

MAAP-PAL Challenge Example Workflow

Multi-mission Algorithm and Analysis Platform (MAAP) - Product Algorithm Laboratory (PAL)

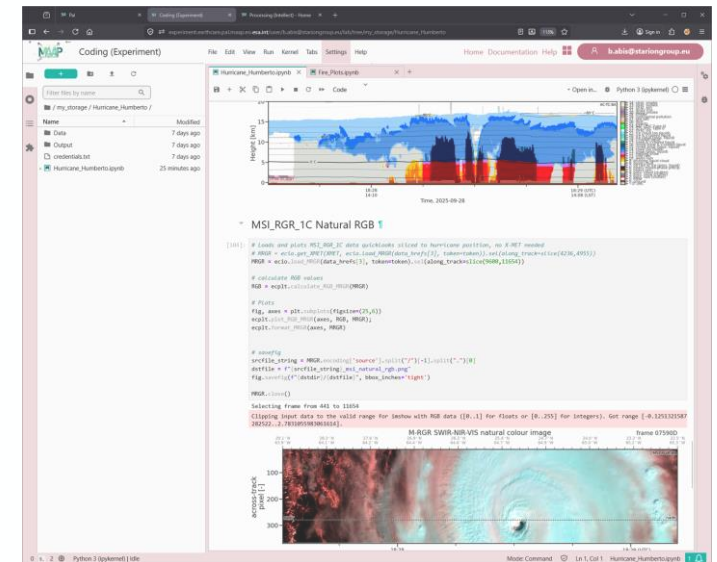
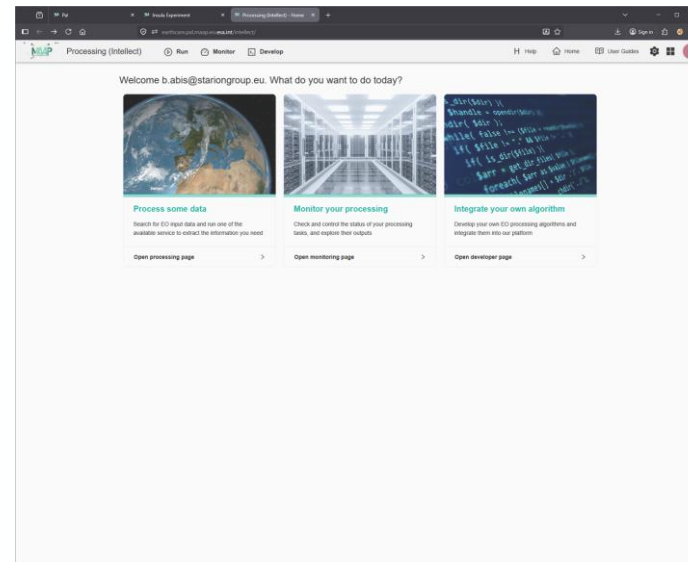
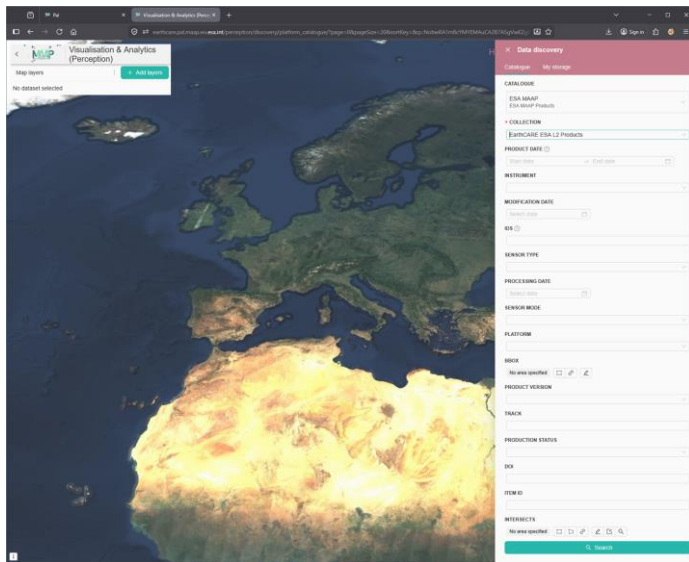
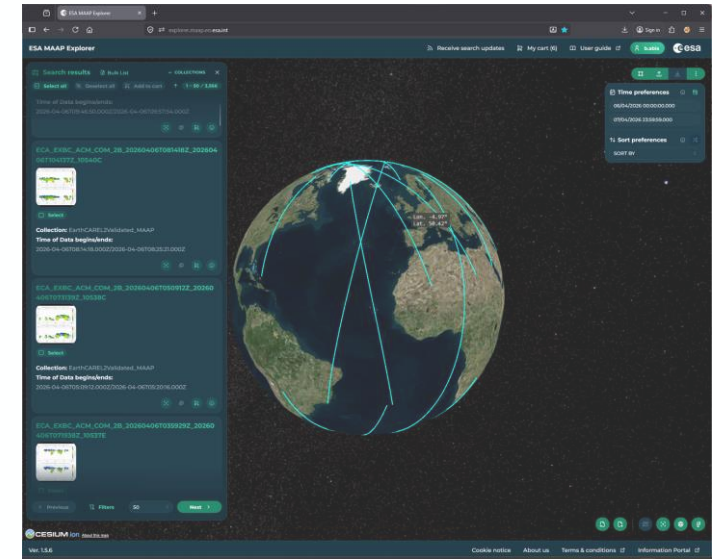


