PO.DAAC SWOT Data Tools, Resources, & Services

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Contact Info:
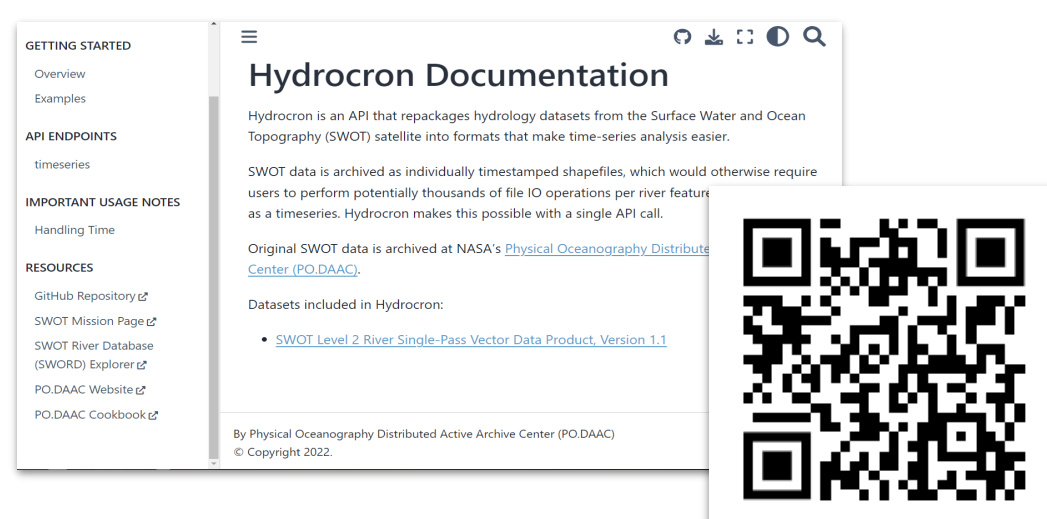cassandra.l.nickles@jpl.nasa.gov
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Tools

Hydrocron Time Series API

Input: Water feature ID (SWOT River reach, node) Future: lake ID, or geospatial bounding box
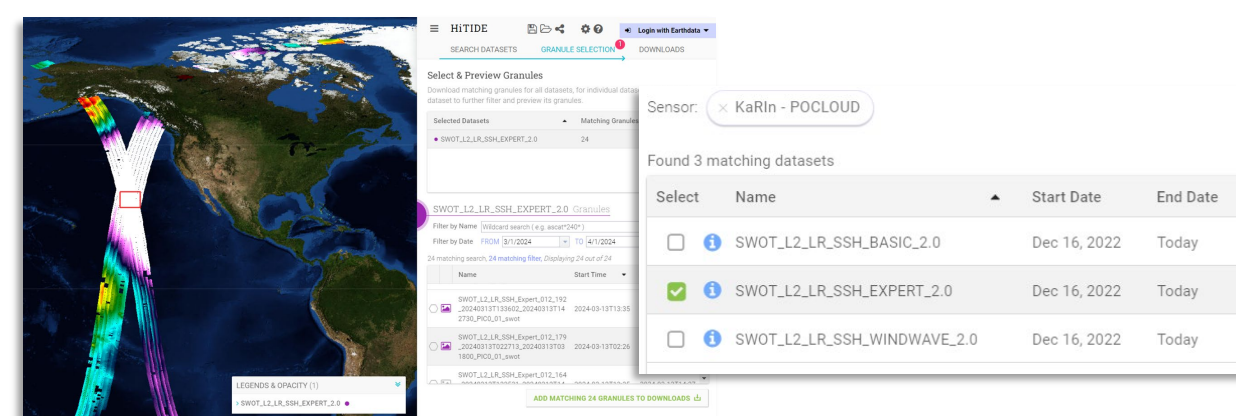**Output:** time series in CSV or GeoJSON

