



AVISO DATA PRODUCTS & SERVICES

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AVISO DATA PRODUCTS & SERVICES

See AVISO
Poster

DATA PRODUCT TYPES

>60

- Level-0 to Level-4 satellite products
- Experimental to nearly-operational
- Along-track to gridded products
- Near-real-time to Delayed Time...

DISTRIBUTION SERVICES

6

AVISO CNES Data Center
THREDDS (OPeNDAP,
HTTPS, WMS,...)

FTP/SFTP
S3 Protocole
(restricted)

PRODUCTION TEAMS

>25

CNES
CLS
CTOH
ACRI-ST, Magellium...

VISUALISATION SERVICES

2

ODL/OVL AVISO CalVal
(ESA/CNES/Ifremer)
Indicators of Climate Change (e.g.,
GMSL, OHC ENSO...)

SATELLITE MISSIONS

>20

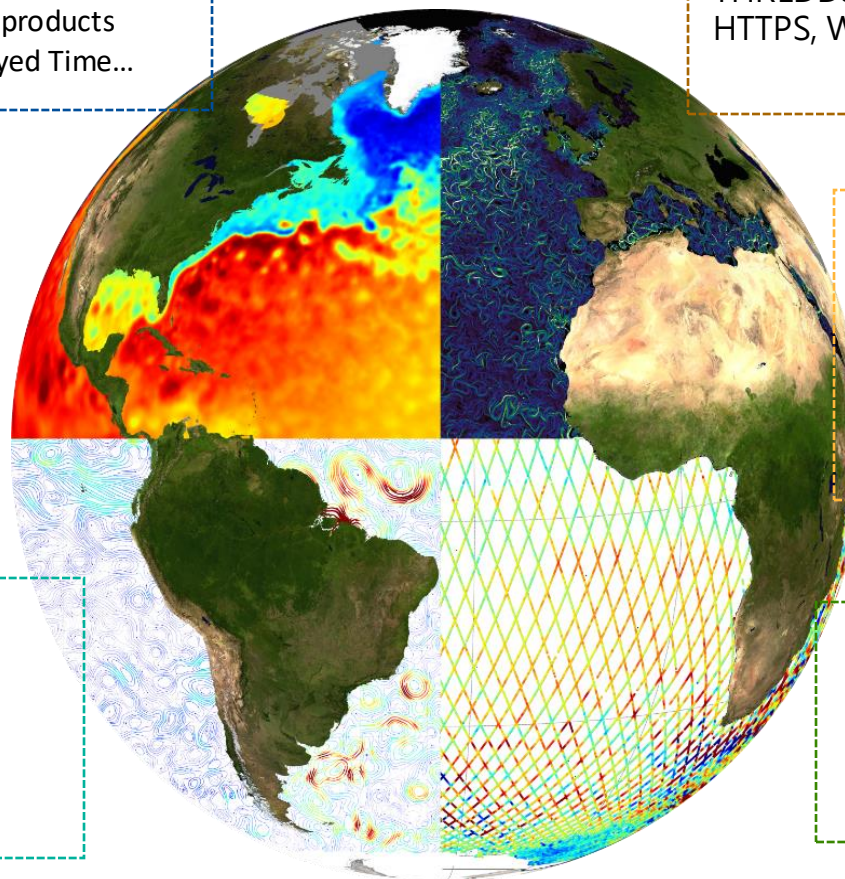
Jason-1/2/3
Sentinel-3A/B
Sentinel-6A MF/B

SARAL
CFOSAT
SWOT...

