WEkEO Climate Change 2025

Post-event report

WEkEO Implemented by EUMETSAT MERCATOR OCEAN INTERNATIONAL ECMWF European Environment Agency Funded by

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SUMMARY

Introduction

Here you will find the unanswered questions of the training « WEkEO 4 Climate Change » held the 10th and 12th June 2025. More than 1400 people took part of the event, hence this post-event report.

Please keep in mind that some of the questions asked were very similar, as a result we've summarized the different topics you covered in the Q&A.

We thank you again for your presence and hope to see you again !

General questions

The Copernicus WEkEO data are free of charge to access, download and vizualize. There is data for all around the globe at low and mid-resolution. There is also data in Europe at higher resolution (Copernicus is a program funded by the European Union).

You can find data from all of the 5 Copernicus Services, for all type of use :

- Copernicus Atmosphere : Atmosphere | Copernicus
- Copernicus Marine : Marine | Copernicus
- Copernicus Land : Land | Copernicus
- Copernicus Climate Change : Climate change | Copernicus
- Copernicus Emergency : Emergency | Copernicus

Data & products

Concerning the data and products available : Data viewer | WEkEO

- Here you can check the full catalogue of available data
- You can see the exact description of each product
- You can vizualize them on a map
- And download them if you wish to

Download the data

How to download the data (wms, api, etc.) : WEkEO Data Download | WEkEO Help Center

- You will find several articles with the different ways to download the data
  - With the Viewer
  - Via HDA – API
- And the errors you might encounter

Calculation and specific parameters

We also had plenty of questions about the different ways of calculating certain parameters, the impact of a phenomenon on the environment and so on for your projects. We invite you to look for research papers that will provide you with a full description of their working methods and the calculations/models/data they use. You can look on ResearchGate, Connected Papers, Google Scholar and many others.

DAY 1 – 10 June 2025

Copernicus Climate Change Monitoring Service – Chris Stewart (ECMWF)

Link to the C3S website : Copernicus
CAMS Catalogue : Climate Data Store

- Is there a plan to operationalize regional reanalysis CERRA as is in the case of ERA5-Land? CERRA is now available only until 2021.

In January this year we have started adding CERRA data to the CDS and we also informed the users https://forum.ecmwf.int/t/additional-cerra-data-for-the-period-from-july-2021-to-july-2022-now-available-on-the-cds/10954. In the meantime we have added more data, currently available until August 2023. The plan is to add data monthly until the production will catch up with real time. Actually, "real time" means about 3.5 months behind real time. Concerning CERRA-Land the plan is to add some data this summer. Then, the update will be twice a year in December and June.

- Does CMIP6 have any downscaled products for the whole world, like the CORDEX dataset for CMIP5?

The CORDEX-CMIP6 datasets are under preparation and will be ready within 1-2 years. We plan to publish new CORDEX data (downscaling CMIP6) in the CDS probably at the second part of next year. Until then we have high resolution Regional Climate Model (RCM) data available only for CMIP5.

WEkEO Tools – Anna-Lena Erdmann (EUMETSAT)

- Can we use Wekeo GPU via an API to integrate GPU notebook execution into an external background process, then get the results for example as a weekly analysis?

You can try this using the Jupyter Hub API, however, this API might not have the capabilities for the described purpose. Lower-level resources are not exposed to users in the WEkEO Workspace.

- Does earthkit support processing curvilinear grids to rectilinear?

There is a specific earthkit package designed for regridding: earthkit-regrid (https://earthkit-regrid.readthedocs.io/en/latest/). For further questions on which projections are supported in

detail, I would refer to the earthkit github https://github.com/ecmwf/earthkit, where you can ask questions to the developers.

- Is there any copilot associated with earthkit to help new python users?

Unfortunately not that I know. At WEkEO, we plan to have a copilot ready for accessing and processing wekeo data with the relevant tools (this will include earthkit). The release is planned for the end of this year.

- Can we download a preprocessed earthkit data for further visualization?

Yes, once the data is in an xarray, it can be analyzed, reshaped and regridded using the native xarray functions. Later it can be exported to e.g. netcdf (https://docs.xarray.dev/en/latest/generated/xarray.Dataset.to_netcdf.html) or zarr (https://docs.xarray.dev/en/latest/generated/xarray.Dataset.to_zarr.html).

User testimony #1 – Javier Gorroño (UPV, Spain)

Link to the paper : https://amt.copernicus.org/articles/16/89/2023/

User testimony #2 – Inês Girão (CoLAB +ATLANTIC, Portugal)

Link to the paper : https://www.researchgate.net/publication/341875593_Local_Climate_Zones_Datasets_from_five_Southern_European_cities_Copernicus_based_classification_maps_of_Athens_Barcelona_Lisbon_Marseille_and_Naples

User testimony #3 – Davide Faranda (CNRS/LSCE, France)

Link to the paper : https://wcd.copernicus.org/articles/5/959/2024/

DAY 2 - 12 June 2025

General questions

- How are the datasets served to the frontend? What type of server API is used for WEkEO ?

The datasets are served to the frontend using WMTS (Web Map Tile Service). However, this might vary depending on the dataset.
And WEkEO also provides WMS/WMTS links, enabling users to access data directly via compatible tools or platforms.

- Is there any limitation to access WEkEO datasets and how can i create the credential and access token in API ?

Access to WEkEO datasets is free, but you need to create a WEkEO account to download data or use the API.
Once your account has been created, you can use your credentials to download the data.
We recommend using the Python client, which handles authentication and requests easily: https://help.wekeo.eu/en/articles/9515753-what-is-the-harmonized-data-access-hda-api
Please note: There is a limit of 100 items downloaded per hour via the API.

WEkEO Viewer – David Bina (Mercator Ocean International)

- Is it possible to download data products in other projections ?

It is not possible to select another projection in the download process, however, you can use the **eocanvas function to reproject your data before downloading**. This might take a bit more time than the direct download, but you will not have to reproject the data on your local machine.

Jupyter Notebooks – Alexandre Homerin (Noveltis)

Link to the tutorial : https://atlas.mercator-ocean.fr/s/Hgon3dJ8DefgPme
Link to the video : https://youtu.be/obAGp_wbV7E

QGIS – Daria Andrievskaia (Noveltis)

Link to the tutorial : https://atlas.mercator-ocean.fr/s/iX5tsSY5a9Bsteg
Link to the video : https://youtu.be/tmbjilLVtHk

R Studio Tutorial - Simon Millet (Noveltis)

Link to the tutorial : https://atlas.mercator-ocean.fr/s/MLwCy6Bqw6sT6aP
Link to the video : https://youtu.be/Kwqpwzd0VY0

Thanks again for your participation 😊