podaac/hydrocron

https://podaac.github.io/hydrocron/intro.html

HiTIDE L2 Subsetter for LR data

https://hitide.podaac.earthdatacloud.nasa.gov/

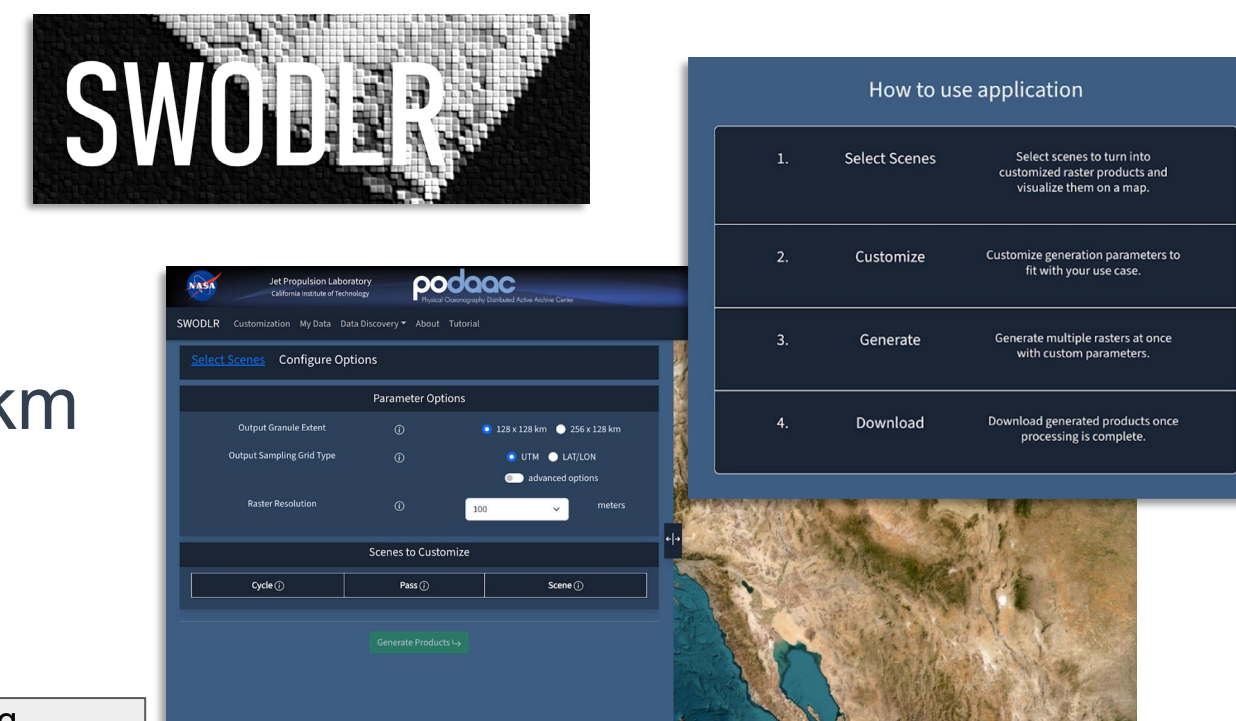• Explore, view coverage, subset and download LR data! Not just spatial search

SWOT On-Demand L2 Raster Generator

SWODLR Customizations
• Custom resolutions
• UTM or geodetic (lat/lon) projections
• 128 x 128 km & 256 x 128 km tile extents

Not a re-gridding technique!
Uses raster algorithms

Current URL:
https://swodlr.podaac.uat.earthdatacloud.nasa.gov/
Future:
https://swodlr.podaac.earthdatacloud.nasa.gov/

Testing environment, still under development

podaac/swodlr
SWOTAlgorithms/Raster-Processor

SWOT HR Data: Earthdata GIS

• EGIS Web Mapping Services in the works: WFS!
• L2_HR_RiverSP product

https://gis.earthdata.nasa.gov/portal/home/
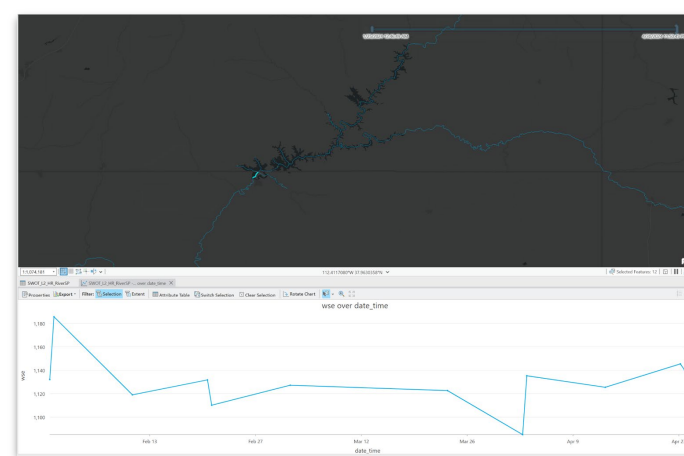
Downloader/Subscriber + *new* Subsetter!
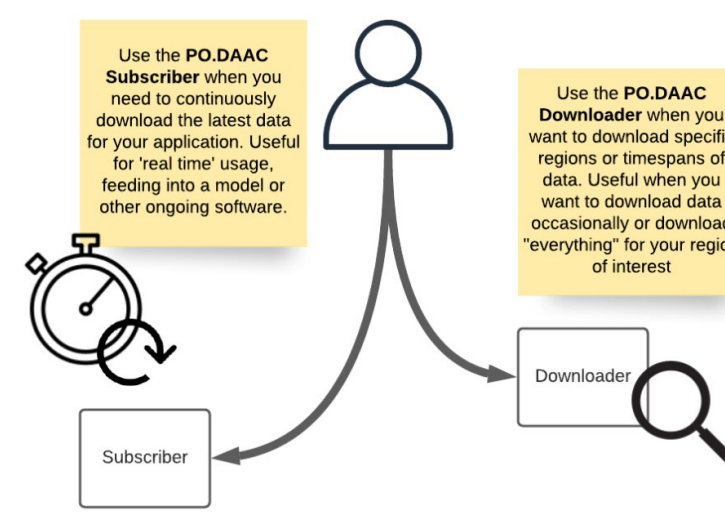
Via Command Line - PO.DAAC subscriber/downloader examples:

