

# Geodata enrichment for air quality

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## TOAR database

A database containing more than 100,000 time series recording surface level ozone measurements, ozone precursors and other meteorological data (e.g. temperature) from more than 10,000 measurements stations around the globe.

## Metadata enrichment

We augment provider metadata information for the measurement stations with globally consistent information derived from multiple Earth Observation data products. This adds additional context to the description of measurement locations and thereby enriches the analysis possibilities.

Data Product Data Product Data Product Data Product



## Rasdaman Service (raster data manager)

Send service and  
area to extract

Return all extracted  
data points

## GEO-PEAS

(Geospatial Point Extraction and Aggregation Service)

- Exposes REST APIs to the user
- Each endpoint lets the user extract one specific dataset
- Define areas with latitude, longitude and radius
- Some services also have a time axis to allow extraction from different time periods
- With a radius the user can also define an aggregation method (e.g. mean, max, min, ...)

## Request

.../service\_name/?lat=50.9&lon=6.4&year=2012&radius=1000&agg=mean

## Service Arguments

Lat - Latitude of area of interest  
lon - Longitude of area of interest  
year - Year of interest  
radius - Area of interest around lat and lon [in meters]  
agg - Aggregation method

## Copernicus Sentinels

In addition to retrieving data from the rasdaman service we could extract data from the Copernicus Open Access Hub and use the same infrastructure and outputs already known to the user.

Send service and  
area to extract

Return all extracted  
data points

Aggregate and  
return GeoJSON

Send request

## Return

```
{
  "type": "Feature",
  "geometry": {
    "type": "Point",
    "coordinates": [
      6.4,
      50.9
    ]
  },
  "properties": {
    "agg_function": "mean",
    "many": "False",
    "mean": 12.3,
    "units": "m",
    "radius": 1000
  },
  "provenance": {...}
}
```

