



Open
Geospatial
Consortium

QGIS support for SensorThings API

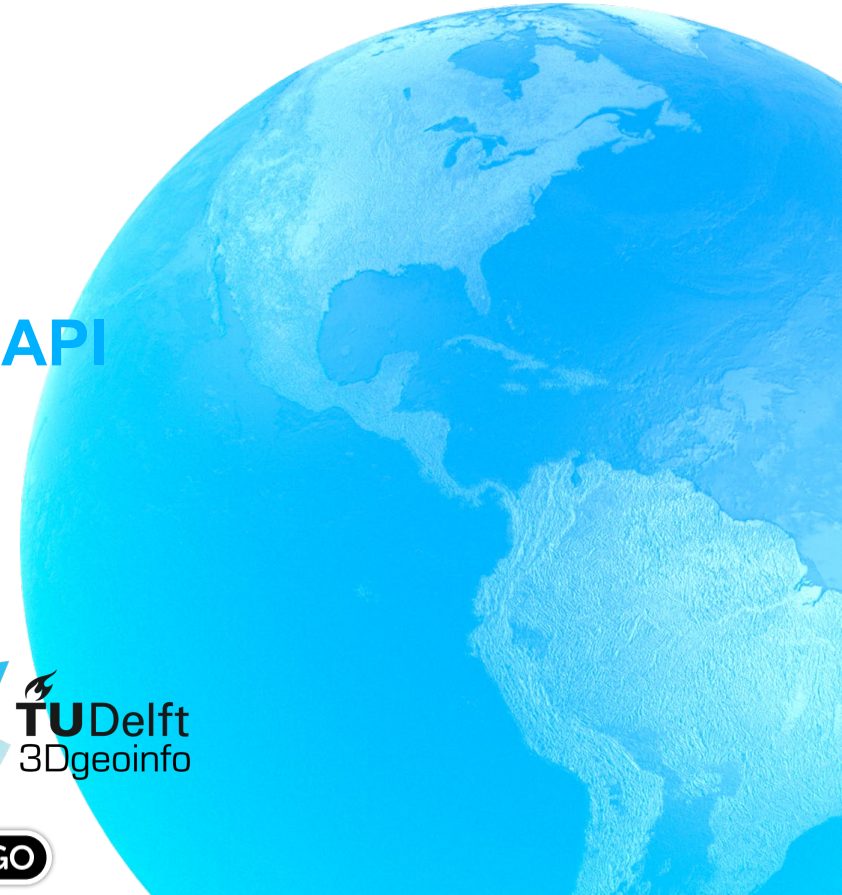
The 128th OGC Member Meeting

Sylvain Grellet
25 March 2024

Meeting
Sponsors



TU Delft
3Dgeoinfo

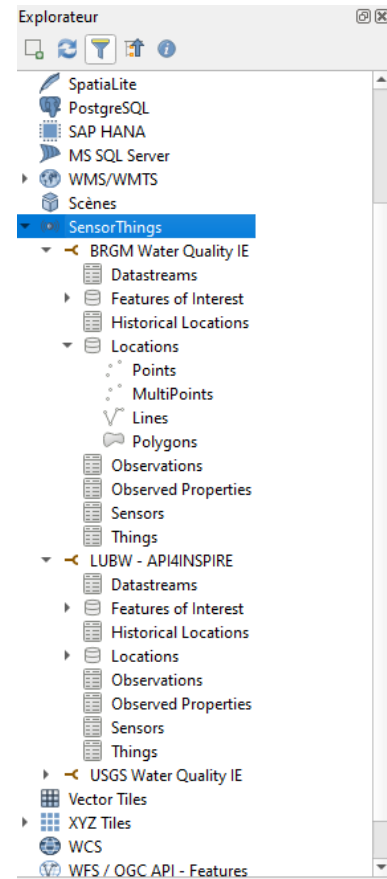
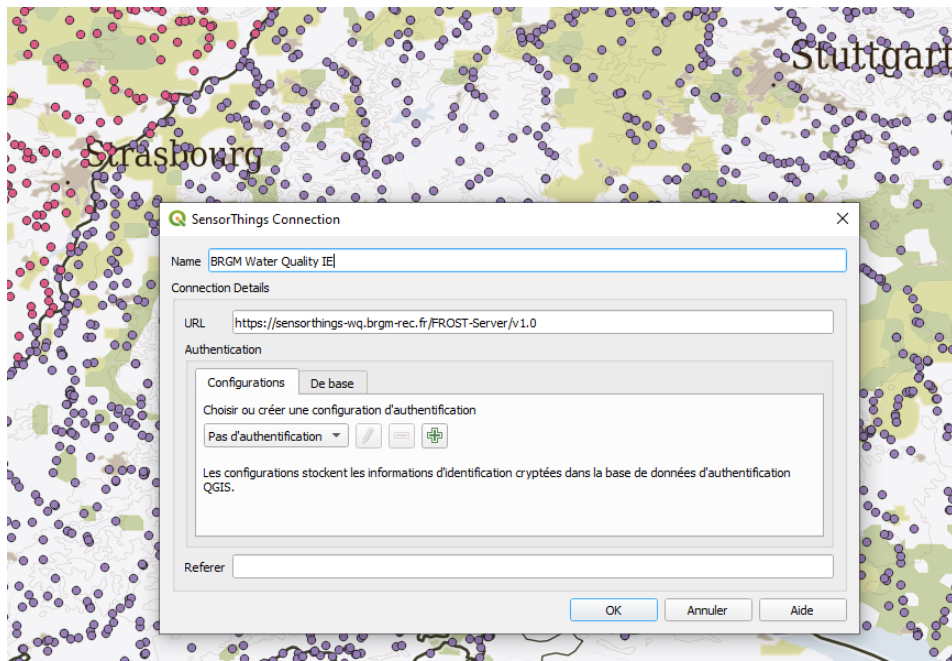


Work history

- 1°/ Air-Break plugin <https://plugins.qgis.org/plugins/SensorThingsAPI/>
- 2°/ QGIS QEP (Qgis Enhancement Proposal)
<https://github.com/qgis/QGIS-Enhancement-Proposals/issues/257>
- 3°/ Integration of SensorThings API 1.1 support QGIS Core
Currently on-going
 - Creation of a QGIS SensorThings API Provider

