SWEing the groundwater data workflow

From data collection to reuse, opportunities of interoperable sensorWeb approaches

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Géosciences pour une Terre durable
brgm

iah • aih 60 years
25-29th September 2016
Montpellier, France
CORUM CONFERENCE CENTER
43rd IAH congress

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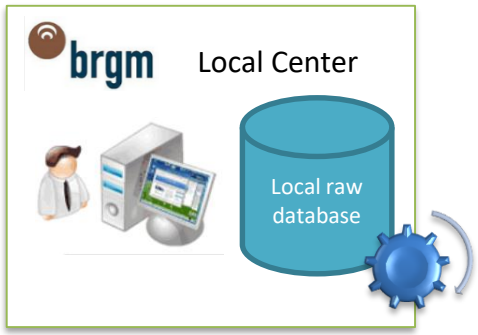
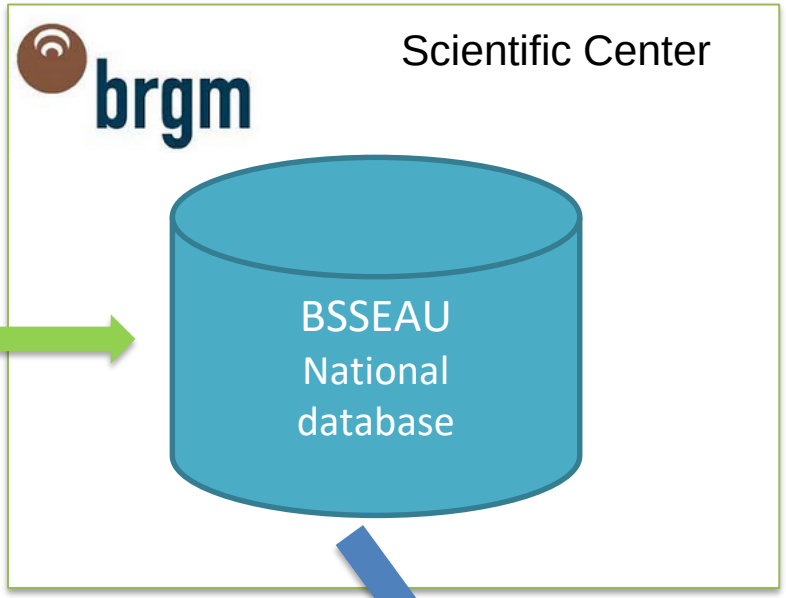
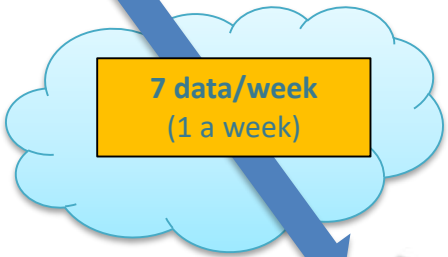
GroundWater level
– now 2016





GPRS / GSM/SMS
Every hour



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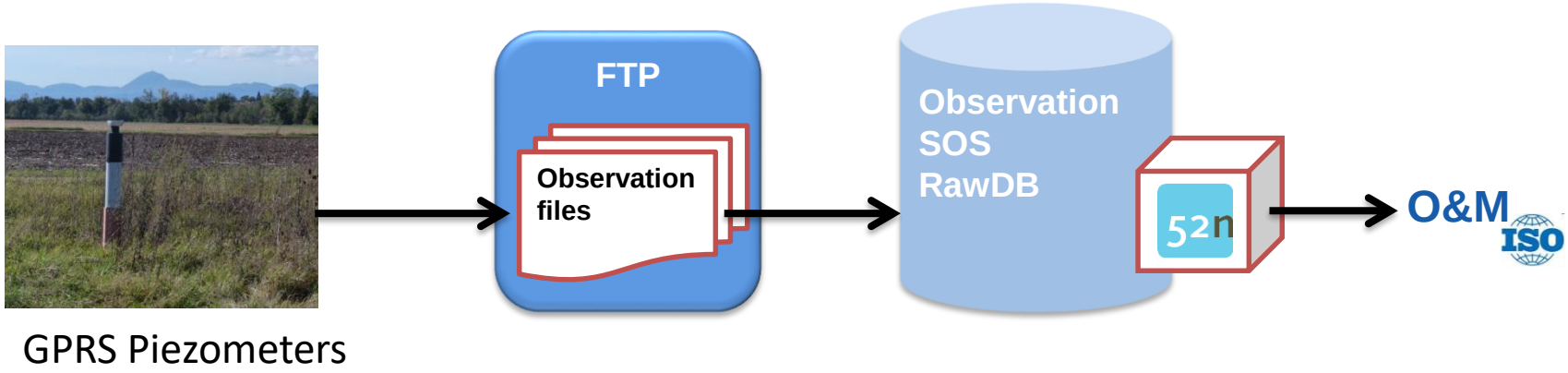


