

OGC SensorThings API

INSPIRE Good Practice

OGC SensorThings API

- OGC Standard since 2015, V1.1 update 2019
- Based on O&M Data model (ISO 19156)
- RESTful API following Oasis Odata V4.0
 - Utilizes a slightly different URL pattern than Open API but
 - Allows for far more powerful queries
- Adheres to recommendations of W3C Data on the Web Best Practices
- Far easier to deploy and use than SOS
- Explicit queries allow access to required data
- Extended response formats allow for GeoJSON and CSV responses

Relevant Domains (on beyond Sensors)

No data loss in comparison to Excel:

<https://www.theguardian.com/politics/2020/oct/05/how-excel-may-have-caused-loss-of-16000-covid-tests-in-england>

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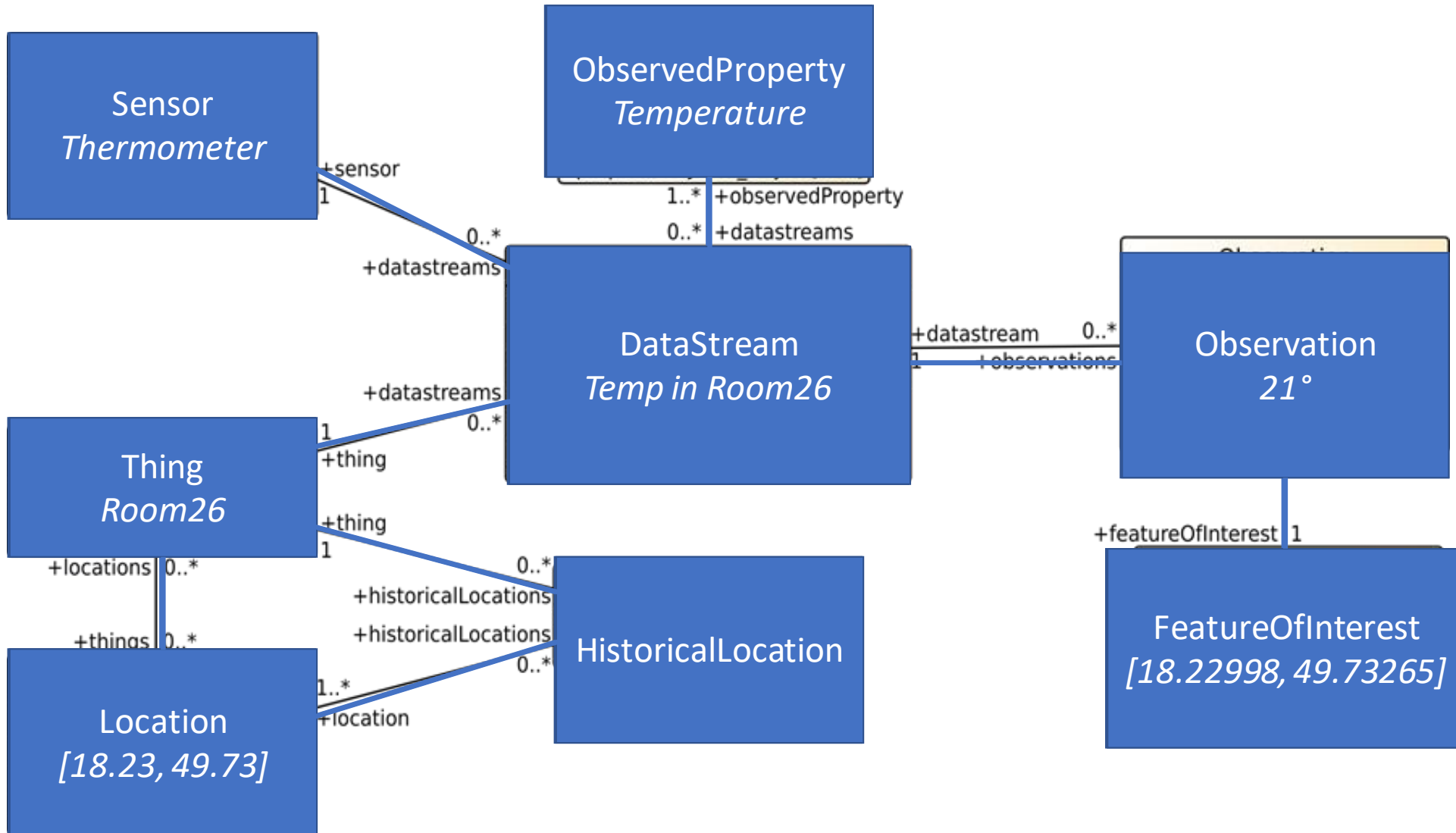
Health policy

