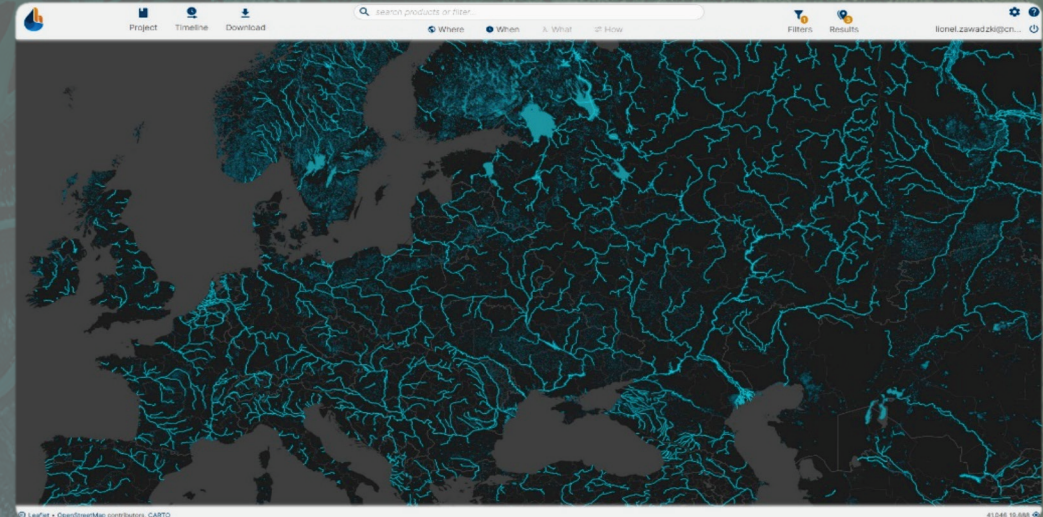
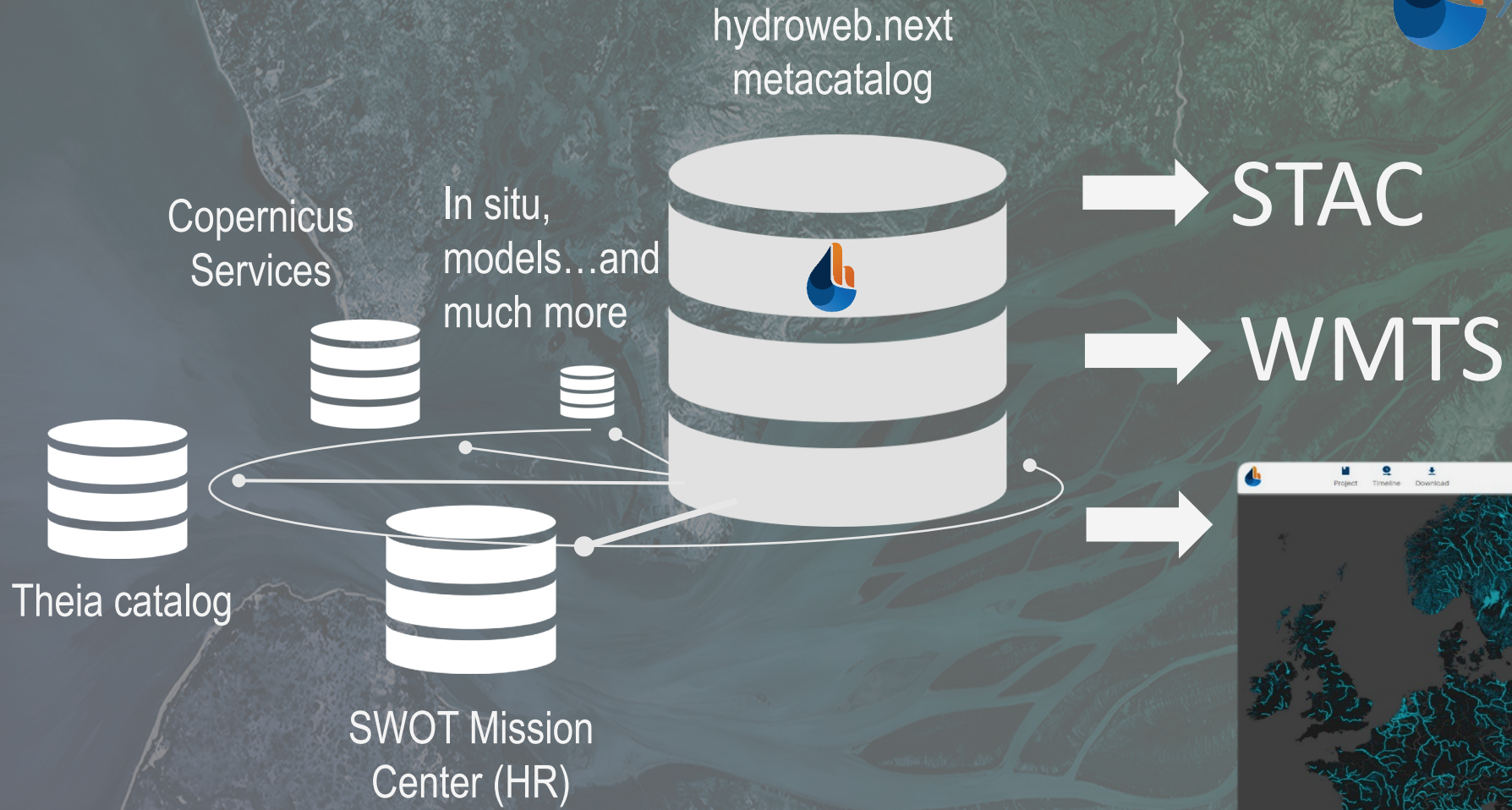




