

Hydrologic Metadata - Concept

Metadata

to identify hydrologic data
to understand the origin of data

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Hydrologic Metadata

- Requirements outline
- Time Series Metadata, concept
- Open questions to discuss
- Representation of Time

Hydrologic Metadata

[GTN-H* - metadata profile](#)

- basis of future data catalogue to identify and evaluate, access and use data relevant to GTN-H
- description of the dataset and the origin of the data
- applicable to 11 Essential Climate Variables
- conform to ISO standards, particularly 19000 series
- conform to guidelines and regulations of WMO

*GTN-H: Global Terrestrial Network for Hydrology

Hydrologic Metadata

WMO Guide to the Global Observing System. (2007)

Appendix III.3: Automatic Weather Station Metadata.

... describe location, instrument and method of observation, quality and other data characteristics, ...

- (1.1) Station and station network information;
- (1.2) Individual instrument information, e.g. uom, uncertainty
- (1.3) Data processing information, e.g. algorithms used
- (1.4) Data handling information, e.g. data quality flags

Hydrologic Metadata

_____ ... assembled for each hydrological station ... should include:

- + Principal features of gauging facilities
- + Summary of data, e.g. monthly flow, annual water quality data

Hydrologic Data

Hydrologic Data:

- value(s) of a property of a feature related to water
- result from observation or simulation

Data product:

- feature produced from data for data access and delivery

DataSet*:

- represents data or a data product
 - spatially
 - temporally
 - thematically

* Identifiable collection of data ... may be as small as a single feature.
(Source: dataset. (2003). In: ISO 19115: Geographic information - Metadata)

Hydrologic Metadata (1)

Metadata (commonly): “data about data”

Hydrologic Metadata: data about ...

- representation of hydrologic data (i.e. dataset)
- origin of hydrologic data (i.e. observation or simulation)
 - water-related feature under investigation (sampled feature)
 - property to be observed, and parameters to be measured
 - procedure used to measure/determine the value of the property
 - sampling feature and sampling medium

Hydrologic Metadata (3)

e.g. Time Series Metadata

provided using ISO 19115: Geographic Metadata

- metadata entity information (MD_Metadata)
- *data*IdentificationInfo (MD_DataIdentification)
- *data*ExtentInfo (MD_DataIdentification/EX_Extent)
- *data*QualityInfo (DQ_DataQuality)
- *data* maintenanceInfo (MD_MaintenanceInformation)
- *data* distributionInfo (MD_Distribution)
- *data* constraintInfo (MD_Constraints)
- referenceSystemInfo (MD_ReferenceSystem)
- contentInfo (MD_ContentInformation)

Hydrologic Metadata (4)

e.g. Time Series Metadata

Additional data identification info required(1):

- **temporalRepresentation**
 - identifying the state the dataset is represented in time (event, duration, frequency, sequence)
 - *similar to spatial representation of MD_DataIdentification*
- **temporalResolution**
 - description of the time raster (or time interval grid)
 - *similar to spatial resolution of MD_DataIdentification*
- **dataGenerationInfo**
 - description of the basic principle that caused the data (i.e. observation or simulation)
 - *provides the relation to the relevant observation / simulation*

Hydrologic Metadata (5)

e.g. Time Series Metadata

additional data identification info required (2):

- **domainTopicCategory / classification**
 - term from a controlled vocabulary, or class from an agreed classification identifying a domain specific thema (topic)
 - use of UDC, section 556: Hydrology (recommended by WMO) ?
- **originalWritingSystem / transliterationCode**
 - *required in a multilingual context for coding of already transliterated textual information, e.g. geonames*
 - writing system or script used in the original dataset
 - transliteration used by the owner/provider of the dataset
- *any other?*

Hydrologic Metadata (6)

e.g. Time Series Metadata

additional data quality info required:

- **measurementAccuracy**
 - confidenceInterval, confidenceLevel
 - nature, and source of error
- **measurementInterference**
 - interferenceIdentification
- **errorCorrectionInfo**
 - value, scope and method applied
- **dateTimePrecision**
 - smallest unit of time applied
- *any other?*

