

Water quality information models

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WEATHER CLIMATE WATER

Outline

OGC standards – UML+XML

- OGC O&M (2011)
- WaterML profile of O&M (2012)
- WaterML-WQ profile of O&M (2014)
- Observable Property vocabulary (2014)

Recent work – RDF/SKOS/OWL

- SSN/SOSA (W3C/OGC, 2017)
- ChEBI (OBO, 2008-2022)
- QUDT (2014-2022)
- NVS P01, S06 (~2000-2022)
 - PUV Ontology (BODC/CSIRO, 2021)
- I-ADOPT (RDA, 2021)

OGC O&M

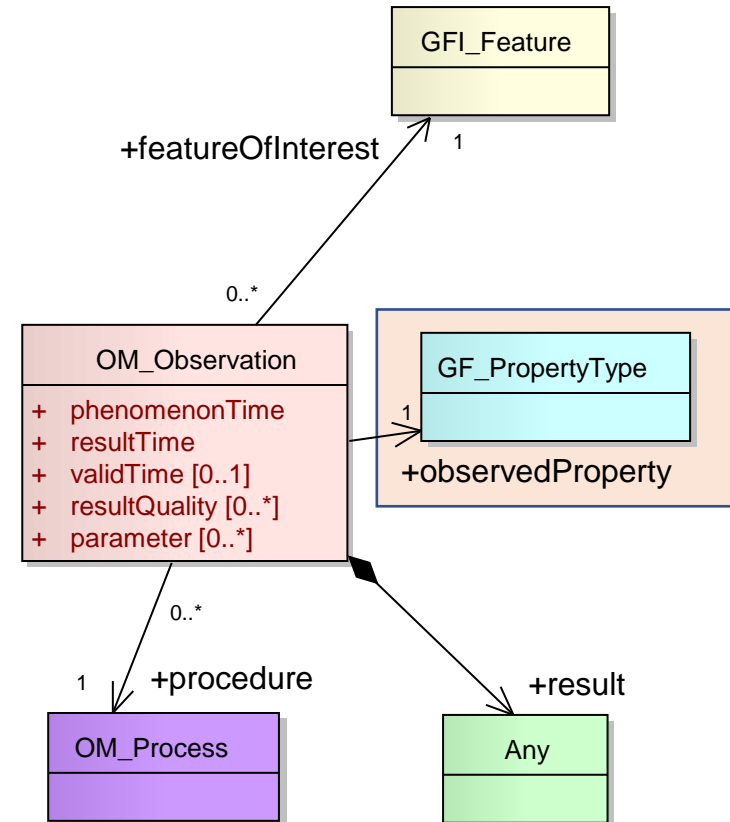
INTERNATIONAL
STANDARD

ISO
19156

First edition
2011-12-15

**Geographic information — Observations
and measurements**

Information géographique — Observations et mesures



An **Observation** is an action whose **result** is an estimate of the value of some **property** of the **feature-of-interest**, obtained using a specified **procedure**

Types of “Observation”

In-situ (monitoring, field observations)

Ex-situ (laboratory)

Remote sensing

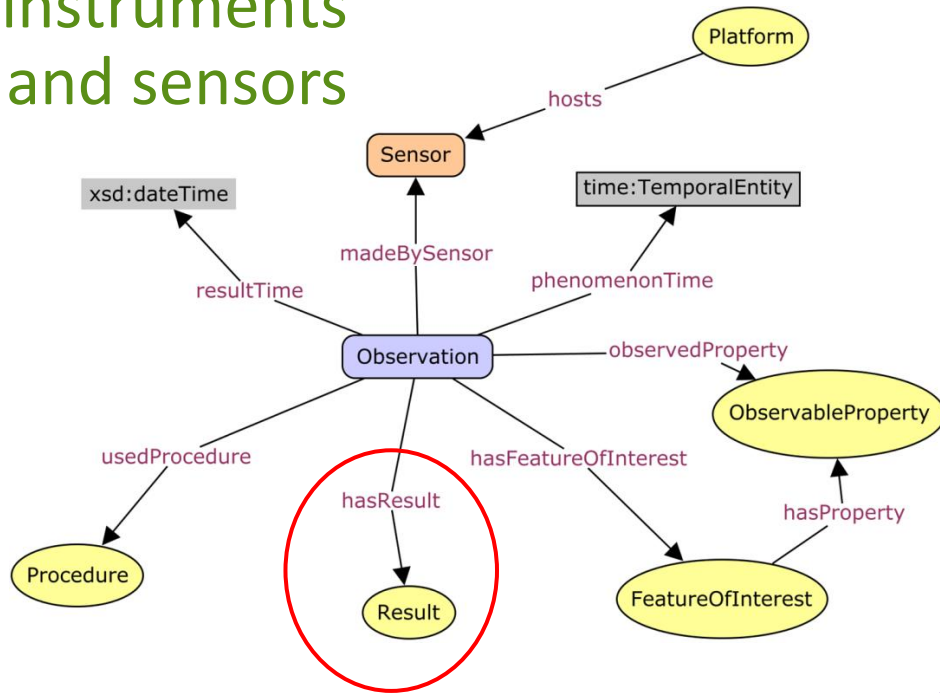
Sensor-observations

Forecasts

Models

Customizing O&M / SSN for an application/domain

instruments
and sensors



observable properties

object types (features)

protocols and
procedures



O&M Implementations

INTERNATIONAL STANDARD

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W3C Recommendation

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 - 4.6.2.3 `sosa:isFeatureOfInterestOf`
 - 4.6.2.4 `ssn:Property`

Semantic Sensor Network Ontology

W3C Recommendation 19 October 2017 (Link error 2017)

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Abstract

The Semantic Sensor Network (SSN) ontology is an ontology for describing involved procedures, the studied features of interest, the samples used as well as actuators. SSN follows a horizontal and vertical modularization a self-contained core ontology called SOSA (Sensor, Observation, Sample classes and properties. With their different scope and different degrees of able to support a wide range of applications and use cases, including safety monitoring, industrial and household infrastructures, social sensing, citizen engineering, and the Web of Things. Both ontologies are described below, and examples of their usage are given.



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Category: OGC® Implementation Standard

Editors: James Tomkins, Dominic Lowe

Timeseries Profile of Observations and Measurements

Copyright notice

software



information model

[✉](#), Kerstin A. Lehnert [d✉](#), Leslie
[✉](#), David G. Tarboton [e✉](#), David

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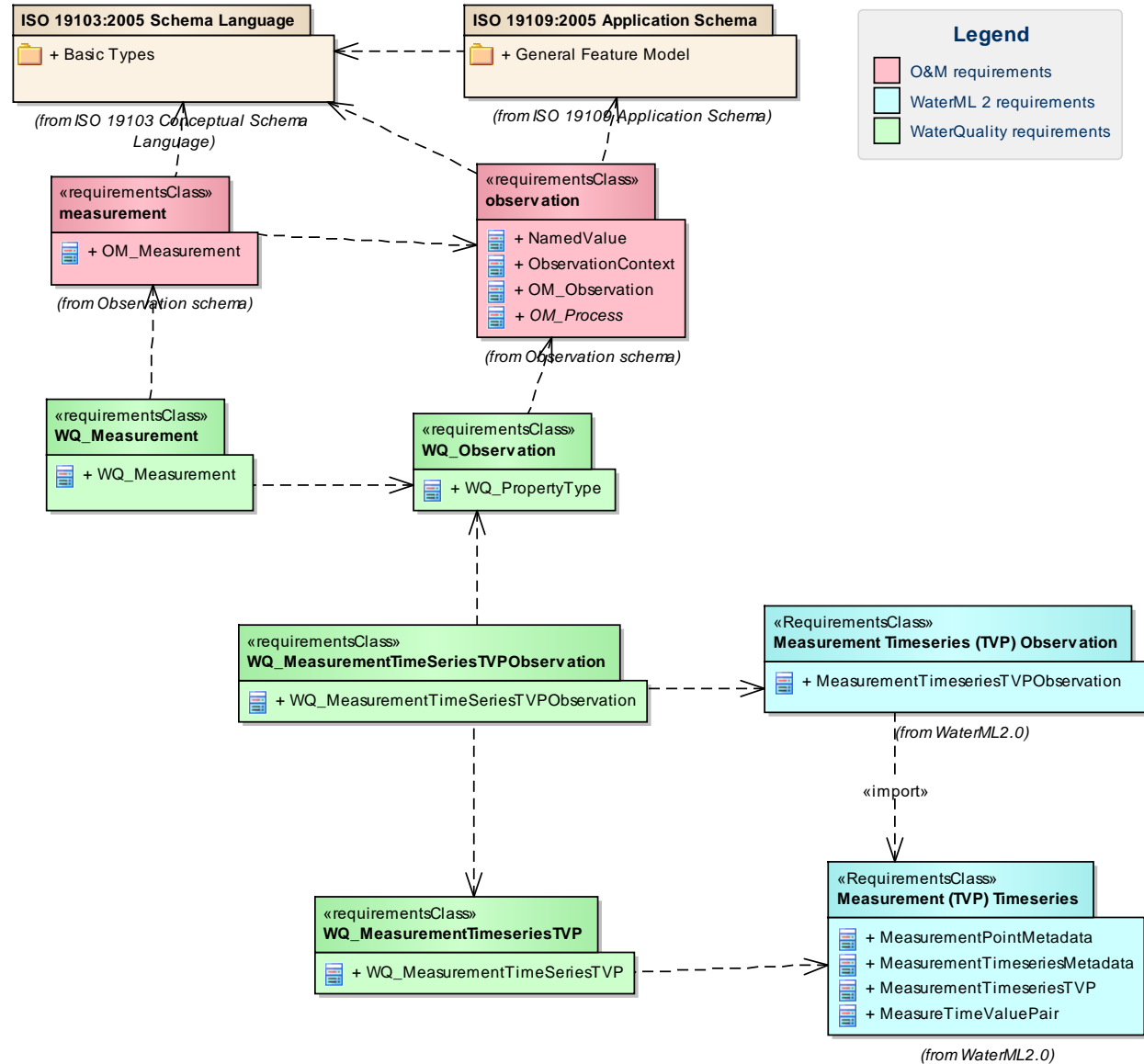
OGC WaterML