Covid: how Excel may have caused loss of 16,000 test results in England

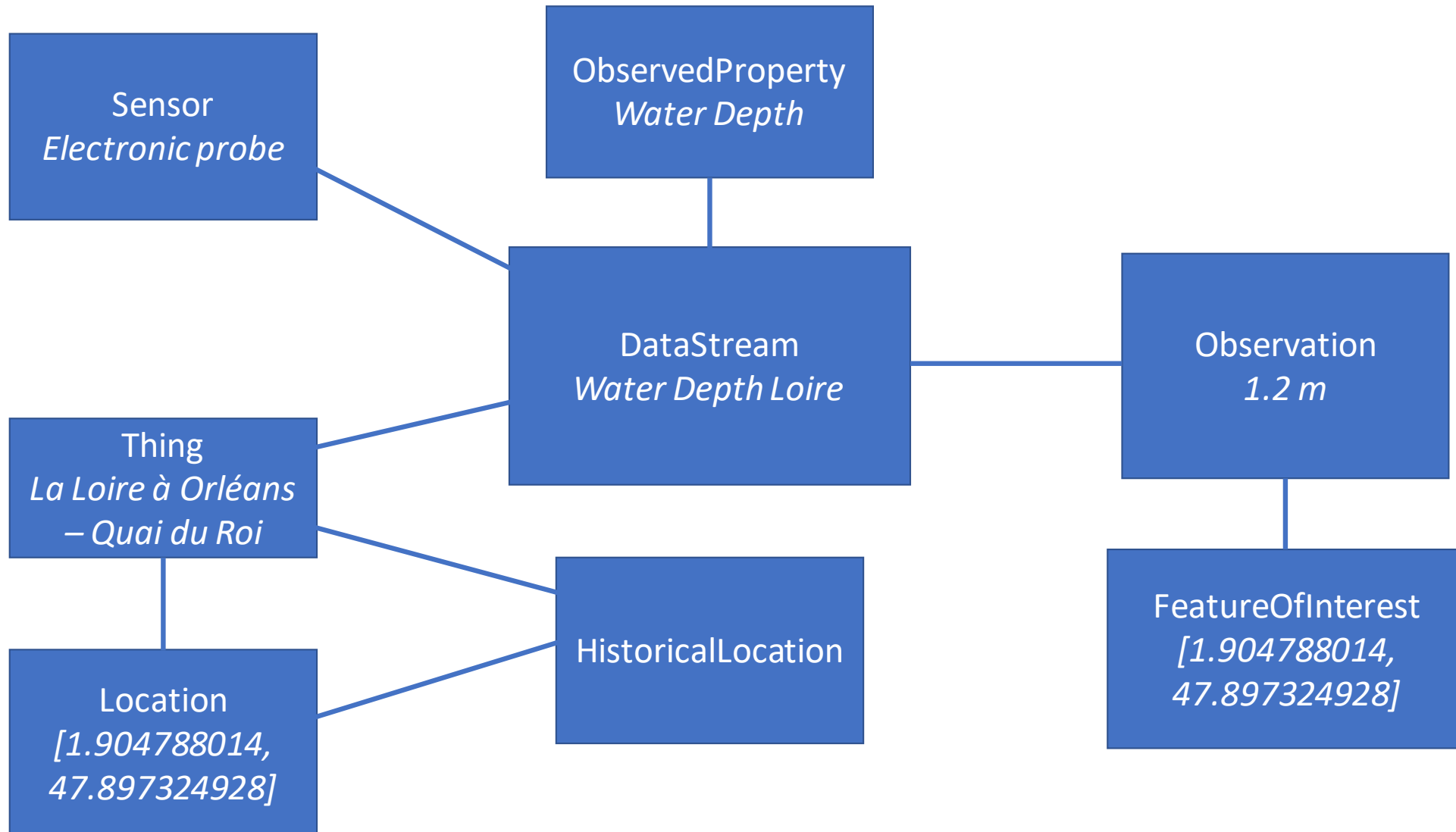
Public Health England data error blamed on limitations of Microsoft spreadsheet

- [Coronavirus - latest updates](#)
- [See all our coronavirus coverage](#)