Use the **PO.DAAC Subscriber** when you need to continuously download the latest data for your application. Useful for 'real time' usage, feeding into a model or other ongoing software

Use the **PO.DAAC Downloader** when you want to download specific regions or timespans of data. Useful when you want to download data occasionally or download "everything" for your region of interest

Hydrology: These examples will download either the river vector files or the raster files for February 2024:

```
podaac-data-downloader -c SWOT_L2_HR_RiverSP_2.0 -d ./SWOT_L2_HR_RiverSP_2.0/ --start-date 2024-02-01T00:00:00Z --end-date 2024-02-29T23:59:59Z
```

This only downloads 1 hours worth of data for the globe:

```
podaac-data-downloader -c SWOT_L2_HR_Raster_2.0 -d ./SWOT_L2_HR_Raster_2.0/ --start-date 2024-02-01T00:00:00Z --end-date 2024-02-01T01:00:00Z
```

Oceanography: These examples will download modeled sea surface heights for the whole SSH collection and then the anomalies using the subscriber then downloader and finally, subset the data by bounding box:

```
podaac-data-subscriber -c SWOT_L2_NALT_OGDR_SSHA_2.0 -d ./data/SWOT_L2_NALT_OGDR_SSHA_2.0 --start-date 2023-03-29T00:00:00Z

podaac-data-downloader -c SWOT_L2_NALT_OGDR_SSHA_2.0 -d ./data/SWOT_L2_NALT_OGDR_SSHA_2.0 --start-date 2023-08-23T00:00:00Z --end-date 2023-08-02T00:00:00Z

podaac-data-downloader -c SWOT_L2_LR_SSH_Basic_2.0 -d ./data 2023-11-25T00:00:00Z --ed 2023-12-15T00:00:00Z b=-22.0,-27.6,5.0 --subset
```
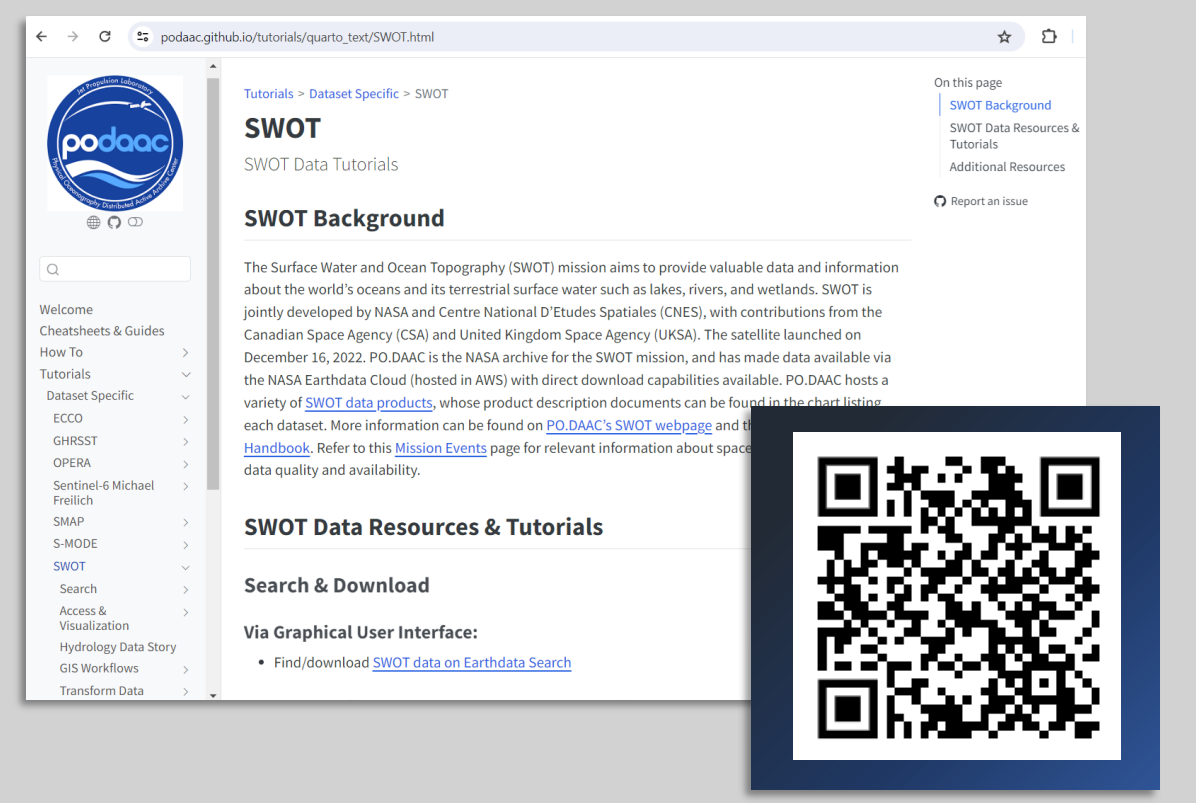
https://podaac.github.io/tutorials/quarto_text/DataSubscriberDownloader.html

