EUMETSAT

Weather-related satellite data with Jupyter Notebooks

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Agenda

Jupyter and Jupyter Notebook

Satpy

Jupyter<>Jupyter notebook

- Project Jupyter is a broad collaboration that develops open-source tools for interactive and exploratory computing.
- Jupyter is a free, open source platform
- A Jupyter notebook is a document that supports mixing executable code, equations, visualizations, and narrative text.

Jupyter?

- A popular software distribution that includes Jupyter is Anaconda, which is easy to install on Windows, Mac, and Linux.
- No need for administrator (or root) access to the computer.
- Other software packages that can run Jupyter (notebooks) are nteract, Hydrogen, Spyder, etc.

- Even when Jupyter runs locally, it runs as a web application; that is, it runs in a browser connected to a server.
- In a local installation, the browser and the server run on the same machine. But it is also possible to run the server remotely.
- **More info on Jupyter and local installation on** https://gitlab.eumetsat.int/eumetlab/data-services/eumetsat_python_for_data_services/-/blob/master/1_Intro_to_Python_and_Jupyter.ipynb

Jupyter notebook?

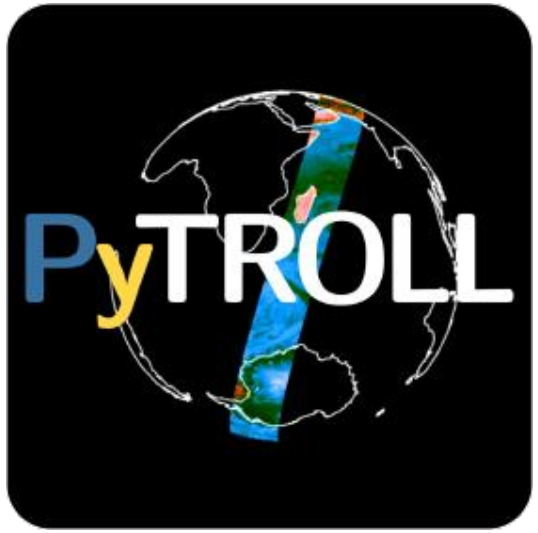
- Code, data and visualizations are combined in one place
- JN is not a coding language but a toll where you can use a coding language
- Started with Python support, now support of over 40 programming languages, including Python, R, Julia, ...
- Notebooks can easily be shared via GitHub, NBViewer, etc.

- A great interactive tool (for teaching and processing)

Jupyter notebook?

- **Shift+Enter to run** a cell
  - Left of the cell you will see a small asterix in brackets (*), while the cell is executing, which will turn into a number when finished
  - You can run multiple consecutive cells and they will be executed one after another
- **Other important commands☺**
  - Interrupt (under Kernel tab)
  - Restart and clear output (under Kernel tab)

- A Python Library for Weather Satellite Processing
- Part of the Pytroll project/community (http://pytroll.github.io/)
  - is an easy to use, modular, free and open source python framework for the processing of earth observation satellite data.
- Is the result of the ongoing developments from 2010 (https://www.youtube.com/watch?v=eBQi2G_fqXQ)
- Satpy Documentation, examples, quickstart: https://satpy.readthedocs.io/en/latest/index.html



Other used libraries

pyorbital pyresample cartopy matplotlib numpy pyhdf scipy geotiepoint h5py (and their dependencies)

Thank you!

NOW LETS FLY TO JUPYTER

Note: some browsers (ie. Mozilla Firefox) can have problems when running the JN on EUMETSAT Training Hub (try Google Chrome)