DATALABS (VREs)

2

SWOT Ocean (CNES/CLS)
Water Quality (CNES/Magellium)



Planned evolutions & future releases

Disclaimer: Target release dates (to be confirmed in the coming months)

SWOT

- L3_LR_SSH
 - V3.0 – Unsmoothed dataset – [August 2026](#)
 - V3.0 – Wind-Wave dataset – [August 2026](#)
- Coastal samples – [Autumn 2026](#)

Ocean & climate

- Mean Dynamic Topography (DT2024) – [Second half of 2026](#)
- Ocean Heat Content Change (v6) – [July 2026](#)

Coastal & high-resolution

- ALTICAP coastal SLA L2P (v2) – [Second half of 2026](#)
- CFOSAT SWIM L2P derived products (v2) – [July 2026](#)

Multi-mission

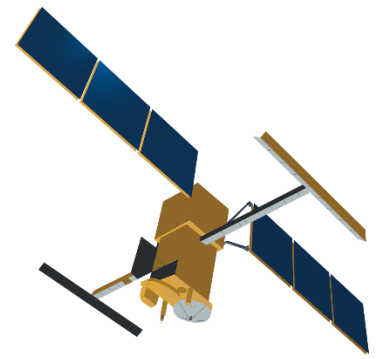
- Level-4 Polar Oceans (MIOST) – [July 2026](#)
- Internal Tides (DT2024) – [July 2026](#)

Sentinel-6

- L2P Delay-Doppler retracking – [Summer 2026](#)
- LRM Climate product (5 Hz) – [Summer 2026](#)

SWOT OCEAN DATA ACCESS & SERVICES

WHERE TO GET SWOT OCEAN PRODUCTS?



ODATIS/AVISO



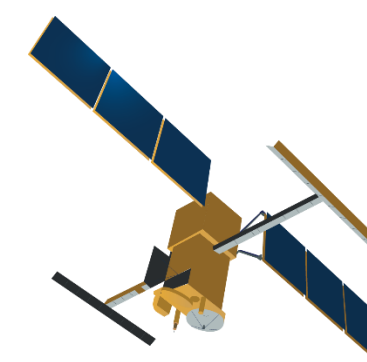
L2

L3/L4

L1B

NASA/PODAAC





Data Access on ODATIS/AVISO

- AVISO CNES Data Center (archive catalog)
- THREDDS (HTTPS & OPeNDAP) and S3 (upcoming)

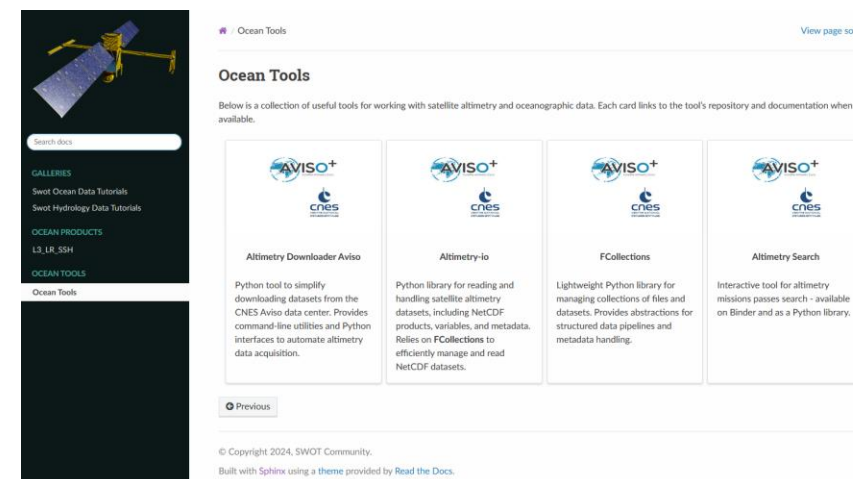
CNES AVISO TDS (with AVISO credentials):

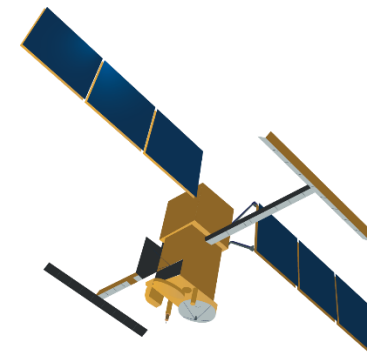
TDS access:

