



Satellite observations: status & data access points and digital tools.

Part 2: Exploring the platforms

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IR0000032 – ITINERIS, Italian Integrated Environmental Research Infrastructures System
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Mission 4 “Education and Research” - Component 2: “From research to business” - Investment
3.1: “Fund for the realisation of an integrated system of research and innovation infrastructures”



Table of Contents

Part 1:

ESA Intro and Missions

ESA/Copernicus DATA Access

Earth Explorer and Heritage Mission Data Access

Sentinel-5p and EarthCARE Missions

Cal/Val activities: EVDC and DIVA

Part 2

Exploring the platforms:

- Copernicus Data Space Ecosystem
- EVDC: OPOT, GEOMS tool, Processing
- DIVA - Validating AOD L2 from satellite using advanced ground based retrievals (Jupyter Notebook)

ITINERIS training - Utilities for participants:

Copernicus Data Space Ecosystem CDSE

<https://dataspace.copernicus.eu/>

Click on Login icon 

Register and create an account in 60 seconds.

ITINERIS training - Utilities for participants:



Cal/Val Platforms:

DIVA (Demonstration of an Integrated approach for the Validation and exploitation of Atmospheric missions:
<https://diva.inoe.ro/>)

Please request an account for DIVA via the
<https://www.grasp-open.com/register/> specifying in the Domain of application: "ITINERIS participants".
Then go to the DIVA platform:
<https://cloud.grasp-sas.com/>

EVDC (ESA atmospheric Validation Data Center)
<https://evdc.esa.int/>

username: evdccourse
password: iO527JCu33PxcE3Yv

Case Studies: Wildfire in Canada

20 June 2023

<https://dataspace.copernicus.eu/>

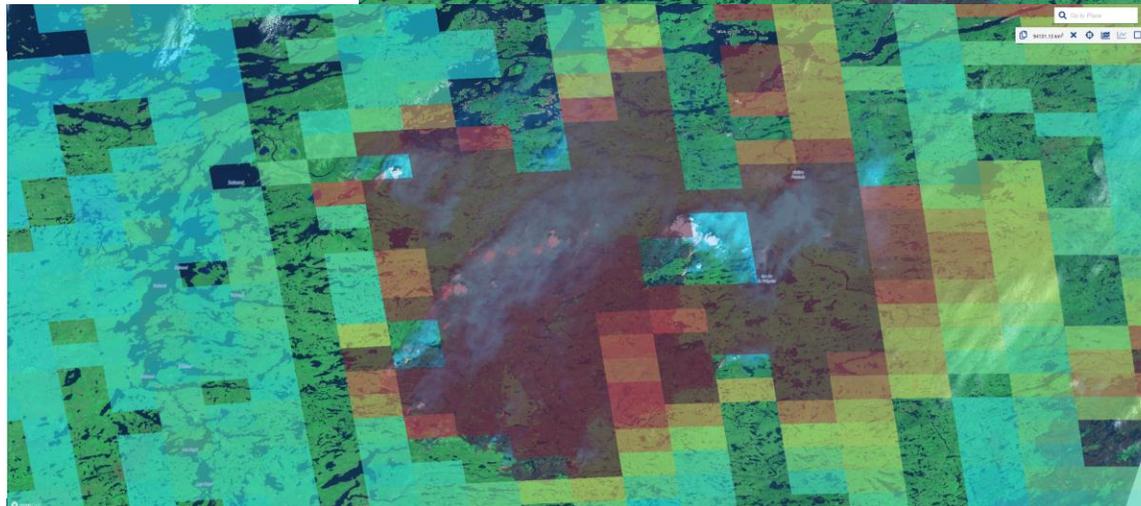
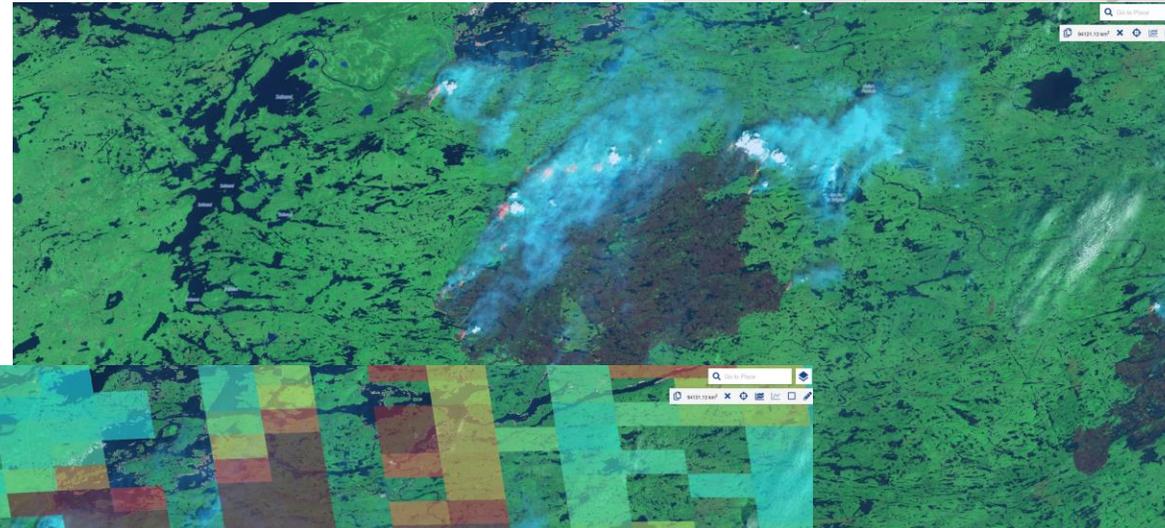
Copernicus Browser – login