Hydrologic Metadata (7)

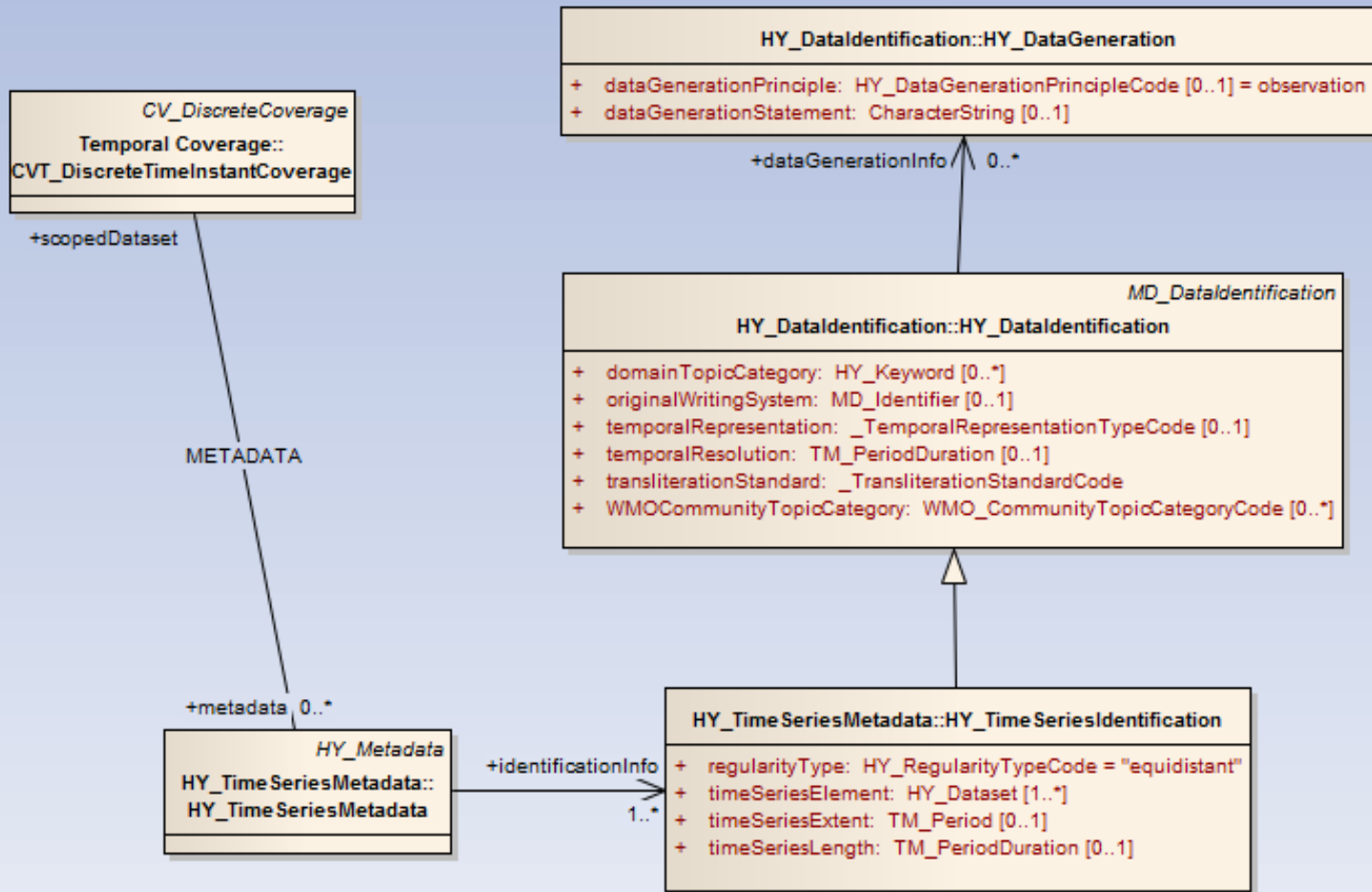
e.g. Time Series Metadata

data generation info required:

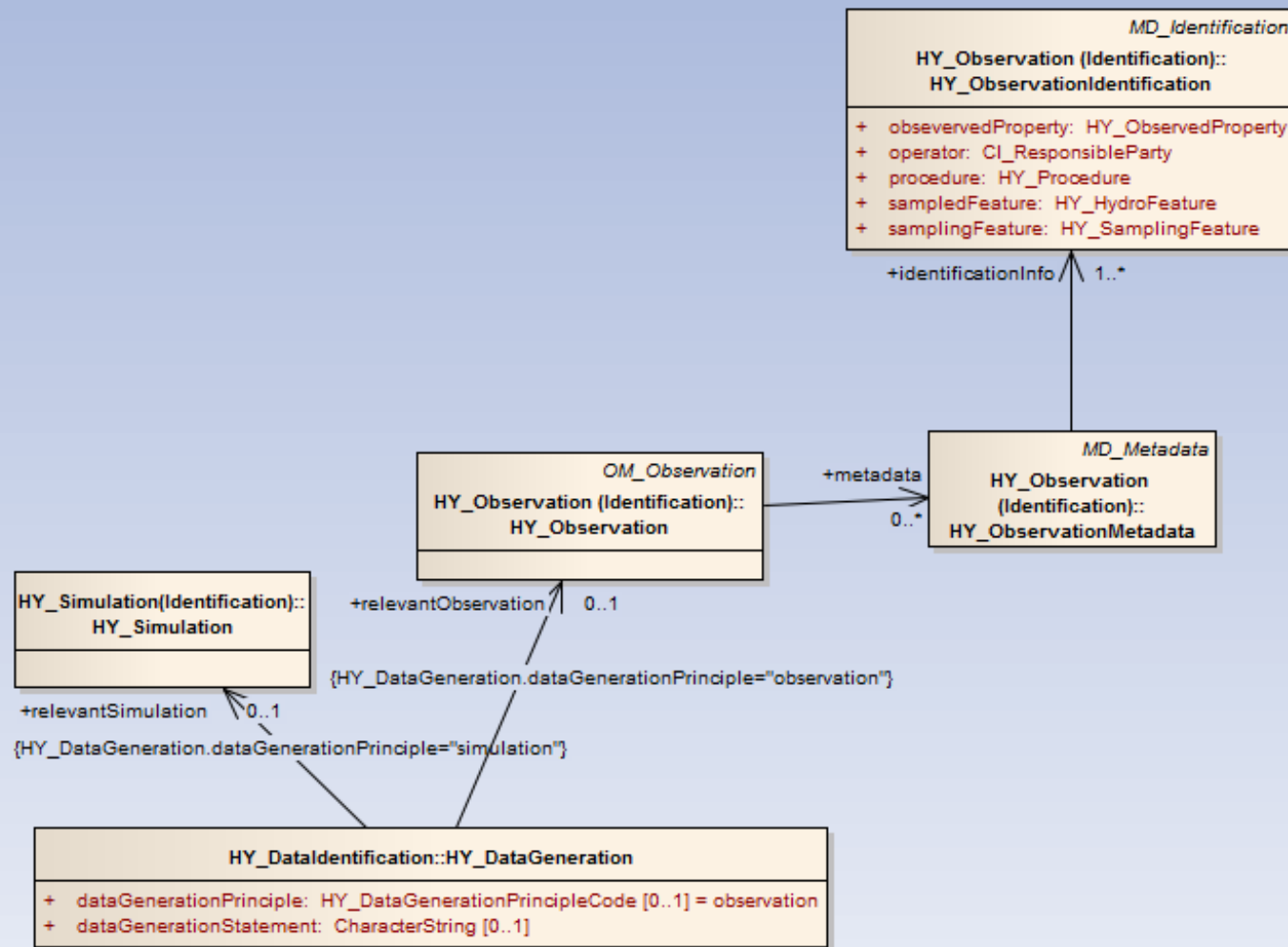
- indicates the basic principle that caused the data:
 - **observation***: act of observing a property to measure or otherwise determine the value of a property
 - **simulation**: act of simulating a property to determine a fictive value of a property (e.g. forecasting context)
- links the description of the hydrologic dataset to the information about the event that generated the data