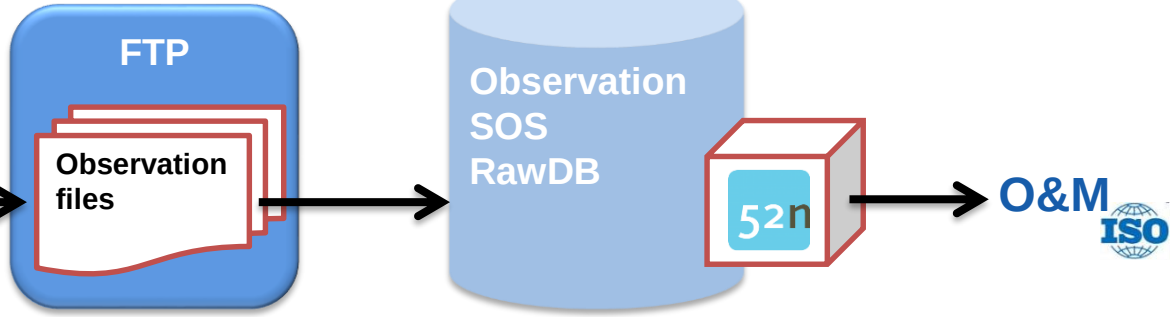
GPRS Piezometers

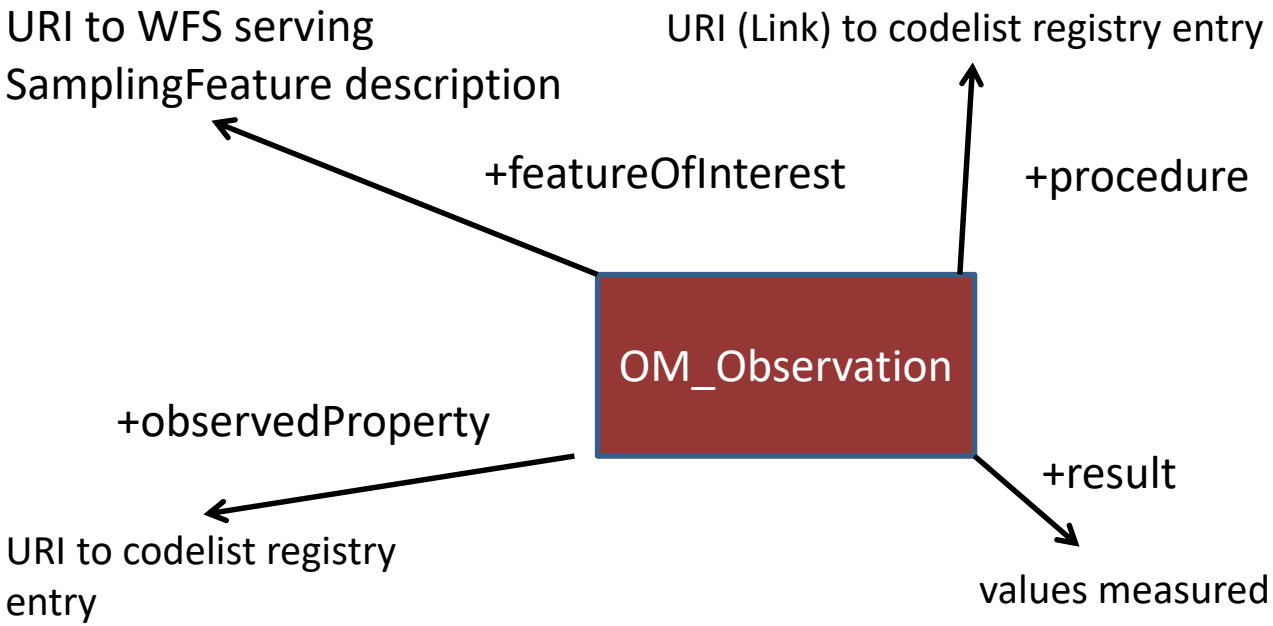
<u>One</u> pivotal exchange mechanism/format

