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DEVELOPING A MODULAR HYDROGEOLOGY ONTOLOGY EXTENDING THE SWEET ONTOLOGIES

by

AJAY TRIPATHI

Under the Direction of Hassan A. Babaie

ABSTRACT

Application of ontologies in the environmental science will allow experts in this field to model their domain knowledge for more efficient exchange and reuse. This thesis presents a modular approach in reengineering existing upper-level ontologies to conceptualize specific domain knowledge. The aim of extending these upper-level ontologies is to tailor and transform the existing conceptual models into new ones designed for the use in a specific domain in the earth sciences. This thesis extends the upper-level Semantic Web for Earth and Environmental Terminology (SWEET) ontologies to develop ontologies for part of the hydrogeology domain. The existing SWEET ontologies are developed by NASA's Jet Propulsion lab for Earth system science (<http://sweet.jpl.nasa.gov/ontology/>). In the new model, presented in this thesis, the architecture and orthogonal design of the SWEET ontologies is not disturbed but restructured at certain levels. New concepts are added to the old structure and the consistency is maintained for use by other domains. This thesis discusses the useful steps, necessary tools and other procedures involved in ontological reengineering of existing upper-level ontologies. The hydrogeology domain modeled in this thesis by means of reengineering, exemplifies the reusability methodology for the Earth system science knowledge base.

DEVELOPING A MODULAR HYDROGEOLOGY ONTOLOGY EXTENDING THE
SWEET ONTOLOGIES

by

AJAY TRIPATHI

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Science

Georgia State University

2005

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College of Arts and Sciences

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August 2005

ACKNOWLEDGEMENTS

I am extremely delighted to present this thesis to the Department of Geology of the Georgia State University for the partial fulfillment of the Master of Science in Geology. I must thank Dr. Hassan A. Babaie, the chair of the thesis committee and my thesis advisor for his excellent technical guidance from time to time. I specially thank the members of the thesis committee Dr. W. Crawford Elliott and Dr. Seth Rose of the Department of Geology for reviewing this work at such a short notice. I also thank the Department of Geology for making all the resources available for the software development of this thesis. Lastly, I thank my friends and family for their continuous support and motivation. I sincerely hope that this thesis will be a useful reference for people working in the area of ontology development and for people interested in learning about the future of the World Wide Web.

Ajay Tripathi

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Introduction

1.1 Using Ontologies for Environmental Science

Each of the five major components (spheres) of the Earth system, i.e., lithosphere, cryosphere, hydrosphere, biosphere and atmosphere, has its own unique set of concepts and relations in addition to those that are common among the components.

Environmental Science is an interdisciplinary field that addresses interactions between people and their natural environment. Some of the better-known issues that environmental scientists deal with are global climate change, natural resources management, ozone depletion, sustainable development, acid rain, air and water quality, and solid and hazardous waste management. Having structured information, for example, through ontologies about the different domains encompassing environmental science will help environmental scientists use a common knowledge-base in studying these issues. Traditionally, understanding of the inter-domainal patterns and integration of knowledge across the five environmental domains have been done by human experts. This could be effective if volume of data and information was small enough to be manageable by people. With the advent of the Internet and coming of semantic web (Berners-Lee et al.,2001), processing of voluminous data and information, crossing domain boundaries, can more effectively be achieved through computers and software such as ontologies.

The knowledge about any domain can be modeled and maintained as a common resource for efficient interchange and reuse of scientific information (Gomez-Perez,1998), and making it available and useful for computer applications (i.e., making it machine readable). Reusability of existing information can help environmental scientists

in several different ways. In addition to the intra-domain knowledge centered around concepts of individual domains, there is knowledge that depends on concepts of other domain(s). For example there is air-water interaction, when CO₂ gas from the atmosphere combines with rain water and enters the hydrosphere or lithosphere. Another example could be the salinity in sea water (hydrosphere) which may affect groundwater (lithosphere and hydrosphere) or marine life (biosphere). We can manage domain specific knowledge more efficiently by developing ontologies in each domain which specify all concepts (entities) and their relationships.

According to Gruber (1993), ontology is a formal and explicit, specification of a conceptualization. Ontology is a description of a common (i.e. agreed upon) vocabulary and their relationships, which can be used to share and reuse information within a domain or even between different domains. The typical vocabulary of ontology is commonly used as annotations to define the database schema.

From a knowledge engineering perspective, ontologies can be defined as machine interpretable definitions of domain concepts and the interrelation between them which represent domain knowledge. One difference between ontology and database is that the latter can be reused by many computer applications. We can use ontologies for different reasons, like sharing common information, reusing domain knowledge, and separating domain knowledge from operational knowledge. (Noy and McGuinness)

In the following section a general description of the basic technologies of ontological engineering (Gomez-Perez et al.,2004) that are applied in this thesis is introduced. The application of each of these technologies is given in the following chapters.

1.2 OWL Language

The Web Ontology Language, OWL (Dean and Schreiber, 2003) was approved in February of 2004 by the World Wide Web Consortium (W3C) as a standard language for the publication and exchange of ontological models on the World Wide Web. OWL can be used when the document's information needs to be processed by an application, rather than just for the purpose of presentation of information. OWL is very useful in representing the meaning (i.e., semantics) of terms and relationships between terms and relationships between terms, and hence developing ontologies.

1.3 Ontology Editing and Development Tools

1.3.1 Protégé with OWL plugin

“Protégé” is an open-source development environment being used by system developers and domain experts to develop knowledge-based systems. The OWL plugin is an extension of Protégé with support for the Web Ontology Language (OWL) (Horridge et al., 2004). Protégé was developed by Stanford Medical Informatics at the Stanford University School of Medicine (<http://protege.stanford.edu/>) with collaboration from several other agencies. Protégé is an ontology editor and a knowledge-based editor as well as an open source Java tool that provides an extensible architecture for creation of customized knowledge-based applications. Using the Protégé OWL Plugin we can load and save OWL and Resource Description Framework (RDF) ontologies, edit and visualize classes and properties, define logical class characteristics as OWL expressions, execute reasoners such as description logic classifiers or edit OWL individuals for Semantic Web markup.

1.3.2 OntoViz Plugin for ontology visualization

The OntoViz Tab bundled in the Protégé 3.1 download, allows visualization of Protégé ontologies with the help of highly sophisticated graph visualization software ([Graphviz from AT&T](http://www.graphviz.org/) <http://www.graphviz.org/>). The visualization is highly configurable. Using OntoViz we can select a set of classes or instances to visualize parts of ontology. We can also display slots and slot edges or specify colors for nodes (i.e., concepts) and edges (i.e., relations). While selecting only a few classes or instances, there is an option for applying various closure operators like selecting subclasses or superclasses in order to visualize the specified dimensions.

1.3.3 SWOOP

SWOOP (<http://www.mindswap.org/2004/SWOOP/>) is a hypermedia inspired ontology editor. SWOOP was developed by MINDSWAP (<http://www.mindswap.org>), which is a semantic web research group at University of Maryland Institute for Advanced Computer Studies. SWOOP has a web browser look and feel. This makes SWOOP very handy for easy browsing and development of OWL ontologies

1.3.4 SMORE

SMORE (<http://www.mindswap.org/2005/SMORE/>) is a tool designed to enable users to markup HTML documents in OWL using Web Ontologies. SMORE was developed by MINDSWAP (<http://www.mindswap.org>), for the purpose of ontological reengineering. SMORE may be used to load different websites containing domain

information. Key concept terms can then be highlighted and added to the ontology as classes or properties.

1.3.5 Query Tab Plugin and RDQL Query

The Query Tab bundled with Protégé 3.1 can be used for simple queries. For more complex querying, a reasoner is required. Pellet is a reasoner which is bundled with SWOOP. The Pellet Query interface can then be used to write Resource Description Query Language (RDQL) queries. Pellet queries the individuals in the ontology and gives appropriate answers (Appendix C). Racer is another reasoner which can be used with protégé (<http://www.racer-systems.com/>).

1.4 SWEET Ontologies

NASA's Jet Propulsion Lab has designed and they maintain Semantic Web for Earth and Environmental Terminology (SWEET) ontologies (<http://sweet.jpl.nasa.gov/ontology/>). SWEET presents an upper level ontology for Earth system science. The SWEET ontologies include thousands of terms which are relevant to Earth System Science and related concepts such as numerical units and other datasets. (Raskin and Pen,2005) SWEET ontologies are designed using the OWL language. The SWEET ontologies used in this thesis include: "earthrealm.owl", "substance.owl", "process.owl", "properties.owl", "phenomenon.owl", "human_activities.owl", "units.owl", "numerics.owl" and "space.owl". These ontologies are the validated and updated versions that were released on April 29th 2005.

1.5 Extending SWEET Ontologies for Hydrogeology domain

The SWEET ontologies are extendable and reusable earth system science knowledge base (Raskin and Pen,2005). In this thesis, some of the broader concepts of hydrogeology such as ground water, water table, hydrosphere layer, etc., were selected from the upper-level concepts in SWEET to describe the underlying, more specialized concepts such as aquifer, confining layer, capillary fringe etc. The new concepts are hierarchically arranged, and wherever necessary, an overall redesigning of SWEET ontologies was done. The relationships between concepts are also described along the process.

1.6 Audience

It is assumed that the first-time reader of this thesis is familiar with the basic concepts of hydrogeology and the semantic web. However, while introducing some of the new terms related to the semantic web, care has been taken to explain the terms to a novice user of this technology. This is done keeping in mind that the reader of this thesis should be able to understand the benefits of using the ontology specifications for knowledge exchange and reuse. If the reader is familiar with the OWL language this thesis comes as a handy example of the reusability of upper level ontologies.

1.7 Goals of the Thesis

The main goal of this thesis is to reengineer the SWEET ontologies to enable a complete conceptualization of hydrogeological terms. The modular sub-ontology can

either be a separate OWL file which imports concepts from other upper level ontologies or it can be included in the upper level ontology itself (i.e., SWEET). In this thesis, all new terms are added to the existing set of SWEET ontologies. This is done to preserve the orthogonal design of SWEET and to enable optimum reusability.

1.8 Organization of the Thesis

The first two chapters following this introduction explain the problem area and overall process of ontological reengineering. A possible application of extending the existing upper-level ontologies for the hydrogeology domain is suggested. These chapters are followed by presenting the final results. This chapter explains the different steps taken to extend the SWEET ontologies. All the new concepts being included in the different ontologies are listed and explained. The hierarchy is illustrated using figures. Based on these results a conclusion is then drawn in the next chapter and the scope for future work is suggested. The last two chapters of the thesis are the references and appendix. The references chapter includes the cited references, website references and uncited references. The appendix includes the modified OWL files, the scenarios and competency questions, instructions about adding instances and making basic additions or modifications to the ontologies and the RQL queries. To enhance readability the OWL file names are written in “Courier New” font and the OWL *class names*, *property names* and *individuals* are written in italicized text.

2. Ontology Development Process

2.1 Development Tools and Methods

2.1.1 Building an ontology

Ontological engineering involves several processes and activities that include conceptual modeling of domain concepts and their relationships, and implementation in a specific language such as OWL (Web Ontology Language) (<http://www.w3.org/TR/owl-features/>). The conceptual modeling starts by knowledge acquisition and identification of relevant domain concepts, through scenarios and raising the so called “competency questions” (Appendix B) (Babaie et al., 2005). An example of a scenario is as follows: A point source (e.g. gas station) introduces a pollutant into the ground, which enters the soil and groundwater. Groundwater flow moves the contaminant down the hydraulic gradient to a discharge point (city well), where it is to be pumped for treatment and usage by people. Upon discovery of the pollutant, the city contracts a consultant to de-contaminate the site with special remediation techniques.

Another example of a scenario is the increase in the overall exhaust gases generated by vehicular traffic in a city. The exhaust contains greenhouse gases like CO₂. Greenhouse gases are known to cause climate changes by trapping heat. The observed warming of the atmosphere over the years is likely to have been due to the increased concentrations of greenhouse gases in the atmosphere. Not only does the increased CO₂ concentration cause global-warming but it may also results in forming acid rain, which enters the lithosphere and causes groundwater contamination. By inspecting the above scenarios, we discover the main concepts such as pollutant, site, discharge, hydraulic

gradient, flow direction, soil, groundwater, greenhouse gas, atmosphere, exhaust, global-warming, and climate change. These are the nouns in the scenario statements. The next step is to give relevant, useful definitions for each concept and develop a taxonomic hierarchy for these concepts. For example *air-pollution* is one concept, which can be defined as contamination of the air by noxious gases and minute particles of solid and liquid matter (particulates) in concentrations that endanger health.” (<http://www.answers.com/topic/air-pollution>) Air-pollution concept can then be related to concepts like “ozone” within the same domain, or to concepts like “erosion” from the lithosphere domain whereby we can say that soil erosion causes the rise in the level of dust particles, which increases air-pollution. By raising competency questions and finding their suitable answers, we can identify the relationship between concepts. These relationships will become relations (properties) in the ontology. We are thus ready with the modular architecture of the ontology which can now be modeled using ontology building and editing tools. Figure 2.1 and Figure 2.2 illustrate the ontology building methodology and lifecycle (Stevens et al.,2000).

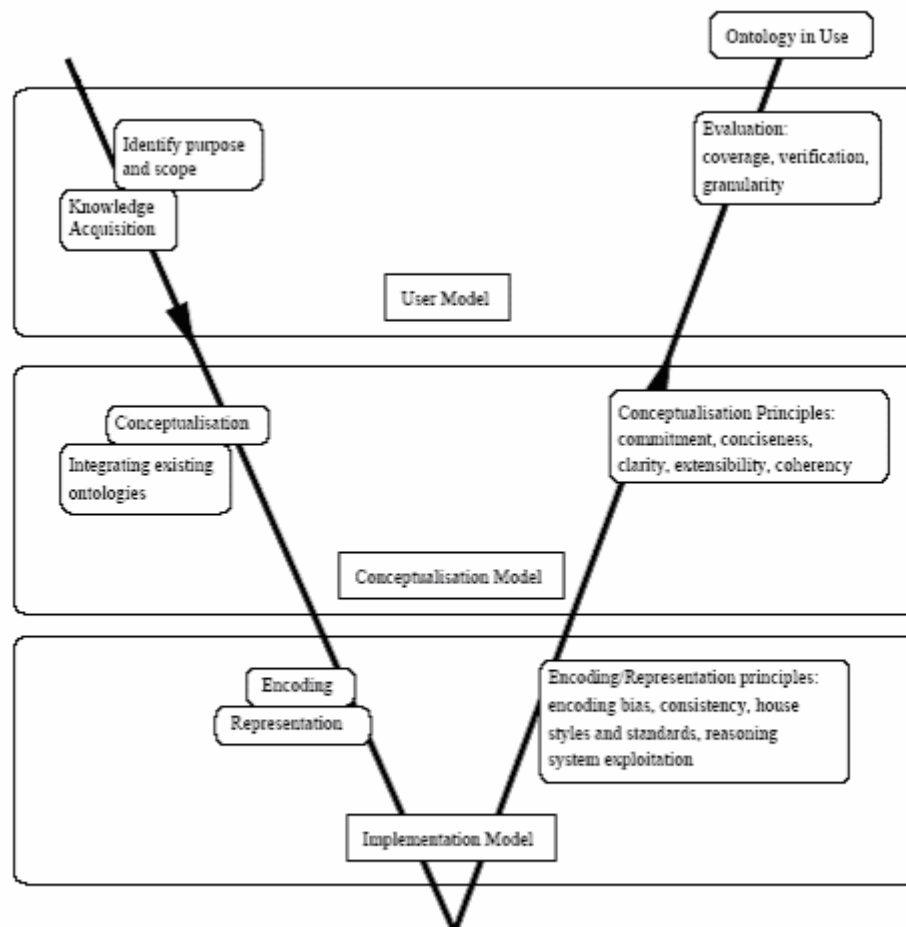


Figure 2.1 The V-model inspired methodology for building ontologies.

The steps involved in ontology building are illustrated in this figure where the process moves along the direction of the arrow. (From (Stevens et al.,2000))

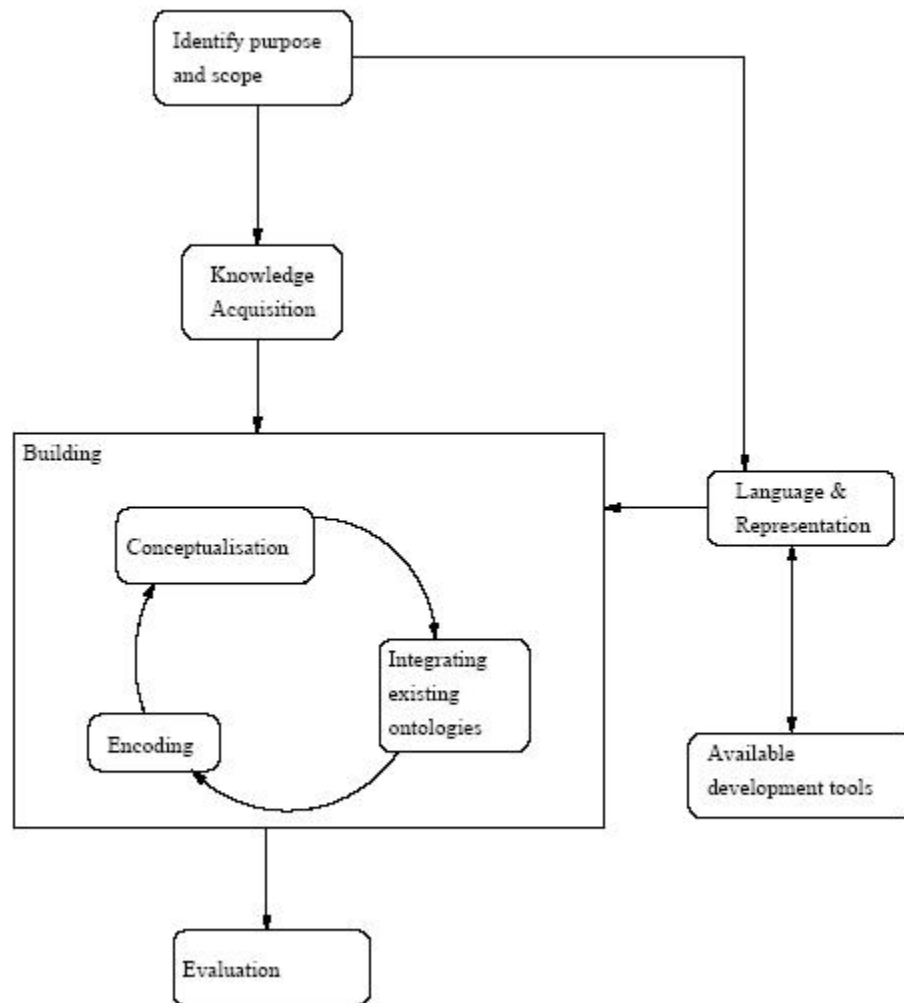


Figure 2.2 The Ontology Building Life-Cycle

Figure 2.2 explains the life-cycle of ontology development. This figure summarizes the steps explained above. (From(Stevens et al.,2000))

2.1.2 The Semantic Web and OWL

The Semantic Web is the next generation web within which machine readable data and information can be shared across applications, enterprise and community boundaries. It is based on the Resource Description Framework (RDF) and RDF Schema (RDFS),

which integrates a variety of applications using Extensible Markup Language (XML) for syntax and Uniform Resource Identifier (URI) for naming. (Berners-Lee et al.,2001)

Web Ontology Language (OWL) is a component of the Semantic Web activity. OWL is based on the concept of information sharing between distributed sources. OWL has the capability to import information that is not limited to a single resource. (<http://www.w3.org>). In OWL, the domain concepts are represented by *classes*. At times classes are related to each other and need to be arranged heirarchically, thus making some of the classes, *sub-class* of higher class(s) in the taxonomic hierarchy. The sub classes inherit propeerties from the superclass. ‘Aquifer’ is an example of a class which has the sub class ‘UnconfinedAquifer’. Some of the properties of the ‘Aquifer’ class could be ‘has name’, ‘has location’ etc. These properties will be inherited by ‘UnconfinedAquifer’ sub-class. Individuals are instances of the concepts with fielled values for the attributes of properties. In this example, ‘has name’ could have one of the values “Floridan Aquifer”. OWL enables powerful reasoning capabilities which can help us to query the domain models in order to manipulate data (Knublauch et al.,2004).

2.1.3 Ontology building and editing tools

There are several ontology development tools that are available. These include Protégé 3.1, SWOOP and SMORE. Protégé 3.1 is a tool developed by Stanford Medical Informatics at the Stanford University School of Medicine (<http://protege.stanford.edu/>) with collaboration from several other agencies. SWOOP and SMORE are developed by MINDSWAP (<http://www.mindswap.org/>), which is a semantic web research group at University of Maryland Institute for Advanced Computer Studies. All these tools are in

different stages of development and it is sometimes a big challenge to work with evolving technology. When working with large upper level ontologies, especially for the purpose of extending them, it is a better idea to use more than one tool. Each of these tools has unique features and capabilities. Protégé 3.1 beta with OWL plugin (Horridge et al., 2004), is good for editing OWL classes and properties, using forms to add individuals, and for visualizing concepts using OntoViz or OwlViz plugins. (Figure 2.3, Figure 2.4 and Figure 2.5).

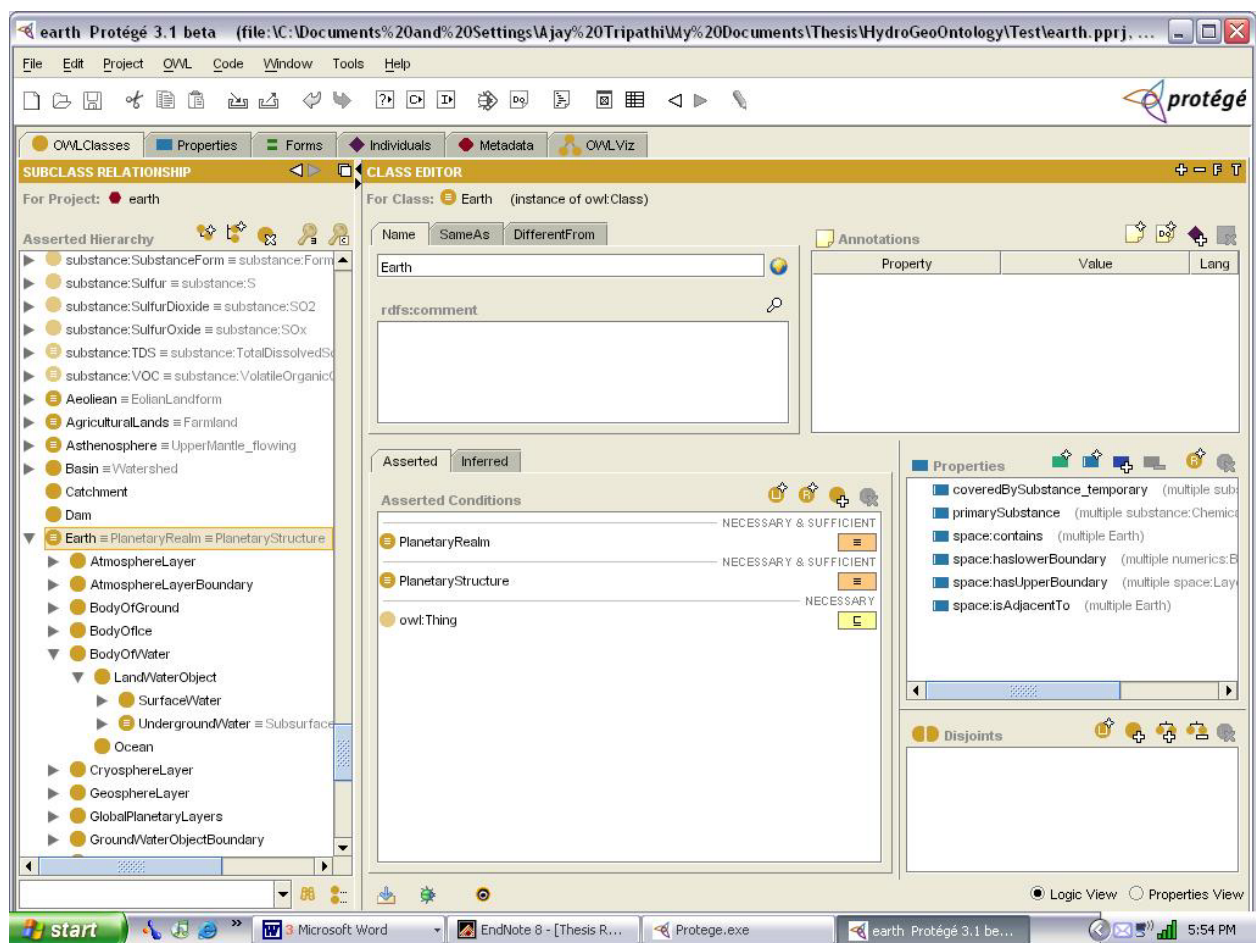


Figure 2.3 Protégé OWL Classes

Figure 2.3 shows the Protégé OWL tool which can be used for viewing and editing OWL *classes*, *individuals* or *properties*. On the left hand corner of this figure we

can see the classes displayed. The right side has properties and in the center we have the box where we can specify conditions and apply restrictions.

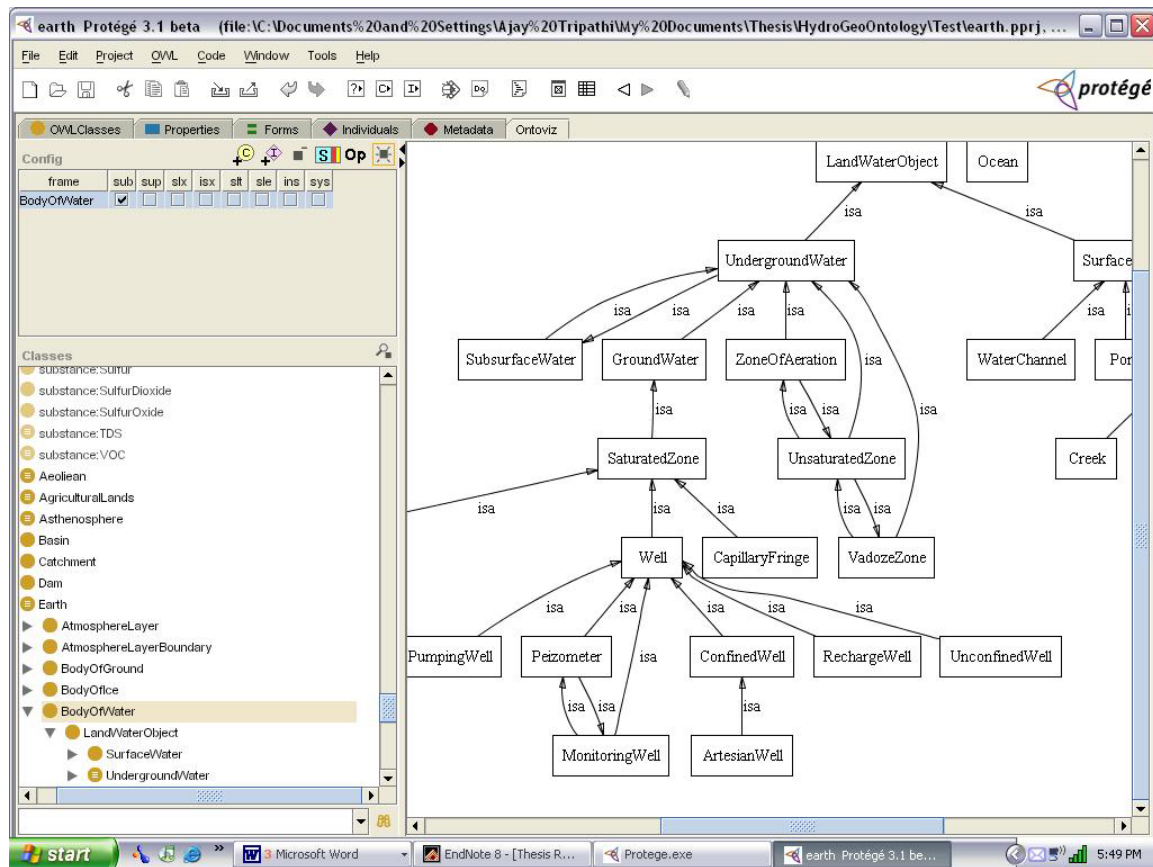


Figure 2.4 OntoViz Tab

Figure 2.4 shows how the OntoViz Tab is used to visualize taxonomical hierarchy of classes, individuals or properties. We need to select the class and add it to the top left corner window of the application. We can then select the option of viewing super-classes, sub-classes, individuals or properties. We then click on the ‘create graph’ button and the graph is displayed in the adjacent application window. This graph can be exported as a gif or jpeg image. It is important to note that visualization will work only if *GraphViz* is installed on the machine.

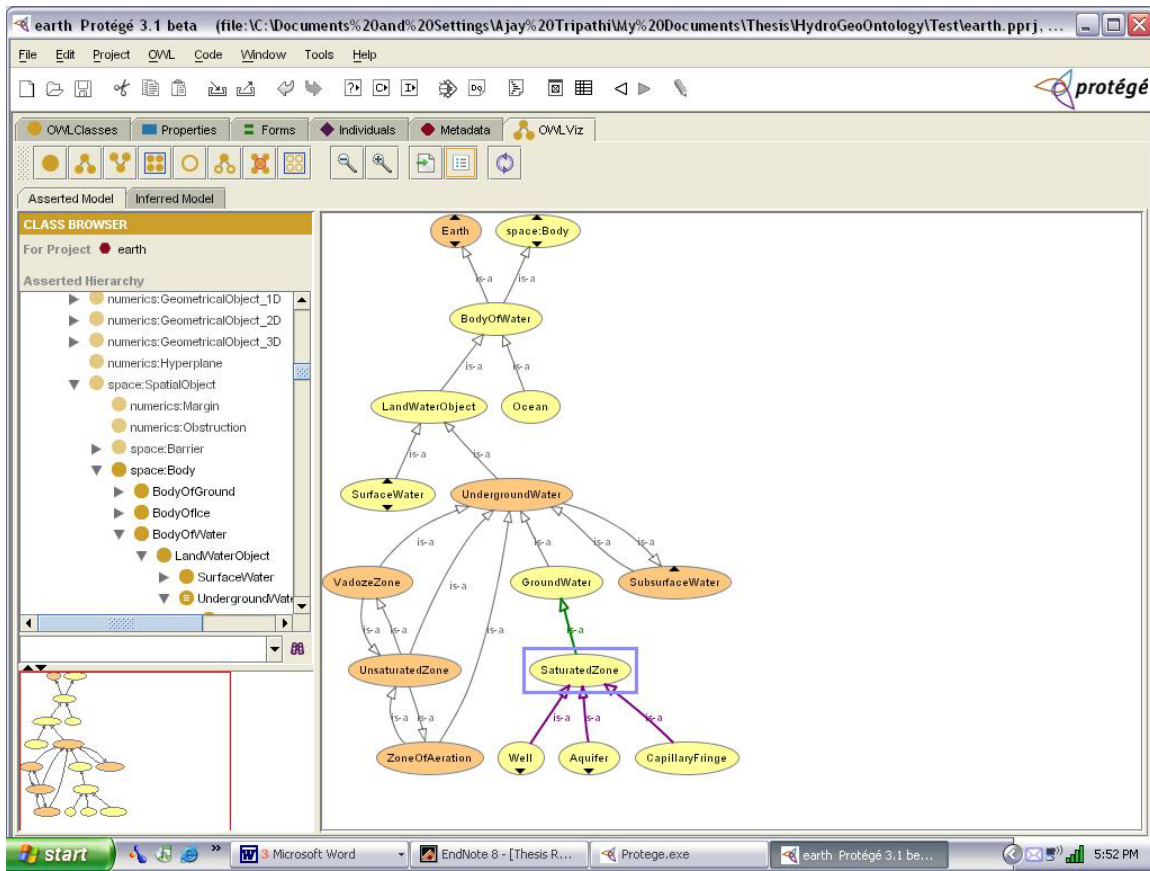


Figure 2.5 OwlViz Tab

Figure 2.5 illustrates the OwlViz Tab which can be used for visualization of OWL classes. We need to select the class for which we need to view its sub-class(s) or super-class(s). There are several options that can be selected to customize the view. Some of these options are: hide class, change size and change color. The class hierarchy can be visualized in the main window of the application. ‘gif’ files of the visualization can also be created.

Protégé also has its own database for storing individuals and plugins for query.

SWOOP (<http://www.mindswap.org/2004/SWOOP/>) is a very handy tool when we need to browse through multiple ontologies (Kalyanpur et al.,2004). When we need to reuse existing data to create a new ontology, or include concepts or properties into an existing ontology, we can use the advanced search capabilities of SWOOP to find those specific concepts or properties. SWOOP is bundled with Pellet reasoner for A-box querying. Pellet Query interface is used for querying OWL ontologies (Appendix C). (Figure 2.6)

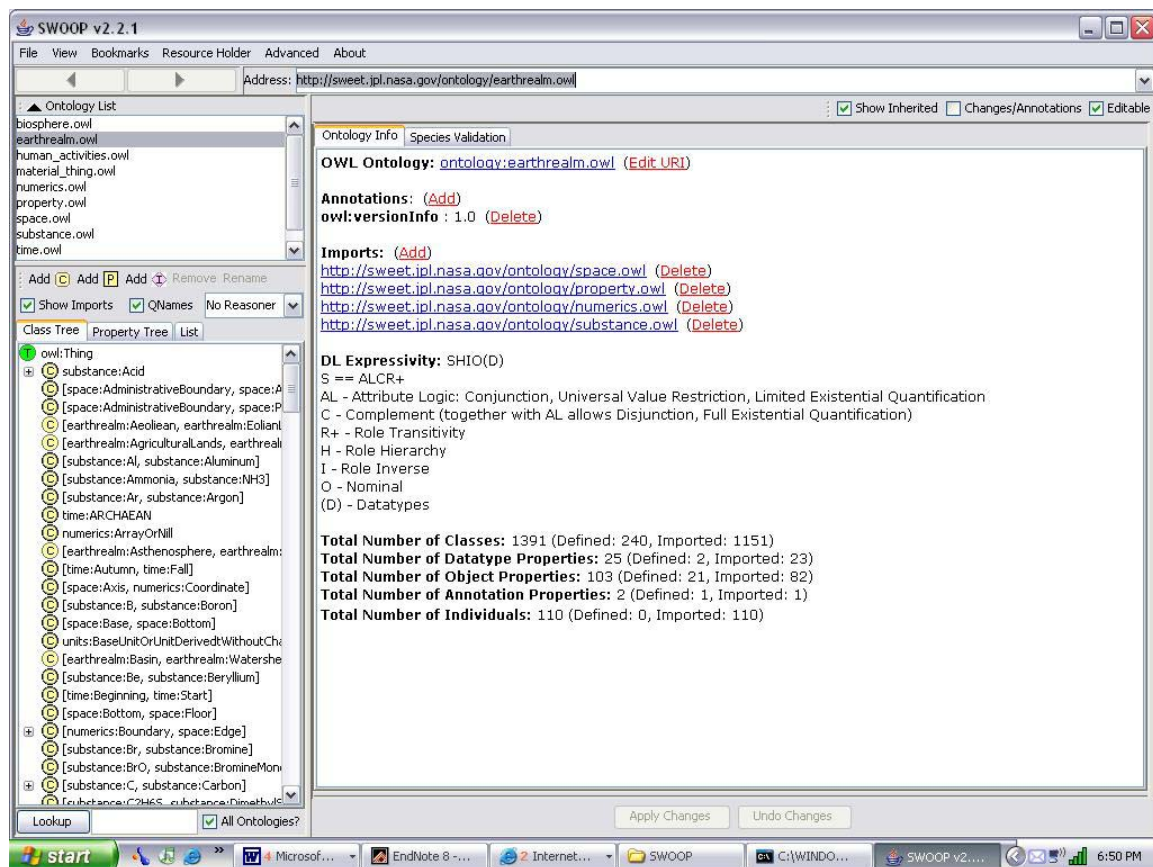


Figure 2.6 SWOOP

Figure 2.6 is a screenshot of the java application SWOOP. SWOOP has a web-browser like look and feel. Ontologies are loaded just the way we load web pages, i.e. by typing or entering the URI. Multiple Ontologies are loaded and can be seen in the top left

corner of the figure. Just below the list of ontologies, is the class or property window which displays the hierarchy of classes or properties. The main window gives the description about the class or ontology.

SMORE (<http://www.mindswap.org/2005/SMORE/>) can be used to gather domain concepts from web resources. This tool is of great help while fine-tuning the ontology in its later stage of development. Using SMORE we can open web links, highlight the text on the opened link and convert the text into a class or property. (Figure 2.7).

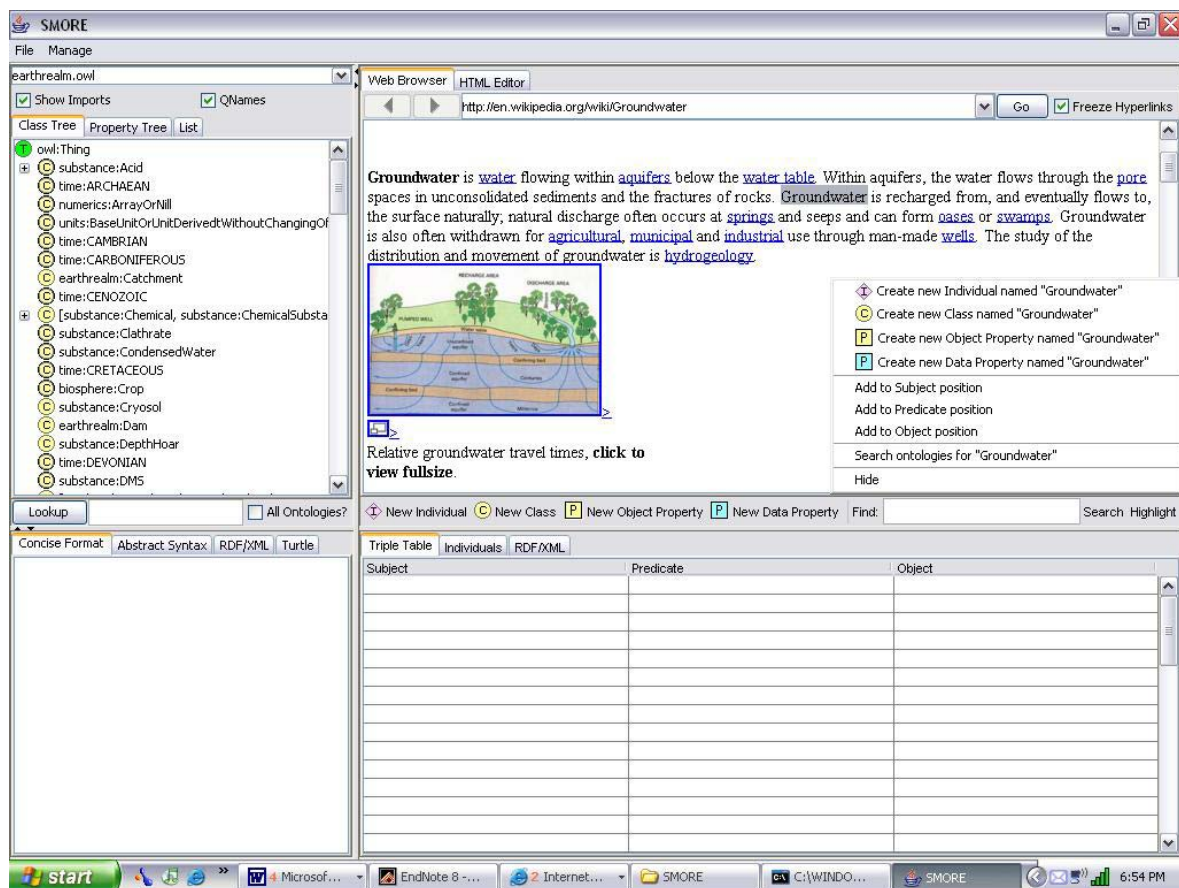


Figure 2.7 SMORE

Figure 2.7 illustrates the SMORE application. SMORE has a web-browser like look and feel. Ontologies can be loaded in SMORE and are displayed in the top left window of

the application. In the top central part we can open a document which can either be a website or a local file. Notice that the term “Groundwater is selected in the window. When we right click a window pops up (as seen in the right bottom of the application), using which we can add the selected term from our website or document into our ontology.

It is important to remember that when working with multiple tools and multiple ontologies, care must be taken while saving files, as multiple tools using the same file at the same time may overwrite data.

2.1.4 Validating and testing the ontology

OWL files can be validated using OWL *validators* which are tools used to check consistency of concepts and overall validity of the ontology. Many such tools are available online and require the user to enter the URI of the ontology which needs to be validated. *Reasoners* such as Racer can be used with protégé to check consistency. SWOOP’s Pellet Query can be used to query the ontologies (Appendix C).

2.2 Scalability

While designing ontologies, it is important to keep in mind that ontologies may become complex and large as they evolve. This may happen due to extension, or cross-linking between properties, individuals or other ontologies. The very idea of Semantic Web is to enable distributed development between groups around the globe. In order to handle large ontologies, it is important to have good documentation. Most ontology

development tools like Protégé allows annotations, which is supported by OWL annotations properties. Annotations can be attached to ontologies, properties, individuals, and classes. With the help of annotations we can track changes and it helps in the overall development of ontologies (Knublauch et al.,2004).

2.3 Reusing Ontologies

One of the greatest benefits of the Semantic Web is the reusability of knowledge. Instead of reinventing the wheel each time, it is faster and more efficient to develop a knowledge base which can share the concepts which have already been defined on the web. There are different ways and levels in which ontologies can be reused. A single ontology can import multiple ontologies and can share classes, properties, individuals or the ontology itself. The upper-level ontologies should be designed keeping optimum reusability in mind. Reusability also helps in structuring information and data (Gomez-Perez and Rojas-Amya,1999). Ontology development tools like SWOOP are useful in searching for related resources in existing ontologies, which is a critical step in reusing ontological (TBox) data. (Kalyanpur et al.,2003)

3. Re-engineering SWEET Ontologies for the Hydrogeology Domain

3.1 SWEET Ontologies

The Semantic Web for Earth and Environmental Terminology (SWEET) is an upper-level ontology for Earth system science (<http://sweet.jpl.nasa.gov/ontology/>). There are several different ontologies within SWEET which include thousands of concepts related to the Earth system (Raskin and Pen, 2005). Since the SWEET ontologies are a large collection of concepts and terms, they are divided into orthogonal dimensions or *facets* (<http://sweet.jpl.nasa.gov/guide.doc>). Orthogonal or faceted designing is a technique which enables us to use combinations of terms across ontologies in order to make compound terms. For example, if there is a term *air* in one of the ontologies and another term *temperature* in the same or other ontology, we can combine the two terms to make a compound term *air temperature*. This way we eliminate the need to create a new term by itself. However, sometimes, it is a better idea to have meaningful compound concepts such as *Hydraulic Gradient* which needs to be explicitly defined.

Orthogonal or faceted ontologies also help in quick retrieval of knowledge and is therefore more efficient. Orthogonal Dimension or facets ensure re-usability as well as reductionism. Figure 3.1 (<http://sweet.jpl.nasa.gov/guide.doc>) below, shows the ontologies represented by rectangular boxes. The lines in this figure represent properties which link ontologies. For example, the ontology *Earth Realm* has a concept *Aquifer* in it and the ontology *Physical Properties* has a concept *Permeability*. A property *hasPermeability* is defined to connect the two concepts. Figure 3.1 also has two dotted rectangular boxes containing a set of ontologies. The big box represents the faceted

ontologies whereas the small box represents integrative ontologies. Integrative ontologies are unifying ontologies which do not contain mutually orthogonal terms. They contain holistic terms which use elements from the faceted ontologies.

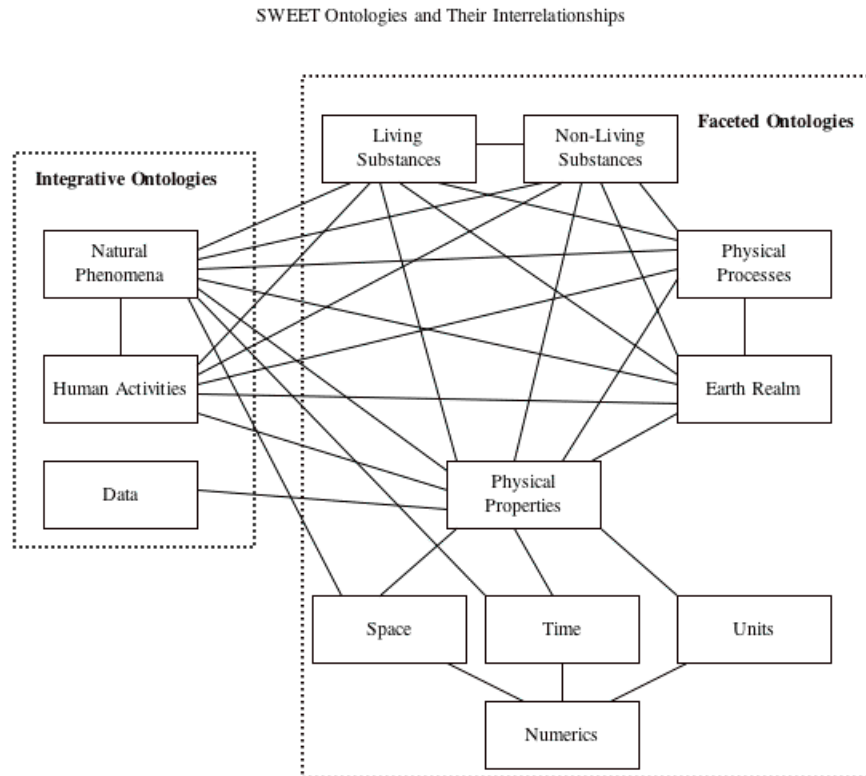


Figure 3.1 SWEET Ontologies and Their Interrelationship

The SWEET ontologies can be downloaded from <http://sweet.jpl.nasa.gov/sweet>. SWEET ontologies are scalable, i.e. they can be easily extended to be useful for specialized domains (e.g. Hydrogeology). SWEET ontologies are also application independent, and can be used across multiple platforms.

The SWEET ontologies which were re-engineered in this thesis to include hydrogeology concepts are as follows:

earthrealm.owl

The `earthrealm.owl` (changed to `earth.owl` to distinguishing it as a local file) ontology constitutes the realms of the earth. These realms are the elements “*atmosphere*”, “*ocean*”, and “*solid earth*”. There are associated sub-realms (such as “*BodyofWater*” and “*HydrosphereLayer*”).

process.owl

This ontology includes processes that affect living and non-living substances, such as diffusion, evaporation, interflow etc.

property.owl

This ontology contains concepts of Physical Properties such as “*temperature*”, “*pressure*”, “*height*” etc., and could apply to other SWEET ontologies like “`property.owl`”, “`process.owl`” etc. These properties are the measured physical quantities (or qualities) with units.

phenomena.owl

This ontology is used to define transient events such as hurricane, earthquake, El Nino, volcano etc. This ontology also includes specific instances of phenomena which comprise about 50 events which have occurred over the past two decades.

substance.owl

This ontology includes the living and non-living substances. The living substances include plant and animal species. The non-living substances include: particles, electromagnetic radiation, and chemical compounds.

units.owl

Units ontology consists of Unidata's UDUnits. This ontology includes conversion factors between various units. Prefixed units such as km are defined as a special case of m with appropriate conversion factor.

human_activities.owl

This ontology takes into account the impact of human activities on processes and phenomena. Some of these activities are commerce, fisheries, farming etc.

material_thing.owl

This ontology includes physical objects, structures and equipments.

3.2 Hydrogeology Domain

Hydrogeology is a discipline of science which deals with the occurrence, characteristics and movement of water below the earth's surface. The hydrogeology domain being modeled here pays particular emphasis to the environmental conservation and natural resource management, and is closely related to other earth system concepts like the regional properties, physical properties, atmosphere and space.

3.3 Using SWEET for Hydrogeology

As described earlier, SWEET ontologies represent the upper-level concepts of the Earth system science, which can be extended and reengineered by adding new concepts, properties or individuals, or by rearranging pre-existing owl classes, properties and individuals. The new design makes SWEET more meaningful to a domain expert such as a hydrogeologist, without disturbing consistency for use by other domains.

3.3.1 Steps involved in re-engineering

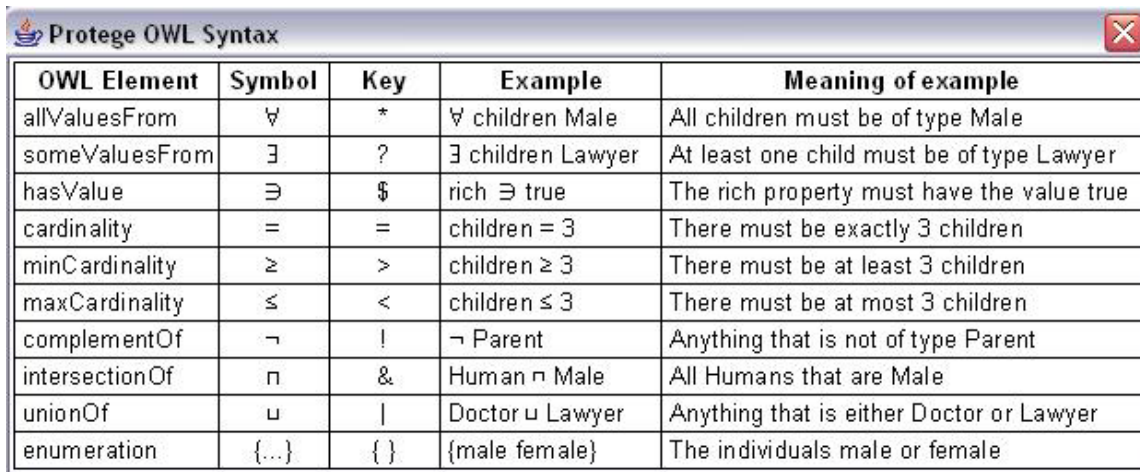
The SWEET ontologies (OWL files) were downloaded and saved locally to enable local editing of the owl files (<http://sweet.jpl.nasa.gov/ontology/>). When editing files locally it is important to change the Uniform Resource Identifier (URI) within all imported OWL files. This can be done using a wordprocessor such as MS Word where the owl file is opened and a Find replace is done to change the URI to a local address. An example of this is the URI: “<http://sweet.jpl.nasa.gov/ontology/earthrealm.owl>” which can be changed to: - “file:/C:/.../earthrealm.owl”. It must be noted that in large ontologies such as these, there can be several hundreds of dependencies of properties and instances across ontologies. It is therefore important to have correct URI specification. Once the ontologies are saved locally and all the URI changes are made, the ontologies are ready for editing, and ontology development tools like Protégé can be used to load these ontologies.

The next step is to identify and collect key concepts, definitions and information about the domain which needs to be mapped (Babaie et al.,2005). In our case, the hydrogeological terms are compiled together. Domain knowledge can be gathered in several different ways such as building scenarios and asking competency questions, looking through existing glossary of terms, or by interviewing domain experts. All the available terms are then identified as classes, properties or individuals. It is sometimes difficult to distinguish between class and property. Usually, when many different things are homogeneous, they are not a class but a property. A simple example by which we can understand the difference between a class, individual and property is: - A person whose name is Ajay has income = \$1000. Here, ‘person’ is a class, ‘Ajay’ is an individual and

‘has income’ is a property. Property can either be a datatype property or an object property. Datatype property has individuals or instances related to a datatype e.g. has income = \$1000 can be an integer datatype. An object property is one in which two individuals of a class are related.

Once the terms relevant to the domain are available, tools like SWOOP can be used to do an advanced concept search across all the SWEET or other ontologies being used. Based on the result of the search the domain expert decides how to model new terms under existing terms in the SWEET ontologies, or remodel the existing terms to make the concept more meaningful. The classes, sub-classes, properties and individuals of relevant sections of the ontology are examined and re-engineered if required. Synonymous terms which are more commonly used by hydrogeologists are also added. In order to see the relationships between terms, visualization tools like OntoViz or OwlViz can be used. These tools are very helpful when we are working with large and multiple ontologies.

After the domain expert has identified the necessary changes to be made, the ontologies can be edited using Protégé OWL editor. The OWL classes, properties and individuals can then be added or edited. Protégé OWL also allows checking consistency using reasoners like Racer. The logical expressions such as conditions and restrictions can also be checked or added using Protégé OWL (Figure 3.2). It is a better idea to add individuals after the classes and properties have been satisfactorily modeled.



OWL Element	Symbol	Key	Example	Meaning of example
allValuesFrom	\forall	*	\forall children Male	All children must be of type Male
someValuesFrom	\exists	?	\exists children Lawyer	At least one child must be of type Lawyer
hasValue	\ni	\$	rich \ni true	The rich property must have the value true
cardinality	=	=	children = 3	There must be exactly 3 children
minCardinality	\geq	>	children \geq 3	There must be at least 3 children
maxCardinality	\leq	<	children \leq 3	There must be at most 3 children
complementOf	\neg	!	\neg Parent	Anything that is not of type Parent
intersectionOf	\sqcap	&	Human \sqcap Male	All Humans that are Male
unionOf	\sqcup		Doctor \sqcup Lawyer	Anything that is either Doctor or Lawyer
enumeration	{...}	{ }	{male female}	The individuals male or female

Figure 3.2 Protégé OWL Syntax. This figure illustrates the syntax that can be used to create conditions and restrictions within owl classes

After acquiring the terms and identifying their relationships, we are ready with the raw version of an extended ontology which contains hydrogeology sub-ontology. The new ontology requires some fine tuning to maintain the orthogonal structure of SWEET. If any new concept is disturbing the overall design, it needs to be re-adjusted. The conventions used in SWEET for naming classes, properties, and individuals, must be maintained when adding new classes, properties and individuals. While adding new terms, reusability of the term by other domains must be considered. We thus design a sub-ontology which is scalable and has scope for further extension or reuse.

The final step is to test the ontology. This can be done using OWL *validators*, or by writing queries to get answers for our competency questions which we had used while modeling the knowledge base. If we are getting correct answers to those questions, the ontology is working correctly. It can now be published on the web.

4. RESULT

The SWEET ontologies, reengineered in this thesis are compatible with the hydrogeology domain. The reengineering involved several changes in design and addition of several new concepts to the original taxonomies. The hierarchies of the sections where these changes were made are explained below in detail. Annotations (i.e., comments) are added to the owl files to highlight and describe the changes. These owl files are available in the Appendix A of this thesis. All changes were made to the SWEET ontologies updated on April 19th 2005. The figures below, representing the OWL class hierarchies, have been created using the OntoViz tab in Protégé to illustrate the remodeling of the ontologies. The OWL file names are in "Courier New" font and the class names and property names are italicized for readability. The properties of classes help in establishing connectivity between concepts across ontologies. In the figures below, the boxes represent classes, the arrows represent properties. The box having the head of the arrow is the super-class or parent class and the box which has the tail of the arrow is its child class. If the arrows show a cyclic relationship, (i.e., the arrows point in either directions between two boxes) the classes are equivalent and there is a recursive relationship. Hydrogeology domain experts can add more properties to the model to suit their requirements and further expand these ontologies (Appendix D). For their convenience most of the concepts have been added as classes in ontologies like "property.owl", "units.owl", "process.owl" or "phenomena.owl". These classes can be linked to the earthrealm.owl by adding appropriate properties wherever they may be required.

4.1 Changes Made to `earthrealm.owl`

The `earthrealm.owl` file contains the main concepts related to ground water. Some important changes have been made to this ontology.