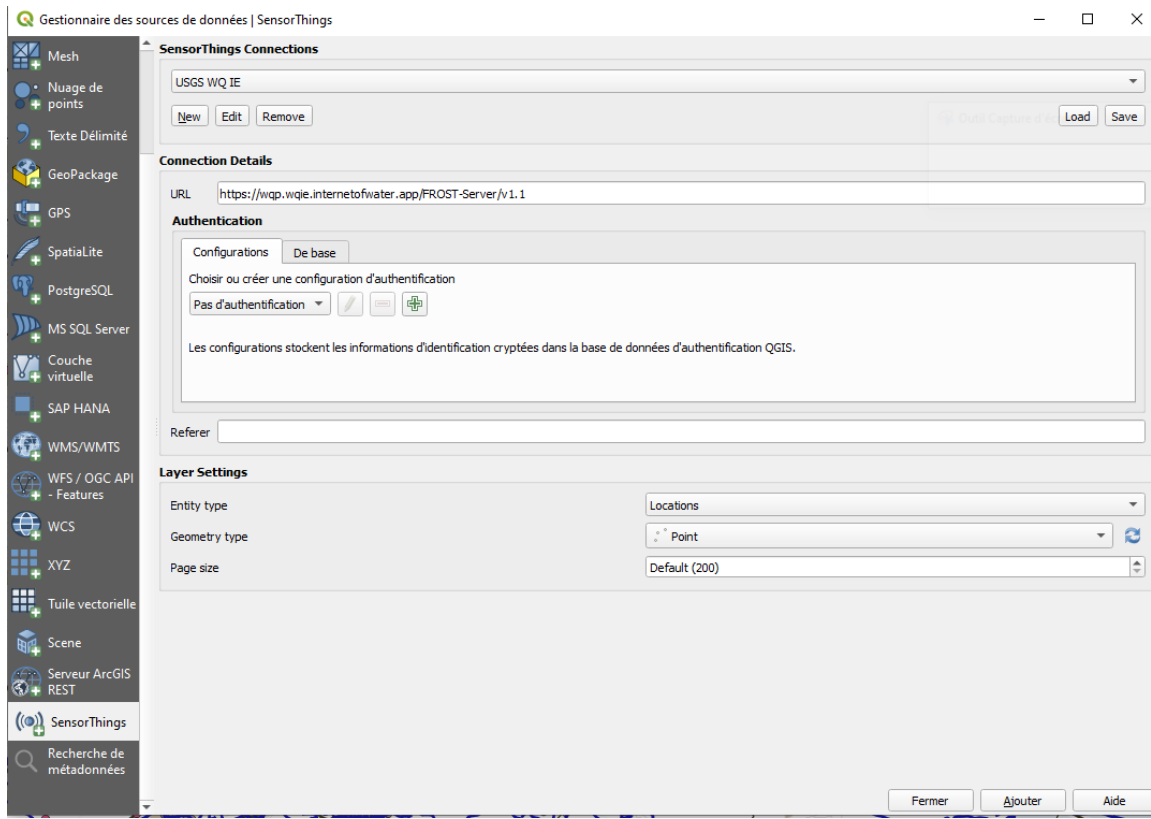
Current status in QGIS 3.36

- New panels within the QGIS Browser, Data Source Manager, and Layer Properties Source tab for users to configure connections to SensorThings data sources.



