How to access the ACTRIS VRE

Access instruction and an overview of examples is available at: https://data.actris.eu/vre

1. Visit ACTRIS VRE JupyterHub.
2. Create an account and log in.
3. Wait for confirmation e-mail of authorization.
4. Explore the available notebooks and tutorials to start analyzing ACTRIS data.

Task 1: Explore ACTRIS data search through the ACTRIS Data Portal

a. Choose a station and variable of your choice. Search for data and add data to basket.
   - Suggestion; Jungfraujoch, Switzerland, Lidar data (i.e. aerosol particle light backscatter coefficient and aerosol particle light extinction coefficient)
b. Look at the data coverage and look through your datasets. When happy, choose "Download all basket metadata" or download your files.
c. Open example "Search with ACTRIS Data Portal.ipynb" in the VRE. Add your basket or files to your user and open the data.
d. Plot your chosen data for one file or more advanced; combine several files of data and plot together. Example "Combining datasets EC OC.ipynb" shows combination of in-situ datasets/files, while example "Access ACTRIS Aerosol Remote Sensing data.ipynb" shows plotting of ARES data.

Task 2: Explore ACTRIS data search through the REST API

a. On https://data.actris.eu/search, click "Large Data Extract"
b. Make use of the example "Search with ACTRIS Metadata API.ipynb" to explore the REST API.
c. Find the same data as in Task 1, using the REST API.

Thoughts: Which method do YOU prefer, data portal or through an API? Do you prefer streaming data or downloading the data locally? Which method is preferred in which cases?

Task 3: Canadian wildfires 2023 – observations and FLEXPART model

a. Have a look at the VRE files "Equivalent black carbon (eBC).ipynb", "FLEXPART footprint emission for black carbon.ipynb" and "FLEXPART and observed eBC timeseries.ipynb".

b. Use the FLEXPART model to see the source spec from facilities in June 2023. Choose a facility where there is a peak contribution from biomass burning (BB). Use either "FLEXPART footprint emission for black carbon.ipynb" or https://flexpart-request.nilu.no/.

c. Find observational data from the facility chosen in 3b. Use one of the methods in Task 1 and Task 2. (Hint: Look for "aerosol light absorption coefficient")

d. Compare the FLEXPART model with the observational data. Here compare time series of measured eBC with the modelled source contributions from FLEXPART (Hint: "FLEXPART and observed eBC timeseries.ipynb")

e. At the peak in your measurements, compare the data with the footprint emission sensitivity from FLEXPART at a global level. Then have a look at the Wildfire contribution (Fire BC) for FLEXPART. Does the measured peak in black carbon come from the canadian wildfires?