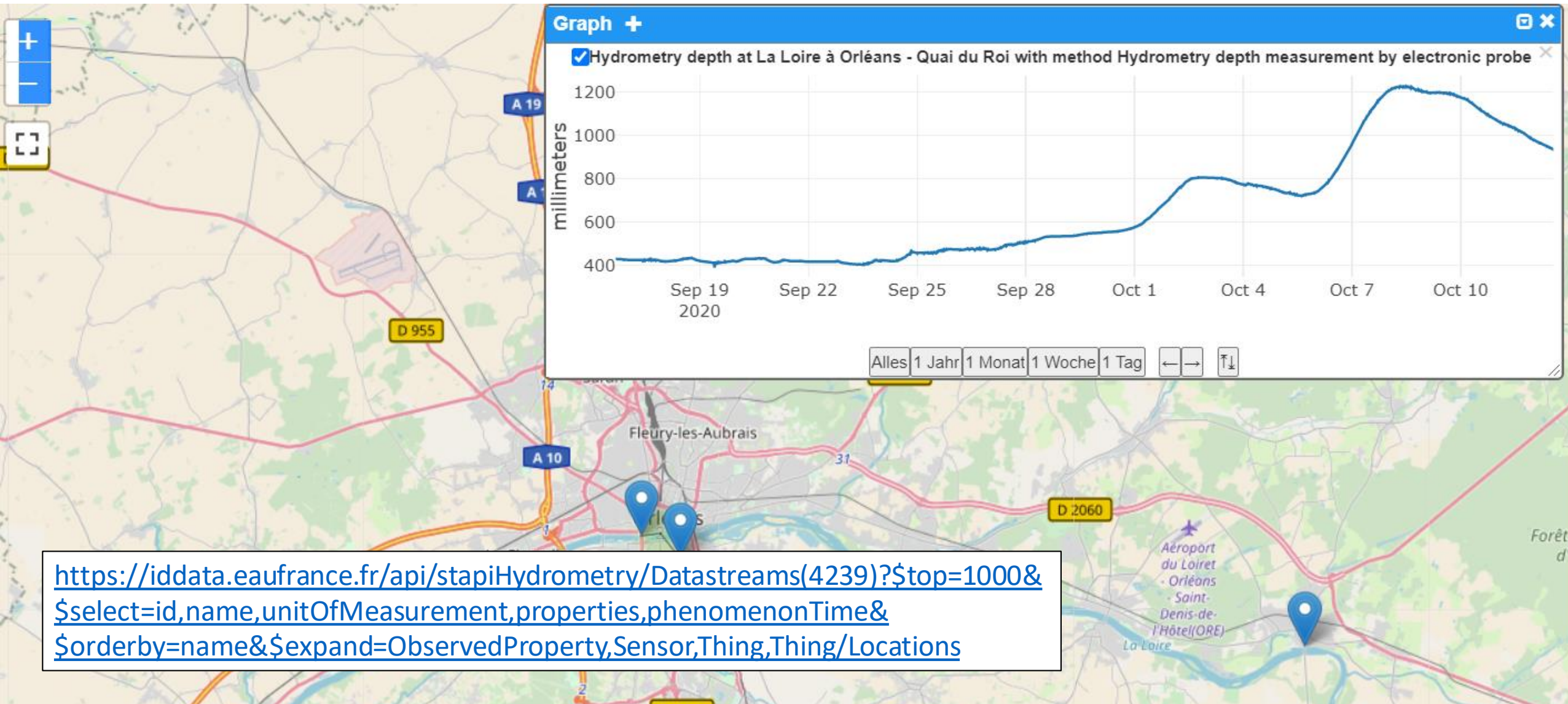
OGC SensorThings API