- [OGC® WaterML 2.0: Part 1- Timeseries](#)
- [OGC® WaterML2.0: Part 2 - Ratings, Gaugings and Sections](#)
- [OGC® WaterML 2: Part 3 - Surface Hydrology Features \(HY Features\) - Conceptual Model](#)
- [OGC WaterML 2: Part 4 – GroundWaterML 2 \(GWML2\)](#)
- [WaterML-WQ – an O&M and WaterML 2.0 profile for water quality data \(1.0\)](#)

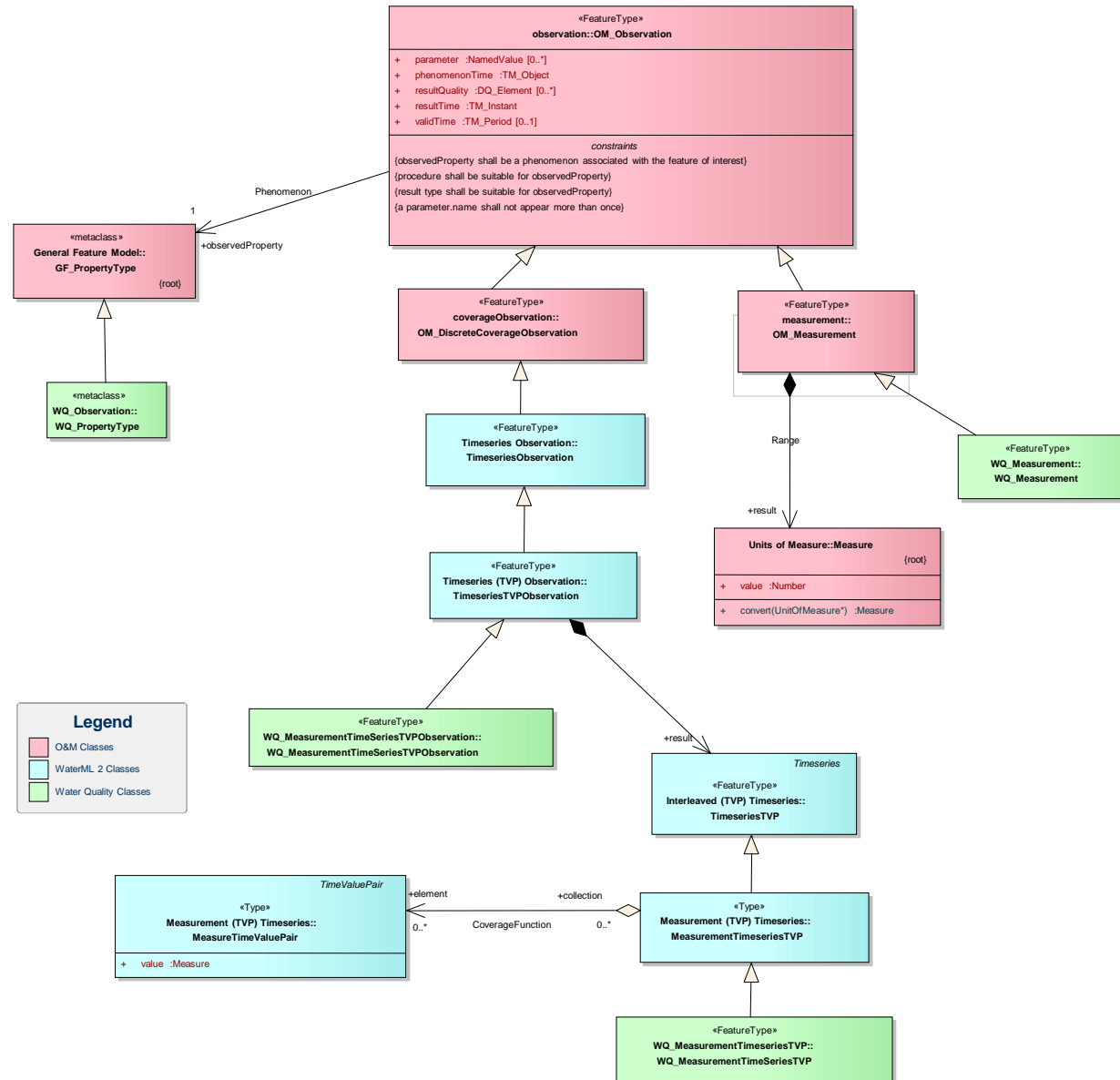
WaterML-WQ

- Defined in UML
 - Implemented in XML
- ... lots of the *spec* deals with UML and XML mechanics

Water Quality package dependencies



WQ classes as sub-types of O&M and WaterML 2



Requirements Classes (option 1)

5.2 Requirements class: observations (WO_Observation)

Concrete observations of water quality use the O&M element OM_Measurement or the WML2 element MeasurementTimeseriesTVPobservation. The observed property common to these elements inherited from OM_Observation is taken from a standard vocabulary. The feature of interest property common to these elements comes from a water domain specific feature catalogue.

Requirements class	<u>/req/observation</u>
Target type	XML data document
Dependency	http://www.opengis.net/spec/OMXML/2.0/req/observation
Dependency	<u>/req/xsd-rules</u>
Requirement	<u>/req/observation/observed-property</u>
Recommendation	<u>/req/observation/feature-of-interest</u>

The observed property of the observation is to be taken from a standard water quality vocabulary governed by the Australian water community.

/req/observation/observed-property

The XML element om:observedProperty SHALL have an xlink:href property that is an instance of the owl class http://qudt.org/schema/qudt#Quantity as defined in http://resources.data.gov.au/water/def/water-quality/wq-quantity

The ultimate feature of interest (domain sampled feature) is a water specific domain feature.

/req/observation/feature-of-interest

The value of the href:xlink attribute for the featureOfInterest property SHOULD be a URI that denotes a feature type whose type is either:

- i) a GroundWaterBody feature from GroundWaterML 1 (Boisvert and Brodaric, 2012);
- or
- ii) a sub-type of a HydrologicUnit feature from GroundWaterML 1 (Boisvert and Brodaric, 2012);
- or
- iii) a HY_HydroFeature feature or one of its sub-types from HY_Feature (Atkinson and Domblut, 2012).

This is the core requirements class for all XML instances of water quality observations.

Requirements Classes (option 2)

5.3 Requirements class: single measurements (WO Measurement)

Single observations of water quality use the O&M element OM Measurement, and require that the units of measure used in the result are taken from a standard vocabulary.

Requirements class	<u>/req/single-measurement</u>
Target type	XML data document
Dependency	<u>/req/observation</u>
Dependency	http://www.opengis.net/spec/OMXML/2.0/req/measurement
Requirement	<u>/req/single-measurement/result-units</u>

The units of measure used in the single observation measurement result are required to be taken from a standard water quality vocabulary governed by the Australian water community.

<u>/req/single-measurement/result-units</u>	The value of the <u>om:result/@uom</u> SHALL be an instance of the <u>owl:Class</u> http://qudt.org/schema/qudt#Unit as defined in http://resources.data.gov.au/water/def/water-quality/water-quality
---------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

The unit of measure must be suitable for the observed property (constraint inherited from OM Observation).

This is the requirements class for all XML instances of single water quality measurements.