4.1.1 Conceptual error corrected

In the original `earthrealm` ontology, *GroundWater* is placed under *owl:thing* and *VadozeZone* is placed under it. *VadozeZone* is the unsaturated zone and technically does not belong to *GroundWater* by definition. This concept is therefore reconstructed. *GroundWater* is now placed as a sub-class of *UndergroundWater*. *UndergroundWater* constitutes the saturated zone as well as the unsaturated zone, where as *GroundWater* constitutes only the saturated zone. (Figure 4.1) A new class *UnsaturatedZone* is now added as a sub-class of *UndergroundWater*. *VadozeZone* is now separated from *GroundWater* and is made the equivalent class of *UnsaturatedZone*. Another class *ZoneOfAeration* is introduced and made equivalent of *VadozeZone*. (Figure 4.2)

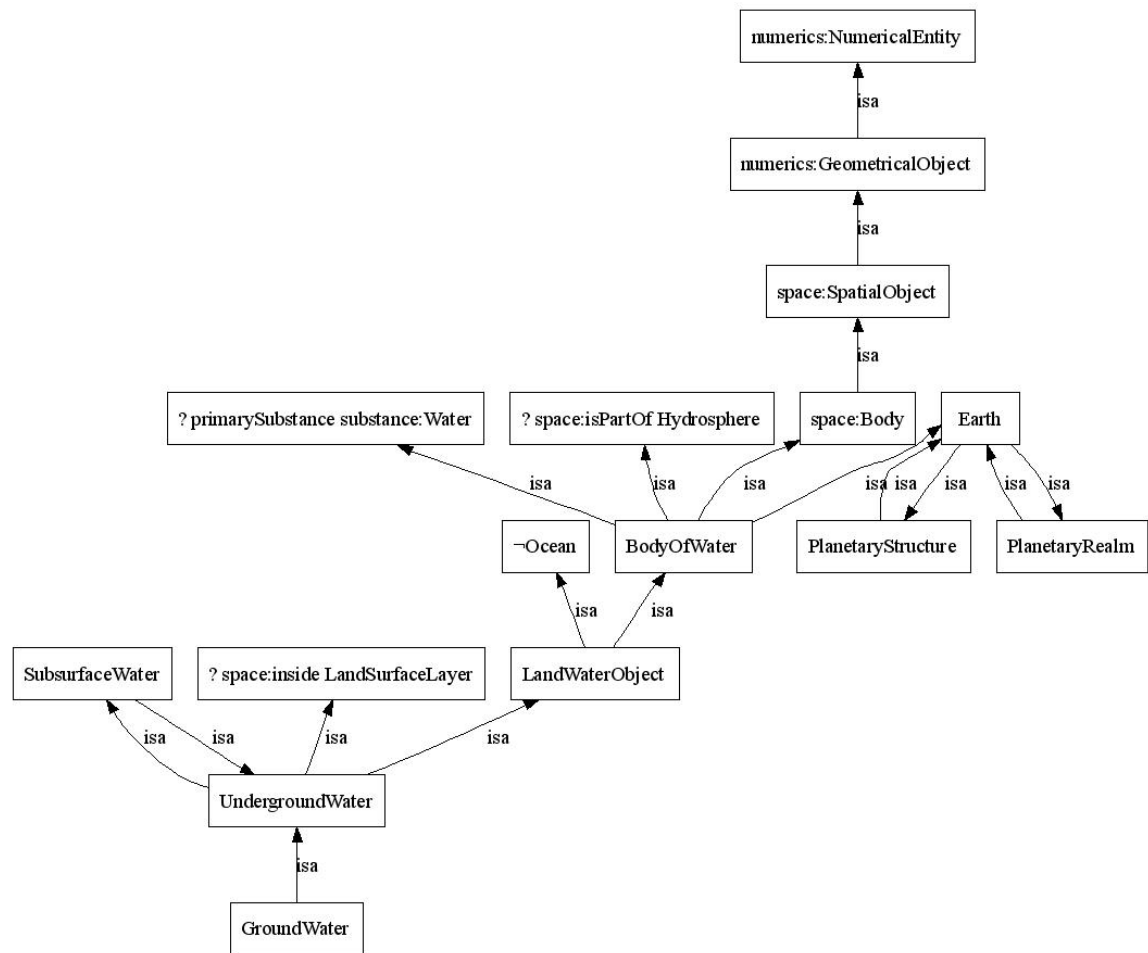


Figure 4.1 Super-Classes of *GroundWater*

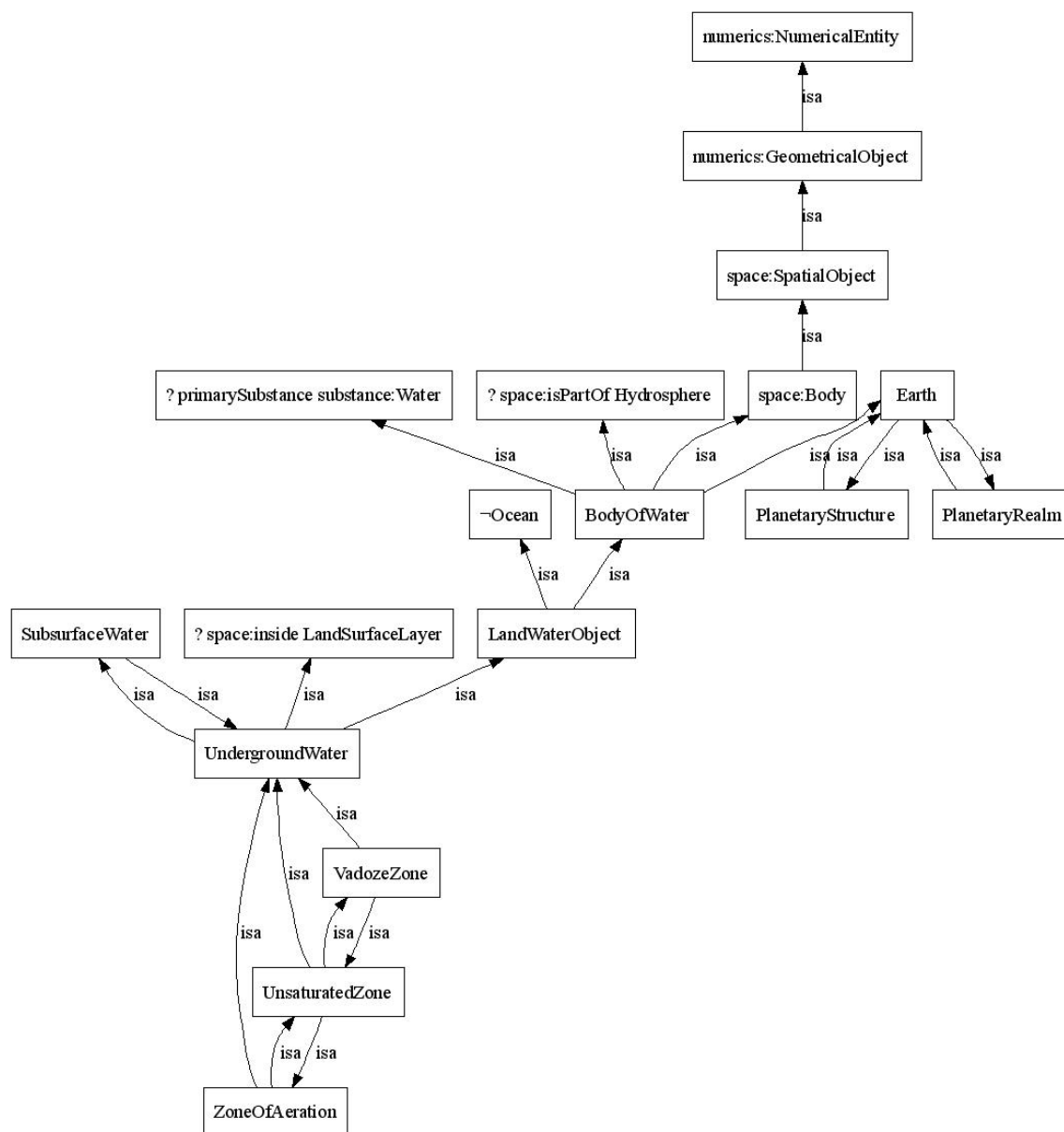


Figure 4.2 Super-Classes of *UnsaturatedZone*

4.1.1.1 Object Properties added to *Groundwater*:

GroundWater		
hasRecharge	Instance*	property:Recharge
hasDischarge	Instance*	property:Discharge
hasLocation	Instance*	space:Location

4.1.1.2 Object Properties added to *UnsaturatedZone*:

UnsaturatedZone		
hasHydraulicConductivity	Instance*	property:HydraulicConductivity

4.1.2 Concept of *Aquifer* is Added along with its subclass and properties

A new class *SaturatedZone* is made the sub-class of *GroundWater* (Figure 4.3). The class *Aquifer* is added under *SaturatedZone*. Multiple sub-classes *ArtesianAquifer*, *ConfinedAquifer*, *PerchedAquifer*, and *WaterTableAquifer* are added under *Aquifer*. *ArtesianAquifer* and *ConfinedAquifer* are made equivalent. *UnconfinedAquifer* and *WaterTableAquifer* are made equivalent. (Figure 4.4)

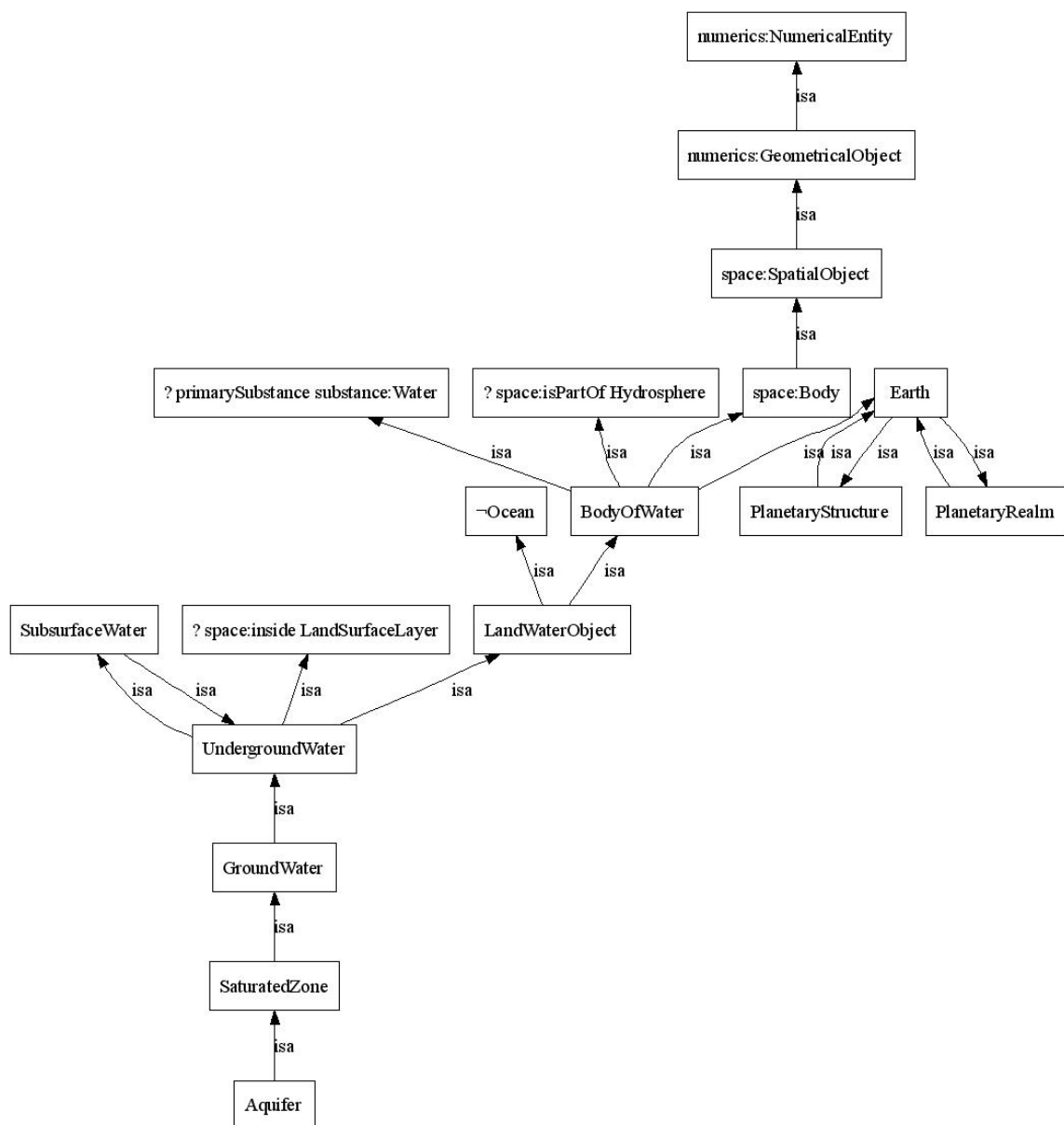


Figure 4.3 Super-Classes of *Aquifer*

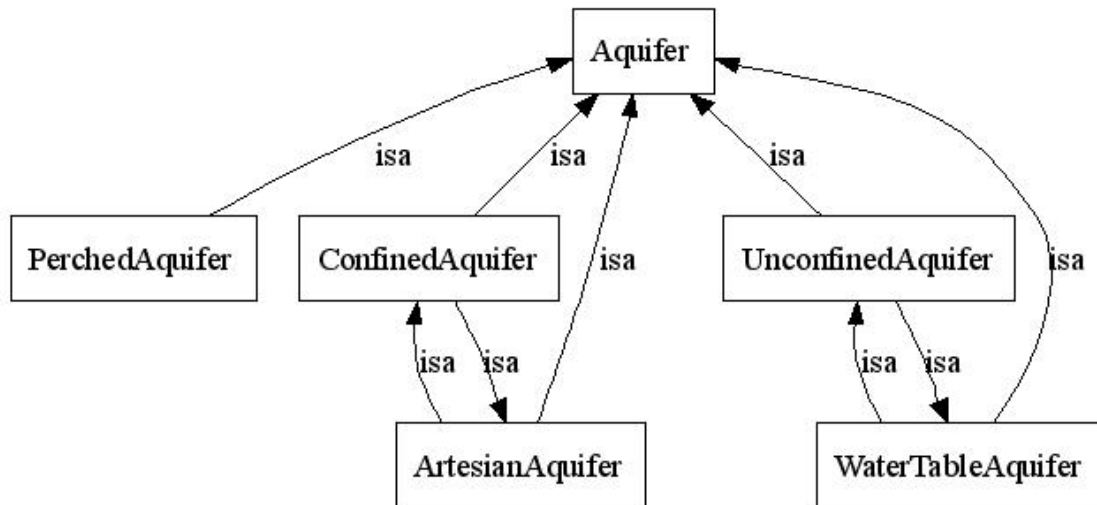


Figure 4.4 Sub-Classes of *Aquifer*

4.1.2.1 New Object Properties added to *Aquifer*:

Aquifer		
hasPorosity	Instance*	property:Porosity
hasHydraulicGradient	Instance*	property:HydraulicGradient
hasHydraulicHead	Instance*	property:HydraulicHead
hasTransmissivity	Instance*	property:Transmissivity
hasPermeability	Instance*	property:Permeability
...		

4.1.2.2 New Object Properties added to *SaturatedZone*:

SaturatedZone		
hasHydraulicConductivity	Instance*	property:HydraulicConductivity

4.1.3 Class *CapillaryFringe* is added

The sub-class *Capillary Fringe* is added under *SaturatedZone* (Figure 4.5)

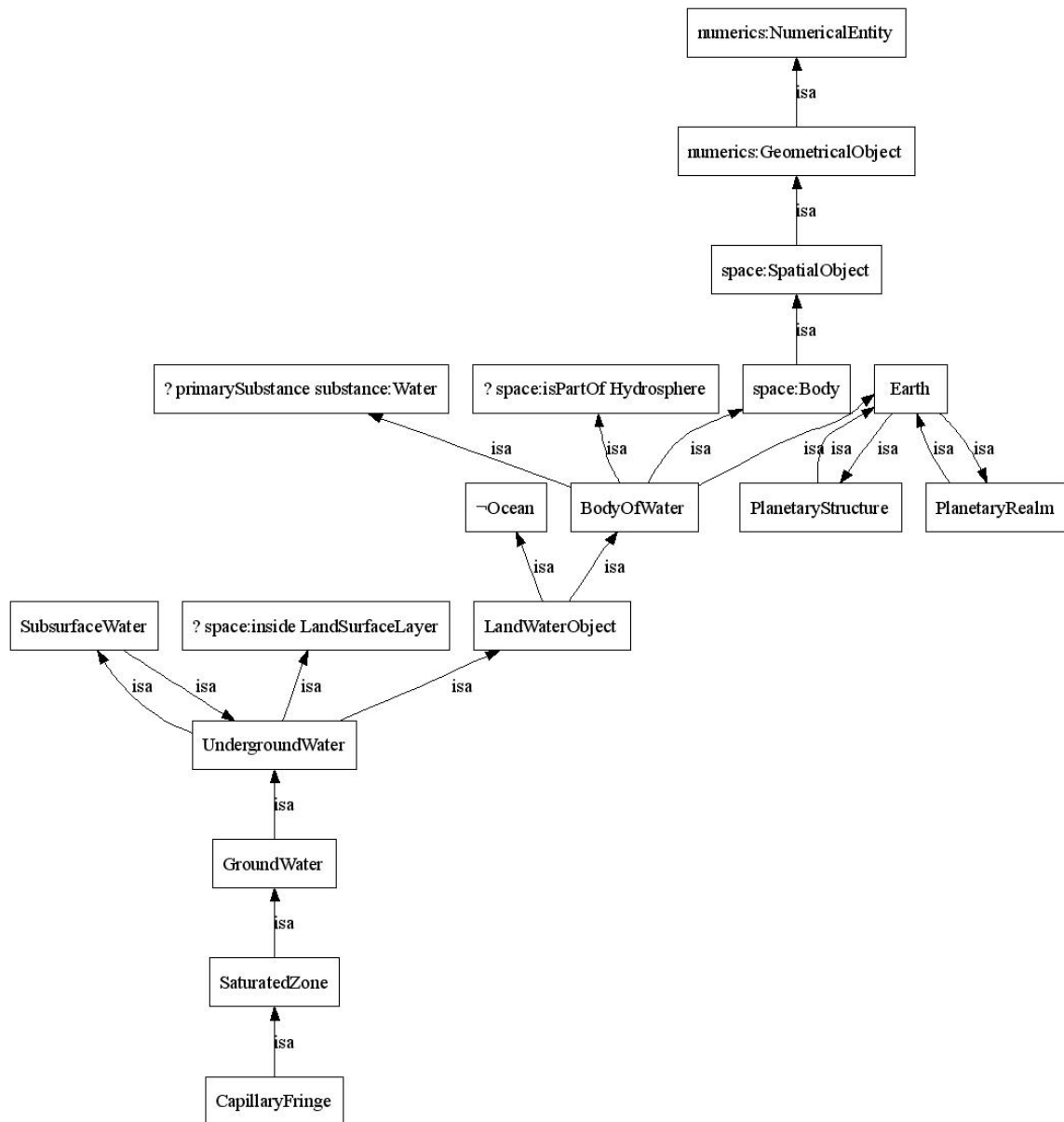


Figure 4.5 Super-Classes of *CapillaryFringe*

4.1.4 Concept of Well is added along with its subclass and properties

Under the class *SaturatedZone* a new sub-class *Well* is added (Figure 4.6). *Well* has multiple sub-classes *ConfinedWell*, *MonitoringWell*, *Peizometer*, *PumpingWell*,

UnconfinedWell and *RechargeWell*. *Peizometer* is made the equivalent of *MonitoringWell*. A new sub-class of *ConfinedWell* is added which is *ArtesianWell*.(Figure 4.7)

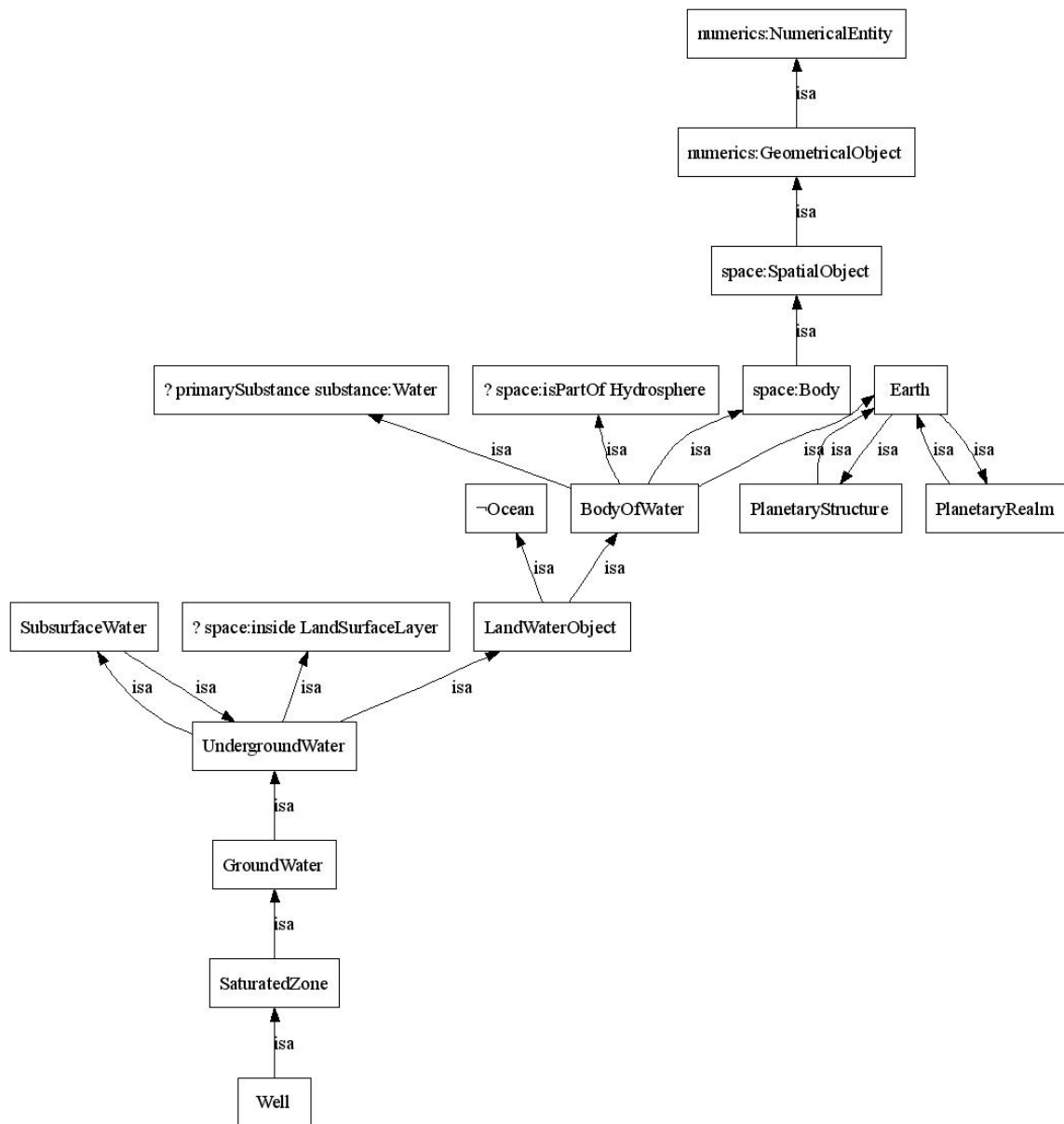


Figure 4.6 Super-Classes of *Well*

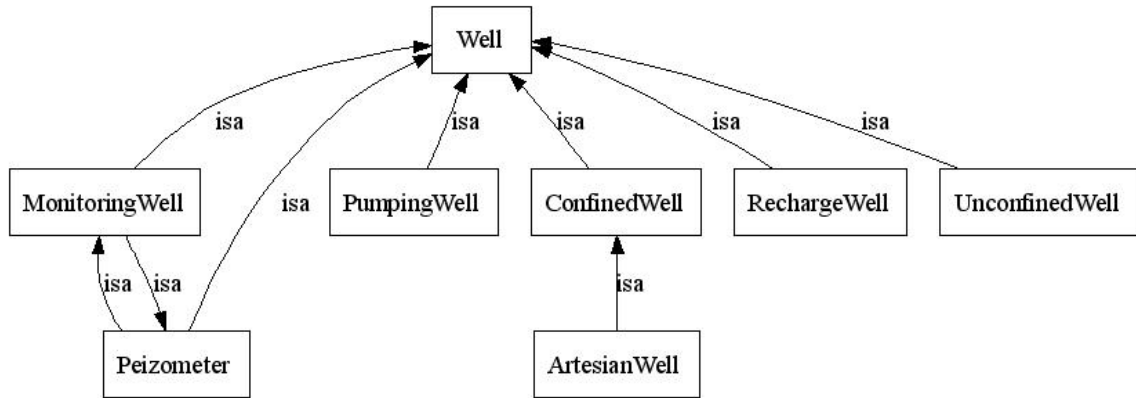


Figure 4.7 Sub-Classes of *Well*

4.1.4.1 Following Object Properties were added to *Well*:

Well		
hasPotentiometricSurface	Instance*	property:PotentiometricSurface
hasHydraulicGradient	Instance*	property:HydraulicGradient
hasSeepageVelocity	Instance*	property:SeepageVelocity
hasHydraulicHead	Instance*	property:HydraulicHead
hasDrawdown	Instance*	property:Drawdown
...		

4.1.5 Changes made to *BodyOfGround*

The class *BodyOfGround* is a subclass of *EarthRealm*. In the original ontology *BodyOfGround* had a sub-class *Rock_Body* which is changed to *RockBody* in order to maintain consistency of class naming convention followed throughout SWEET ontology. Another sub-class *Landfill* is added under *BodyOfGround*. (Figure 4.8)

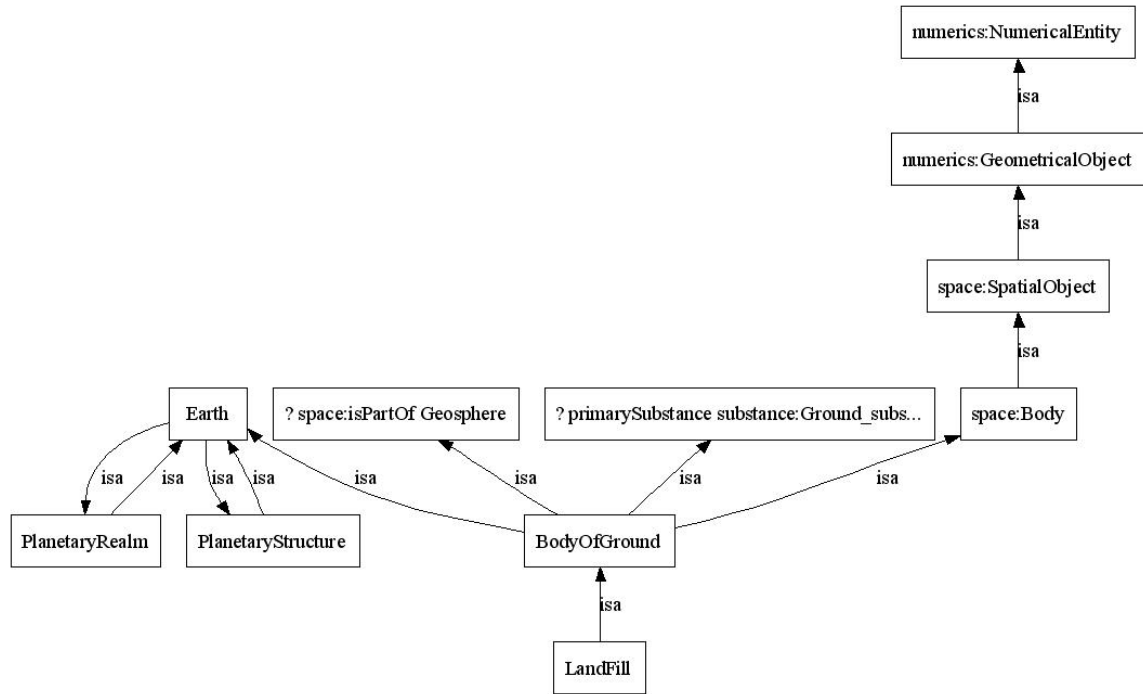


Figure 4.8 Super-Classes of *LandFill*

4.1.6 Changes made to *GroundWaterObjectBoundary*

The sub-classes *BarrierBoundary* and *RechargeBoundary* are added to *GroundWaterObjectBoundary*. (Figures 4.9, 4.10). *WaterTable* class is made a necessary class for *WaterTableAquifer* (Figure 4.11)

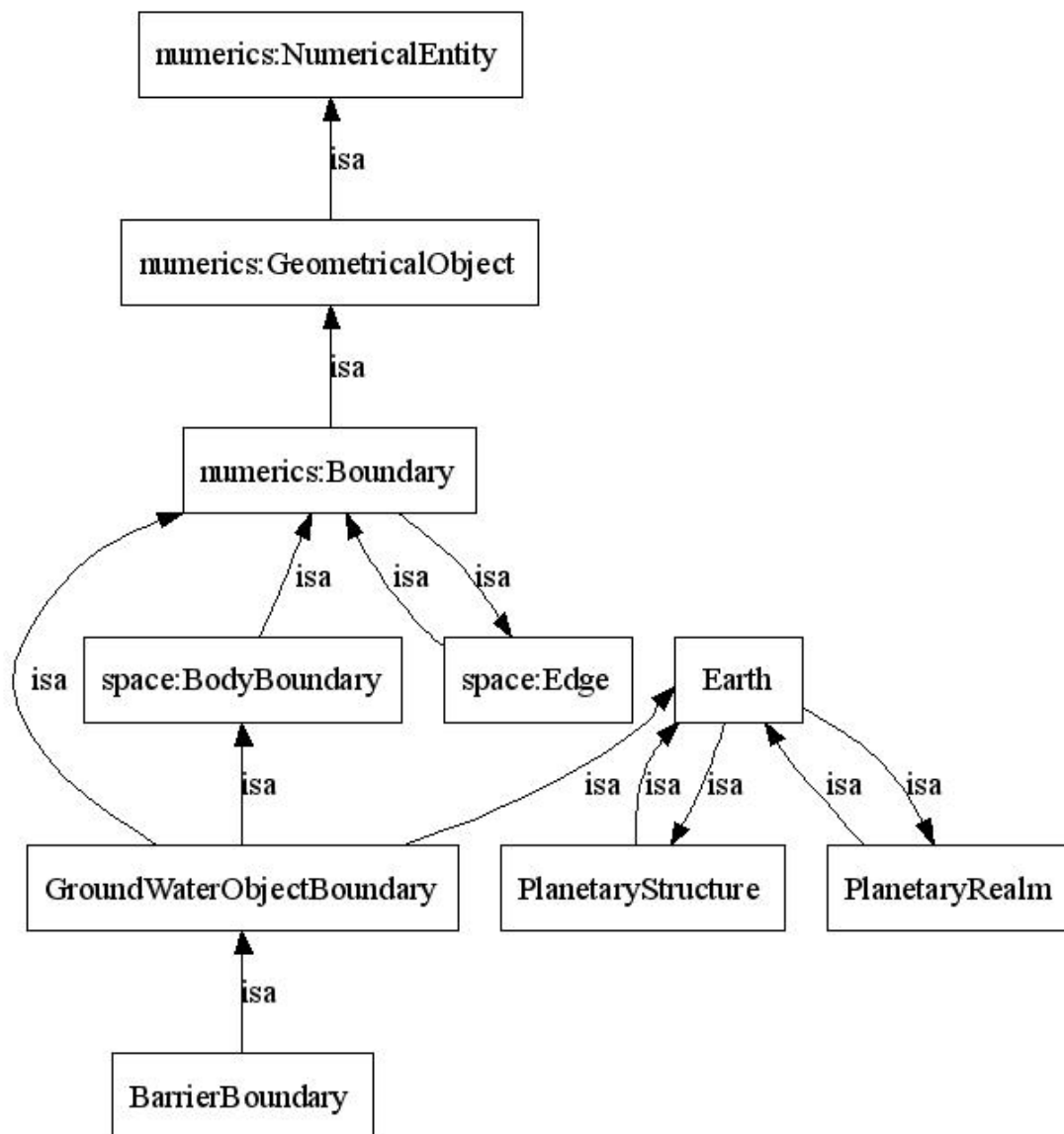


Figure 4.9 Super-Classes of *BarrierBoundary*

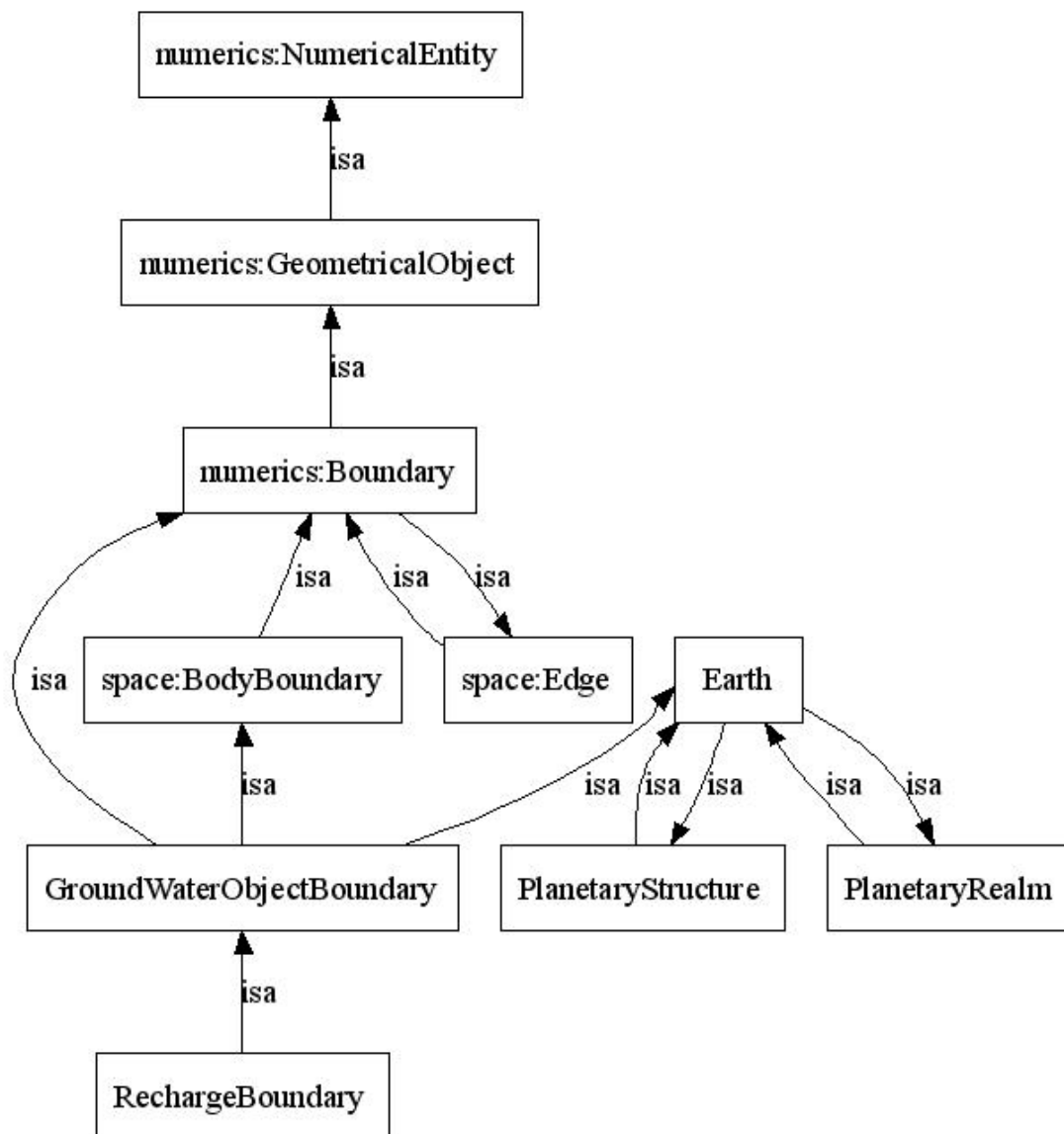


Figure 4.10 Super-Classes of *RechargeBoundary*

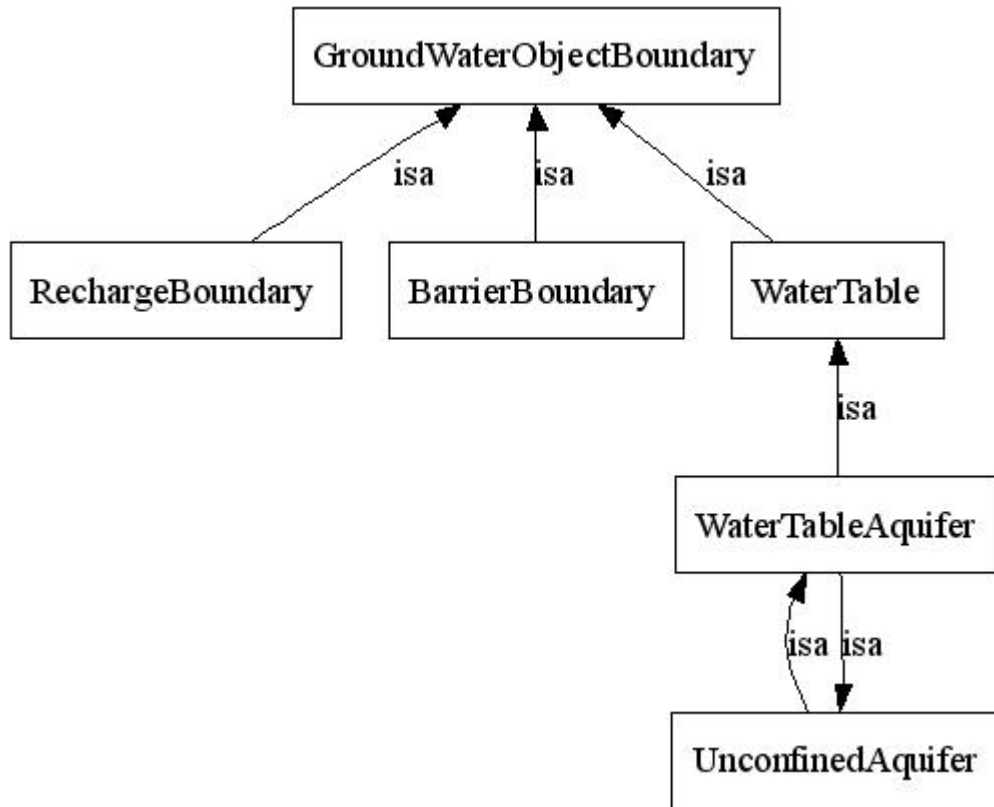


Figure 4.11 Sub-Classes of *GroundWaterObjectBoundary*

4.1.7 Changes made to *HydrosphereLayer*

Sub-classes *ConfiningLayer* and *Media* are added to class *HydrosphereLayer*. Under the class *ConfiningLayer* sub-classes *Aquifuge*, *Aquiclude*, *Aquitard* and *LeakyConfiningLayer* are added. *Aquiclude* is made equivalent to *Aquifuge* and *Aquitard* is made equivalent to *LeakyConfiningLayer*. (Figures 4.12, 4.13). The class *Media* has sub-classes *RockBody* and *SedimentaryStructures* which are inherited from the class *BodyOfGround*. (Figure 4.14, 4.15, 4.16)

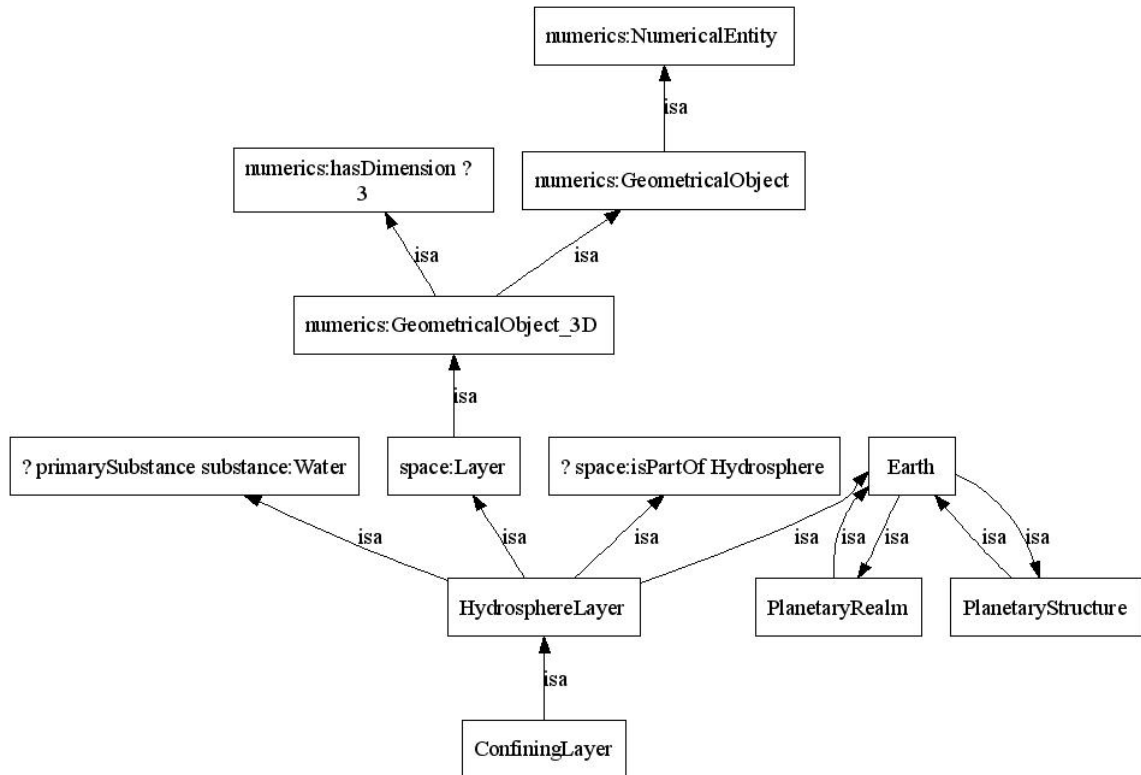


Figure 4.12 Super-Classes of *ConfiningLayer*

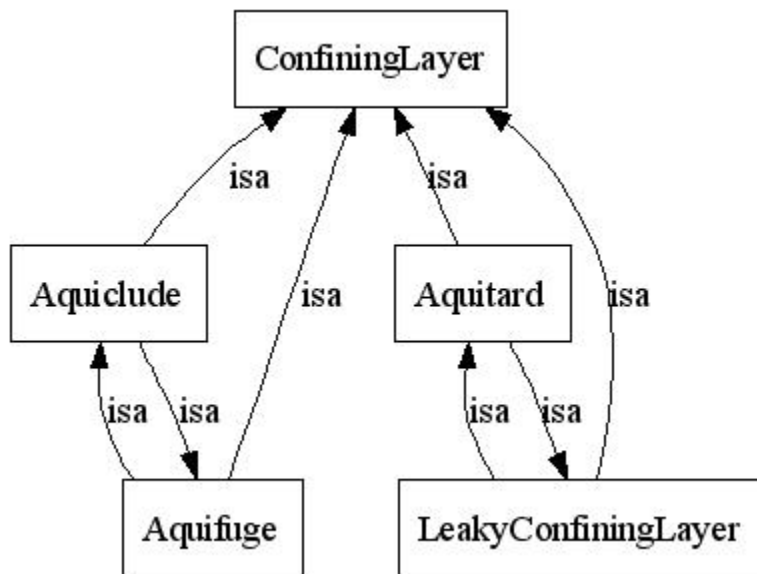


Figure 4.13 Sub-Classes of *ConfiningLayer*

4.1.7.1 Following Object Properties are added to *ConfiningLayer* :

ConfiningLayer		
hasPorosity	Instance*	property:Porosity
hasHydraulicConductivity	Instance*	property:HydraulicConductivity
hasTransmissivity	Instance*	property:Transmissivity
hasPermeability	Instance*	property:Permeability

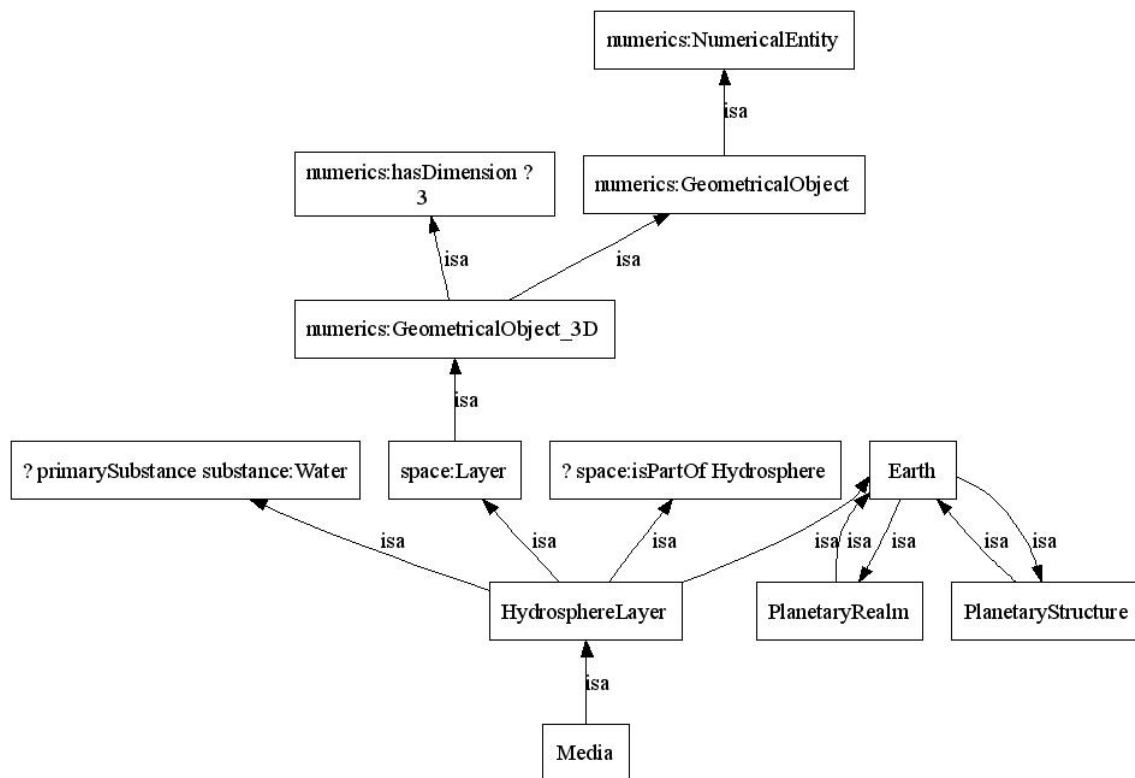


Figure 4.14 Super-Classes of Media

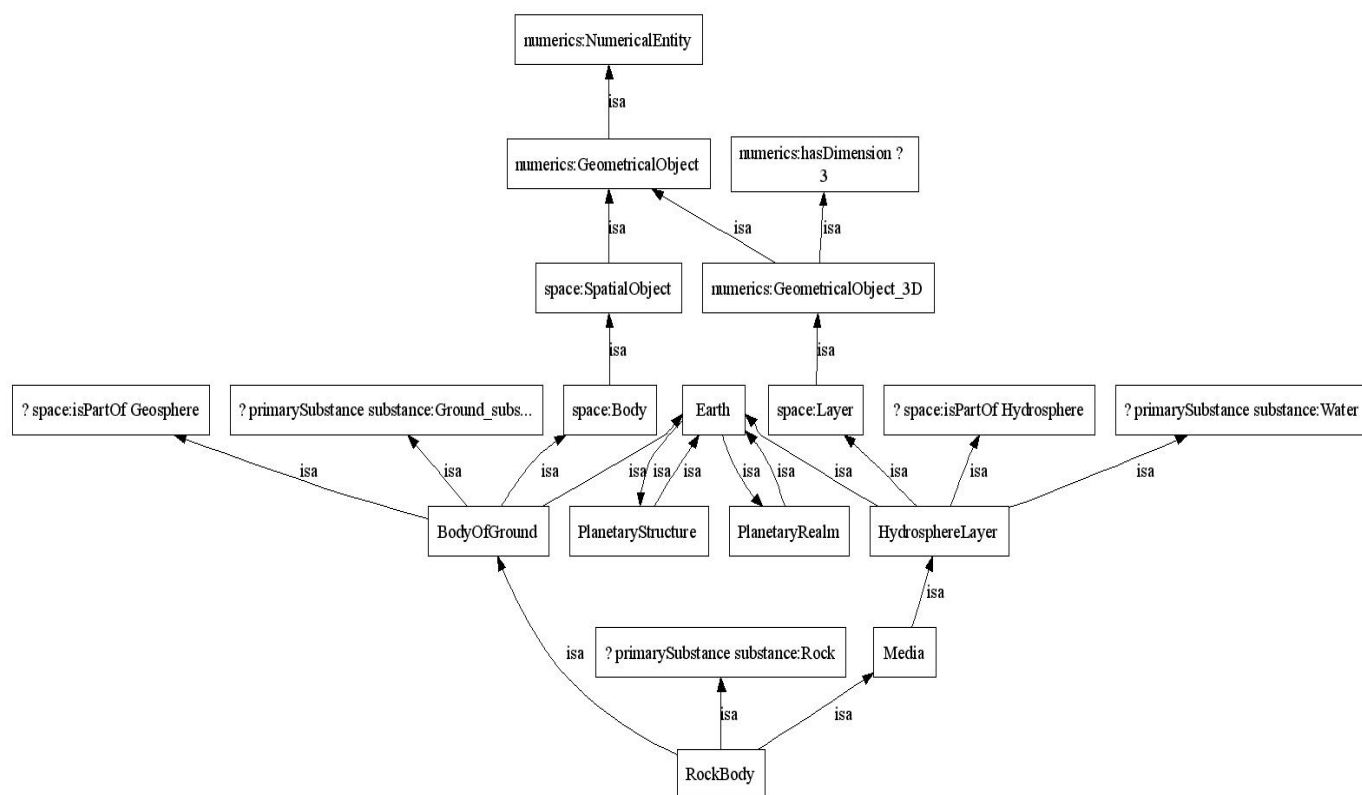


Figure 4.15 Super-Classes of *RockBody*

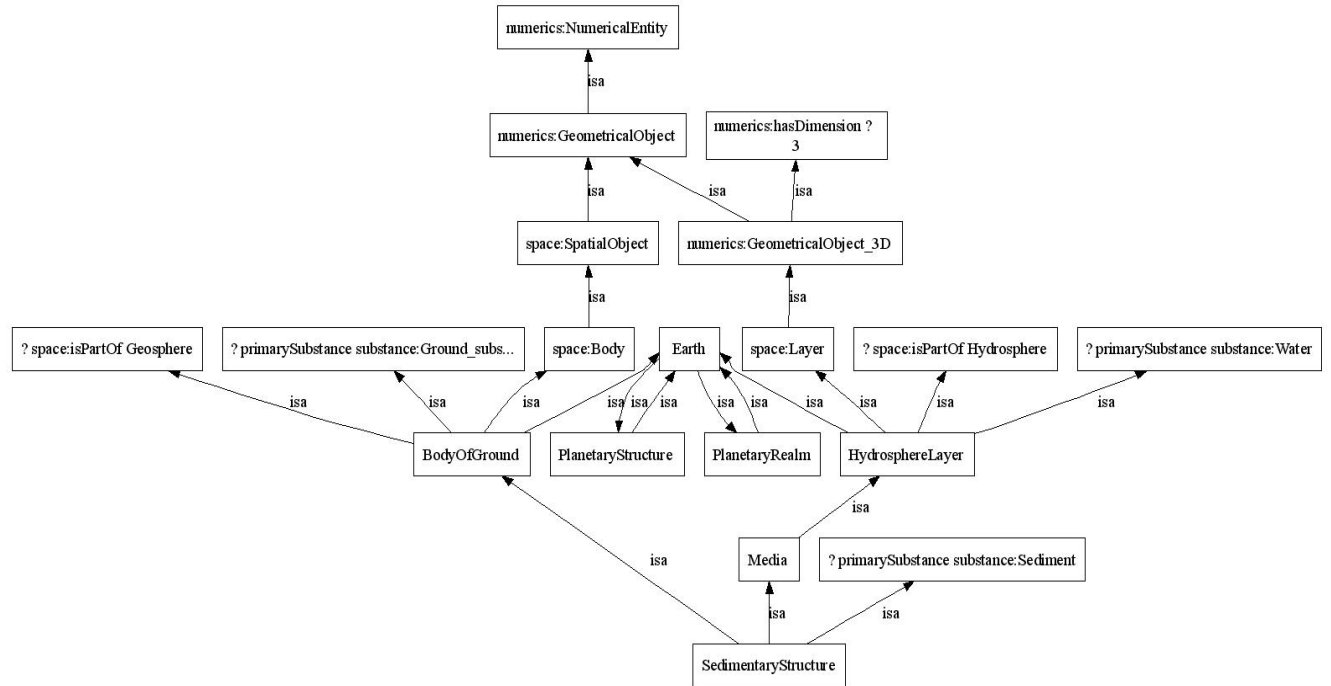


Figure 4.16 Super-Classes of *SedimentaryStructure*

4.2 Changes Made to `property.owl`

The Classes and Properties in this ontology span across several ontologies and can be used by different concepts. Some hydrogeology-specific properties need to be added to this ontology (`property.owl`) to make it compatible with the hydrogeology domain.