Current status in QGIS 3.36

- ... Data Source Manager



Current status in QGIS 3.36

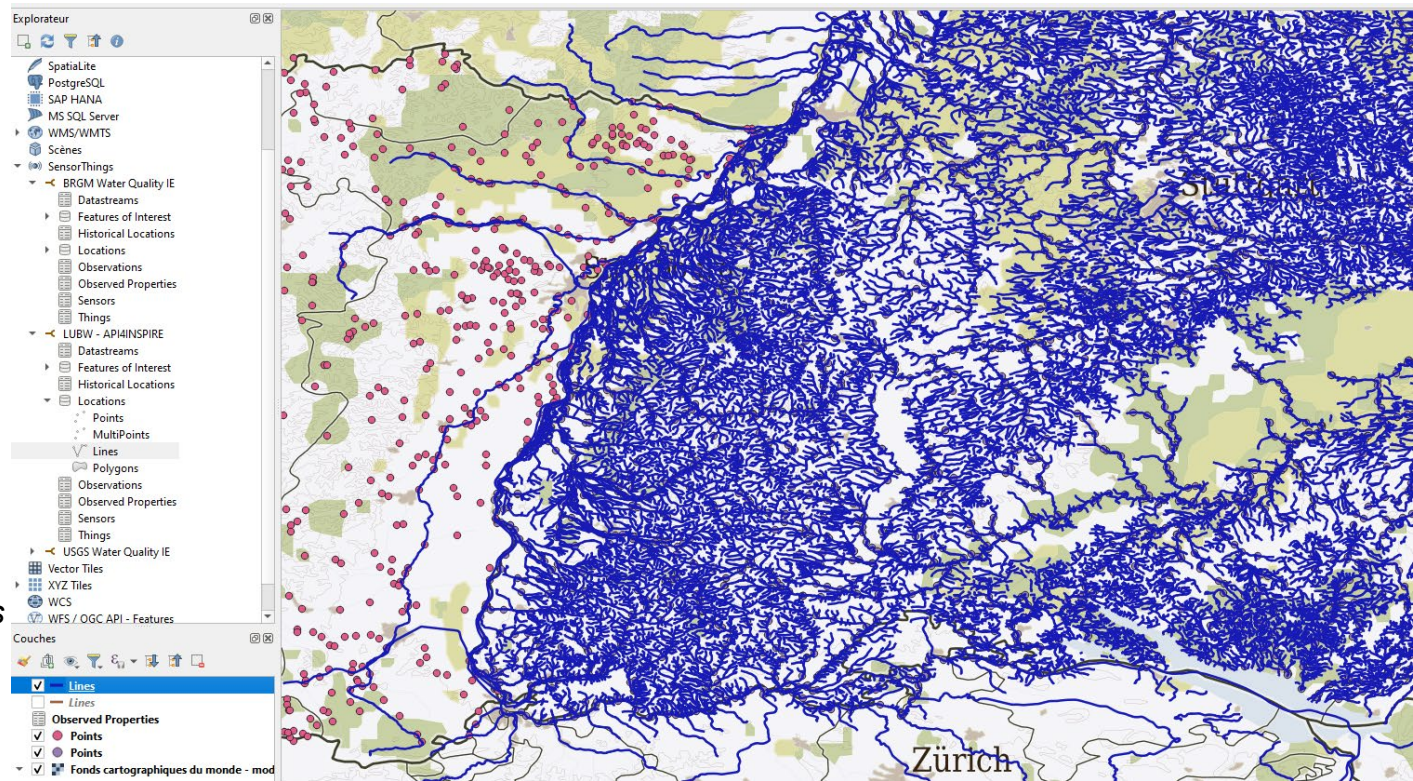
- All content properly fetched from the server DataStream, Observation, ObservedProperties, etc...