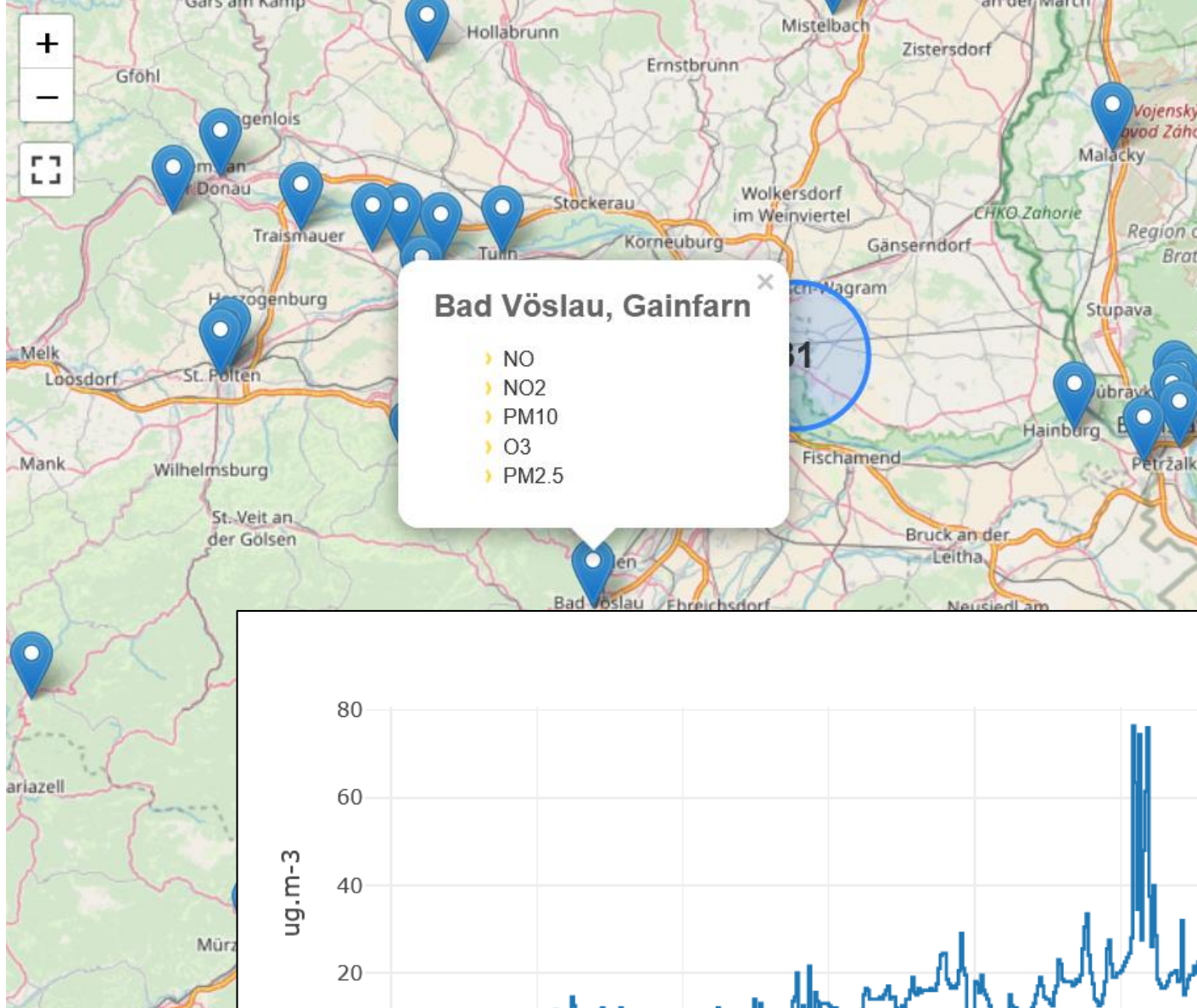
OGC SensorThings API - French Water Depth API