4.2.1 Changes made to *MediumProperty*

The class *MediumProperty* contains sub-class *MotionRelatedQuantity* which contains sub-class *VelocityFieldRelatedProperty*. Sub-classes *SpecificDischarge*, *DischargeVelocity* and *DarcianVelocity* which are equivalent classes are added under *VelocityFieldRelatedProperty* (Figure 4.17). *Space:hasDirection* is included as a necessary condition for these classes. Another sub-class *SeepageVelocity* is also added to

VelocityFieldRelatedProperty. (Figure 4.18). Classes which are directly added under *MotionRelatedQuantity* as sub-class are *Discharge* and *Recharge* which have units ft^3/day (Figures 4.19, 4.20). Sub-class *Viscosity* which has units $\text{Kg m}^{-1}\text{s}^{-1}$ is directly added under *MediumProperty* (Figure 4.21). *MediumProperty* has a sub-class *SolidMaterialProperty* under which a new sub-class *Permeability* is added. *Permeability* has units ‘darcy’. (Figure 4.22)

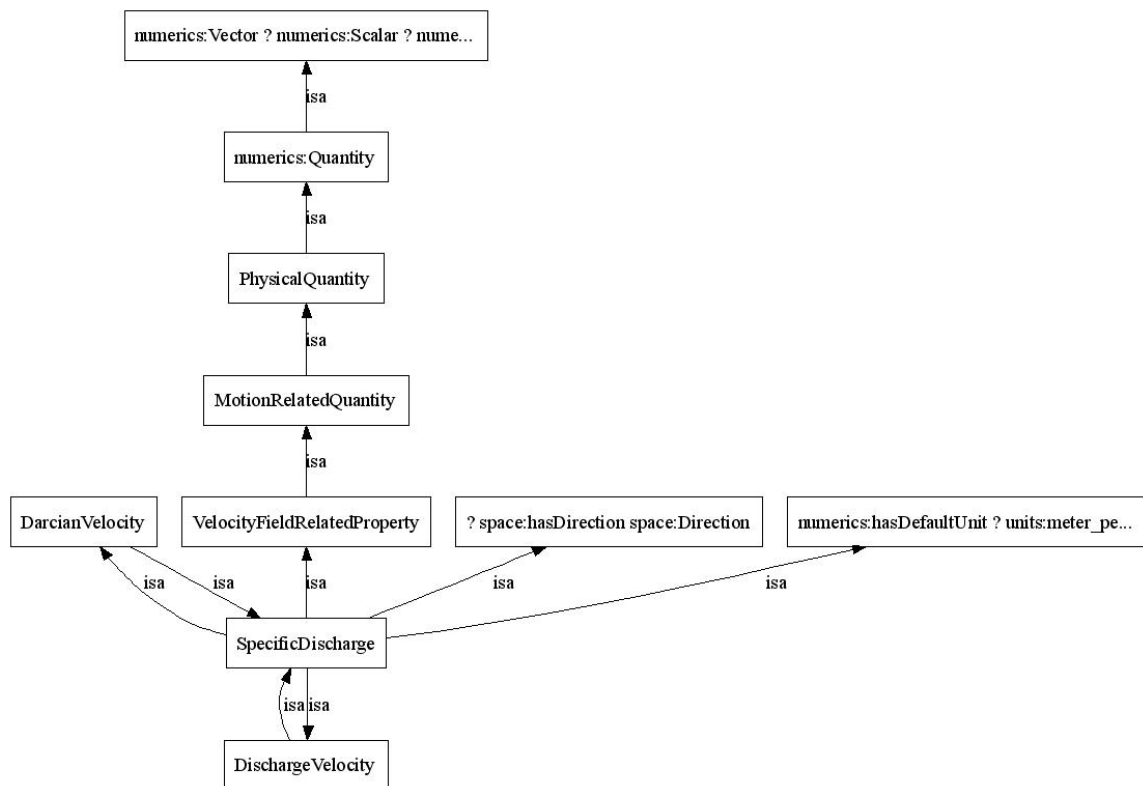


Figure 4.17 Super-Classes of *DischargeVelocity*

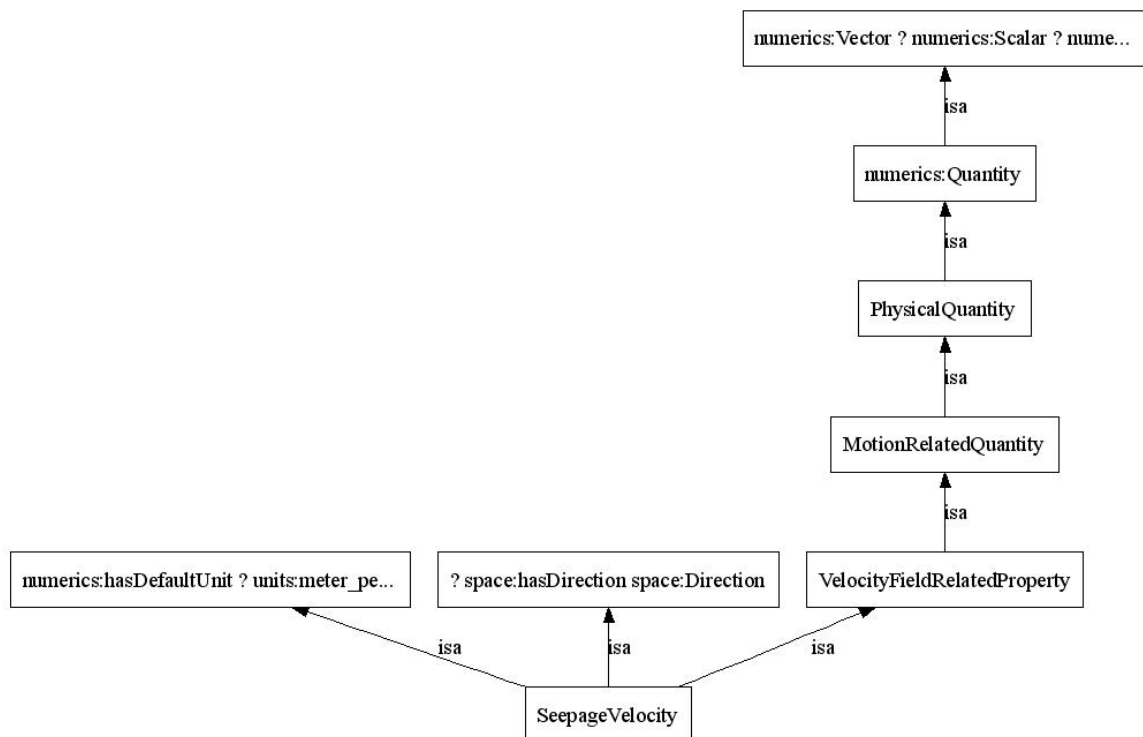


Figure 4.18 Super-Classes of *SeepageVelocity*

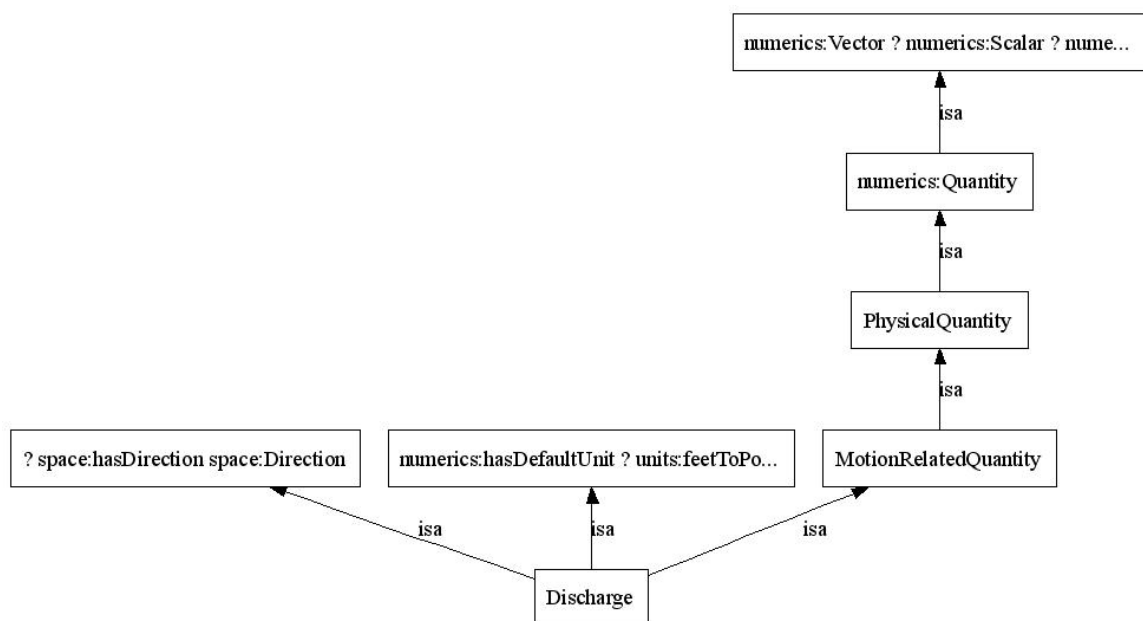


Figure 4.19 Super-Classes of *Discharge*

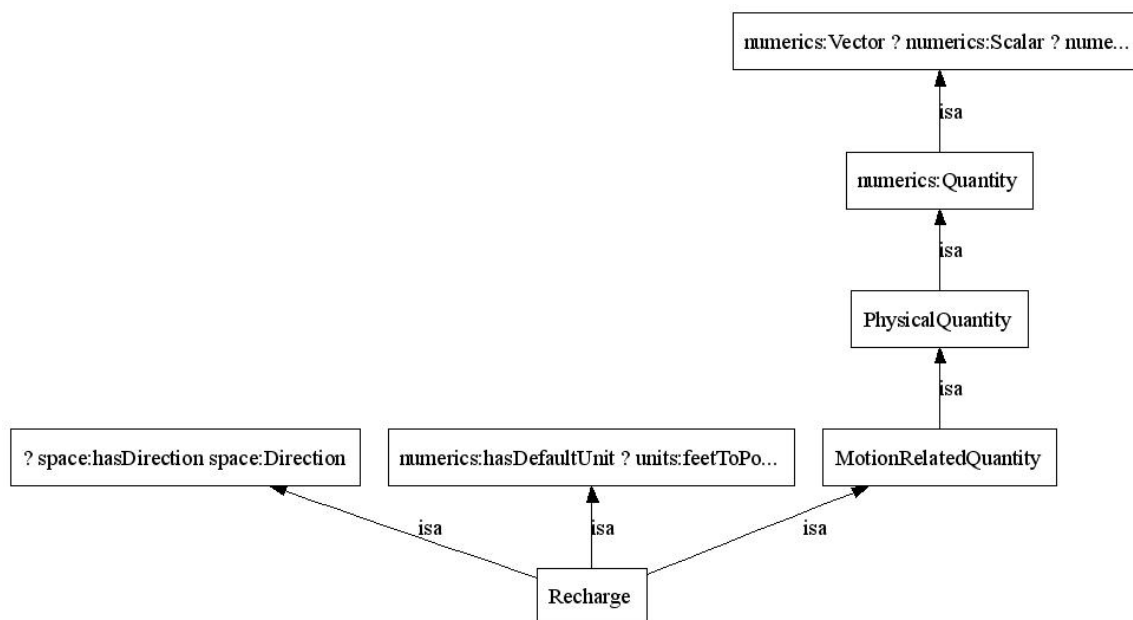


Figure 4.20 Super-Classes of *Recharge*

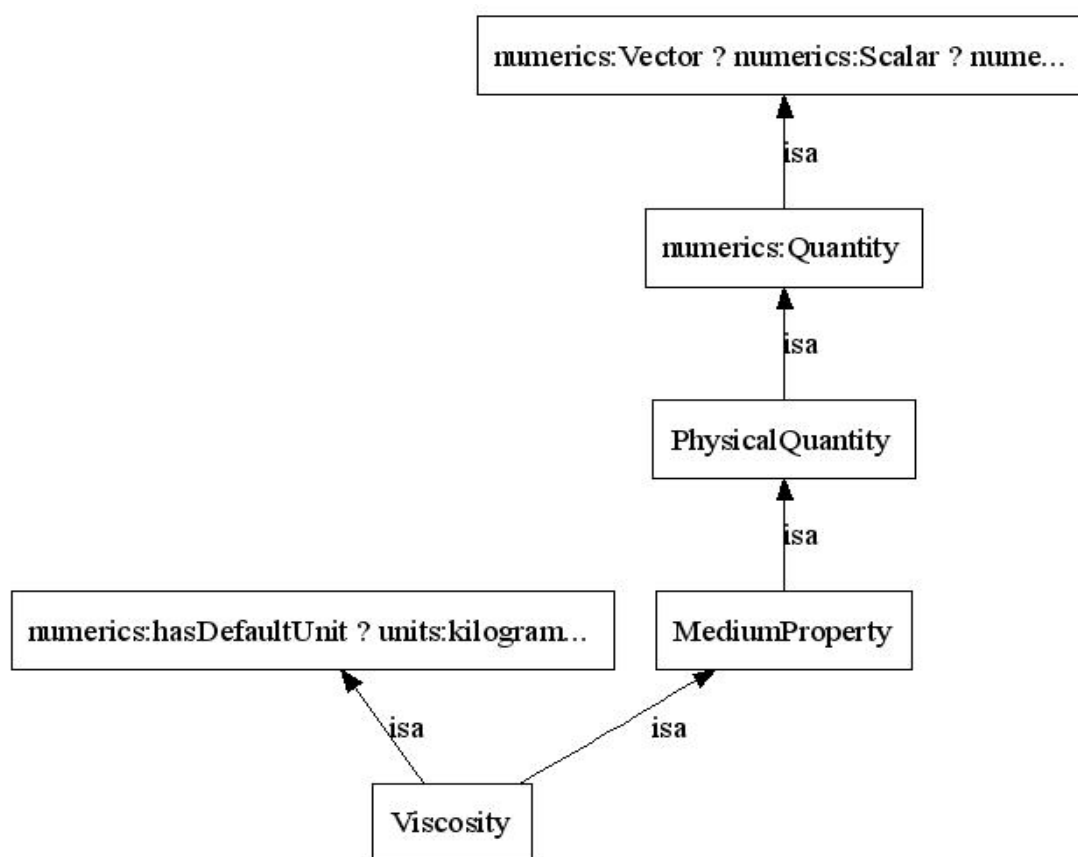


Figure 4.21 Super-Classes of *Viscosity*

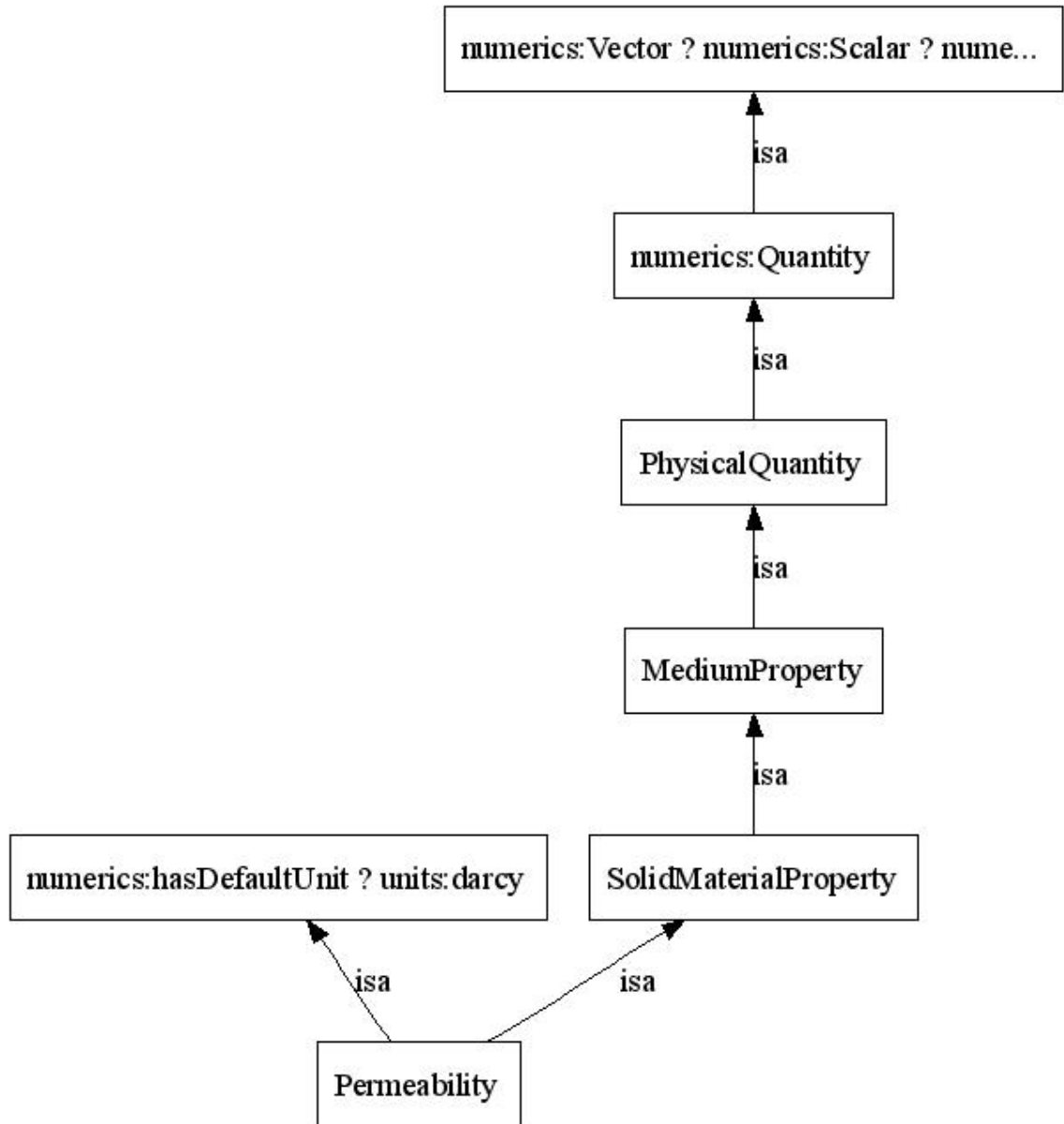


Figure 4.22 Super-Classes of *Permeability*

4.2.2 Multiple sub-classes added to *GeotechnicalProperties*

Following sub-classes are added under *GeotechnicalProperties* :

SpecificCapacity which has units feet squared per day (Figure 4.23)

Transmissivity which has units feet squared per day (Figure 4.24)

Drawdown which has units meters (Figure 4.25)

SpecificRetention which has dimensionless units (Figure 4.26)

SpecificYeild which has dimensionless units (Figure 4.27)

Storativity and *StorageCoefficient* which are equivalent classes (Figure 4.28)

UniformityCoefficient (Figure 4.29)

ElectromagneticConductivity, *TerrainConductivity* and *ElectricConductivity* which are equivalent classes (Figure 4.30)

HydraulicHead and *FluidPotential* which are equivalent classes and have units meters (Figure 4.31)

HydraulicGradient which has dimensionless units.(Figure 4.32)

PotentiometricSurface and *PeizometricSurface* which are equivalent classes (Figure 4.33)

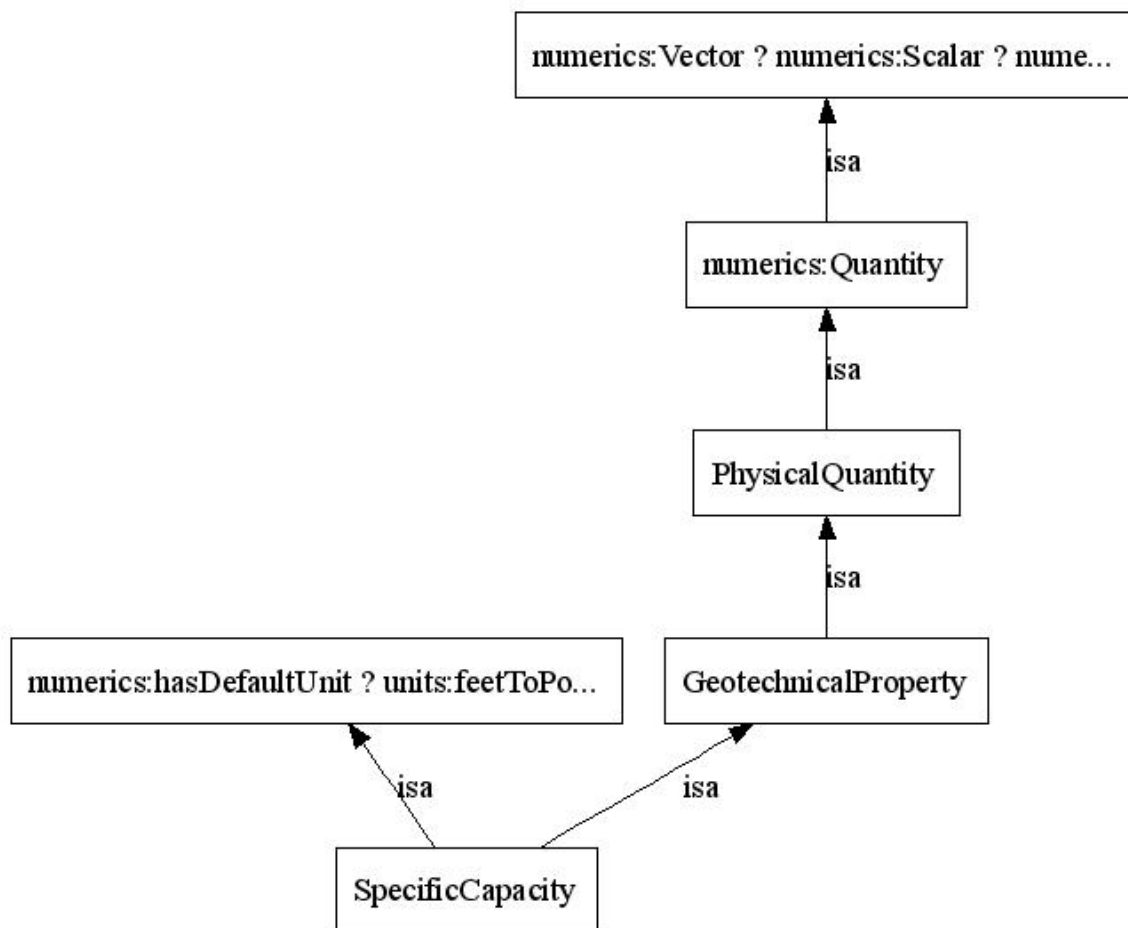


Figure 4.23 Super-Classes of *SpecificCapacity*

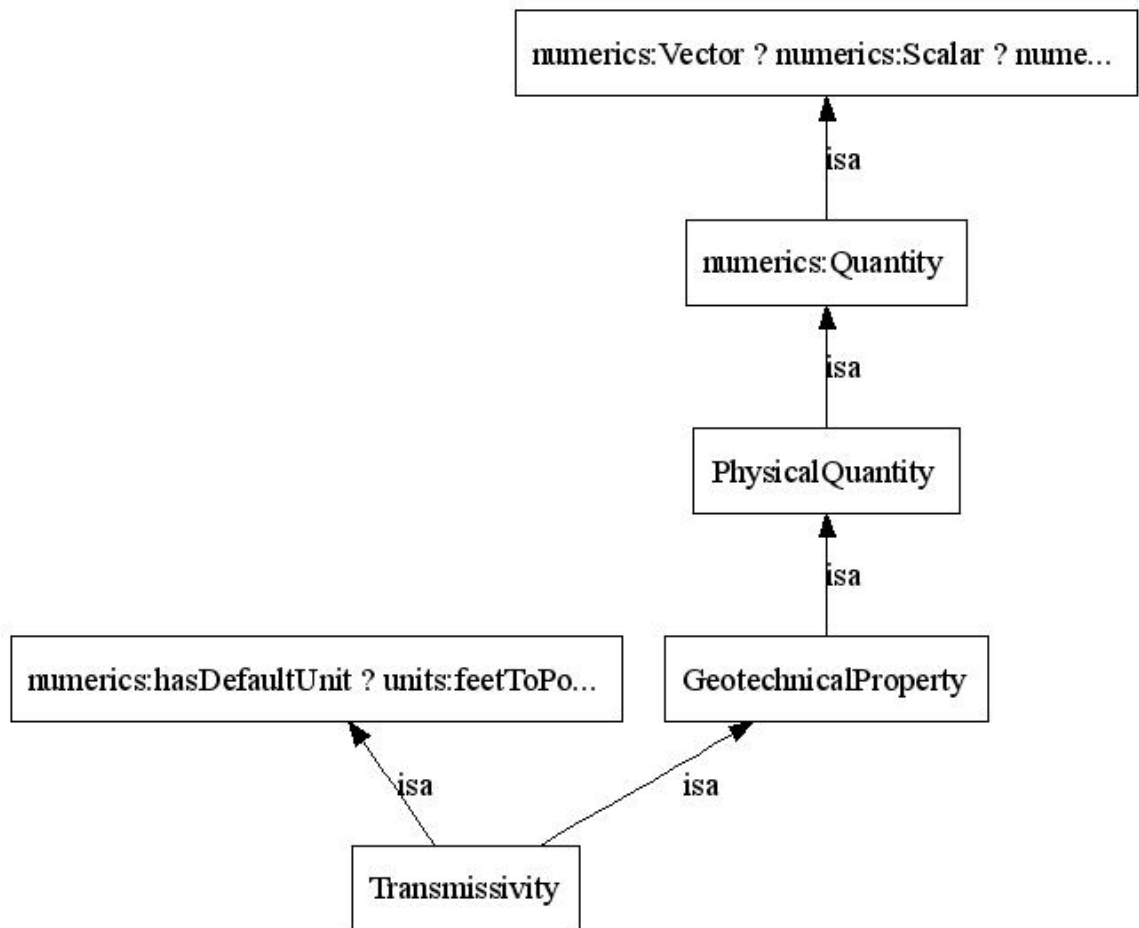


Figure 4.24 Super-Classes of *Transmissivity*

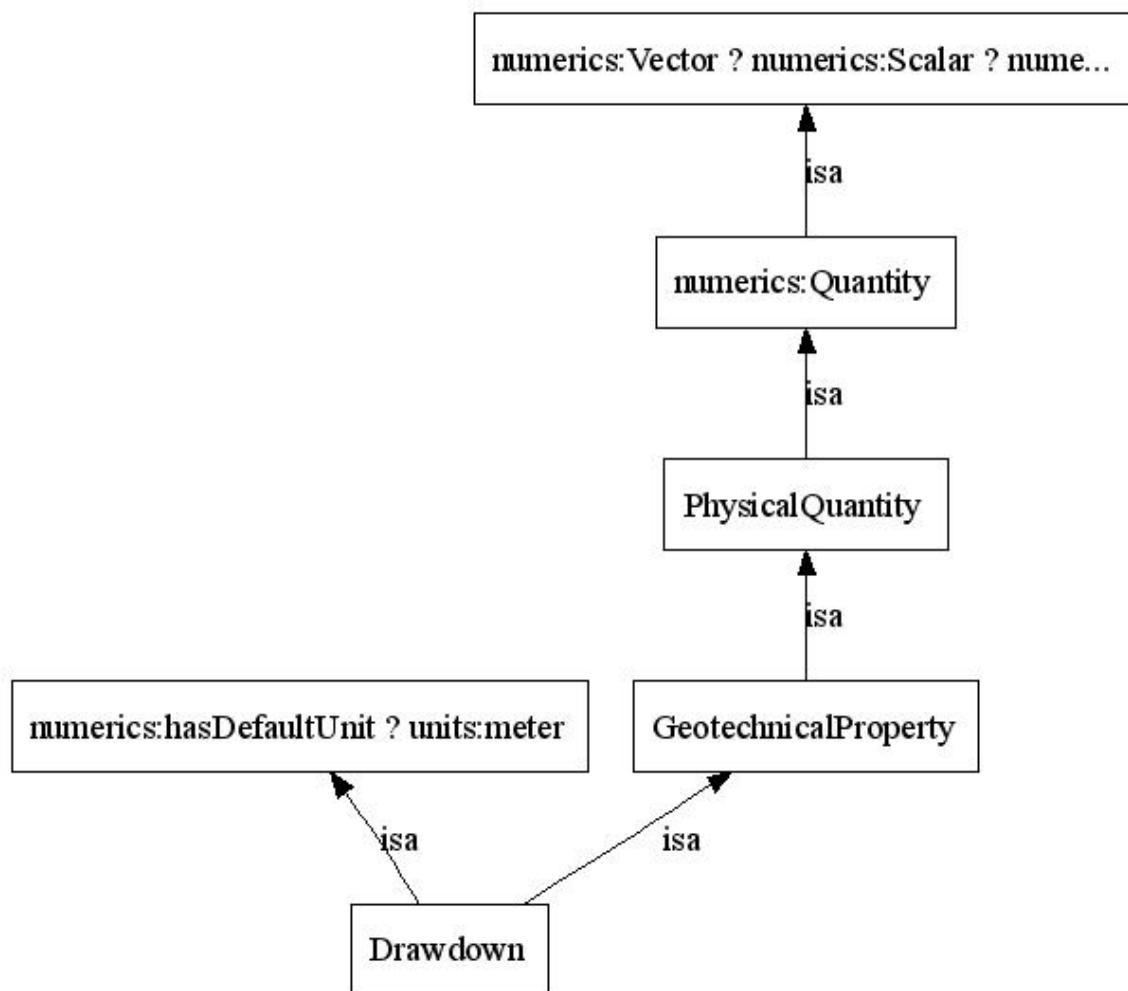


Figure 4.25 Super-Classes of Drawdown

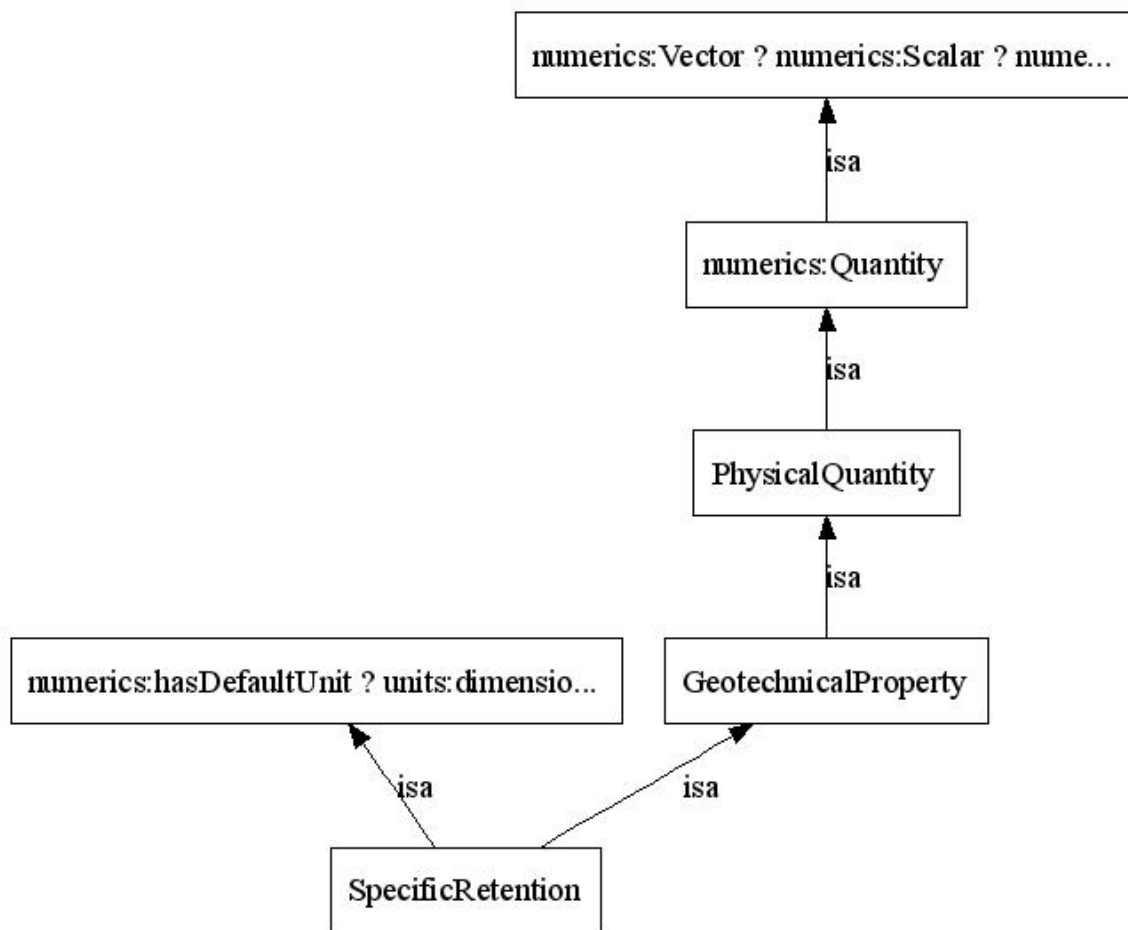


Figure 4.26 Super-Classes of *SpecificRetention*

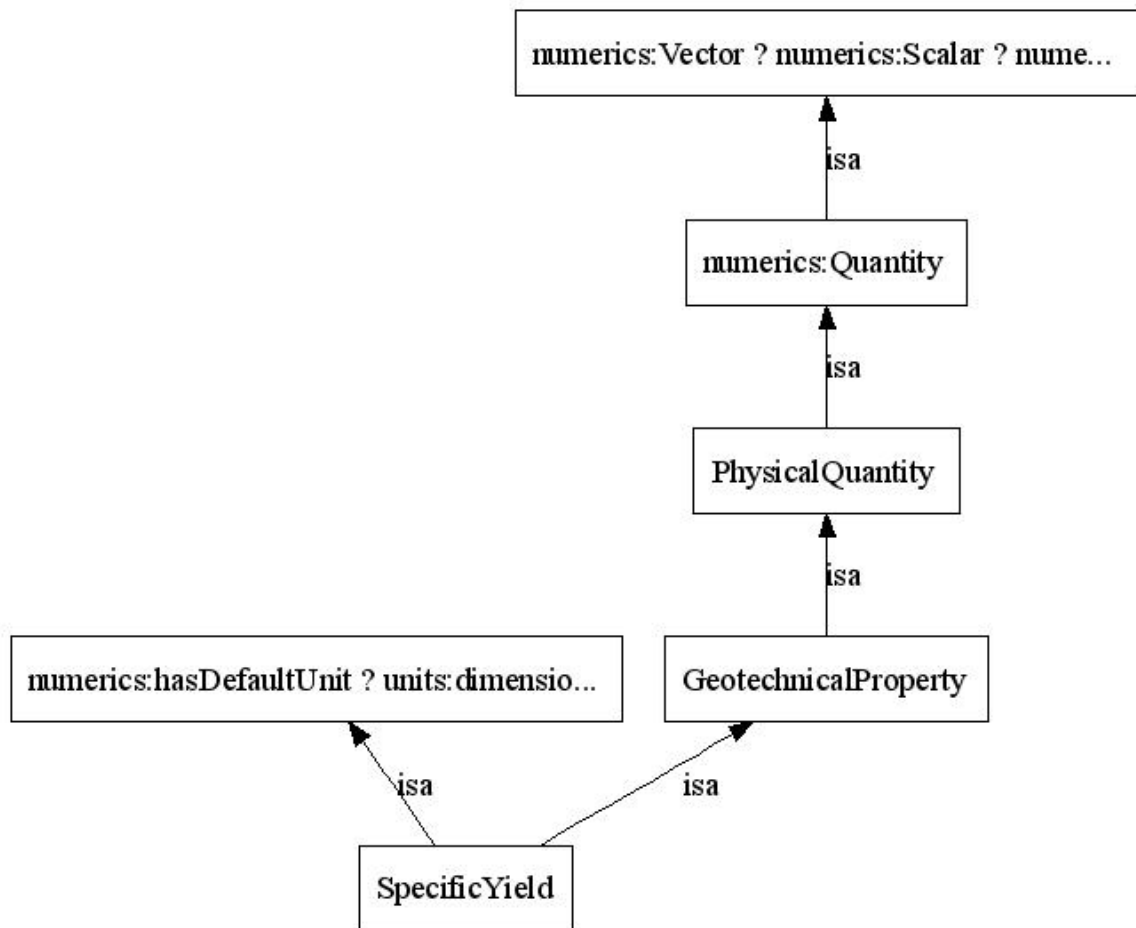


Figure 4.27 Super-Classes of *SpecificYield*

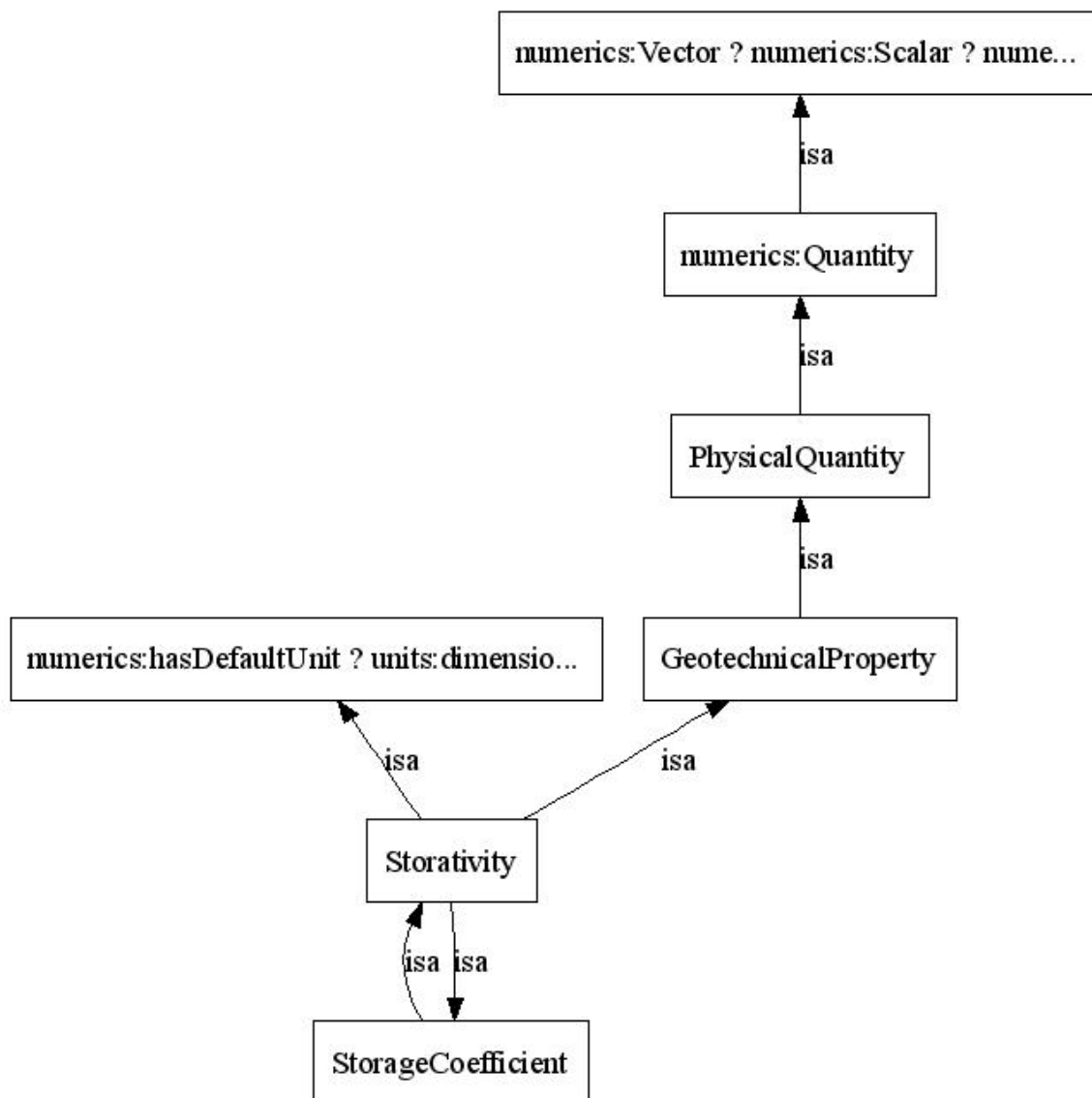


Figure 4. 28 Super-Classes of *StorageCoefficient*

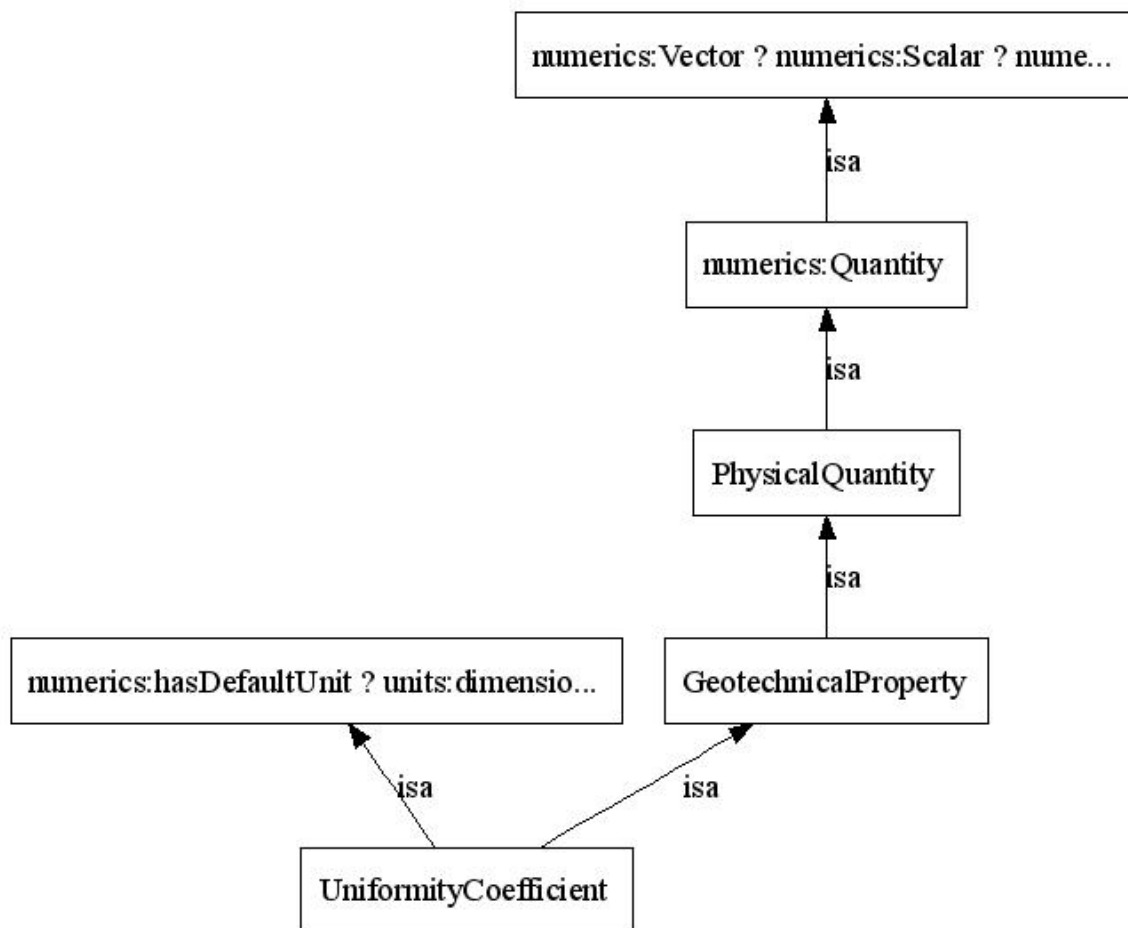


Figure 4.29 Super-Classes of *UniformityCoefficient*

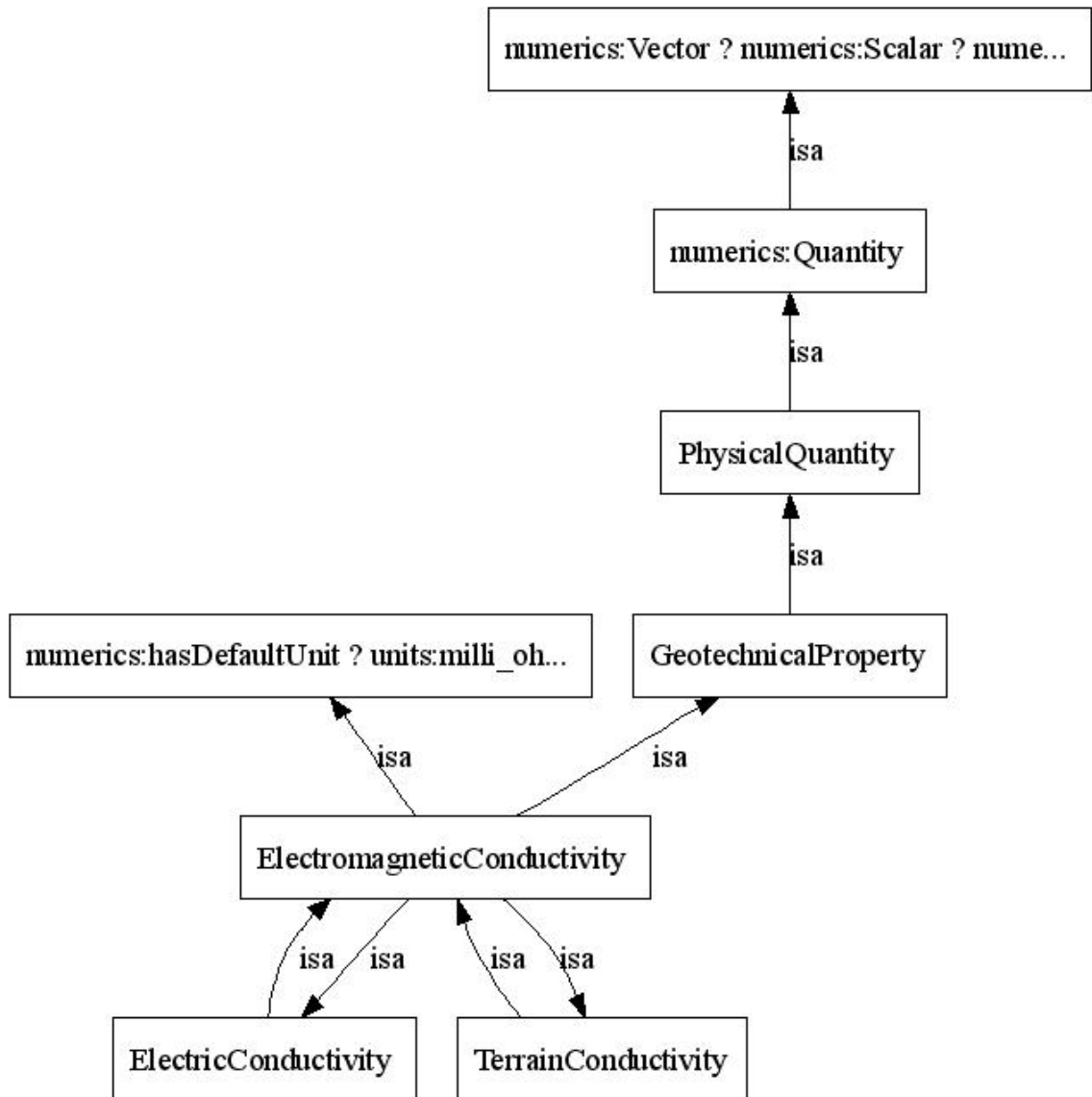


Figure 4.30 Super-Classes of *ElectromagneticConductivity*

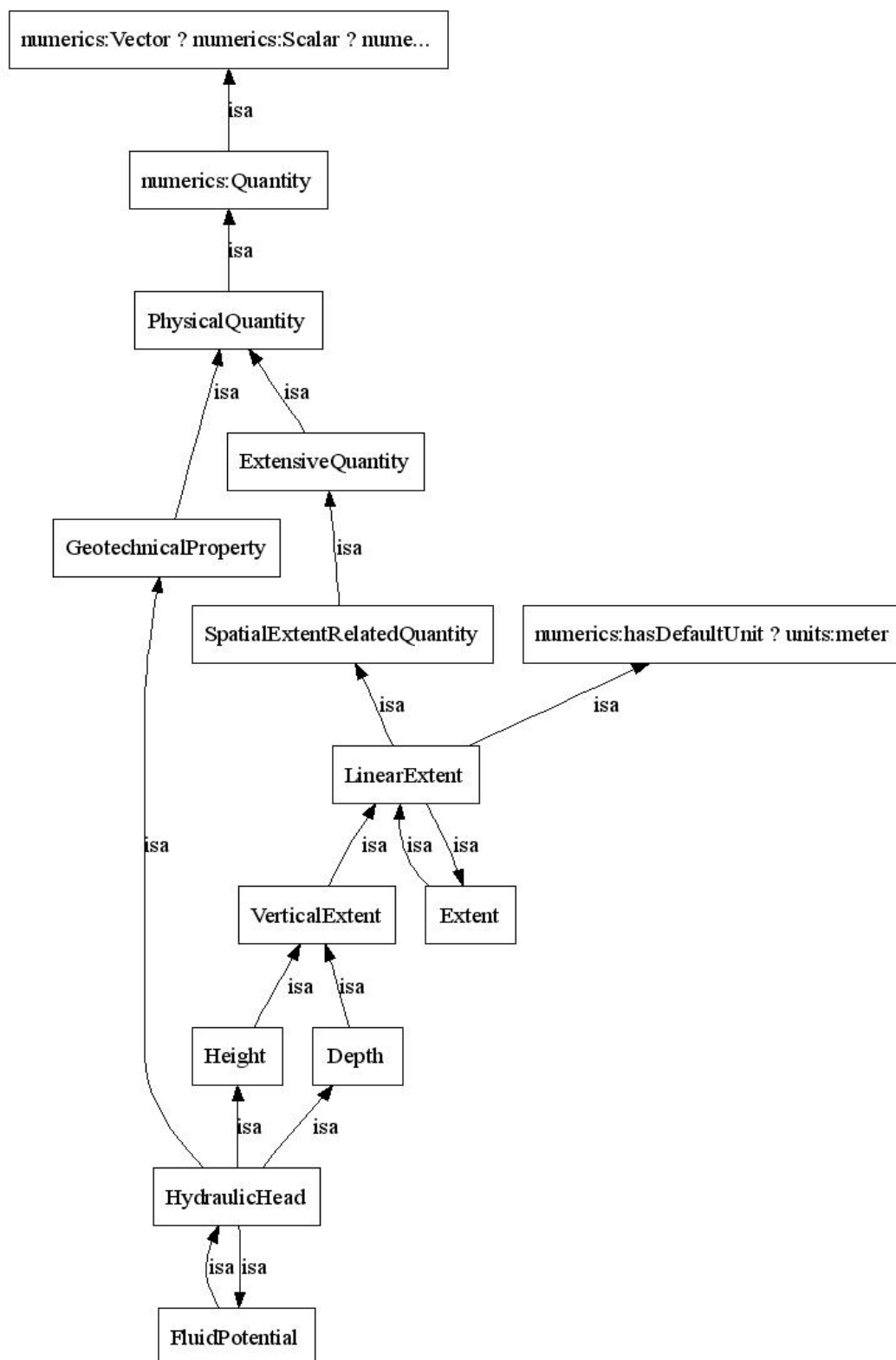


Figure 4.31 Super-Classes of *HydraulicHead*

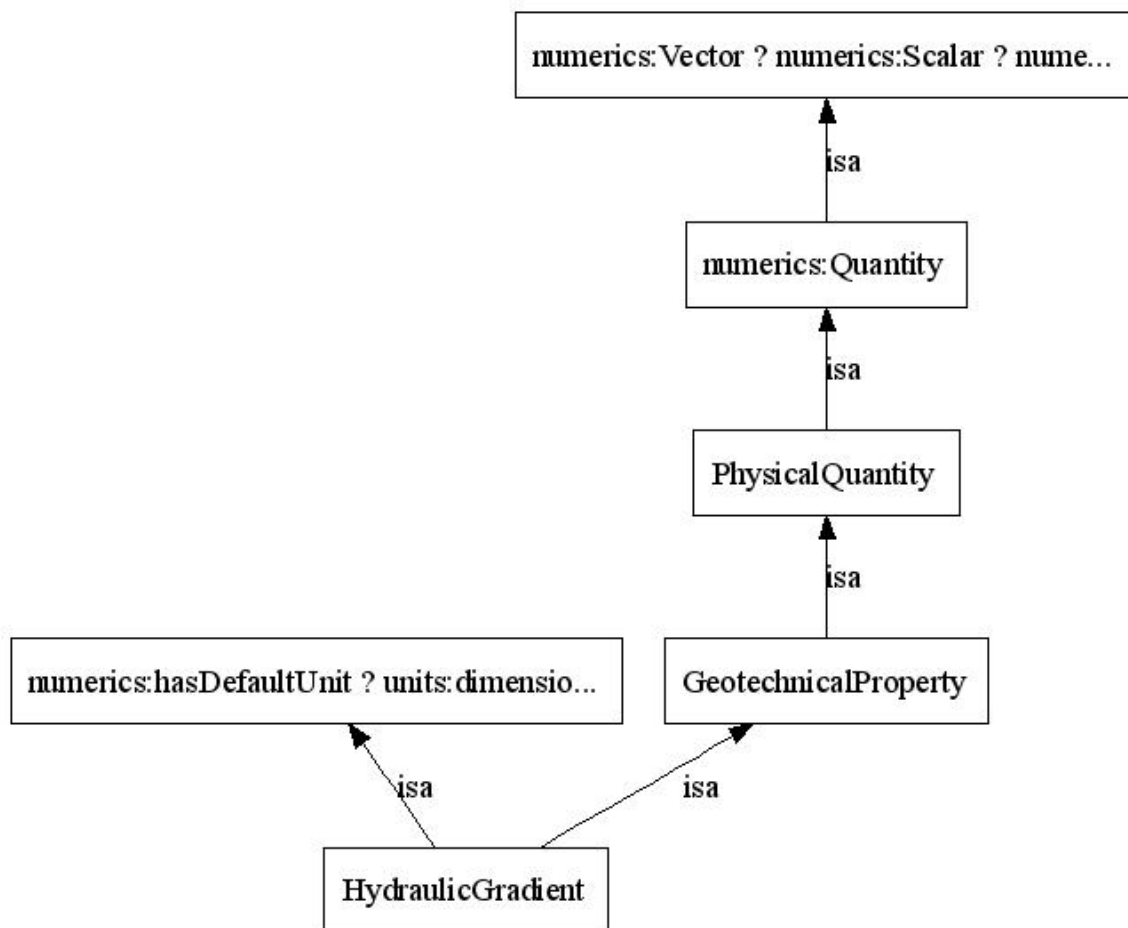


Figure 4.32 Super-Classes of *HydraulicGradient*

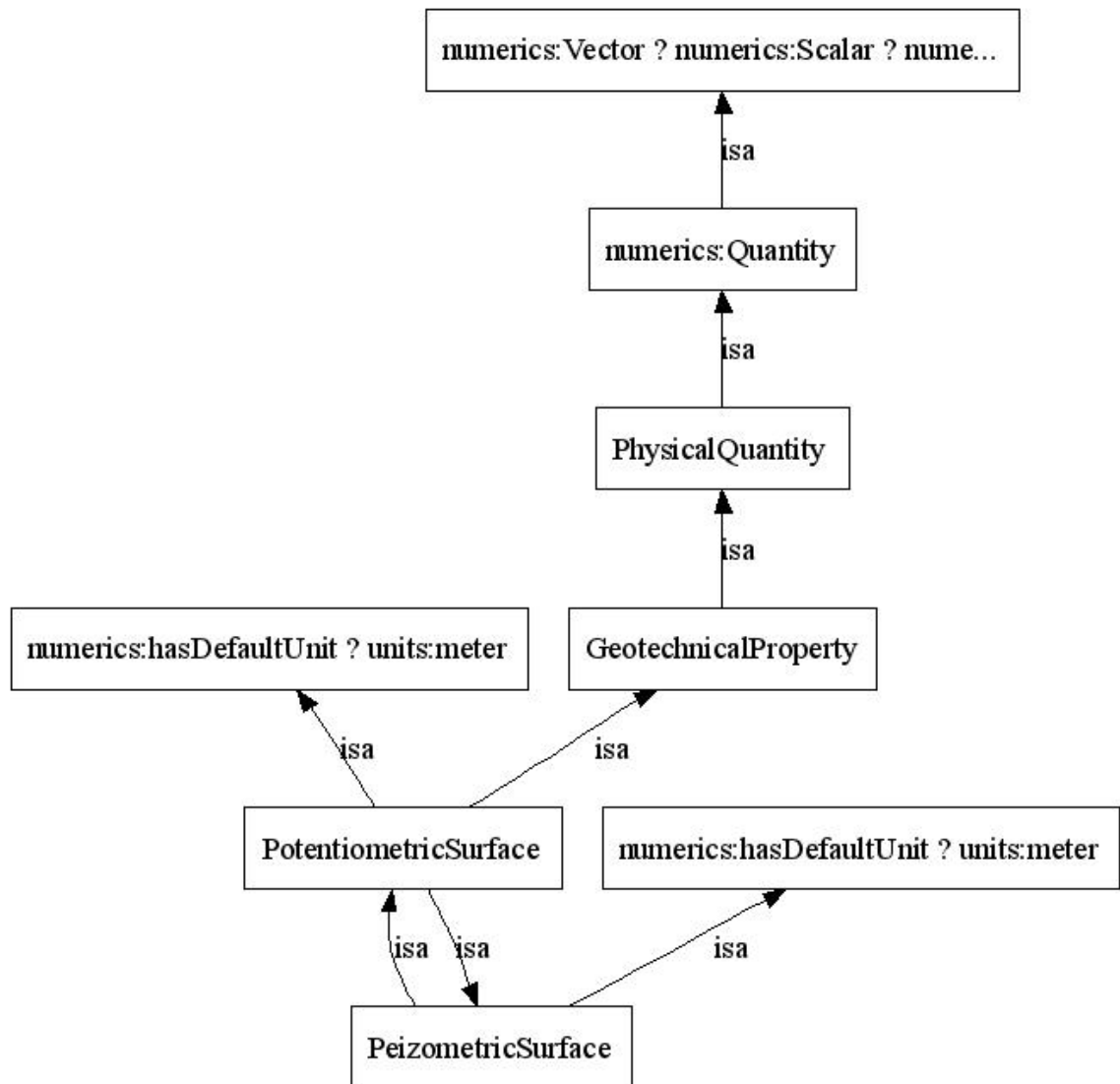


Figure 4.33 Super-Classes of *PotentiometricSurface*

4.2.3 Changes made to *ExtensiveQuantity*

ExtensiveQuantity contains sub-class *SpatialExtentRelatedQuantity* which contains sub-class *Area*. Under the class *Area* sub-classes *AreaOfFlow*, *RechargeArea* and *DischargeArea* are added. (Figures 4.34, 4.35, Figure 4.36)