**(Source: observation. (2010). In: ISO 19156: Geographic information - Observations and measurements. under development)*

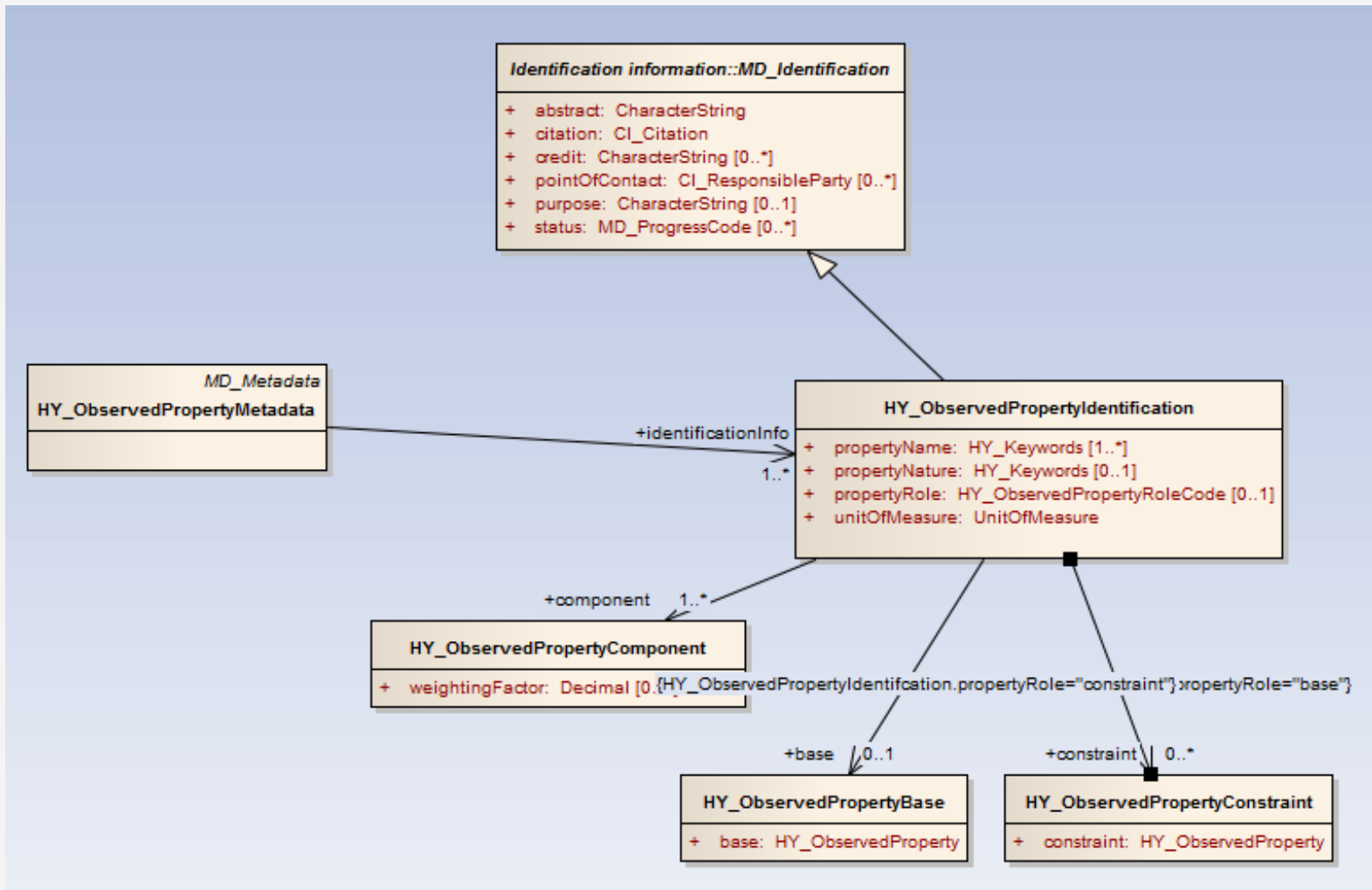
Time Series Metadata, concept



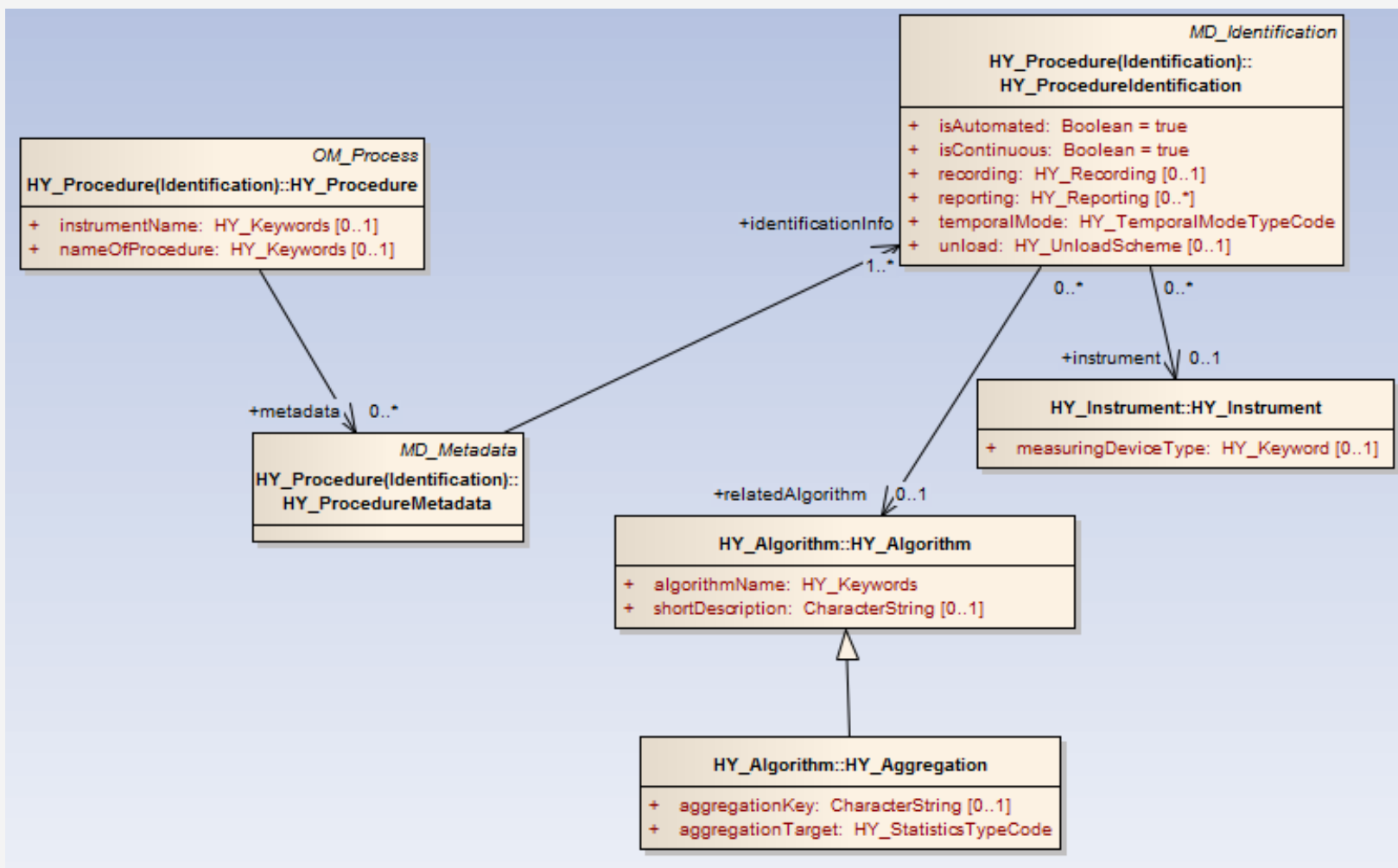