The PO.DAAC Cookbook: SWOT Chapter

https://podaac.github.io/tutorials/quarto_text/SWOT.html
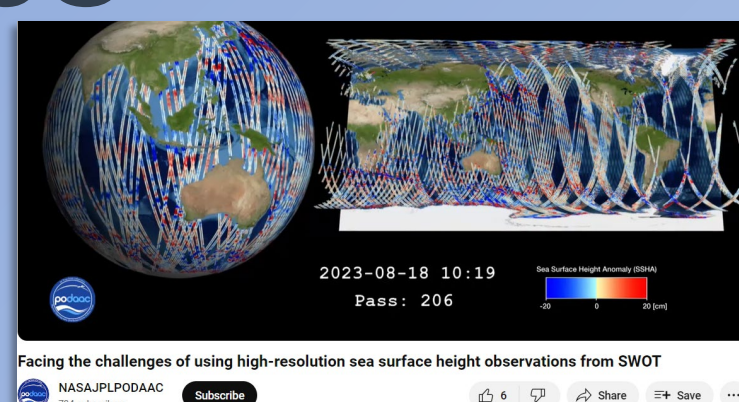
AWS Cloud
Local Machine

SWOT	Access & Visualization	GIS Workflows
Welcome	SWOT Hydrology	StoryMap
Search	SWOT Oceanography	Shapefile Exploration
via GUI	Hydrocron Time Series	Datetime Conversion
Programmatically	Raster Multifile	Transform Data
via Command Line	Quality Flags	Hydrology Time Series
Spatial Coverage	Hydrology Data Story	NetCDF to Geotiff
Tips: Spatial Search		Tools

Highlights!

• **Tips and tricks** for spatial search, quality flags & more!
• KMZ file of SWOT tiles, scenes, & passes
• In cloud and on premise **Jupyter Notebook** examples for LR & HR data!
• Hydrocron Time series multi-reach tutorial
• **SWORD** reaches/nodes searchable via **FTS API**
• **GIS** transformations and workflows

Additional Resources

Accessing Data for the World's Water with the SWOT Mission
NASA Earthdata
13K subscribers   Subscribe

https://www.youtube.com/watch?v=IKtFMfHH5Ic

Facing the challenges of using high-resolution sea surface height observations from SWOT
2023-08-18 10:19

https://www.youtube.com/watch?v=NQGm1QnDd5o&t=2s

Diving Into SWOT Hydrology Data

A workshop hosted by NASA's Physical Oceanography Distributed Active Archive Center (PO.DAAC) explored data and derived observations from the Surface Water and Ocean Topography (SWOT) mission.

Dr. Cassandra Nickles and Dr. Catalina Taglialatela
NASA's Jet Propulsion Laboratory, California Institute of Technology
Mar 18, 2024

https://www.earthdata.nasa.gov/learn/blog/diving-into-swot-hydrology-data

SWOT Data Access Workshop by NASA's PO.DAAC
In person at AGU Chapman: Remote Sensing of the Water Cycle

https://podaac.github.io/2024-SWOT-Hydro-Workshop/

Product Description Documents & User Handbook

Dataset	Description	Coverage	Format	Product Description Document (PDD)	Algorithm Theoretical Basis Document (ATBD)
L2_HR_PIXC	Point cloud of water mask pixels ("pixel cloud") with geolocated heights, backscatter, geophysical fields, and flags.	Point cloud over tile (approx 64x64 km²); half swath (left or right side of full swath)	netCDF	L2_HR_PIXC Product Description Document	L2_HR_PIXC Algorithm Theoretical Basis Document

SWOT Science Data Products User Handbook
May 1, 2024

https://podaac.jpl.nasa.gov/SWOT?tab=datasets-information&sections=about

Some SWOT Art for fun :)