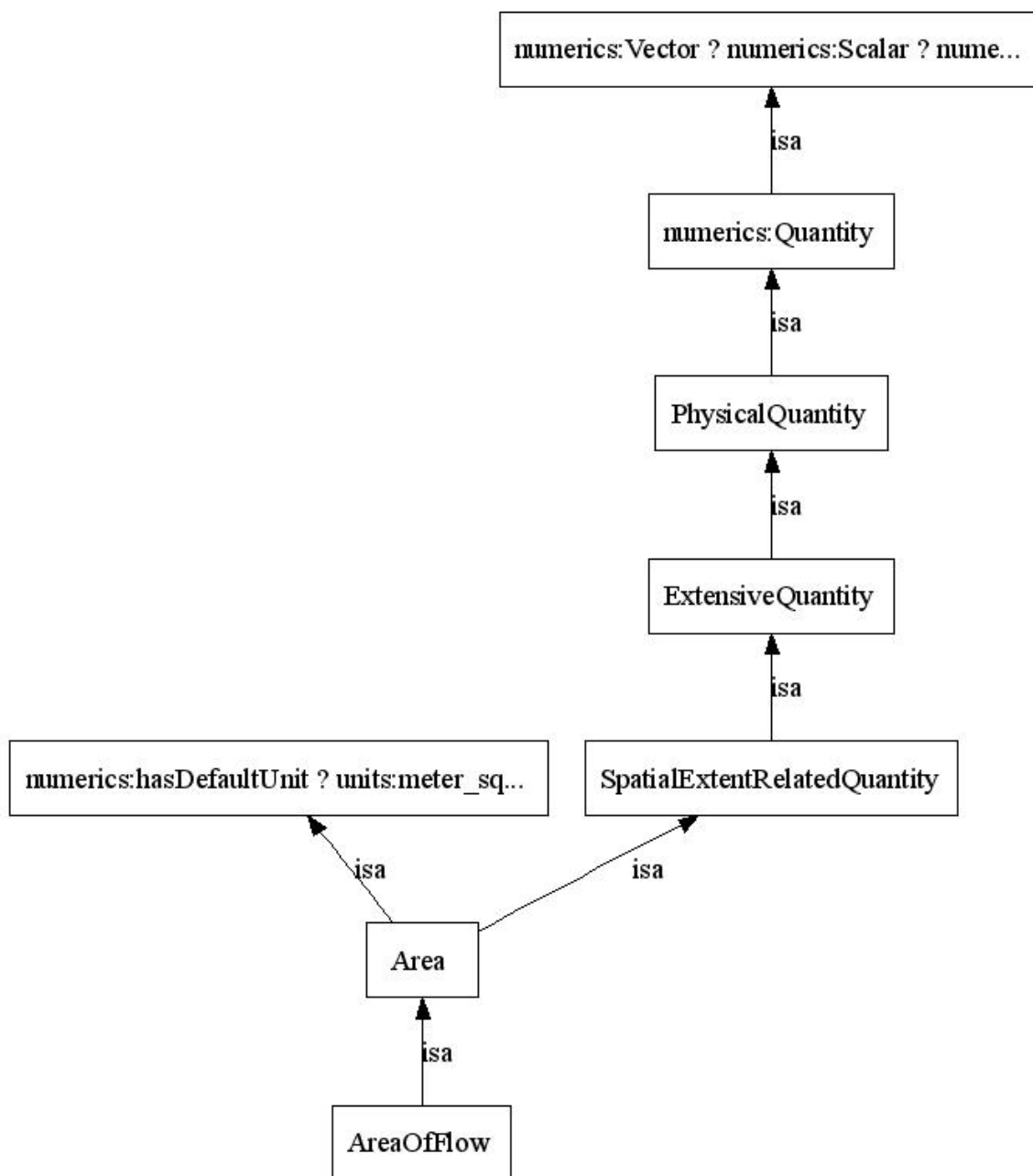


Figure 4.34 Super-Classes of *AreaOfFlow*

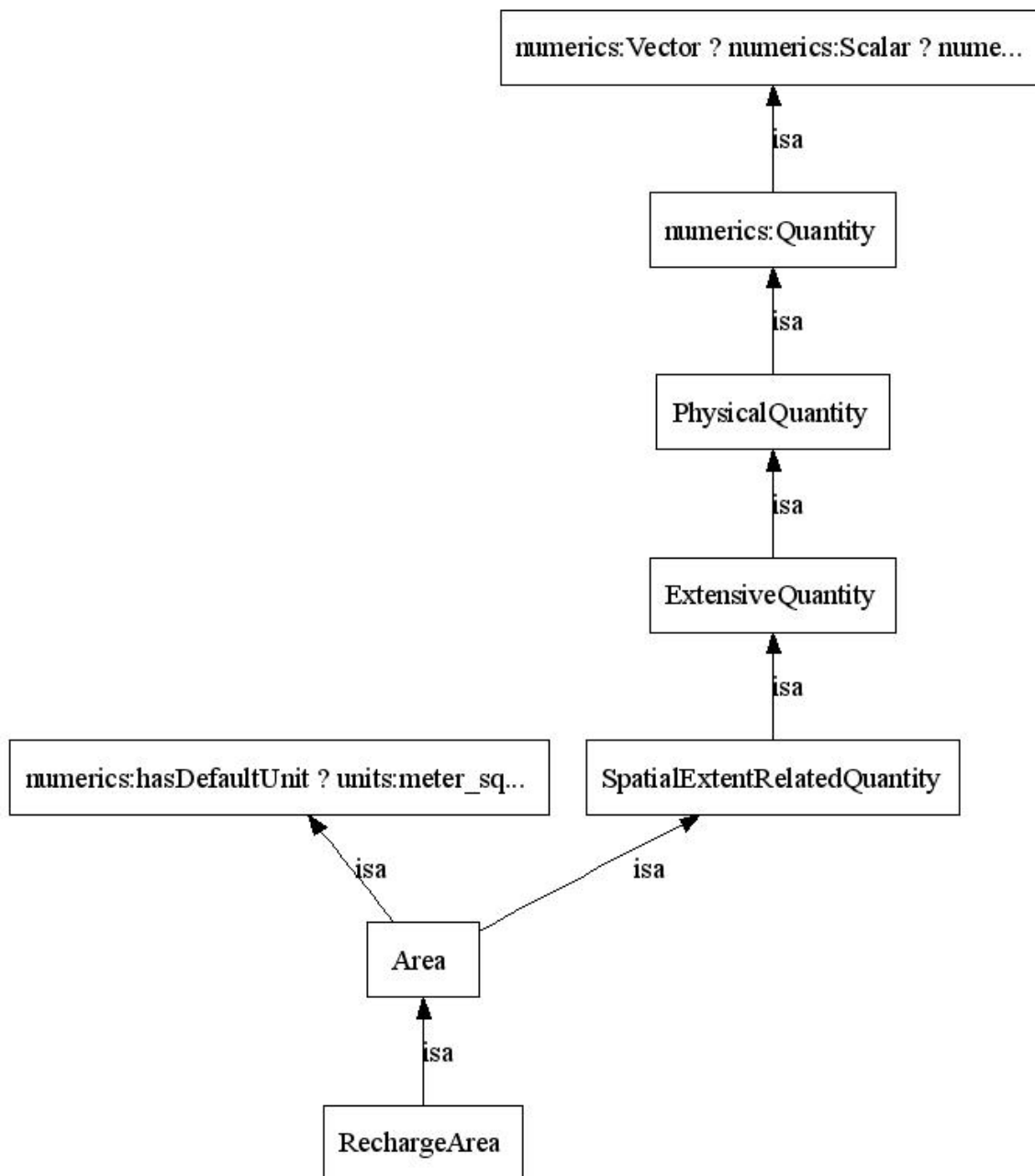


Figure 4.35 Super-Classes of *RechargeArea*

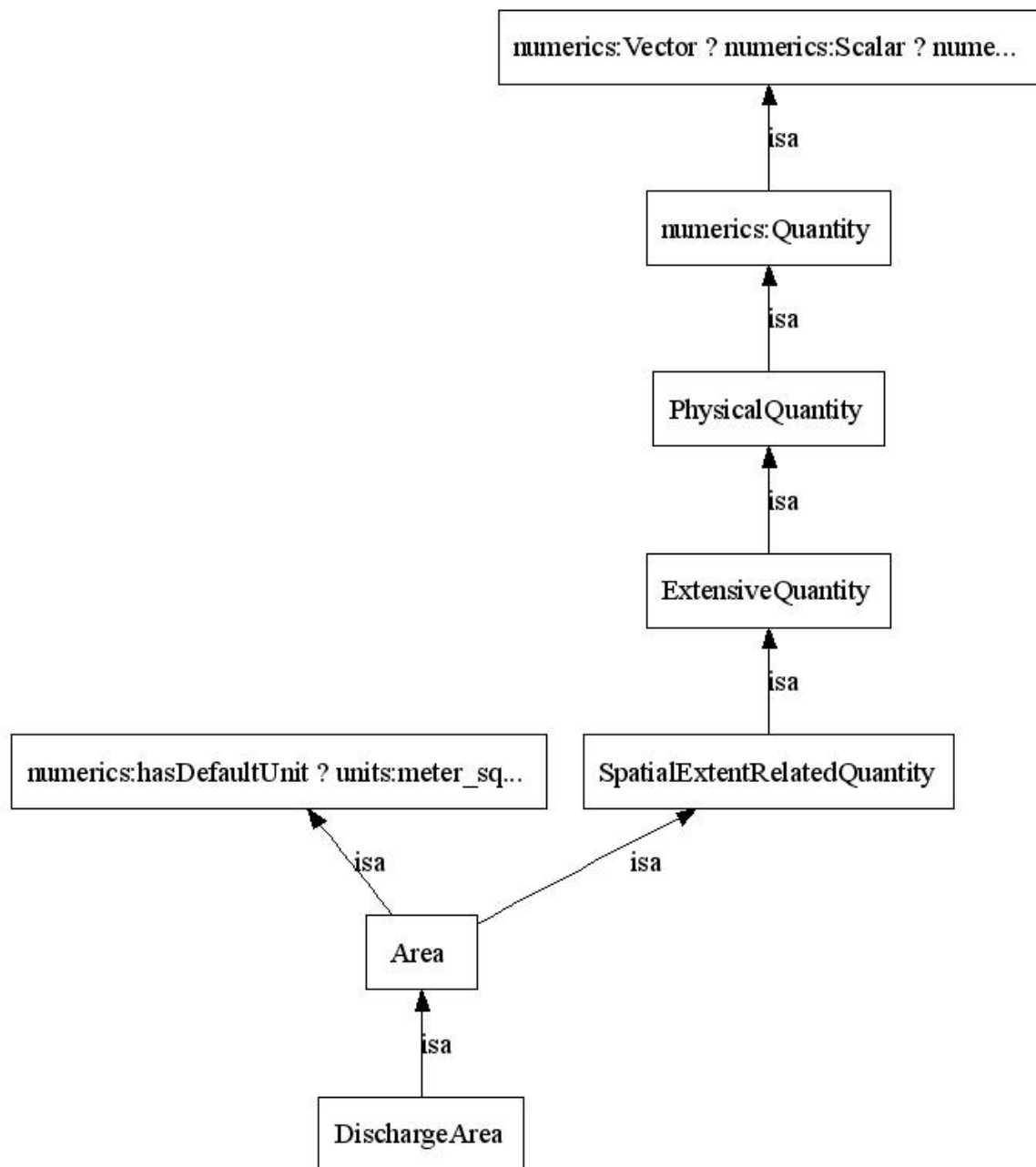


Figure 4.36 Super-Classes of *DischargeArea*

4.2.4 Changes made to *MassRelatedQuantity*

Sub-class *SaturationRatio* is added under class *WaterConcentration*. *MassRelatedQuantity* has the sub-class *MassConcentrationRelatedQuantity* which has the sub-class *MassConcentration* which has the sub-class *WaterConcentration*. (Figure 4.37)

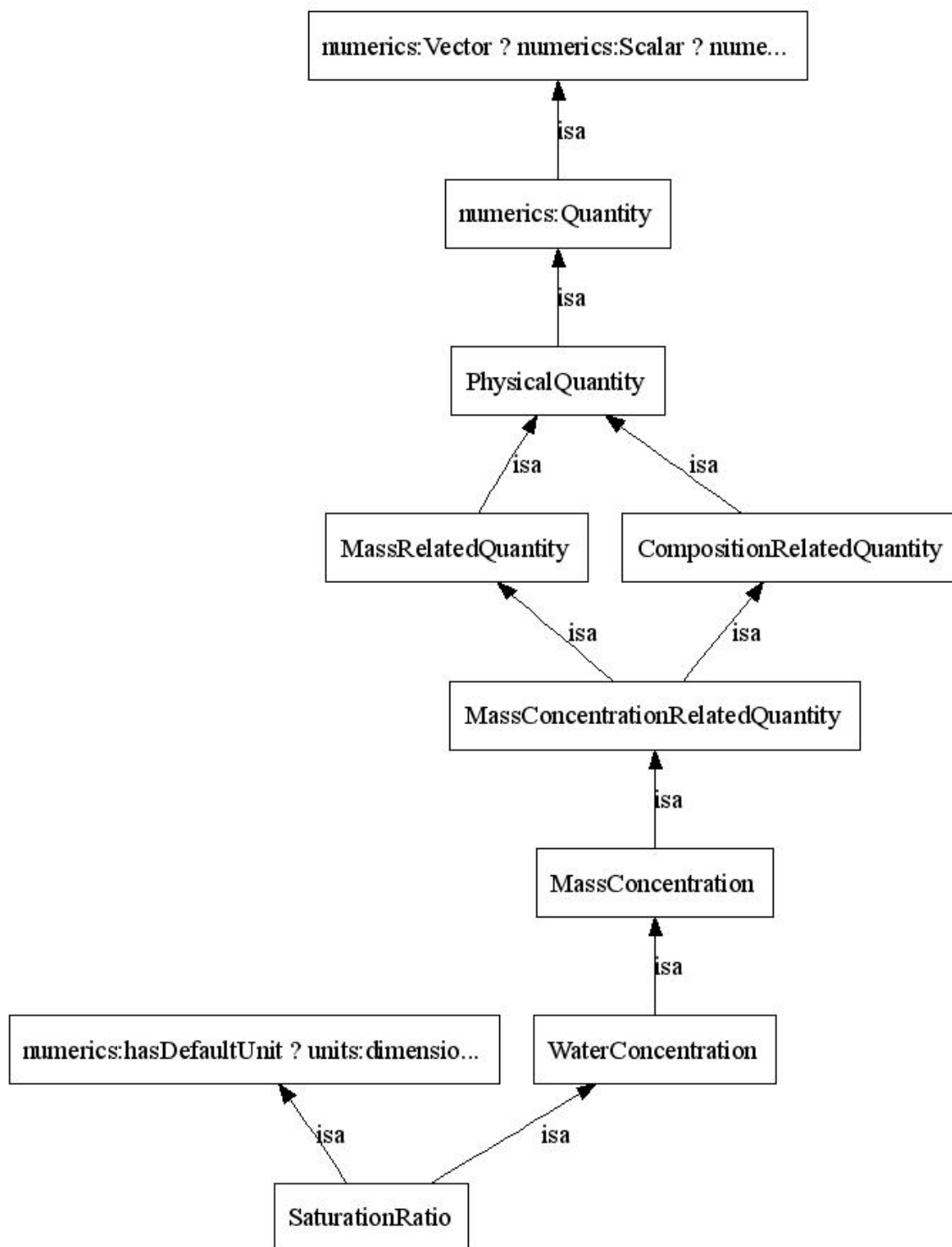


Figure 4.37 Super-Classes of *SaturationRatio*

4.3 Changes Made to `process.owl`

4.3.1 Concepts added to *PhysicalProcess*

Sub-class *Discharge* is added under *PhysicalProcess*. (Figure 4.38) *PhysicalProcess* has sub-class *Transport* under which equivalent sub-classes *Pumping* and *Pump* are added (Figure 4.39). *PhysicalProcess* has sub-class *Motion* under which sub-class *Interflow* is added. (Figure 4.40)

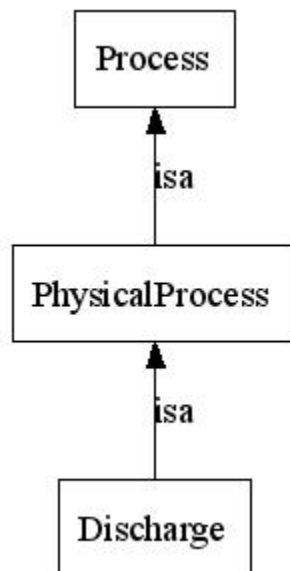


Figure 4.38 Super-Classes of *Discharge*

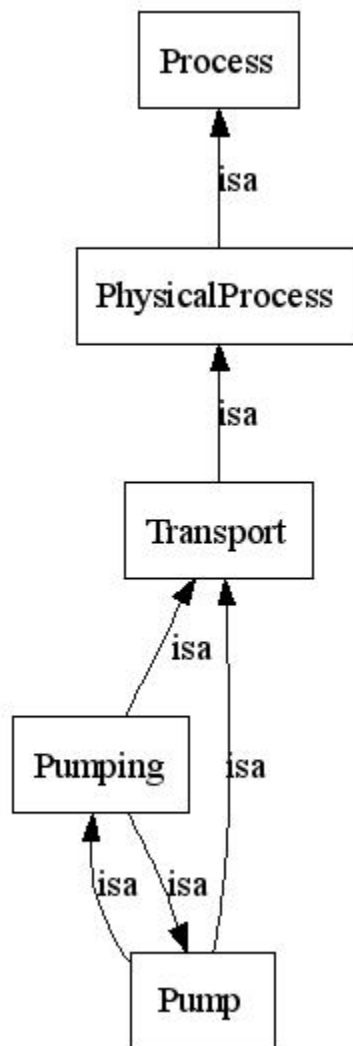


Figure 4.39 Super-Classes of *Pumping*

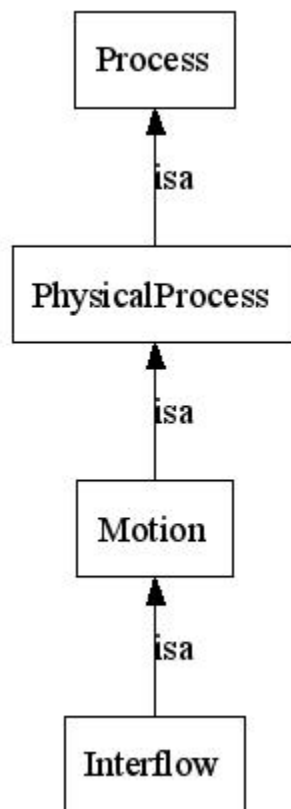


Figure 4.40 Super-Classes of *Interflow*

4.3.2 Concepts added to *GeologicalProcess*

GeologicalProcess contains the sub-class *GeoChemicalProcess*. This class contains the sub- classes *Retardation* and *CommonIonEffect*. (Figures 4.41, Figure 4.42)

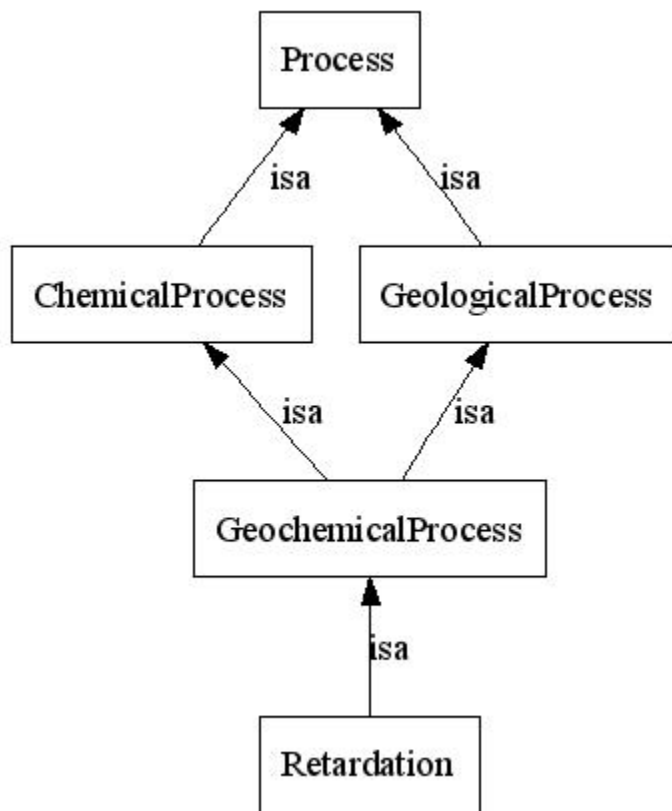


Figure 4.41 Super-Classes of *Retardation*

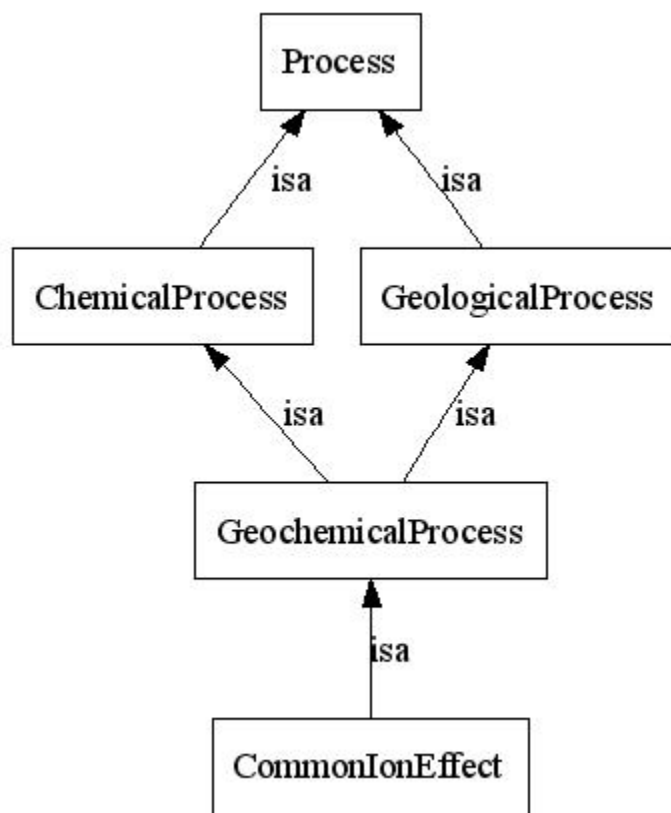


Figure 4.42 Super-Classes of *CommonIonEffect*

4.3.3 *Transpiration* added to *BiologicalProcess*

Sub-class *Transpiration* is added to the class *BiologicalProcess* (Figure 4.43)

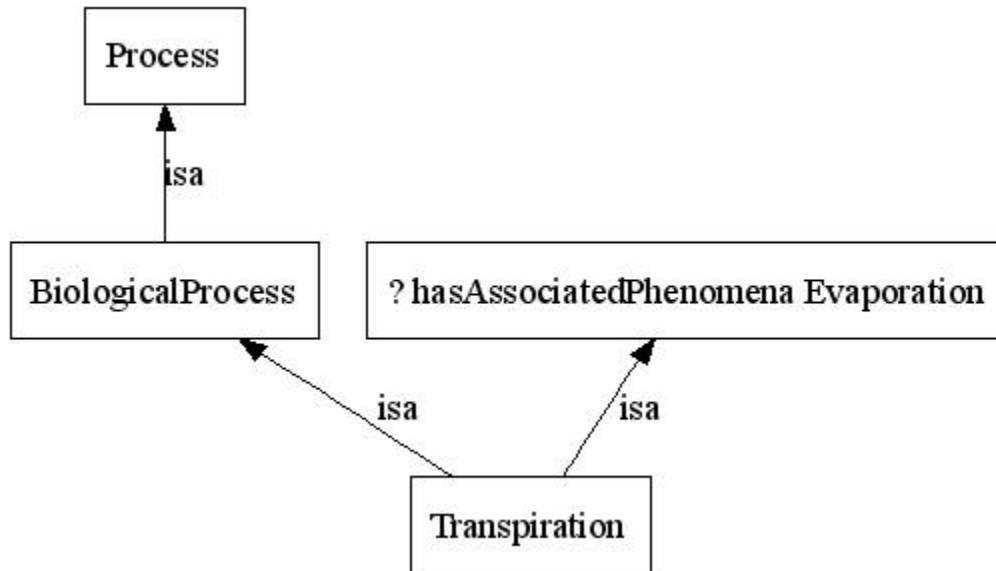


Figure 4.43 Super-Classes of *Transpiration*

4.4 Changes Made to `units.owl`

In order to have more instances of derived units, some changes were made to the necessary conditions of *UnitsDerivedByScaling*. This class should get all derived values from the union of the classes *BaseUnit*, *UnitDerivedWithoutChangeOfDimension* and *UnitDerivedByRaisingToPower*. New individuals are added in order to make the necessary hydrogeology related units available. All these individuals are some form of derivation of the base units. Domain Experts can easily add more units and derive necessary units by adding new individuals as and when required(Appendix D).

4.4.1 Individuals added to *UnitDerivedByScaling*

Following individuals are added to *UnitDerivedByScaling* :

$$day = 86400 \text{ sec}$$

$$feet = 0.3048 \text{ m}$$

$$darcy = 9.869233 \text{ E -13 meter Square}$$

4.4.2 Individuals added to *UnitDerivedByRaisingToPower*

Following individuals are added to *UnitDerivedByRaisingToPower*:

Feet To Power 2

Feet To Power 3

perDay

4.4.3 Individuals added to *ComplexUnit*

Following individuals are added to *ComplexUnit*:

milli_ohm_perMeter

feetToPower3_perDay

feetToPower2_perDay

Kilogram_perMeter_perSecond

4.5 Changes Made to material_things.owl

4.5.1 Equipments added to *GeologicEquipment*

The equipments in Figure 4.44 were added as sub-classes to the class *GeologicEquipment*

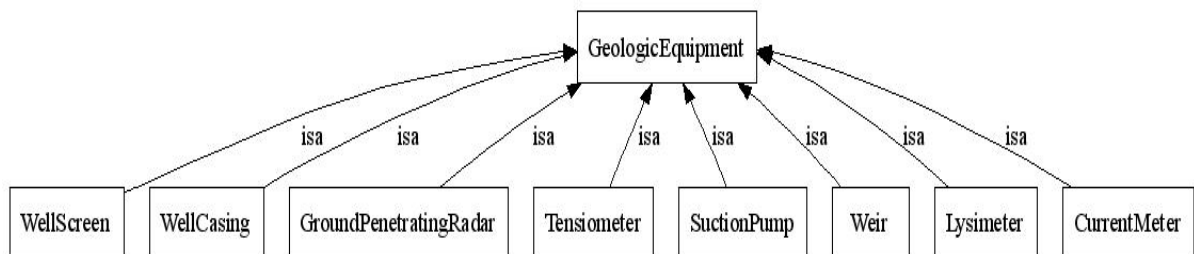


Figure 4.44 Sub-Classes of *GeologicEquipment*

4.5.2 Sub-class added to *Infrastructure*

Sub-class *Landfill* is added under class *Structure* which is a sub-class of *Facility*, a sub-class of *Infrastructure*(Figure 4.45)

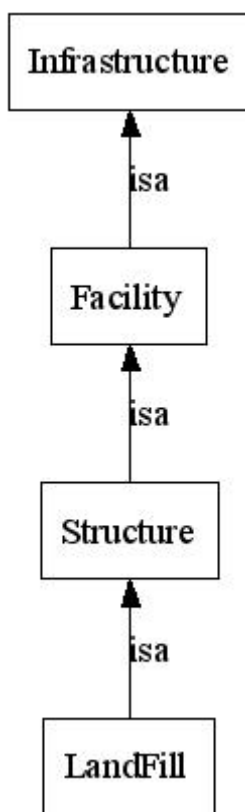


Figure 4.45 Super-Classes of *LandFill* (*material_things*)

4.6 Changes Made to `substance.owl`

4.6.1 Concepts added to *MixedSubstance*

MixedSubstance is a sub-class of *Substance* which contains the sub-class *Contaminant*. Since contaminant is also referred to as pollutant, this class is made equivalent to the class *Pollutant* (Figure 4.46). Sub-classes *Plume* and *VolatileOrganicCompound* are added to *Contaminant*. *VOC* is made equivalent to *VolatileOrganicCompound* as they refer to the same term. (Figure 4.47) Sub-classes

Lechate and *Regolith* are added under the class *MixedSubstance*. (Figures 4.48, 4.49)

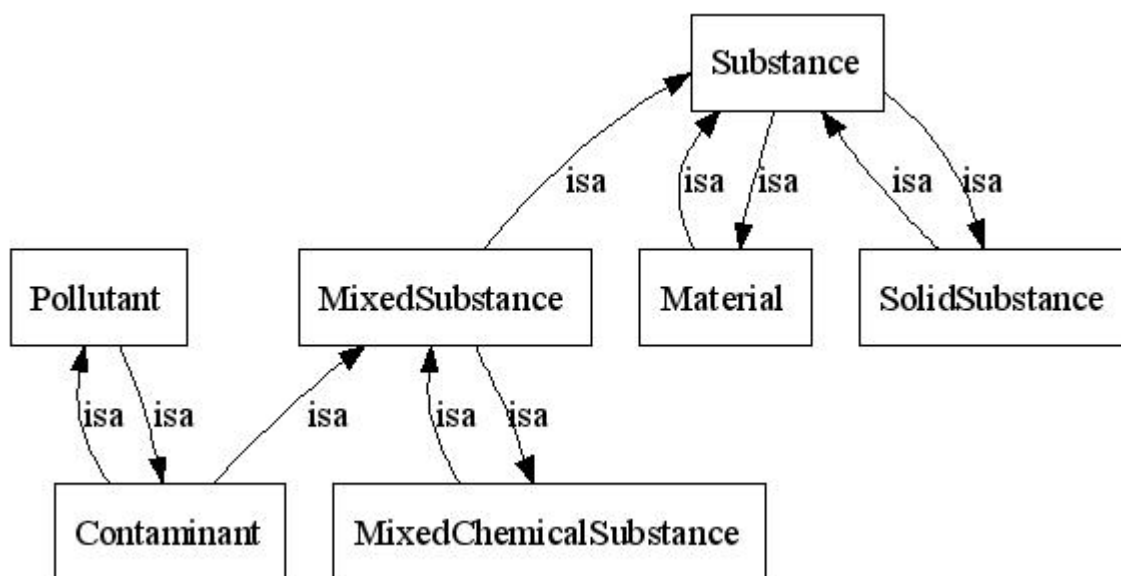


Figure 4.46 Super-Classes of *Pollutant*

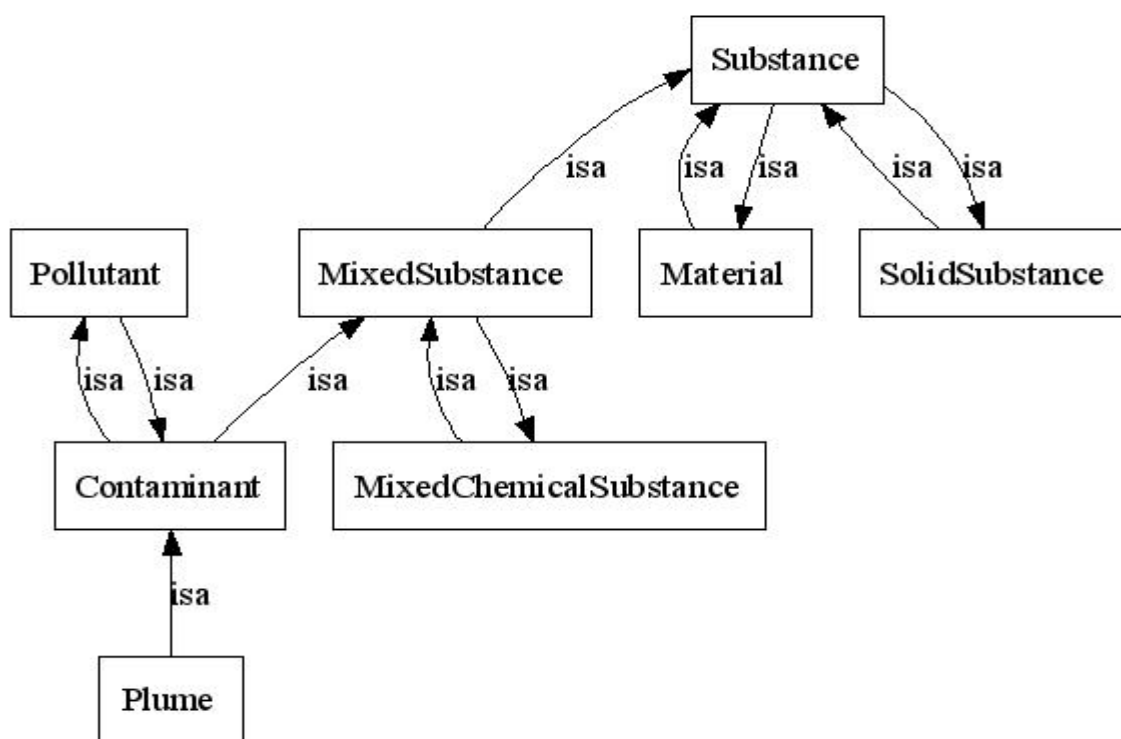


Figure 4.47 Super-Classes of *Plume*

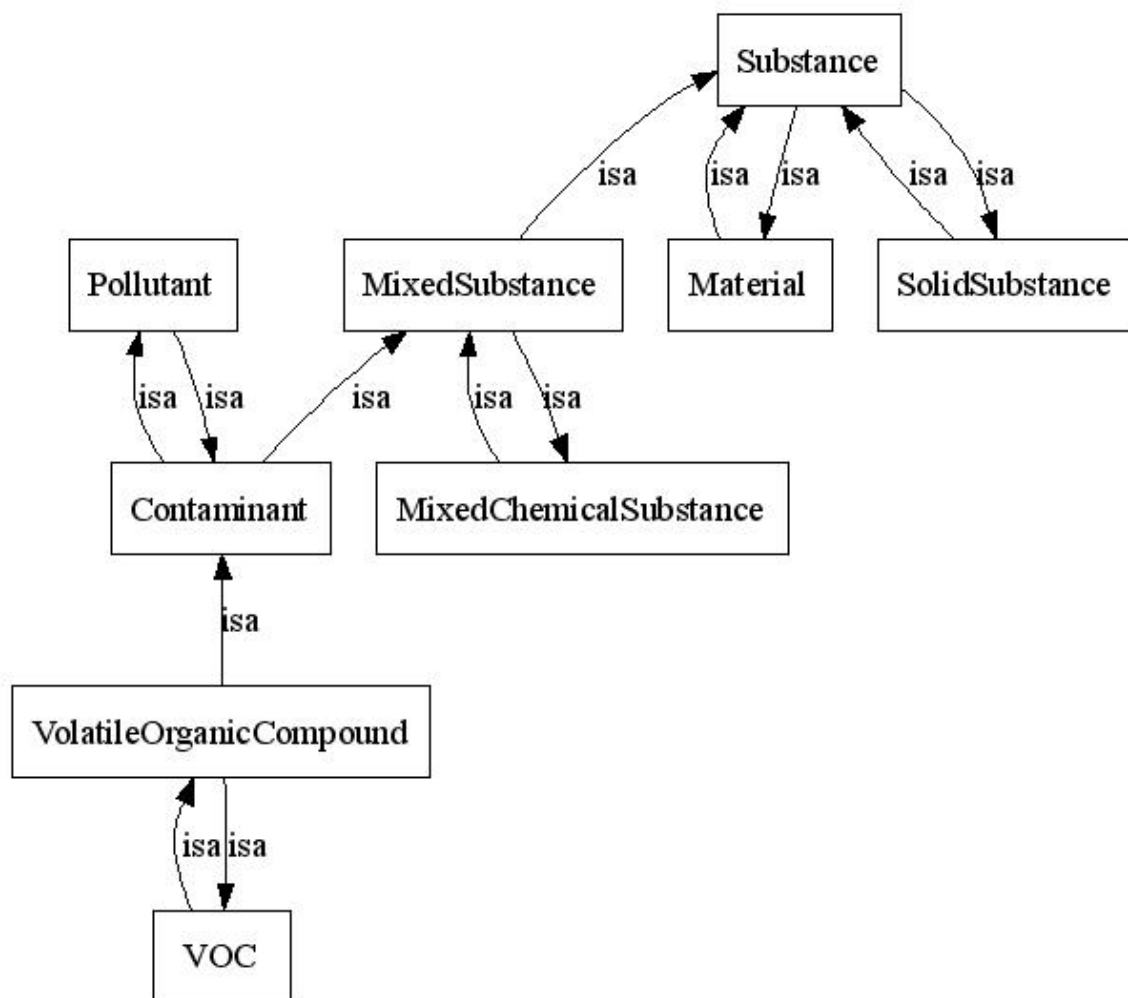


Figure 4.48 Super-Classes of *VolatileOrganicCompound*

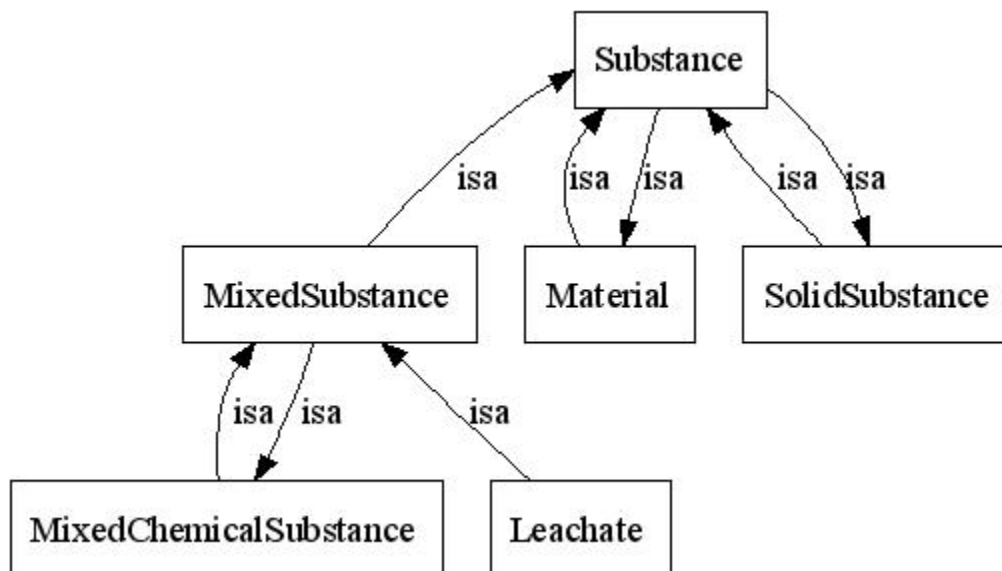


Figure 4.49 Super-Classes of *Leachate*

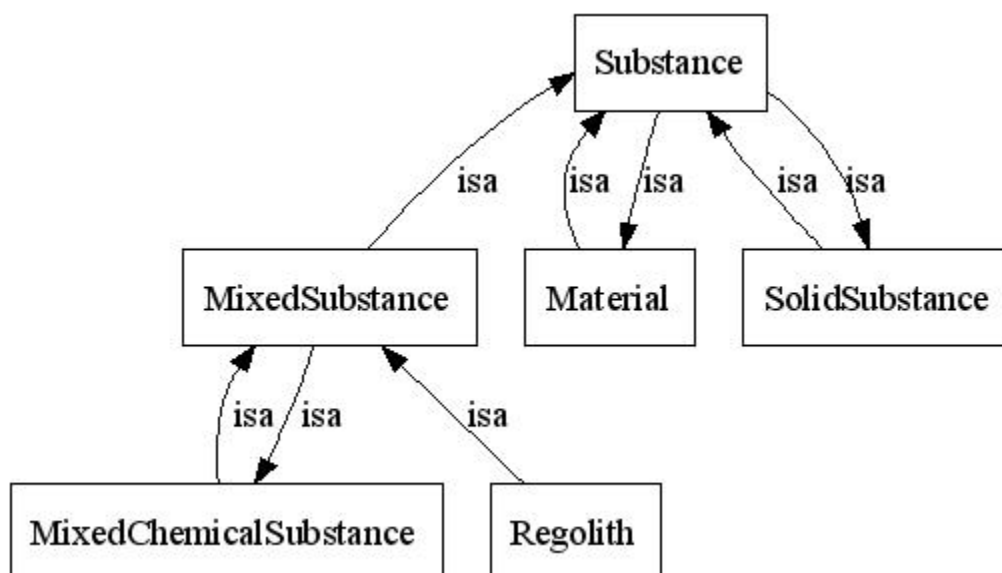


Figure 4.50 Super-Classes of *Regolith*

4.6.1.1 Following Datatype and Object Properties are added to *Contaminant*:

Contaminant		
isVOC	Boolean*	
isPointSource	Boolean*	
isNonPointSource	Boolean*	
hasLocation	Instance*	space:Location
hasExtent	Instance*	space:Vicinity

4.6.2 Concept added to *SubstanceForm*

SubstanceForm is the equivalent class of *FormOfSubstanceOrganization*. This class contains the sub-class *DissolvedSubstance*. A new sub-class *TotalDissolvedSolid* which has an equivalent class *TDS* is added under *DissolvedSubstance*. (Figure 4.51)

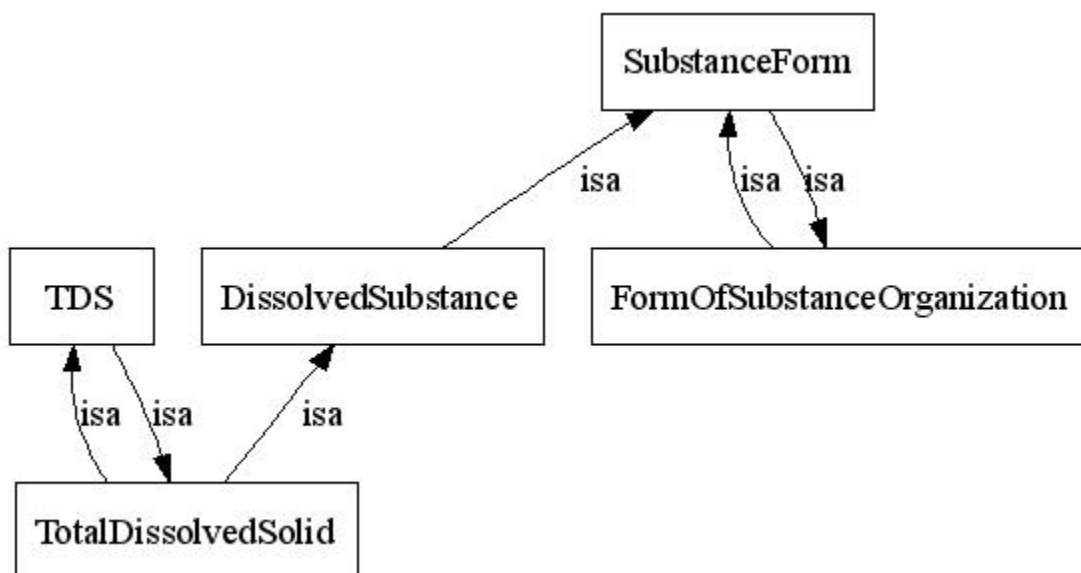


Figure 4.51 Super-Classes of *TotalDissolvedSolid*

4.7 Changes Made to `phenomena.owl`

4.7.1 Changes made to *HydrospherePhenomena*

Sub-classes *Baseflow*, *GravityDrainage*, and *Interception* are added under the class *LandwaterCirculation* which is a sub-class of *HydrospherePhenomena* (Figures 4.52, 4.53, 4.54) . *LandWaterCirculation* has a sub-class *Intrusion* under which a new sub-class *SaltWaterIntrusion* is added. (Figure 4.55)

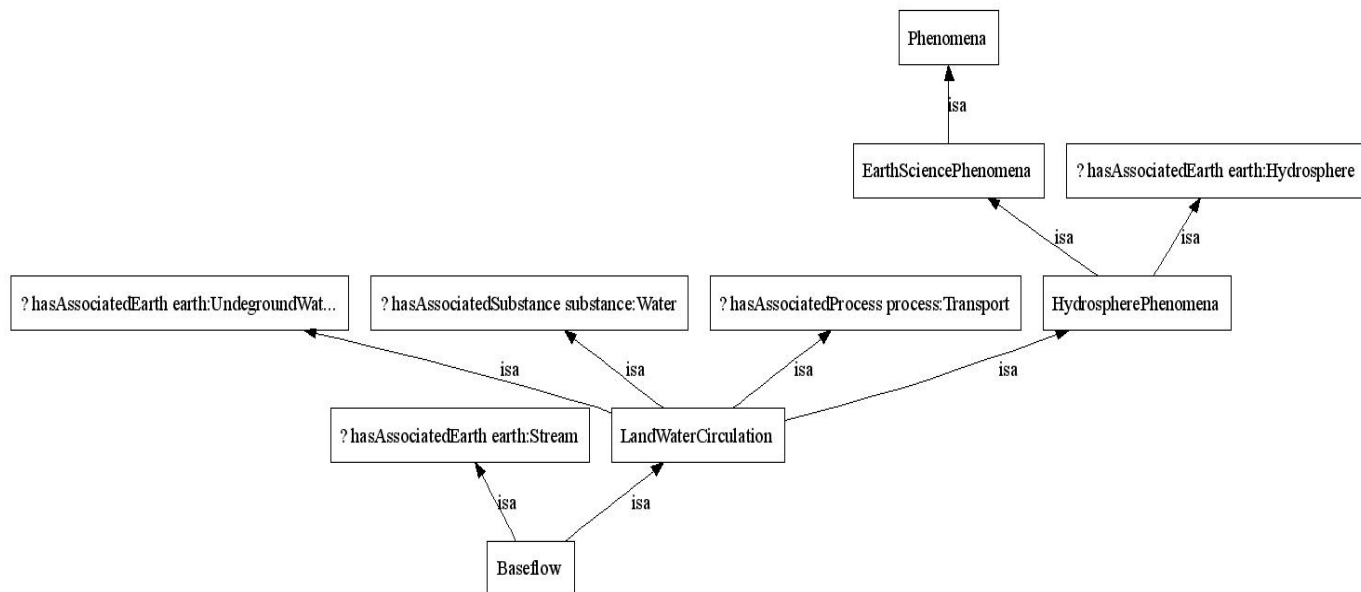


Figure 4.52 Super-Classes of *Baseflow*

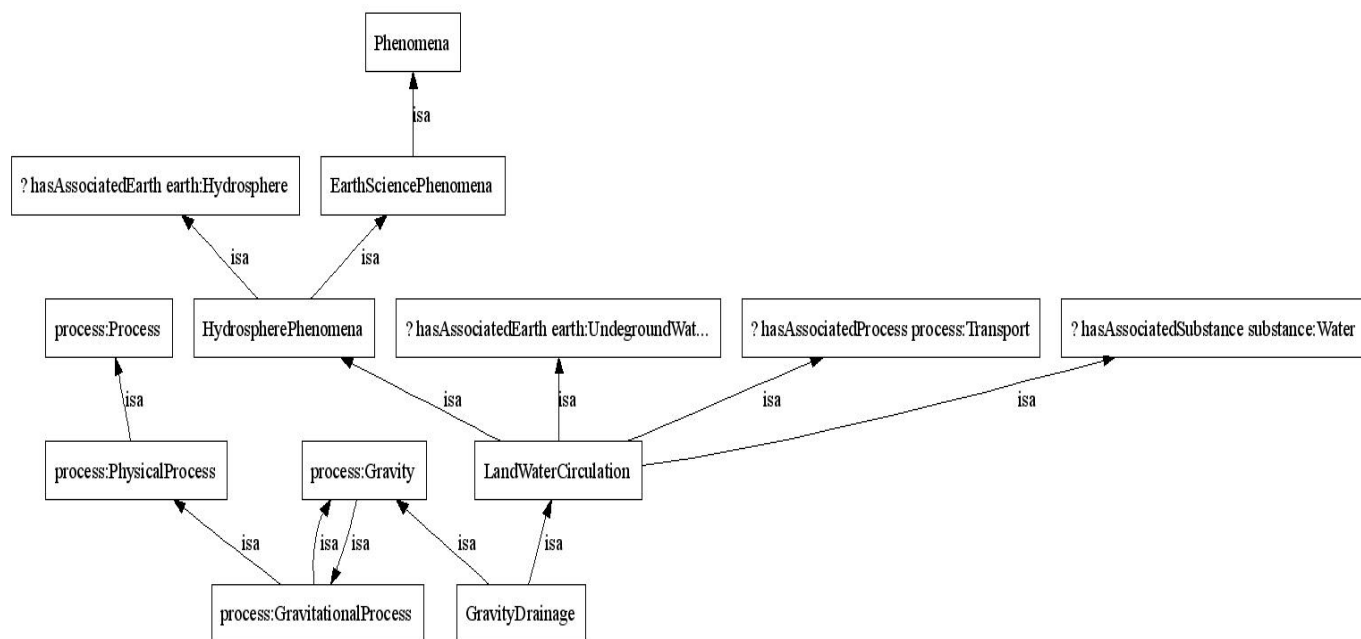


Figure 4.53 Super-Classes of *GravityDrainage*

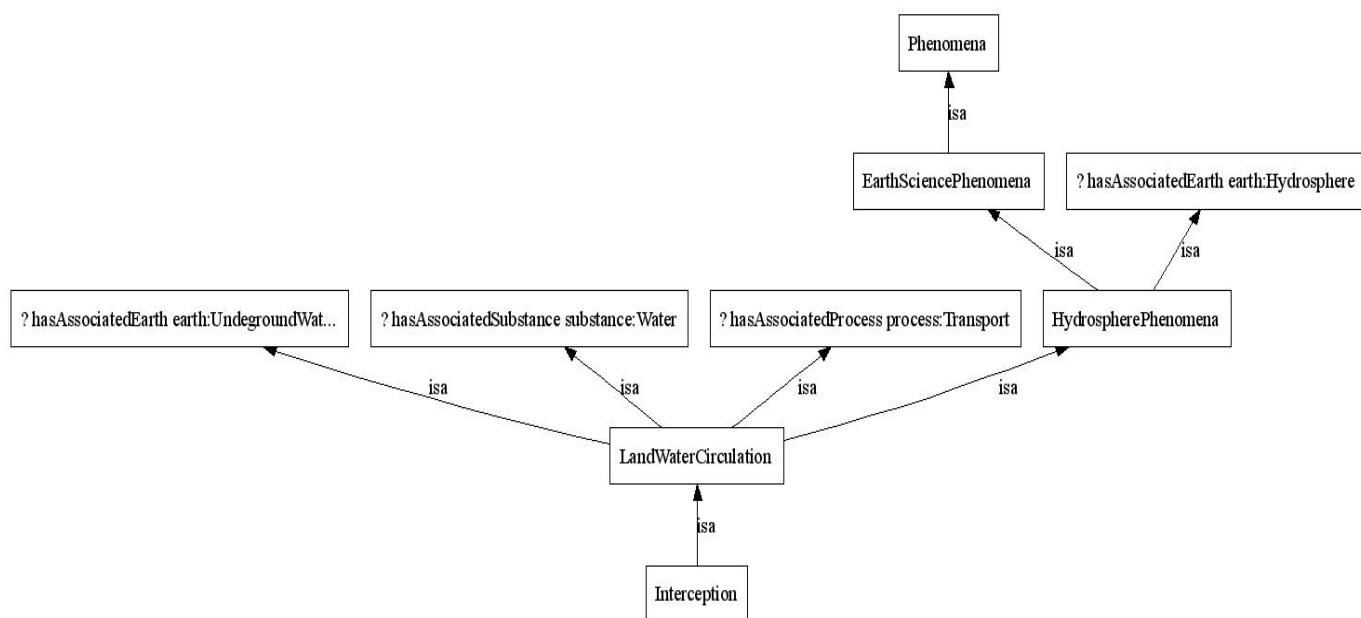


Figure 4.54 Super-Classes of *Interception*

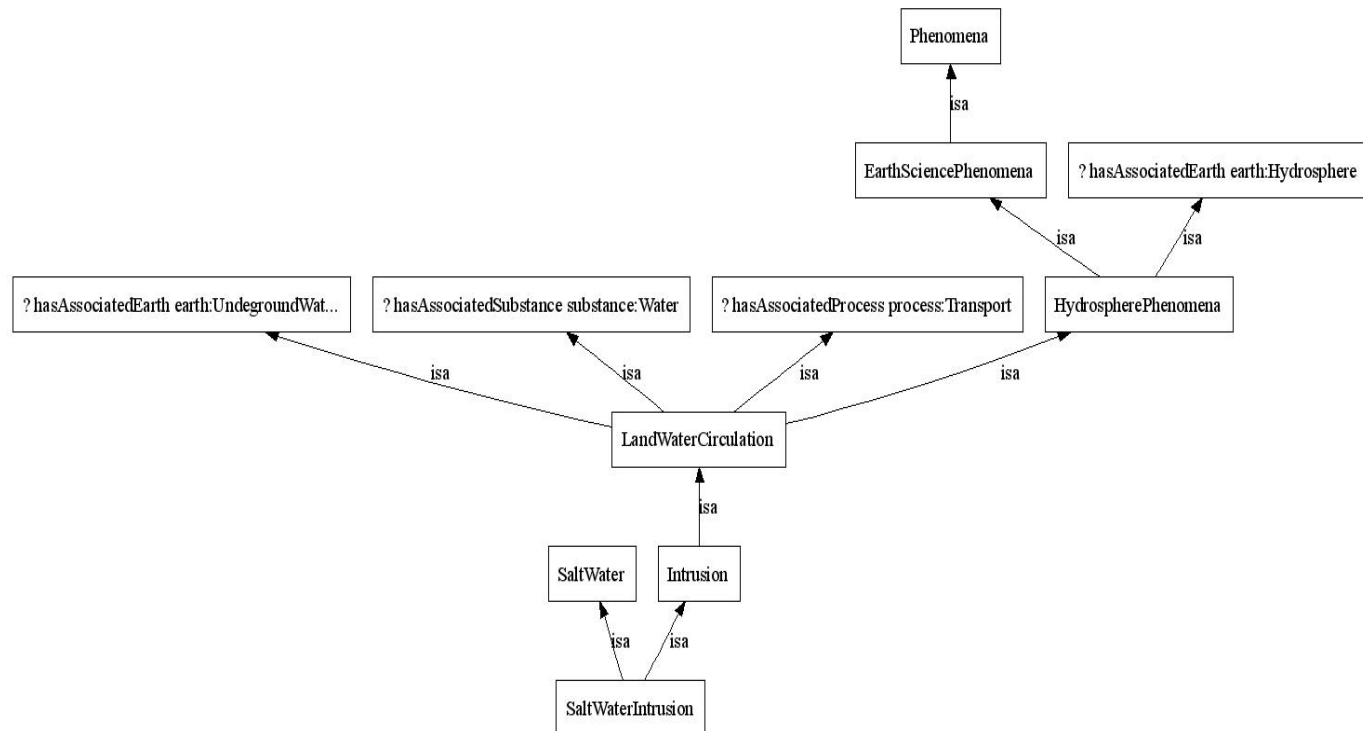


Figure 4.55 Super-Classes of *SaltWaterIntrusion*

4.7.2 Changes made to *EarthMaterialDisplacement*.

A new sub-class *SoilLiquefaction* is added to the class *EarthMaterialDisplacement* (Figure 4.56)

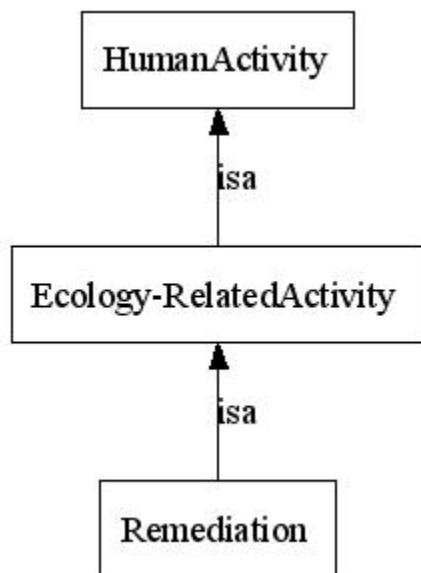


Figure 4.57 Super-Classes of *Remediation*

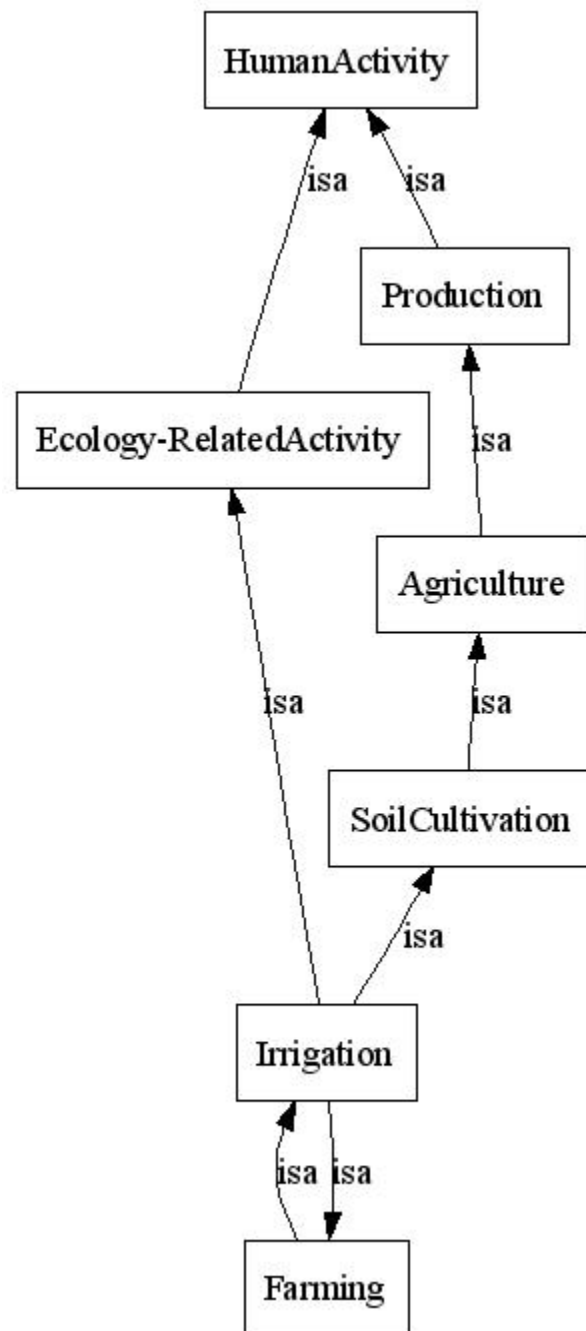


Figure 4.58 Super-Classes of *Farming*

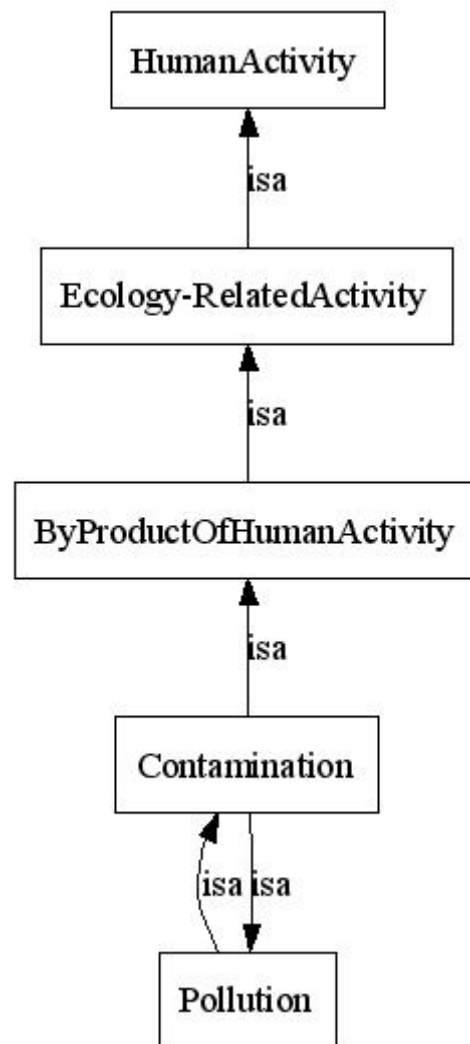


Figure 4.59 Super-Classes of *Pollution*

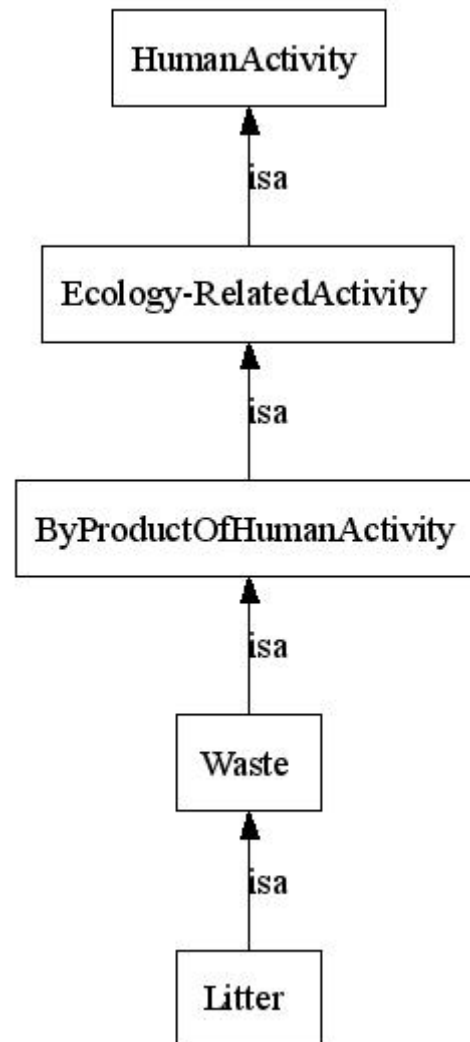


Figure 4.60 Super-Classes of *Litter*

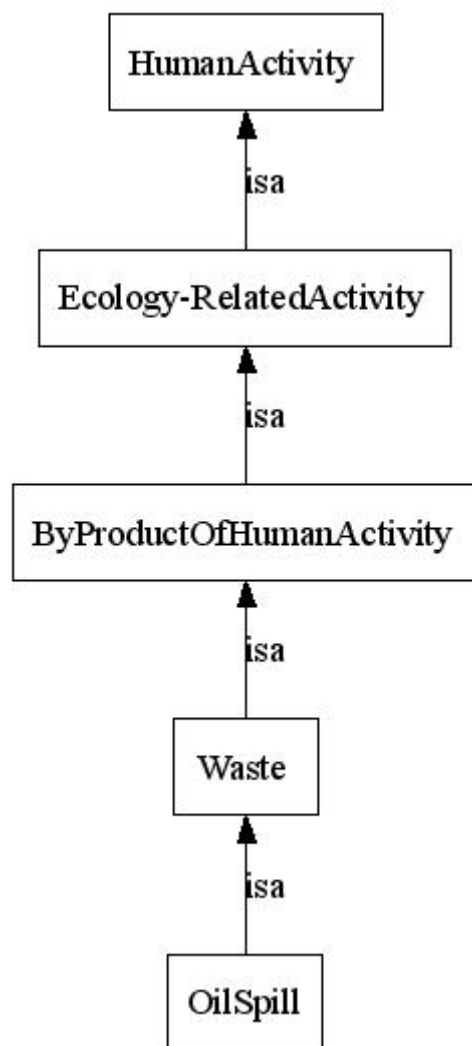


Figure 4.61 Super-Classes of *OilSpill*

4.8.2 Changes made to *Emission*

A new sub-class *AutomobileEmission* is added under the class *Emission*. (Figure 4.62)

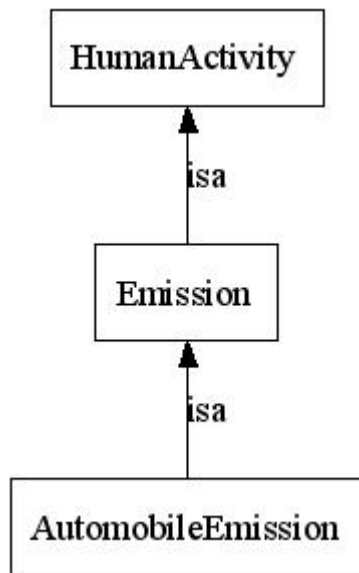


Figure 4.62 Super-Classes of *AutomobileEmission*

Conclusion and Future Work

Conclusion

This thesis demonstrates the methodology used in modeling a specialized domain such as hydrogeology by re-engineering upper-level ontologies, such as NASA's SWEET ontologies. The necessary tools and procedures which help in conceptualizing and re-modeling an existing set of upper-level ontologies are explained. The new set of OWL ontologies presented here is an example of reusability, sharing and scalability of knowledge. This illustrates the purpose of the semantic web world.