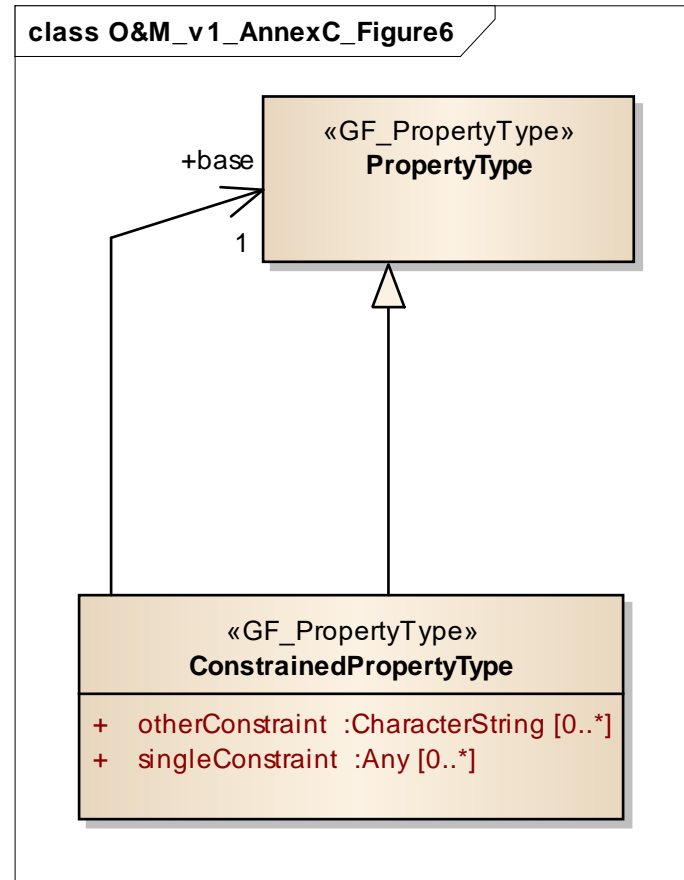
Water Quality observable property vocabulary

1. Observable property model as a formal ontology based on
 - OGC *O&M v1.0* (Cox, 2007)
 - *QUDT v1.1* (Hodgson and Keller, 2011)
2. Content from various Australian and international projects
3. Analytes linked to *Chemical Entities of Biological Interest (ChEBI)* ontology

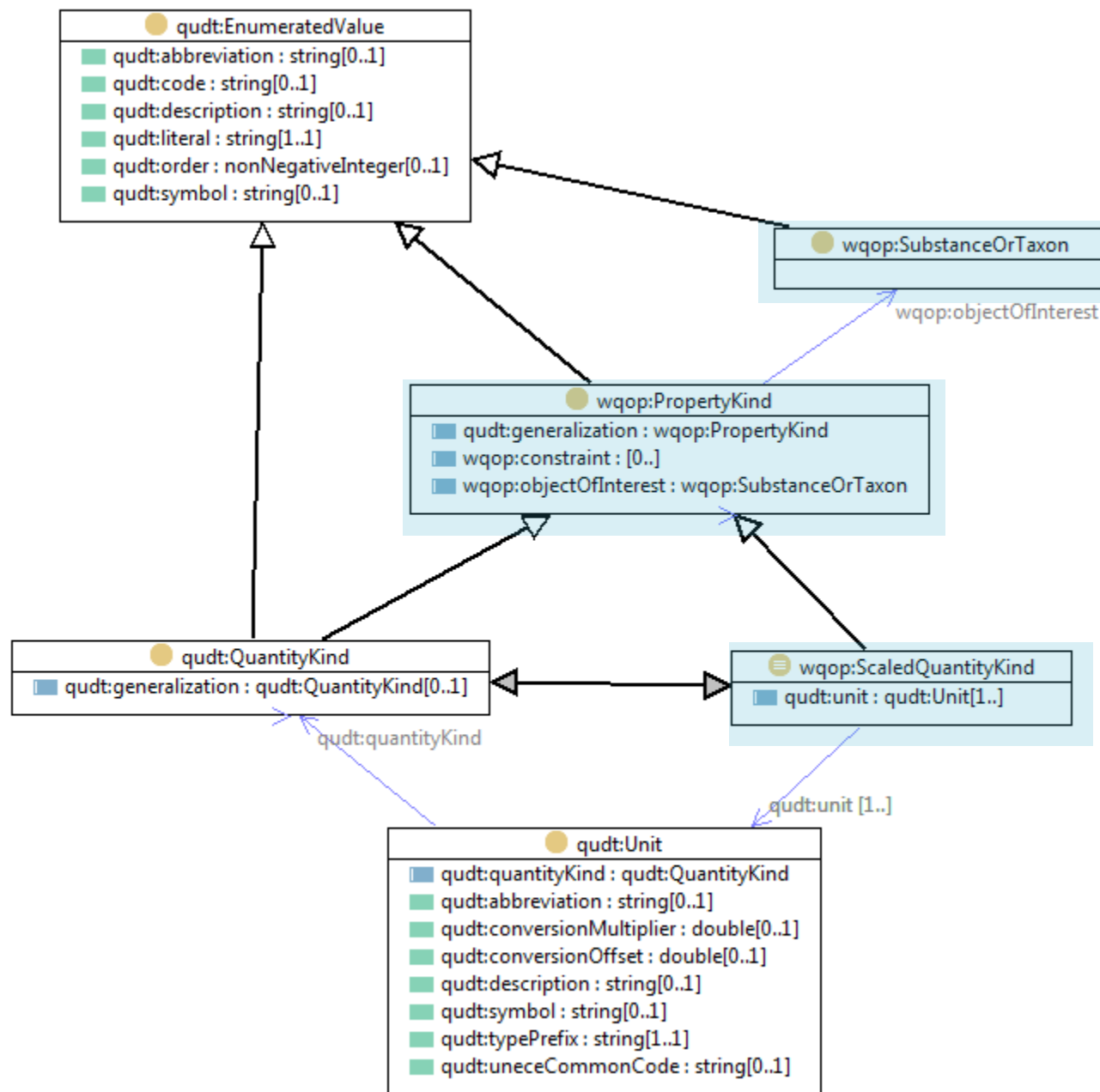
Healthy Headwaters Terms

cas_rn number	Number of tests	Units_used	ANGDTS Code	ANGDTS Description	WDTF Parameter	chemical name	ADWG name	IUPAC name	Group		Comments
EC	267621	us/cm (256639), ms/cm (10948), mg/L (25)	EC	ease at which conduction current can be caused to flow through material in microSiemens/centimetre	ElectricalConductivityAt25C_uScm	Electrical Conductivity			Conductivity		us/cs and ms/cm could all be MicroSiemens/cm, but temperature of measurement not recorded
PH	104367	pH units	pH	negative logarithm of hydrogen ion concentration in ph units	WaterpH_pH	pH	pH		pH, alkalinity, acidity		
16887-00-6	90358	mg/L (90357), mg/kg (1)	16887-00-6	concentration of chloride as Cl in milligrams/litre		Chloride		Chloride	Chloride	Anion	Halide
TDS	89918	mg/L	TDS	the portion of total solids that passes through filter and deemed to have been dissolved in sample in milligrams/litre		Total Dissolved Solids	Total Dissolved Solids		Salinity		Silica + Total Anions + Total Cations
TOTALALKALINITY	89142	mg/L	ALKT	concentration in milligrams/litre CaCO3 of titratable bases using a methyl-orange endpoint of about pH 4.3		Total Alkalinity (as CaCO3)			pH, alkalinity, acidity		
HARDNESS_CACO3	88044	mg/L	HARD	the ability of water to precipitate soap and is sum of calcium and magnesium concentrations as milligrams/litre CaCO3		Hardness (as CaCO3)	Hardness (as calcium carbonate)		Hardness (as calcium carbonate)		
TDI	87949	mg/L				Total Dissolved Ions			Salinity		Total Anions + Total Cations
SAR	80643	Ratio	SAR	ratio of sodium to magnesium and calcium and used to assess risk of excess sodium in irrigation water		Sodium Adsorption Ratio			Salinity		$SAR = [Na^+] / \{([Ca^{2+}] + [Mg^{2+}]) / 2\}^{1/2}$
3812-32-6	72329	mg/L (72328), %MOL (1)	ALKC	alkalinity ascribed to carbonate in milligrams/litre CO3		Carbonate Alkalinity (as CaCO3)		Carbonate	pH, alkalinity, acidity		
NITRATE	68072	mg/L (68071), mg/kg (1)	14797-55-8	concentration of nitrate as N in milligrams/litre		Nitrate	Nitrate and Nitrite		Nitrate and Nitrite	Anion	
7439-89-6	53215	mg/L (53074), mg/kg (1), ug/L (140)	7439-89-6	concentration of iron as Fe in milligrams/litre		Iron		Iron	Metal	Cation	Transition metal

O&M V1 Annex C (cut-down version)



WQ extension to QUDT



Observable properties vocab

- Originally in CSIRO's Linked Data Registry
- Now in RVA - <https://demo.vocabs.ardc.edu.au/viewById/907>

Water Quality Observed Properties

Acronym: WQOP
Publisher CSIRO

Created: 2014

1ed

released: 2015

Water-quality observed properties for groundwater, surface water and marine water quality observations. Each PropertyKind is associated with a SubstanceOrTaxon object via the objectOfInterest property or a real-world Feature via the featureOfInterest property.

The sub-class of PropertyKinds that can be measured are ScaledQuantityKinds, which have appropriate units of measure (qudt:unit property). This water quality ontology re-uses the Quantities, Units, Dimensions, Data Types (QUDT) ontology.