Observation Metadata, concept



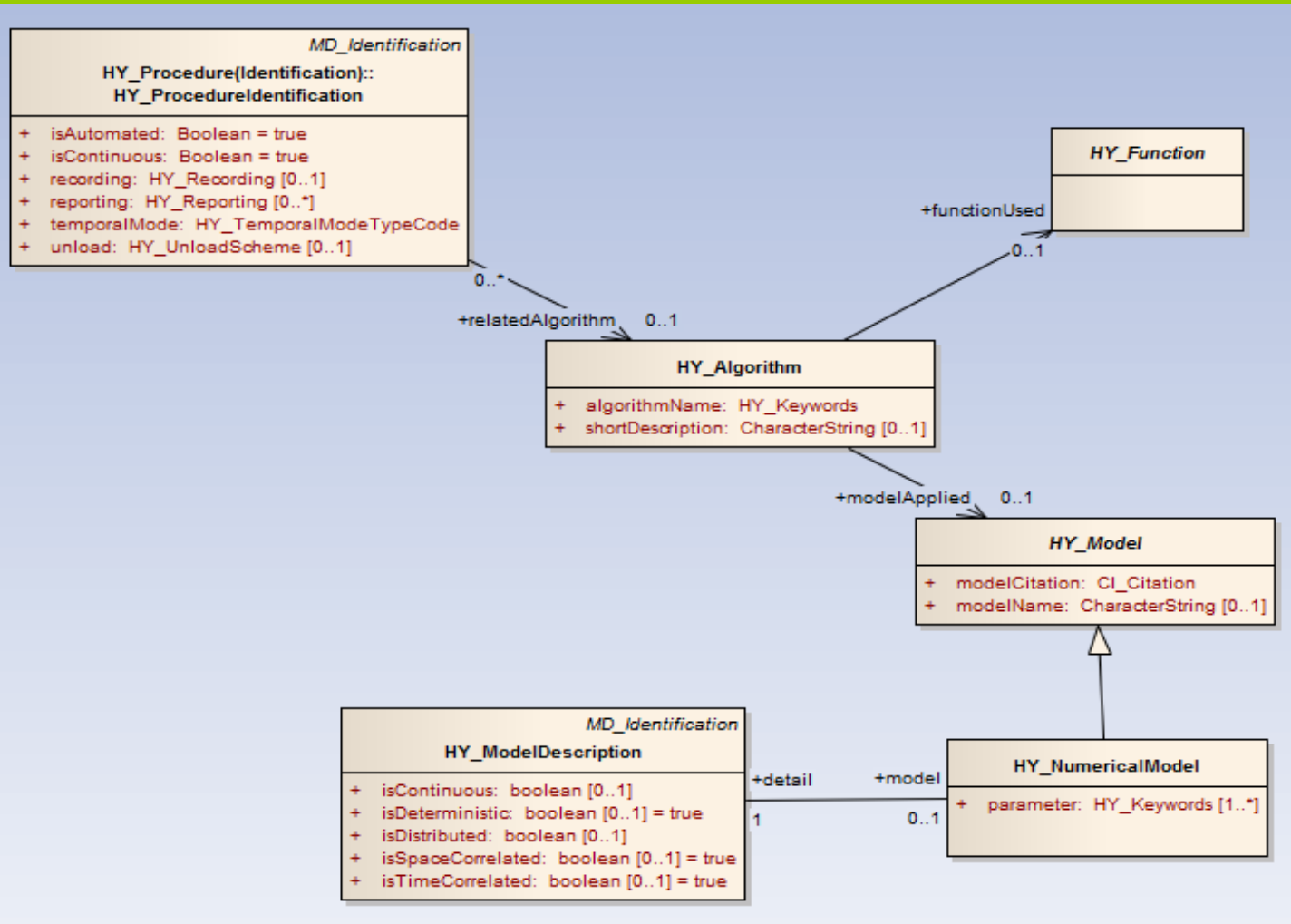
Observed Property Metadata - Identification