Future Work

In the short term, the researchers following this work may immediately undertake following tasks:

- New properties and instances can be added for practical applications of the ontologies in hydrogeology and related domains.
- *Web Agents* can be developed to query databases and present results based on ontological specifications.
- Based on the modular approach of re-engineering upper-level ontologies, as illustrated in this thesis, the ontologies can be further reengineered to model other earth science domains like atmosphere, cryosphere and lithosphere. Sub-descriptions in geology such as petrology, mineralogy, sedimentology and stratigraphy can also be modeled using ontologies like SWEET.

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APPENDICES

A OWL CODE

earth.owl

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns:property="file:/D:/SWEET/property.owl#"
  xmlns:substance="file:/D:/SWEET/substance.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns="file:/D:/SWEET/earth.owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:daml="http://www.daml.org/2001/03/daml+oil#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:space="file:/D:/SWEET/space.owl#"
  xmlns:numeric="file:/D:/SWEET/numeric.owl#"
  xml:base="file:/D:/SWEET/earth.owl">
  <owl:Ontology rdf:about="file:/D:/SWEET/earth.owl">
    <owl:versionInfo
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
1.0</owl:versionInfo>
    <owl:imports rdf:resource="file:/D:/SWEET/numeric.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/substance.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/space.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/property.owl"/>
  </owl:Ontology>
  <rdfs:Class rdf:about="file:/D:/SWEET/property.owl#Permiability"/>
  <owl:Class rdf:ID="SnowField">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="SnowLayer"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SeaFloorRegion">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
        <owl:allValuesFrom>
          <owl:Class rdf:ID="SeaFloorGroundLayer"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="TopographicalRegion"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="UpperMantle_flowling">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="MantleLayer"/>
    </rdfs:subClassOf>
  </owl:Class>
  </owl:RDF>
</rdf:RDF>
```

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    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="RechargeBoundary">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="GroundWaterObjectBoundary"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Mantle">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:ID="hasLowerBoundaryReferenceHeight"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
-270000</owl:hasValue>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:ID="hasUpperBoundaryReferenceHeight"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
-40000</owl:hasValue>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
        <owl:allValuesFrom>
          <owl:Class rdf:ID="Crust"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#MantleLayer"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="LacustrineWetland">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Wetland"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="CapillaryFringe">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="SaturatedZone"/>
    </rdfs:subClassOf>
  </owl:Class>

```

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<owl:Class rdf:ID="AphoticZone">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="OceanLayer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/space.owl#Layer"/>
<owl:Class rdf:ID="PlanetarySurface">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/space.owl#LayerBoundary"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerUpperBoundaryOf"/>
      <owl:allValuesFrom>
        <owl:Class rdf:ID="PlanetarySurfaceLayer"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:ID="Earth"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerLowerBoundaryOf"/>
      <owl:allValuesFrom>
        <owl:Class rdf:ID="Atmosphere"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Media">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="HydrosphereLayer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="TectonicLandform">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="GeomorphologicalRegionType"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Nearshore">
  <owl:equivalentClass>
    <owl:Class>
      <owl:intersectionOf rdf:parseType="Collection">
        <owl:Class rdf:ID="OceanRegion"/>
        <owl:Class rdf:ID="CoastalRegion"/>
      </owl:intersectionOf>
    </owl:Class>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="UnconfinedAquifer">
  <owl:equivalentClass>
    <owl:Class rdf:ID="WaterTableAquifer"/>
  </owl:equivalentClass>
  <rdfs:subClassOf>

```

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    <owl:Class rdf:ID="Aquifer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Leads">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="OceanCrustLayer">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanLayer"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:ID="CrustLayer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Lagoon">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="LandwaterSurfaceLayer">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="WaterSurfaceLayer"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isAdjacentTo"/>
      </owl:onProperty>
      <owl:allValuesFrom>
        <owl:Class rdf:ID="LandWaterSurface"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Hydrosphere">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="GlobalPlanetaryLayers"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#HydrosphereLayer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="PerchedAquifer">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="RiparianWetland">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Wetland"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="ArtesianAquifer">

```

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    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
    </rdfs:subClassOf>
    <owl:equivalentClass>
      <owl:Class rdf:ID="ConfinedAquifer"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="IceFloe">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="BodyOfSeaIce"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="PermafrostZone">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="ClimateZoneType"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="RockyCoast">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="IslandArc">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#TectonicLandform"/>
        <owl:onProperty>
          <owl:ObjectProperty rdf:ID="hasGeomorphologicalType"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Island"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="ConfinedWell">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Well"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#DepthHoar"/>
  <owl:Class rdf:ID="BorealForest">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Forest_Ecosystem"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="TerrestrialWetland">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Wetland"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="BarrierIsland">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Island"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>

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    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
        </owl:allValuesFrom>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Island">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="LandRegion"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
              <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#OceanRegion"/>
              <owl:Class rdf:ID="LandwaterRegion"/>
            </owl:unionOf>
          </owl:Class>
        </owl:allValuesFrom>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#surroundedBy_2D"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
  <owl:Class rdf:ID="FractureZone">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#WaterTableAquifer">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="WaterTable"/>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#UnconfinedAquifer"/>
  </owl:Class>
  <owl:Class rdf:ID="PlanetEarth">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/space.owl#Body"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="ConfiningLayer">

```

```

    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#HydrosphereLayer"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Aquitard">
    <owl:equivalentClass>
      <owl:Class rdf:ID="LeakyConfiningLayer"/>
    </owl:equivalentClass>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ConfiningLayer"/>
  </owl:Class>
  <owl:Class rdf:ID="CostalLandform">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GeomorphologicalRegionType"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Cryosphere">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="CryosphereLayer"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GlobalPlanetaryLayers"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SeaIceLayer">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/substance.owl#SeaIce"/>
        </owl:allValuesFrom>
        <owl:onProperty>
          <owl:ObjectProperty rdf:ID="primarySubstance"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="IceLayer"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
        </owl:onProperty>
        <owl:allValuesFrom>
          <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
              <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#OceanRegion"/>
              <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
            </owl:unionOf>
          </owl:Class>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>

```

```

        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Creek">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Stream"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="FastIce">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
            </owl:allValuesFrom>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaIceLayer"/>
</owl:Class>
<owl:Class rdf:ID="CaveEcosystem">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="TerrestrialEcosystem"/>
    </rdfs:subClassOf>
</owl:Class>

    <owl:Class rdf:ID="Geosphere">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
0</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GlobalPlanetaryLayers"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="GeosphereLayer"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#LandRegion">
    <rdfs:subClassOf>
        <owl:Class>
            <owl:complementOf>
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanRegion"/>
            </owl:complementOf>
        </owl:Class>
    </owl:Class>

```



```

</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:allValuesFrom>
      <owl:Class>
        <owl:unionOf rdf:parseType="Collection">
          <owl:Class rdf:ID="LandSurfaceLayer"/>
          <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#LandwaterSurfaceLayer"/>
            </owl:unionOf>
          </owl:Class>
        </owl:allValuesFrom>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
  </rdfs:subClassOf>
</rdfs:subClassOf>
  <owl:Restriction>
    <owl:allValuesFrom>
      <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#TerrestrialEcosystem"/>
        </owl:allValuesFrom>
      <owl:onProperty>
        <owl:ObjectProperty rdf:ID="hasEcosystemType"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Stratopause">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom>
            <owl:Class rdf:ID="Mesosphere"/>
          </owl:allValuesFrom>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerLowerBoundaryOf"/>
            </owl:Restriction>
          </rdfs:subClassOf>
        </rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom>
            <owl:Class rdf:ID="Stratosphere"/>
          </owl:allValuesFrom>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerUpperBoundaryOf"/>
            </owl:Restriction>
          </rdfs:subClassOf>
        </rdfs:subClassOf>
        <owl:Class rdf:ID="AtmosphereLayerBoundary"/>
      </rdfs:subClassOf>
    </owl:Class>
  </rdfs:subClassOf>

```

```

</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Soil"/>
<owl:Class rdf:ID="SeaSurface">
  <owl:disjointWith>
    <owl:Class rdf:ID="LandSurface"/>
  </owl:disjointWith>
  <rdfs:subClassOf>
    <owl:Class rdf:ID="WaterSurface"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerUpperBoundaryOf"/>
        <owl:allValuesFrom>
          <owl:Class rdf:ID="SeaSurfaceLayer"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
<owl:Class rdf:ID="SubtropicalClimateZone">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#ClimateZoneType"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Ridge">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
      </owl:onProperty>
      <owl:allValuesFrom>
        <owl:Class>
          <owl:unionOf rdf:parseType="Collection">
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#SeaFloorGroundLayer"/>
          </owl:unionOf>
        </owl:Class>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="MarineWetland">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Wetland"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="ContinentalMargin">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
  </owl:Class>

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<owl:Class rdf:ID="GeneratingArea">
  <owl:equivalentClass>
    <owl:Class rdf:ID="Fetch"/>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="BoundaryLayer">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
0</owl:hasValue>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
      />
    </owl:Restriction>
  </rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Class rdf:ID="TroposphereLayer"/>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="MontaneForest">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#Forest_Ecosystem"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Snow"/>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#Atmosphere">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="AtmosphereLayer"/>
  </rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >
0</owl:hasValue>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
    />
  </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
    />
    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >
700000</owl:hasValue>
  </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GlobalPlanetaryLayers"/>

```

```

    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Shoreline">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Polynya">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Swamp">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Wetland"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Ionosphere">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Pond">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="SurfaceWater"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="DeepOcean">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Peizometer">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Well"/>
  </rdfs:subClassOf>
  <owl:equivalentClass>
    <owl:Class rdf:ID="MonitoringWell"/>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="Watershed">
  <owl:equivalentClass>
    <owl:Class rdf:ID="Basin"/>
  </owl:equivalentClass>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandRegion"/>
</owl:Class>
<owl:Class rdf:ID="Dam"/>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#ClimateZoneType">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="RegionProperty"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="UpperMantle_rigid">
  <rdfs:subClassOf>
    <owl:Restriction>

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        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
-150000</owl:hasValue>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
/>
    </owl:Restriction>
</rdfs:subClassOf>
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        >
-40000</owl:hasValue>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>
    </owl:Restriction>
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<rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#MantleLayer"/>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Class rdf:ID="LithosphereLayer"/>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SalineLake">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Lake"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#Fetch">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanRegion"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Mesopause">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerLowerBoundaryOf"/>
            <owl:allValuesFrom>
                <owl:Class rdf:ID="Thermosphere"/>
            </owl:allValuesFrom>
        </owl:Restriction>
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<rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#AtmosphereLayerBoundary"/>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:allValuesFrom>
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Mesosphere"/>
        </owl:allValuesFrom>
    </owl:Restriction>

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        <owl:onProperty
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        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SaturatedZone"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Pycnocline">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanLayer"/>
    </rdfs:subClassOf>
</owl:Class>
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    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Media"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
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            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Class rdf:ID="BodyOfGround"/>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="LowerAtmosphere">
    <owl:equivalentClass>
        <owl:Class rdf:ID="Troposphere"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="Delta">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
    </rdfs:subClassOf>
</owl:Class>
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    <rdfs:subClassOf>
        <owl:Class rdf:ID="EcosystemType"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#CrustLayer">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#LithosphereLayer"/>
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    <rdfs:subClassOf>
      <owl:Restriction>
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        </owl:allValuesFrom>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
          </owl:onProperty>
        </owl:Restriction>
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    </owl:Class>
    <owl:Class rdf:ID="LandFill">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#BodyOfGround"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="MixedLayer">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SeaSurfaceLayer"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="CoralReef">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
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    <owl:Class rdf:ID="PeriglacialLandform">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GeomorphologicalRegionType"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="OceanRidge">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
    </owl:Class>
    <owl:Class rdf:ID="Plateau">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom>
            <owl:Class>
              <owl:unionOf rdf:parseType="Collection">
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rdf:about="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Basin"/>
                <owl:Class rdf:ID="Catchment"/>
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Dam"/>
                <owl:Class rdf:ID="Floodplain"/>
                <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#SeaFloorGroundLayer"/>
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            </owl:Class>
          </owl:allValuesFrom>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
            </owl:onProperty>

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        </owl:Restriction>
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    <rdfs:subClassOf>
        <owl:Class
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    </owl:Class>
    <owl:Class rdf:ID="Trench">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
    </owl:Class>
    <owl:Class rdf:ID="Aeolian">
        <owl:equivalentClass>
            <owl:Class rdf:ID="EolianLandform"/>
        </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#EolianLandform">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GeomorphologicalRegionType"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Plain">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Air"/>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Height"/>
    <owl:Class rdf:ID="InversionLayer">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#TroposphereLayer"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Fjord">
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Halocline">
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanLayer"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="SubmarineCanyon">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Trench"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#AtmosphereLayerBoundary">
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/space.owl#LayerBoundary"/>
        </rdfs:subClassOf>
    </owl:Class>

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</owl:Class>
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    <owl:Class>
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rdf:about="file:/D:/SWEET/earth.owl#Stratosphere"/>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Mesosphere"/>
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    </owl:Class>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="PhoticZone">
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    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SeaSurfaceLayer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#HydrosphereLayer">
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Layer"/>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Hydrosphere"/>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Water"/>
      </owl:allValuesFrom>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
<owl:Class rdf:ID="Aquiclude">
  <owl:equivalentClass>
    <owl:Class rdf:ID="Aquifuge"/>
  </owl:equivalentClass>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ConfiningLayer"/>
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<owl:Class rdf:ID="LandWaterObject">
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    <owl:Class>
      <owl:complementOf>
        <owl:Class rdf:ID="Ocean"/>
      </owl:complementOf>
    </owl:Class>
  </rdfs:subClassOf>

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        </owl:Class>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="BodyOfWater"/>
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</owl:Class>
<owl:Class rdf:ID="KarstLandform">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GeomorphologicalRegionType"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/substance.owl#ChemicalSubstance"/>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GlobalPlanetaryLayers">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Layer"/>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
    </rdfs:subClassOf>
</owl:Class>
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        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Polygon"/>
<owl:Class rdf:ID="LowerMantle">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#MantleLayer"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class
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    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/space.owl#BodyBoundary"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Boundary"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="DepthHoarLayer">
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        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SnowLayer"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#DepthHoar"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>

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    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Inlet">
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    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#TerrestrialEcosystem">
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      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#EcosystemType"/>
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  </owl:Class>
  <owl:Class rdf:ID="SeaFloorWaterLayer">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanLayer"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isAdjacentTo"/>
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        <owl:allValuesFrom>
          <owl:Class rdf:ID="SeaFloor"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Lake">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SurfaceWater"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SaturatedZone">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="GroundWater"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="FluvialLandform">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GeomorphologicalRegionType"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Bedrock">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Rock"/>
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    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#CrustLayer"/>
  </owl:Class>

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</owl:Class>
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    <owl:Restriction>
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        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Troposphere"/>
        </owl:allValuesFrom>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
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    </owl:Class>
    <owl:Class rdf:ID="GlacialLandform">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GeomorphologicalRegionType"/>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:ID="Grassland">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TerrestrialEcosystem"/>
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        <owl:Class rdf:ID="BodyOfIce">
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            <owl:Restriction>
              <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
                </owl:onProperty>
                <owl:allValuesFrom>
                  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ice"/>
                </owl:allValuesFrom>
              </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
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            <rdfs:subClassOf>
              <owl:Restriction>
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rdf:resource="file:/D:/SWEET/earth.owl#Cryosphere"/>
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                  <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
                  </owl:onProperty>
                </owl:Restriction>
              </rdfs:subClassOf>
              <rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Body"/>
            </owl:Class>
            <owl:Class rdf:ID="Benthos">
              <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorWaterLayer"/>

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    <owl:Class rdf:about="file:/D:/SWEET/space.owl#Region"/>
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  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class>
          <owl:unionOf rdf:parseType="Collection">
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#PlanetarySurfaceLayer"/>
              <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#SeaFloorGroundLayer"/>
            </owl:unionOf>
          </owl:Class>
        </owl:allValuesFrom>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="ArcticClimateZone">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ClimateZoneType"/>
</owl:Class>
<owl:Class rdf:ID="Beach">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Sea">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#Wetland">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TerrestrialEcosystem"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#LithosphereLayer">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#GeosphereLayer"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
      </owl:onProperty>
      <owl:allValuesFrom>
        <owl:Class rdf:ID="Lithosphere"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>

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        </owl:allValuesFrom>
    </owl:Restriction>
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</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/space.owl#LayerBoundary">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Boundary"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="http://www.w3.org/2002/07/owl#Thing"/>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanLayer">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
            </owl:onProperty>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Ocean"/>
            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#HydrosphereLayer"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#WaterSurfaceLayer">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#PlanetarySurfaceLayer"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#HydrosphereLayer"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom>
                    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#WaterSurface"/>
                </owl:allValuesFrom>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isAdjacentTo"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#LandSurfaceLayer">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#CrustLayer"/>
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#PlanetarySurfaceLayer"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>

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        <owl:hasValue
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        >
0</owl:hasValue>
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    <owl:Restriction>
        <owl:allValuesFrom>
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        </owl:allValuesFrom>
        <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isAdjacentTo"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="WaterChannel">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SurfaceWater"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SolidEarth">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#Geosphere"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SnowLayer">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Snow"/>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CryosphereLayer"/>
            </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="IceCore">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#BodyOfIce"/>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:allValuesFrom>
                        <owl:Class>
                            <owl:unionOf rdf:parseType="Collection">
                                <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#LandRegion"/>
                                <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
                            </owl:unionOf>
                        </owl:Class>
                    </owl:allValuesFrom>
                </owl:Restriction>
            </rdfs:subClassOf>
        </owl:Class>
    </owl:Class>

```

```

        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="TropicalClimateZone">

    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ClimateZoneType"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#OceanRegion">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Ocean"/>
        </owl:allValuesFrom>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#hasEcosystemType"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#MarineEcosystem"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#BodyOfSeaIce">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#OceanRegion"/>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>

```



```

        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#SeaIce"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Thermosphere">
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >
500000</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >
85000</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="AbyssalHill">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
    </owl:Class>
    <owl:Class rdf:ID="Seamount">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
    </owl:Class>
    <owl:Class rdf:ID="BenticEcosystem">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#MarineEcosystem"/>
    </owl:Class>
    <owl:Class rdf:ID="Land_WaterBoundary_2D">
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Boundary"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Tropopause">
        <rdfs:subClassOf>

```

```

    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#Stratosphere"/>
        </owl:allValuesFrom>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerLowerBoundaryOf"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#AtmosphereLayerBoundary"/>
    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Troposphere"/>
      </owl:allValuesFrom>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerUpperBoundaryOf"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#MantleLayer">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Mantle"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#hasPart"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#GeosphereLayer"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Well">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SaturatedZone"/>
    </owl:Class>
    <owl:Class rdf:ID="SoilLayer">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
      </owl:Class>
      <owl:Class rdf:ID="SkinLayer">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
        </owl:Class>
        <owl:Class rdf:ID="VadozeZone">
          <rdfs:subClassOf>
            <owl:Class rdf:ID="UndergroundWater"/>
          </rdfs:subClassOf>
          <owl:equivalentClass>
            <owl:Class rdf:ID="UnsaturatedZone"/>
          </owl:equivalentClass>
        </owl:Class>
        <owl:Class rdf:ID="UpperAir">

```

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    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Mountain">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
              <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
              <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#SeaFloorGroundLayer"/>
            </owl:unionOf>
          </owl:Class>
        </owl:allValuesFrom>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#AtmosphereLayer">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
      </owl:onProperty>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Air"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
      </owl:onProperty>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Atmosphere"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Layer"/>
</owl:Class>
<owl:Class rdf:ID="TemperateClimateZone">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ClimateZoneType"/>

```

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</owl:Class>
<owl:Class rdf:ID="IntertidalZone">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Magnetosphere">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
</owl:Class>
<owl:Class rdf:ID="Litter">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
</owl:Class>
<owl:Class rdf:ID="CoreLayer">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#GeosphereLayer"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Peatland">
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Wetland"/>
</owl:Class>
<owl:Class rdf:ID="DesertClimateZone">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ClimateZoneType"/>
</owl:Class>
<owl:Class rdf:ID="BarrierBoundary">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#GroundWaterObjectBoundary"/>
</owl:Class>
<owl:Class rdf:ID="AgriculturalLands">
  <owl:equivalentClass>
    <owl:Class rdf:ID="Farmland"/>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="Land">
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#LandRegion"/>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/earth.owl#GeomorphologicalRegionType">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#RegionProperty"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#LandWaterSurface">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandwaterSurfaceLayer"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerUpperBoundaryOf"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#WaterSurface"/>
  </rdfs:subClassOf>
</owl:Class>

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    <owl:Class rdf:ID="Shoal">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
    </owl:Class>
    <owl:Class rdf:ID="Biosphere">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#GlobalPlanetaryLayers"/>
    </owl:Class>
    <owl:Class rdf:ID="ZoneOfAeration">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#UndergroundWater"/>
          </rdfs:subClassOf>
          <owl:equivalentClass>
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#UnsaturatedZone"/>
          </owl:equivalentClass>
        </owl:Class>
      </owl:Class>
      <owl:Class rdf:ID="Talik">
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#PermafrostZone"/>
              <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
              </owl:onProperty>
            </owl:Restriction>
          </rdfs:subClassOf>
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#CrustLayer"/>
                <owl:onProperty>
                  <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
                </owl:onProperty>
              </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Class rdf:about="file:/D:/SWEET/earth.owl#BodyOfGround"/>
            </rdfs:subClassOf>
          </owl:Class>
          <owl:Class rdf:ID="DryLandRegion">
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:onProperty>
                  <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
                </owl:onProperty>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
              </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandRegion"/>
          </owl:Class>

```

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<owl:Class rdf:about="file:/D:/SWEET/earth.owl#GeosphereLayer">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Geosphere"/>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Layer"/>
    </owl:Class>
    <owl:Class rdf:ID="PumpingWell">
      <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Well"/>
    </owl:Class>
    <owl:Class rdf:ID="PelagicEcosystem">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#MarineEcosystem"/>
      </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SeaFloorGroundLayer">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isAdjacentTo"/>
            </owl:onProperty>
            <owl:allValuesFrom>
              <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SeaFloor"/>
            </owl:allValuesFrom>
          </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#CrustLayer"/>
        </owl:Class>
        <owl:Class rdf:ID="SubsurfaceWater">
          <owl:equivalentClass>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#UndergroundWater"/>
            </owl:equivalentClass>
          </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#ConfinedAquifer">
          <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Aquifer"/>
          <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#ArtesianAquifer"/>
          </owl:Class>
        <owl:Class rdf:ID="RockGlacier">
          <rdfs:subClassOf>
            <owl:Class rdf:ID="Glacier"/>
          </rdfs:subClassOf>
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:onProperty>

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```

        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#contains"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#RockBody"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="WetlandRegion">
    <rdfs:subClassOf>
        <owl:Restriction>

            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandwaterSurfaceLayer"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandRegion"/>
        </owl:Class>
        <owl:Class rdf:ID="F-Region">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#Ionosphere"/>
            </owl:Class>
            <owl:Class rdf:ID="Sky">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
                </owl:Class>
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SurfaceWater">
                    <rdfs:subClassOf>
                        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#LandwaterRegion"/>
                    </rdfs:subClassOf>
                    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandWaterObject"/>
                    </rdfs:subClassOf>
                    <owl:Restriction>
                        <owl:onProperty>
                            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#surroundedBy_2D"/>
                            </owl:onProperty>
                        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandRegion"/>
                        </owl:Restriction>
                    </rdfs:subClassOf>
                </owl:Class>
                <owl:Class rdf:ID="AbyssalPlain">
                    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
                    </owl:Class>
                    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#LeakyConfiningLayer">
                        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ConfiningLayer"/>
                        </owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#Aquitard"/>

```

```

</owl:Class>
<owl:Class rdf:ID="River">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Stream"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cryosol"/>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#Troposphere">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
12000</owl:hasValue>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
/>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
0</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
  <owl:Class rdf:ID="Thermocline">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#OceanLayer"/>
    </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#IceLayer">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CryosphereLayer"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Stratosphere">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
50000</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
  </owl:Class>

```



```

        <owl:Restriction>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >
12000</owl:hasValue>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
            />
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Tundra_Ecosystem">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TerrestrialEcosystem"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#TopographicalRegion">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#LandwaterRegion">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
                    </owl:onProperty>
                    <owl:someValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandwaterSurfaceLayer"/>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandRegion"/>
        </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Ocean">
        <rdfs:subClassOf>
            <owl:Class>
                <owl:complementOf
rdf:resource="file:/D:/SWEET/earth.owl#LandWaterObject"/>
            </owl:Class>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#BodyOfWater"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifuge">
        <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#Aquiclude"/>
    </owl:Class>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ConfiningLayer"/>
    </owl:Class>
    <owl:Class rdf:ID="Desert_Ecosystem">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TerrestrialEcosystem"/>
    </owl:Class>
    <owl:Class rdf:ID="Core">
        <rdfs:subClassOf>
            <owl:Restriction>

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```

        <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
/>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
-6378000</owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
-2890000</owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#CoreLayer"/>
</owl:Class>
<owl:Class rdf:ID="Estuary">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#LandSurface">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#PlanetarySurface"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerUpperBoundaryOf"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Cave">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#hasEcosystemType"/>
            </owl:onProperty>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#CaveEcosystem"/>
        </owl:Restriction>
    </rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class>

```

```

        <owl:unionOf rdf:parseType="Collection">
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#SeaFloorGroundLayer"/>
        </owl:unionOf>
    </owl:Class>
</owl:allValuesFrom>
<owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
    </owl:onProperty>
</owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="UnconfinedWell">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Well"/>
</owl:Class>
<owl:Class rdf:ID="EstuarineWetland">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Wetland"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:someValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#OceanRegion"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#hasCommon2DBorderWith"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:someValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandRegion"/>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#hasCommon2DBorderWith"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#MonitoringWell">
            <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#Peizometer"/>
            <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Well"/>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#GroundWater">
            <rdfs:subClassOf>
                <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#UndergroundWater"/>
            </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#WaterTable">

```

```

    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#GroundWaterObjectBoundary"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#UnsaturatedZone">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#ZoneOfAeration"/>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#VadozeZone"/>
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#UndergroundWater"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="HydrothermalVents">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Boundary">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#GeometricalObject"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SeaSurfaceLayer">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#OceanLayer"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isAdjacentTo"/>
    </owl:onProperty>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#SeaSurface"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#WaterSurfaceLayer"/>
    </owl:Class>
    <owl:Class rdf:ID="Felsic">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Crust"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Glacier">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#BodyOfIce"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom>
    <owl:Class>
    <owl:unionOf rdf:parseType="Collection">
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#LandRegion"/>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#CoastalRegion"/>
    </owl:unionOf>
    </owl:Class>
    </owl:allValuesFrom>

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        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="AlpineClimateZone">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ClimateZoneType"/>
    </owl:Class>
    <owl:Class rdf:ID="PackIce">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaIceLayer"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
            </owl:onProperty>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#OceanRegion"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Mesosphere">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
/>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
50000</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
85000</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth">
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#PlanetaryRealm"/>
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#PlanetaryStructure"/>
    </owl:Class>

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    <owl:Class rdf:about="file:/D:/SWEET/space.owl#BodyBoundary">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Boundary"/>
    </owl:Class>
    <owl:Class rdf:ID="fiord">
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#Fjord"/>
    </owl:Class>
    <owl:Class rdf:ID="Savanna">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#Grassland"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#Ground_substance"/>
      <owl:Class rdf:ID="Dune">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
      </owl:Class>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Sediment"/>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Stream">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SurfaceWater"/>
      </owl:Class>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#CryosphereLayer">
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:allValuesFrom>
              <owl:Class>
                <owl:unionOf rdf:parseType="Collection">
                  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ice"/>
                  <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#Snow"/>
                </owl:unionOf>
              </owl:Class>
            </owl:allValuesFrom>
            <owl:onProperty>
              <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Cryosphere"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </rdfs:subClassOf>
  <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Cryosphere"/>
    <owl:onProperty>
      <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
    </owl:onProperty>
  </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Layer"/>
<rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#UndergroundWater">
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#SubsurfaceWater"/>

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    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
          </owl:onProperty>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandWaterObject"/>
      </owl:Class>
      <owl:Class rdf:ID="Iceberg">
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:onProperty>
              <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
              </owl:onProperty>
              <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#OceanRegion"/>
              </owl:Restriction>
            </rdfs:subClassOf>
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#BodyOfIce"/>
          </owl:Class>
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Lithosphere">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LithosphereLayer"/>
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >
0</owl:hasValue>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>
                </owl:Restriction>
              </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
/>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >
-150000</owl:hasValue>
              </owl:Restriction>
            </rdfs:subClassOf>
          </owl:Class>
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Farmland">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TerrestrialEcosystem"/>
            </owl:Class>

```

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<owl:Class rdf:ID="RiftValley">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#TectonicLandform"/>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#hasGeomorphologicalType"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorRegion"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#BodyOfWater">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
        </owl:onProperty>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Hydrosphere"/>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Body"/>
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
</owl:Class>
<owl:Class rdf:ID="Marsh">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#WetlandRegion"/>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#CoastalRegion"/>
</owl:Class>
<owl:Class rdf:ID="SedimentaryStructure">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
        </owl:onProperty>
      <owl:someValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Sediment"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Media"/>
  <rdfs:subClassOf>

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        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#BodyOfGround"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Exosphere">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#AtmosphereLayer"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
/>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >
500000</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#PlanetarySurfaceLayer">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Layer"/>
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#EcosystemType">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#RegionProperty"/>
    </owl:Class>
    <owl:Class rdf:ID="Asthenosphere">
        <owl:equivalentClass
rdf:resource="file:/D:/SWEET/earth.owl#UpperMantle_flowng"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Forest_Ecosystem">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TerrestrialEcosystem"/>
    </owl:Class>
    <owl:Class rdf:ID="Permafrost">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#PermafrostZone"/>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#inside"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#CrustLayer"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom>
                    <owl:Class>
                        <owl:unionOf rdf:parseType="Collection">
                            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ice"/>
                            <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#Rock"/>

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        <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#Soil"/>
        </owl:unionOf>
        </owl:Class>
    </owl:allValuesFrom>
    <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#CryosphereLayer"/>
</owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Crust">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasUpperBoundaryReferenceHeight"
/>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
0</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#CrustLayer"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
-40000</owl:hasValue>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/earth.owl#hasLowerBoundaryReferenceHeight"
/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SeaFloor">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/space.owl#LayerBoundary"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorWaterLayer"/>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerLowerBoundaryOf"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerUpperBoundaryOf"/>

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        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#SeaFloorGroundLayer"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="RechargeWell">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Well"/>
</owl:Class>
<owl:Class rdf:ID="Volcano">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TopographicalRegion"/>
    </owl:Class>
<owl:Class rdf:ID="UrbanLand">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#TerrestrialEcosystem"/>
    </owl:Class>
<owl:Class rdf:ID="ArtesianWell">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ConfinedWell"/>
    </owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#WaterSurface">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#PlanetarySurface"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#isLayerUpperBoundaryOf"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#WaterSurfaceLayer"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="PalustrineWetland">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Wetland"/>
</owl:Class>
<owl:Class rdf:ID="Mafic">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Crust"/>
</owl:Class>
<owl:Class rdf:ID="MediterraneanClimateZone">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#ClimateZoneType"/>
    </owl:Class>
<owl:Class rdf:ID="IceSheet">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#BodyOfSeaIce"/>
    </owl:Class>
<owl:Class rdf:ID="MangroveForest">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#Forest_Ecosystem"/>
    </owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#BodyOfGround">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Geosphere"/>
        </owl:Restriction>
    </owl:Class>

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        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isPartOf"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf rdf:resource="file:/D:/SWEET/space.owl#Body"/>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance"/>
            </owl:onProperty>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Ground_substance"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
    </owl:Class>
    <owl:Class rdf:ID="FreshwaterLake">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Lake"/>
    </owl:Class>
    <owl:Class rdf:ID="Continent">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandRegion"/>
    </owl:Class>
    <owl:Class rdf:ID="ActiveLayer">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
    </owl:Class>
    <owl:Class rdf:ID="Spring">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/earth.owl#Stream"/>
    </owl:Class>
    <owl:Class rdf:ID="DemersalEcosystem">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/earth.owl#MarineEcosystem"/>
    </owl:Class>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#hasCommon2DBorderWith">
        <rdfs:range rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>
        <rdfs:domain
rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#haslowerBoundary">
        <rdfs:domain rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
        <rdfs:range rdf:resource="file:/D:/SWEET/numerics.owl#Boundary"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:about="file:/D:/SWEET/space.owl#inside">
        <rdfs:range rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#hasEcosystemType">
        <rdfs:domain
rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>
        <rdfs:range rdf:resource="file:/D:/SWEET/earth.owl#EcosystemType"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasPorosity">

```

```

    <rdfs:domain>
      <owl:Class>
        <owl:unionOf rdf:parseType="Collection">
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
          <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#Porosity"/>
            <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#ConfiningLayer"/>
          </owl:unionOf>
        </owl:Class>
      </rdfs:domain>
      <rdfs:range rdf:resource="file:/D:/SWEET/property.owl#Porosity"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasPotentiometricSurface">
      <rdfs:range
rdf:resource="file:/D:/SWEET/property.owl#PotentiometricSurface"/>
      <rdfs:domain>
        <owl:Class>
          <owl:unionOf rdf:parseType="Collection">
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Well"/>
            <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#PotentiometricSurface"/>
          </owl:unionOf>
        </owl:Class>
      </rdfs:domain>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#hasGeomorphologicalType">
      <rdfs:domain
rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>
      <rdfs:range
rdf:resource="file:/D:/SWEET/earth.owl#GeomorphologicalRegionType"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/earth.owl#primarySubstance">
      <rdfs:domain rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
      <rdfs:range
rdf:resource="file:/D:/SWEET/substance.owl#ChemicalSubstance"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasHydraulicGradient">
      <rdfs:domain>
        <owl:Class>
          <owl:unionOf rdf:parseType="Collection">
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
            <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#HydraulicGradient"/>
          </owl:unionOf>
        </owl:Class>
      </rdfs:domain>
      <rdfs:range
rdf:resource="file:/D:/SWEET/property.owl#HydraulicGradient"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#surroundedBy_2D">
      <rdfs:range rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>

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```

    <rdfs:domain
rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasSeepageVelocity">
    <rdfs:range
rdf:resource="file:/D:/SWEET/property.owl#SeepageVelocity"/>
    <rdfs:domain>
    <owl:Class>
    <owl:unionOf rdf:parseType="Collection">
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Well"/>
    <rdf:Description
rdf:about="file:/D:/SWEET/property.owl#SeepageVelocity"/>
    </owl:unionOf>
    </owl:Class>
    </rdfs:domain>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasClimateZoneType">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>
    <rdfs:range
rdf:resource="file:/D:/SWEET/earth.owl#ClimateZoneType"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasLocation">
    <rdfs:range rdf:resource="file:/D:/SWEET/space.owl#Location"/>
    <rdfs:domain>
    <owl:Class>
    <owl:unionOf rdf:parseType="Collection">
    <rdf:Description
rdf:about="file:/D:/SWEET/space.owl#Location"/>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#GroundWater"/>
    </owl:unionOf>
    </owl:Class>
    </rdfs:domain>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:about="file:/D:/SWEET/space.owl#hasPart">
    <rdfs:range rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isLowerBoundaryOf">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/space.owl#LayerBoundary"/>
    <rdfs:range rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isAdjacentTo">
    <rdfs:range rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
    <rdfs:domain rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#hasUpperBoundary">
    <rdfs:range rdf:resource="file:/D:/SWEET/space.owl#LayerBoundary"/>
    <rdfs:domain rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#hasRegionBoundary">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/earth.owl#SurfaceRegion"/>

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```

    <rdfs:range rdf:resource="file:/D:/SWEET/numerics.owl#Polygon"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:about="file:/D:/SWEET/space.owl#isPartOf">
    <rdfs:range rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#isUpperBoundaryOf">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/space.owl#LayerBoundary"/>
    <rdfs:range rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:ID="hasPermeability">
    <rdfs:domain>
      <owl:Class>
        <owl:unionOf rdf:parseType="Collection">
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
          <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#ConfiningLayer"/>
            <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#Permeability"/>
          </owl:unionOf>
        </owl:Class>
      </rdfs:domain>
      <rdfs:range
rdf:resource="file:/D:/SWEET/property.owl#Permeability"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasDrawdown">
      <rdfs:range rdf:resource="file:/D:/SWEET/property.owl#Drawdown"/>
      <rdfs:domain>
        <owl:Class>
          <owl:unionOf rdf:parseType="Collection">
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Well"/>
            <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#Drawdown"/>
          </owl:unionOf>
        </owl:Class>
      </rdfs:domain>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="coveredBySubstance_temporary">
      <rdfs:range
rdf:resource="file:/D:/SWEET/substance.owl#ChemicalSubstance"/>
      <rdfs:domain rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
    </owl:ObjectProperty>

    <owl:ObjectProperty rdf:ID="hasSpecificCapacity">
      <rdfs:range
rdf:resource="file:/D:/SWEET/property.owl#SpecificCapacity"/>
      <rdfs:domain>
        <owl:Class>
          <owl:unionOf rdf:parseType="Collection">
            <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Well"/>
            <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#SpecificCapacity"/>
          </owl:unionOf>
        </owl:Class>
      </rdfs:domain>
    </owl:ObjectProperty>

```

```

<owl:ObjectProperty rdf:ID="hasUpperBoundaryHeight">
  <rdfs:range rdf:resource="file:/D:/SWEET/property.owl#Height"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="hasSpecificDischarge">
  <rdfs:range
rdf:resource="file:/D:/SWEET/property.owl#SpecificDischarge"/>
  <rdfs:domain>
    <owl:Class>
      <owl:unionOf rdf:parseType="Collection">
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Well"/>
        <rdf:Description
rdf:about="file:/D:/SWEET/property.owl#SpecificDischarge"/>
        </owl:unionOf>
      </owl:Class>
    </rdfs:domain>
  </owl:ObjectProperty>
<owl:ObjectProperty rdf:about="file:/D:/SWEET/space.owl#contains">
  <rdfs:domain rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
  <rdfs:range rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>

</owl:ObjectProperty>
<owl:DatatypeProperty rdf:ID="DatatypeProperty_1"/>
<owl:DatatypeProperty rdf:ID="hasDischarge">
  <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#float"/>
  <rdfs:domain>
    <owl:Class>
      <owl:unionOf rdf:parseType="Collection">
        <rdf:Description
rdf:about="file:/D:/SWEET/property.owl#Discharge"/>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#GroundWater"/>
      </owl:unionOf>
    </owl:Class>
  </rdfs:domain>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="hasRecharge">
  <rdfs:domain>
    <owl:Class>
      <owl:unionOf rdf:parseType="Collection">
        <rdf:Description
rdf:about="file:/D:/SWEET/property.owl#Recharge"/>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#GroundWater"/>
      </owl:unionOf>
    </owl:Class>
  </rdfs:domain>
  <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#float"/>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="hasHydraulicConductivity">
  <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#float"/>
  <rdfs:domain>
    <owl:Class>
      <owl:unionOf rdf:parseType="Collection">
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#ConfiningLayer"/>
        <rdf:Description
rdf:about="file:/D:/SWEET/property.owl#HydraulicConductivity"/>
        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#SaturatedZone"/>

```



```

        <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#UnsaturatedZone"/>
        </owl:unionOf>
    </owl:Class>
</rdfs:domain>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="hasLowerBoundaryHeight">
    <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#int"/>
    <rdfs:domain rdf:resource="file:/D:/SWEET/earth.owl#Aquifer"/>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="hasHydraulicHead">
    <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#int"/>
    <rdfs:domain>
        <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
                <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#HydraulicHead"/>
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Well"/>
            </owl:unionOf>
        </owl:Class>
    </rdfs:domain>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="hasTransmissivity">
    <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#float"/>
    <rdfs:domain>
        <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
                <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#Transmissivity"/>
            </owl:unionOf>
        </owl:Class>
    </rdfs:domain>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="hasStorativity">
    <rdfs:domain>
        <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Aquifer"/>
                <rdfs:Description
rdf:about="file:/D:/SWEET/property.owl#Storativity"/>
            </owl:unionOf>
        </owl:Class>
    </rdfs:domain>
    <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#float"/>
</owl:DatatypeProperty>
<property:Recharge rdf:ID="Recharge_2"/>
<Aquifer rdf:ID="UpperFloridanAquifer">
    <hasHydraulicHead
rdf:datatype="http://www.w3.org/2001/XMLSchema#int"
    >32</hasHydraulicHead>
    <hasLocation
rdf:resource="file:/D:/SWEET/space.owl#Lat31deg10min9sec_Long84deg49min
55sec"/>

```

```
<hasLowerBoundaryHeight
rdf:datatype="http://www.w3.org/2001/XMLSchema#int"
>200</hasLowerBoundaryHeight>
<hasDischarge rdf:datatype="http://www.w3.org/2001/XMLSchema#float"
>300.25</hasDischarge>
</Aquifer>
</rdf:RDF>

<!-- Created with Protege (with OWL Plugin 2.1 beta, Build 277)
http://protege.stanford.edu -->
```

property.owl

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="file:/D:/SWEET/property.owl#"
  xmlns:human_activities="file:/D:/SWEET/human_activities.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:j.0="file:/D:/SWEET/earth.owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:time="file:/D:/SWEET/time.owl#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:daml="http://www.daml.org/2001/03/daml+oil#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:units="file:/D:/SWEET/units.owl#"
  xmlns:numerics="file:/D:/SWEET/numerics.owl#"
  xml:base="file:/D:/SWEET/property.owl">
  <owl:Ontology rdf:about="file:/D:/SWEET/property.owl">
    <owl:imports rdf:resource="file:/D:/SWEET/units.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/numerics.owl"/>
    <owl:versionInfo
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
1.0</owl:versionInfo>
    <owl:imports rdf:resource="file:/D:/SWEET/human_activities.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/time.owl"/>
  </owl:Ontology>

  <owl:Class rdf:ID="ElectricityRelatedQuantity">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="PhysicalQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="AcousticRelatedQuantity">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SeepageVelocity">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/space.owl#Direction"/>
        </owl:allValuesFrom>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#hasDirection"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>

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```

        <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#meter_perSecond"/>
        </owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Class rdf:ID="VelocityFieldRelatedProperty"/>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="QualitativeMeasure"/>
<owl:Class rdf:ID="SignificantHeight">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Height"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="MassConcentration">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="MassConcentrationRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="VelocityPotential">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                </owl:onProperty>
                <owl:hasValue>
                    <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#meterSquare_perSecond"/>
                    </owl:hasValue>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Class
rdf:about="file:/D:/SWEET/property.owl#VelocityFieldRelatedProperty"/>
                </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="Population">
                <rdfs:subClassOf>
                    <owl:Class rdf:ID="Count"/>
                </rdfs:subClassOf>
                <rdfs:subClassOf>
                    <owl:Restriction>
                        <owl:allValuesFrom>
                            <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#Human"/>
                            </owl:allValuesFrom>
                        <owl:onProperty>
                            <owl:ObjectProperty rdf:ID="hasObjectOfCount"/>
                        </owl:onProperty>
                    </owl:Restriction>
                </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="Phase">
                <rdfs:subClassOf>
                    <owl:Restriction>

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```

        <owl:hasValue>
            <units:BaseUnit
rdf:about="file:/D:/SWEET/numerics.owl#radian"/>
        </owl:hasValue>
        <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="OscillationRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Distribution">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Quantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SecchiDepth">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Depth"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Radiation-MediumInteractionRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Speed">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#meter_perSecond"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="MotionRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="FireWeatherIndex">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Index"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Quantity"/>
<owl:Class rdf:ID="Recharge">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MotionRelatedQuantity"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#feetToPower3_perDay"/>

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```

        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/space.owl#Direction"/>
        </owl:allValuesFrom>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#hasDirection"/>
      </owl:Restriction>

    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="DewPointTemperature">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Temperature"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="GeotechnicalProperty">
    <rdfs:subClassOf>

      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SpecificCapacity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#feetToPower2_perDay"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SubstanceConcentration">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="SubstanceConcentrationRelatedQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Description">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Quantity"/>
  </owl:Class>
  <owl:Class rdf:ID="Value">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
  </owl:Class>

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```

    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#SubstanceConcentrationRelatedQuantity">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="CompositionRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Characteristics">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Quantity"/>
    </owl:Class>
    <owl:Class rdf:ID="PotentiometricSurface">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                </owl:onProperty>
                <owl:hasValue>
                    <units:BaseUnit rdf:about="file:/D:/SWEET/units.owl#meter"/>
                </owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
    <owl:equivalentClass>
        <owl:Class rdf:ID="PeizometricSurface"/>
    </owl:equivalentClass>
</owl:Class>
    <owl:Class rdf:ID="SpatialRange">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="SpatialExtentRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Precipitable">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="WaterConcentration"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="CloudForcing">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="RadiativeForcing"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Depth">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="VerticalExtent"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Plasticity">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="SolidMaterialProperty"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue>

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        <units:BaseUnit
rdf:about="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
        </owl:hasValue>
        <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Color">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="HydraulicGradient">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
<owl:Class rdf:ID="Geopotential">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue>
                <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#meterSquare_perSecondSquare"/>
            </owl:hasValue>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="GravitationalRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="DissolvedConcentration">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#MassConcentration"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>

                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>

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        <owl:hasValue>
            <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#kilogram_perMeterToPower3"/>
            </owl:hasValue>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Elevation">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Height"/>
    </rdfs:subClassOf>
    <owl:equivalentClass>
        <owl:Class rdf:ID="Altitude"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="DarcianVelocity">
    <owl:equivalentClass>
        <owl:Class rdf:ID="SpecificDischarge"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="Length">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="LinearExtent"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Irradiance">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue>
                <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#watt_perMeterSquare"/>
            </owl:hasValue>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </rdfs:subClassOf>
        <owl:Class rdf:ID="ElectromagneticRadiationRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Absorptance">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue>
                <units:ComplexUnit
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
            </owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    </rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
    </rdfs:subClassOf>

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</owl:Class>

<owl:Class rdf:about="file:/D:/SWEET/time.owl#Age">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/time.owl#TimeInterval"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="GeopotentialHeight">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#GravitationalRelatedQuantity"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Height"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Dissipation">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>
          <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#joule_perMeterSquare_perSecond"/>
          </owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Class rdf:ID="EnergyRelatedQuantity"/>
      </rdfs:subClassOf>
    </owl:Class>
  <owl:Class rdf:ID="Drawdown">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
          <owl:hasValue rdf:resource="file:/D:/SWEET/units.owl#meter"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
  <owl:Class rdf:ID="StandardizedPrecipitationIndex">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SaturationRatio">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#WaterConcentration"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>

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        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Quality">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
</owl:Class>
<owl:Class rdf:ID="Brightness">
    <rdfs:subClassOf
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#ElectromagneticRadiationRelatedQ
uantity"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue>
                <units:ComplexUnit
rdf:about="file:/D:/SWEET/numerics.owl#candella_perMeterSquare"/>
            </owl:hasValue>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Amplitude">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue rdf:resource="file:/D:/SWEET/units.owl#meter"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#OscillationRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Alkalinity">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="ChemicalQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Transmittance">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>

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    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="BarortopicStreamfunction">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:hasValue>
            <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#meterToPower3_perSecond"/>
            </owl:hasValue>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
          <owl:Class rdf:ID="Streamfunction"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="ExnerFunction">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="TimeRelatedQuantity">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
          <owl:hasValue>
            <units:BaseUnit rdf:about="file:/D:/SWEET/units.owl#second"/>
            </owl:hasValue>
          </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
          <owl:Class rdf:ID="ExtensiveQuantity"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="NorthAtlanticOscillationIndex">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="ElectricPotential">
      <rdfs:subClassOf>

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    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>
          <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#watt"/>
          </owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
rdf:resource="file:/D:/SWEET/property.owl#ElectricityRelatedQuantity"/>
</owl:Class>
<owl:Class rdf:ID="StageHeight">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Height"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="CropMoistureIndex">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="StaticTemperature">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="ScaleHeight">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Height"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/property.owl#WaterConcentration">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#MassConcentration"/>
  </owl:Class>
  <owl:Class rdf:ID="OpticalDepth">
    <owl:equivalentClass>
      <owl:Class rdf:ID="OpticalThickness"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="Viscosity">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#kilogram_perMeter_perSecond"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Class rdf:ID="MediumProperty"/>

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    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="EathquakeMagnitude">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>

  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#PhysicalQuantity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Quantity"/>
  </owl:Class>
  <owl:Class rdf:ID="MagneticField">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Field"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="MagnetismRelatedQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SolarRadiation">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#RadiativeForcing"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="RadiantEnergy">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Energy"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="CommonSenseClimateIndex">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="MagneticInduction">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MagnetismRelatedQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="ForestFireDangerIndex">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="ElectricConductivity">
    <owl:equivalentClass>
      <owl:Class rdf:ID="ElectromagneticConductivity"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="SpecificHeat">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue>

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        <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#joule_perKilogram_perKelvin"/>
        </owl:hasValue>
        <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#EnergyRelatedQuantity"/>
        </rdfs:subClassOf>
<rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MediumProperty"/>
        </rdfs:subClassOf>
</owl:Class>
        <owl:Class rdf:ID="Vorticity">
        <rdfs:subClassOf>

        <owl:Restriction>
        <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>
        <units:UnitDerivedByRaisingToPower
rdf:about="file:/D:/SWEET/units.owl#perSecond"/>
        </owl:hasValue>
        </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#VelocityFieldRelatedProperty"/>
        </rdfs:subClassOf>
</owl:Class>
        <owl:Class rdf:ID="FluidPotential">
        <owl:equivalentClass>
        <owl:Class rdf:ID="HydraulicHead"/>
        </owl:equivalentClass>
</owl:Class>
        <owl:Class rdf:ID="Stress">
        <rdfs:subClassOf>
        <owl:Class rdf:ID="PressureRelatedQuantity"/>
        </rdfs:subClassOf>
</owl:Class>
        <owl:Class rdf:ID="Humidity">
        <rdfs:subClassOf>
        <owl:Class rdf:ID="Moisture"/>
        </rdfs:subClassOf>
<rdfs:subClassOf>
        <owl:Restriction>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
        <owl:onProperty>

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        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#WaterConcentration"/>
</owl:Class>
<owl:Class rdf:ID="FieldStrength"/>
<owl:Class rdf:ID="CirculationIndex">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="AbsoluteVorticity">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Vorticity"/>
</owl:Class>
<owl:Class rdf:ID="Size">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#LinearExtent"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="BulkDensity">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Density"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SpecificYield">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                </owl:onProperty>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/space.owl#Direction">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Vector_3D"/>
</owl:Class>
<owl:Class rdf:ID="KaplanSstIndex">

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    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SpecificRetention">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
  </owl:Class>
  <owl:Class rdf:ID="LatentHeat">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Heat"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Bioavailability">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="BiologicalQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="BowenRatio">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="RadiationBalanceRelatedQuantity"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:ID="SensibleHeat"/>
        </owl:allValuesFrom>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasFirstOperand"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Ratio"/>
    </rdfs:subClassOf>
  </rdfs:subClassOf>

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        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#LatentHeat"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasSecondOperand"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Stability">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#PressureRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Turbidity">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/property.owl#SpatialExtentRelatedQuantity">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#ExtensiveQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Yield"/>
<owl:Class rdf:ID="Pattern">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
</owl:Class>
<owl:Class rdf:ID="RechargeArea">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Area"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Wavelength">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#LinearExtent"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SpecificPotentialEnergy">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue>
                <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#joule_perKilogram"/>
            </owl:hasValue>
        </owl:Restriction>
    </rdfs:subClassOf>

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    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#EnergyRelatedQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Structure">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
    </owl:Class>
  <owl:Class
rdf:about="file:/D:/SWEET/property.owl#RadiationBalanceRelatedQuantity"
>
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#ElectromagneticRadiationRelatedQ
uantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#VerticalExtent">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#LinearExtent"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#Height">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#VerticalExtent"/>
    </owl:Class>
  <owl:Class rdf:ID="SpecificHumidity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Humidity"/>
    </owl:Class>
  <owl:Class rdf:ID="Kp">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="GeomagneticIndex"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="PotentialVorticity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Vorticity"/>
    </owl:Class>
  <owl:Class rdf:ID="WaterHoldingCapacity">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
          <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      </rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#SolidMaterialProperty"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="HeatCapacity">

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    <rdfs:subClassOf>
      <owl:Class rdf:ID="TemperatureRelatedQuantity"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Capacity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Convergence">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>
          <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#meter_perSecondSquare"/>
        </owl:hasValue>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#VelocityFieldRelatedProperty"/>
    </rdfs:subClassOf>

  </owl:Class>
  <owl:Class rdf:ID="PressureThickness">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#PressureRelatedQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SubstanceContent">
    <rdfs:subClassOf>
      <owl:Class
rdf:resource="file:/D:/SWEET/property.owl#SubstanceConcentrationRelated
Quantity"/>
    </owl:Class>
  <owl:Class rdf:ID="ThermalDiffusivity">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>
          <units:ComplexUnit
rdf:resource="file:/D:/SWEET/units.owl#meterSquare_perSecond"/>
        </owl:hasValue>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MediumProperty"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Thickness">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#LinearExtent"/>
    </rdfs:subClassOf>

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</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#ExtensiveQuantity">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
</owl:Class>
<owl:Class rdf:ID="VirtualTemperature">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>

  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="TotalPressure">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="Pressure"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/property.owl#OscillationRelatedQuantity">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/numerics.owl#ScalarSubtraction"/>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#LinearExtent">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SpatialExtentRelatedQuantity"
/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
          <owl:hasValue rdf:resource="file:/D:/SWEET/units.owl#meter"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Divergence">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#meter_perSecondSquare"/>
          </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
          <owl:Class
rdf:about="file:/D:/SWEET/property.owl#VelocityFieldRelatedProperty"/>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="PseudoEquivalentTemperature">
          <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
          </rdfs:subClassOf>
        </owl:Class>
      </rdfs:subClassOf>
    </owl:Class>
  </rdfs:subClassOf>
</owl:Class>

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</owl:Class>
<owl:Class rdf:ID="MassContent">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>
          <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#kilogram_perMeterSquare"/>
          </owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MassConcentrationRelatedQuantity
"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="StorageCoefficient">
      <owl:equivalentClass>
        <owl:Class rdf:ID="Storativity"/>
      </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:ID="Shear">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#PressureRelatedQuantity"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="KineticEnergy">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Energy"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="SaturationDeficit">
      <rdfs:subClassOf>
        <owl:Class rdf:ID="MassConcentration"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="SaturationDeficit">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:hasValue>
            <units:kilogram_perMeterToPower3"/>
          </owl:hasValue>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MagnetismRelatedQuantity">
      <rdfs:subClassOf>
        <owl:Class
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
        </owl:Class>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Pressure">
        <rdfs:subClassOf>

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    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#PressureRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Health">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#BiologicalQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/units.owl#ComplexUnit"/>
<owl:Class rdf:ID="State">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
</owl:Class>
<owl:Class rdf:ID="HallConductivity">
    <rdfs:subClassOf>
    <owl:Class rdf:ID="Conductivity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/property.owl#EnergyRelatedQuantity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
</owl:Class>
<owl:Class rdf:ID="Composition">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#CompositionRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/time.owl#SunshineDuration">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/time.owl#TimeInterval"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="AerodynamicsRelatedQuantity">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MotionRelatedQuantity"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#ChemicalQuantity">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>

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        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Quantity"/>
    </owl:Class>
    <owl:Class rdf:ID="Exotic">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
    </owl:Class>
    <owl:Class rdf:ID="GravityField">
        <rdfs:subClassOf
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#GravitationalRelatedQuantity"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/numerics.owl#Field"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#PressureRelatedQuantity">
        <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue>
                <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#pascal"/>
            </owl:hasValue>
        </owl:hasValue>
        <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="IntensiveQuantity"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Anisotropy">
        <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="BruntVaisalaFrequency">
        <rdfs:subClassOf>
        <owl:Class rdf:ID="Frequency"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="BlockingIndex">
        <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="ElectricField">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/numerics.owl#Field"/>

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    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#ElectricityRelatedQuantity"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#SolidMaterialProperty">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MediumProperty"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="BarometricAltitude">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Altitude"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Momentum">
    <rdfs:subClassOf>
    <owl:Class rdf:ID="MassRelatedQuantity"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MotionRelatedQuantity"/>
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    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    <owl:hasValue>
    <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#kilogram_meter_perSecond"/>
    </owl:hasValue>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Classification">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Quantity"/>
    </owl:Class>
    <owl:Class rdf:ID="ThermalConductivity">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:hasValue>
    <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#watt_perMeter_perKelvin"/>
    </owl:hasValue>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MediumProperty"/>
    </rdfs:subClassOf>

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</owl:Class>
<owl:Class rdf:ID="Rainfall">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#VerticalExtent"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#SensibleHeat">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Heat"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="http://www.w3.org/2002/07/owl#Thing"/>
<owl:Class rdf:ID="PotentialDensity">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Density"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="AtmosphericPressure">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Pressure"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/time.owl#Hydroperiod">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/time.owl#TimeInterval"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="PotentialEnergy">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Energy"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#HydraulicHead">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/property.owl#Depth"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Height"/>
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#FluidPotential"/>
        </owl:Class>
    <owl:Class rdf:ID="UniformityCoefficient">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:onProperty>
              <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                </owl:onProperty>
              <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
                </owl:Restriction>
            </rdfs:subClassOf>
          </owl:Class>
    <owl:Class rdf:ID="SurfaceMoistureIndex">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
      </rdfs:subClassOf>

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</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#Streamfunction">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#VelocityFieldRelatedProperty"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#meterToPower3_perSecond"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="DeicedTemperature">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="F10.7">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Irradiance"/>
      </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#CompositionRelatedQuantity">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
      </owl:Class>
    <owl:Class rdf:ID="Salinity">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
          <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
          </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasAssociatedSubstance"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Salt"/>
            </owl:Restriction>
          </rdfs:subClassOf>
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#MassConcentration"/>
          </owl:Class>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#TemperatureRelatedQuantity">
          <rdfs:subClassOf>
            <owl:Restriction>

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        <owl:hasValue>
          <units:BaseUnit rdf:about="file:/D:/SWEET/units.owl#kelvin"/>
        </owl:hasValue>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
      </owl:Class>
      <owl:Class rdf:ID="PseudoEquivalentPotentialTemperature">
        <rdfs:subClassOf>
          <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:ID="MoleFraction">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SubstanceConcentrationRelated
Quantity"/>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
            <owl:onProperty>
              <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
              </owl:onProperty>
            </owl:Restriction>

          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Capacity">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
          </owl:Class>
          <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MassRelatedQuantity">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
            </owl:Class>
            <owl:Class rdf:ID="PotentialTemperature">
              <rdfs:subClassOf>
                <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
              </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="AreaOfFlow">
              <rdfs:subClassOf>
                <owl:Class rdf:about="file:/D:/SWEET/property.owl#Area"/>
              </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="AmbientNoise">
              <rdfs:subClassOf>
                <owl:Class rdf:ID="Noise"/>
              </rdfs:subClassOf>
            </owl:Class>
          </owl:Class>
        </owl:Class>
      </owl:Class>
    </owl:Class>
  </owl:Class>

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<owl:Class rdf:ID="Reflectivity">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/units.owl#UnitDerivedByRaisingToPower"/>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#GeomagneticIndex">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#MagnetismRelatedQuantity"/>
  </owl:Class>
  <owl:Class rdf:ID="DryBulbTemperature">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Omega">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MotionRelatedQuantity"/>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue>
        <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#pascal_perSecond"/>
      </owl:hasValue>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
  <owl:Class rdf:ID="StaticPressure">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Pressure"/>
  </owl:Class>
  <owl:Class rdf:ID="EquivalentTemperature">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
    </rdfs:subClassOf>
  </owl:Class>