The screenshot displays the QGIS 3.36 interface. On the left, the Project Panel shows a tree view of data layers, including 'BRGM Water Quality IE' and 'USGS Water Quality IE'. The main map area shows a geographical map with numerous red circular markers representing observations. On the right, the 'Observed Properties' table is open, showing a list of 16 properties with their respective IDs, self-links, names, definitions, descriptions, and property values.

	id	selfLink	name	definition	description	properties
1	2566	https://sensorthings-wq.brgm-rec.fr/FROST...	OCDD	http://id.eaufra...	OCDD	NULL
2	2575	https://sensorthings-wq.brgm-rec.fr/FROST...	1,2,3,4,6,7,8-HpCDD	http://id.eaufra...	1,2,3,4,6,7,8-Hp...	NULL
3	2934	https://sensorthings-wq.brgm-rec.fr/FROST...	1-(3-chloro-4-methylphen)	http://id.eaufra...	1-(3-chloro-4-...	NULL
4	5399	https://sensorthings-wq.brgm-rec.fr/FROST...	17alpha-Estradiol	http://id.eaufra...	17alpha-Estradiol	NULL
5	5331	https://sensorthings-wq.brgm-rec.fr/FROST...	3-Aminobenzotrifluoride	http://id.eaufra...	3-Aminobenzot...	NULL
6	2616	https://sensorthings-wq.brgm-rec.fr/FROST...	4,4'-Dihydroxybiphenyl	http://id.eaufra...	4,4'-Dihydroxy...	NULL
7	5426	https://sensorthings-wq.brgm-rec.fr/FROST...	Acide dibromoacétique	http://id.eaufra...	Acide dibromo...	NULL
8	1481	https://sensorthings-wq.brgm-rec.fr/FROST...	Acide dichloroacétique	http://id.eaufra...	Acide dichloroa...	NULL
9	5427	https://sensorthings-wq.brgm-rec.fr/FROST...	Acide monobromoacétique	http://id.eaufra...	Acide monobro...	NULL
10	1521	https://sensorthings-wq.brgm-rec.fr/FROST...	Acide nitrotriacétique	http://id.eaufra...	Acide nitrotria...	NULL
11	1034	https://sensorthings-wq.brgm-rec.fr/FROST...	Activité alpha globale	http://id.eaufra...	Activité alpha g...	NULL
12	1035	https://sensorthings-wq.brgm-rec.fr/FROST...	Activité bêta globale	http://id.eaufra...	Activité bêta gl...	NULL
13	1076	https://sensorthings-wq.brgm-rec.fr/FROST...	Activité gamma globale	http://id.eaufra...	Activité gamm...	NULL
14	2012	https://sensorthings-wq.brgm-rec.fr/FROST...	Amidosulfuron	http://id.eaufra...	Amidosulfuron	NULL
15	1351	https://sensorthings-wq.brgm-rec.fr/FROST...	Ammoniac non ionisé	http://id.eaufra...	Ammoniac non...	NULL
16	1104	https://sensorthings-wq.brgm-rec.fr/FROST...	Amétryne	http://id.eaufra...	Amétryne	NULL