Languages
English

Licence

Related

Related people and organisations

Has author Bruce A Simons

Has author Simon J D Cox

Has author Jonathan Yu

Using browse

Concept Unordered collection

- Soil observable properties
- Water observable properties (8)
 - chemistry observable properties (318)
 - life form observable properties (10)
 - major element observable properties (7)
 - minor or trace element observable properties (22)
 - nutrient observable properties (18)
 - organic observable properties (120)
 - physical observable properties (50)
 - trace element observable properties (36)
- water quality observable properties (8)
- No Title (1)
- crocodile concentration (2)
- degree heating days
- No Title (6)

O&M Implementations

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Profile of Observations and Measurements

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 - 4.6.2.4 *ssn:Property*

Semantic Sensor Network Ontology

W3C Recommendation 19 October 2017 (Link errors corrected 08 December 2017)



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Abstract

The Semantic Sensor Network (SSN) ontology is an ontology for describing sensors and their observations, the involved procedures, the studied features of interest, the samples used to do so, and the observed properties, as well as actuators. SSN follows a horizontal and vertical modularization architecture by including a lightweight but self-contained core ontology called SOSA (Sensor, Observation, Sample, and Actuator) for its elementary classes and properties. With their different scope and different degrees of axiomatization, SSN and SOSA are able to support a wide range of applications and use cases, including satellite imagery, large-scale scientific monitoring, industrial and household infrastructures, social sensing, citizen science, observation-driven ontology engineering, and the Web of Things. Both ontologies are described below, and examples of their usage are given.

software



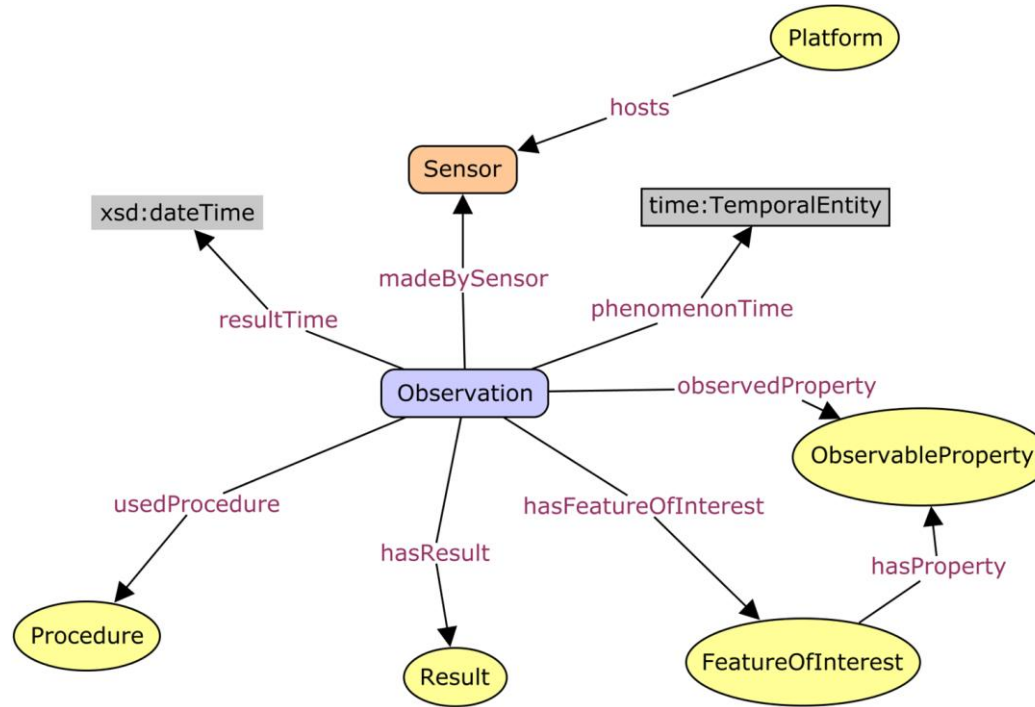
information model

[✉](#), Kerstin A. Lehnert ^d[✉](#), Leslie
[✉](#), David G. Tarboton ^e[✉](#), David

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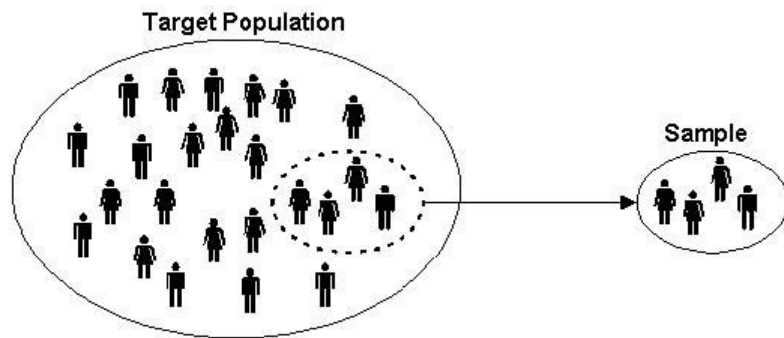
open access

“Observation” = Act of observation



Properties = metadata and result for a single observation

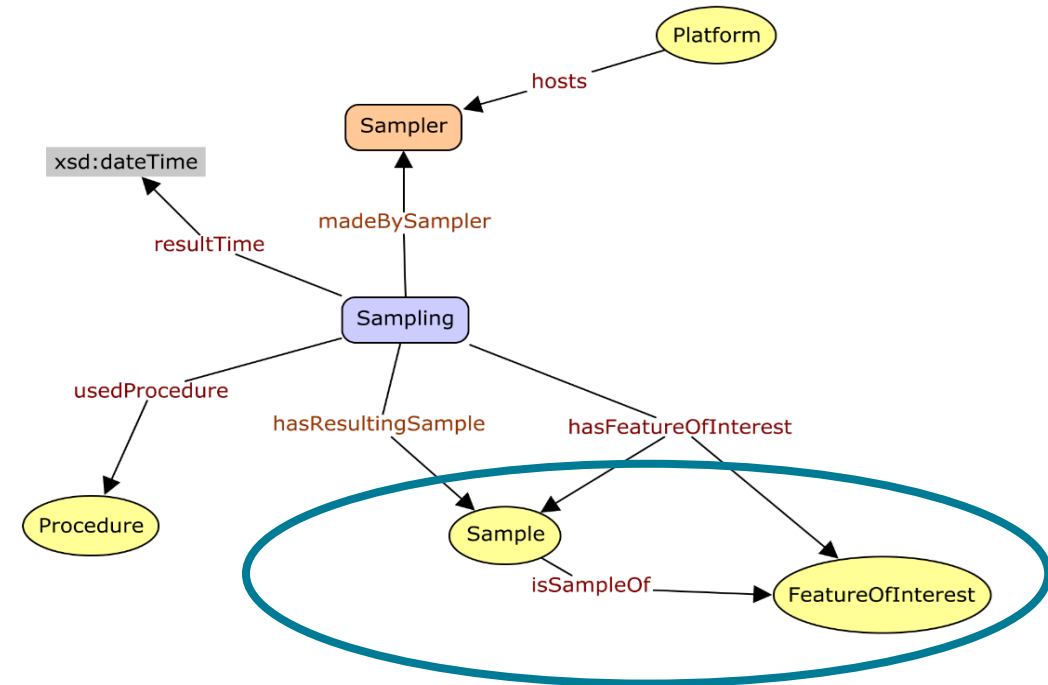
Sampling



Sample = result of an Act-of-sampling

A 'sample' is a thing or subset which is intended to be representative of a larger thing or set ...

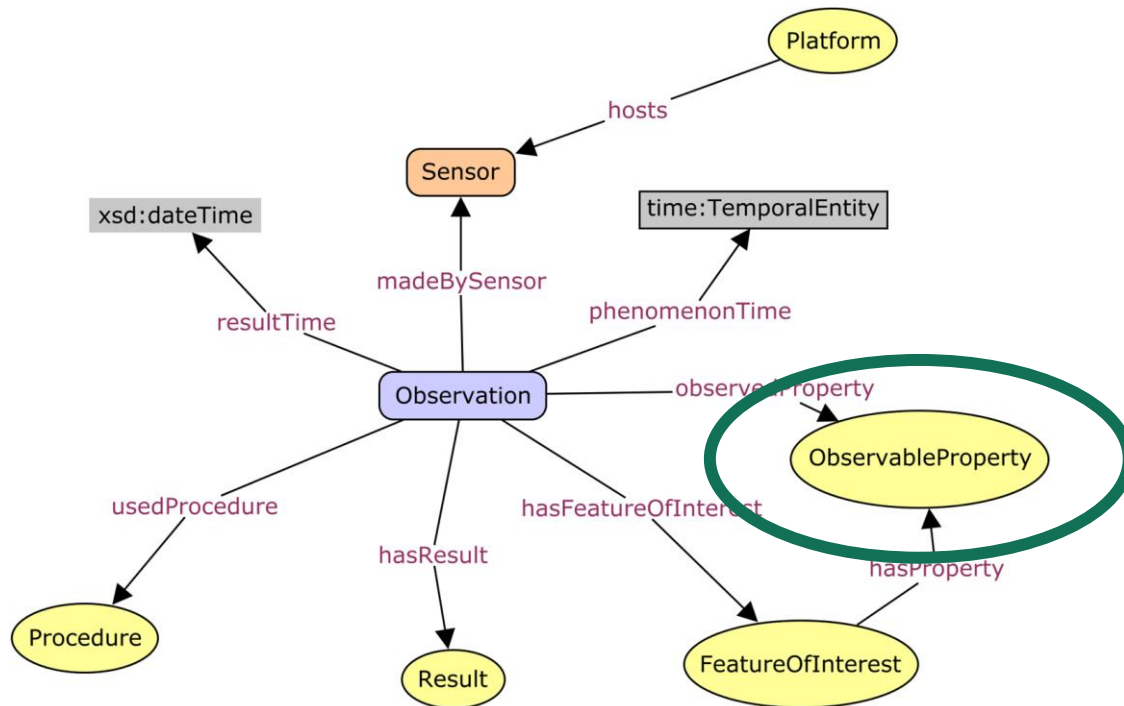
... created or selected for the purpose of making observations to determine the value of one or more properties, traits or qualities of the larger thing