MAAP-PAL platform



Within the EarthCARE MAAP, users have access to

- **Explorer:** the official ESA EarthCARE data dissemination service
- A collaborative environment, the PAL consisting of three main components:
 - **Perception:** for visualisation and analytics
 - **Intellect:** for ad-hoc systematic processing with custom algorithms and processors prototypes
 - **Experiment:** a JupyterLab instance for coding with access to the STAC catalogue and to dedicated libraries





MAAP-PAL challenge



After registration, send your submission by email to ecsatsat.mvcc.ecb@esa.int. The email should comprise:

- Subject containing the phrase "MAAP-PAL-Challenge Entry"
- Body containing a short paragraph explaining **which component(s) of MAAP-PAL** is used and in what way.
- Inclusion of other materials (e.g. analysis scripts, notebooks, PDF file of the presentation) for the jury evaluation is **optional**. These can be provided as attachments in your email or in your public-bucket in the MAAP environment. For the latter, please indicate your MAAP ID in the email body. You can find your MAAP ID, by opening a terminal when you are in my-public-bucket.

The competition:

- Poster and oral presentations are **judged separately**
- **Two favourites** (one per category) selected by the jury **receive a prize each**

Evaluation criteria (the jury will look at the MAAP application rather than scientific value):

- to what **extent** the MAAP-PAL **capability is exploited** in the work
- the **potential** of further MAAP-PAL **exploitation or MAAP-PAL improvement** resulting from the work