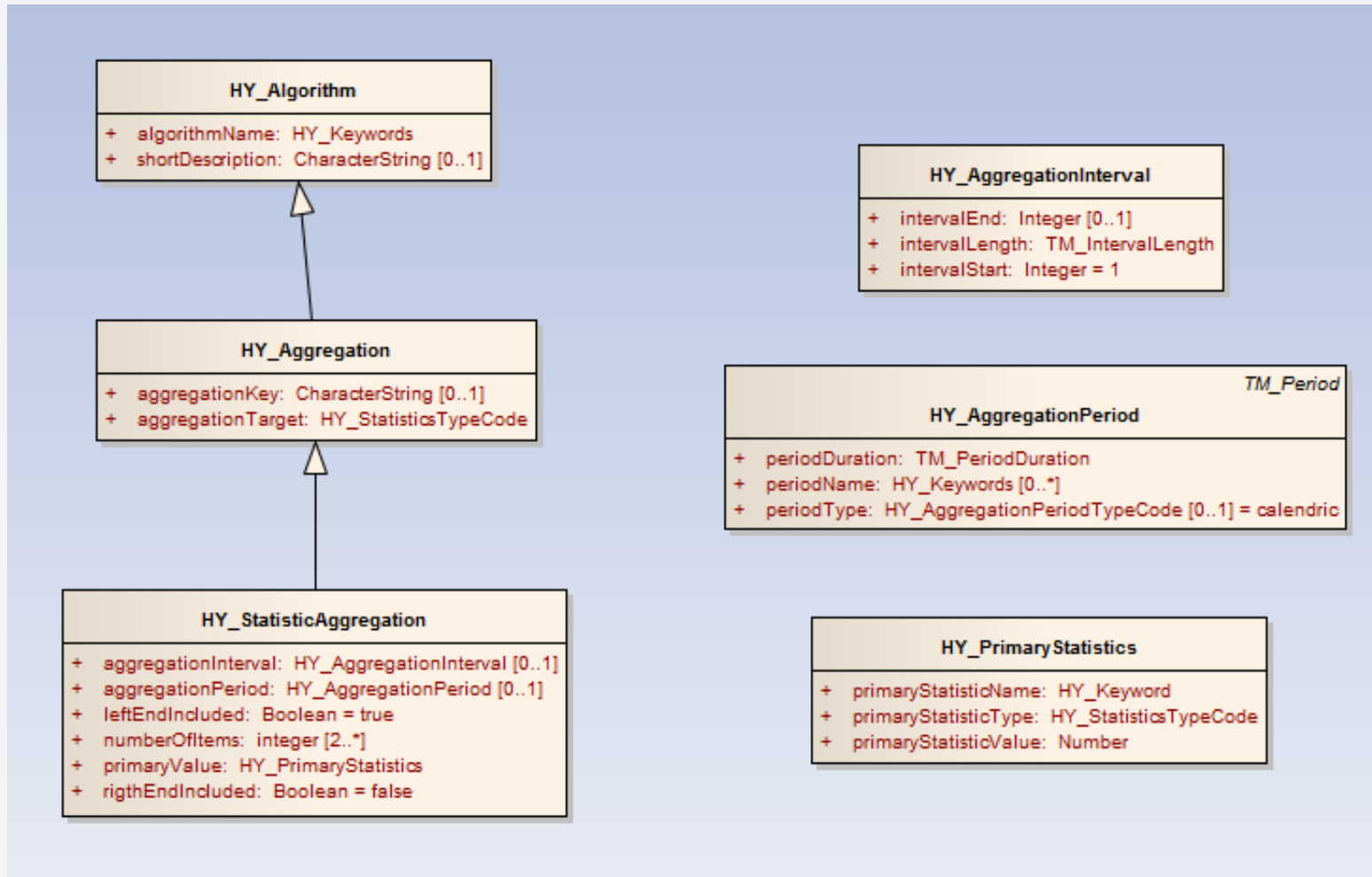
Procedure Metadata - Identification



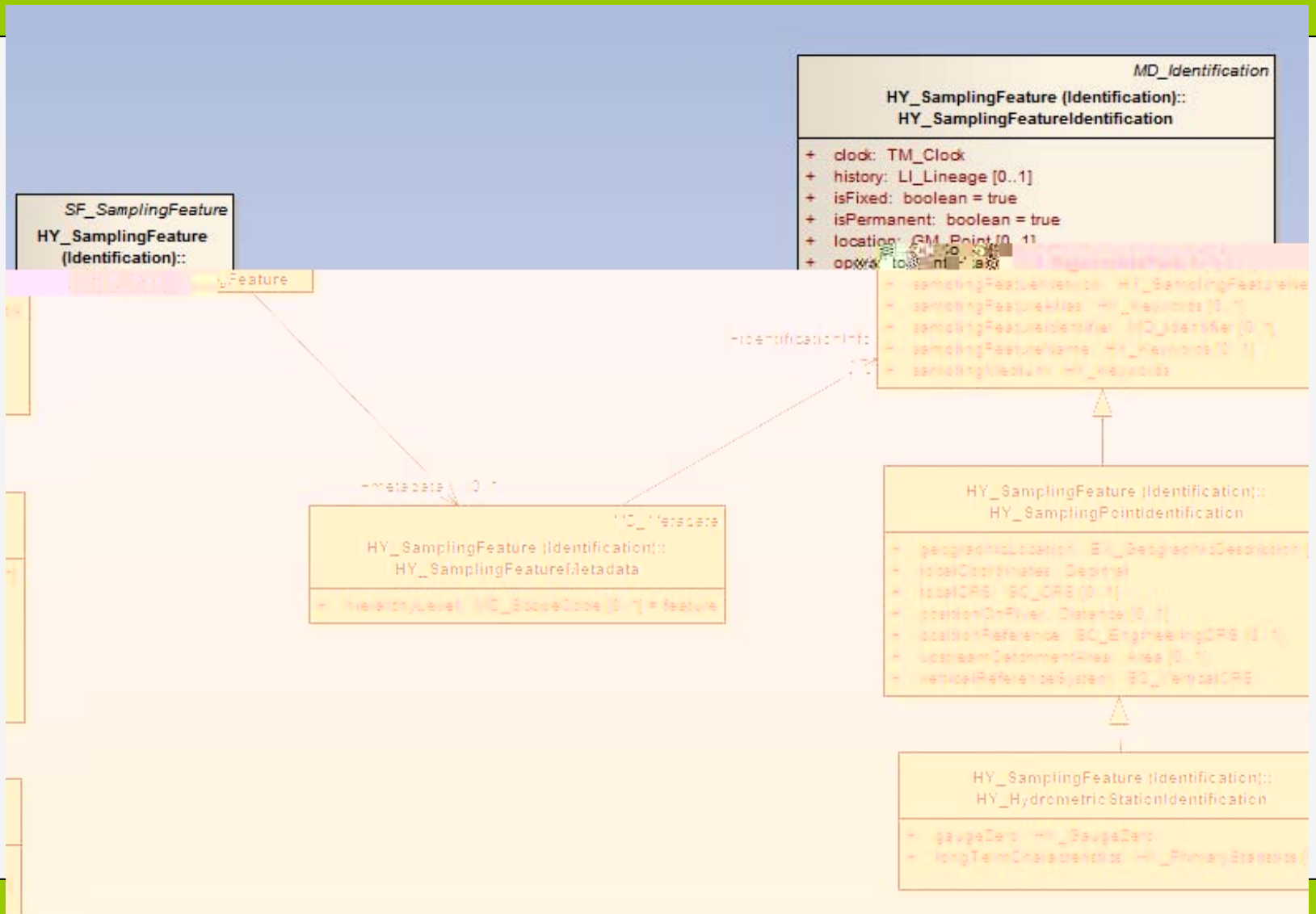
Procedure Metadata - Algorithm



Procedure Metadata - Aggregation



Sampling Feature Metadata



HydroFeature (sampledFeature)