Current status in QGIS 3.36

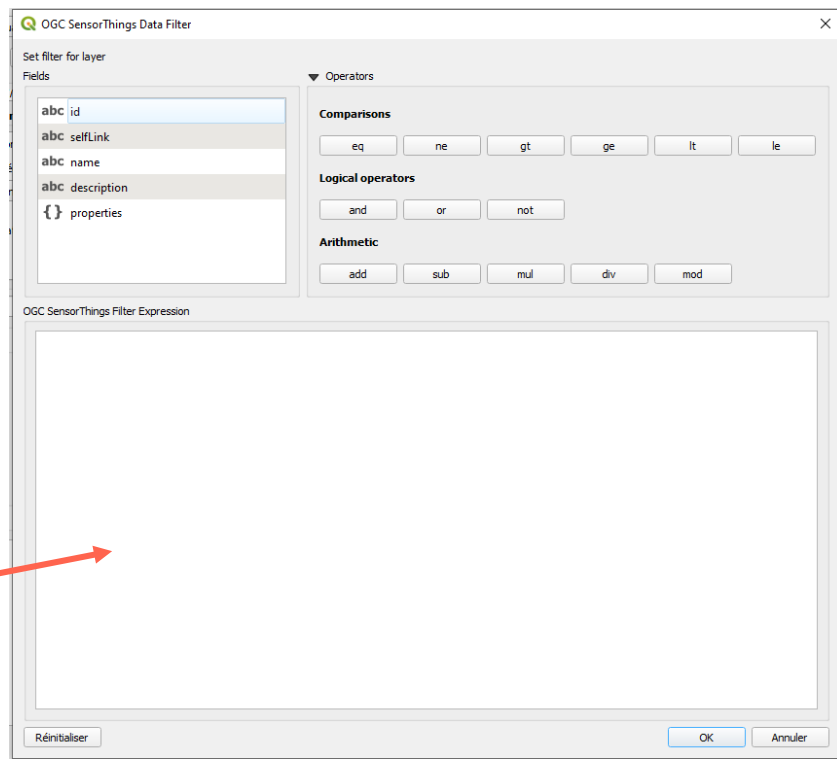
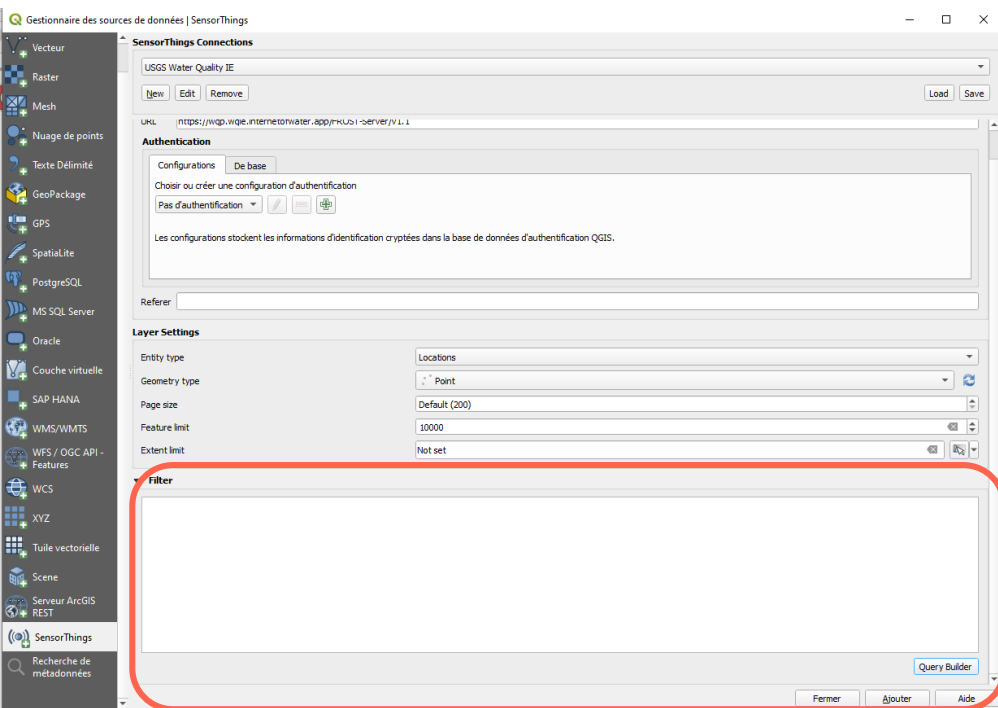
- Various geometry types handled