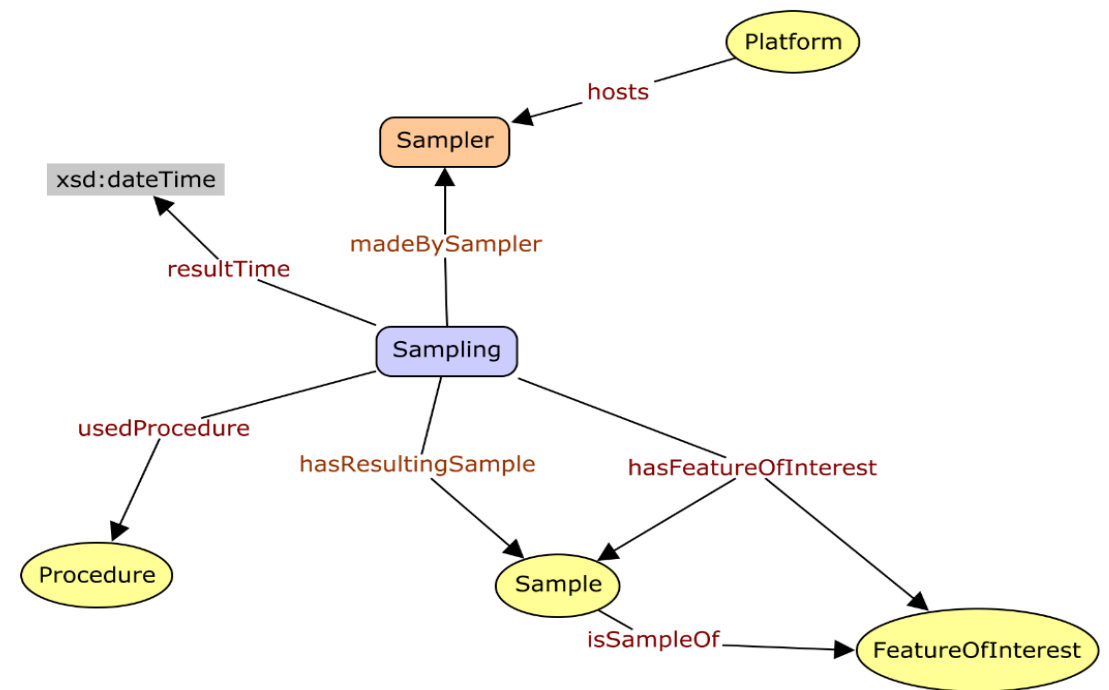
The essential property of a sample is the 'is-sample-of' relationship with the larger thing.

SOSA/SSN = RDFS/OWL implementation

Observation



Sampling



SOSA/SSN is 'born linked'

- Link to dependencies description of the Observable Property using a **persistent URI**

In practice

URIs for terms

Standard resource types

Links between related resources

Small datatype vocabulary

```
corveg-site:site-29099 a plot:Site ;
  rdfs:label "Site 29099" ;
  plot:floristics <http://linked.data.gov.au/def/corveg-cv/site-sample-floristics/c> ; # "Woody Species And Perennial Herbs"
  plot:sampleLevel <http://linked.data.gov.au/def/corveg-cv/site-sample-level/q> ; # "Quaternary Site"
  plot:sampleType <http://linked.data.gov.au/def/corveg-cv/site-sample-type/a> ; # "square"
  plot:siteDescription corveg-site:d-29099-1 ;
  dct:identifier "29099"^^corveg-def:site-id,
    "618_455029"^^corveg-def:site-number ;
  dct:modified "2015-10-20T08:44:07"^^xsd:dateTime ;
  locn:Location corveg-location:l-28966 ;
  prov:wasGeneratedBy corveg-site:p-287 ;
  sosa:hasUltimateFeatureOfInterest <http://linked.data.gov.au/def/corveg-cv/miscellaneous/87> .
```

```
corveg-site:d-29099-1 a sosa:ObservationCollection ;
  rdfs:label "Site 29099 observation collection." ;
  dct:type <http://linked.data.gov.au/def/corveg-cv/ogroup/4> ; # "sampling-site (description)"
  sosa:hasFeatureOfInterest corveg-site:site-29099 ;
  sosa:phenomenonTime corveg-site:t1995-10-13-h0-m0-s0 ;
  sosa:resultTime "2015-10-20T00:00:00"^^xsd:dateTime ;
  sosa:hasMember corveg-site:d-29099-1-1 .
```

```
corveg-site:d-29099-1-1 a sosa:Observation ;
  rdfs:label "Site 29099 area measurement observation" ;
  sosa:hasFeatureOfInterest corveg-site:site-29099 ;
  sosa:hasResult [ a data:QuantitativeMeasure ;
    data:standard unit:M2 ;
    rdf:value 400 ] ;
  sosa:observedProperty <http://linked.data.gov.au/def/corveg-cv/op/1> ; # "area"
  sosa:phenomenonTime corveg-site:t1995-10-13-h0-m0-s0 ;
  sosa:resultTime "2015-10-20T00:00:00"^^xsd:dateTime ;
  sosa:usedProcedure <http://linked.data.gov.au/def/corveg-cv/common-method/s> . # "Site Layout Method"
```

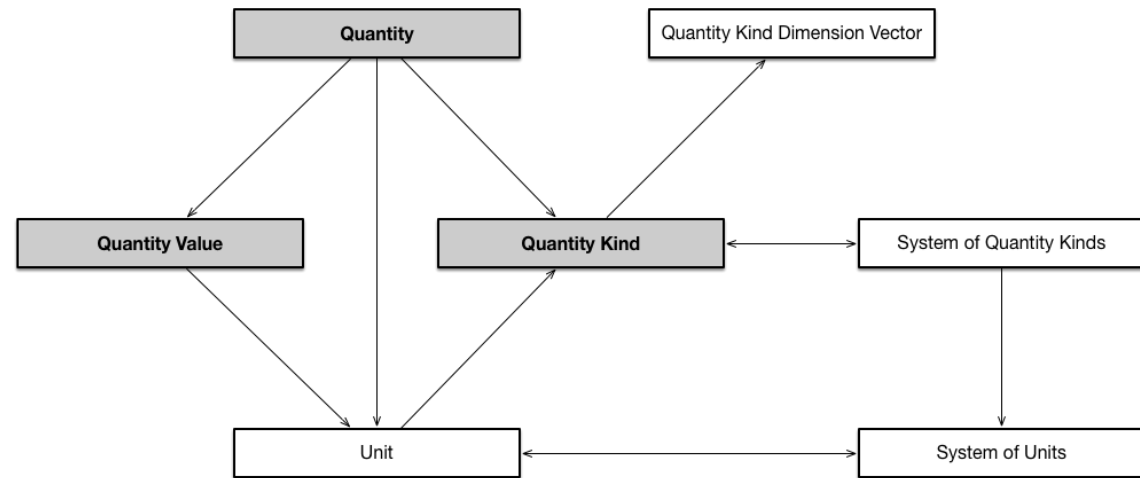
```
corveg-site:t1995-10-13-h0-m0-s0 a time:Instant ;
  time:inXSDDateTime "1995-10-13T00:00:00"^^xsd:dateTime .
```


Vocabularies and ontologies for WQ observable properties

- ChEBI (OBO, 2008-2022)
- QUDT (2014-2022)
- NVS P01, S06 (~2000-2022)
 - PUV Ontology (BODC/CSIRO, 2021)
- I-ADOPT (RDA, 2021)

QUDT – Quantities Units Dimensions & Types

- <http://www.qudt.org/>



QUDT Quantity Kinds

Concentration

<http://qudt.org/vocab/quantitykind/Concentration>

quantitykind:Concentration

URI: <http://qudt.org/vocab/quantitykind/Concentration>

Type

qudt:QuantityKind

Description

Properties

qudt:dbpediaMatch

<http://dbpedia.org/resource/Concentration>

qudt:plainTextDescription

In chemistry, concentration is defined as the abundance of a constituent divided by the total volume of a mixture. Furthermore, in chemistry, four types of mathematical description can be distinguished: mass concentration, molar concentration, number concentration, and volume concentration. The term concentration can be applied to any kind of chemical mixture, but most frequently it refers to solutes in solutions.

qudt:hasDimensionVector

dimension:A1E0L-3I0M0H0T0D0

qudt:informativeReference

<http://en.wikipedia.org/wiki/Concentration>

rdf:type

qudt:QuantityKind

Annotations

rdfs:isDefinedBy

<<http://qudt.org/2.1/vocab/quantitykind>>

rdfs:label

Concentration (en)

View as: [CSV](#) [RDF/XML](#) [TURTLE](#) [JSON](#) [JSON-LD](#)

QUDT Units

kg/m³

<http://qudt.org/vocab/unit/KiloGM-PER-M3>

QUDT

unit:KiloGM-PER-M3

URI: <http://qudt.org/vocab/unit/KiloGM-PER-M3>

Type

qudt:DerivedUnit

qudt:Unit

Description

Kilogram per cubic metre is an SI derived unit of density, defined by mass in kilograms divided by volume in cubic metres. The official SI symbolic abbreviation is *kg · m⁻³*, or equivalently either *kg/m³*.

