



MINISTÈRE
DE LA TRANSITION
ÉCOLOGIQUE
ET SOLIDAIRE

**AGENCE FRANÇAISE
POUR LA BIODIVERSITÉ**

ÉTABLISSEMENT PUBLIC DE L'ÉTAT



eaufrance

BD TOPAGE: THE NEW FRENCH HYDROGRAPHIC CORE DATA BASE



The French biodiversity agency in a few words

- A public body under the French Ministry of the Environment
- Established on January 2017 the first
- 4 bodies merged:
 - l'Agence des aires marines protégées
 - l'Atelier technique des espaces naturels
 - l'Office national de l'eau et des milieux aquatiques
 - Parcs nationaux de France
- 10 national parks coordinated by AFB
- And also: la Fédération des conservatoires botaniques nationaux and a part of the service du patrimoine naturel du Muséum national d'histoire naturelle
- 1300 staff across mainland and its overseas territories
- <http://www.afbiodiversite.fr/>



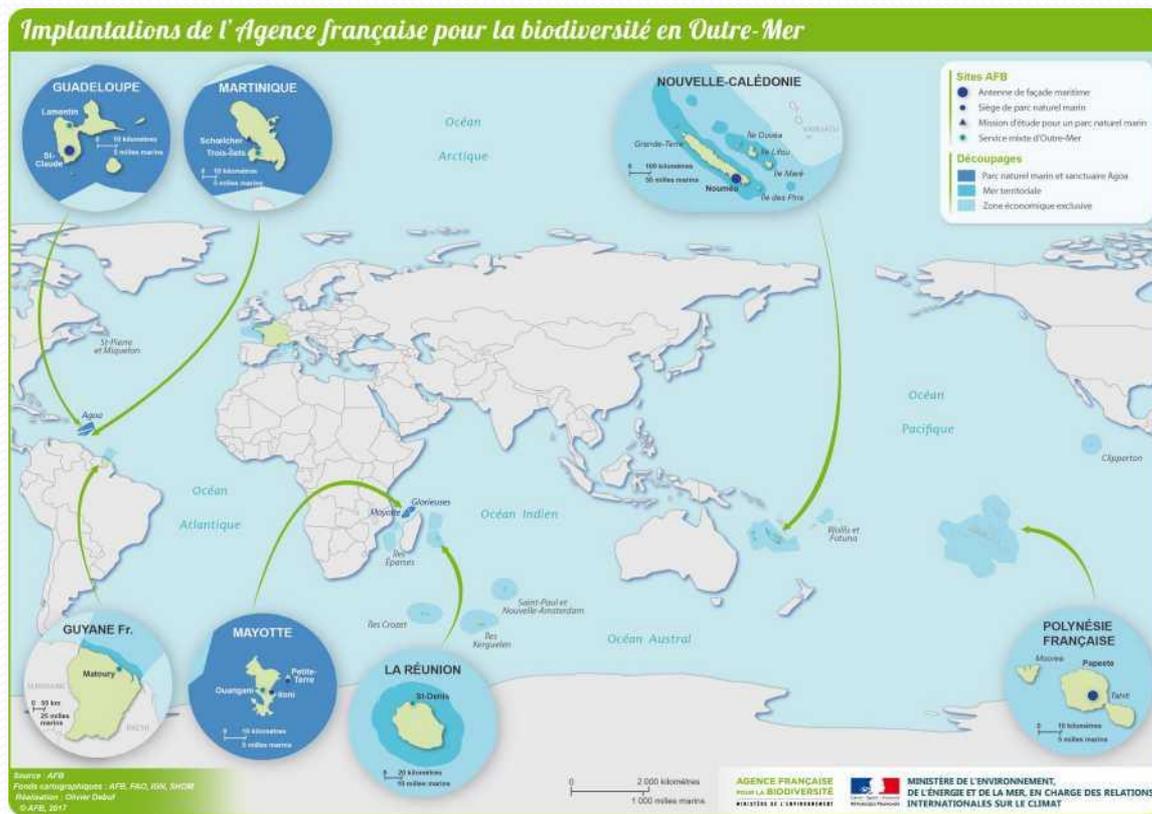
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The French biodiversity agency in a few maps



