Virtual Research Environment initiatives as part of ODATIS, the French Ocean data cluster

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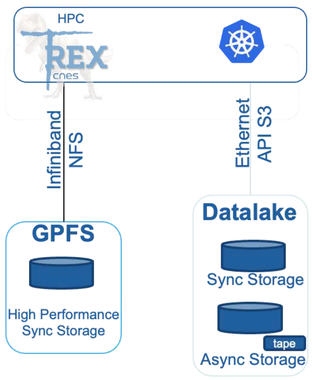
Abstract:
As part of the French Ocean data cluster ODATIS (from the Data Terra Research Infrastructure), we showcase the Virtual Research Enviroment (VRE) tools and services offered by CNES and Ifremer. In particular, we present both the CNES and Ifremer (Dataromor) JupyterHub platforms for hosting projects (high computing power with CPU and GPU capacities, very fast and optimized remote access to data products, etc.) together with specific Pangeo-based libraries, powerful tools and dedicated tutorials to illustrate simple use cases.

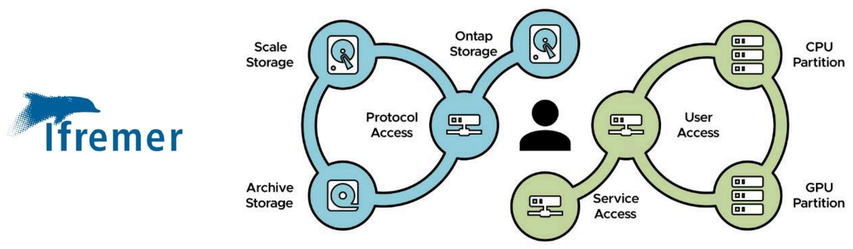
ODATIS Data & Service Centers

Storage & compute resources

Trex (CNES)
DatArmor (Ifremer)

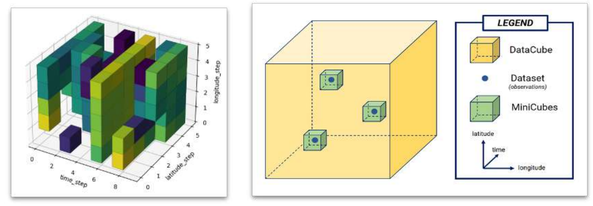
Two HPC-type data and computing centres combining computing resources and storage dedicated to hosting and processing massive amounts of data.