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Realtime Air Quality



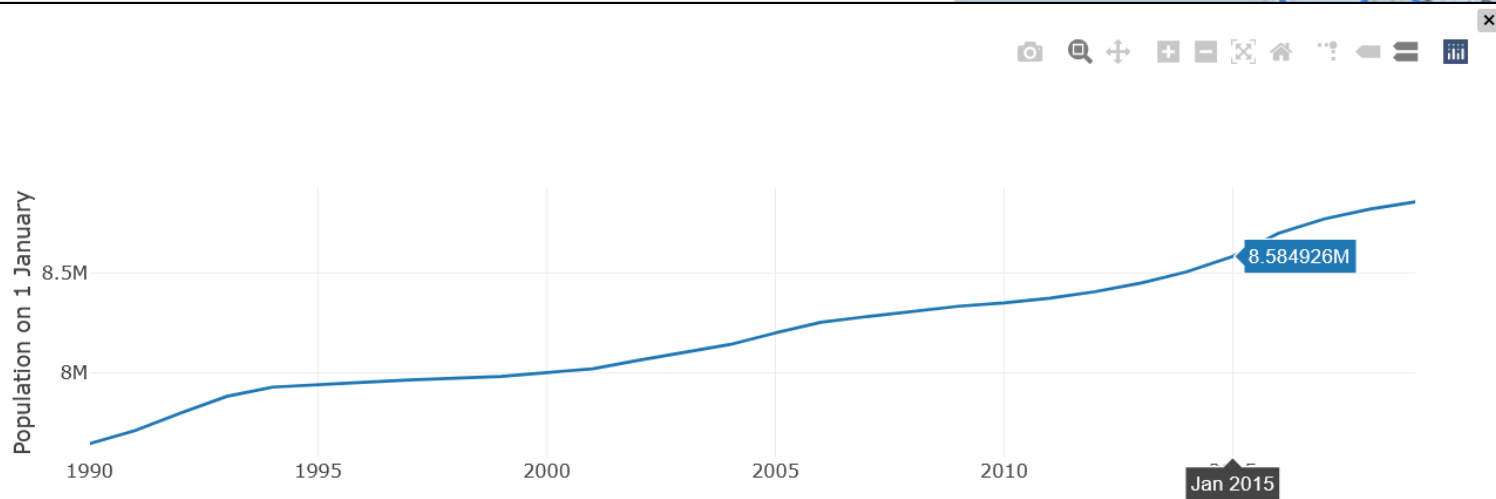
[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Datastreams\(75\)?\\$top=1000&\\$select=id,name,unitOfMeasurement,properties,phenomenonTime&\\$orderby=name&\\$expand=ObservedProperty,Sensor,Thing,%20Thing/Locations](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Datastreams(75)?$top=1000&$select=id,name,unitOfMeasurement,properties,phenomenonTime&$orderby=name&$expand=ObservedProperty,Sensor,Thing,%20Thing/Locations)

Some Demos

Demos

- <https://datacoveeu.github.io/API4INSPIRE/maps/Demography.html>
- <https://datacoveeu.github.io/API4INSPIRE/maps/AirQuality.html>
- <https://datacoveeu.github.io/API4INSPIRE/maps/RiversInBw.html>

European Demography



Some Queries - Population European Countries

```
http://service.datacove.eu/DemographyThings/v1.1/Things  
?\$top=10  
&\$filter=length\(name\) eq 2  
&\$select=name  
&\$expand=Locations\(\$select=location\),  
Datastreams\(  
    \$filter=ObservedProperty/name eq 'demo\_r\_pjanaggr3';  
    \$select=name;  
    \$expand=ObservedProperty\(\$select=name, definition\),  
    Sensor\(\$select=metadata\),  
    Observations\(  
        \$select=result,phenomenonTime;  
        \$orderby=phenomenonTime desc;  
        \$top=1  
    \)  
\)  
&\$resultFormat=geojson
```

Some Queries - All stations at a river that flows into the Rhine

<https://lubw.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Things>

[?\\$filter=properties/type eq 'station'](#)

[and](#)

[properties/gewaesser.Location/properties/sink.Location/name](#)

[eq 'Rhein'](#)

[&\\$resultFormat=geojson](#)

SensorThings API Endpoints

- **Water:**

- Ground Water (FR): <https://sensorthings.brgm-rec.fr/SensorThingsGroundWater/v1.0>
- Surface Water Quantity (FR): <https://iddata.eaufrance.fr/api/stapiHydrometry/v1.1>
- Surface Water Quality (FR): <https://sensorthings-wq.brgm-rec.fr/FROST-Server/v1.0>
- Water (DE): <https://lubw.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1>

- **Air Quality** - Near-real-time air quality across Europe, data from both national sources (harvested from AT SOS and WFS) and Europe (EEA):
<https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1>

- Reuse by Windy:

- **Smart Cities** - Urb

- **Demography** - Bas

<https://demograp>

- **Covid Case Data,**

RKI: <http://covids>

- Dashboard: <http://>

User base expanding, example France:

- BRGM (French Geological Institute)
- French Office for Biodiversity
- INRAe: Soil
- IFREMER: marine

Highly interested: MNHN and IGN France (mapping agency)

Conclusions

- SensorThings API is being increasingly deployed
- Far easier to deploy and use than SOS
- Data model isomorph to O&M, thus compatible to INSPIRE data specifications
 - ["Extending INSPIRE to the Internet of Things through SensorThings API"](https://doi.org/10.3390/geosciences8060221)
[doi:10.3390/geosciences8060221](https://doi.org/10.3390/geosciences8060221)
- Map based visualization still in development
 - STAM provides simple mapping support
<https://github.com/DataCoveEU/STAM>
 - Grafana support:
<https://grafana.com/grafana/plugins/linksmart-sensorthings-datasource>

More examples and demos at:

<https://datacoveeu.github.io/API4INSPIRE/>

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Thanks for your Attention!

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