

Visualizing AIR-Portal data

1. Filename convention:

The provided example files follow the following naming convention:

```
processed_<species>_<region>_<reference-datetime>_<step>.nc
```

Where:

- <species> is one of the supported air quality species from the list: *pm2p5*, *pm10*, *o3*, *no2* or *aqi*.

- <region> is the alias of the region of interest. In the provided example data, this will have the value *ams*.

- <reference-datetime> is the reference hour with respect to which the data was generated. For example, all forecast files generated on the 2021-08-02 will have a reference datetime of 20210802000000.

- <step> describes the hour for which this file is valid for. For example, if one is interested in the forecast for 13:00 on the 2021-08-03, using a reference date of 2021-08-02, the *step* will be $24 + 13 = 37$.

2. File format

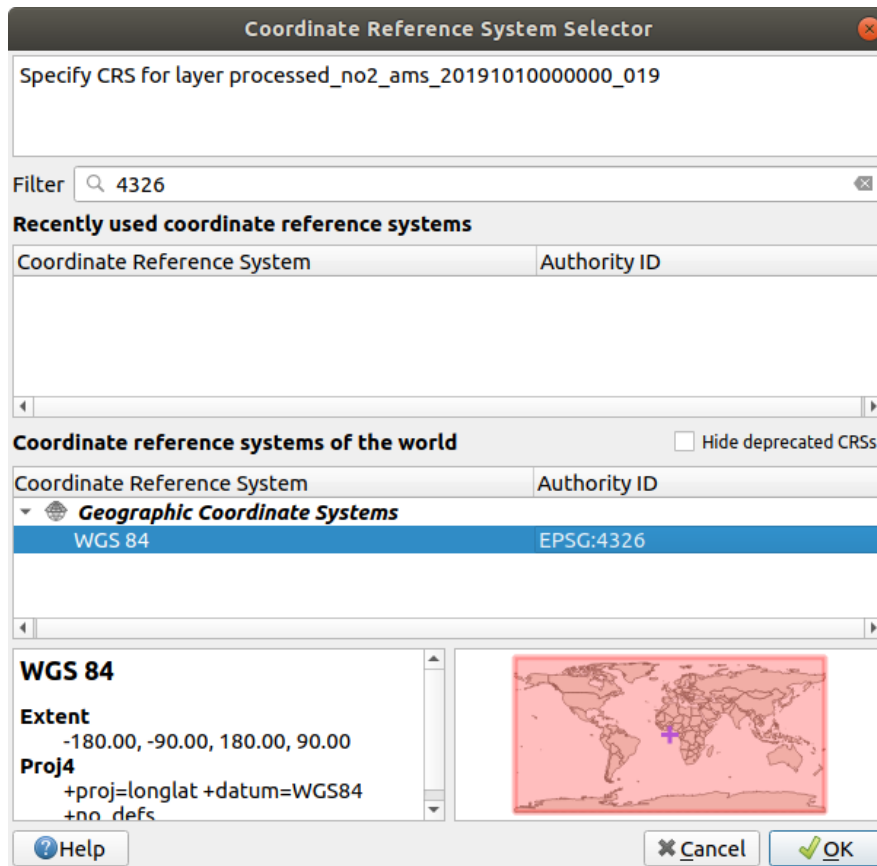
The format description (contents, metadata and structure) of the contents of the file can be found within the provided ST-ESA-AIRPORTAL-TN-002-v1.0 Air Quality Format.pdf file.

3. Visualizing the files

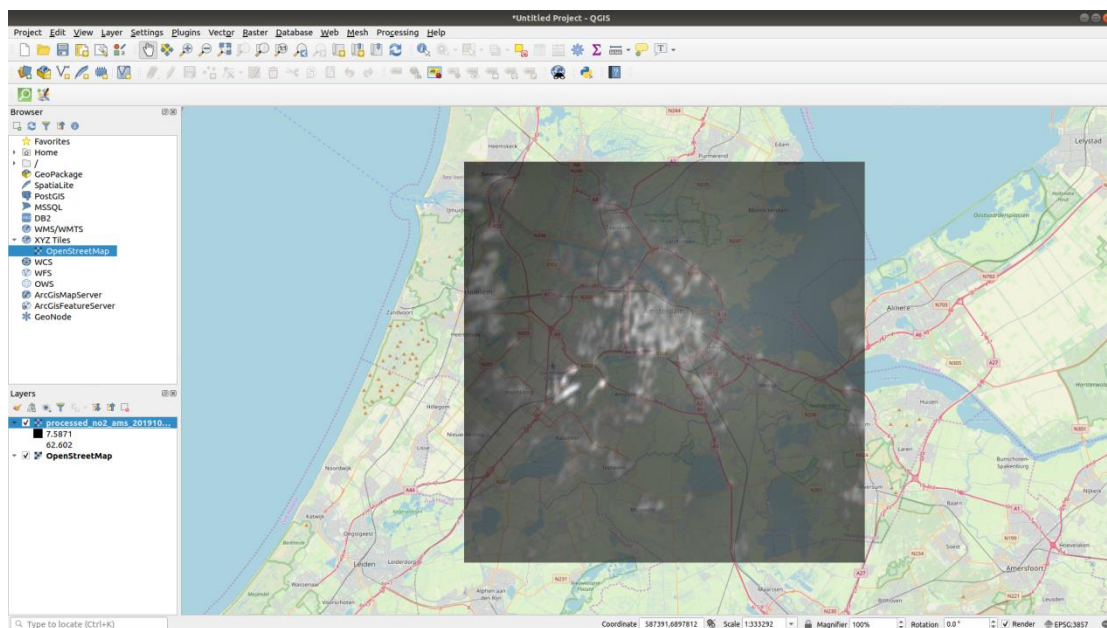
The underlying *netcdf* format (<https://www.unidata.ucar.edu/software/netcdf/>) used for the AIR-Portal products is a standard that is supported by most GIS applications. For example, using QGIS (for installation: <https://qgis.org/en/site/>):

- Open the application.

- Drag-and-drop one of the provided files. This will cause QGIS to read the contents. This should result in a prompt similar to the one shown below. In the "Filter" area (top part) please search for "4326". This will shorten the list of available projections to be used to display the data. Select the "WGS 84" entry in the "Coordinate reference systems of the world" area. This will allow QGIS to correctly plot the included data.



Press “OK”, and the data should be displayed visually within QGIS. This will result in a similar view to the one below (please keep in mind that for visualization purposes, there is an OpenStreetMap view added underneath the AIR-Portal data (tutorial: <https://www.giscourse.com/how-to-add-openstreetmap-basemaps-in-qgis-3-0/>). In addition, some transparency (right-click on the data layer -> Properties -> Transparency tab).



4. Reading file contents.

Importing data from the files can be done by use of many libraries. For example, if using python, libraries such as *scipy* provide ways of working with netcdf files (https://docs.scipy.org/doc/scipy-0.16.1/reference/generated/scipy.io.netcdf.netcdf_file.html). Other options include:

- *netcdf4-python* (<https://unidata.github.io/netcdf4-python/netCDF4/index.html>);
- *Coda* (<https://anaconda.org/stcorp/coda>);
- *Harp* (<https://anaconda.org/stcorp/harp>) and more.