

# High-Performance Data Analytics Demo with PyOphidia

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# Environment setup

Requirements: *Docker, git CLI and a web browser*

For the tutorial we are using the *Ophidia all-in-one training container* from DockerHub:

```
docker pull ophidiabigdata/ophidia-training:latest
```

Further information at: <https://hub.docker.com/r/ophidiabigdata/ophidia-training>

Retrieve the tutorial/demo material from *GitHub*:

```
git clone https://github.com/ESiWACE/hpda-vis-training.git
```

If you already have it, check for the latest version. To get updates:

```
cd hpda-vis-training  
git pull
```



# Start the environment

Download the data required for the training:

```
cd hpda-vis-training/Training2021/Session4  
./get_data.sh
```

You should now see 7 CMIP5 NetCDF files under the git repository folder.

From the same folder start the container, binding the tutorial material repo path (\$PWD):

```
docker run --rm -it -v $PWD:/home/ophidia/notebooks -p 8888:8888  
ophidiabigdata/ophidia-training:latest
```

This container includes the full Ophidia software stack, a Jupyter Notebook server and a set of scientific Python modules.



# Access the environment

If started correctly, you should get something like the following messages in the terminal:

```
[I 20:43:36.116 NotebookApp] Writing notebook server cookie secret to
/usr/local/ophidia/.local/share/jupyter/runtime/notebook_cookie_secret
[I 20:43:36.539 NotebookApp] Serving notebooks from local directory: /home/ophidia
[I 20:43:36.539 NotebookApp] Jupyter Notebook 6.4.0 is running at:
[I 20:43:36.540 NotebookApp] http://172.17.0.2:8888/
[I 20:43:36.540 NotebookApp] Use Control-C to stop this server and shut down all kernels
(twice to skip confirmation).
```

Now copy the URL showed by the message (e.g., <http://172.17.0.2:8888/>) in your browser to open the Jupyter Notebook UI and type '*ophidia*' as password.



Password:

.....

Log in



# Run the demo/hands-on notebooks

The screenshot shows the JupyterLab interface. At the top, there are 'Quit' and 'Logout' buttons. Below them are tabs for 'Files', 'Running', and 'Clusters'. A message says 'Select items to perform actions on them.' To the right are 'Upload', 'New', and a refresh icon. The file browser shows a list of files and folders. The 'notebooks' folder is selected and highlighted with a red box. A red arrow points to it from a dashed box containing the text 'Go in the notebooks folder'. Below 'notebooks', there are several folders: 'Examples', 'Hands-on', and 'imgs'. The 'Hands-on' folder is highlighted with a red box, and a red arrow points to it from a dashed box containing the text 'Location of the hands-on notebooks'. Below the folders, there are several files. The 'Workflow\_Overview.ipynb' file is highlighted with a red box, and a red arrow points to it from a dashed box containing the text 'The demo will show the Workflow\_Overview notebook'. The file list includes columns for 'Name', 'Last Modified', and 'File size'.

Name	Last Modified	File size
..	alcuni secondi fa	
Examples	22 minuti fa	
Hands-on	un minuto fa	
imgs	4 ore fa	
Download_Cartopy_features.ipynb	4 ore fa	875 B
Workflow_Overview.ipynb	22 minuti fa	74.7 kB
get_data.sh	4 ore fa	1.2 kB
README.md	4 ore fa	4.46 kB
tasmax_day_CMCC-CESM_rcp85_r1i1p1_20960101-20961231.nc	10 giorni fa	6.76 MB
tasmax_day_CMCC-CESM_rcp85_r1i1p1_20960101-21001231.nc	9 anni fa	33.7 MB
tasmax_day_CMCC-CESM_rcp85_r1i1p1_20970101-20971231.nc	10 giorni fa	6.74 MB
tasmax_day_CMCC-CESM_rcp85_r1i1p1_20980101-20981231.nc	10 giorni fa	6.74 MB
tasmax_day_CMCC-CESM_rcp85_r1i1p1_20990101-20991231.nc	10 giorni fa	6.74 MB
tasmax_day_CMCC-CESM_rcp85_r1i1p1_21000101-21001231.nc	10 giorni fa	6.74 MB
tasmin_day_CMCC-CESM_rcp85_r1i1p1_20960101-21001231.nc	9 anni fa	33.7 MB



# Questions?

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AND CLIMATE IN EUROPE



More about Ophidia?

Ophidia website: <http://ophidia.cmcc.it>

Contact: [ophidia-info \[at\] cmcc.it](mailto:ophidia-info[at]cmcc.it)

Social media: <https://twitter.com/OphidiaBigData>



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