

# STA endpoints and requests

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# The OGC SensorThings API

## SensorThings API

Thanks to the way SensorThings API was built...



## Web browser navigation

...data from the API can be easily viewed using a **normal Web Browser**. One can simply navigate from one object to the next by clicking the **URLs** provided within the data.

# How does it work?

## Endpoint

The base requests allowing access to the seven core classes described above are available from the SensorThings API landing page

<https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/>

# Endpoint examples

1

## BRGM Water

Water data by OGC

<https://sensorthings-wq.brgm-rec.fr/FROST-Server/v1.0>

2

## Fraunhofer Stats

Demographic statistics by Fraunhofer Institute, Germany

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

Covid data by Fraunhofer Institute, Germany

<http://covidsta.hft-stuttgart.de/server/v1.1/>

3

## Municipality of Ferrara

Data about air quality, bike transits, traffic by Municipality of Ferrara, Italy

<https://iot.comune.fe.it/FROST-Server/v1.1/>

4

## Fraunhofer Air Quality

Data about air quality from AQ stations in Europe, by Fraunhofer Institute, Germany (EEA)

<https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/>

# Basic navigation options

## Direct access to class

[endpoint]/[class]

<https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations>

## Direct access to individual

[endpoint]/[class]([id])

[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations\(1\)](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations(1))

# Tailoring requests

- **\$stop**: specify the maximum number of objects to be returned. The usual default setting for \$stop is 100.
- **\$skip**: used for paging, skip over the first n records and provide records from the n + 1 on.
- **\$count**: return the total number of objects in the response. The usual default setting for \$count is false.
- **\$orderBy**: used to specify that the returned objects should be ordered by a specific attribute, either ascending or descending.
- **\$filter**: specify filters that control which entities are returned.
- **\$select**: specify exactly which attributes are to be provided in the response.
- **\$expand**: create a response returning multiple object types nested within each other

# Tailoring requests: \$top

**\$top**: specify the maximum number of objects to be returned. The usual default setting for \$top is 100.

<https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?Stop=1>

# Tailoring requests: \$skip

**\$skip**: used for paging, skip over the first n records and provide records from the n + 1 on.

[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?\\$skip=10](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?$skip=10)



# Tailoring requests: \$count

**\$count**: return the total number of objects in the response. The usual default setting for \$count is false.

[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?\\$count=true](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?$count=true)

# Tailoring requests: \$orderby

**\$orderBy**: used to specify that the returned objects should be ordered by a specific attribute, either ascending or descending.

[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?\\$stop=3&\\$orderby=name](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?$stop=3&$orderby=name)

# Tailoring requests: \$filter

**\$filter**: specify filters that control which entities are returned.

[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?\\$filter=name%20eq%20%27Stadlau%27](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Locations?$filter=name%20eq%20%27Stadlau%27)

[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Things\(1\)](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Things(1))

# Tailoring requests: \$select

**\$select**: specify exactly which attributes are to be provided in the response.

[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Things\(1\)?\\$select=id,name](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Things(1)?$select=id,name)

# Tailoring requests: \$expand

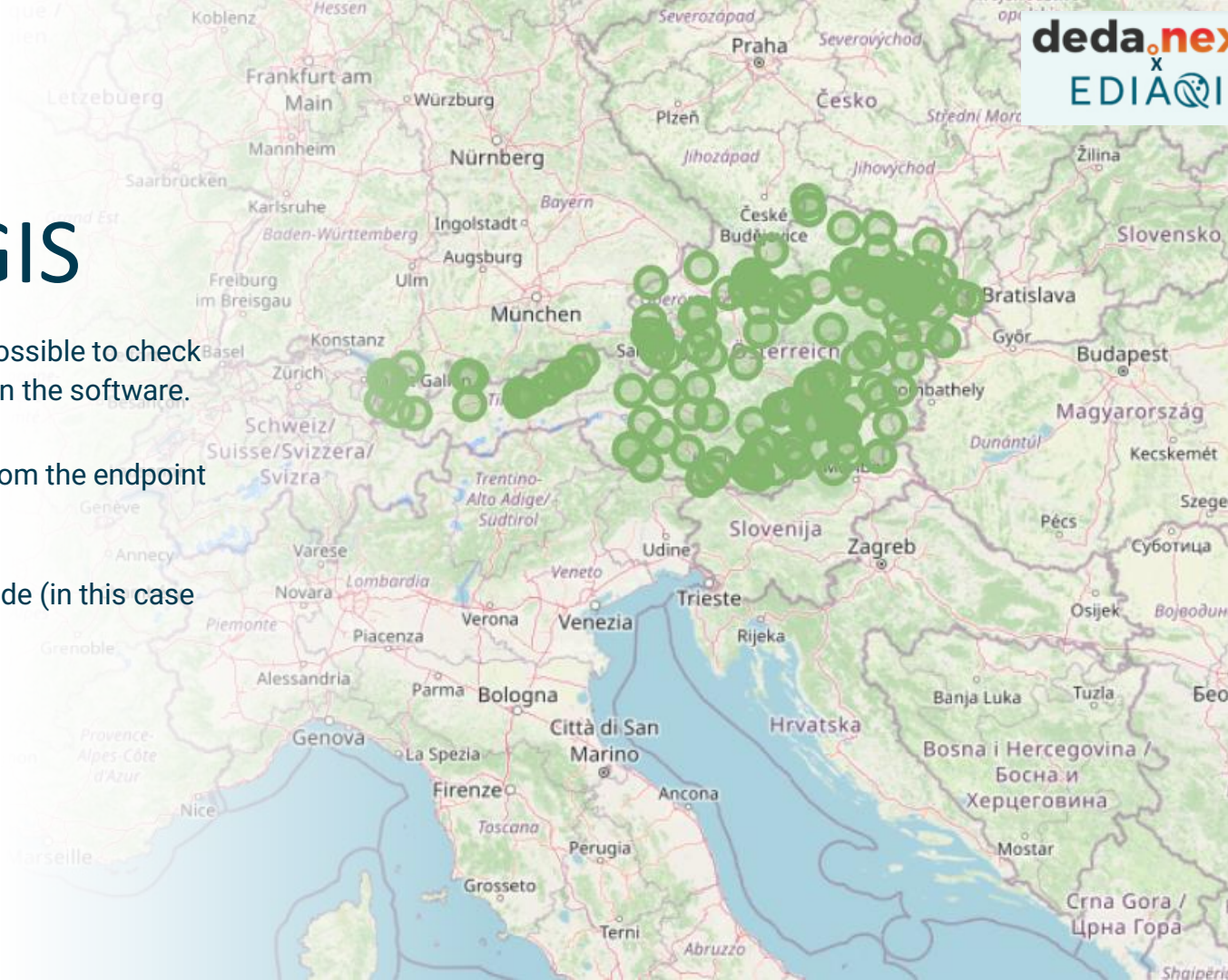
**\$expand**: create a response returning multiple object types nested within each other

[https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Things\(1\)?\\$expand=Datastreams](https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1/Things(1)?$expand=Datastreams)

# Air quality data on QGIS

Thanks to our QGIS plugin, it is possible to check the data of an endpoint directly on the software.

On the example the data come from the endpoint <https://airquality-frost.k8s.ilt-dmz.iosb.fraunhofer.de/v1.1> and are filtered on the country code (in this case AT – Austria).



## Q&A

Did you understand the difference and linkages between open standards like OGC ones and ISO/CEN?

## Q&A

Have you ever used any standard similar to make your own data available in an interoperable way?