The French biodiversity agency in a few maps



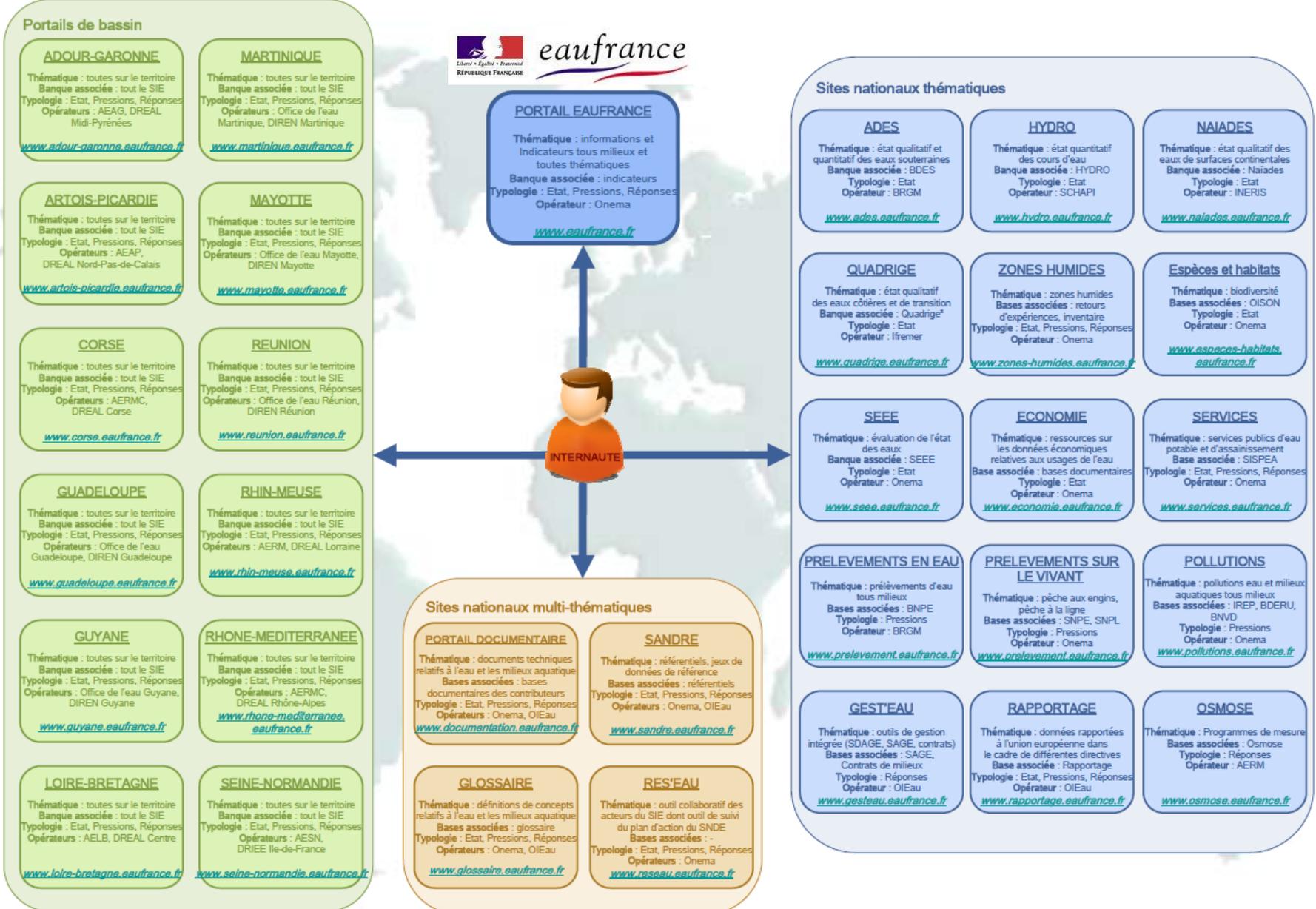
The French water information system (WIS-F) in a few words

- Technical coordination by AFB
- Organise the sharing of water data, intended to support public action
- A complex, distributed and partnership-based system
- Open data

- Goals
 - support public action
 - disseminate public environmental information
 - report to national authorities and the E.C. (WFD...)