- <https://tds-odatis.aviso.altimetry.fr>
- <https://tds-odatis.aviso.altimetry.fr/thredds/catalog/L2/L2-SWOT-DATA/L2-SWOT.html>
- https://tds-odatis.aviso.altimetry.fr/thredds/catalog/dataset-l3-swot-karin-nadir-validated/l3_lr_ssh.html
- <https://tds-odatis.aviso.altimetry.fr/thredds/catalog/L3/dataset-l3-swot-karin-wind-wave.html>

Altimetry Downloader AVISO

- Open-source tool to easily search and download altimetry products from the Aviso catalog
- Both a Command Line Interface (CLI) and a Python Interface (API)
- [Documentation](#)





FCollections

- Open-source Python library to load datasets from a files set
- Information contained in files and folders names are used to create basic selection filters
- Both local and [remote file systems](#) (FTP, S3, ...) can be explored
- Rich examples for Swot
- Easy to extend for its own usage
- [Documentation](#)

List files...

```
from fcollections.implementations import NetcdfFilesDatabaseSwotLRL2
fc = NetcdfFilesDatabaseSwotLRL2(path)
fc.list_files(cycle_number=1)
```

pass_number	time	level	subset	version	
12	[2024-01-01T03:00:00.000000, 2024-01-01T06:00:00.000000]	ProductLevel.L2	ProductSubset.Expert	PGC0_01	/tmp/tmpa9q8us19 SWOT_L2_LR_SSH_E
11	[2024-01-01T00:00:00.000000, 2024-01-01T03:00:00.000000]	ProductLevel.L2	ProductSubset.Expert	PGC0_01	/tmp/tmpa9q8us19 SWOT_L2_LR_SSH_E

Read data...

```
fc.query(cycle_number=1, pass_number=11)
```

xarray.Dataset

Dimensions: (num_lines: 9860, num_pixels: 69)

▼ Data variables:

ssha	(num_lines, num_pixels)	float64	dask.array<chunksize=(9860, 69), m...	
swh	(num_lines, num_pixels)	float64	dask.array<chunksize=(9860, 69), m...	
cycle_number	(num_lines)	uint16	1 1 1 1 1 1 1 ... 1 1 1 1 1 1 1	
pass_number	(num_lines)	uint16	11 11 11 11 11 ... 11 11 11 11 11	

ex_swot_l3_s... - JupyterLabmain

Non sécuriséhttp://px-1021.px.ds.fr:8891/lab/tree/TESTS/ex_swot_l3_startup.ipynb120 %

SWOT

FileEditViewRunKernelTabsSettingsHelp

ex_swot_l3_startup.ipynb

Markdown

PY311_DEV

CNES AVISOContribution

SWOT L3 KaRIn and Nadir Ocean Data Products

This tutorial will introduce you to some sample SWOT L3 data products and show you how to download these data from AVISO and perform basic plots using Python related libraries.

The Sea Level Anomaly is represented by the `SSHA` fields in L3 LR SSH products. These fields are described as follow:

SLA field	Calibrated	Edited	Filtered
ssha_unedited	X		
ssha_unfiltered	X	X	
ssha_filtered	X	X	X

Note Required environment to run this notebook:

- `xarray`
- `matplotlib` + `cartopy`
- `altimetry_downloader_aviso` : see [documentation](#).
- `altimetry.io` : available [here](#).