ex: all Land Baden-Württemberg rivers and some in France. Thanks Hylke for such a nice Payload :) That got eventually rendered !

Upcoming in QGIS 3.38 (already in nightly builds)

- Filter, feature & extent limit, integration with QGIS Time Manager



On going-discussions

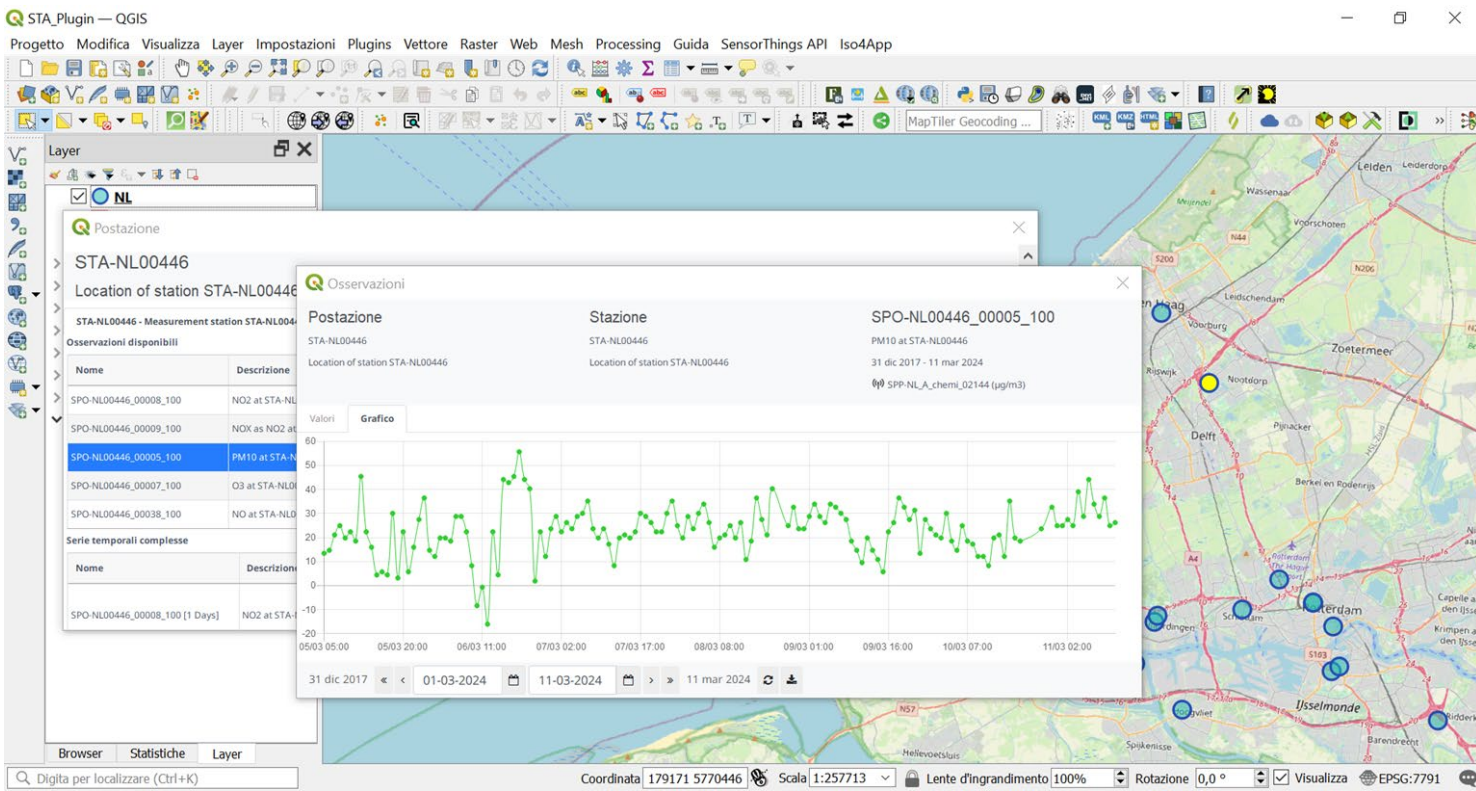
- Feedback from testing
- Plotting data
 - The current plugin will be updated in the coming month to be fed by the new QGIS SensorThings API provider
 - Should QGIS provide a raw/crude timeseries viewer ?
 - Just to simplify the uptake, then communities could set up their own plugins
 - VS there are many community SensorThings API patterns (timeseries, z-serie, sample, ...) is such a raw viewer feasible in a domain agnostic/generic way ?
 - VS is that feasible in QGIS itself
 - The current SensorThings API plugin is in chartjs : https://github.com/AirBreak-UIA/SensorThingsAPI_QGIS-plugin/tree/main
 - In QGIS, a nice/interactive Graph(Chart?)Widget in Qt5? Maybe in Qt6?
 - In the meantime : there is also the “Data Plotly” plugin that can be used.