Quebec Area

Date 2023-06-20

Sentinel 2 L1C – SWIR
(add compare, pin)

Sentinel-5p CO
(add compare, pin)



Case Studies: Sahara dust event 01 April 2024

<https://dataspace.copernicus.eu/>

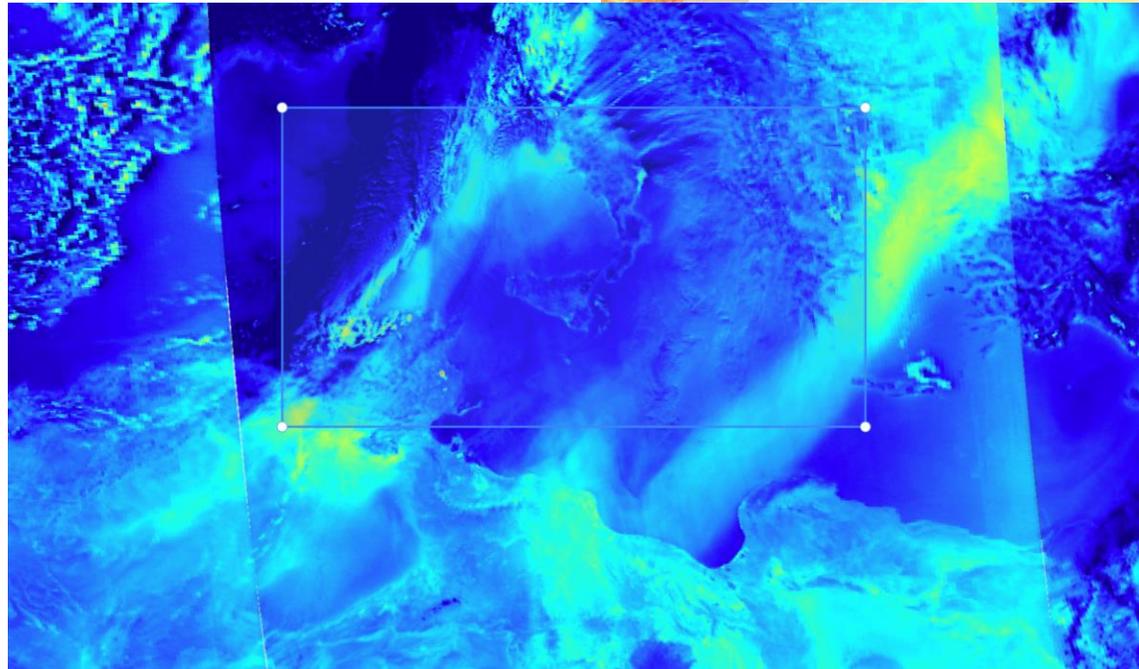
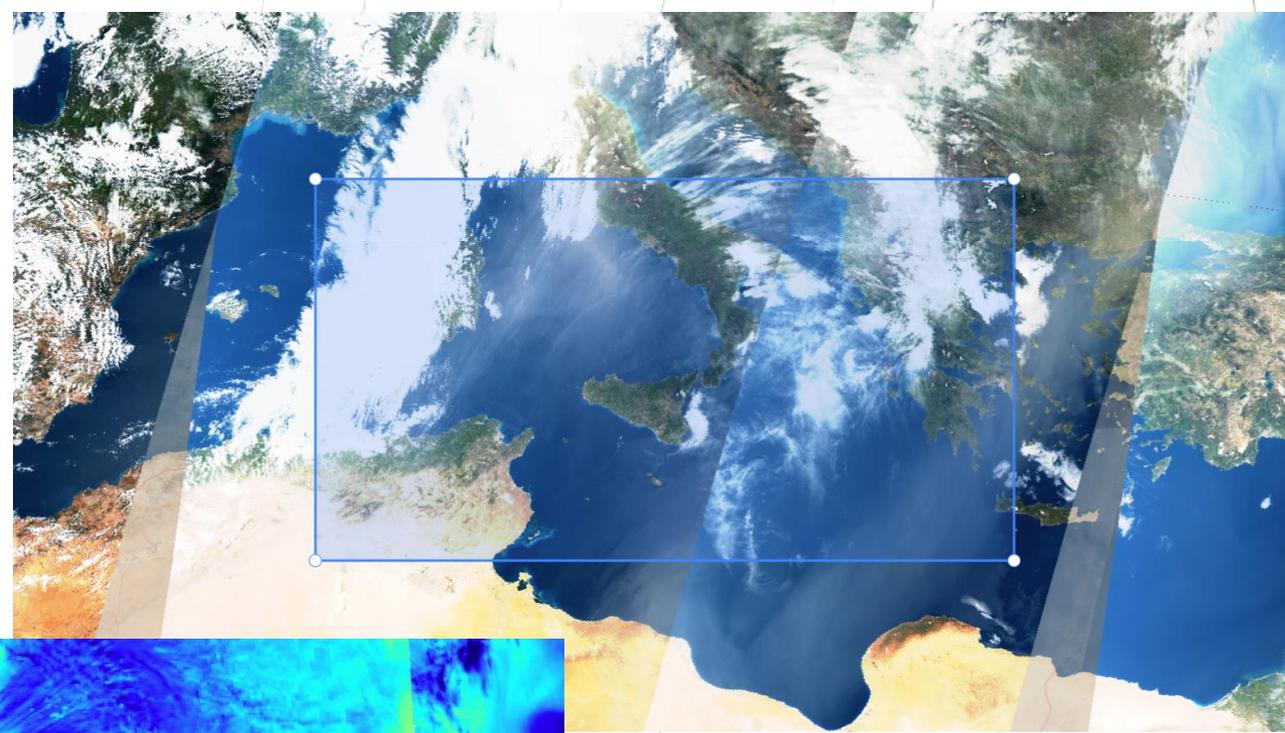
Copernicus Browser – login

Mediterranean area

Date 2024-04-01

Sentinal 3 - L1 – OLCI EFR
(add compare, pin)