- A portal : www.eaufrance.fr

The French water information system (WIS-F) in a map



BD CARTHAGE[®]: the former hydrographic core data base

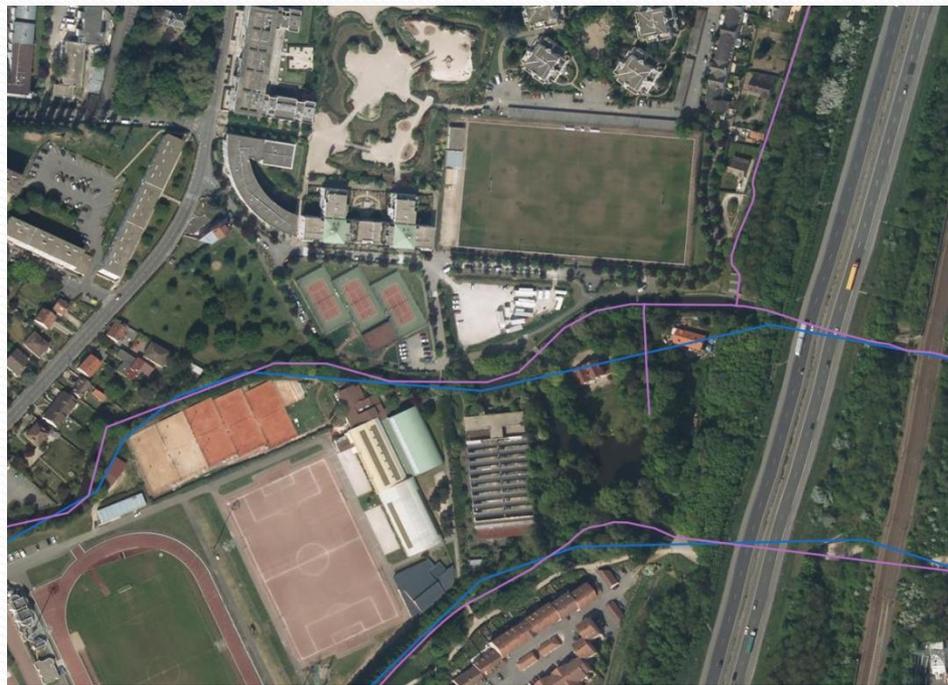
- Produced in the 90's
- Updated annually
- A partnership between AFB, IGN-F and river basin agencies
- Released by Sandre : <http://www.sandre.eaufrance.fr>

- Positional accuracy: ~30 m
- Quite good water flow direction
- Suitable for medium scale use cases (reporting: e.g. WFD)

- Released under the French Open licence since 2013

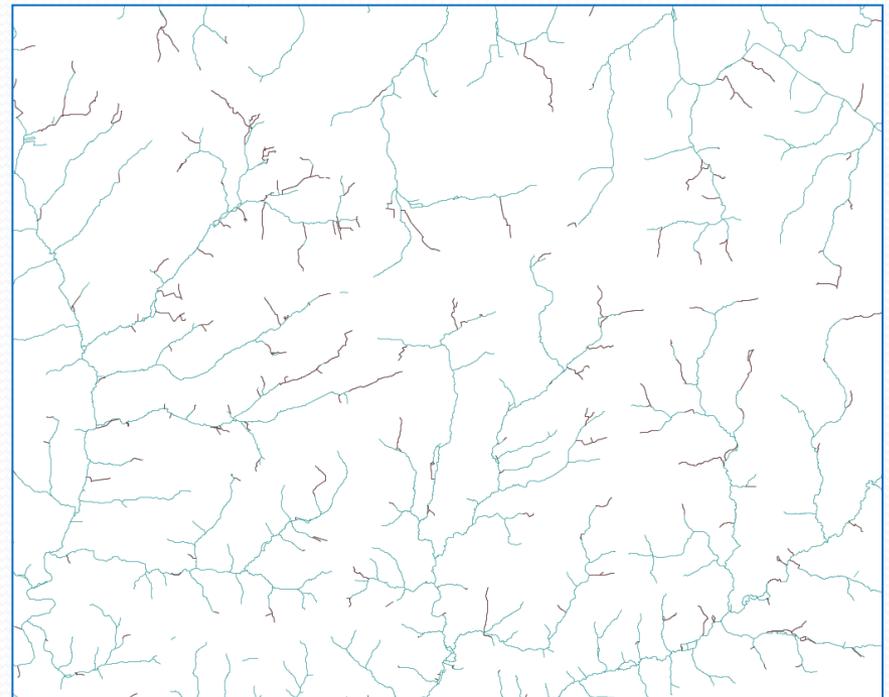
BD CARTHAGE®: problems

Positional accuracy



BD CARTHAGE® / BD TOPO® / BD ORTHO®

Completeness: omission



BD CARTHAGE® / BD TOPO®

Non Inspire model

Water network length:

BD CARTHAGE® : 510 000 Km

« Rough » BDTopage : 800 000 Km

« Enriched » BDTopage : 1 million Km?

