

hydroFeature - basic concept

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hydroFeature – basic concept

hydroFeature

- context of hydrologic observation
- intended target feature (object) of observation
→ „sampled feature“ of observation
- may be represented by an observation result (measured data or data product)
- topologically related, geometric feature
- name in cultural and political context
- characteristics in spatial, temporal, classification context

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catchment

- basic physiographic unit of study in hydrology
 - across scientific disciplines; crossing political boundaries
- ultimate object of observation (→ special hydroFeature)
- abstract feature; common representations are
 - catchment area and watershed (syn.: drainage divide)
 - individual water bodies or a system (network) of these
 - i.e. hydrographic network
 - individual sampling features or a system (network) of these
 - e.g. hydrometric network
- topology: simplified to an “is-part-of” relation

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hydroFeature name

- semantic representation of hydroFeature
- localised name to handle cultural, political, historical variability (i.e. name varies with the location)

hydroFeature characteristics

- thematic representation of hydroFeature
- characteristics in a spatial, temporal, or classification context

→ **cross-domain concepts** of names and characteristics

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catchment area and watershed

- geometric representation of a catchment
- catchment area: projected, planar surface
- watershed: closed curve
- outfall (lowest point on the boundary line): coincides with a location in the hydrographic network, e.g. on a river

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hydrographic network (syn. drainage network)

- permanent, flow directed, hierarchical
- segmentation to hydrographic network features
 - watercourse: aggregate of source, stream, outlet
 - stream: aggregate of fork/s, reach/es, confluence/s
 - stagnant water: aggregate of inflow/s, impoundment, outflow/s
- geometric representation of hydrographic features
- reference points provide relation to the network topology

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hydrographic features

- special hydrographic network features
- correspond to typical special catchments
- modelled within individual applications
- **special watercourses:** river, canal, glacier, groundwater stream, ...
- **special stagnant waters:** lake, reservoir, lagoon, wetland, aquifer,...

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hydrometric network (syn. hydrologic network)

- non/permanent, partially connected
- segmentation to hydrometric (i.e. sampling) features
- geometric representation of hydrometric features
- positioning/anchoring of hydrometric features in the hydrographic network
 - indirect position on the hydrographic feature, e.g. on a river (distance to the reference point)

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catchment's „is-part-of“ topology

- based on segmentation of the hydrographic network into subsequent reaches (end of a reach = start of the next reach)
- start/end of a reach marks a special reference point: source, fork, confluence, outlet (or specialisation of these)
- location of the catchment's outfall at the reference points
- network topology carries the „is-part-of“ relation
 - ctchmnt at fork is part of ctchmnt at the relevant confluence
 - ctchmnt at confluence is part of ctchmnt at the relevant outlet
 - ctchmnt at upstream location is part of ctchmnt at downstream location

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cross-domain concepts required 1(2)

- localised feature name
 - multilinguality
 - usage (e.g. official, traditional, conventional, ...Example: Danube)
 - history (e.g. period of usage. Example: Congo>Zaire>Congo)
- multilingual keyword
 - traditional/conventional preferences
 - translation/s
 - transcription/s

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cross-domain concepts required 2(2)

- general characteristics of a feature
 - spatial context, i.e. overlap or interaction with other domains (example: # of cc in basin, land use, soil type)
 - temporal context (example: lifespan, permanence)
 - classification context, e.g. rank, class, category in the relevant RS
- positioning of feature: indirect position
 - distance to a reference point in a linear CRS

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Next steps

- (1) consolidation of the basic concept (UML)
- (2) preparation of a discussion paper

Your contributions are welcome!

Thank You!

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