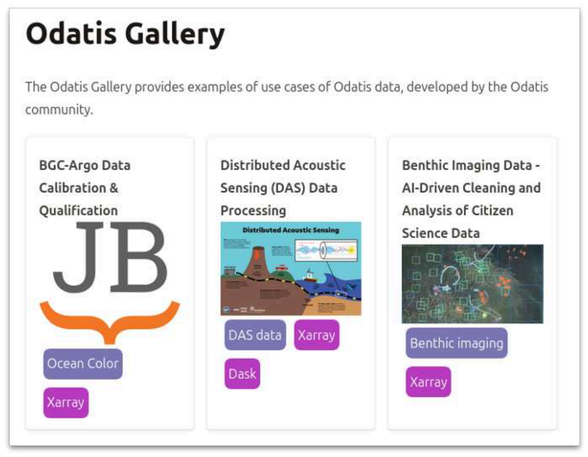




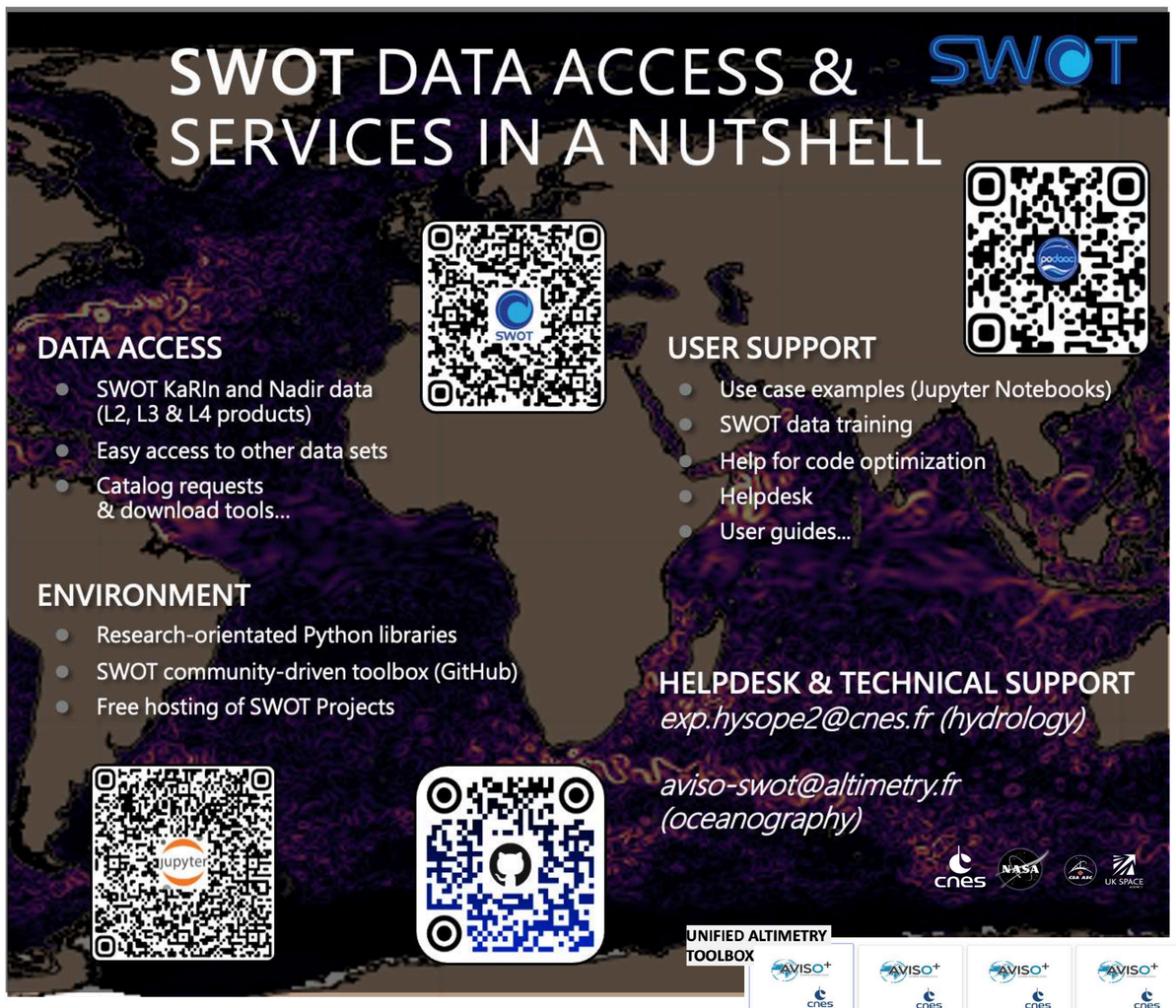
Tools & Services

PytCube

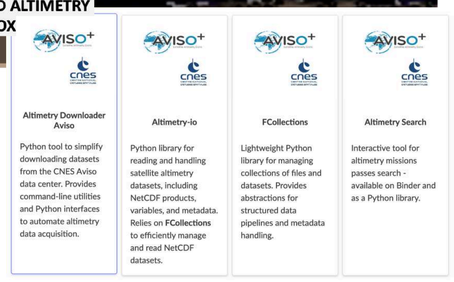




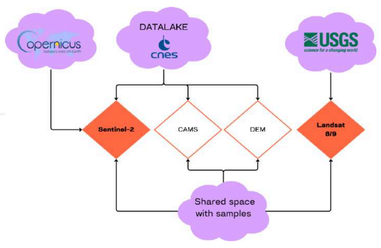
SWOT CNES VRE platforms



UNIFIED ALTIMETRY TOOLBOX



Coastal Ocean Color VRE platform



The steps

1 Download the notebook you need

You can view the notebook catalog on the Tutorials page.

If you are new to manipulating satellite images with Python, we recommend starting with the 'basics' notebooks. Otherwise, you can choose the section that interests you. By clicking on a notebook, you can view it with its outputs.

You can retrieve pieces of code by copying them, but if you want to launch the entire notebook, you can download it at the biginning of the page and then can move on to the next step.

2 Copy it on your CNES home

To copy the notebook to your TREX space, we will use the scp method described on the CNES wiki.

- Open a terminal on your machine
- Go to your download directory (or to the folder containing the downloaded notebook if you have moved it).
- Transfer the notebook using the scp command as described below:

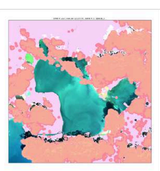
```
scp sandbox_example_notebook.ipynb user@trex.cnes.fr:
```

3 Visualise the notebook on JupyterHub

Image processing

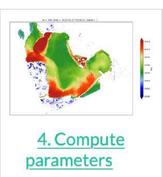
With the notebooks below, you will learn how to perform each part of image processing. For a better understanding, we recommend that you follow the steps in order, but it is also possible to focus on a single step.

1. Data access
How to access and import data from the datalake

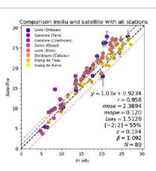


2. Masking
Create and apply cloud and water masks

3. Atmospheric correction
Create and apply cloud and water masks



4. Compute parameters
Computation and display of water quality parameters



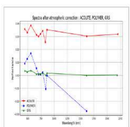
5. Validation
Validation of results with field measurements

Atmospheric correction

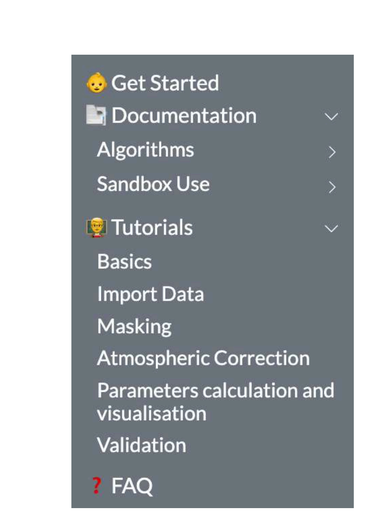
POLYMER
Polymer
Apply Polymer atmospheric correction

ACOLITE
Acolite
Apply Acolite atmospheric correction

GRS
GRS
Apply GRS atmospheric correction



Comparison
Compare the L2A images obtain with the different algorithms



SCAN ME

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