BD CARTHAGE®: problems

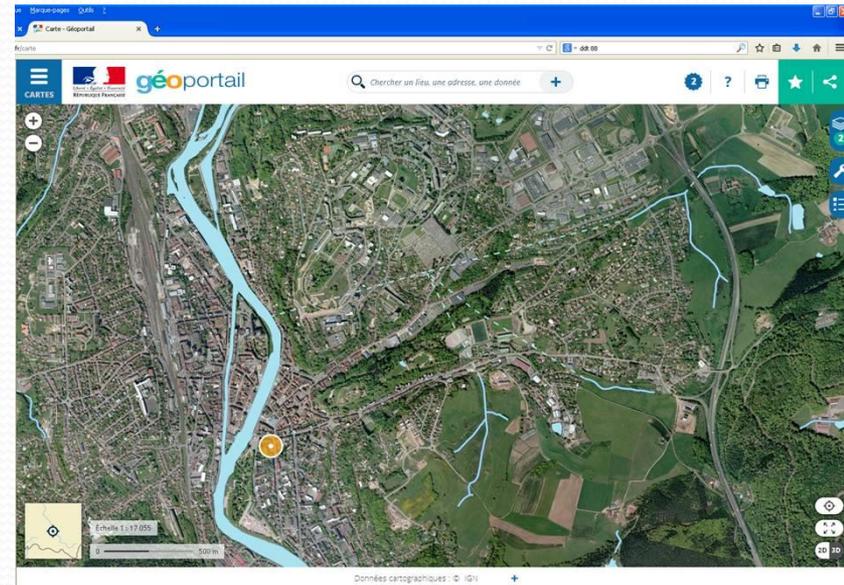
Updates :

- An outdated and confusing updates channel

BD CARTHAGE® does not meet public policy needs anymore (protected sites, regulation zones...)

BD TOPO®

- The topographic component of the RGE® from IGN-F
- Pros
 - Free of charge for public policies since 2011
 - metric positional accuracy , completeness
- Cons
 - lack of flow water directions
 - lack of geographical names
- Updated by IGN-F
Mainly from aerial photographs



The new hydrographic core data base: BD TOPAGE project

- ➔ « To keep the best of Carthage et Topo »
- ➔ To enhance gradually:
 - streamlines completeness,
 - standing water,
 - drainage basins,
 - Coastline,
 - attributes
- ➔ Collaborative updating

A coproduction agreement between ONEMA and IGN-F (ratified in December 2016)

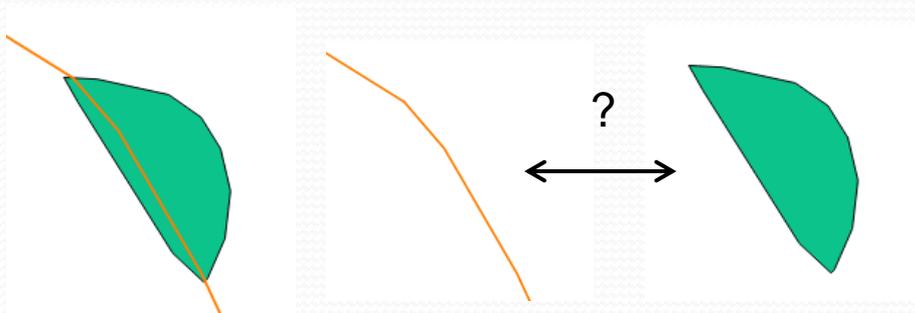
- A three-year plan of production
- A “rough” BD TOPAGE obtained by automatic and interactive matching of BD CARTHAGE and BD TOPO
- Analysis and correction of imperfection by local stakeholders (AFB, RBA...)
- The opening of both data sets : hydrographic theme of BD TOPO and BD TOPAGE
- The development, by IGN-F, of a collaborative platform to gather and treat updates and corrections delivered by stakeholders

