JUPYTER Notebook Competition

PARTICIPANT PLAYBOOK LAST UPDATE 27 JUL 2022

get_access_token (hda_direct)

132.824284352, 21.6995134862S

"EO:EUM:DAT:SENTINEL-3

"dataRangeSelectValues"

"platformname"

Data Access API request

PROGRAMME OF THE EUROPEAN UNION

IMPLEMENTED BY

EUMETSAT   MERCATOR OCEAN INTERNATIONAL   ECMWF   European Environment Agency

What is this guide?

The playbook is intended to guide you through the most important information about the Jupyter Notebook Competition.

Inside you will find information about the practicalities of the competitions, tools, and resources you need to make the most of during this competition.

We can't wait to see what notebook did you create and what challenges you decided to tackle!
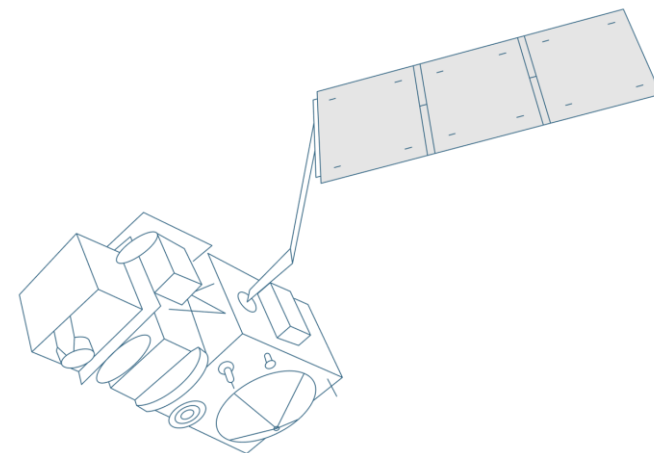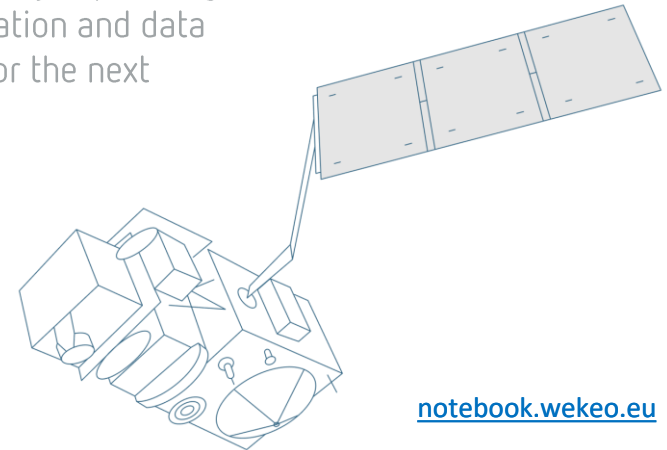
ABOUT

What is the Copernicus Jupyter Notebook Competition about?

The Jupyter Notebook Competition is chance for people around the world to share their skills and knowledge to create a notebook library that will help others to work with and understand Copernicus Earth Observation data. With your help, we aim to build a community-driven resource of notebooks.

WEkEO provides free online access to all Copernicus datasets and features the Jupyter Lab, where you can develop and test your notebook.

This open-source library will undoubtedly expand big data analytics literacy in Earth observation and data science, as well as kickstart training for the next generation of users.

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ABOUT

Why now?

▶ ▶ ▶ ▶ Our ability to harness the power of Earth observation data from satellites is increasing at a phenomenal rate. Thanks to initiatives like the EU's Copernicus Programme, we have seen the launch of the Sentinel satellites, at this very moment there are beaming down a constant flow of freely available data (16 TB/day) on our environment for us to use.

More, globally the past seven years have been the warmest on record. With more and more high temperatures, floods and megafires across the globe.

Satellite data can help scientists to understand changes and make better predictions and offer correcting measures.

However accessing and fully utilising Earth observation data can be difficult, at least to begin with, this is where the Jupyter Notebook Competition comes in.

With your help, we aim to build a community-driven resource of notebooks on the Copernicus WEkEO online platform that will empower others to start their own journeys.

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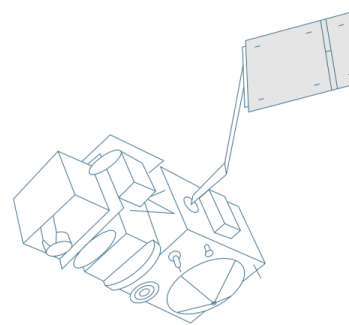
WHO CAN PARTICIPATE

- Participants from **Europe and beyond** can participate in the notebook competition. You must be **over 18**, or of legal age in your jurisdiction, in order to participate.