Import + code

```
[ ]: import logging
logging.basicConfig(level=logging.INFO)

[ ]: from pathlib import Path

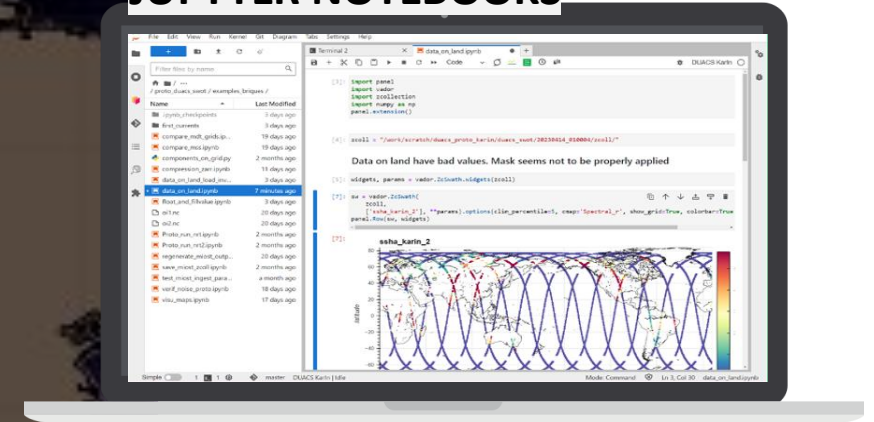
import cartopy.crs as ccrs
import cartopy.feature as cft
import cartopy.mpl.geoaxes as cmplgeo
import cartopy.mpl.gridliner as cmplgrid
import matplotlib.pyplot as plt
```

Simple21PY311_DEV | IdleMode: CommandLn 1, Col 1ex_swot_l3_startup.ipynb0

SWOT DATA ACCESS & SERVICES IN A NUTSHELL

SWOT

JUPYTER NOTEBOOKS



DATA ACCESS

- SWOT KaRIn and Nadir data (L2, L3 & L4 products)
- Easy access to other data sets
- Catalog requests & download tools...



USER SUPPORT

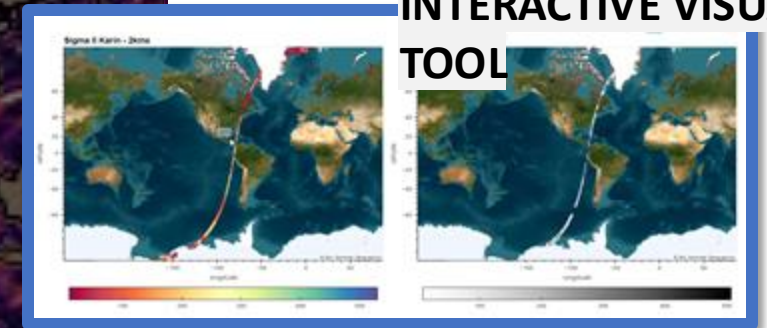
- Use case examples (Jupyter Notebooks)
- SWOT data training
- Help for code optimization
- Helpdesk
- User guides...

ENVIRONMENT

- Research-orientated Python libraries
- SWOT community-driven toolbox (GitHub)
- Free hosting of SWOT Projects



INTERACTIVE VISUALISATION TOOL

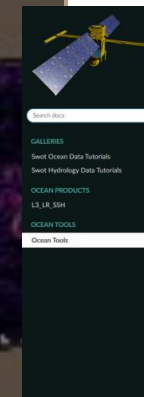


HELPDESK & TECHNICAL SUPPORT

exp.hysope2@cnes.fr (hydrology)

aviso-swot@altimetry.fr (oceanography)

UNIFIED ALTIMETRY TOOLBOX



Below is a collection of useful tools for working with satellite altimetry and oceanographic data. Each card links to the tool's repository and documentation when available.

AVISO+	AVISO+	AVISO+	AVISO+
cnes	cnes	cnes	cnes
Altimetry Downloader Aviso	Altimetry-io	FCollections	Altimetry Search
Python tool to simplify downloading datasets from the CNES Aviso data center. Provides command-line utilities and Python interfaces to automate altimetry data acquisition.	Python library for reading and handling satellite altimetry datasets, including NetCDF products, variables, and metadata. Relies on FCollections to efficiently manage and read NetCDF datasets.	Lightweight Python library for managing collections of files and datasets. Provides abstractions for structured data pipelines and metadata handling.	Interactive tool for altimetry missions passes search - available on Binder and as a Python library.

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Built with Sphinx using a theme provided by Read the Docs.