- Compliant with Inspire Requirements and Recommendations
- SOS 2.0 output, WaterML2.0 encoding

SWEing the groundwater data workflow

GPRS Piezometers



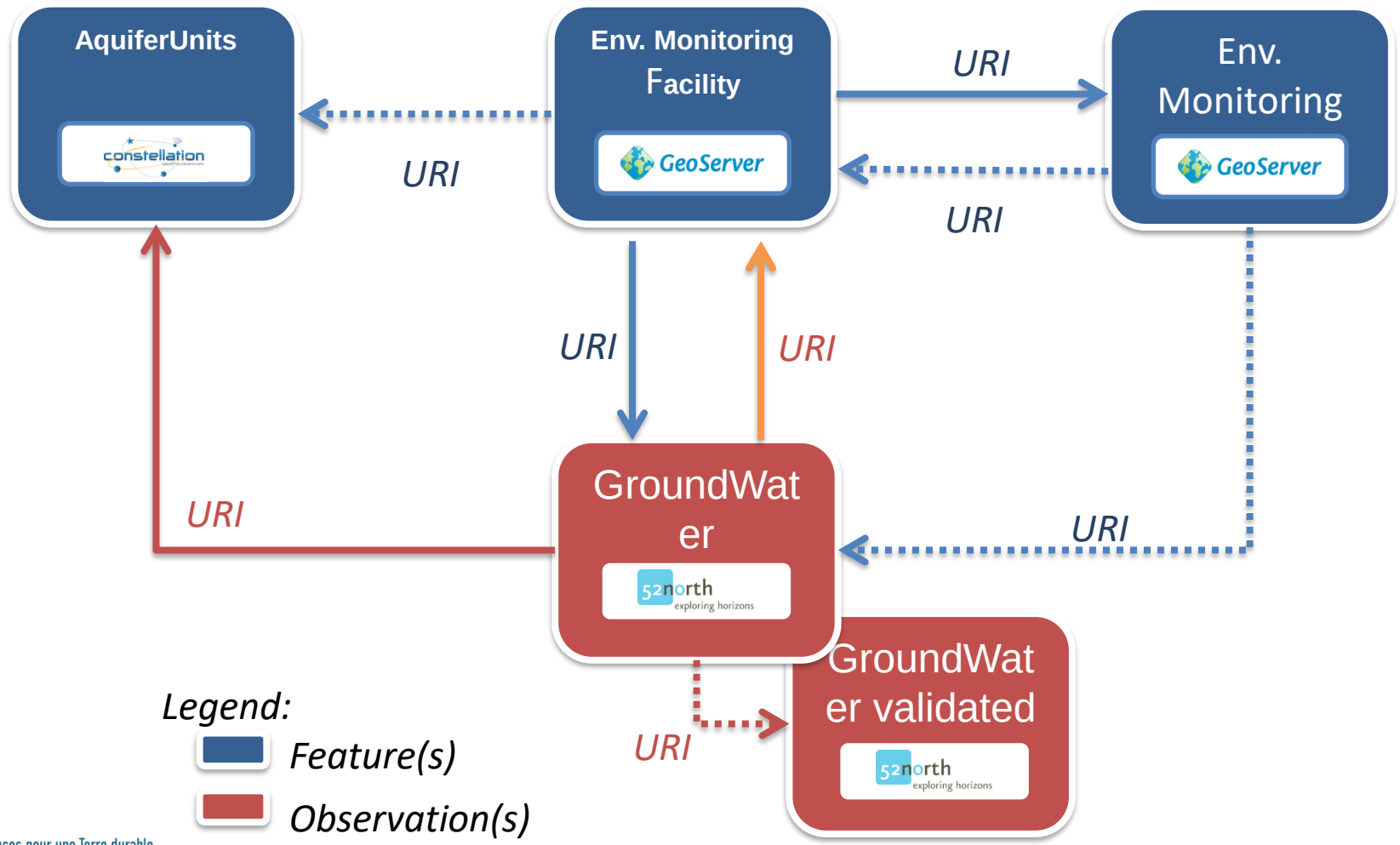


SWEing the groundwater data workflow

- Implementation
  - http://ressource.brgm-rec.fr/ to centralize BRGM data resources
    - **./data** for data objects (e.g. geologic units, piezometers, …)
    - **./obs** for observations (e.g. groundwater levels, …)
    - **./vocabs** for controled vocabularies (e.g. groundwater sampling for quality analysis, …)
    - **./services** for web services endpoint
  - POC Apache rewritting rules
- Some examples:
  - Latest GroundWaterLevel observation from one piezometer provided in :
    - WaterML 2.0 format: http://ressource.brgm-rec.fr/obs/RawOfferingPiezo/00463X0036/H1.2&responseFormat=http://www.opengis.net/waterml/2.0&temporalFilter=om%3AphenomenonTime%2Clatest
    - JSON format: http://ressource.brgm-rec.fr/obs/RawOfferingPiezo/00463X0036/H1.2&responseFormat=application/json&temporalFilter=om%3AphenomenonTime%2Clatest

SWEing the groundwater data workflow

Groundwater Levels use case: service view



Feedback during the sos implementation

- Topics of discussion during the implementation
  - Which SOS solution to deploy?
  - How to map to preexisting (non O&M compliant) databases?
  - How to design the rawobservation database?
  - How to link features to observations (at service level)?

- At the moment:
  - Each use case needs its own webapp to be configured and deployed

SOS > Current use cases

Data type	Profile	BRGM associated project	Status
Groundwater levels (raw observations)	INSPIRE PointTimeSeriesObs°	Pôle INSIDE	X
Groundwater levels (validated data)	INSPIRE PointTimeSeriesObs°	Pôle INSIDE	WIP
Groundwater quality (validated data)	Under discussion	Pôle INSIDE	Specified
Borehole logs	GWML2 (GeologyLogCoverage)	EPOS	Specified