On going-discussions

- Plotting data continu'ed
 - Decision from meeting this morning (2024/03/25)
 - QGIS SensorThings API provider : will be the core for discussing with ST API server (querying, parsing response, ...)
 - It will be up to the plugin(s)
 - to use the QGIS SensorThings API provider to exchange with ST API servers
 - to develop the rendering that fits the community concerned
 - => the current Plugin SensorThings API will be updated in the coming months applying the rationale above
 - => in the meantime it can still be used for TimeSeries rendering (or “Data Plotly”)

On going-discussions

- Plotting data continu'ed => Current plugin example



AirQuality Delft
March2023

On going-discussions

- Future work
 - Data persistence on client side in a DB (not flattened in a file)
 - MQTT in QGIS
 - Real-time' values in a map. E.g. periodically fetching all latest Observations for all Things/Location/Datastreams in current map/view, seeing them in a Temporal enabled layer and automagically updating the Observations (and repainting the MapCanvas).

Want to contribute ?

- Test & feedback / propose enhancements on QGIS GitHub issues

The screenshot shows the GitHub interface for the QGIS repository. The top navigation bar includes the GitHub logo, the repository name 'qgis / QGIS', and a search bar. Below the navigation bar, there are tabs for 'Code', 'Issues' (with 4.4k issues), 'Pull requests' (with 32), 'Actions', 'Wiki', 'Security', and 'Insights'. The main content area displays a list of issues filtered by 'is:issue sensorthings'. The list includes three issues: a closed bug report about the SensorThings API Provider, a closed feature request about navigation links, and another closed bug report about the SensorThings reference document. Each issue entry shows its title, status (closed), label (Bug or Feature Request), and some activity metrics like pull requests and comments.

qgis / QGIS

Type to search

Code Issues 4.4k Pull requests 32 Actions Wiki Security Insights

Filters is:issue sensorthings Labels 137 Milestones 17 New issue

Clear current search query, filters, and sorts

0 Open ✓ 4 Closed Author Label Projects Milestones Assignee Sort

🔴 SensorThings API Provider - Layer name Bug 1 2

#56838 by sgrllet was closed 5 days ago 1 of 2 tasks

🔵 [sensorthings] follow navigationlinks and add links to attribute table Feature Request 4