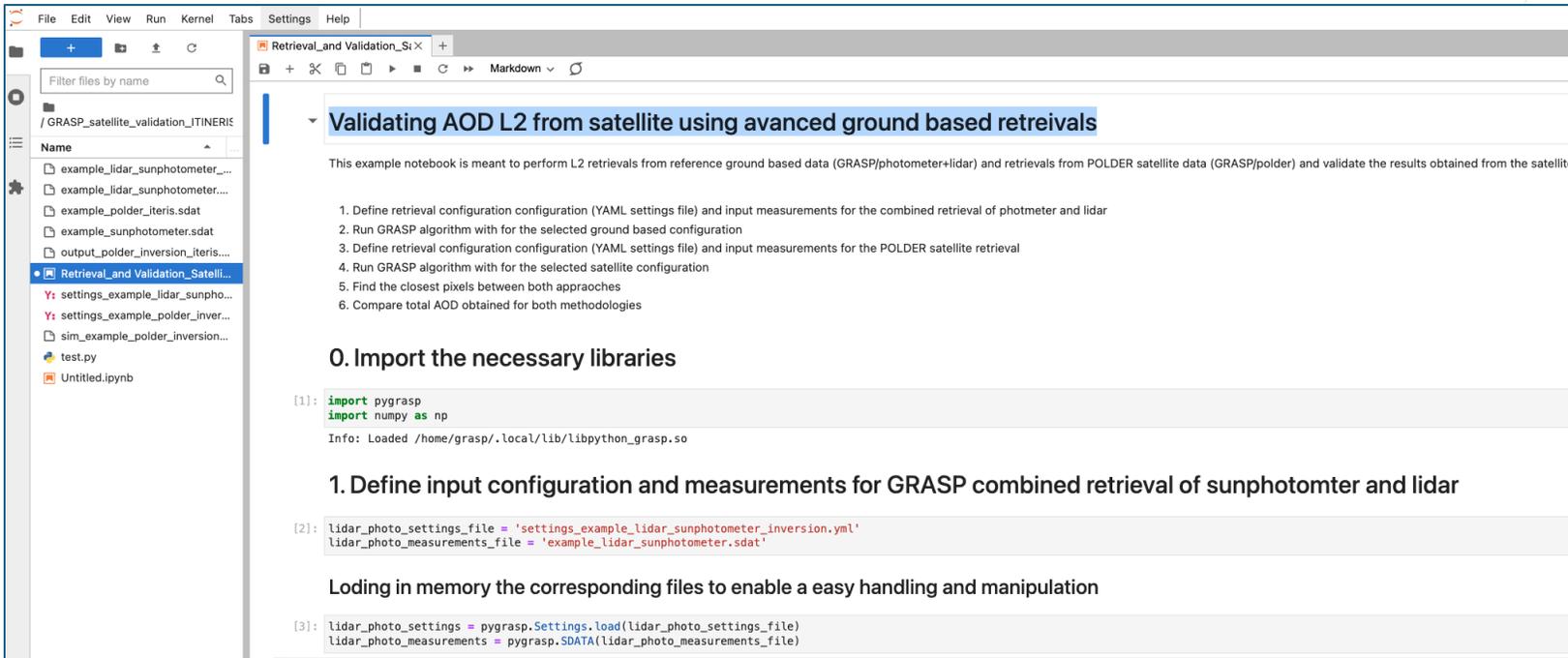
Sentinel-5p AER AI, LH
(add compare, pin)



DIVA: Validating AOD L2 from satellite using advanced ground-based retrievals

Packet : GRASP_satellite_validation_ITERIS_v2.zip

> step by step Jupiter notebook



The screenshot shows a Jupiter notebook interface. The title bar reads "Retrieval_and Validation_Satelli...". The notebook title is "Validating AOD L2 from satellite using advanced ground based retrievals". The first cell contains the following code:

```
[1]: import pygrasp
import numpy as np
Info: Loaded /home/grasp/.local/lib/libpython_grasp.so
```

The second cell contains the following code:

```
[2]: lidar_photo_settings_file = 'settings_example_lidar_sunphotometer_inversion.yml'
lidar_photo_measurements_file = 'example_lidar_sunphotometer.sdat'
```

The third cell contains the following code:

```
[3]: lidar_photo_settings = pygrasp.Settings.load(lidar_photo_settings_file)
lidar_photo_measurements = pygrasp.SDATA(lidar_photo_measurements_file)
```

The notebook also includes a list of steps:

1. Define retrieval configuration configuration (YAML settings file) and input measurements for the combined retrieval of photometer and lidar
2. Run GRASP algorithm with for the selected ground based configuration
3. Define retrieval configuration configuration (YAML settings file) and input measurements for the POLDER satellite retrieval
4. Run GRASP algorithm with for the selected satellite configuration
5. Find the closest pixels between both approaches
6. Compare total AOD obtained for both methodologies

Section 0: Import the necessary libraries

Section 1: Define input configuration and measurements for GRASP combined retrieval of sunphotometer and lidar

Loading in memory the corresponding files to enable a easy handling and manipulation

EVDC

Overpass tool -> Find overpasses of Sentinel-5p e.g.: over Potenza lat: 40.64; long: 15:80

Date range 30/01/2025 to 05/02/2025

EVDC cal/Val data query

EVDC Satellita data query

GEOMS tool

Processing



THANKS!

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