SWEing the groundwater data workflow

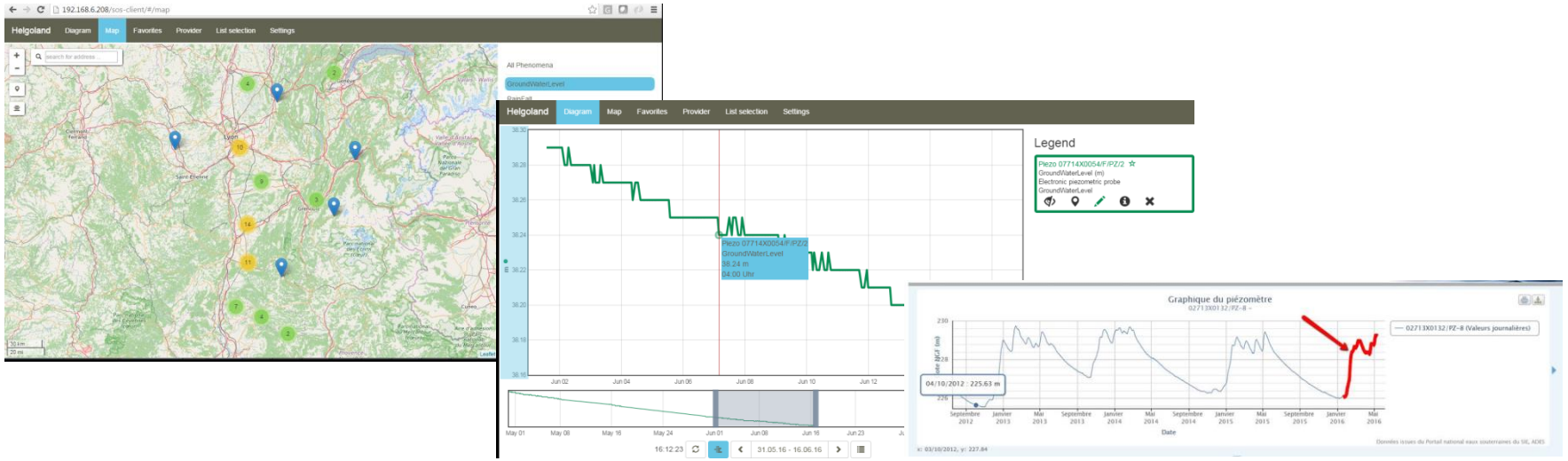
- Data broadcast
  - Service SOS – formats :
    - WaterML2.0 : http://ressource.brgm-rec.fr/obs/rawOfferingPiezo/00463X0036/H1/PZ/2&responseFormat=http://www.opengis.net/waterml/2.0&temporalFilter=om%3AphenomenonTime%2Clatest
    - JSON : http://ressource.brgm-rec.fr/obs/rawOfferingPiezo/00463X0036/H1/PZ/2&responseFormat=application/json
    - Otherformat possible: SWEArrayObservation, …
  - 52N Rest-API
    - Provide JSON
    - http://192.168.6.208/52n-sos-rawdb/api/v1/ (explore with id)
    - A resort/sensor: http://192.168.6.208/52n-sos-rawdb/api/v1/stations/1223
    - A timeserie: http://192.168.6.208/52n-sos-rawdb/api/v1/timeseries/608/getData?timespan=PT12H/2016-06-01

- Data consuming
  - Rest-API : Big data project – HubEAU (hubeau.fr)
  - SOS
    - With a QGIS Client
    - With some webapp

SWEing the groundwater data workflow

SOS > Positive feedback

- It worths the effort!
  - Lot of reuse (websites, QGIS client plugin)