SWOT HR DATA PRODUCTS FROM HYDROWEB.NEXT

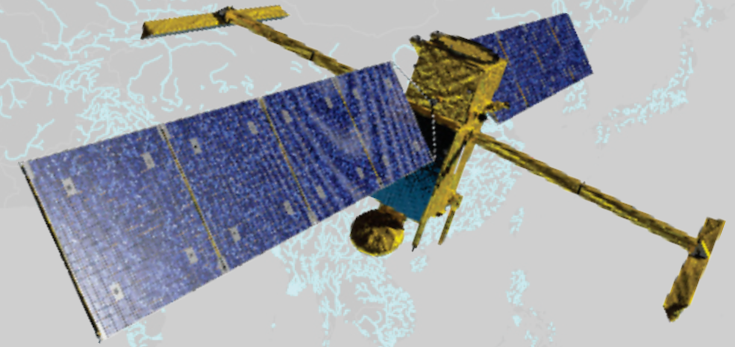
L. ZAWADZKI, B. SPECHT, P. CAUQUIL, T. BARROSO, N. PICOT,
CSGROUP / SOPRA STERIA HYDROWEB.NEXT TEAM

SWOT Science Team Meeting
19-22 September 2023 – Toulouse, France





SWOT hydrology products



SWOT-HR Collections

SWOT Level-1B HR Single Look Complex		(5% only)	.nc
SWOT Level-2 Pixel Cloud			.nc
SWOT Level-2 Pixel Cloud Vector			.nc
SWOT Level-2 HR Raster - 100m			.nc (raster)
SWOT Level-2 HR Raster - 250m			.nc (raster)
SWOT Level-2 HR River Single Pass - Reach			.shp
SWOT Level-2 HR River Single Pass - Node			.shp
SWOT Level-2 Lake Single Pass - Prior			.shp
SWOT Level-2 HR Lake Single Pass - Observed			.shp
SWOT Level-2 HR Lake Single Pass - Unassigned			.shp
SWOT Level-2 HR River Average			.shp
SWOT Level-2 HR Lake Average			.shp
SWOT Prior River Database - SWORD			.shp
SWOT Prior Lake Database (available soon v1.02)			.shp