Properties

qudt:conversionMultiplier

1.0

qudt:plainTextDescription

Kilogram per cubic metre is an SI derived unit of density, defined by mass in kilograms divided by volume in cubic metres. The official SI symbolic abbreviation is *kg · m⁻³*, or equivalently either *kg/m³*.

qudt:hasDimensionVector

dimension:A0E0L-3I0M1H0T0D0

qudt:hasQuantityKind

quantityKind:Density

quantityKind:MassConcentration

quantityKind:MassConcentrationOfWater

quantityKind:MassConcentrationOfWaterVapour

quantityKind:MassDensity

qudt:iec61360Code

0112/2///62720#UAA619

rdf:type

qudt:DerivedUnit

qudt:Unit

qudt:ucumCode

kg.m-3

kg/m3

qudt:uneceCommonCode

KMQ

Annotations

dcterms:description

Kilogram per cubic metre is an SI derived unit of density, defined by mass in kilograms divided by volume in cubic metres. The official SI symbolic abbreviation is *kg · m⁻³*, or equivalently either *kg/m³*.

qudt:expression

kg/m³

rdfs:isDefinedBy

<<http://qudt.org/2.1/vocab/unit>>

rdfs:label

Kilogram per Cubic Meter (en-us)

Kilogram per Cubic Metre (en)

kilogram per cubic meter (en-us)

kilogram per cubic metre (en)

Units of measurement

Also

- UCUM
- OM
- UDUNITS
- ...

Mapping service

<https://units-of-measurement.org/kg.m-3>

Units of Measurement



kilogram per cubic metre

<https://w3id.org/uom/kg.m-3>

- [rdf:type](#)
 - [owl:NamedIndividual](#)
- [skos:exactMatch](#)
 - [OM:kilogramPerCubicmetre](#)
 - [QUDT:KiloGM-PER-M3](#)
 - [obo:UO_0000083](#)
 - [OBOE:KilogramPerMeterCubed](#)
 - [NERC_P06:UKMC](#)
- [rdfs:label](#)
 - kilogram per cubic metre
- [skos:altLabel](#)
 - kilogram per cubic meter
- [skos:definition](#)
 - A unit which is equal to 10^3 gram per 1 cubic metre.
- [SI code](#)
 - kg m⁻³
- [UCUM code](#)
 - kg/m³
 - kg.m⁻³

NERC Vocabulary Service

Ocean data vocabularies

https://vocab.nerc.ac.uk/search_nvs/



The NERC Vocabulary Server (NVS)

Service Status

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Search for a term in a vocabulary collection

Enter search string using % as wildcard if required. Example: chlorophyll%sediment.

P01

Search

Identifier Preferred label Alternative label Definition Exact match Case sensitive [toggle advanced options](#)

A01	A02	A03	A04	A05	B02	B03	B04	B05	B06	B07	B09	B11	B12	B20	B21	B22	B39	B75	B76	C00	C10	C16	C17	C18	C19
C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C43	C45	C46	C47	C48	C59	C60	C61	C62	C64	C67	C71	C72	C75
C77	C86	C87	C88	C89	C96	C98	D01	E01	E02	F02	G01	G02	G03	G04	G05	G06	G07	G08	G09	G10	G11	G12	G13	G14	G15
G17	G18	G20	G21	G22	G23	G25	G26	G28	G29	G30	GBX	GGB	GGs	GGT	GS1	GS2	GS3	GS4	GS5	GS6	GS8	GS9	GSA	GSB	GSC
GXM	H01	H02	H03	H04	H05	H06	HA2	I01	I02	I03	I10	I11	I12	I13	I14	I15	L02	L03	L04	L05	L06	L07	L08	L10	L11
L12	L13	L14	L15	L18	L19	L20	L21	L22	L23	L24	L26	L27	L30	L31	L33	L34	L35	L36	L37	L38	M01	M03	M04	M05	M06
M09	M10	M11	M12	M13	M14	M15	M16	M17	M18	M20	M21	M22	M23	M24	M25	M26	M27	MVB	N01	N02	N03	N04	N05	N06	OD1
OG1	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12	P13	P14	P15	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26
P27	P28	P29	P30	P35	P36	P37	P38	P64	Q01	R01	R03	R04	R05	R06	R07	R08	R09	R10	R11	R12	R13	R15	R16	R19	R20
R21	R22	R23	R24	R25	R26	R27	RD2	RMC	RP2	RR2	RTV	S01	S02	S03	S04	S05	S06	S07	S09	S10	S11	S12	S13	S14	S15
S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	T01	T02	V12	V22	V23	W01	W02	W03	W04	W05	W06	W07	W08
W09	W10	W11																							

Vocabulary collection selector: hover on the coloured cells to see the collection's title and click to select. Note that the codes and the colours have no meaning but related vocabularies tend to be given a code starting with the same letter.

S06 - Parameter names

<https://vocab.nerc.ac.uk/collection/S06/current/>

Basic observable properties

100s entries

BODC parameter semantic model parameter entity names

Other formats for this page:

[RDF/XML](#) [Turtle](#) [JSON-LD](#)

Alternate Profiles

Other views of this page:

[Alternate Profiles](#) ?

URI	http://vocab.nerc.ac.uk/collection/S06/current/
Description	Controlled vocabulary defining the terms that may be used to specify the property element of a parameter (part of the 'what' theme) in the BODC parameter semantic model.
Creator	British Oceanographic Data Centre
Modified	2022-03-23
Version Info	112
Identifier	S06
Register Manager	British Oceanographic Data Centre
Register Owner	British Oceanographic Data Centre
See Also	https://github.com/nvs-vocabs/S06
License	https://creativecommons.org/licenses/by/4.0/

Members

ID ↑	Preferred Label ↑	Definition ↑	Date ↑
S0600001	14C age	The age of an object determined by radiocarbon dating expressed relative to a datum of AD 1950.	2006-02-17
S0600125	4-pi scalar irradiance as photons	The flux of photons reaching a spherical surface from every direction.	2017-12-18
S0600084	Absolute salinity	Salinity in terms of mass per unit mass computed from practical salinity using TEOS-10 equation of state.	2017-09-19
S0600080	Absorbance	A measure of the quantity of incident electromagnetic radiation that is absorbed by an object, substance or solution.	2017-07-11
S0600002	Abundance	The number of occurrences of an entity per unit area or per unit volume.	2006-02-17
S0600178	Abundance category	Nominal scale used to qualify the abundance of an organism in a survey or sample.	2018-06-07
S0600179	Abundance category (SACFOR)	Standardised nominal scale that classifies the abundance of marine benthic flora and fauna into 6 categories (Superabundant, Abundant, Common, Frequent, Occasional, Rare) based on the percent cover or density of organisms on the bed.	2018-06-08
S0600212	Abundance category (SACFORN)	Standardised nominal scale that classifies the abundance of marine benthic flora and fauna into 7 categories (Superabundant, Abundant, Common, Frequent, Occasional, Rare, Not found) based on the percent cover or density of organisms on a surface. A variant of the SACFOR scale with the purpose of adding a zero category.	2018-09-21
S0600220	Abundance increase	The positive change in the number of occurrences of an entity between two points (typically two points in time); negative values indicate a decrease.	2019-01-21
S0600209	Acceptable proportion	Also referred to as Percent Good, this is the proportion of good data collected per beam and depth cell from an acoustic doppler current profiler (ADCP). Represented as a percentage between 0 and 100.	2018-09-14
S0600003	Accumulation rate	The rate at which the quantity of an entity increases.	2006-02-17
S0600043	Activity	The number of disintegrations of a radioactive substance in a given unit of time (physics) or in the ability of a substance to take part in a chemical reaction (chemistry).	2015-09-02
S0600241	Activity ratio	Quotient of the radioactive decay rates of two co-located radionuclides.	2019-05-30
S0600254	Amplitude	The maximum displacement of a periodic variable over a single spatial or	2020-06-17

P01 - Parameter names

<https://vocab.nerc.ac.uk/collection/P01/current/>

Highly detailed, includes method with observable property
~40,000 entries

BODC Parameter Usage Vocabulary

Other formats for this page:

[RDF/XML](#) [Turtle](#) [JSON-LD](#)

Alternate Profiles

Other views of this page:

[Alternate Profiles](#) ?