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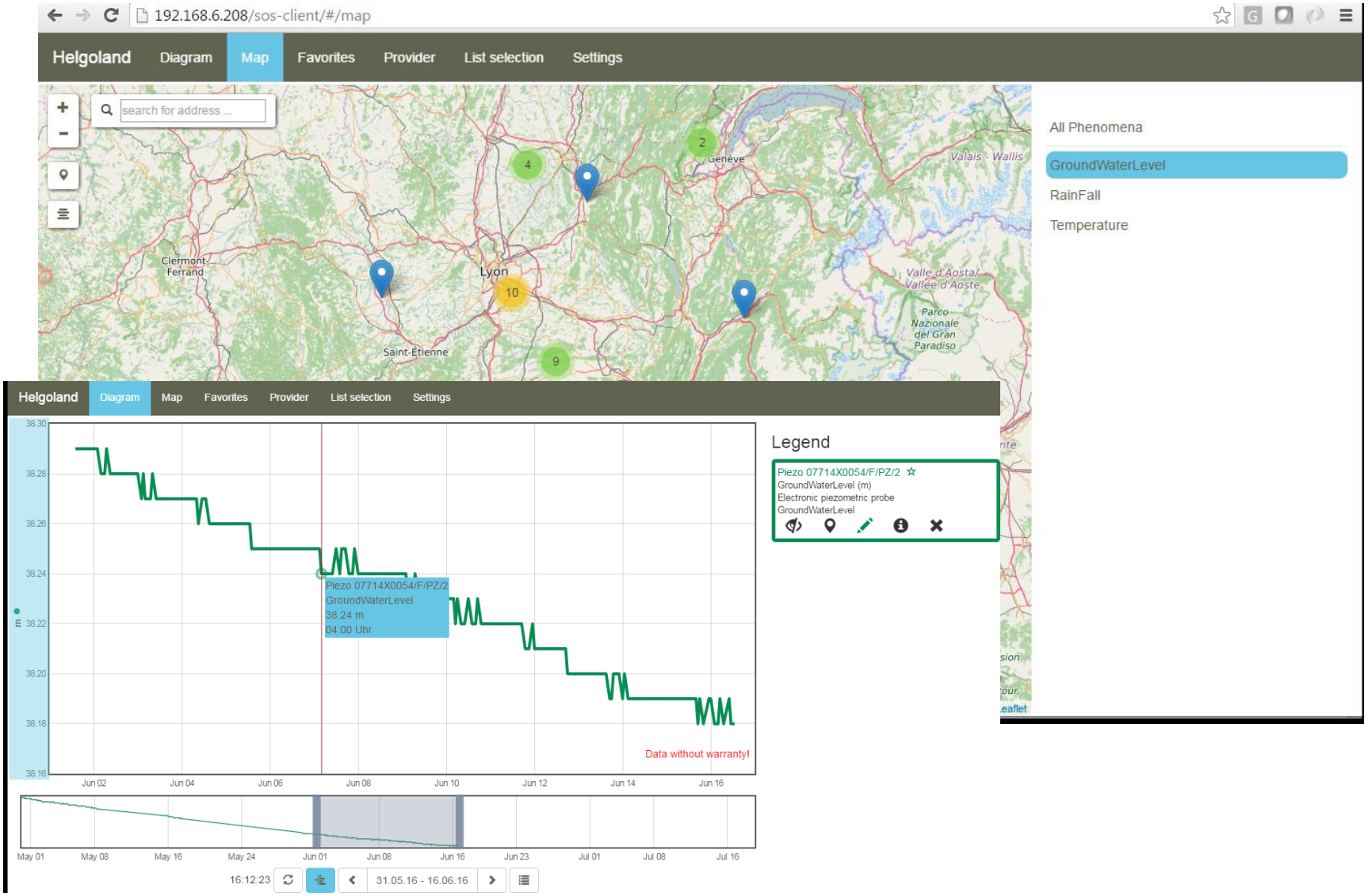