Adaptation of INSPIRE model

- HydroNetwork and PhysicalWaters into the same model
- Less feature types (covered by other databases)
 - HydroPointOfInterest
 - Man-made Object
- Addition of specific attributes / feature types
 - Salinity, main / secondary watercourse
 - Transition waters

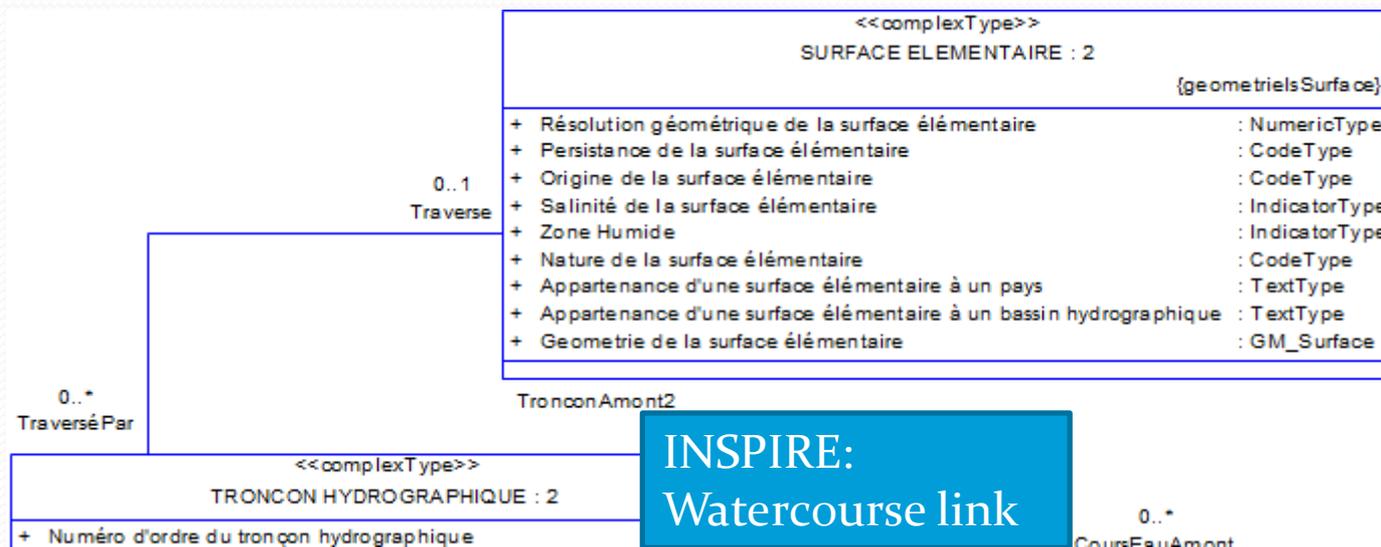
Differences with INSPIRE

- Different modeling of surface water
 - In INSPIRE, watercourse can be GMSurface or curve



| «featureType» Watercourse |
|--|
| «voidable» |
| + condition :ConditionOfFacilityValue [0..1] |
| + delineationKnown :Boolean |
| + length :Length |
| + level :VerticalPositionValue |
| + streamOrder :HydroOrderCode [0..1] |
| + width :WidthRange |
| constraints |
| {geometryIsCurveOrSurface} |
| {banksShallBeDifferentShoreObjects} |
| {onlyManmadeHasConditionAttr} |

- In Topage, watercourse is GMCurve
=> surface representation by an other feature type