- You can either **enter individually** or as **a small team**. If you work with a team then you need to appoint a team leader. This team leader will be the main contact point between the organisers and the team. All teams can include up to a **maximum of five team members**.

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WHY PARTICIPATE?

JUPYTER Notebook Competition 2022

Discover Copernicus

Explore the vast range of Copernicus data and unravel its possibilities

Code the Future

Help shape what our future could look like! Your ideas could make a real difference and will help others to follow in your steps working with Copernicus data and information

Win cash prizes

The top teams will win prizes from a cash pool of 5,000 euros

Showcase your skills

Improve your skills through a hands-on experience where you can innovate with data and highlight your expertise to the wider community

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THE PROCESS

JUPYTER
Notebook
Competition
2022

Register for WEkEO to
discover Copernicus data

03

Register on the
competition platform

25 Apr.

01

Choose your track
and thematic data

02

04

Create, iterate & submit
your notebook

4 Sep.

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THE TRACKS

TRACK A: Utilise the broad range of Copernicus data

Develop a Jupyter Notebook that shows others how to access and work with Copernicus data across ocean, atmosphere, land, and climate themes. You could even combine data sets in innovative ways to highlight the added value of data fusion.

- Use of a combination of Copernicus datasets
- Show the added-value of data fusion over single data use
- Appropriate pre-processing

TRACK B: Visualise changes to our environment

Build a top-notch Jupyter Notebook that brings Copernicus data to life and enables others to visually understand how our planet is changing.

- Pay attention to the correctness of scientific presentation of information
- Increase the understandability for non-experts
- Pick the best visual technique for the type of data represented
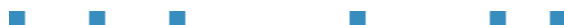
TRACK C: Innovate with Artificial Intelligence

Create a Jupyter Notebook that presents new ways of working with Copernicus data and machine learning algorithms to generate insights on our environment. Build more accurate and sophisticated models.

- Demonstrate the added value of ML/AI
- Show us your skills in models developed and trained during this competition
- Think of the scalability of your solution

TRACK D: Bring awareness to challenges on planet Earth

Shape a narrative with your Jupyter Notebook by writing the ultimate impact story.

- Increase the understandability for non-experts
- How impactful is your story
- Pick a compelling visualisation of the data

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CREATING A JUPYTER NOTEBOOK

For this competition, you will have access to the Copernicus data and information on the WEkEO platform, and we would like you to create a **Python-based Jupyter Notebook** that showcases the use of Copernicus data. Other open-source datasets can be used for the development of your solution but there must be some use of Copernicus data available on WEkEO.

Keep in mind the following when working on your notebook:

• Fresh notebooks only. To ensure a level field for all contestants, the notebook must use code created or reworked by the team, during the competition period (Apr – Sep).

• Participants are encouraged to register as a user on WEkEO.eu and develop their notebooks in the WEkEO JupyterLab environment using the existing libraries that are available. If additional libraries are required, we ask participants to add an environment file.

• Notebooks should show an intuitive end-to-end workflow including showing how to access the relevant data (via WEkEO and any other relevant APIs for additional data), followed by any analysis/visualisation.

• You are permitted to use publicly available or openly licensed APIs, SDKs, frameworks and other software libraries for your project, provided details are supplied so the judging team can run the notebooks.

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ACCESSING DATA ON WEkEO

- WEkEO API: https://www.wekeo.eu/docs/harmonised-data-access-api
- HDA Python Library: https://www.wekeo.eu/docs/hda-python-lib

As an alternative to using the HDA API directly (see this guide) or the sample Jupyter notebooks, you can use the Python client library HDA, that abstracts away the details of the API.

Here is an example of its usage:

```python
from hda import Client

c = Client(debug=True)

query = {
    "datasetId": "EO:CODA:DAT:SENTINEL-3:OL_1_EFR___",
    "dateRangeSelectValues": [{
        "end": "2019-07-03T14:03:00.000Z",
        "name": "dtrange",
        "start": "2019-07-03T13:59:00.000Z"
    }],
    "stringChoiceValues": []
}
matches = c.search(query)
print(matches)
matches.download()
```

WHAT IS CONSIDERED AN ELIGIBLE NOTEBOOK

- Notebooks should use the recommended template available on the [WEkEO Github](#), and provide descriptive elements in markdown as well as code (see existing examples on the WEkEO JupyterLab).