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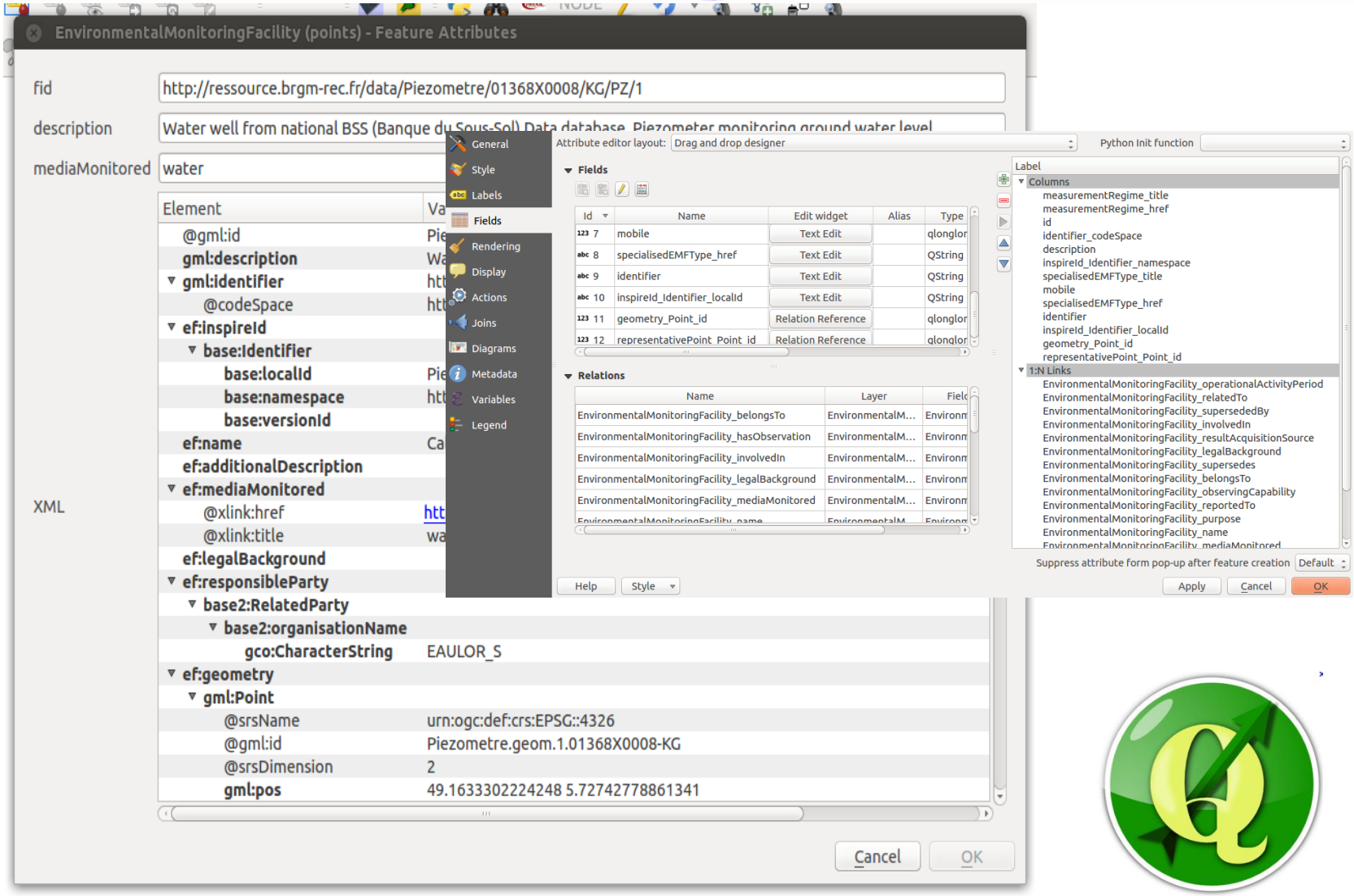


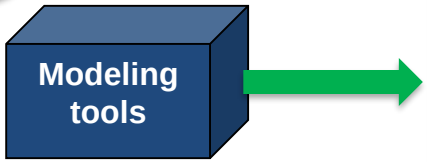
Remaining aspects

- Domain models
  - Aquifer level forecast

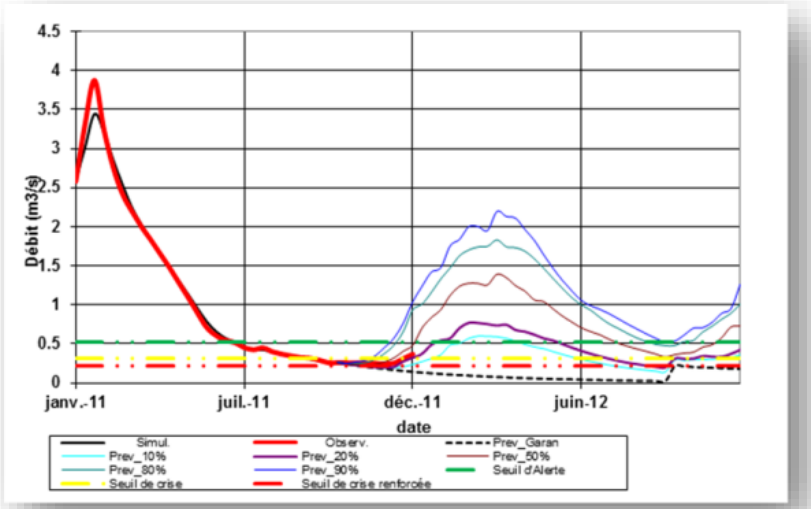
BRGM : Groundwater level SOS

MeteoFrance :
weather station SOS

SCHAPI : stream gages
JSON



3 of them
to be opened



If you need more information :

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– Mickael BEAUFILS :

Merci de votre attention