#56805 by pvgenuchten was closed 2 weeks ago

🔴 [sensorthings] Location formalism as described SensorThings reference document doesn't display on map Bug 1 1

#56732 by hsquidant was closed 2 weeks ago 2 tasks done

Development context

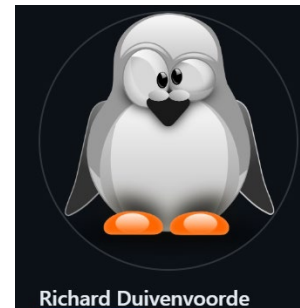
- Team



Mapping, QGIS and other Open Source Ramblings



Geosciences pour une Terre durable
brgm



- Funding





Thank you

The Project Team :

s.grellet@brgm.fr

matteo.ghetta@faunalia.eu

cavallini@faunalia.it

nyall@north-road.com

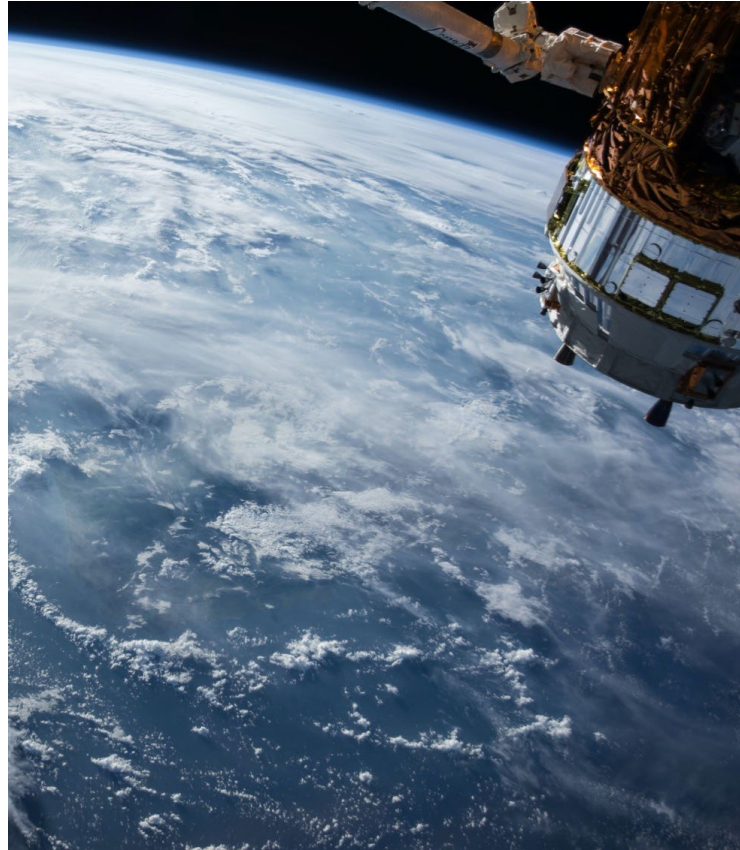
Piergiorgio.Cipriano@dedagroup.it

Luca.Giovannini@dedagroup.it

Nicola.CracchiBianchi@dedagroup.it

richard@duif.net

hylke.vanderschaaf@iosb.fraunhofer.de



Thank You

Community

- 500+ International Members
- 110+ Member Meetings
- 60+ Alliance and Liaison partners
- 50+ Standards Working Groups
- 45+ Domain Working Groups
- 25+ Years of Not for Profit Work
- 10+ Regional and Country Forums

Innovation

- 120+ Innovation Initiatives
- 380+ Technical reports
- Quarterly Tech Trends monitoring

Standards

- 65+ Adopted Standards
- 300+ products with 1000+ certified implementations
- 1,700,000+ Operational Data Sets
- Using OGC Standards