URI	http://vocab.nerc.ac.uk/collection/P01/current/
Description	Terms built using the BODC parameter semantic model designed to describe individual measured phenomena. May be used to mark up sets of data such as a NetCDF array or spreadsheet column.
Creator	British Oceanographic Data Centre
Modified	2022-03-25
Version Info	1061
Identifier	P01
Register Manager	British Oceanographic Data Centre
Register Owner	British Oceanographic Data Centre
See Also	https://github.com/nvs-vocabs/P01
License	https://creativecommons.org/licenses/by/4.0/

Members

ID ↑	Preferred Label ↑	Definition ↑	Date ↑
SAGEMSFM	14C age of Foraminiferida (ITIS: 44030: WoRMS 22528) [Subcomponent: tests] in sediment by picking and accelerator mass spectrometry	Accelerated mass spectrometry on picked tests	2008-10-16
SAGEMCFM	14C age of Foraminiferida (ITIS: 44030: WoRMS 22528) [Subcomponent: tests] in sediment by picking and accelerator mass spectrometry and correction after Stuiver and Reimer	Accelerated mass spectrometry on picked tests then Stuiver and Reimer correction	2018-01-16
SAGEMSGB	14C age of Globigerina bulloides (ITIS: 45797: WoRMS 113434) [Subcomponent: tests] in sediment by picking and accelerator mass spectrometry	Accelerated mass spectrometry on picked tests	2008-10-16
SAGEMCGB	14C age of Globigerina bulloides (ITIS: 45797: WoRMS 113434) [Subcomponent: tests] in sediment by picking and accelerator mass spectrometry and correction after Stuiver and Reimer	Accelerated mass spectrometry on picked tests then Stuiver and Reimer correction	2018-01-16
SAGEMSNP	14C age of Neogloboquadrina pachyderma (WoRMS 113458) [Subcomponent: tests] in sediment by picking and accelerator mass spectrometry	Accelerated mass spectrometry on picked tests	2008-10-16
SAGEMCNP	14C age of Neogloboquadrina pachyderma (WoRMS 113458) [Subcomponent: tests] in sediment by picking and accelerator mass spectrometry and correction after Stuiver and Reimer	Accelerated mass spectrometry on picked tests then Stuiver and Reimer correction	2018-01-16
PAGEPAMS	14C age of peat by accelerator mass spectrometry	Age of a sample of peat based on 14C contained in its total carbon content determined by accelerator mass spectrometry	2010-09-30

Requesting changes, new terms

<https://github.com/nvs-vocabs/P01/issues>

Search or jump to... Pull requests Issues Marketplace Explore

nvs-vocabs / P01 Public

Unwatch 8 Fork 0 Star 4

Code Issues 41 Pull requests Actions Projects Wiki Security Insights

Filters is:issue is:open Labels 14 Milestones 0 New issue

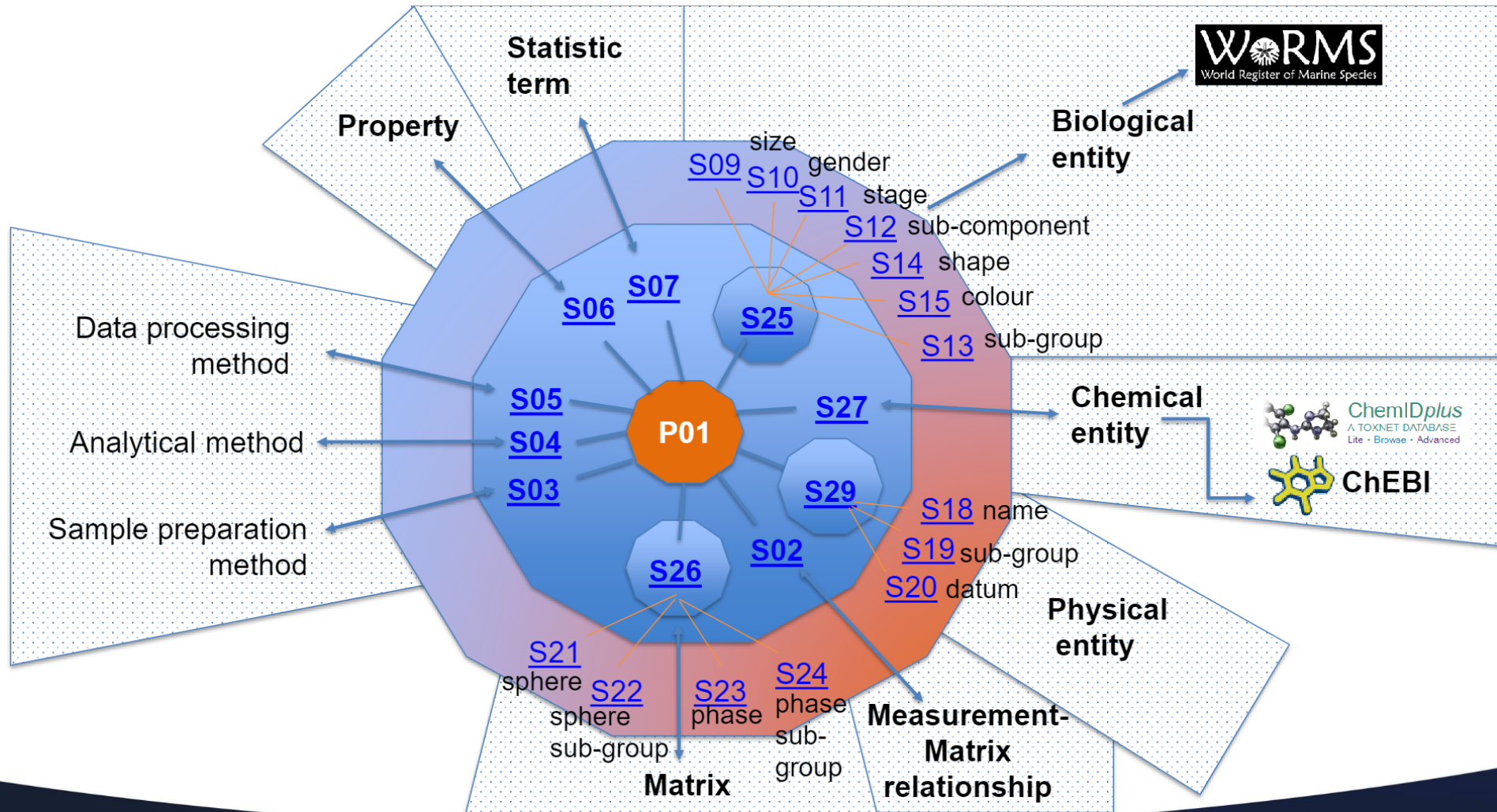
41 Open 72 Closed Author Label Projects Milestones Assignee Sort

- Physical oceanography parameters - eReefs project (2 terms)
#119 opened 21 hours ago by danibodc
- Carbon chemistry terms for pH and total alkalinity - eReefs project (2 terms)
#118 opened 22 hours ago by danibodc
- Attenuation of electromagnetic radiation at 490nm - eReefs project (2 terms)
#117 opened 23 hours ago by danibodc
- Concentration/saturation of chemicals parameters for eReefs project (6 terms)
#116 opened 3 days ago by JordanAthertonNOC
- Carbon chemistry parameters for eReefs project (3 terms)
#115 opened 7 days ago by roswn
- Depth of Secchi disk - eReefs project (1 term)
#114 opened 9 days ago by danibodc
- Physical oceanography parameters for eReefs project (5 terms)
#113 opened 10 days ago by roswn
- NTRs Occurrence probability of ...
#109 opened on 14 Feb by tkeena 4
- NTR: Request for 1 PAR Upwelling P01 code (BODCNVS-1191)
#104 opened on 7 Dec 2021 by danibodc 2
- Align spelling of sulfur/sulfate with IUPAC nomenclature decision (i.e. "f" instead of "ph")
#103 opened on 6 Dec 2021 by gwemon 2
- Resolve apparent duplication for Concentration of carbonate (CO32- CAS 3812-32-6) per unit dry weight of geological sample
#102 opened on 5 Dec 2021 by gwemon 2
- Resolve apparent duplication for Concentration of total nitrogen (total_N) (PON) per unit volume of the water body [particulate > unknown phase]
#101 opened on 5 Dec 2021 by gwemon 1
- Resolve apparent duplicates for Concentration of organic carbon (organic_C CAS 7440-44-0) (DOC) per unit volume of the water body [dissolved plus reactive particulate phase]
#100 opened on 5 Dec 2021 by gwemon 5