```

```

    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#PeizometricSurface">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#PotentiometricSurface"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:hasValue rdf:resource="file:/D:/SWEET/units.owl#meter"/>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
    </owl:Class>
    <owl:Class rdf:ID="SigmaT">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Density"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="DischargeArea">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Area"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="DegreeDay">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#TemperatureRelatedQuantity"/>
    </owl:Class>
    <owl:Class rdf:ID="Habitat">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SpatialRange"/>
    </owl:Class>
    <owl:Class rdf:ID="RelativeVorticity">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Vorticity"/>
    </owl:Class>
    <owl:Class rdf:ID="Biomass">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#BiologicalQuantity"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Frequency">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#OscillationRelatedQuantity"/>

```

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    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
          <owl:hasValue>
            <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#hertz"/>
            </owl:hasValue>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="DewPointDepression">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasFirstOperand"/>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#DryBulbTemperature"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#ScalarSubtraction"/>
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasSecondOperand"/>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#DewPointTemperature"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="TerrainConductivity">
      <owl:equivalentClass>
        <owl:Class
rdf:about="file:/D:/SWEET/property.owl#ElectromagneticConductivity"/>
        </owl:equivalentClass>
      </owl:Class>
    <owl:Class rdf:ID="Radiance">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:hasValue>
            <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#watt_perMeterSquare_perSteradian"/>
            </owl:hasValue>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      <rdfs:subClassOf>

```

```

    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#ElectromagneticRadiationRelatedQ
uantity"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Velocity">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#meter_perSecond"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MotionRelatedQuantity"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#hasDirection"/>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/space.owl#Direction"/>
    </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="WetBulbTemperature">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Emissivity">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#ElectromagneticRadiationRelatedQ
uantity"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
    </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Interval"/>
    <owl:Class rdf:ID="SeaState">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/property.owl#State"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#GravitationalRelatedQuantity">

```



```

    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#RadiativeForcing">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#RadiationBalanceRelatedQuantity"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#watt_perMeterSquare"/>
    </owl:Restriction>
    </rdfs:subClassOf>

    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/time.owl#TimeInterval">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Interval"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#TimeRelatedQuantity"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Storativity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#StorageCoefficient"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="ElectromagneticFieldRelatedQuantity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
    </owl:Class>
    <owl:Class rdf:ID="HydraulicConductivity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SolidMaterialProperty"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#meter_perSecond"/>
    <owl:onProperty>

```

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        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#Temperature">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#TemperatureRelatedQuantity"/>
    </owl:Class>
    <owl:Class rdf:ID="Consistence">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SolidMaterialProperty"/>
            </owl:Class>
            <owl:Class rdf:ID="CrossSection">
                <rdfs:subClassOf>
                    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Area"/>
                </rdfs:subClassOf>
                <rdfs:subClassOf>
                    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
                </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:about="file:/D:/SWEET/property.owl#Noise">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#AcousticRelatedQuantity"/>
                </rdfs:subClassOf>
                <owl:Restriction>
                    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#watt_perMeterSquare"/>
                    <owl:onProperty>
                        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                        </owl:onProperty>
                    </owl:Restriction>
                </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="Impedance">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
                </owl:Class>
                <owl:Class rdf:ID="SpecificGravitationalPotentialEnergy">
                    <rdfs:subClassOf>
                        <owl:Restriction>
                            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#joule_perKilogram"/>
                            <owl:onProperty>

```

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        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#EnergyRelatedQuantity"/>
</owl:Class>
    <owl:Class rdf:ID="DischargeVelocity">
        <owl:equivalentClass>
            <owl:Class
rdf:about="file:/D:/SWEET/property.owl#SpecificDischarge"/>
            </owl:equivalentClass>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#OpticalThickness">
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
                    <owl:onProperty>
                        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                        </owl:onProperty>
                    </owl:Restriction>
                </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
            </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="Time">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#TimeRelatedQuantity"/>
            </owl:Class>
            <owl:Class rdf:ID="Level">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Quantity"/>
                </owl:Class>
                <owl:Class rdf:ID="FineStructure">
                    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Structure"/>
                    </owl:Class>
                    <owl:Class rdf:ID="Porosity">
                        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SolidMaterialProperty"/>
                        <rdfs:subClassOf>
                            <owl:Restriction>
                                <owl:onProperty>
                                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                                    </owl:onProperty>
                                <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
                                </owl:Restriction>
                            </rdfs:subClassOf>
                        </owl:Class>
                        <owl:Class rdf:ID="PedersenConductivity">

```

```

    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Conductivity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Fertility">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#BiologicalQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#Altitude">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Height"/>
  </owl:Class>
  <owl:Class rdf:ID="WindIndex">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#Density">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#kilogram_perMeterToPower3"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MassConcentrationRelatedQuantity
"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class
rdf:about="file:/D:/SWEET/property.owl#ElectromagneticConductivity">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#TerrainConductivity"/>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#ElectricConductivity"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#milli_ohm_perMeter"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="MeridionalOvertuningStreamfunction">
    <rdfs:subClassOf>

```

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        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#meterToPower3_perSecond"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Streamfunction"/>
    </owl:Class>
    <owl:Class rdf:ID="Pigment">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/property.owl#Color"/>
    </owl:Class>
    <owl:Class rdf:ID="Albedo">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                </owl:onProperty>
                <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <owl:equivalentClass>
            <owl:Class rdf:ID="Reflectance"/>
        </owl:equivalentClass>
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="RelativeHumidity">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Humidity"/>
    </owl:Class>
    <owl:Class rdf:ID="DragCoefficient">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#AerodynamicsRelatedQuantity"/>
    >
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="TotalTemperature">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Temperature"/>
    </owl:Class>

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```

    <owl:Class rdf:about="file:/D:/SWEET/property.owl#MediumProperty">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MassConcentrationRelatedQuantity
">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#MassRelatedQuantity"/>
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#CompositionRelatedQuantity"/>
    </owl:Class>
    <owl:Class rdf:ID="ErtelPotentialVorticity">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Vorticity"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
          <owl:hasValue>
            <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#perKilogram_meterSquare_perSecond_k
elvin"/>
          </owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#ElectromagneticRadiationRelatedQ
uantity">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
    </owl:Class>
    <owl:Class rdf:ID="Transmissivity">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#GeotechnicalProperty"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
          <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#feetToPower2_perDay"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Texture">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SolidMaterialProperty"/>
      <rdfs:subClassOf>
        <owl:Restriction>

          <owl:onProperty>

```

```

<owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
  </owl:onProperty>
  <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
  </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="GeoMagneticField">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#MagneticField"/>
  </owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#IntensiveQuantity">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
  </owl:Class>
<owl:Class rdf:ID="HydrostaticPressure">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Pressure"/>
  </owl:Class>
<owl:Class rdf:ID="WindChill">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Temperature"/>
  </owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/property.owl#VelocityFieldRelatedProperty">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MotionRelatedQuantity"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Discharge">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MotionRelatedQuantity"/>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#feetToPower3_perDay"/>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#hasDirection"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/space.owl#Direction"/>
            </owl:Restriction>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="Extent">

```

```

    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#LinearExtent"/>
    </owl:Class>
    <owl:Class rdf:ID="Spectrum">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
    </owl:Class>
    <owl:Class rdf:ID="Permeability">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SolidMaterialProperty"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:hasValue rdf:resource="file:/D:/SWEET/units.owl#darcy"/>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Distance">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#LinearExtent"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Heat">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Energy"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="OxygenDemand">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#BiologicalQuantity"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Productivity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
    </owl:Class>
    <owl:Class rdf:ID="Topography">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Height"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#MotionRelatedQuantity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
    </owl:Class>
    <owl:Class rdf:ID="Ceiling">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#VerticalExtent"/>
    </owl:Class>
    <owl:Class rdf:ID="Volume">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SpatialExtentRelatedQuantity"
/>
    <rdfs:subClassOf>

```



```

    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>
          <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#meter_toPower3"/>
          </owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="ExchangeCapacity">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
            <owl:hasValue>
              <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#perKilogram_mole"/>
              </owl:hasValue>
            </owl:Restriction>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="Bathymetry">
          <rdfs:subClassOf rdf:resource="file:/D:/SWEET/property.owl#Depth"/>
        </owl:Class>
        <owl:Class rdf:ID="HeatEnergy">
          <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#Heat"/>
          </owl:Class>
        <owl:Class rdf:ID="TotalElectronContent">
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                </owl:onProperty>
                <owl:hasValue>
                  <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#dimensionlessUnit_perMeterSquare"/>
                  </owl:hasValue>
                </owl:Restriction>
              </rdfs:subClassOf>
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SubstanceContent"/>
            </owl:Class>
            <owl:Class rdf:ID="FieldCapacity">
              <rdfs:subClassOf>
                <owl:Restriction>
                  <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
                  </owl:hasValue>
                <owl:onProperty>
                  <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                  </owl:onProperty>
                </owl:Restriction>
              </rdfs:subClassOf>
            </owl:Class>
          </rdfs:subClassOf>
        </owl:Class>
      </rdfs:subClassOf>
    </owl:Class>
  </owl:Class>

```

```

        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#WaterConcentration"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Capacity"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/units.owl#BaseUnit"/>
    <owl:Class rdf:ID="BrightnessTemperature">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Temperature"/>
        </owl:Class>
        <owl:Class rdf:ID="Microstructure">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Structure"/>
            </owl:Class>
            <owl:Class rdf:ID="DifferentialPressure">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#PressureRelatedQuantity"/>
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#ScalarSubtraction"/>
                <rdfs:subClassOf>
                    <owl:Restriction>
                        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#Pressure"/>
                        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasFirstOperand"/>
                        </owl:Restriction>
                    </rdfs:subClassOf>
                    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#AerodynamicsRelatedQuantity"/>
                    </rdfs:subClassOf>
                    <owl:Restriction>
                        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#Pressure"/>
                        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasSecondOperand"/>
                        </owl:Restriction>
                    </rdfs:subClassOf>
                </owl:Class>
                <owl:Class rdf:about="file:/D:/SWEET/property.owl#Area">
                    <rdfs:subClassOf>
                        <owl:Restriction>
                            <owl:hasValue>
                                <units:UnitDerivedByRaisingToPower
rdf:about="file:/D:/SWEET/units.owl#meter_square"/>
                                </owl:hasValue>
                            <owl:onProperty>
                                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                                </owl:onProperty>
                            </owl:Restriction>
                        </rdfs:subClassOf>
                    </owl:Class>
                </owl:Class>
            </owl:Class>
        </owl:Class>
    </owl:Class>

```

```

    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#SpatialExtentRelatedQuantity"
/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#Index">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Quantity"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Insolation">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#watt_perMeterSquare"/>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#ElectromagneticRadiationRelat
edQuantity"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Reflectance">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
      </rdfs:subClassOf>
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#Albedo"/>
    </owl:Class>
    <owl:Class rdf:ID="pH">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#ChemicalQuantity"/>
    </owl:Class>
    <owl:Class rdf:ID="Mass">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#MassRelatedQuantity"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
            </owl:onProperty>
          <owl:hasValue>
            <units:BaseUnit
rdf:about="file:/D:/SWEET/units.owl#kilogram"/>

```

```

        </owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#Conductivity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#MediumProperty"/>
    </owl:Class>
    <owl:Class rdf:ID="Roughness">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Description"/>
        </owl:Class>
        <owl:Class rdf:ID="PhotolysisRate">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#CompositionRelatedQuantity"/>
            </owl:Class>
            <owl:Class rdf:ID="LeafAreaIndex">
                <rdfs:subClassOf rdf:resource="file:/D:/SWEET/property.owl#Index"/>
            </owl:Class>
            <owl:Class rdf:ID="ExtinctionCoefficient">
                <rdfs:subClassOf>
                    <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
                </rdfs:subClassOf>
                <rdfs:subClassOf>
                    <owl:Restriction>
                        <owl:onProperty>
                            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
                            </owl:onProperty>
                            <owl:hasValue>
                                <units:UnitDerivedByRaisingToPower
rdf:about="file:/D:/SWEET/units.owl#perMeter"/>
                                </owl:hasValue>
                            </owl:Restriction>
                        </rdfs:subClassOf>
                    </owl:Class>
                    <owl:Class
rdf:about="file:/D:/SWEET/property.owl#BiologicalQuantity">
                        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Quantity"/>
                        </owl:Class>
                        <owl:Class rdf:ID="BenthicIndex">
                            <rdfs:subClassOf rdf:resource="file:/D:/SWEET/property.owl#Index"/>
                        </owl:Class>
                        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Count">
                            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Quantity"/>
                            <rdfs:subClassOf>
                                <owl:Restriction>
                                    <owl:onProperty>
                                        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasUnit"/>
                                        </owl:onProperty>
                                        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
                                        </owl:Restriction>
                                    </owl:Restriction>
                                </owl:Restriction>
                            </owl:Class>
                        </owl:Class>
                    </owl:Class>
                </owl:Class>
            </owl:Class>
        </owl:Class>
    </owl:Class>

```

```

    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#IntensiveQuantity"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/property.owl#SpecificDischarge">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#VelocityFieldRelatedProperty"
/>
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#DarcianVelocity"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/units.owl#meter_perSecond"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/space.owl#hasDirection"/>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/space.owl#Direction"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/property.owl#DischargeVelocity"/>
  </owl:Class>
  <owl:Class rdf:ID="EquivalentThickness">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Thickness"/>
  </owl:Class>
  <owl:Class rdf:ID="LiquidWaterEquivalent">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#WaterConcentration"/>
  </owl:Class>
  <owl:Class rdf:ID="NorthPacificOscillationIndex">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/property.owl#Index"/>
  </owl:Class>
  <owl:Class rdf:ID="HydroPattern">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Pattern"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasAssociatedSubstance"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>

```

```

<owl:Class rdf:ID="Type"/>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#Energy">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
        </owl:onProperty>
        <owl:hasValue>
          <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#joule"/>
          </owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#EnergyRelatedQuantity"/>
    </owl:Class>
    <owl:Class rdf:ID="HumidityIndex">
      <rdfs:subClassOf rdf:resource="file:/D:/SWEET/property.owl#Index"/>
    </owl:Class>
    <owl:Class rdf:ID="Visibility">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#Radiation-
MediumInteractionRelatedQuantity"/>
      </owl:Class>
      <owl:Class rdf:ID="Inductance">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/property.owl#ElectromagneticFieldRelatedQu
antity"/>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:onProperty>
              <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit"/>
              </owl:onProperty>
              <owl:hasValue>
                <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#henry"/>
                </owl:hasValue>
              </owl:Restriction>
            </rdfs:subClassOf>
          </owl:Class>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/property.owl#hasObjectOfCount">
            <rdfs:range rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
            <rdfs:domain rdf:resource="file:/D:/SWEET/property.owl#Count"/>
          </owl:ObjectProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasDefaultUnit">
            <rdfs:range rdf:resource="file:/D:/SWEET/units.owl#ComplexUnit"/>
            <rdfs:domain rdf:resource="file:/D:/SWEET/numerics.owl#Quantity"/>
          </owl:ObjectProperty>
          <owl:ObjectProperty rdf:about="file:/D:/SWEET/numerics.owl#hasUnit">
            <rdfs:domain rdf:resource="file:/D:/SWEET/numerics.owl#Quantity"/>
          </owl:ObjectProperty>
          <owl:DatatypeProperty rdf:ID="hasDischarge">
            <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#float"/>

```

```

    </owl:DatatypeProperty>
    <owl:FunctionalProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasValue">
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#DatatypeProperty"/>
    </owl:FunctionalProperty>
    <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#siemence_perMeter"/>
    <units:ComplexUnit
rdf:about="file:/D:/SWEET/units.owl#amper_perMeter"/>
    <Discharge rdf:ID="Discharge_1">
    <j.0:hasDischarge
rdf:datatype="http://www.w3.org/2001/XMLSchema#float"
    >0.03</j.0:hasDischarge>
    </Discharge>
    <units:BaseUnit rdf:about="file:/D:/SWEET/units.owl#steradian"/>
</rdf:RDF>

<!-- Created with Protege (with OWL Plugin 2.1 beta, Build 277)
http://protege.stanford.edu -->

```

process.owl

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns:phenomena="file:/D:/SWEET/phenomena.owl#"
  xmlns="file:/D:/SWEET/process.owl#"
  xmlns:human_activities="file:/D:/SWEET/human_activities.owl#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:space="file:/D:/SWEET/space.owl#"
  xmlns:numerics="file:/D:/SWEET/numerics.owl#"
  xmlns:property="file:/D:/SWEET/property.owl#"
  xmlns:earth="file:/D:/SWEET/earth.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:daml="http://www.daml.org/2001/03/daml+oil#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:units="file:/D:/SWEET/units.owl#"
  xml:base="file:/D:/SWEET/process.owl">
  <owl:Ontology rdf:about="file:/D:/SWEET/process.owl">
    <owl:imports rdf:resource="file:/D:/SWEET/property.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/earth.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/numerics.owl"/>
    <owl:versionInfo
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
  >
1.0</owl:versionInfo>
    <owl:imports rdf:resource="file:/D:/SWEET/units.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/space.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/human_activities.owl"/>
  </owl:Ontology>
  <owl:Class rdf:about="http://www.w3.org/2002/07/owl#Thing"/>
  <owl:Class rdf:ID="Wave">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Oscillation"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Scavenging">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="EcologicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Decomposition">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="BiologicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Parasitism">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
  </owl:Class>
  <owl:Class rdf:ID="Competition">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
  </owl:Class>
  <owl:Class rdf:ID="Strain">

```



```

    <rdfs:subClassOf>
      <owl:Class rdf:ID="MechanicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SystemStateChangePattern">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="SystemCharacteristic"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Feeding">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#BiologicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Convection">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Transport"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Excitation">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Medium-WaveInteractionProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="InertialWave">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Wave"/>
  </owl:Class>
  <owl:Class rdf:ID="Fault">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Strain"/>
  </owl:Class>
  <owl:Class rdf:ID="Condition">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#SystemCharacteristic"/>
  </owl:Class>
  <owl:Class rdf:ID="Hydration">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="SubstanceConcentrationChangeProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Evapotranspiration">
    <owl:equivalentClass>
      <owl:Class>
        <owl:unionOf rdf:parseType="Collection">
          <owl:Class rdf:ID="Evaporation"/>
          <owl:Class rdf:ID="Transpiration"/>
        </owl:unionOf>
      </owl:Class>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="Rotation">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Motion"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Consumption">
    <rdfs:subClassOf>

```

```

    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#BiologicalProcess"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Adaptation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
</owl:Class>
<owl:Class rdf:ID="Melt">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="StateOfMatterChangeEvent"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Transmit">
    <owl:equivalentClass>
        <owl:Class rdf:ID="Transmission"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/process.owl#Evaporation">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#StateOfMatterChangeEvent"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Thermosteric">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="ThermalProcess"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="CapillaryWave">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="GravitationalProcess"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Wave"/>
</owl:Class>
<owl:Class rdf:ID="FeedingHabitat">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
</owl:Class>
<owl:Class rdf:ID="Deformation">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#MechanicalProcess"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Interflow">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/process.owl#Motion"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="KarstProcess">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="GeologicalProcess"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="GravityWave">
    <rdfs:subClassOf>

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    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GravitationalProcess"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Wave"/>
</owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#StateOfMatterChangeEvent">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="PhysicalProcess"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Discharge">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Photosynthesis">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#BiologicalProcess"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Pump">
    <owl:equivalentClass>
        <owl:Class rdf:ID="Pumping"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/process.owl#Transport"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="CoriolisEffect">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GravitationalProcess">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Exchange">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/process.owl#Transport"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Succession">
    <rdfs:subClassOf>
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Transport">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>

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    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="InternalWave">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Wave"/>
  </owl:Class>
  <owl:Class rdf:ID="Evaporate">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#Evaporation"/>
  </owl:Class>
  <owl:Class rdf:ID="Magnetism">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SecondaryProduction">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
  </owl:Class>
  <owl:Class rdf:ID="Fluctuation">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Variation"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Fixation">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="ChemicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Stability">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#SystemStateChangePattern"/>
  </owl:Class>
  <owl:Class rdf:ID="Sedimentation">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GeologicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Subsidence">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#MechanicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/process.owl#Variation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#SystemStateChangePattern"/>
  </owl:Class>
  <owl:Class rdf:ID="Diffusion">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/process.owl#Motion"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Flare">
    <owl:equivalentClass>

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    <owl:Class rdf:ID="Flaring"/>
  </owl:equivalentClass>
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/process.owl#Motion">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Advection">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Transport"/>
      </owl:Class>
      <owl:Class rdf:ID="AcousticWave">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Wave"/>
      </owl:Class>
      <owl:Class rdf:ID="Denitrification">
        <rdfs:subClassOf>
          <owl:Class
rdf:about="file:/D:/SWEET/process.owl#SubstanceConcentrationChangeProce
ss"/>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="SpeciesRecruitment">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
          </owl:Class>
          <owl:Class rdf:ID="GeothermalProcess">
            <rdfs:subClassOf>
              <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
              </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="Attenuation">
              <rdfs:subClassOf>
                <owl:Class rdf:about="file:/D:/SWEET/process.owl#Medium-
WaveInteractionProcess"/>
                </rdfs:subClassOf>
              </owl:Class>
              <owl:Class rdf:ID="Post-breeding">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
                </owl:Class>
                <owl:Class rdf:ID="Emission">
                  <rdfs:subClassOf>
                    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
                    </rdfs:subClassOf>
                  </owl:Class>
                  <owl:Class
rdf:about="file:/D:/SWEET/process.owl#SubstanceConcentrationChangeProce
ss">
                    <rdfs:subClassOf>

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    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="Mutualism">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Scattering">
    <rdfs:subClassOf
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Medium-
WaveInteractionProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Selection">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Trend">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Variation"/>
    </owl:Class>
    <owl:Class rdf:ID="Migration">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Dispersion">
    <rdfs:subClassOf
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Medium-
WaveInteractionProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Heating">
    <rdfs:subClassOf
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ThermalProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Retardation">
    <rdfs:subClassOf
    <owl:Class rdf:ID="GeochemicalProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Reflect">
    <owl:equivalentClass>
    <owl:Class rdf:ID="Reflection"/>
    </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:ID="Fold">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Strain"/>
    </owl:Class>
    <owl:Class rdf:ID="FluvialProcess">
    <rdfs:subClassOf
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GeologicalProcess"/>
    </rdfs:subClassOf>
    </owl:Class>

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    <owl:Class rdf:ID="RangeChanges">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Shift">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Variation"/>
    </owl:Class>
    <owl:Class rdf:ID="Runoff">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="Overflow">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="Corrosion">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="Entrainment">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Transport"/>
    </owl:Class>
    <owl:Class rdf:ID="Attenuate">
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#Attenuation"/>
    </owl:Class>
    <owl:Class rdf:ID="Scatter">
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#Scattering"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#MechanicalProcess">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="EolianProcess">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GeologicalProcess"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="Excretion">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#BiologicalProcess"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="Decline">

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    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Variation"/>
    </owl:Class>
    <owl:Class rdf:ID="TectonicProcess">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GeologicalProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Transpiration">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Evaporation"/>
    <owl:onProperty>
    <owl:ObjectProperty rdf:ID="hasAssociatedPhenomena"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="http://www.w3.org/2002/07/owl#Thing"/>
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#BiologicalProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Mutation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="CommonIonEffect">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GeochemicalProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#PhysicalProcess">
    <rdfs:subClassOf>
    <owl:Class rdf:ID="Process"/>
    </rdfs:subClassOf>

    </owl:Class>
    <owl:Class rdf:ID="Absorption">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#PhysicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Burning">
    <owl:equivalentClass>
    <owl:Class rdf:ID="Burn"/>
    </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#BiologicalProcess">

    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Process"/>
    </owl:Class>
    <owl:Class rdf:ID="MaterialDisintegration">

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    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="BolusAdvection">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Advection"/>
  </owl:Class>
  <owl:Class rdf:ID="Condense">
    <owl:equivalentClass>
      <owl:Class rdf:ID="Condensation"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="NutrientCycling">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/process.owl#Condensation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#StateOfMatterChangeEvent"/>
  </owl:Class>
  <owl:Class rdf:ID="Aeration">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Transport"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/process.owl#Transmission">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/process.owl#Medium-
WaveInteractionProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SeismicBodyWave">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="SeismicWave"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Fracture">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Strain"/>
  </owl:Class>
  <owl:Class rdf:ID="Chemosynthesis">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#BiologicalProcess"/>
  </owl:Class>
  <owl:Class rdf:ID="Freeze">
    <owl:equivalentClass>
      <owl:Class rdf:ID="Freezing"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="Friction">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#MechanicalProcess"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/process.owl#SeismicWave">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Wave"/>
  </owl:Class>
  <owl:Class rdf:ID="Heat">

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    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#Heating"/>
    </owl:Class>
    <owl:Class rdf:ID="GravityWaveDrag">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#MechanicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="GlacialProcess">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GeologicalProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Predation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Development">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Variation"/>
    </owl:Class>
    <owl:Class rdf:ID="Backscatter">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Scattering"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#GeochemicalProcess">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GeologicalProcess"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Adsorption">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#PhysicalProcess"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Oscillation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Variation"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Pumping">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#Pump"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Transport"/>
    </owl:Class>
    <owl:Class rdf:ID="Bioaccumulation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Respiration">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#BiologicalProcess"/>
    </owl:Class>

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    <owl:Class rdf:ID="BiogeochemicalCycle">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Reflection">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/process.owl#Medium-
WaveInteractionProcess"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Chill">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ThermalProcess"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Reduction">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Medium-
WaveInteractionProcess">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#PhysicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Conduct">
      <owl:equivalentClass>
        <owl:Class rdf:ID="Conduction"/>
      </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Conduction">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Transport"/>
    </owl:Class>
    <owl:Class rdf:ID="Extinction">
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#Attenuation"/>
    </owl:Class>
    <owl:Class rdf:ID="Melting">
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#Melt"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#ThermalProcess">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#PhysicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Gravity">
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#GravitationalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Deposition">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#PhysicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Flow">

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    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Motion"/>
  </owl:Class>
  <owl:Class rdf:ID="Vaporize">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/process.owl#Evaporation"/>
  </owl:Class>
  <owl:Class rdf:ID="PlanetaryWave">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Wave"/>
  </owl:Class>
  <owl:Class rdf:ID="PrimaryProduction">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
  </owl:Class>
  <owl:Class rdf:ID="Oxidation">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="WaveAbsorption">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Medium-
WaveInteractionProcess"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Absorption"/>
  </owl:Class>
  <owl:Class rdf:ID="Sublimation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#StateOfMatterChangeEvent"/>
  </owl:Class>
  <owl:Class rdf:ID="CoastalProcess">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#GeologicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Cycle">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Variation"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/process.owl#Burn">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Fluorescence">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Luminescence"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Collision">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Medium-
WaveInteractionProcess"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/process.owl#Freezing">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#StateOfMatterChangeEvent"/>

```

```

    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#GeologicalProcess">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Process"/>
    </owl:Class>
    <owl:Class rdf:ID="DiurnalMovement">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:ID="Dominance">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Luminescence">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess"/>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="Compaction">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#MechanicalProcess"/>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/process.owl#ChemicalProcess">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Process"/>
        </owl:Class>
        <owl:Class rdf:ID="Biogeochemistry">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
        </owl:Class>
        <owl:Class rdf:ID="SpeciesExtinction">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
        </owl:Class>
        <owl:Class rdf:ID="Bioluminescence">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Luminescence"/>
        </owl:Class>
        <owl:Class rdf:ID="Survival">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
        </owl:Class>
        <owl:Class rdf:ID="Herbivory">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#EcologicalProcess"/>
        </owl:Class>
        <owl:ObjectProperty rdf:ID="hasAssociatedProcess">
          <rdfs:range rdf:resource="file:/D:/SWEET/process.owl#Process"/>
        </owl:ObjectProperty>
      </rdfs:subClassOf>
    </owl:Class>
  </rdf:RDF>

<!-- Created with Protege (with OWL Plugin 2.1 beta, Build 277)
http://protege.stanford.edu -->

```

units.owl

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns="file:/D:/SWEET/units.owl#"
  xml:base="file:/D:/SWEET/units.owl">
  <owl:Ontology rdf:about="file:/D:/SWEET/units.owl">
    <owl:versionInfo
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
1.0</owl:versionInfo>
  </owl:Ontology>
  <owl:Class rdf:ID="ComplexUnit">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="DerivedUnit"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="http://www.w3.org/2002/07/owl#Thing"/>
  <owl:Class rdf:about="file:/D:/SWEET/units.owl#DerivedUnit">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Unit"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Prefix">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty rdf:ID="hasValue"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="http://www.w3.org/2001/XMLSchema#double"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:FunctionalProperty rdf:ID="hasSymbol"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="http://www.w3.org/2001/XMLSchema#string"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
  <owl:Class rdf:ID="UnitDerivedByScaling">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="http://www.w3.org/2001/XMLSchema#double"/>
        <owl:onProperty>
          <owl:FunctionalProperty rdf:ID="hasScalingNumber"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>

```

```

    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty rdf:ID="hasPrefix"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/units.owl#Prefix"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
              <owl:Class rdf:ID="BaseUnit"/>
              <owl:Class
rdf:ID="UnitDerivedWithoutChangingOfDimension"/>
              <owl:Class rdf:ID="UnitDerivedByRaisingToPower"/>
            </owl:unionOf>
          </owl:Class>
        </owl:allValuesFrom>
        <owl:onProperty>
          <owl:ObjectProperty rdf:ID="derivedFromUnit"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/units.owl#UnitDerivedWithoutChangingOfDimensi
on"/>
    </rdfs:subClassOf>
  </owl:Class>

  <owl:Class>
    <owl:equivalentClass>
      <owl:Class rdf:ID="PrefixOrUnit"/>
    </owl:equivalentClass>
    <owl:unionOf rdf:parseType="Collection">
      <owl:Class rdf:about="file:/D:/SWEET/units.owl#Unit"/>
      <owl:Class rdf:about="file:/D:/SWEET/units.owl#Prefix"/>
    </owl:unionOf>
  </owl:Class>
  <owl:Class rdf:ID="UnitDerivedByShifting">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/units.owl#UnitDerivedWithoutChangingOfDimensi
on"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class
rdf:about="file:/D:/SWEET/units.owl#UnitDerivedWithoutChangingOfDimensi
on">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="SimpleUnit"/>
    </rdfs:subClassOf>
  </owl:Class>

```

```

    <owl:Class
rdf:about="file:/D:/SWEET/units.owl#UnitDerivedByRaisingToPower">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/units.owl#hasPrefix"/>
                </owl:onProperty>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/units.owl#Prefix"/>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Class rdf:about="file:/D:/SWEET/units.owl#SimpleUnit"/>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:onProperty>
                        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/units.owl#derivedFromUnit"/>
                    </owl:onProperty>
                    <owl:allValuesFrom>
                        <owl:Class>
                            <owl:unionOf rdf:parseType="Collection">
                                <owl:Class
rdf:about="file:/D:/SWEET/units.owl#BaseUnit"/>
                                <owl:Class
rdf:about="file:/D:/SWEET/units.owl#UnitDerivedWithoutChangingOfDimensi
on"/>
                            </owl:unionOf>
                        </owl:Class>
                    </owl:allValuesFrom>
                </owl:Restriction>
            </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/units.owl#SimpleUnit">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/units.owl#DerivedUnit"/>
            </owl:Class>
            <owl:Class rdf:ID="BaseUnitOrUnitDerivedtWithoutChangingOfDimension">
                <rdfs:comment
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
>
Class created for convenience</rdfs:comment>
            </owl:Class>
            <owl:Class rdf:about="file:/D:/SWEET/units.owl#BaseUnit">
                <rdfs:subClassOf rdf:resource="file:/D:/SWEET/units.owl#Unit"/>
            </owl:Class>
            <owl:Class>
                <owl:unionOf rdf:parseType="Collection">
                    <owl:Class rdf:about="file:/D:/SWEET/units.owl#BaseUnit"/>
                    <owl:Class
rdf:about="file:/D:/SWEET/units.owl#UnitDerivedWithoutChangingOfDimensi
on"/>
                </owl:unionOf>

```



```

    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/units.owl#BaseUnitOrUnitDerivedtWithoutCha
ngingOfDimension"/>
    </owl:Class>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/units.owl#derivedFromUnit">
    <rdfs:range
rdf:resource="file:/D:/SWEET/units.owl#BaseUnitOrUnitDerivedtWithoutCha
ngingOfDimension"/>
    <rdfs:domain rdf:resource="file:/D:/SWEET/units.owl#SimpleUnit"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="productOf">
    <rdfs:domain rdf:resource="file:/D:/SWEET/units.owl#ComplexUnit"/>
    <rdfs:range rdf:resource="file:/D:/SWEET/units.owl#Unit"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:about="file:/D:/SWEET/units.owl#hasPrefix">
    <rdfs:domain rdf:resource="file:/D:/SWEET/units.owl#Unit"/>
    <rdfs:range rdf:resource="file:/D:/SWEET/units.owl#Prefix"/>
    </owl:ObjectProperty>
    <owl:DatatypeProperty rdf:about="file:/D:/SWEET/units.owl#hasValue">
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#FunctionalProperty"/>
    <rdfs:domain rdf:resource="file:/D:/SWEET/units.owl#Prefix"/>
    </owl:DatatypeProperty>
    <owl:DatatypeProperty rdf:ID="hasPower">
    <rdfs:range
rdf:resource="http://www.w3.org/2001/XMLSchema#double"/>
    <rdfs:domain
rdf:resource="file:/D:/SWEET/units.owl#UnitDerivedByRaisingToPower"/>
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#FunctionalProperty"/>
    </owl:DatatypeProperty>
    <owl:DatatypeProperty rdf:ID="hasShiftingNumber">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/units.owl#UnitDerivedByShifting"/>
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#FunctionalProperty"/>
    <rdfs:range
rdf:resource="http://www.w3.org/2001/XMLSchema#double"/>
    </owl:DatatypeProperty>
    <owl:FunctionalProperty
rdf:about="file:/D:/SWEET/units.owl#hasSymbol">
    <rdfs:range
rdf:resource="http://www.w3.org/2001/XMLSchema#string"/>
    <rdfs:domain rdf:resource="file:/D:/SWEET/units.owl#PrefixOrUnit"/>
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#DatatypeProperty"/>
    </owl:FunctionalProperty>
    <owl:FunctionalProperty
rdf:about="file:/D:/SWEET/units.owl#hasScalingNumber">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/units.owl#UnitDerivedByScaling"/>
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#DatatypeProperty"/>
    <rdfs:range
rdf:resource="http://www.w3.org/2001/XMLSchema#double"/>
    </owl:FunctionalProperty>

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```

    <UnitDerivedByScaling rdf:ID="year">
      <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >31556926</hasScalingNumber>
      <derivedFromUnit>
        <BaseUnit rdf:ID="second">
          <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
          >
s</hasSymbol>
        </BaseUnit>
      </derivedFromUnit>
    </UnitDerivedByScaling>
    <BaseUnit rdf:ID="mole">
      <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
      >
mol</hasSymbol>
    </BaseUnit>
    <ComplexUnit rdf:ID="farad">
      <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
      >
F</hasSymbol>
      <productOf>
        <BaseUnit rdf:ID="kilogram">
          <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
          >
kg</hasSymbol>
        </BaseUnit>
      </productOf>

      <productOf>
        <UnitDerivedByRaisingToPower rdf:ID="amperSquare">
          <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
          >2</hasPower>
          <derivedFromUnit>
            <BaseUnit rdf:ID="ampere">
              <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
              >
A</hasSymbol>
            </BaseUnit>
          </derivedFromUnit>
        </UnitDerivedByRaisingToPower>
      </productOf>
      <productOf>
        <UnitDerivedByRaisingToPower rdf:ID="secondToPower4">
          <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#second"/>
          <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
          >
4</hasPower>
        </UnitDerivedByRaisingToPower>
      </productOf>

```

```

    <productOf>
      <UnitDerivedByRaisingToPower rdf:ID="perMeterSquare">
        <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
          >
-2</hasPower>
        </UnitDerivedByRaisingToPower>
      </productOf>
    </ComplexUnit>
    <UnitDerivedByScaling rdf:ID="decade">
      <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#second"/>

      <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
315569260</hasScalingNumber>
      </UnitDerivedByScaling>
      <ComplexUnit rdf:ID="volt">
        <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
          >
V</hasSymbol>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
        <productOf>
          <UnitDerivedByRaisingToPower rdf:ID="perSecondToPower3">
            <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#second"/>
            <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
              >-3</hasPower>
            </UnitDerivedByRaisingToPower>
          </productOf>
        <productOf>
          <UnitDerivedByRaisingToPower rdf:ID="perAmper">
            <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
              >
-1</hasPower>
            <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#ampere"/>
            </UnitDerivedByRaisingToPower>
          </productOf>
        <productOf>
          <UnitDerivedByRaisingToPower rdf:ID="meterSquare">
            <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
              >
2</hasPower>
            </UnitDerivedByRaisingToPower>
          </productOf>
        </ComplexUnit>
        <Prefix rdf:ID="micro">
          <hasValue rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >
10E-6</hasValue>
        </Prefix>
        <ComplexUnit rdf:ID="watt_perMeter_perKelvin">
          <productOf>

```

```

        <UnitDerivedByRaisingToPower rdf:ID="perKelvin">
            <derivedFromUnit>
                <BaseUnit rdf:ID="kelvin"/>
            </derivedFromUnit>
            <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >
-1</hasPower>
        </UnitDerivedByRaisingToPower>
    </productOf>
    <productOf>
        <UnitDerivedByRaisingToPower rdf:ID="perMeter">
            <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
            >
1/m</hasSymbol>
            <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >
-1</hasPower>
        </UnitDerivedByRaisingToPower>
    </productOf>
    <productOf>
        <ComplexUnit rdf:ID="watt">
            <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
            <productOf
rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
            <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondToPower3"/>
            </ComplexUnit>
        </productOf>
    </ComplexUnit>
    <ComplexUnit rdf:ID="milli_ohm_perMeter">
        <productOf>
            <ComplexUnit rdf:ID="ohm">
                <productOf>
                    <UnitDerivedByRaisingToPower rdf:ID="perAmperSquare">
                        <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#ampere"/>
                        <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                        >-2</hasPower>
                    </UnitDerivedByRaisingToPower>
                </productOf>
            </productOf>
            <productOf
rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
            <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondToPower3"/>
            <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
            </ComplexUnit>
        </productOf>
        <hasPrefix>
            <Prefix rdf:ID="milli">
                <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
                >
m</hasSymbol>

```

```

        <hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
10E-3</hasValue>
    </Prefix>
</hasPrefix>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeter"/>
</ComplexUnit>
    <ComplexUnit rdf:ID="siemence_perMeter">
        <productOf>
            <ComplexUnit rdf:ID="siemens">
                <productOf>
                    <UnitDerivedByRaisingToPower rdf:ID="secondToPower3">
                        <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#second"/>
                        <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                        >
3</hasPower>
                    </UnitDerivedByRaisingToPower>
                </productOf>
            </productOf>
            <productOf
rdf:resource="file:/D:/SWEET/units.owl#amperSquare"/>
            <productOf>
                <UnitDerivedByRaisingToPower rdf:ID="perKilogram">
                    <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
                </UnitDerivedByRaisingToPower>
            </productOf>
        </productOf>
        <productOf
rdf:resource="file:/D:/SWEET/units.owl#perMeterSquare"/>
        </ComplexUnit>
    </productOf>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeter"/>
</ComplexUnit>
    <ComplexUnit rdf:ID="feet_perDay">
        <productOf>
            <UnitDerivedByScaling rdf:ID="feet">
                <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >0.3048</hasScalingNumber>
            </UnitDerivedByScaling>
        </productOf>
    </productOf>
    <UnitDerivedByRaisingToPower rdf:ID="perDay">
        <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >-1</hasPower>
        <derivedFromUnit>
            <UnitDerivedByScaling rdf:ID="day">
                <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >86400</hasScalingNumber>
            </derivedFromUnit>
            <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#second"/>
            </UnitDerivedByScaling>
        </derivedFromUnit>
    </UnitDerivedByRaisingToPower>
</ComplexUnit>

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```

        </UnitDerivedByRaisingToPower>
    </productOf>
</ComplexUnit>
<BaseUnit rdf:ID="meter"/>
<UnitDerivedByRaisingToPower rdf:ID="perHour">
    <hasPower rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >
-1</hasPower>
    <derivedFromUnit>
        <UnitDerivedByScaling rdf:ID="hour">
            <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >3600</hasScalingNumber>
            <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#second"/>
            </UnitDerivedByScaling>
        </derivedFromUnit>
    </UnitDerivedByRaisingToPower>
<UnitDerivedByShifting rdf:ID="degreeC">
    <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#kelvin"/>
    <hasShiftingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >-273</hasShiftingNumber>
</UnitDerivedByShifting>
<ComplexUnit rdf:ID="joule_perKilogram">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perKilogram"/>
</productOf>
    <ComplexUnit rdf:ID="joule">
        <productOf
rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
        <productOf>
            <UnitDerivedByRaisingToPower rdf:ID="perSecondSquare">
                <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >
-2</hasPower>
                <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#second"/>
                </UnitDerivedByRaisingToPower>
            </productOf>
            <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
            >
J</hasSymbol>
            <owl:sameAs>
                <ComplexUnit rdf:ID="kilogram_meterSquare_perSecondSquare"/>
            </owl:sameAs>
            <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
        </ComplexUnit>
    </productOf>
</ComplexUnit>
<ComplexUnit rdf:ID="pascal_perScnd">
    <productOf>
        <ComplexUnit rdf:ID="pascal">
            <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeter"/>
            <owl:sameAs>
                <ComplexUnit rdf:ID="kilogram_perMeter_perSecondSquare">

```

```

        <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
        <productOf
rdf:resource="file:/D:/SWEET/units.owl#perMeter"/>
        <productOf
rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
        </ComplexUnit>
        </owl:sameAs>
        <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
>
Pa</hasSymbol>
        <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
        </ComplexUnit>
        </productOf>

        <productOf>
        <UnitDerivedByRaisingToPower rdf:ID="perSecond">
        <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>
-1</hasPower>
        <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#second"/>
        </UnitDerivedByRaisingToPower>
        </productOf>
        </ComplexUnit>
        <BaseUnit rdf:ID="radian">
        <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
>
rad</hasSymbol>
        </BaseUnit>
        <ComplexUnit rdf:ID="meterSquare_perSecond">
        <productOf rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
        </ComplexUnit>
        <BaseUnit rdf:ID="dimensionlessUnit"/>
        <ComplexUnit rdf:ID="meter_perSecond">
        <productOf rdf:resource="file:/D:/SWEET/units.owl#second"/>
        </ComplexUnit>
        <ComplexUnit rdf:ID="meterSquare_perSecondSquare">
        <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
        </ComplexUnit>
        <ComplexUnit rdf:ID="feetToPower2_perDay">
        <productOf>
        <UnitDerivedByRaisingToPower rdf:ID="feetToPower2">
        <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
>2</hasPower>
        <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#feet"/>
        </UnitDerivedByRaisingToPower>
        </productOf>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#perDay"/>

```

```

</ComplexUnit>
<UnitDerivedByScaling rdf:ID="kilo_meter">
  <derivedFromUnit>
    <BaseUnit rdf:ID="metre"/>
  </derivedFromUnit>
  <hasPrefix>
    <Prefix rdf:ID="kilo">
      <hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >
10e3</hasValue>
      <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
      >
k</hasSymbol>
    </Prefix>
  </hasPrefix>
</UnitDerivedByScaling>
<ComplexUnit rdf:ID="feetToPower3_perDay">
  <productOf rdf:resource="file:/D:/SWEET/units.owl#perDay"/>
  <productOf>
    <UnitDerivedByRaisingToPower rdf:ID="feetToPower3">
      <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >3</hasPower>
      <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#feet"/>
    </UnitDerivedByRaisingToPower>
  </productOf>
</ComplexUnit>
<Prefix rdf:ID="mega">
  <hasValue rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
  >
10e6</hasValue>
  <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
  >
M</hasSymbol>
</Prefix>
<ComplexUnit rdf:ID="kilogram_meter_perSecondSquare"/>
<ComplexUnit rdf:ID="dimensionlessUnit_perMeterSquare">
  <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeterSquare"/>
  <productOf
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
  </ComplexUnit>
  <UnitDerivedByRaisingToPower rdf:ID="secondSquare">
    <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#second"/>
    <hasPower rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >
2</hasPower>
  </UnitDerivedByRaisingToPower>
  <ComplexUnit rdf:ID="meterToPower3_perSecond">
    <productOf>
      <UnitDerivedByRaisingToPower rdf:ID="meterToPower3">
        <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#metre"/>
        <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
      >
    </productOf>
  </ComplexUnit>

```



```

3</hasPower>
  </UnitDerivedByRaisingToPower>
  </productOf>
  <productOf rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>
</ComplexUnit>
<UnitDerivedByRaisingToPower rdf:ID="perMole">
  <hasPower rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
  >
-1</hasPower>
  <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#mole"/>
  </UnitDerivedByRaisingToPower>
  <Prefix rdf:ID="hecto">
    <hasValue rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >
10e2</hasValue>
    <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
h</hasSymbol>
  </Prefix>
  <UnitDerivedByScaling rdf:ID="nano_meter">
    <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#metre"/>
    <hasPrefix>
      <Prefix rdf:ID="nano">
        <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
        >
n</hasSymbol>
        <hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
10E-9</hasValue>
        </Prefix>
      </hasPrefix>
    </UnitDerivedByScaling>
    <ComplexUnit rdf:ID="perKilogram_meterSquare_perSecond_kelvin">
      <productOf rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>
      <productOf rdf:resource="file:/D:/SWEET/units.owl#perKilogram"/>
      <productOf rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
      <productOf rdf:resource="file:/D:/SWEET/units.owl#kelvin"/>
    </ComplexUnit>
    <Prefix rdf:ID="giga">
      <hasValue rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >
10e9</hasValue>
      <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
      >
G</hasSymbol>
      </Prefix>
      <UnitDerivedByScaling rdf:ID="minute">
        <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#second"/>
        <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >60</hasScalingNumber>
      </UnitDerivedByScaling>
      <ComplexUnit rdf:ID="kilogram_meter_perSecond">
        <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>

```

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</ComplexUnit>
<UnitDerivedByScaling rdf:ID="century">
  <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
  >3.1556926E09</hasScalingNumber>
  <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#second"/>
</UnitDerivedByScaling>
<ComplexUnit rdf:ID="lux">
  <productOf rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
  <productOf>
    <BaseUnit rdf:ID="candela">
      <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
      >
cd</hasSymbol>
    </BaseUnit>
  </productOf>
  <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
  >
Lx</hasSymbol>
</ComplexUnit>
<ComplexUnit rdf:ID="kilo_meter_perHour">
  <productOf rdf:resource="file:/D:/SWEET/units.owl#perHour"/>
  <hasPrefix rdf:resource="file:/D:/SWEET/units.owl#kilo"/>
</ComplexUnit>
<Prefix rdf:ID="NoPrefix">
  <hasValue rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
  >
1</hasValue>
</Prefix>
<ComplexUnit rdf:ID="tesla">
  <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
  <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
  <productOf rdf:resource="file:/D:/SWEET/units.owl#perAmper"/>
</ComplexUnit>
<ComplexUnit rdf:ID="watt_perMeterSquare_perSteradian">
  <productOf rdf:resource="file:/D:/SWEET/units.owl#watt"/>
  <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeterSquare"/>
  <productOf>
    <UnitDerivedByRaisingToPower rdf:ID="perSteradian">
      <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >
-1</hasPower>
      <derivedFromUnit>
        <BaseUnit rdf:ID="steradian">
          <hasSymbol
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
          >
sr</hasSymbol>
        </BaseUnit>
      </derivedFromUnit>
    </UnitDerivedByRaisingToPower>
  </productOf>
</ComplexUnit>
<UnitDerivedByScaling rdf:ID="millenium">

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    <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#second"/>
    <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >
3.1556926E10</hasScalingNumber>
</UnitDerivedByScaling>
<ComplexUnit rdf:ID="perKilogram_mole">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perKilogram"/>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#mole"/>
</ComplexUnit>
<ComplexUnit rdf:ID="kilogram_perMeterSquare">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeterSquare"/>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
</ComplexUnit>
<ComplexUnit rdf:ID="newton">
    <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
    <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
N</hasSymbol>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
    <owl:sameAs
rdf:resource="file:/D:/SWEET/units.owl#kilogram_meter_perSecondSquare"/
    >
    </ComplexUnit>
<ComplexUnit rdf:ID="joule_perKilogram_perKelvin">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#joule"/>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perKelvin"/>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perKilogram"/>
</ComplexUnit>
<ComplexUnit rdf:ID="hertz">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>
    <productOf
rdf:resource="file:/D:/SWEET/units.owl#dimensionlessUnit"/>
    <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
Hz</hasSymbol>
    </ComplexUnit>
<ComplexUnit rdf:ID="henry">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perAmperSquare"/>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
    <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
    </ComplexUnit>
<UnitDerivedByScaling rdf:ID="darcy">
    <derivedFromUnit
rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
    <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >9.869233E-13</hasScalingNumber>
</UnitDerivedByScaling>
<UnitDerivedByScaling rdf:ID="week">
    <hasScalingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >604800</hasScalingNumber>

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```

    <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#second"/>

</UnitDerivedByScaling>
<ComplexUnit rdf:ID="amper_perMeter">
  <productOf rdf:resource="file:/D:/SWEET/units.owl#ampere"/>
  <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeter"/>
</ComplexUnit>
<ComplexUnit rdf:ID="weber">
  <productOf rdf:resource="file:/D:/SWEET/units.owl#perAmper"/>
  <productOf rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
  <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
  <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
  </ComplexUnit>
  <UnitDerivedByShifting rdf:ID="degreeF">
    <hasShiftingNumber
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >
32</hasShiftingNumber>
  </UnitDerivedByShifting>
  <UnitDerivedByRaisingToPower rdf:ID="perCandela">
    <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#candela"/>
    <hasPower rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
    >
-1</hasPower>
  </UnitDerivedByRaisingToPower>
  <ComplexUnit rdf:ID="kilogram_perMeterToPower3">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
    <productOf>
      <UnitDerivedByRaisingToPower rdf:ID="perMeterToPower3">
        <hasPower
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
-3</hasPower>
      </UnitDerivedByRaisingToPower>
    </productOf>
  </ComplexUnit>
  <ComplexUnit rdf:ID="coulomb">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#second"/>
    <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
C</hasSymbol>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#ampere"/>
  </ComplexUnit>
  <ComplexUnit rdf:ID="gray">
    <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
Gy</hasSymbol>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#meterSquare"/>
    <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
  </ComplexUnit>
  <ComplexUnit rdf:ID="watt_perMeterSquare">
    <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeterSquare"/>
    <productOf rdf:resource="file:/D:/SWEET/units.owl#watt"/>
    <owl:sameAs>
      <ComplexUnit rdf:ID="joule_perMeterSquare_perSecond">