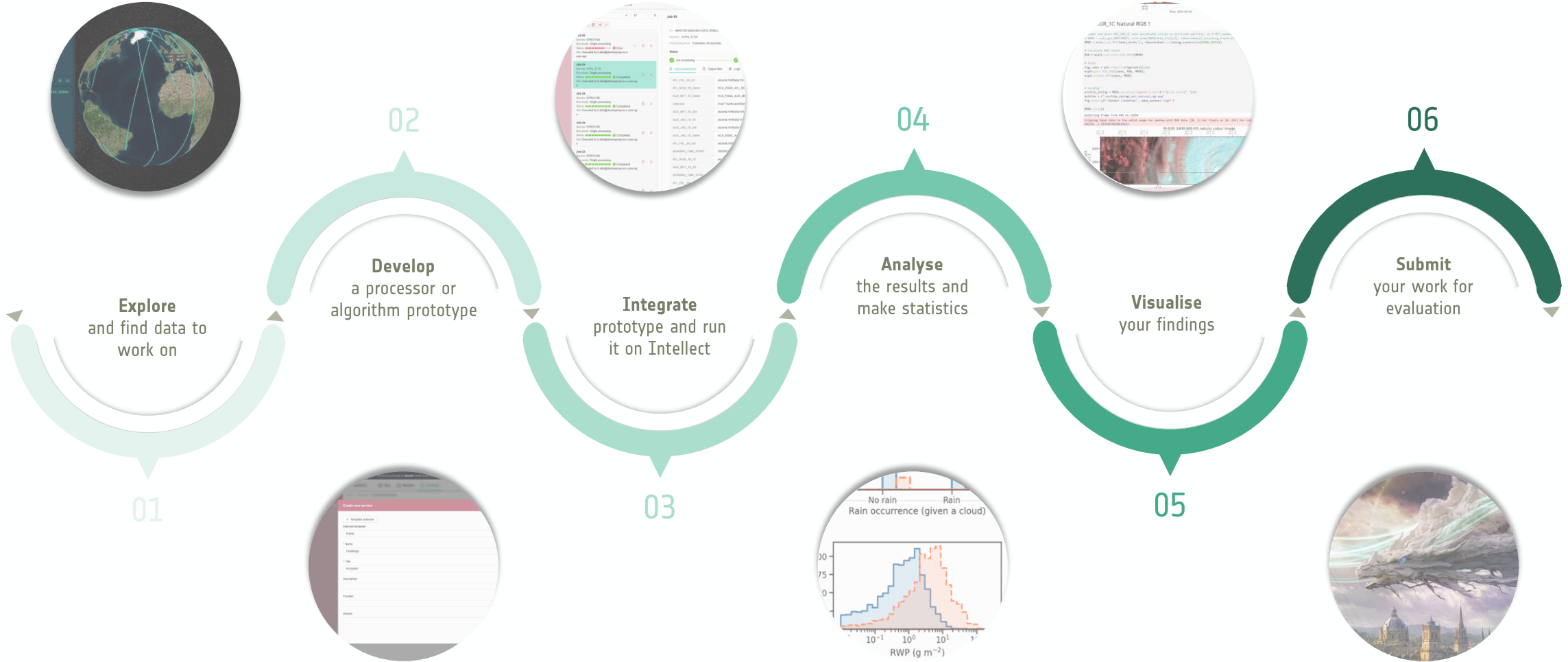
A **participation gift** is prepared by the organizers for all entries meeting the challenge requirements

<https://www.earthcare-science-validation-2026.org/maap-pal-challenge>





MAAP-PAL challenge example workflow





MAAP-PAL example entry



Title: Comparison of Level 2A Products and Variables

MAAP-PAL components used: All three components – JupyterLab/Coding (for development and testing of scripts), Processing (for scalable execution), and Visualization & Analytics (for inspection and comparison of outputs).

This analysis focuses on the comparison of variables from the CPR_FMR_2A, MSI_AOT_2A, and MSI_COP_2A Level 2A products. Using the EarthCARE tools add-on template in the Coding Component, I developed a script that streams data via ESA MAAP STAC APIs. The workflow processes and compares corrected reflectivity and path-integrated attenuation from the CPR_FMR_2A product. The corrected reflectivity is first converted to linear units and vertically integrated before being compared to attenuation values through visualization.

In addition, the analysis incorporates aerosol optical thickness at 670 nm and 865 nm from MSI_AOT_2A, as well as cloud optical thickness from MSI_COP_2A. These variables are harmonized and exported as a multi-band GeoTIFF. All scripts are integrated into the Processing Component, enabling execution across arbitrary EarthCARE frames in a scalable manner. The resulting rasterized outputs from MSI_COP_2A and MSI_AOT_2A can be directly explored and compared within the Visualization & Analytics Component.