<https://github.com/nvs-vocabs/P01>

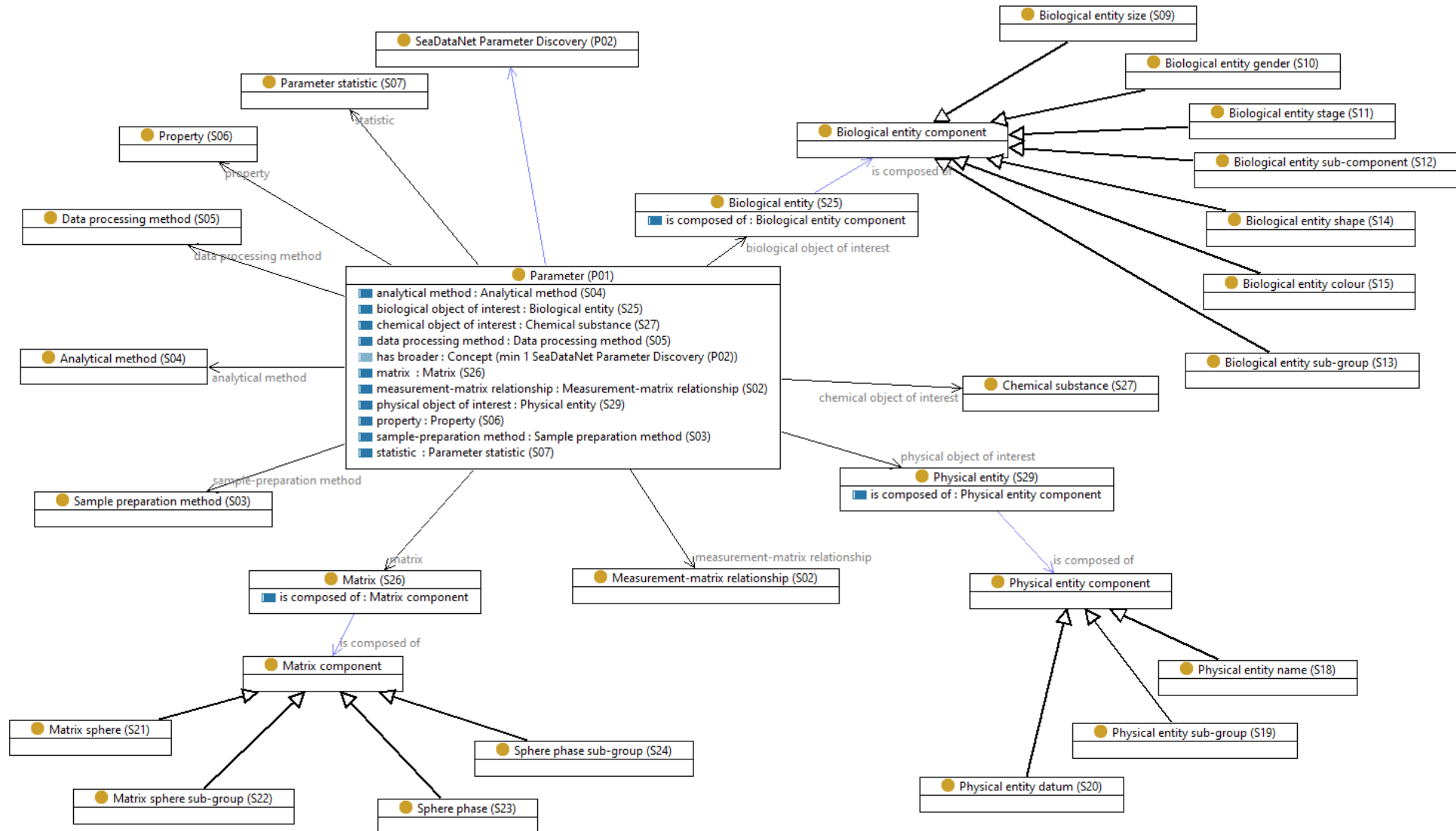
P01 Semantic Model

https://github.com/nvs-vocabs/P01/blob/master/P01_wheel.pdf



PUV Ontology

<https://w3id.org/env/puv>





The NERC Vocabulary Server (NVS)

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PUV view coming soon

Alternate Profiles

This page lists the different *profiles* - model views - and the various formats they are available in for the resource identified below.

Instance

<http://vocab.nerc.ac.uk/collection/P01/current/PAGEPAMS/>

Default Profile

[nvs](#)

Token	Name	Formats	Languages	Description	Profile URI
nvs	NVS Collections List Profile	JSON-LD N-triples RDF/XML HTML Turtle	en	The NERC Vocabulary Server's profile of SKOS that include Provenance Ontology (PROV) and Registry Ontologyrelationships for term governance.	https://w3id.org/profile/nvs-col
skos	SKOS	JSON-LD N-triples RDF/XML Turtle	en	Simple Knowledge Organization System (SKOS)is a W3C-authored, common data model for sharing and linking knowledge organization systems via the Web.	https://www.w3.org/TR/skos-reference/
vocpub	VocPub	JSON-LD N-triples RDF/XML Turtle	en	A profile of SKOS for the publication of Vocabularies. This profile mandates the use of one Concept Scheme per vocabulary	https://w3id.org/profile/vocpub
sdo	schema.org	JSON-LD N-triples RDF/XML Turtle	en	Schema.org is a collaborative, community activity with a mission to create, maintain, and promote schemas for structured data on the Internet, on web pages, in email messages, and beyond.	https://schema.org
alt	Alternate Representations	JSON JSON-LD N-triples RDF/XML HTML Turtle	en	The representation of the resource that lists all other representations (profiles and Media Types)	http://www.w3.org/ns/dx/conneg/altr

I-ADOPT

<https://rd-alliance.org/group/interoperable-descriptions-observable-property-terminology-wg-i-adopt-wg/outcomes>



Interoperable Descriptions of Observable Property Terminologies (I-ADOPT) WG - outputs and recommendations

Authors

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Version

1.0

Publication date

2022-01-25

Keywords

Interoperability, ontology, terminology, variable, observable property

IADOPT

- Model

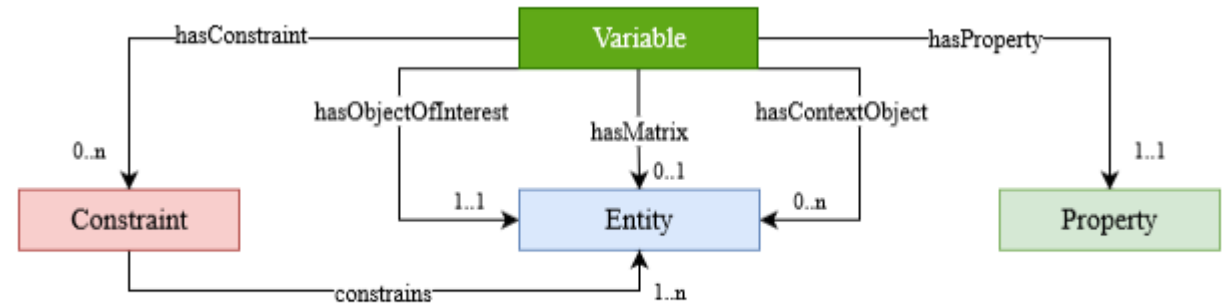


Figure 2: A conceptual overview of the Interoperability Framework ontology.

- Example

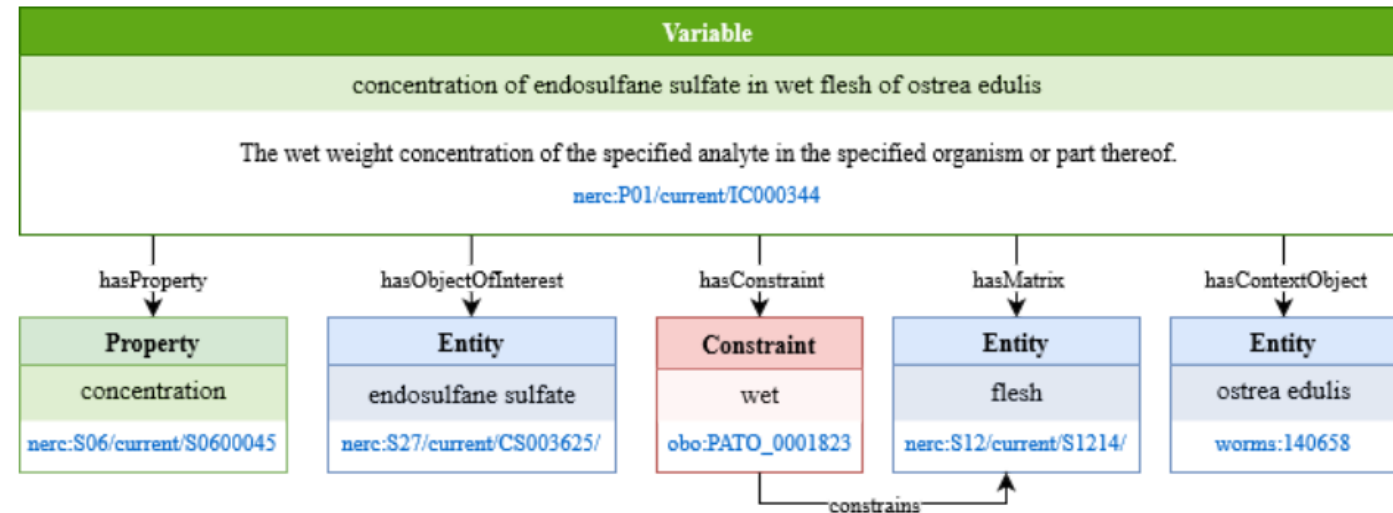


Figure 3. I-ADOPT variable for “concentration of endosulfan sulfate in wet flesh of ostrea edulis”.

<https://people.csiro.au/c/s/simon-cox>

Workshop Series on Water Quality Monitoring – Opening Workshop



Thank you!

WEATHER CLIMATE WATER