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        <productOf rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#joule"/>
        <productOf
rdf:resource="file:/D:/SWEET/units.owl#perMeterSquare"/>
        </ComplexUnit>
        </owl:sameAs>
    </ComplexUnit>
    <Prefix rdf:ID="deco">
        <hasSymbol rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
        >
da</hasSymbol>
        <hasValue rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >10</hasValue>
    </Prefix>
    <UnitDerivedByRaisingToPower rdf:ID="perRadian">
        <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#radian"/>
        <hasPower rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >
-1</hasPower>
    </UnitDerivedByRaisingToPower>
    <ComplexUnit rdf:ID="meter_perSecondSquare">
        <productOf
rdf:resource="file:/D:/SWEET/units.owl#perSecondSquare"/>
        </ComplexUnit>
    <UnitDerivedByScaling rdf:ID="milli_meter">
        <hasPrefix rdf:resource="file:/D:/SWEET/units.owl#milli"/>
        <derivedFromUnit rdf:resource="file:/D:/SWEET/units.owl#metre"/>
    </UnitDerivedByScaling>
    <ComplexUnit rdf:ID="kilogram_perMeter_perSecond">
        <productOf rdf:resource="file:/D:/SWEET/units.owl#perMeter"/>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#kilogram"/>
        <productOf rdf:resource="file:/D:/SWEET/units.owl#perSecond"/>
    </ComplexUnit>
</rdf:RDF>

<!-- Created with Protege (with OWL Plugin 2.1 beta, Build 277)
http://protege.stanford.edu -->

```

material_things.owl

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns:human_activities="file:/D:/SWEET/human_activities.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:biosphere="file:/D:/SWEET/biosphere.owl#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns="file:/D:/SWEET/material_thing.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:daml="http://www.daml.org/2001/03/daml+oil#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xml:base="file:/D:/SWEET/material_thing.owl">
  <owl:Ontology rdf:about="file:/D:/SWEET/material_thing.owl">
    <owl:imports rdf:resource="file:/D:/SWEET/human_activities.owl"/>
    <owl:versionInfo
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
1.0</owl:versionInfo>
    <owl:imports rdf:resource="file:/D:/SWEET/biosphere.owl"/>
  </owl:Ontology>
  <owl:Class rdf:about="http://www.w3.org/2002/07/owl#Thing"/>
  <owl:Class rdf:ID="DopplerRadar">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Radar"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Internet">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="CommunicationFacility"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Product"/>
  <owl:Class rdf:ID="Tensiometer">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="GeologicEquipment"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Facility">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Infrastructure"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Fishery">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="AgriculturalProductionFacility"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="IndustrialProduct">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Product"/>
  </owl:Class>
  <owl:Class rdf:ID="Weir">
    <rdfs:subClassOf>

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    <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#GeologicEquipment"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Farm">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#AgriculturalProductionFacility"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Electricity">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#IndustrialProduct"/>
        </owl:Class>
    <owl:Class rdf:ID="Lysimeter">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#GeologicEquipment"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="PowerTransmissionFacility">
        <rdfs:subClassOf>
            <owl:Class rdf:ID="TransportationFacility"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="CurrentMeter">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#GeologicEquipment"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="Phone_mainline">
        <rdfs:subClassOf>
            <owl:Class rdf:ID="CommunicationEquipment"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Satellite">
        <rdfs:subClassOf>
            <owl:Class rdf:ID="Equipment"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="SuctionPump">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#GeologicEquipment"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/material_thing.owl#Equipment">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Infrastructure"/>
        </owl:Class>
    <owl:Class rdf:ID="Dome">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
        </owl:Class>
    <owl:Class rdf:ID="Instrument">

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    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
    </owl:Class>
    <owl:Class rdf:ID="ElectricityEquipment">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#CommunicationEquipment">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/human_activities.owl#Communications"/>
    <owl:onProperty>
    <owl:ObjectProperty rdf:ID="hasAssociatedActivity"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#TransportationFacility">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Facility"/>
    </owl:Class>
    <owl:Class rdf:ID="Computer">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
    </owl:Class>
    <owl:Class rdf:ID="NavigationEquipment">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
    </owl:Class>
    <owl:Class rdf:ID="Buoy">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#NavigationEquipment"/>
    </owl:Class>
    <owl:Class rdf:ID="MiningFacility">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Facility"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#AgriculturalProductionFacility">
    <rdfs:subClassOf>
    <owl:Class rdf:ID="ProductionFacility"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="MeteorologicalFacility">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Facility"/>
    </owl:Class>
    <owl:Class rdf:ID="WellScreen">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#GeologicEquipment"/>

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        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#CommunicationFacility">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Facility"/>
    </owl:Class>
    <owl:Class rdf:ID="Mine">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#MiningFacility"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#GeologicEquipment">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
    </owl:Class>
    <owl:Class rdf:ID="Antenna">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#CommunicationEquipment"
/>
    </owl:Class>
    <owl:Class rdf:ID="LandFill">
        <rdfs:subClassOf>
            <owl:Class rdf:ID="Structure"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="TransportationEquipment">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/material_thing.owl#hasAssociatedActivity"/
>
                    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/human_activities.owl#Transportation"/>
                </owl:Restriction>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="Meteostation">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#MeteorologicalFacility"
/>
    </owl:Class>
    <owl:Class rdf:ID="Phone_mobile">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#CommunicationEquipment"
/>
    </owl:Class>
    <owl:Class rdf:ID="GroundPenetratingRadar">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#GeologicEquipment"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/material_thing.owl#ProductionFacility">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Facility"/>

```

```

    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/human_activities.owl#Production"/>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/material_thing.owl#hasAssociatedActivity"/
>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/material_thing.owl#Radar">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Equipment"/>
  </owl:Class>
  <owl:Class rdf:ID="WellCasing">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#GeologicEquipment"/>
  </owl:Class>
  <owl:Class rdf:ID="Sensor">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Instrument"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/material_thing.owl#Structure">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Facility"/>
  </owl:Class>
  <owl:Class rdf:ID="Building">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/material_thing.owl#Structure"/>
  </owl:Class>
</rdf:RDF>

<!-- Created with Protege (with OWL Plugin 2.1 beta, Build 277)
http://protege.stanford.edu -->

```

substance.owl

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns:property="file:/D:/SWEET/property.owl#"
  xmlns="file:/D:/SWEET/substance.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:daml="http://www.daml.org/2001/03/daml+oil#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:units="file:/D:/SWEET/units.owl#"
  xmlns:numerics="file:/D:/SWEET/numerics.owl#"
  xml:base="file:/D:/SWEET/substance.owl">
  <owl:Ontology rdf:about="file:/D:/SWEET/substance.owl">
    <owl:imports rdf:resource="file:/D:/SWEET/property.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/units.owl"/>
    <owl:versionInfo
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
  >
1.0</owl:versionInfo>
    <owl:imports rdf:resource="file:/D:/SWEET/numerics.owl"/>
  </owl:Ontology>
  <owl:Class rdf:ID="DinitrogenPentoxide"/>
  <owl:Class rdf:ID="DimethylSulfide"/>
  <owl:Class rdf:ID="Honey">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Food"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Ox">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty rdf:ID="hasElement"/>
        </owl:onProperty>
        <owl:allValuesFrom>
          <owl:Class rdf:ID="O"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Allotrope"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="FossilFuel">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="NaturalResource"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="HydrogenousSediment">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Sediment"/>
    </rdfs:subClassOf>
  </owl:Class>

```

```

<owl:Class rdf:ID="Mineral">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#NaturalResource"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="DMS"/>
<owl:Class rdf:ID="NOx">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="Compound"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty rdf:ID="hasChemical_1"/>
      </owl:onProperty>
      <owl:allValuesFrom>
        <owl:Class rdf:ID="N"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty rdf:ID="hasChemical_2"/>
      </owl:onProperty>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Ox"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <owl:equivalentClass>
    <owl:Class rdf:ID="NitrogenOxide"/>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="CarbonDioxide"/>
<owl:Class rdf:ID="LongWaveRadiation"/>
<owl:Class rdf:ID="Nitrogen"/>
<owl:Class rdf:ID="State"/>
<owl:Class rdf:ID="Ozone"/>
<owl:Class rdf:about="file:/D:/SWEET/numerics.owl#Quantity"/>
<owl:Class rdf:ID="Neutrino">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="ElementaryParticle"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Radionuclide">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="RadioactiveSubstance"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="FoodAdditive">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Food"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Si">
  <rdfs:subClassOf>

```

```

    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
        >18</owl:hasValue>
      <owl:onProperty>
        <owl:DatatypeProperty rdf:ID="hasBaseNeutrons"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Class rdf:ID="Element"/>
</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:onProperty>
      <owl:DatatypeProperty rdf:ID="hasProtons"/>
    </owl:onProperty>
    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
      >14</owl:hasValue>
    </owl:Restriction>
  </rdfs:subClassOf>
  <owl:equivalentClass>
    <owl:Class rdf:ID="Silicon"/>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="MicrowaveRadiation">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue>
        <units:Unit rdf:ID="milli_meter"/>
      </owl:hasValue>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasUnit"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
          </owl:onProperty>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >1000.</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>

            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
            </owl:onProperty>

```

```

        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >1.</owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Class rdf:ID="ElectromagneticRadiation"/>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="EnergeticParticle">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElementaryParticle"/>
    </owl:Class>
<owl:Class rdf:ID="HC">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            <owl:allValuesFrom>
                <owl:Class rdf:ID="Cx"/>
            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:ID="H"/>
            </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass>
        <owl:Class rdf:ID="Hydrocarbon"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="C">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >6</owl:hasValue>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass>
        <owl:Class rdf:ID="Carbon"/>
    </owl:equivalentClass>

```

```

    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
          </owl:onProperty>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >6</owl:hasValue>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="CarbonaceousAerosol">
      <rdfs:subClassOf>
        <owl:Class rdf:ID="Aerosol"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="PCB">
      <rdfs:subClassOf>
        <owl:Class rdf:ID="Pesticide"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Mineraloid">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Mineral"/>
      </owl:Class>
    <owl:Class rdf:ID="LiquidSubstance">
      <owl:equivalentClass>
        <owl:Class rdf:ID="Liquid"/>
      </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:ID="Ar">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >18</owl:hasValue>
          <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      <owl:equivalentClass>
        <owl:Class rdf:ID="Argon"/>
      </owl:equivalentClass>
    </rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
          </owl:onProperty>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"

```

```

        >22</owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="VOC">
    <owl:equivalentClass>
        <owl:Class rdf:ID="VolatileOrganicCompound"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="NH3">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N"/>
            </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <owl:equivalentClass>
            <owl:Class rdf:ID="Ammonia"/>
        </owl:equivalentClass>
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
        </rdfs:subClassOf>

        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
                <owl:allValuesFrom>
                    <owl:Class rdf:ID="H3"/>
                </owl:allValuesFrom>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="O2minus">
        <rdfs:subClassOf>
            <owl:Class rdf:ID="Ion"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >-1</owl:hasValue>
            <owl:onProperty>
                <owl:DatatypeProperty rdf:ID="hasCharge"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="O2"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ion">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Chemical"/>

```



```

    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Varve">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Sediment"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Ominus">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Ion"/>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasCharge"/>
          </owl:onProperty>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >-1</owl:hasValue>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:ID="F">
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:onProperty>
              <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
              </owl:onProperty>
              <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >9</owl:hasValue>
              </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
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                <owl:onProperty>
                  <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
                  </owl:onProperty>
                </owl:Restriction>
              </rdfs:subClassOf>
              <owl:equivalentClass>
                <owl:Class rdf:ID="Fluorine"/>
              </owl:equivalentClass>
            </rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="Magnesium"/>
        <owl:Class rdf:ID="Regolith">
          <rdfs:subClassOf>

```

```

    <owl:Class rdf:ID="MixedSubstance"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Gas">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#State"/>
  </owl:Class>
<owl:Class rdf:ID="CloudCondensationNuclei">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Aerosol"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="StateOfMatter">
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#State"/>
  </owl:Class>
<owl:Class rdf:ID="TerrigenousSediment">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Sediment"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Litter">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Solid"/>
    </rdfs:subClassOf>
  </owl:Class>
<owl:Class rdf:ID="HydrochlorousAcid">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="Acid"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Toxin">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="HazardousSubstance"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="HCN">
  <owl:equivalentClass>
    <owl:Class rdf:ID="HydrogenCyanide"/>
  </owl:equivalentClass>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N"/>
      </owl:allValuesFrom>
      <owl:onProperty>
        <owl:ObjectProperty rdf:ID="hasChemical_3"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>

```

```

<owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
  <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
    </owl:Restriction>
  </rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:allValuesFrom>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#H"/>
    </owl:allValuesFrom>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
<owl:Class rdf:ID="OxygenIsotope">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="Isotope"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="FreshWater">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance"/>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            <owl:allValuesFrom>
              <owl:Class rdf:ID="H2O"/>
            </owl:allValuesFrom>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="Loess">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Sediment"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Soil">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance"/>
          </rdfs:subClassOf>
          <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Solid"/>
          </rdfs:subClassOf>
        </owl:Class>
      <owl:Class rdf:ID="IceCrystal">
        <rdfs:subClassOf>
          <owl:Class rdf:ID="Crystal"/>
        </rdfs:subClassOf>
      </owl:Class>
    </owl:Class>
  </rdfs:subClassOf>
</owl:Class>

```

```

    <rdfs:subClassOf>
      <owl:Class rdf:ID="Ice"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="ElectromagneticWave"/>
  <owl:Class rdf:ID="Pyroclastics">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Rock"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="SiO2">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Si"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2"/>
        </owl:allValuesFrom>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass>
      <owl:Class rdf:ID="SiliconDioxide"/>
    </owl:equivalentClass>
    <owl:equivalentClass>
      <owl:Class rdf:ID="Silica"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="HaC">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
          <owl:allValuesFrom>
            <owl:Class rdf:ID="Ha"/>
          </owl:allValuesFrom>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
          <owl:allValuesFrom>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cx"/>
          </owl:allValuesFrom>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
  </owl:Class>

```

```

<rdfs:subClassOf>
  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
</rdfs:subClassOf>
<owl:equivalentClass>
  <owl:Class rdf:ID="Halocarbon"/>
</owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="HydrogenFluoride"/>
<owl:Class rdf:ID="NonMethaneHydrocarbon"/>
<owl:Class rdf:ID="O3minus">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="O3"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasCharge"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
        >-1</owl:hasValue>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Ion"/>
  </owl:Class>
<owl:Class rdf:ID="Oplus">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Ion"/>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
      >1</owl:hasValue>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasCharge"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
<owl:Class rdf:ID="Microfossil">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="Fossil"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Violet">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >455</owl:hasValue>
      <owl:onProperty>
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
      </owl:Restriction>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>

```

```

    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
          >390</owl:hasValue>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Class rdf:ID="VisibleLight"/>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue>
          <units:Unit rdf:ID="nano_meter"/>
        </owl:hasValue>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
          </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="ChlorineMonoxide"/>
    <owl:Class rdf:ID="Pollutant">
      <owl:equivalentClass>
        <owl:Class rdf:ID="Contaminant"/>
      </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:ID="NonmetallicMineral">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Mineral"/>
        </owl:Class>
        <owl:Class rdf:ID="Snow">
          <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ice"/>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="HClFC">
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#F"/>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_3"/>
                  </owl:Restriction>
            </rdfs:subClassOf>
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
                <owl:onProperty>
                  <owl:ObjectProperty rdf:ID="hasChemical_4"/>
                </owl:onProperty>
              </owl:Restriction>
            </rdfs:subClassOf>
          </owl:Class>
        </owl:Class>
      </owl:Class>
    </owl:Class>
  </owl:Class>

```



```

    </owl:Restriction>
  </rdfs:subClassOf>
  <owl:equivalentClass>
    <owl:Class rdf:ID="Sodium"/>
  </owl:equivalentClass>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
      >11</owl:hasValue>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SuspendedSolid">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="SuspendedSubstance"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Solid"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SnowFacies">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Crystal"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="ElectricField">
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/numerics.owl#Field"/>
</owl:Class>
<owl:Class rdf:ID="CO">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>

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```

    <owl:equivalentClass>
      <owl:Class rdf:ID="Carbonyl"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="Soot">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Contaminant"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="O5">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
        </owl:allValuesFrom>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
>5</owl:hasValue>
        <owl:onProperty>
          <owl:DatatypeProperty rdf:ID="hasAtoms"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="AlphaParticle">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElementaryParticle"/>
  </owl:Class>
  <owl:Class rdf:ID="Sedimentary">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Rock"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="FormOfSubstanceOrganization">
    <owl:equivalentClass>
      <owl:Class rdf:ID="SubstanceForm"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:ID="Fe3">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>

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```

        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
        </owl:onProperty>
        <owl:allValuesFrom>
            <owl:Class rdf:ID="Fe"/>
        </owl:allValuesFrom>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
            </owl:onProperty>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >3</owl:hasValue>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="CH4">
    <owl:equivalentClass>
        <owl:Class rdf:ID="Methane"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:ID="H4"/>
            </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#H">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >1</owl:hasValue>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>

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    <owl:equivalentClass>
      <owl:Class rdf:ID="Hydrogen"/>
    </owl:equivalentClass>
  </rdfs:subClassOf>
  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
      >0</owl:hasValue>
    <owl:onProperty>
      <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
  <owl:Class rdf:ID="NonMethaneHydrocarbons"/>
  <owl:Class rdf:ID="Fluorocarbon"/>
  <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#HazardousSubstance">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Substance"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="NuclearRadiation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElementaryParticle"/>
    </owl:Class>
  <owl:Class rdf:ID="Blue">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
          >492</owl:hasValue>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
          >455</owl:hasValue>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  </rdfs:subClassOf>
  <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#VisibleLight"/>
    </rdfs:subClassOf>
  </rdfs:subClassOf>
  <owl:Restriction>

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    <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
    <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Al">
  <owl:equivalentClass>
    <owl:Class rdf:ID="Aluminum"/>
  </owl:equivalentClass>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
>13</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
>14</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
  <owl:Class rdf:ID="TraceSubstance">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
    </owl:Class>
  <owl:Class rdf:ID="Atom">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
    </owl:Class>
  <owl:Class rdf:ID="MagneticField">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/numerics.owl#Field"/>
  </owl:Class>
  <owl:Class rdf:ID="N2O5">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
        <owl:allValuesFrom>
          <owl:Class rdf:ID="N2"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>

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    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#DinitrogenPentoxide"/>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#O5"/>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Manganese"/>
    <owl:Class rdf:ID="Smoke">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#SuspendedSubstance"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="ClO2">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cl"/>
                </owl:allValuesFrom>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
            </rdfs:subClassOf>
            <owl:equivalentClass>
                <owl:Class rdf:ID="ChlorineDioxide"/>
            </owl:equivalentClass>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
                    <owl:allValuesFrom>
                        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2"/>
                    </owl:allValuesFrom>
                </owl:Restriction>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="NO2">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N"/>
                </owl:allValuesFrom>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>

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</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
</rdfs:subClassOf>

<owl:equivalentClass>
  <owl:Class rdf:ID="NitrogenDioxide"/>
</owl:equivalentClass>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    <owl:allValuesFrom>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2"/>
    </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Meteorite">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="ExtraterrestrialSubstance"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="ShortWaveRadiation"/>
<owl:Class rdf:ID="O4">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
      </owl:onProperty>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
        >4</owl:hasValue>
    </owl:Restriction>
  </rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
</rdfs:subClassOf>
<rdfs:subClassOf>
  <owl:Restriction>
    <owl:onProperty>
      <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
    </owl:onProperty>
    <owl:allValuesFrom>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
    </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="HF">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>

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        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#HydrogenFluoride"/>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#F"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="C2">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >2</owl:hasValue>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
            </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
            </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Helium"/>
    <owl:Class rdf:ID="Air">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N2"/>
                </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf>

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    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2"/>
    </owl:allValuesFrom>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Aerosol">
    <rdfs:subClassOf>
    <owl:Class rdf:ID="Particulate"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Feed">
    <rdfs:subClassOf>
    <owl:Class rdf:ID="Nutrient"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Fe">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Iron"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
    >30</owl:hasValue>
    <owl:onProperty>
    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
    </owl:onProperty>
    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
    >26</owl:hasValue>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Red">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>

```



```

        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >780</owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >622</owl:hasValue>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
        </owl:Restriction>
    </rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#VisibleLight"/>
    </rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Contaminant">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Pollutant"/>
    </owl:Class>
    <owl:Class rdf:ID="Ca">
    <owl:equivalentClass>
        <owl:Class rdf:ID="Calcium"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >20</owl:hasValue>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"

```

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        >20</owl:hasValue>
        <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Fe2">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Fe"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
                </owl:onProperty>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >2</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
<owl:Class rdf:ID="SOx">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            <owl:allValuesFrom>
                <owl:Class rdf:ID="S"/>
            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass>
        <owl:Class rdf:ID="SulfurOxide"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Ox"/>
            </owl:Restriction>

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    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Nitrite"/>
  <owl:Class rdf:ID="Plasma">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#State"/>
  </owl:Class>
  <owl:Class rdf:ID="Be">
    <owl:equivalentClass>
      <owl:Class rdf:ID="Beryllium"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
          >4</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
          >5</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
  <owl:Class rdf:ID="Li">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
    </rdfs:subClassOf>
    <owl:equivalentClass>
      <owl:Class rdf:ID="Lithium"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
          >4</owl:hasValue>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
        </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>

```

```

        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
        >3</owl:hasValue>
        <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="HeavyIon">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Ion"/>
</owl:Class>
<owl:Class rdf:ID="Chlorine"/>
<owl:Class rdf:ID="ChlorineNitrate"/>
<owl:Class rdf:ID="ChemicalSubstance"/>
<owl:Class rdf:ID="SulfurDioxide"/>
<owl:Class rdf:ID="C14">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#C"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:DatatypeProperty rdf:ID="hasExcessNeutrons"/>
            </owl:onProperty>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >2</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Isotope"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="ChemicalElement"/>
<owl:Class rdf:ID="NaturalGas">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#FossilFuel"/>
    </owl:Class>
    <owl:Class rdf:ID="Bubble">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
        </owl:Class>
        <owl:Class rdf:ID="DissolvedGas">
            <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Gas"/>
            <rdfs:subClassOf>
                <owl:Class rdf:ID="DissolvedSubstance"/>
            </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="Carcinogen">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#HazardousSubstance"/>
            </owl:Class>
            <owl:Class rdf:ID="Dust">
                <rdfs:subClassOf>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Particulate"/>
                </rdfs:subClassOf>
            </owl:Class>
        </owl:Class>
    </owl:Class>

```

```

    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Contaminant"/>
    </owl:Class>
    <owl:Class rdf:ID="Meteorite_substance">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Meteorite"/>
    </owl:Class>
    <owl:Class rdf:ID="MixedChemicalSubstance"/>
    <owl:Class rdf:ID="Ground">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Solid"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#H4">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
    </owl:onProperty>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
    >4</owl:hasValue>
    <owl:onProperty>
    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="IgneousRock">
    <owl:equivalentClass>
    <owl:Class rdf:ID="Igneous"/>
    </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:ID="NO3minus">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#O3minus"/>

```

```

        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass>
        <owl:Class rdf:ID="Nitrate"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N"/>
            </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O3">
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >3</owl:hasValue>
            </owl:Restriction>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
            </owl:onProperty>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
                </owl:onProperty>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
                </owl:allValuesFrom>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Sulfur"/>
    <owl:Class rdf:ID="Potassium"/>
    <owl:Class rdf:ID="Manure">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Solid"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Radiocarbon">
        <rdfs:subClassOf>

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    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#RadioactiveSubstance"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Biomass">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="OrganicSubstance"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/substance.owl#DissolvedSubstance">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
    </owl:Class>
<owl:Class rdf:ID="CH2O">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <owl:equivalentClass>
        <owl:Class rdf:ID="Formaldehyde"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_3"/>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
                </owl:allValuesFrom>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
                <owl:allValuesFrom>
                    <owl:Class rdf:ID="H2"/>
                </owl:allValuesFrom>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
<owl:Class rdf:ID="VolcanicDeposit">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Deposit"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/substance.owl#RadioactiveSubstance">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#HazardousSubstance"/>

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</owl:Class>
<owl:Class rdf:ID="Oxygen"/>
<owl:Class rdf:ID="Fe3O4">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Fe3"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#O4"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <owl:equivalentClass>
    <owl:Class rdf:ID="Magnetite"/>
  </owl:equivalentClass>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Bromine"/>
<owl:Class rdf:ID="CO2">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#CarbonDioxide"/>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/substance.owl#VolatileOrganicCompound">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Contaminant"/>
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#VOC"/>

```



```

    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#SuspendedSubstance">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Particulate"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#ElectromagneticRadiation">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/numerics.owl#Quantity"/>
        <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#ElectromagneticWave"/>
      </owl:Class>
    <owl:Class rdf:ID="Oil">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#FossilFuel"/>
    </owl:Class>
    <owl:Class rdf:ID="Magma">
      <rdfs:subClassOf
        <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="MetamorphicRock">
      <owl:equivalentClass>
        <owl:Class rdf:ID="Metamorphic"/>
      </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:ID="Pigment">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#OrganicSubstance"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Liquid">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#State"/>
    </owl:Class>
    <owl:Class rdf:ID="Neon"/>
    <owl:Class rdf:ID="Pollen">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Particulate"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="NaCl">
      <owl:equivalentClass>
        <owl:Class rdf:ID="Salt"/>
      </owl:equivalentClass>
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Na"/>
          </owl:Restriction>

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    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
          <owl:allValuesFrom>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cl"/>

          </owl:allValuesFrom>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="ClO">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            <owl:allValuesFrom>
              <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
            </owl:allValuesFrom>
          </owl:Restriction>
        </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            <owl:allValuesFrom>
              <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cl"/>
            </owl:allValuesFrom>
          </owl:Restriction>
        </rdfs:subClassOf>
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#ChlorineMonoxide"/>
      </owl:Class>
      <owl:Class rdf:ID="H6">
        <rdfs:subClassOf>
          <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
        </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >6</owl:hasValue>
          <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>

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        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>

        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="http://www.w3.org/2002/07/owl#Thing"/>
<owl:Class rdf:ID="NitrousOxide"/>
<owl:Class rdf:ID="SO2">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#S"/>
            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#SulfurDioxide"/>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2"/>
            </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="InorganicSubstance">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Substance"/>
    </owl:Class>
    <owl:Class rdf:ID="Hematite"/>
    <owl:Class rdf:ID="CosmicRay">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElementaryParticle"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N2">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N"/>
                </owl:allValuesFrom>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>

```

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    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
          </owl:onProperty>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >2</owl:hasValue>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:ID="RadioWaveRadiation">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElectromagneticRadiation"/>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
              >1000.</owl:hasValue>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
            </owl:Restriction>
          </rdfs:subClassOf>
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >1.</owl:hasValue>
              <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
              </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
                <owl:hasValue>
                  <units:Unit rdf:ID="meter"/>
                </owl:hasValue>
              </owl:Restriction>
            </rdfs:subClassOf>
          </owl:Class>
          <owl:Class rdf:ID="Water"/>
          <owl:Class rdf:about="file:/D:/SWEET/substance.owl#H2">
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                  >2</owl:hasValue>
                <owl:onProperty>
                  <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
                </owl:onProperty>
              </owl:Restriction>
            </rdfs:subClassOf>
          </owl:Class>
        </rdfs:subClassOf>
      </owl:Class>
    </rdfs:subClassOf>
  </owl:Class>

```

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    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="C2H6S">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H6"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C2"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#S"/>
      </owl:allValuesFrom>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_3"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#DimethylSulfide"/>
</owl:Class>
<owl:Class rdf:ID="PhotosyntheticallyActiveRadiation">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >400</owl:hasValue>
    </owl:Restriction>

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    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#VisibleLight"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
          >700</owl:hasValue>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Deposit">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
  </owl:Class>
  <owl:Class rdf:ID="Solution">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
  </owl:Class>
  <owl:Class rdf:ID="IcePellet">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ice"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="Grain"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Ash">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Contaminant"/>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/substance.owl#MixedSubstance">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Substance"/>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#MixedChemicalSubstance"/>
  </owl:Class>
  <owl:Class rdf:ID="Electron">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElementaryParticle"/>
  </owl:Class>
  <owl:Class rdf:ID="ThermalInfraredRadiation">
    <rdfs:subClassOf>
      <owl:Restriction>

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        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
        <owl:hasValue>
            <units:Unit rdf:ID="micro_meter"/>
        </owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElectromagneticRadiation"/>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >6</owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >0.78</owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="B">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
    </rdfs:subClassOf>
    <owl:equivalentClass>
        <owl:Class rdf:ID="Boron"/>
    </owl:equivalentClass>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >6</owl:hasValue>
        <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >5</owl:hasValue>
    </owl:Restriction>
</rdfs:subClassOf>

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</owl:Class>
<owl:Class rdf:ID="BrO">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
  <owl:equivalentClass>
    <owl:Class rdf:ID="BromineMonoxide"/>
  </owl:equivalentClass>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
      <owl:allValuesFrom>
        <owl:Class rdf:ID="Br"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Fe2O3">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#O3"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Hematite"/>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Fe2"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Paleovegetation">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Solid"/>
  </rdfs:subClassOf>
</owl:Class>

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<owl:Class rdf:ID="LiquidWater">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Liquid"/>
      <owl:onProperty>
        <owl:ObjectProperty rdf:ID="hasState"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
  </owl:Class>
  <owl:Class rdf:ID="Gelbstoff">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#OrganicSubstance"/>
    </owl:Class>
    <owl:Class rdf:ID="FC">
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Fluorocarbon"/>
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
          </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#F"/>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            </owl:Restriction>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="Inorganic"/>
        <owl:Class rdf:ID="Phosphate"/>
        <owl:Class rdf:ID="Green">
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
              >557</owl:hasValue>
              <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
              </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#VisibleLight"/>
              </rdfs:subClassOf>
            </rdfs:subClassOf>

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    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >492</owl:hasValue>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Food">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Nutrient"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="TDS">
  <owl:equivalentClass>
    <owl:Class rdf:ID="TotalDissolvedSolid"/>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="Paleosol">
  <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Soil"/>
</owl:Class>
<owl:Class rdf:ID="HCl">
  <owl:equivalentClass>
    <owl:Class rdf:ID="HydrogenChloride"/>
  </owl:equivalentClass>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>

        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cl"/>
      </owl:allValuesFrom>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Br">

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    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
          >35</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
          >45</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Bromine"/>
    </owl:Class>
    <owl:Class rdf:ID="MarineSediment">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Sediment"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Allotrope">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Chemical"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Defoilant">
      <rdfs:subClassOf>
        <owl:Class rdf:ID="AgriculturalChemical"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Sewage">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#HazardousSubstance"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Liquid"/>
    </owl:Class>
    <owl:Class rdf:ID="StableIsotope">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Isotope"/>
      </rdfs:subClassOf>
    </owl:Class>
  </owl:Class>

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<owl:Class rdf:ID="Orange">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >597</owl:hasValue>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#VisibleLight"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
      >622</owl:hasValue>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>

    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
      <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="OCS">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>

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        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#S"/>
    </owl:allValuesFrom>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_3"/>
    </owl:Restriction>
</rdfs:subClassOf>
<owl:equivalentClass>
    <owl:Class rdf:ID="CarbonylSulfide"/>
</owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="Sand">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Grain"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Silk">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#OrganicSubstance"/>
    </owl:Class>
<owl:Class rdf:ID="Lava">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Magma"/>
    </owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#H3">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >3</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
        </owl:DatatypeProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Allotrope"/>
</owl:Class>
<owl:Class rdf:ID="SnowGrain">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Snow"/>
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Grain"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="ClONO2">

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    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2"/>
        </owl:allValuesFrom>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_4"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N"/>
      </owl:allValuesFrom>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_3"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cl"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#ChlorineNitrate"/>
  </owl:Class>
  <owl:Class rdf:ID="GreenhouseGas">
    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Hydroperoxy"/>
  <owl:Class rdf:ID="UltravioletRadiation">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
        <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
      </owl:Restriction>
    </rdfs:subClassOf>

```

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    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
          <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
            >390</owl:hasValue>
        </owl:Restriction>
      </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElectromagneticRadiation"/>
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#ShortWaveRadiation"/>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
              >5</owl:hasValue>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
              </owl:Restriction>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="Pb">
          <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Lead"/>
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:onProperty>
                  <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
                    </owl:onProperty>
                    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                      >82</owl:hasValue>
                </owl:Restriction>
              </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
                </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:onProperty>
                  <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
                    </owl:onProperty>
                    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                      >125</owl:hasValue>
                </owl:Restriction>
              </rdfs:subClassOf>
            </owl:Class>
          <owl:Class rdf:ID="MethylCyanide"/>
          <owl:Class rdf:ID="N2O">
            <rdfs:subClassOf>
              <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
            </rdfs:subClassOf>
          </owl:Class>
        </owl:Class>
      </rdfs:subClassOf>
    </owl:Class>
  </owl:Class>

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    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#NitrousOxide"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#N2"/>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="BiomedicalChemical">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </owl:Class>
    <owl:Class rdf:ID="NitricOxide"/>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cx">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
                </owl:onProperty>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Allotrope"/>
    </owl:Class>
    <owl:Class rdf:ID="CH3CN">
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
        </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#MethylCyanide"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N"/>
            </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_4"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>

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    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_3"/>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H3"/>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#C"/>
    </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Metamorphic">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Rock"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Cation">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Ion"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Pesticide">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#AgriculturalChemical"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="GasHydrate">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#NaturalResource"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Solid">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#State"/>
    </owl:Class>
    <owl:Class rdf:ID="GravityField">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/numerics.owl#Field"/>
    </owl:Class>
    <owl:Class rdf:ID="CoralDeposit">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Deposit"/>
    </owl:Class>
    <owl:Class rdf:ID="Radiation"/>
    <owl:Class rdf:ID="XrayRadiation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElectromagneticRadiation"/>
    <rdfs:subClassOf>

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    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >5</owl:hasValue>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
      <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
        >0.03</owl:hasValue>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Micronutrient">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Nutrient"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SedimentaryRock">
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Sedimentary"/>
</owl:Class>
<owl:Class rdf:ID="BiogenicSediment">
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Sediment"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SeaWater">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#H2O"/>
      </owl:allValuesFrom>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Salt"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    </owl:Restriction>
  </rdfs:subClassOf>

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        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </owl:Class>
    <owl:Class rdf:ID="OH">
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
                </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
                </owl:Restriction>
            </rdfs:subClassOf>
            <owl:equivalentClass>
                <owl:Class rdf:ID="Hydroxyl"/>
            </owl:equivalentClass>
        </owl:Class>
        <owl:Class rdf:ID="Clathrate"/>
        <owl:Class rdf:ID="Mg">
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                    >12</owl:hasValue>
                <owl:onProperty>
                    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                    >12</owl:hasValue>
                <owl:onProperty>
                    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
            <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Magnesium"/>
            <rdfs:subClassOf>

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    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Material">
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Substance"/>
  </owl:Class>
  <owl:Class rdf:ID="Leachate">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Element">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Chemical"/>
      </rdfs:subClassOf>
      <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#ChemicalElement"/>
      </owl:Class>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Rock">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Solid"/>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
        </owl:Class>
        <owl:Class rdf:ID="Yellow">
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
              <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
            </owl:Restriction>
          </rdfs:subClassOf>
          <rdfs:subClassOf>
            <owl:Restriction>
              <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
              >557</owl:hasValue>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
            </owl:Restriction>
          </rdfs:subClassOf>
          <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#VisibleLight"/>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >622</owl:hasValue>
              </owl:Restriction>
            </rdfs:subClassOf>
          </owl:Class>
          <owl:Class rdf:ID="DissolvedSolid">

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    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Solid"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#DissolvedSubstance"/>
    </owl:Class>
    <owl:Class rdf:ID="Phosphorus"/>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ice">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
    <owl:onProperty>
    <owl:ObjectProperty rdf:ID="hasChemical"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasState"/>
    </owl:onProperty>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Solid"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
    </owl:Class>
    <owl:Class rdf:ID="HO2">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Hydroperoxy"/>
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2"/>
    </owl:allValuesFrom>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Organic"/>
    <owl:Class rdf:ID="Plume">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Contaminant"/>

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</owl:Class>
<owl:Class rdf:ID="NMHC">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Cx"/>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_3"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#NonMethaneHydrocarbon"/>
  <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom>
        <owl:Class rdf:ID="NM"/>
      </owl:allValuesFrom>
      <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Cl">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
>17</owl:hasValue>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
>18</owl:hasValue>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
      </owl:onProperty>
    </owl:Restriction>

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    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Chlorine"/>
    </owl:Class>
    <owl:Class rdf:ID="NO2minus">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#O2minus"/>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Nitrite"/>
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N"/>
    </owl:allValuesFrom>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Coal">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#FossilFuel"/>
    </owl:Class>
    <owl:Class rdf:ID="PO">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Phosphate"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    <owl:allValuesFrom>
    <owl:Class rdf:ID="P"/>
    </owl:allValuesFrom>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Ox"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>

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    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#AgriculturalChemical">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#TotalDissolvedSolid">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#TDS"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#DissolvedSubstance"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#H2O">
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_1"/>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#H2"/>
    </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
    <owl:allValuesFrom>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
    </owl:allValuesFrom>
    </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Nutrient">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Grain">
    <rdfs:subClassOf>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Particulate"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Sediment">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Deposit"/>
    </owl:Class>
    <owl:Class rdf:ID="WaterVapor">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasState"/>

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        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Gas"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#VisibleLight">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElectromagneticRadiation"/>
    </owl:Class>
    <owl:Class rdf:ID="SuspendedGas">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Gas"/>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SuspendedSubstance"/>
    </owl:Class>
    <owl:Class rdf:ID="He">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
        <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Helium"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
                </owl:onProperty>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >2</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >2</owl:hasValue>
                <owl:onProperty>
                    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Petroleum">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#FossilFuel"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O2">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement"/>
                </owl:onProperty>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
                </owl:allValuesFrom>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>

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        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Allotrope"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms"/>
            </owl:onProperty>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >2</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Droplet">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
    </owl:Class>
    <owl:Class rdf:ID="CondensedWater">
        <owl:equivalentClass>
            <owl:Class>
                <owl:unionOf rdf:parseType="Collection">
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ice"/>
                    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#LiquidWater"/>
                </owl:unionOf>
            </owl:Class>
        </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:ID="GammaWaveRadiation">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                    >0</owl:hasValue>
                </owl:Restriction>
            </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                    >0.03</owl:hasValue>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElectromagneticRadiation"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>

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        <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#nano_meter"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Bedrock">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Rock"/>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Chemical">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#ChemicalSubstance"/>
    </owl:Class>
<owl:Class rdf:ID="Macrofossil">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Fossil"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Igneous">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Rock"/>
</owl:Class>
<owl:Class rdf:ID="Powder">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Particulate"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Proton">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElementaryParticle"/>
    </owl:Class>
<owl:Class rdf:ID="SolidSubstance">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Substance"/>
    </owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Fossil">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
    </owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#S">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
            </owl:onProperty>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
>16</owl:hasValue>
        </owl:Restriction>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Sulfur"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"

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        >16</owl:hasValue>
        <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="InfraredRadiation">
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#LongWaveRadiation"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue
rdf:resource="file:/D:/SWEET/substance.owl#micro_meter"/>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUnit"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasLowerBound"/>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >0.780</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#double"
                >1000.</owl:hasValue>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/numerics.owl#hasUpperBound"/>
                </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#ElectromagneticRadiation"/>
        </owl:Class>
        <owl:Class rdf:ID="Ne">
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:onProperty>
                        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
                    </owl:onProperty>
                    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                    >10</owl:hasValue>
                </owl:Restriction>
            </rdfs:subClassOf>
            <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Neon"/>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:onProperty>

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        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
        </owl:onProperty>
        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
        >10</owl:hasValue>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Crystal">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
    </owl:Class>
    <owl:Class rdf:ID="K">
        <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Potassium"/>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >20</owl:hasValue>
                <owl:onProperty>
                    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:onProperty>
                        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
                        </owl:onProperty>
                        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                        >19</owl:hasValue>
                    </owl:Restriction>
                </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="AirBubble">
                <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Air"/>
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Bubble"/>
            </owl:Class>
            <owl:Class rdf:ID="Mn">
                <rdfs:subClassOf>
                    <owl:Restriction>
                        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                        >30</owl:hasValue>
                        <owl:onProperty>
                            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>

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        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Manganese"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
            </owl:onProperty>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >25</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
    </rdfs:subClassOf>
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
</owl:Class>
<owl:Class rdf:ID="NO">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound"/>
    </rdfs:subClassOf>
    <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#NitricOxide"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O"/>
            </owl:allValuesFrom>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/substance.owl#hasChemical_2"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="TraceMetal">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Metal"/>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#TraceSubstance"/>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#P">
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                        >15</owl:hasValue>
                    <owl:onProperty>

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        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
                </owl:onProperty>
                <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
                >16</owl:hasValue>
            </owl:Restriction>
        </rdfs:subClassOf>
        <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Phosphorus"/>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Compound">
            <owl:equivalentClass>
                <owl:Class rdf:ID="ChemicalCompound"/>
            </owl:equivalentClass>
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Chemical"/>
            </owl:Class>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Isotope">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
                </owl:Class>
                <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#ExtraterrestrialSubstance">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#MixedSubstance"/>
                </owl:Class>
                <owl:Class rdf:ID="Spray">
                    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Aerosol"/>
                    </owl:Class>
                    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Particulate">
                        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#SubstanceForm"/>
                        </rdfs:subClassOf>
                        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#Solid"/>
                        </owl:Class>
                        <owl:Class rdf:ID="TraceGas">
                            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#TraceSubstance"/>
                            <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Gas"/>
                            </owl:Class>
                            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#O">
                                <rdfs:subClassOf>
                                    <owl:Restriction>
                                        <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"

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        >8</owl:hasValue>
        <owl:onProperty>
          <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Restriction>
      <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
      >8</owl:hasValue>
      <owl:onProperty>
        <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </rdfs:subClassOf>
  <owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
  </owl:Class>
  <owl:Class rdf:ID="Fertilizer">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/substance.owl#AgriculturalChemical"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#N">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons"/>
            </owl:onProperty>
            <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >7</owl:hasValue>
          </owl:Restriction>
        </rdfs:subClassOf>
      </rdfs:subClassOf>
    </owl:Restriction>
  </owl:hasValue>
  <owl:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
  >7</owl:hasValue>
  <owl:onProperty>
    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons"/>
    </owl:onProperty>
  </owl:Restriction>
</rdfs:subClassOf>
<owl:equivalentClass
rdf:resource="file:/D:/SWEET/substance.owl#Nitrogen"/>
</owl:Class>
<owl:ObjectProperty rdf:ID="hasChemical_5"/>
<owl:ObjectProperty rdf:ID="hasDirection"/>

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    <owl:ObjectProperty rdf:ID="hasAssociatedPhenomena"/>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasState">
    <rdfs:range rdf:resource="file:/D:/SWEET/substance.owl#State"/>
    <rdfs:domain
rdf:resource="file:/D:/SWEET/substance.owl#Substance"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasAssociatedSubstance"/>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/substance.owl#hasElement">
    <rdfs:range rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasLocation">
    <rdfs:domain>
    <owl:Class>
    <owl:unionOf rdf:parseType="Collection">
    <rdfs:Description
rdf:about="file:/D:/SWEET/space.owl#Location"/>
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#Contaminant"/>
    </owl:unionOf>
    </owl:Class>
    </rdfs:domain>
    <rdfs:range rdf:resource="file:/D:/SWEET/space.owl#Location"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasExtent">
    <rdfs:range rdf:resource="file:/D:/SWEET/space.owl#Vicinity"/>
    <rdfs:domain>
    <owl:Class>
    <owl:unionOf rdf:parseType="Collection">
    <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#Contaminant"/>
    <rdfs:Description
rdf:about="file:/D:/SWEET/space.owl#Vicinity"/>
    </owl:unionOf>
    </owl:Class>
    </rdfs:domain>
    </owl:ObjectProperty>
    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasExcessNeutrons">
    <rdfs:domain rdf:resource="file:/D:/SWEET/substance.owl#Chemical"/>
    </owl:DatatypeProperty>
    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasAtoms">
    <rdfs:domain rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
    </owl:DatatypeProperty>
    <owl:DatatypeProperty rdf:ID="isVOC">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/substance.owl#Contaminant"/>
    <rdfs:range
rdf:resource="http://www.w3.org/2001/XMLSchema#boolean"/>
    </owl:DatatypeProperty>
    <owl:DatatypeProperty rdf:ID="isPointSource">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/substance.owl#Contaminant"/>
    <rdfs:range>
    <owl:DataRange>

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```

    <owl:oneOf rdf:parseType="Resource">
      <rdf:rest rdf:parseType="Resource">
        <rdf:rest rdf:resource="http://www.w3.org/1999/02/22-rdf-
syntax-ns#nil"/>
        <rdf:first
rdf:datatype="http://www.w3.org/2001/XMLSchema#boolean"
        >false</rdf:first>
      </rdf:rest>
      <rdf:first
rdf:datatype="http://www.w3.org/2001/XMLSchema#boolean"
        >true</rdf:first>
    </owl:oneOf>
  </owl:DataRange>
</rdfs:range>
</owl:DatatypeProperty>
<owl:DatatypeProperty rdf:ID="isNonPointSource">
  <rdfs:range>
    <owl:DataRange>
      <owl:oneOf rdf:parseType="Resource">
        <rdf:first
rdf:datatype="http://www.w3.org/2001/XMLSchema#boolean"
        >true</rdf:first>
        <rdf:rest rdf:parseType="Resource">
          <rdf:first
rdf:datatype="http://www.w3.org/2001/XMLSchema#boolean"
          >false</rdf:first>
          <rdf:rest rdf:resource="http://www.w3.org/1999/02/22-rdf-
syntax-ns#nil"/>
        </rdf:rest>
      </owl:oneOf>
    </owl:DataRange>
  </rdfs:range>
  <rdfs:domain
rdf:resource="file:/D:/SWEET/substance.owl#Contaminant"/>
  </owl:DatatypeProperty>
  <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasProtons">
    <rdfs:domain rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
  </owl:DatatypeProperty>
  <owl:DatatypeProperty rdf:ID="isHazardous">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/substance.owl#Substance"/>
  </owl:DatatypeProperty>
  <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasCharge">
    <rdfs:domain rdf:resource="file:/D:/SWEET/substance.owl#Chemical"/>
  </owl:DatatypeProperty>
  <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/substance.owl#hasBaseNeutrons">
    <rdfs:domain rdf:resource="file:/D:/SWEET/substance.owl#Element"/>
  </owl:DatatypeProperty>
  <units:Unit rdf:ID="kilo_meter"/>
</rdf:RDF>

<!-- Created with Protege (with OWL Plugin 2.1 beta, Build 277)
http://protege.stanford.edu -->

```

phenomena.owl

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="file:/D:/SWEET/phenomena.owl#"
  xmlns:substance="file:/D:/SWEET/substance.owl#"
  xmlns:process="file:/D:/SWEET/process.owl#"
  xmlns:human_activities="file:/D:/SWEET/human_activities.owl#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:space="file:/D:/SWEET/space.owl#"
  xmlns:numerics="file:/D:/SWEET/numerics.owl#"
  xmlns:property="file:/D:/SWEET/property.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:earth="file:/D:/SWEET/earth.owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:daml="http://www.daml.org/2001/03/daml+oil#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xmlns:units="file:/D:/SWEET/units.owl#"
  xml:base="file:/D:/SWEET/phenomena.owl">
  <owl:Ontology rdf:about="file:/D:/SWEET/phenomena.owl">
    <owl:imports rdf:resource="file:/D:/SWEET/units.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/numerics.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/process.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/earth.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/property.owl"/>
    <owl:versionInfo
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
  >
1.0</owl:versionInfo>
    <owl:imports rdf:resource="file:/D:/SWEET/space.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/substance.owl"/>
    <owl:imports rdf:resource="file:/D:/SWEET/human_activities.owl"/>
  </owl:Ontology>
  <owl:Class rdf:about="file:/D:/SWEET/space.owl#MeteorologicalScale"/>
  <owl:Class rdf:ID="Flood">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty rdf:ID="hasAssociatedEarth"/>
        </owl:onProperty>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#LandRegion"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="HydrospherePhenomena"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty rdf:ID="hasAssociatedSubstance"/>
        </owl:onProperty>
        <owl:allValuesFrom>

```

```

        <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#LiquidWater"/>
        </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Madden-JulianOscillation">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:hasValue>
                <property:Time rdf:ID="years_20">
                    <numerics:hasUnit>
                        <units:SimpleUnit rdf:ID="year"/>
                    </numerics:hasUnit>
                    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
                    >
20</numerics:hasValue>
                </property:Time>
            </owl:hasValue>
            <owl:onProperty>
                <owl:ObjectProperty rdf:ID="hasTemporalExtent"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="GlobalOscillation"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Blowing">
    <rdfs:comment
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
When dust, sand, snow, and/or spray is raised by the wind to a height
of 6 feet or more</rdfs:comment>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty rdf:ID="hasAssociatedPhenomena"/>
            </owl:onProperty>
            <owl:allValuesFrom>
                <owl:Class rdf:ID="Wind"/>
            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
            </owl:onProperty>
            <owl:allValuesFrom>
                <owl:Class rdf:ID="DustOrSandOrSprayOrSnow"/>
            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>

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```

    <owl:Class rdf:ID="WeatherPhenomena"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#PlanetarySurface"/>
<owl:Class rdf:ID="Frost">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty rdf:ID="hasAssociatedProcess"/>
      </owl:onProperty>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Freezing"/>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#WeatherPhenomena"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
      </owl:onProperty>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ice"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/property.owl#Speed"/>
<owl:Class rdf:ID="Typhoon">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="Cyclone"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Eddy">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
      </owl:onProperty>
      <owl:allValuesFrom>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Ocean"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:ID="EarthSciencePhenomena"/>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
      </owl:onProperty>

```

```

        <owl:allValuesFrom>
            <owl:Class rdf:ID="Geomagnetism"/>
        </owl:allValuesFrom>
    </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Sublimation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#StateOfMatterChangeEvent"/>
    </owl:Class>
<owl:Class rdf:ID="ENSO">
    <owl:equivalentClass>
        <owl:Class rdf:ID="ElNinoSouthernOscillation"/>
    </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="Baseflow">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Stream"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="LandWaterCirculation"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#Hydrosphere"/>
<owl:Class rdf:about="file:/D:/SWEET/space.owl#Vertical"/>
<owl:Class rdf:ID="AtmosphericCirculation">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
                </owl:onProperty>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Air"/>
            </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Circulation"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#WeatherPhenomena"/>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class rdf:ID="AtmosphericPhenomena"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Whiteout">
    <rdfs:subClassOf>

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```

    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#Visibility"/>
      <owl:onProperty>
        <owl:ObjectProperty rdf:ID="hasAssociatedQuantity"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>
</rdfs:subClassOf>
  <owl:Class rdf:ID="ObscurationPhenomena"/>
</rdfs:subClassOf>
</rdfs:subClassOf>
  <owl:Restriction>
    <owl:onProperty>
      <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
    </owl:onProperty>
    <owl:allValuesFrom>
      <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Snow"/>
    </owl:allValuesFrom>
  </owl:Restriction>
</rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#PlanetEarth"/>
<owl:Class rdf:ID="TidalCurrent">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
      </owl:onProperty>
      <owl:allValuesFrom>
        <owl:Class rdf:ID="Tide"/>
      </owl:allValuesFrom>
    </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class rdf:ID="OceanCurrent"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/substance.owl#CloudCondensationNuclei"/>
  <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Cryosphere"/>
  <owl:Class rdf:ID="Diagenesis">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="SedimentFormation"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#WeatherPhenomena">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>

```

```

        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
        </owl:onProperty>
        <owl:allValuesFrom>
            <owl:Class rdf:ID="Weather"/>
        </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Anticyclone">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#AtmosphericCirculation"/>
    </owl:Class>
<owl:Class rdf:ID="Slide">
    <rdfs:subClassOf
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
        </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom>
                    <owl:Class rdf:about="file:/D:/SWEET/process.owl#Transport"/>
                </owl:allValuesFrom>
            </owl:Restriction>
        </owl:onProperty>
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/substance.owl#Acid"/>
<owl:Class rdf:ID="Monsoon">
    <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Wind"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="CoastalRegion"/>
<owl:Class rdf:ID="PlateConvergence">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="TectonicPhenomena"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Rain">
    <rdfs:subClassOf>
        <owl:Class rdf:ID="Precipitation"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
                </owl:onProperty>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#LiquidWater"/>
                </owl:Restriction>
            </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:ID="LittoralDrift">
            <owl:equivalentClass>

```



```

    <owl:Class rdf:ID="LongshoreCurrent"/>
  </owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="Symbiosis">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="EcologicalPhenomena"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SeismicPhenomena">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="SolidEarthPhenomena"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="VolcanicActivity">
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
        </owl:onProperty>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Volcano"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#SolidEarthPhenomena"/>
    </rdfs:subClassOf>
  </owl:Class>
<owl:Class rdf:ID="Desertification">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="ClimateChange"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="Hazard">
  <rdfs:subClassOf>
    <owl:Class rdf:ID="Phenomena"/>
  </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/earth.owl#BoundaryLayer"/>
<owl:Class rdf:ID="SeaFloor"/>
<owl:Class rdf:ID="SaltWater"/>
<owl:Class rdf:ID="OceanPhenomena">
  <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#HydrospherePhenomena"/>
    </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Ocean"/>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>

```

```

    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
          </owl:onProperty>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#SaltWater"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:ID="Glacier"/>
      <owl:Class rdf:about="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
      <owl:Class rdf:ID="Tornado">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#AtmosphericCirculation"/>
        <rdfs:subClassOf>
          <owl:Class rdf:ID="Storm"/>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:ID="Toxicity">
        <rdfs:subClassOf>
          <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Atmosphere"/>
        <owl:Class rdf:ID="WarmPool">
          <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#HydrospherePhenomena"/>
            </rdfs:subClassOf>
          </owl:Class>
          <owl:Class rdf:ID="Avalanche">
            <rdfs:subClassOf>
              <owl:Restriction>
                <owl:onProperty>
                  <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
                  </owl:onProperty>
                  <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Snow"/>
                  </owl:Restriction>
                </rdfs:subClassOf>
              <rdfs:subClassOf>
rdf:resource="file:/D:/SWEET/phenomena.owl#Slide"/>
              </owl:Class>
              <owl:Class rdf:ID="PhysicalPhenomena">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
                </owl:Class>

              <owl:Class rdf:ID="SoilLiquefaction">
                <rdfs:subClassOf rdf:resource="file:/D:/SWEET/substance.owl#Soil"/>
                <rdfs:subClassOf>
                  <owl:Class rdf:ID="Earthquake"/>

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```

    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Class rdf:ID="EarthMaterialDisplacement"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#ElNinoSouthernOscillation">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#GlobalOscillation"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Subsidence">
    <rdfs:subClassOf>
      <owl:Class rdf:ID="LandSurfaceHeightChangeEvent"/>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
  </owl:Class>
  <owl:Class rdf:ID="Towering">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#hasDirection"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/space.owl#Vertical"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Motion"/>
  </owl:Class>
  <owl:Class rdf:ID="TrophicDynamics">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
  </owl:Class>
  <owl:Class rdf:ID="AcidRain">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Acid"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <owl:onProperty>
      <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
    </owl:onProperty>
  </owl:Restriction>
  </rdfs:subClassOf>
  <rdfs:subClassOf>
    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
      </owl:onProperty>
    </owl:Restriction>
  </rdfs:subClassOf>

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        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#LiquidWater"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/phenomena.owl#Rain"/>
</owl:Class>
<owl:Class rdf:ID="Blizzard">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:ID="Cloud"/>
            </owl:allValuesFrom>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#Precipitation"/>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Snow"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Gyre">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#OceanCurrent"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="GlobalWarming">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom>
                    <owl:Class rdf:ID="GreenhouseEffect"/>
                </owl:allValuesFrom>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#ClimateChange"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="OceanCirculation">

```

```

    <rdfs:subClassOf>
      <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Circulation"/>
    </rdfs:subClassOf>
  </rdfs:subClassOf>
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanPhenomena"/>
  </owl:Class>
  <owl:Class rdf:ID="Jet">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/property.owl#Pressure"/>
        </owl:allValuesFrom>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity"/>
          </owl:onProperty>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Glaciation">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Freezing"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
  </rdfs:subClassOf>
  <owl:Class rdf:ID="CryospherePhenomena"/>
  </rdfs:subClassOf>
  </rdfs:subClassOf>
  <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#Glacier"/>
    </owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
    </owl:onProperty>
  </owl:Restriction>
  </rdfs:subClassOf>
</owl:Class>
  <owl:Class rdf:ID="Explosion">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="Cumulonimbus">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Cloud"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Upwelling">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanCirculation"/>
      </owl:Class>

```

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    <owl:Class rdf:ID="StormSurge">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Flood"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#CoastalRegion"/>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#UndegroundWaterObject"/>
    <owl:Class rdf:ID="Smoke">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#ObscurationPhenomena"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#HazardousLevel"/>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#DustOrSandOrSprayOrSnow">
      <owl:equivalentClass>
        <owl:Class>
          <owl:unionOf rdf:parseType="Collection">
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Sand"/>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Spray"/>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Dust"/>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Snow"/>
          </owl:unionOf>
        </owl:Class>
      </owl:equivalentClass>
    </owl:Class>
    <owl:Class rdf:ID="Dew">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#WeatherPhenomena"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom>
            <owl:Class rdf:about="file:/D:/SWEET/property.owl#DewPoint"/>
          </owl:allValuesFrom>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom>
            <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Water"/>
          </owl:allValuesFrom>
          <owl:onProperty>

```