- Notebooks should work on the WEkEO JupyterLab platform (within current resource specifications and using existing or additional compatible libraries described in an environment file). Additional libraries used should be compatible with an MIT licence (e.g. BSD, Apache 2, L-GPL).

- The notebook needs to make use of Copernicus data and information but is not limited to them.

- Notebooks should use the WEkEO HDA API (ideally via the client provided – https://github.com/wekeo/hda, which is pre-installed in the WEkEO JupyterLab).

- External datasets may be used, but need to be open source and accessible via an API (this access should be demonstrated in the notebook).

- The final submission also needs to be open source i.e. shareable under an MIT licence.

DO WE HAVE TO USE WEKEO TO DEVELOP THE NOTEBOOKS?

Our aim with the competition is to get people using the data available on the WEkEO platform so…

- You can develop locally/on other platform…but a criteria is that notebooks must work on WEkEO so please test and provide information on any requirements (new libraries).
- The notebooks should use the HDA API (we recommend using the client from our examples/GitHub).
- You can use other data sources/APIs in addition, but if the data is in WEkEO please use the HDA API ☺
- TIP – separate the download cells from others and add an option to not download if already done (makes running scripts faster).

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# WHERE CAN I GET MORE SUPPORT?

A couple of places…

- From the WEkEO helpdesk in case you have problems accessing data on WEkEO (https://www.wekeo.eu/support or support@wekeo.eu)

- NEW Slack Channel: https://join.slack.com/t/wekeo-community/shared_invite/zt-1ab6glmp1-ruVdAwy1lU8ic5gA3mCByA

- Write us an email at notebook@wekeo.eu

SUBMITTING A JUPYTER NOTEBOOK

The final submission of your Jupyter notebook must be made by September 4, 2022 (4:59 PM CEST)
on the submission platform, and each valid submission must consist of:

1. A link to a Jupyter notebook or the notebook (.ipynb) itself, the link can be to your own personal Git repository or Google drive or similar.

2. Include any relevant information needed to run the notebook (e.g. an environment file for additional libraries required).

3. Also, submit a .pdf version of the notebook with any outputs displayed.
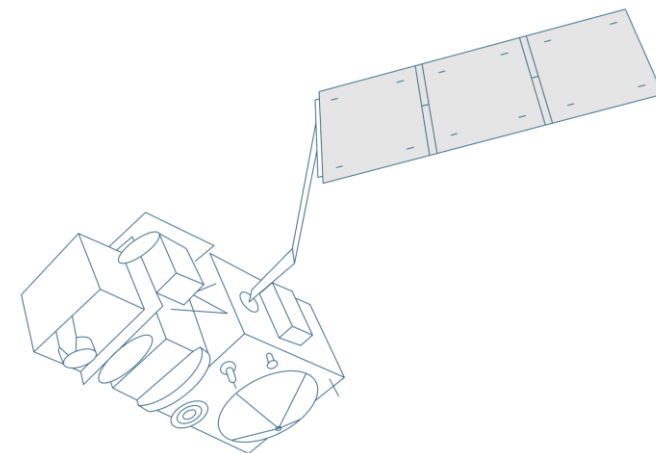
COMPETITION NETIQUETTE

The Jupyter Notebook Competition is a project that encourages the data science community to come together to explore key issues, exchange ideas and collaborate to develop and share content, information and best practices for the creation of an open-science resource.

- Everyone is welcome. We welcome all participants regardless of race, creed, colour, ethnicity, nationality, religion, sex, sexual orientation, gender expression, age, physical appearance, body size, disability, or marital status.

- Be nice to each other. We are dedicated to providing a harassment-free experience for everyone, regardless of race, creed, colour, ethnicity, nationality, religion, sex, sexual orientation, gender expression, age, physical appearance, body size, disability, or marital status. We do not tolerate harassment on our platforms in any form.

- Use your time and energy to innovate for good, not to make the world a worse place. Activities promoting or related to alcohol, tobacco, religion, politics, intolerance, violence, firearms, pornography, obscenity, gambling, or illegal drugs are explicitly excluded from the competition. Just don't. Sexual language and imagery are not appropriate on our platforms.

Failure to obey will result in the removal of the member's account and/or associated content.

For full information about participating in the Jupyter Notebook Competition, read the Terms & Conditions