INSPIRE:
Watercourse
surface

INSPIRE:
Watercourse
link

Language

- The model is in French
- Mapping with INSPIRE attributes is documented

| Attributs ETH2.0 | | Correspondance Inspire | Format | Card |
|------------------|---|--------------------------------------|-----------|------|
| IdentifiantOH | Identifiant de l'objet hydrographique | localId de l'inspireId (Identifiant) | Caractère | 1 |
| NomOH | Nom de l'objet hydrographique | attribut text du datatype SpellingO | Caractère | 0..* |
| LangueNomOH | Langue du nom de l'objet hydrographique | attribut language de geographicalN | Caractère | 0..* |
| StatutNomOH | Statut du nom de l'objet hydrographique | attribut nameStatus de geographic | Caractère | 0..* |
| SourceNomOH | Source du nom de l'objet hydrographique | attribut sourceOfName de geograp | Caractère | 0..* |
| TypeToponymeOH | Type de toponyme de l'objet hydrographique | - | Caractère | |
| DateCreationOH | Date de création de l'objet hydrographique | beginLifespanVersion | Date | 1 |
| DateMajOH | Date de dernière mise à jour de l'objet hydro | endLifespanVersion | Date | 1 |
| StatutOH | Statut de l'objet hydrographique | - | Caractère | 1 |
| PrecAltiOH | Précision altimétrique de la donnée utilisée | - | Caractère | 0..1 |
| MethAltiOH | Méthode d'acquisition de la précision altimé | - | Caractère | 0..1 |
| PrecPlaniOH | Précision planimétrique de la donnée utilisé | - | Caractère | 0..1 |
| MethPlaniOH | Méthode d'acquisition de la précision planim | - | Caractère | 0..1 |
| CommentaireOH | Commentaires sur l'objet hydrographique | - | Caractère | 0..1 |

Complex types

Case 1 : no flattening

- The type Identifier has been kept
- However only the local id is captured production process. The other attributes will automatically be derived during the transformation to INSPIRE

Case 2 : full flattening

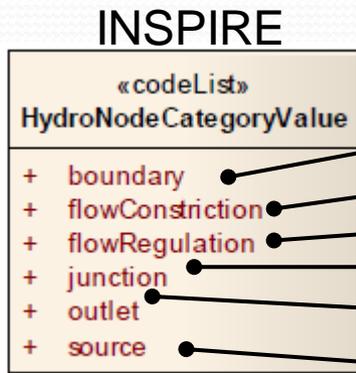
- E.g. All the attributes of the dataType HydroOrderCode are associated to the watercourse

Case 3 : flattening with simplifications

- E.g. For the GeographicalName type, some unused attributes have been removed

Code lists

Case 1 : extra-values added



Topage

| Code de l'élément | Mnémonique de l'élément |
|-------------------|-------------------------|
| 1 | limite |
| 2 | influence flux réseau |
| 3 | régule flux réseau |
| 4 | embranchement |
| 5 | exutoire |
| 6 | source |
| 7 | diffluence |
| 8 | perte/infiltration |

Case 2 : less values

All values kept. Unused values are marked as “frozen” in the model

| Code de l'élément | Mnémonique de l'élément | Statut de l'élément |
|-------------------|---------------------------|---------------------|
| 1 | equinoctialSpringLowWater | Gelé |
| 2 | higherHighWater | Gelé |
| 3 | higherHighWaterLargeTide | Gelé |
| 4 | highestAstronomicalTide | Gelé |
| 5 | plus hautes eaux | Validé |
| 6 | highWater | Gelé |
| 7 | highWaterSprings | Gelé |
| 8 | indianSpringHighWater | Gelé |
| 9 | indianSpringLowWater | Gelé |
| 10 | localDatum | Gelé |
| 11 | lowerLowWater | Gelé |
| 12 | lowerLowWaterLargeTide | Gelé |
| 13 | lowestAstronomicalTide | Gelé |
| 14 | plus basses eaux | Validé |
| 15 | lowestLowWaterSprings | Gelé |
| 16 | lowWater | Gelé |

Publication

- Draft exchange model
 - Adapted from the conceptual one
 - Shortening of attribute names
 - Selection of attributes to be published
 - No lineage
 - No metadata information on names (language, source, ...)
 - ...
 - Only instanciable feature types are described (with inherited attributes)
- Exchange format
 - Shp (ESRI)
 - MIF/MID (for Map Info)
 - GPKG
 - WFS, GML ?
 - Will be accessible through Sandre catalogue
<http://www.sandre.eaufrance.fr/>

For more information

bdtopage.eaufrance.fr (work in progress): information, news, schedule, documentation, FAQ

forge.eaufrance.fr/projects/bdtopage (work in progress): documentation & technical issues

http://www.eurogeographics.org/sites/default/files/11_BDTopage_Stephane.pdf (special thanks to Stéphane Garcia & Dominique Laurent, IGN-F)