```

        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Condensation"/>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
        </owl:Restriction>
    </rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
            </owl:onProperty>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#PlanetarySurface"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:ID="SurfaceWave">
    <rdfs:subClassOf rdf:resource="file:/D:/SWEET/process.owl#Wave"/>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#ObscurationPhenomena">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#WeatherPhenomena"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity"/>
                </owl:onProperty>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#Visibility"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
<owl:Class rdf:ID="Tsunami">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#Earthquake"/>
            </owl:allValuesFrom>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanPhenomena"/>

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```

    <owl:equivalentClass>
      <owl:Class rdf:ID="TidalWave"/>
    </owl:equivalentClass>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Geomagnetism">
    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#SolidEarthPhenomena"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Magnetism"/>
    </owl:Class>
    <owl:Class rdf:ID="DustStorm">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Storm"/>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
          </owl:onProperty>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Dust"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="SeismicSurfaceWave">
      <rdfs:subClassOf>
        <owl:Class rdf:ID="SeismicWave"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="PacificDecadalOscillation">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#GlobalOscillation"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#LandWaterCirculation">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#HydrospherePhenomena"/>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
          </owl:onProperty>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>

```



```

        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#UndergroundWaterObject"/>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Transport"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#SolidEarthPhenomena">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                    </owl:onProperty>
                    <owl:allValuesFrom>
                        <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SolidEarth"/>
                    </owl:allValuesFrom>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
                </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="Drought">
                <rdfs:subClassOf>
                    <owl:Class rdf:ID="ClimateAnomaly"/>
                </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:ID="Desalinization">
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#SubstanceConcentrationChangeProcess"/>
                </owl:Class>
            <owl:Class rdf:ID="PNA">
                <owl:equivalentClass>
                    <owl:Class rdf:ID="PacificNorthAmericanPattern"/>
                </owl:equivalentClass>
            </owl:Class>
            <owl:Class rdf:ID="Landslide">
                <rdfs:subClassOf>
                    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EarthMaterialDisplacement"/>
                </rdfs:subClassOf>
                <rdfs:subClassOf>
                    <owl:Restriction>
                        <owl:allValuesFrom>

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```

        <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Ground"/>
    </owl:allValuesFrom>
    <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Slide"/>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class
rdf:about="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
                </owl:allValuesFrom>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Particle"/>
    <owl:Class rdf:ID="Eruption">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#VolcanicActivity"/>
    </owl:Class>
    <owl:Class rdf:ID="AtmosphericElectricityPhenomena">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#AtmosphericPhenomena"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="SandStorm">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Sand"/>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Storm"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="SaltWaterIntrusion">
        <rdfs:subClassOf>
            <owl:Class rdf:ID="Intrusion"/>
            </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#SaltWater"/>
    </owl:Class>
    <owl:Class rdf:ID="Ablation">

```

```

    <rdfs:subClassOf>
      <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#CryospherePhenomena"/>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Sublimation"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#Glacier"/>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Evaporation"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Melting"/>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:ID="Erosion">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#MaterialDisintegration"/>
  </owl:Class>
  <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#TectonicPhenomena">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Deformation"/>
        <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#SolidEarthPhenomena"/>
    <rdfs:subClassOf>
      <owl:Restriction>

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        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
        </owl:onProperty>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Crust"/>
        </owl:allValuesFrom>
      </owl:Restriction>
    </rdfs:subClassOf>
  </owl:Class>
  <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Cyclone">
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom
rdf:resource="http://www.w3.org/2001/XMLSchema#integer"/>
        <owl:onProperty>
          <owl:DatatypeProperty rdf:ID="hasMaxCategory"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:allValuesFrom>
          <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Storm"/>
        </owl:allValuesFrom>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
        </owl:onProperty>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#Rain"/>
      </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#AtmosphericCirculation"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#LinearExtent"/>
    <owl:Class rdf:ID="Infiltration">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#LandWaterCirculation"/>
    </owl:Class>
    <owl:Class rdf:ID="PhenomenaOrHumanActivity">
      <owl:equivalentClass>
        <owl:Class>
          <owl:unionOf rdf:parseType="Collection">
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#Phenomena"/>
            <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#HumanActivity"/>

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        </owl:unionOf>
    </owl:Class>
</owl:equivalentClass>
</owl:Class>
<owl:Class rdf:ID="GeothermalPhenomena">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#SolidEarthPhenomena"/>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#ThermalProcess"/>
</owl:Class>
<owl:Class rdf:ID="Bioturbation">
    <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#SedimentFormation"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#GreenhouseEffect">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#ClimateChange"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="ArcticOscillation">
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#GlobalOscillation"/>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:ID="NeotectonicPhenomena">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#TectonicPhenomena"/>
        </owl:Class>
    <owl:Class rdf:ID="EnvironmentalImpact">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
        </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/property.owl#TimeInterval">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasUpperLimit"/>
                    </owl:onProperty>
                    <owl:allValuesFrom>
                        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Time"/>
                    </owl:allValuesFrom>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:allValuesFrom>
                        <owl:Class rdf:about="file:/D:/SWEET/property.owl#Time"/>
                    </owl:allValuesFrom>
                    <owl:onProperty>
                        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasLowerLimit"/>
                        </owl:onProperty>

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        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#CryospherePhenomena">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Cryosphere"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/units.owl#ComplexUnit"/>
<owl:Class rdf:ID="Fire">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
    </owl:Class>
<owl:Class rdf:ID="Aquifer"/>
<owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Precipitation">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom>
                <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Troposphere"/>
            </owl:allValuesFrom>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </rdfs:subClassOf>
    <owl:Restriction>
        <owl:allValuesFrom>
            <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Cloud"/>
        </owl:allValuesFrom>
        <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
            </owl:onProperty>
        </owl:Restriction>
    </rdfs:subClassOf>
</rdfs:subClassOf>
    <owl:Class rdf:ID="Hydrometeor"/>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Wind">
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:onProperty>

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        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#Speed"/>
        </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#AtmosphericCirculation"/>
        </owl:Class>
        <owl:Class rdf:ID="ThermohalineCirculation">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanCirculation"/>
        </owl:Class>
        <owl:Class rdf:ID="Drainage">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#LandWaterCirculation"/>
        </owl:Class>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
        </owl:Class>
        <owl:Class rdf:ID="Hail">
        <rdfs:subClassOf>
        <owl:Restriction>
        <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Ice"/>
        </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Precipitation"/>
        </owl:Class>
        <owl:Class rdf:ID="WindGust">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/phenomena.owl#Wind"/>
        </owl:Class>
        <owl:Class rdf:ID="Paleomagnetism">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Magnetism"/>
        </owl:Class>
        <owl:Class rdf:about="http://www.w3.org/2002/07/owl#Thing"/>
        <owl:Class rdf:ID="Inundation">
        <owl:equivalentClass
rdf:resource="file:/D:/SWEET/phenomena.owl#Flood"/>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Tide">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanPhenomena"/>
        </owl:Class>
        <owl:Class rdf:ID="Smog">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#ObscurationPhenomena"/>
        </owl:Class>

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    <owl:Class rdf:ID="Turbulence">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Fluctuation"/>
    </owl:Class>
    <owl:Class rdf:ID="Cirrus">
      <rdfs:subClassOf>
        <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Cloud"/>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Sleet">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#LiquidWater"/>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Precipitation"/>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:onProperty>
              <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
            </owl:onProperty>
            <owl:allValuesFrom>
              <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#IcePellet"/>
            </owl:allValuesFrom>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Weather">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#WeatherPhenomena"/>
            <owl:onProperty>
              <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:about="file:/D:/SWEET/earth.owl#SoilLayer"/>
      <owl:Class rdf:ID="IsostaticRebound">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#TectonicPhenomena"/>
        </owl:Class>
        <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Storm">
          <rdfs:subClassOf>

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    <owl:Restriction>
      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#Rain"/>
        </owl:Restriction>
      </rdfs:subClassOf>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#AtmosphericCirculation"/>
    </owl:Class>
    <owl:Class rdf:ID="Hurricane">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Cyclone"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#Wind"/>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:ID="Airglow">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#AtmosphericPhenomena"/>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Hydrometeor">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#HydrospherePhenomena"/>
        </rdfs:subClassOf>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Haze">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#ObscurationPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="Front">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity"/>
            </owl:onProperty>
            <owl:allValuesFrom>
              <owl:Class
rdf:about="file:/D:/SWEET/property.owl#Temperature"/>
              </owl:allValuesFrom>
            </owl:Restriction>
          </owl:Class>

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    </rdfs:subClassOf>
    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity"/>
          </owl:onProperty>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#Pressure"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#WeatherPhenomena"/>
      </owl:Class>
      <owl:Class rdf:ID="BaroclinicCirculation">
        <rdfs:subClassOf>
          <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Circulation"/>
        </rdfs:subClassOf>
      </owl:Class>
      <owl:Class rdf:ID="FoodWebDynamics">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
        </owl:Class>
        <owl:Class rdf:ID="SouthernOscillation">
          <owl:equivalentClass
rdf:resource="file:/D:/SWEET/phenomena.owl#ENSO"/>
          <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#GlobalOscillation"/>
            </rdfs:subClassOf>
          </owl:Class>
          <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#ClimateChange">
            <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
            </owl:Class>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#GlobalOscillation">
              <rdfs:subClassOf>
                <owl:Restriction>
                  <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity"/>
                    </owl:onProperty>
                    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#Temperature"/>
                    </owl:Restriction>
                  </rdfs:subClassOf>
                <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
                <rdfs:subClassOf>
                  <owl:Restriction>
                    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/property.owl#Pressure"/>
                    <owl:onProperty>
                      <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity"/>
                      </owl:onProperty>

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        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Ocean"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    <rdfs:subClassOf>
        <owl:Restriction>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Atmosphere"/>
            <owl:onProperty>
                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Aurora">
        <rdfs:subClassOf>
            <owl:Class rdf:ID="AtmosphericLightEmission"/>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Fog">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Condensation"/>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
                </owl:Restriction>
            </rdfs:subClassOf>
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Hydrometeor"/>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:onProperty>
                        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                    </owl:onProperty>
                    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#BoundaryLayer"/>
                </owl:Restriction>
            </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
                </owl:onProperty>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>

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        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
<owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Intrusion">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#LandWaterCirculation"/>
    </owl:Class>
    <owl:Class rdf:ID="Percolation">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#LandWaterCirculation"/>
        </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#EarthMaterialDisplacement">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
        </owl:Class>
    <owl:Class rdf:ID="Squall">
        <rdfs:subClassOf rdf:resource="file:/D:/SWEET/phenomena.owl#Wind"/>
        </owl:Class>
    <owl:Class rdf:ID="Recharge">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#LandWaterCirculation"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#Aquifer"/>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
        </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/substance.owl#Substance"/>
    <owl:Class rdf:ID="Wind-DrivenCirculation">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanCirculation"/>
        </owl:Class>
    <owl:Class rdf:ID="Current">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Fluctuation"/>
        </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#LongshoreCurrent">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                    </owl:onProperty>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#CoastalRegion"/>
                </owl:Restriction>
            </rdfs:subClassOf>
        <rdfs:subClassOf>
            <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#OceanCurrent"/>
            </rdfs:subClassOf>
        </owl:Class>
    </owl:Class>

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</owl:Class>
<owl:Class rdf:ID="CommunityStructure">
  <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
</owl:Class>
<owl:Class rdf:ID="PeriglacialPhenomena">
  <rdfs:subClassOf>
    <owl:Restriction>

      <owl:onProperty>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
        </owl:onProperty>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#Glacier"/>
        </owl:Restriction>
      </rdfs:subClassOf>
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#CryospherePhenomena"/>
      </owl:Class>
      <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#AtmosphericPhenomena">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
        <rdfs:subClassOf>
          <owl:Restriction>
            <owl:onProperty>
              <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
              </owl:onProperty>
              <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Atmosphere"/>
              </owl:Restriction>
            </rdfs:subClassOf>
          </owl:Class>
          <owl:Class rdf:ID="AirGlow">
            <rdfs:subClassOf>
              <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#AtmosphericLightEmission"/>
              </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:about="file:/D:/SWEET/units.owl#SimpleUnit"/>
            <owl:Class rdf:ID="Shower">
              <rdfs:subClassOf rdf:resource="file:/D:/SWEET/phenomena.owl#Rain"/>
            </owl:Class>
            <owl:Class rdf:ID="Stratus">
              <rdfs:subClassOf>
                <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Cloud"/>
              </rdfs:subClassOf>
            </owl:Class>
            <owl:Class rdf:about="file:/D:/SWEET/property.owl#Time">
              <rdfs:subClassOf>
                <owl:Restriction>
                  <owl:onProperty>
                    <owl:FunctionalProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasValue"/>
                    </owl:onProperty>

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        <owl:allValuesFrom
rdf:resource="http://www.w3.org/2001/XMLSchema#date"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="PlateDivergence">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#TectonicPhenomena"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Cloud">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Hydrosphere"/>
                <owl:onProperty>
                    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                    </owl:onProperty>
                </owl:Restriction>
            </rdfs:subClassOf>
            <rdfs:subClassOf>
                <owl:Restriction>
                    <owl:onProperty>
                        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
                        </owl:onProperty>
                    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#CloudCondensationNuclei"/>
                    </owl:Restriction>
                </rdfs:subClassOf>
                <rdfs:subClassOf>
                    <owl:Restriction>
                        <owl:onProperty>
                            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
                            </owl:onProperty>
                        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/substance.owl#Water"/>
                        </owl:Restriction>
                    </rdfs:subClassOf>
                    <rdfs:subClassOf>
                        <owl:Restriction>
                            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Atmosphere"/>
                            <owl:onProperty>
                                <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
                                </owl:onProperty>
                            </owl:Restriction>
                        </rdfs:subClassOf>
                    </owl:Class>
                    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#HydrospherePhenomena">
                        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>

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    <rdfs:subClassOf>
      <owl:Restriction>
        <owl:onProperty>
          <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
          </owl:onProperty>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Hydrosphere"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Earthquake">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#SeismicPhenomena"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena"/>
            </owl:onProperty>
            <owl:allValuesFrom>
              <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#SeismicWave"/>
              </owl:allValuesFrom>
            </owl:Restriction>
          </rdfs:subClassOf>
        </owl:Class>
      <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#LandSurfaceHeightChangeEvent">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
            </owl:onProperty>
            <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#LandSurfaceLayer"/>
            </owl:Restriction>
          </rdfs:subClassOf>
        </owl:Class>
      <owl:Class rdf:ID="Troposphere"/>
      <owl:Class rdf:ID="SurfBeat">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanPhenomena"/>
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#CoastalRegion"/>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      </owl:Class>

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    <owl:Class rdf:ID="PopulationDynamics">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="GravityDrainage">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/process.owl#Gravity"/>
    </owl:Class>
    <owl:Class rdf:ID="LandWaterCirculation">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#LandWaterCirculation"/>
    </owl:Class>
    <owl:Class rdf:ID="ContinentalDrift">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#TectonicPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="ElNino">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#GlobalOscillation"/>
    </owl:Class>
    <owl:Class rdf:ID="EndangeredSpecies">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="QuasiBiennialOscillation">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:hasValue>
            <property:Time rdf:ID="years_2">
              <numerics:hasUnit
rdf:resource="file:/D:/SWEET/phenomena.owl#year"/>
              <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
                >
2</numerics:hasValue>
              </property:Time>
            </owl:hasValue>
          <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasTemporalExtent"/>
            </owl:onProperty>
          </owl:Restriction>
        </rdfs:subClassOf>
      </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/earth.owl#Earth"/>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#Circulation">
      <rdfs:subClassOf>
        <owl:Restriction>
          <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Transport"/>
          <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
          </owl:Restriction>
        </rdfs:subClassOf>
      </rdfs:subClassOf>
    </owl:Restriction>
  
```



```

        <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
        <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Motion"/>
        </owl:Restriction>
    </rdfs:subClassOf>
</owl:Class>
    <owl:Class rdf:ID="FunnelCloud">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Cloud"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Rotation"/>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="AntarcticOscillation">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#GlobalOscillation"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#SeismicWave">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#SeismicPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="FreezingRain"/>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#AtmosphericLightEmission">
        <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#AtmosphericPhenomena"/>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty
rdf:resource="file:/D:/SWEET/phenomena.owl#hasAssociatedProcess"/>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/process.owl#Luminescence"/>
            </owl:Restriction>
        </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#SedimentFormation">
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/phenomena.owl#SeaFloor"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <owl:onProperty>
            <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
        </owl:onProperty>
    </owl:Restriction>
</rdfs:subClassOf>
<rdfs:subClassOf>
    <owl:Restriction>
        <owl:onProperty>

```

```

        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance"/>
        </owl:onProperty>
        <owl:allValuesFrom>
        <owl:Class
rdf:about="file:/D:/SWEET/substance.owl#Sediment"/>
        </owl:allValuesFrom>
        </owl:Restriction>
    </rdfs:subClassOf>
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthMaterialDisplacement"/>
    </owl:Class>
    <owl:Class rdf:ID="LifeHistory">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="Compaction">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#SedimentFormation"/>
    </owl:Class>
    <owl:Class rdf:ID="Interception">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#LandWaterCirculation"/>
    </owl:Class>
    <owl:Class rdf:ID="InvasiveSpecies">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="Disease">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#EcologicalPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="Lightning">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#AtmosphericElectricityPhenom
ena"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#ClimateAnomaly">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#ClimateChange"/>
    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/earth.owl#Troposphere"/>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth"/>
    </owl:onProperty>
    </owl:Restriction>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/phenomena.owl#PacificNorthAmericanPattern">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#GlobalOscillation"/>
    </owl:Class>
    <owl:Class rdf:ID="LandDegradation">

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```

    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#LandSurfaceHeightChangeEvent
"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/phenomena.owl#OceanCurrent">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanCirculation"/>
    </owl:Class>
    <owl:Class rdf:ID="Frozen">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#PhysicalPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="BarotropicCirculation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#Circulation"/>
    </owl:Class>
    <owl:Class rdf:ID="ClearSky">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#WeatherPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="Swell">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanPhenomena"/>
    </owl:Class>
    <owl:Class rdf:ID="Seiche">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/phenomena.owl#OceanPhenomena"/>
    </owl:Class>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasTemporalExtent">
    <rdfs:range rdf:resource="file:/D:/SWEET/property.owl#Time"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasScale">
    <rdfs:range
rdf:resource="file:/D:/SWEET/space.owl#MeteorologicalScale"/>
    <rdfs:domain
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedQuantity">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
    <rdfs:range
rdf:resource="file:/D:/SWEET/property.owl#PhysicalQuantity"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedEarth">
    <rdfs:range rdf:resource="file:/D:/SWEET/earth.owl#Earth"/>
    <rdfs:domain
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:about="file:/D:/SWEET/numerics.owl#hasUnit"/>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedSubstance">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
    <rdfs:range rdf:resource="file:/D:/SWEET/substance.owl#Substance"/>

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    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/space.owl#hasLocation"/>
    <owl:ObjectProperty rdf:ID="ObjectProperty_1"/>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasAssociatedPhenomena">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
    <rdfs:range rdf:resource="file:/D:/SWEET/phenomena.owl#Phenomena"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasSpatialExtent">
    <rdfs:range
rdf:resource="file:/D:/SWEET/property.owl#LinearExtent"/>
    </owl:ObjectProperty>
    <owl:ObjectProperty rdf:ID="hasHazardousLevel">
    <rdfs:range
rdf:resource="file:/D:/SWEET/human_activities.owl#HazardousLevel"/>
    <rdfs:domain
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
    </owl:ObjectProperty>
    <owl:DatatypeProperty rdf:ID="hasAssociatedDate">
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#FunctionalProperty"/>
    <rdfs:domain
rdf:resource="file:/D:/SWEET/phenomena.owl#EarthSciencePhenomena"/>
    <rdfs:range rdf:resource="http://www.w3.org/2001/XMLSchema#date"/>
    </owl:DatatypeProperty>
    <owl:DatatypeProperty
rdf:about="file:/D:/SWEET/phenomena.owl#hasMaxCategory">
    <rdfs:domain rdf:resource="file:/D:/SWEET/phenomena.owl#Cyclone"/>
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#FunctionalProperty"/>
    <rdfs:range
rdf:resource="http://www.w3.org/2001/XMLSchema#integer"/>
    </owl:DatatypeProperty>
    <owl:DatatypeProperty rdf:ID="hasAssociatedTimestamp">
    <rdfs:range
rdf:resource="http://www.w3.org/2001/XMLSchema#dateTime"/>
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#FunctionalProperty"/>
    </owl:DatatypeProperty>
    <owl:FunctionalProperty
rdf:about="file:/D:/SWEET/numerics.owl#hasValue">
    <rdf:type
rdf:resource="http://www.w3.org/2002/07/owl#DatatypeProperty"/>
    </owl:FunctionalProperty>
    <property:Time rdf:ID="SEP_19_2003">
    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
>
2003-09-19</numerics:hasValue>
    </property:Time>
    <units:ComplexUnit rdf:ID="kilo_meter_perHour"/>
    <property:Time rdf:ID="NOV_05_1998">
    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
>

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1998-11-05</numerics:hasValue>
  </property:Time>
  <units:SimpleUnit rdf:ID="minute"/>
  <property:Time rdf:ID="SEP_17_1997">
    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
    >
1997-09-17</numerics:hasValue>
  </property:Time>
  <property:TimeInterval rdf:ID="SEP_06-SEP_19_2003">
    <numerics:hasUpperLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#SEP_19_2003"/>
    <numerics:hasLowerLimit>
      <property:Time rdf:ID="SEP_06_2003">
        <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
        >
2003-09-06</numerics:hasValue>
      </property:Time>
      </numerics:hasLowerLimit>
    </property:TimeInterval>
    <property:Time rdf:ID="JUL_30_1997">
      <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
      >
1997-07-30</numerics:hasValue>
    </property:Time>
    <Hurricane rdf:ID="Isabel">
      <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#SEP_06-SEP_19_2003"/>
      <hasAssociatedPhenomena>
        <Wind rdf:ID="Wind259km_perHour">
          <hasAssociatedQuantity>
            <property:Speed rdf:ID="Speed259km_perHour">
              <numerics:hasUnit
rdf:resource="file:/D:/SWEET/phenomena.owl#kilo_meter_perHour"/>
              <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
              >
259</numerics:hasValue>
            </property:Speed>
          </hasAssociatedQuantity>
        </Wind>
      </hasAssociatedPhenomena>
      <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
      >
5</hasMaxCategory>
    </Hurricane>
    <property:Time rdf:ID="SEP_06_2002">
      <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
      >
2002-09-06</numerics:hasValue>
    </property:Time>
    <property:Time rdf:ID="AUG_11_1980">

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```

    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
    >
1980-08-11</numerics:hasValue>
    </property:Time>
    <Hurricane rdf:ID="Allen">
    <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
    >
5</hasMaxCategory>
    <hasAssociatedPhenomena>
    <Wind rdf:ID="Wind306km_perHour">
    <hasAssociatedQuantity>
    <property:Speed rdf:ID="Speed306km_perHour">
    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
    >
306</numerics:hasValue>
    <numerics:hasUnit
rdf:resource="file:/D:/SWEET/phenomena.owl#kilo_meter_perHour"/>
    </property:Speed>
    </hasAssociatedQuantity>
    </Wind>
    </hasAssociatedPhenomena>
    <hasAssociatedQuantity>
    <property:TimeInterval rdf:ID="AUG_04-AUG_11_1980">
    <numerics:hasUpperLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#AUG_11_1980"/>
    <numerics:hasLowerLimit>
    <property:Time rdf:ID="AUG_4_1980">
    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
    >
1980-08-04</numerics:hasValue>
    </property:Time>
    </numerics:hasLowerLimit>
    </property:TimeInterval>
    </hasAssociatedQuantity>
    </Hurricane>
    <property:Speed rdf:ID="Speed268km_perHour">
    <numerics:hasUnit
rdf:resource="file:/D:/SWEET/phenomena.owl#kilo_meter_perHour"/>
    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
    >
286</numerics:hasValue>
    </property:Speed>
    <property:TimeInterval rdf:ID="SEP_09-SEP_17_1997">
    <numerics:hasUpperLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#SEP_17_1997"/>
    <numerics:hasLowerLimit>
    <property:Time rdf:ID="SEP_09_1997">
    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
    >
1997-09-09</numerics:hasValue>
    </property:Time>

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    </numerics:hasLowerLimit>
  </property:TimeInterval>
  <property:TimeInterval rdf:ID="OCT_22-OCT_22_2002">
    <numerics:hasUpperLimit>
      <property:Time rdf:ID="OCT_22_2002">
        <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
        >
2002-10-22</numerics:hasValue>
      </property:Time>
    </numerics:hasUpperLimit>
    <numerics:hasLowerLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#OCT_22_2002"/>
  </property:TimeInterval>
  <property:TimeInterval rdf:ID="SEP_8-SEP_19_1988">
    <numerics:hasUpperLimit>
      <property:Time rdf:ID="SEP_19_1988">
        <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
        >
1988-09-19</numerics:hasValue>
      </property:Time>
    </numerics:hasUpperLimit>
    <numerics:hasLowerLimit>
      <property:Time rdf:ID="SEP_8_1988">
        <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
        >
1988-09-08</numerics:hasValue>
      </property:Time>
    </numerics:hasLowerLimit>
  </property:TimeInterval>
  <property:TimeInterval rdf:ID="AUG_16-AUG_28_1992">
    <numerics:hasUpperLimit>
      <property:Time rdf:ID="AUG_28_1992">
        <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
        >
1992-08-28</numerics:hasValue>
      </property:Time>
    </numerics:hasUpperLimit>
    <numerics:hasLowerLimit>
      <property:Time rdf:ID="AUG_16_1992">
        <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
        >
1992-08-16</numerics:hasValue>
      </property:Time>
    </numerics:hasLowerLimit>
  </property:TimeInterval>
  <property:Time rdf:ID="SEP_10_1989">
    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
    >
1989-09-10</numerics:hasValue>
  </property:Time>
  <Hurricane rdf:ID="Andrew">

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    <hasAssociatedPhenomena>
      <Wind rdf:ID="Wind273km_perHour">
        <hasAssociatedQuantity>
          <property:Speed rdf:ID="Speed273km_perHour">
            <numerics:hasUnit
rdf:resource="file:/D:/SWEET/phenomena.owl#kilo_meter_perHour"/>
            <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
            >
273</numerics:hasValue>
          </property:Speed>
        </hasAssociatedQuantity>
      </Wind>
    </hasAssociatedPhenomena>
    <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
    >
5</hasMaxCategory>
    <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#AUG_16-AUG_28_1992"/>
    </Hurricane>
    <Hurricane rdf:ID="Linda">
      <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#SEP_09-SEP_17_1997"/>
      <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
      >
5</hasMaxCategory>
      <hasAssociatedPhenomena>
        <Wind rdf:ID="Wind296km_perHour">
          <hasAssociatedQuantity>
            <property:Speed rdf:ID="Speed296km_perHour">
              <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
              >
296</numerics:hasValue>
              <numerics:hasUnit
rdf:resource="file:/D:/SWEET/phenomena.owl#kilo_meter_perHour"/>
            </property:Speed>
          </hasAssociatedQuantity>
        </Wind>
      </hasAssociatedPhenomena>
    </Hurricane>
    <Hurricane rdf:ID="Hugo">
      <hasAssociatedPhenomena
rdf:resource="file:/D:/SWEET/phenomena.owl#Wind259km_perHour"/>
      <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
      >
5</hasMaxCategory>
      <hasAssociatedQuantity>
        <property:TimeInterval rdf:ID="SEP_10-SEP_22_1989">
          <numerics:hasLowerLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#SEP_10_1989"/>
          <numerics:hasUpperLimit>
            <property:Time rdf:ID="SEP_22_1989">

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        <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
        >
1989-09-22</numerics:hasValue>
        </property:Time>
        </numerics:hasUpperLimit>
        </property:TimeInterval>
        </hasAssociatedQuantity>
    </Hurricane>
    <Wind rdf:ID="Wind268km_perHour">
        <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#Speed268km_perHour"/>
        </Wind>
        <Hurricane rdf:ID="Kenna">
            <hasAssociatedPhenomena
rdf:resource="file:/D:/SWEET/phenomena.owl#Wind268km_perHour"/>
            <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#OCT_22-OCT_22_2002"/>
            <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
            >
5</hasMaxCategory>
        </Hurricane>
        <property:Time rdf:ID="AUG_30_2002">
            <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
            >
2002-08-30</numerics:hasValue>
            </property:Time>
            <property:TimeInterval rdf:ID="AUG_30-SEP_06_2002">
                <numerics:hasLowerLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#AUG_30_2002"/>
                <numerics:hasUpperLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#SEP_06_2002"/>
            </property:TimeInterval>
            <property:Time rdf:ID="OCT_22_1998">
                <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
                >
1998-10-22</numerics:hasValue>
            </property:Time>
            <property:Time rdf:ID="minute_1">
                <numerics:hasUnit
rdf:resource="file:/D:/SWEET/phenomena.owl#minute"/>
                <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
                >
1</numerics:hasValue>
            </property:Time>
            <property:TimeInterval rdf:ID="JUL_30-AUG_15_1997">
                <numerics:hasLowerLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#JUL_30_1997"/>
                <numerics:hasUpperLimit>
                <property:Time rdf:ID="AUG_15_1997">
                    <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
                    >

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1997-08-15</numerics:hasValue>
  </property:Time>
</numerics:hasUpperLimit>
</property:TimeInterval>
<Hurricane rdf:ID="Hernan">
  <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#AUG_30-SEP_06_2002"/>
  <hasAssociatedPhenomena
rdf:resource="file:/D:/SWEET/phenomena.owl#Wind259km_perHour"/>
  <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
  >
5</hasMaxCategory>
</Hurricane>
<Hurricane rdf:ID="Gilbert">
  <hasAssociatedPhenomena
rdf:resource="file:/D:/SWEET/phenomena.owl#Wind296km_perHour"/>
  <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
  >

5</hasMaxCategory>
  <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#SEP_8-SEP_19_1988"/>
  </Hurricane>
  <property:TimeInterval rdf:ID="OCT_22-NOV_05_1998">
    <numerics:hasUpperLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#NOV_05_1998"/>
    <numerics:hasLowerLimit
rdf:resource="file:/D:/SWEET/phenomena.owl#OCT_22_1998"/>
  </property:TimeInterval>
  <Wind rdf:ID="Wind287km_perHour">
    <hasAssociatedQuantity>
      <property:Speed rdf:ID="Speed287km_perHour">
        <numerics:hasUnit
rdf:resource="file:/D:/SWEET/phenomena.owl#kilo_meter_perHour"/>
        <numerics:hasValue
rdf:datatype="http://www.w3.org/2001/XMLSchema#date"
        >
287</numerics:hasValue>
      </property:Speed>
    </hasAssociatedQuantity>
  </Wind>
  <property:TimeInterval rdf:ID="AUG_27-SEP_08_2003"/>
  <Hurricane rdf:ID="Gullermo">
    <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
    >
5</hasMaxCategory>
  <hasAssociatedPhenomena
rdf:resource="file:/D:/SWEET/phenomena.owl#Wind259km_perHour"/>
  <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#JUL_30-AUG_15_1997"/>
  </Hurricane>
  <Hurricane rdf:ID="Mitch">
    <hasMaxCategory
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer"
    >

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```
>
5</hasMaxCategory>
  <hasAssociatedPhenomena
rdf:resource="file:/D:/SWEET/phenomena.owl#Wind287km_perHour"/>
  <hasAssociatedQuantity
rdf:resource="file:/D:/SWEET/phenomena.owl#OCT_22-NOV_05_1998"/>
  </Hurricane>
</rdf:RDF>

<!-- Created with Protege (with OWL Plugin 2.1 beta, Build 277)
http://protege.stanford.edu -->
```

human_activities.owl

```

<?xml version="1.0"?>
<rdf:RDF
  xmlns="file:/D:/SWEET/human_activities.owl#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:biosphere="file:/D:/SWEET/biosphere.owl#"
  xmlns:material_thing="file:/D:/SWEET/material_thing.owl#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:daml="http://www.daml.org/2001/03/daml+oil#"
  xmlns:dc="http://purl.org/dc/elements/1.1/"
  xml:base="file:/D:/SWEET/human_activities.owl">
  <owl:Ontology rdf:about="file:/D:/SWEET/human_activities.owl">
    <owl:versionInfo
rdf:datatype="http://www.w3.org/2001/XMLSchema#string"
    >
1.0</owl:versionInfo>
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    <owl:Class rdf:ID="ByProductOfHumanActivity"/>
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    <owl:Class rdf:ID="Research-Exploration"/>
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    <owl:Class rdf:ID="Aquaculture"/>
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    <owl:Class rdf:ID="Tomography">
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    <owl:Class rdf:ID="Pollution"/>
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    <owl:Class
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    </owl:Class>
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        <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#AnimalProduction"/>
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    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/human_activities.owl#Pollution">
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rdf:resource="file:/D:/SWEET/human_activities.owl#Production"/>
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        <owl:Class
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            </owl:onProperty>
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        <owl:Class
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    </rdfs:subClassOf>
</owl:Class>
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    <rdfs:subClassOf
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    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#KnowledgeDomain"/>
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    <owl:Class rdf:ID="Spill">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Contamination"/>
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rdf:resource="file:/D:/SWEET/human_activities.owl#Ecology-
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    <owl:Class rdf:ID="Processing">
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      <rdfs:subClassOf>
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    </owl:Restriction>
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    <rdfs:subClassOf
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    </owl:Class>
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    <owl:Class rdf:ID="BiologicalHazard">
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    <owl:ObjectProperty
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    <owl:allValuesFrom
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rdf:about="file:/D:/SWEET/human_activities.owl#NaturalHazard"/>
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    <owl:Class rdf:ID="AnimalWaste">
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    <owl:Class rdf:ID="Conservation">
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rdf:resource="file:/D:/SWEET/human_activities.owl#Ecology-
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    <owl:Class rdf:ID="Observation">
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    </owl:Class>
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rdf:about="file:/D:/SWEET/human_activities.owl#Sociology"/>
      </rdfs:subClassOf>
    </owl:Class>
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    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#ByProductOfHumanActivity
">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Ecology-
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    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/human_activities.owl#Research-
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    </owl:Class>
    <owl:Class rdf:ID="NutritionScience">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#KnowledgeDomain"/>
    </owl:Class>
    <owl:Class rdf:ID="CropsProduction">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#PlantProduction"/>
    </owl:Class>
    <owl:Class rdf:ID="Manure">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#AgriculturalProduct"/>

    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#SocialActivity">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#HumanActivity"/>
    </owl:Class>
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    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#HumanActivity"/>
    </owl:Class>
    <owl:Class rdf:ID="Ecology">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#KnowledgeDomain"/>
    </owl:Class>
    <owl:Class rdf:ID="LandTenure">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#LandManagement"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="HorticulturalActivity">
    <rdfs:subClassOf
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    </owl:Class>
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    <rdfs:subClassOf>
    <owl:Restriction>
    <owl:onProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/human_activities.owl#hasObjectOfActivity"/>
    </owl:onProperty>
    <owl:allValuesFrom
rdf:resource="file:/D:/SWEET/biosphere.owl#Crop"/>
    </owl:Restriction>
    </rdfs:subClassOf>

```

```

    <rdfs:subClassOf
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    </owl:Class>
    <owl:Class rdf:ID="CropProduct">
    <rdfs:subClassOf>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#AgriculturalProduct"/>
    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Seismology">
    <rdfs:subClassOf
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    </owl:Class>
    <owl:Class rdf:ID="Afforestation">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Ecology-
RelatedActivity"/>
    </owl:Class>
    <owl:Class rdf:ID="VitalStatistics">
    <rdfs:subClassOf>
    <owl:Class
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    </rdfs:subClassOf>
    </owl:Class>
    <owl:Class rdf:ID="Economics">
    <rdfs:subClassOf
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    </owl:Class>
    <owl:Class
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rdf:resource="file:/D:/SWEET/human_activities.owl#Product"/>
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    <rdfs:subClassOf
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>
    </owl:Class>
    <owl:Class rdf:ID="Contours">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Mapping"/>
    </owl:Class>
    <owl:Class rdf:ID="Bathimetry">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Measurement"/>
    </owl:Class>
    <owl:Class rdf:ID="Toxicology">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#KnowledgeDomain"/>
    </owl:Class>
    <owl:Class rdf:ID="ConsumerBehavior">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#SocialBehavior"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#LandManagement">

```



```

    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Management"/>
    </owl:Class>
    <owl:Class rdf:ID="Birth">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#VitalActivity"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#NaturalHazard">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Hazard"/>
    </owl:Class>
    <owl:Class rdf:ID="AutomobileEmission">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Emission"/>
    </owl:Class>
    <owl:Class rdf:ID="Restoration">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Ecology-
RelatedActivity"/>
    </owl:Class>
    <owl:Class rdf:ID="Profession">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#HumanCategory"/>
    </owl:Class>
    <owl:Class rdf:ID="Protection">
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RelatedActivity"/>
    </owl:Class>
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    <rdfs:subClassOf
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    </owl:Class>
    <owl:Class rdf:ID="LandscapeManagement">
    <rdfs:subClassOf
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    </owl:Class>
    <owl:Class rdf:ID="Adult">
    <rdfs:subClassOf
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    </owl:Class>
    <owl:Class rdf:ID="Fishery"/>
    <owl:Class rdf:ID="Monitoring">
    <rdfs:subClassOf
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Exploration"/>
    </owl:Class>
    <owl:Class rdf:ID="Desertification">
    <rdfs:subClassOf
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ity"/>
    </owl:Class>
    <owl:Class rdf:ID="Harvesting">
    <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#PlantProduction"/>
    </owl:Class>

```

```

    <owl:Class rdf:ID="Packaging">
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rdf:resource="file:/D:/SWEET/human_activities.owl#Production"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#AnimalProduction">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Agriculture"/>
    </owl:Class>
    <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#Aquaculture">
      <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Agriculture"/>
    </owl:Class>
    <owl:Class rdf:about="file:/D:/SWEET/human_activities.owl#Sociology">
      <rdfs:subClassOf>
        <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#BehavioralScience"/>
          </rdfs:subClassOf>
        </owl:Class>
        <owl:Class
rdf:about="file:/D:/SWEET/human_activities.owl#BehavioralScience">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#KnowledgeDomain"/>
        </owl:Class>
        <owl:Class
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          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#SoilCultivation"/>
          <owl:equivalentClass
rdf:resource="file:/D:/SWEET/human_activities.owl#Farming"/>
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Ecology-
RelatedActivity"/>
        </owl:Class>
        <owl:Class rdf:ID="LandUse">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#LandManagement"/>
        </owl:Class>
        <owl:Class rdf:ID="ForestProduct">
          <rdfs:subClassOf
rdf:resource="file:/D:/SWEET/human_activities.owl#Product"/>
        </owl:Class>
        <owl:ObjectProperty
rdf:about="file:/D:/SWEET/human_activities.owl#hasAssociatedKnowledgeDo
main">
          <rdfs:range
rdf:resource="file:/D:/SWEET/human_activities.owl#KnowledgeDomain"/>
        </owl:ObjectProperty>
        <owl:ObjectProperty rdf:ID="studyOf">
          <rdfs:domain
rdf:resource="file:/D:/SWEET/human_activities.owl#KnowledgeDomain"/>
        </owl:ObjectProperty>
        <owl:ObjectProperty rdf:ID="belongsToHumanCategory">
          <rdfs:domain
rdf:resource="file:/D:/SWEET/human_activities.owl#Human"/>

```

```

    <rdfs:range
rdf:resource="file:/D:/SWEET/human_activities.owl#AgeGroup"/>
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    <owl:ObjectProperty
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ure">
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    </owl:ObjectProperty>
    <owl:ObjectProperty
rdf:about="file:/D:/SWEET/human_activities.owl#hasObjectOfActivity">
    <rdfs:domain
rdf:resource="file:/D:/SWEET/human_activities.owl#HumanActivity"/>
    </owl:ObjectProperty>
</rdf:RDF>

<!-- Created with Protege (with OWL Plugin 2.1 beta, Build 277)
http://protege.stanford.edu -->

```

B SCENARIO AND COMPETENCY QUESTIONS

Scenario 1: A point source (e.g. gas station) introduces a pollutant into the ground, which enters the soil and ground water. Ground water flow moves the contaminant down the hydraulic gradient to a discharge point (city well), where it is to be pumped for treatment and usage by people. Upon discovery of the pollutant, the city contracts a consultant company to de-contaminate the site with special remediation techniques

Competency questions based on the above scenario:

1. What is the location of the underlying aquifer which is contaminated?
2. What is the lateral extent of the cone of depression?
3. What is the direction of contaminant movement?
4. Is the contaminant a volatile organic compound (VOC)?
5. What are the underlying and overlying layers?
6. What is the thickness of the zones of saturation?
7. What is the depth of the well?
8. What is the direction of flow of the contaminate plume?
9. What is the gradient of the region?
10. What is the depth to the water table?

Scenario 2: Chemical Fertilizers and pesticides are being used in farming practices in the suburban Georgia farms. The fertilizers and pesticides applied to the soil surface leach through the unsaturated zone. The leachate gets loaded into the water table and travels through the saturated zone and is potentially drawn into the supply wells. In the saturated zone, the plume gets affected by the water table loading concentrations, the recharge rate and the geology of the area. The supply wells intercept low contaminant concentration and/or localized high concentration hotspots. This is a case of non-point source contamination. In order to plan proper remediation for this problem is studied using GIS applications which show the hotspots and other detailed analysis such as the extent of contamination and direction of movement of the plume etc.

Competency questions based on the above scenario:

1. What is the location of the underlying aquifer which is contaminated?
2. Show the areas/regions that are contaminated
3. Show the hotspots where the contaminant concentration is the highest
4. What is the direction of ground water movement?
5. What is the geology of the affected area?
6. What is the depth to the water table?
7. What is the thickness of the layer overlying the aquifer?
8. What is the rock-type overlying the aquifer?
9. What is the gradient of the region?
10. What is the direction of contaminant movement?

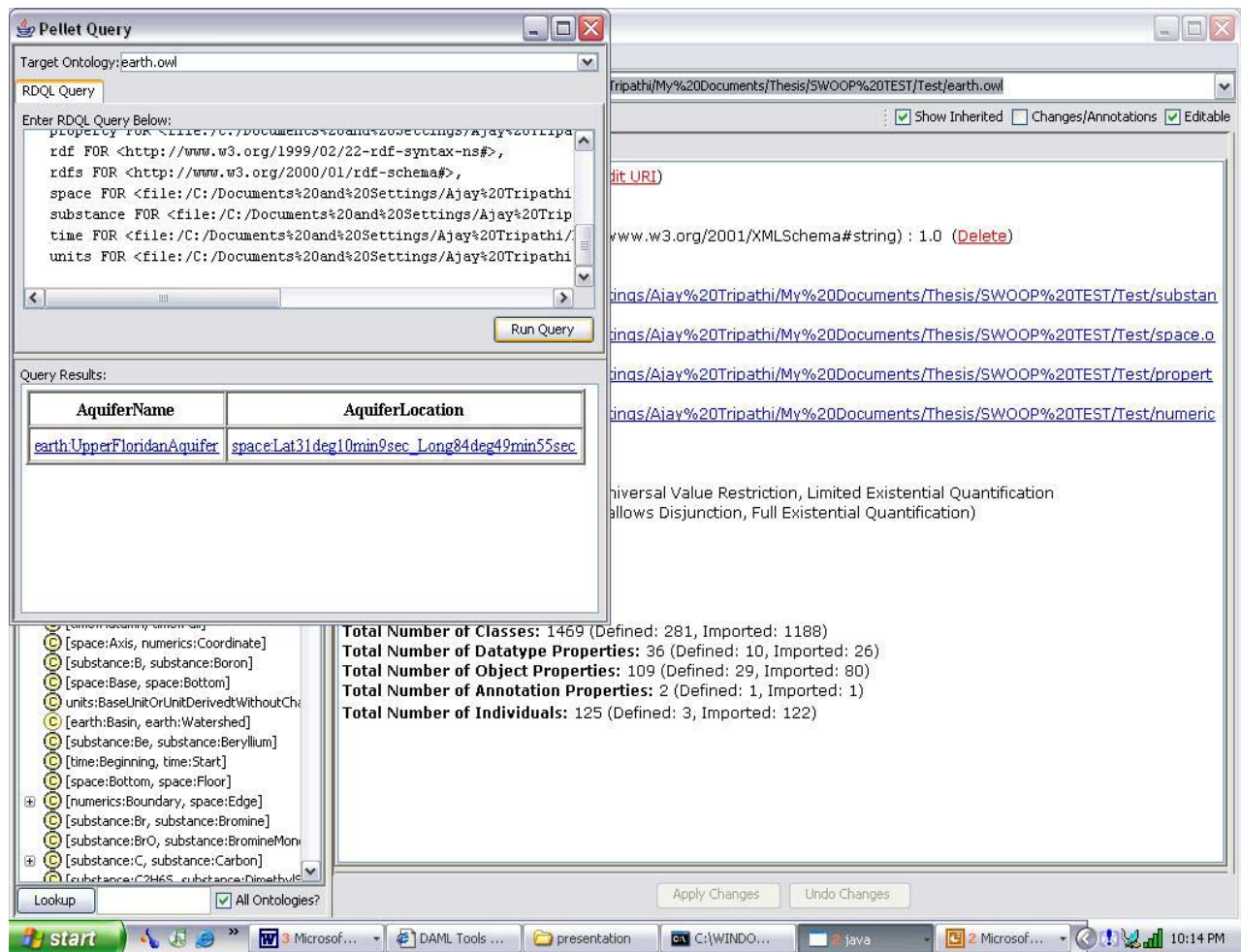
Scenario 3: An engineering company is contracted by a local government agency to install a well for drinking water supply in an inland area. After successful installation of the well in an unconfined aquifer, the testing phase of the project begins and water is pumped out and supplied to neighboring areas. Initially there is continuous supply of water from the aquifer into the well. As demand increases, the well is over pumped, which results in a significant drop in the water level of the well. It is observed that the water level is regained when the withdrawal rate is decreased. It is observed however, that the water being pumped out is getting brackish and unworthy of human consumption. Appropriate remedy needs to be planned immediately.

Competency questions based on the above scenario:

1. What is the recharge rate of the aquifer?
2. What is the location of salt water intrusion?
3. What is the depth of the well?
4. What is the level of the water table?
5. What is the rock type of the aquifer?
6. What is the direction of ground water movement?
7. What is the drawdown at different times?
8. What is the extent of the cone of depression?

C RDQL QUERIES

SWOOP has an advanced querying feature which uses Resource Description Query Language RDQL. This query tool is called Pellet Query. Pellet is a reasoner which is in-built in the SWOOP application. Using Pellet Query ABox queries can be written, which means, the individuals can be queried. The screenshot below shows the Pellet Query interface.



Sample Queries Used to Test the reengineered SWEET Ontologies

Query: Tell me the location of the contaminated Aquifer

```

SELECT ?AquiferName, ?AquiferLocation
WHERE (?AquiferName, rdf:type, earth:Aquifer),
(?AquiferLocation, rdf:type, space:Location)
USING
    biosphere FOR <file:/D:/SWEET/biosphere.owl#>,
    earth FOR <file:/D:/SWEET/earth.owl#>,

```

```

human_activities FOR
<file:/D:/SWEET/human_activities.owl#>,
material_thing FOR <file:/D:/SWEET/material_thing.owl#>,
numerics FOR <file:/D:/SWEET/numerics.owl#>,
owl FOR <http://www.w3.org/2002/07/owl#>,
property FOR <file:/D:/SWEET/property.owl#>,
rdf FOR <http://www.w3.org/1999/02/22-rdf-syntax-ns#>,
rdfs FOR <http://www.w3.org/2000/01/rdf-schema#>,
space FOR <file:/D:/SWEET/space.owl#>,
substance FOR <file:/D:/SWEET/substance.owl#>,
time FOR <file:/D:/SWEET/time.owl#>,
units FOR <file:/D:/SWEET/units.owl#>

```

Query: *What is the hydraulic head of the UpperFloridan Aquifer at the USGS test well DP-2 ?*

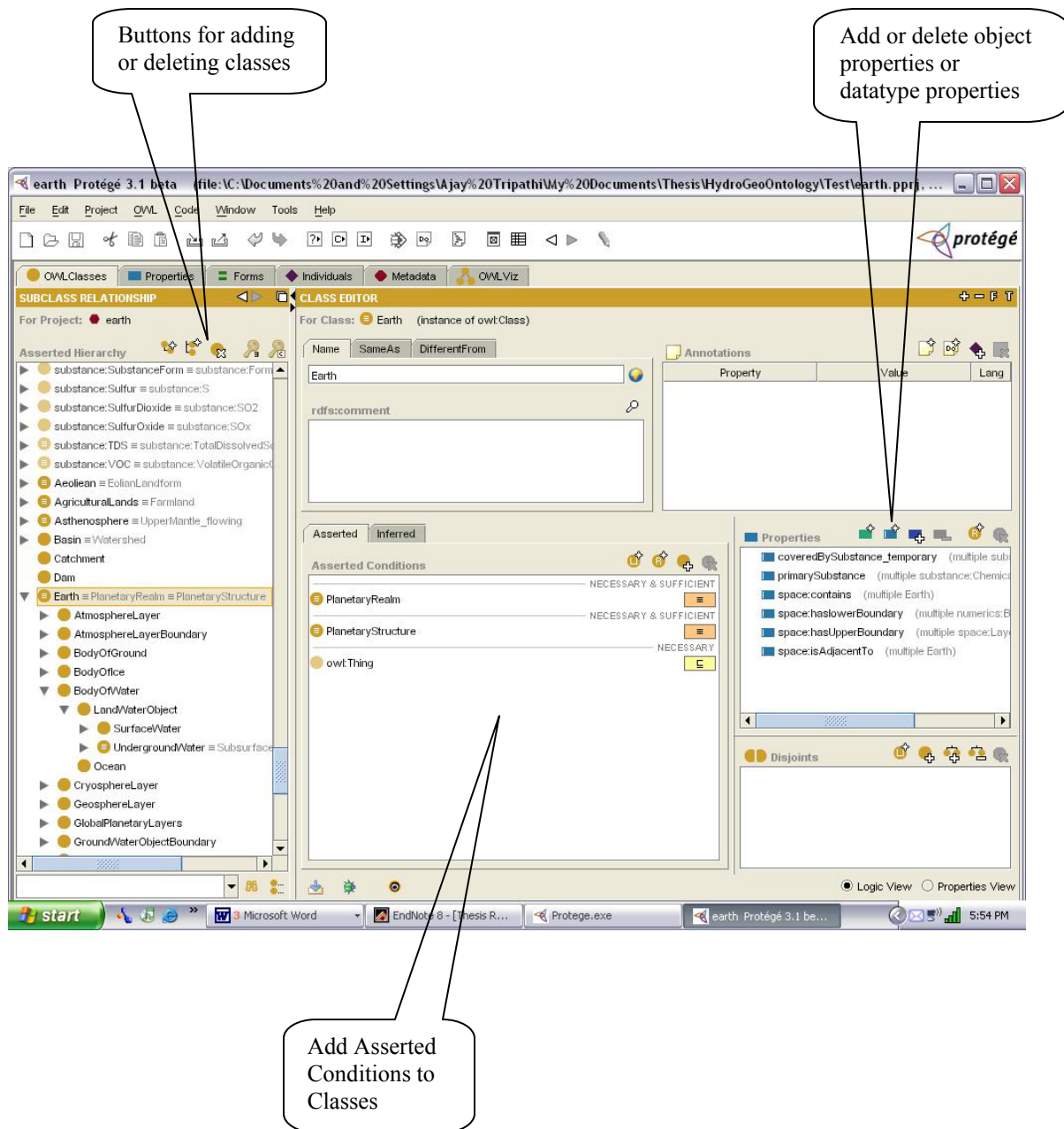
```

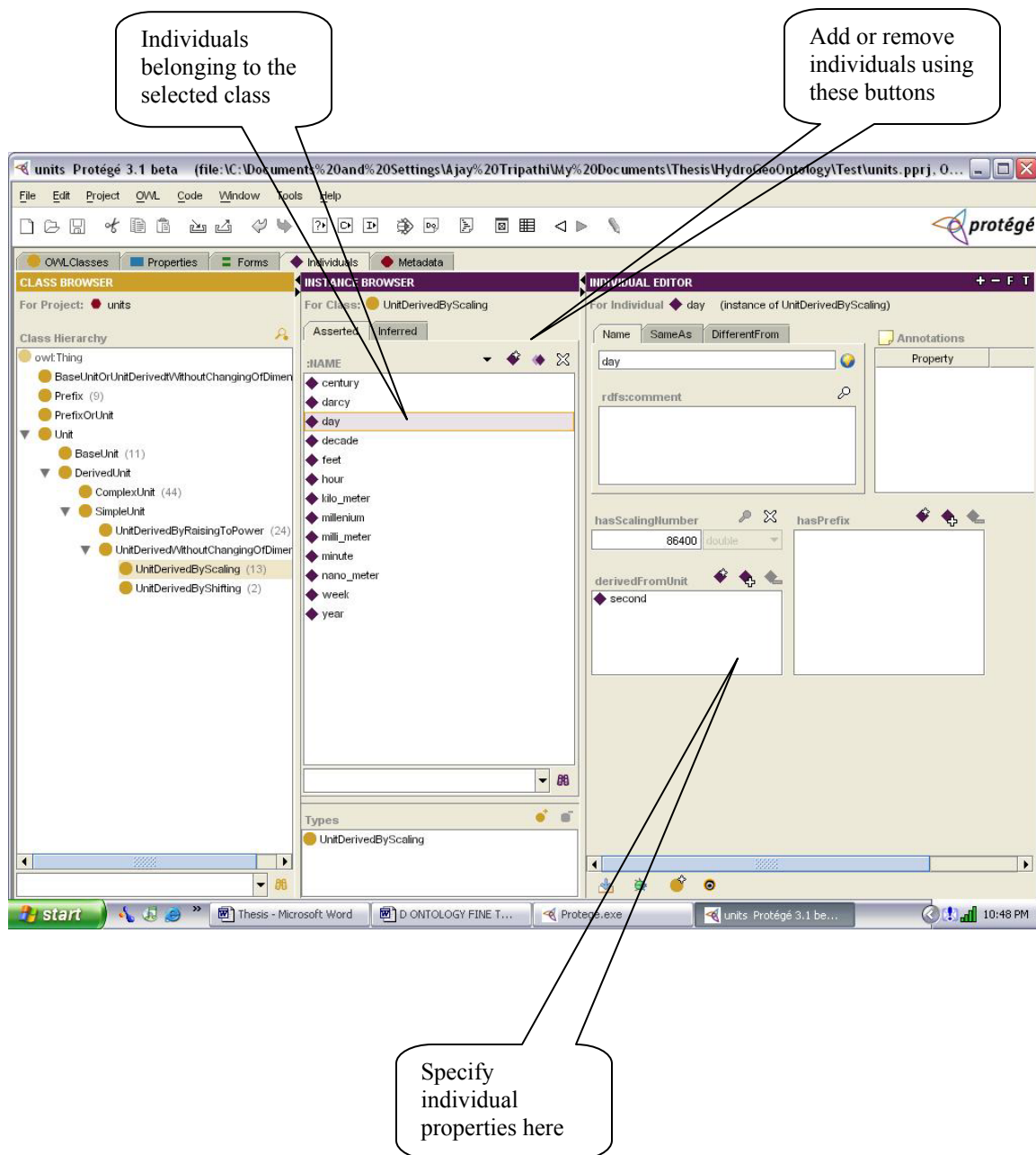
SELECT ?AquiferName, ?HydraulicHead
WHERE (?AquiferName, earth:hasHydraulicHead,
?HydraulicHead)
USING
    biosphere FOR <file:/D:/SWEET/biosphere.owl#>,
    earth FOR <file:/D:/SWEET/earth.owl#>,
    human_activities FOR
<file:/D:/SWEET/human_activities.owl#>,
    material_thing FOR <file:/D:/SWEET/material_thing.owl#>,
    numerics FOR <file:/D:/SWEET/numerics.owl#>,
    owl FOR <http://www.w3.org/2002/07/owl#>,
    property FOR <file:/D:/SWEET/property.owl#>,
    rdf FOR <http://www.w3.org/1999/02/22-rdf-syntax-ns#>,
    rdfs FOR <http://www.w3.org/2000/01/rdf-schema#>,
    space FOR <file:/D:/SWEET/space.owl#>,
    substance FOR <file:/D:/SWEET/substance.owl#>,
    time FOR <file:/D:/SWEET/time.owl#>,
    units FOR <file:/D:/SWEET/units.owl#>

```

D ONTOLOGY FINE TUNING TECHNIQUES

The design of SWEET ontologies enables maximum reusability and extensibility. The OWL files presented in this thesis are a new version of the SWEET Ontologies that have been reengineered to include hydrogeology concepts. It is possible to make changes to these ontologies. New classes, properties or individuals can be easily added and existing classes, properties or individuals can be modified or deleted as explained below:





Forms Editor can be
used to customize
individual properties