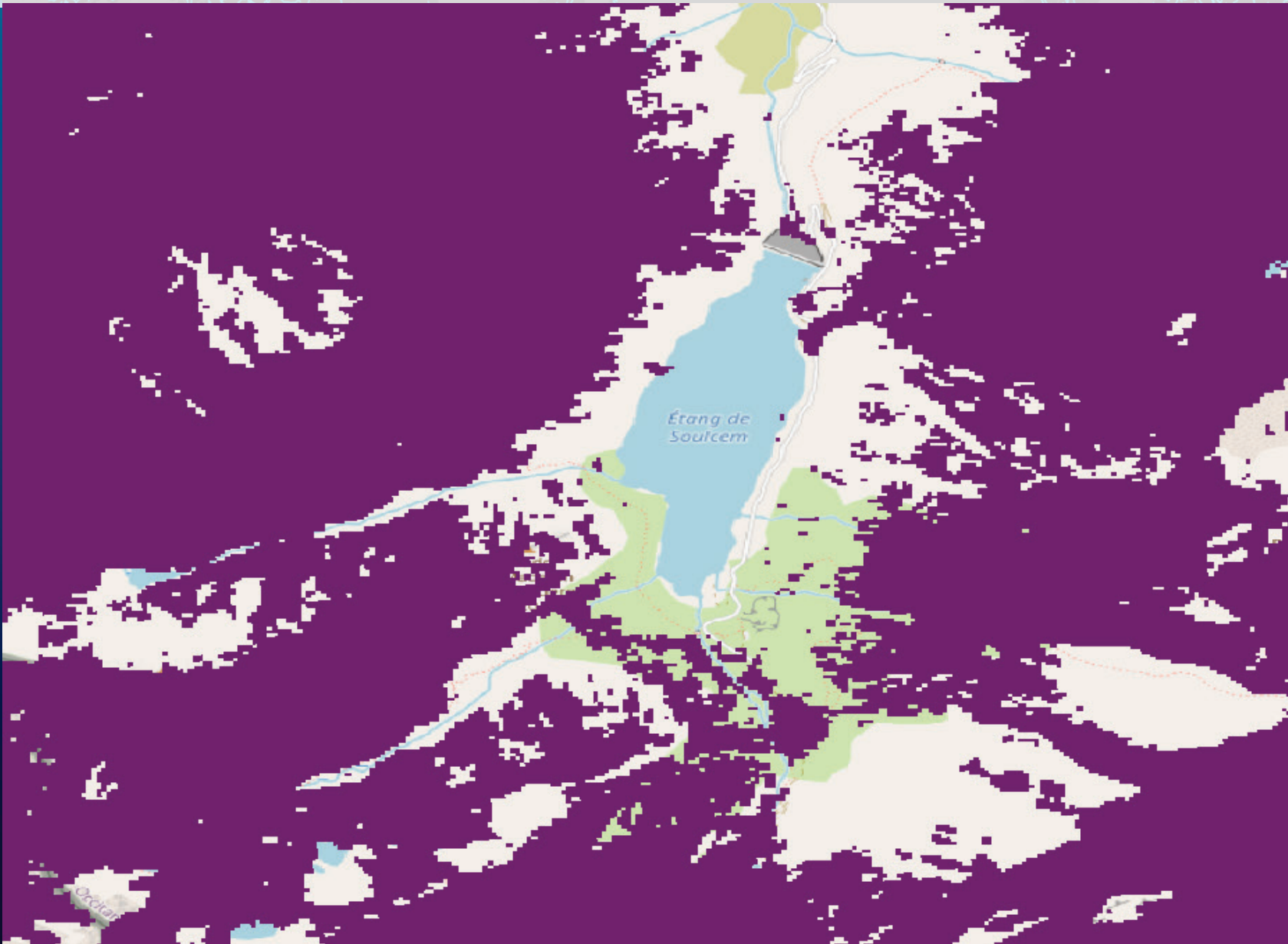
Theia hydrology products



Theia



Short-term (2023) : 4 Essential Water Variables routinely provided



Snow Cover



Fractional Snow Cover (%)



Sentinel-2\MSI



10 meters



5 days



Short-term (2023) : 4 Essential Water Variables routinely provided



Water Mask



Land/water mask



Sentinel-2\MSI



10 meters



5 days



Short-term (2023) : 4 Essential Water Variables routinely provided



Water Quality



Chlorophyl-A,
Suspended Particulate
Matter, Turbidity



Sentinel-2\MSI



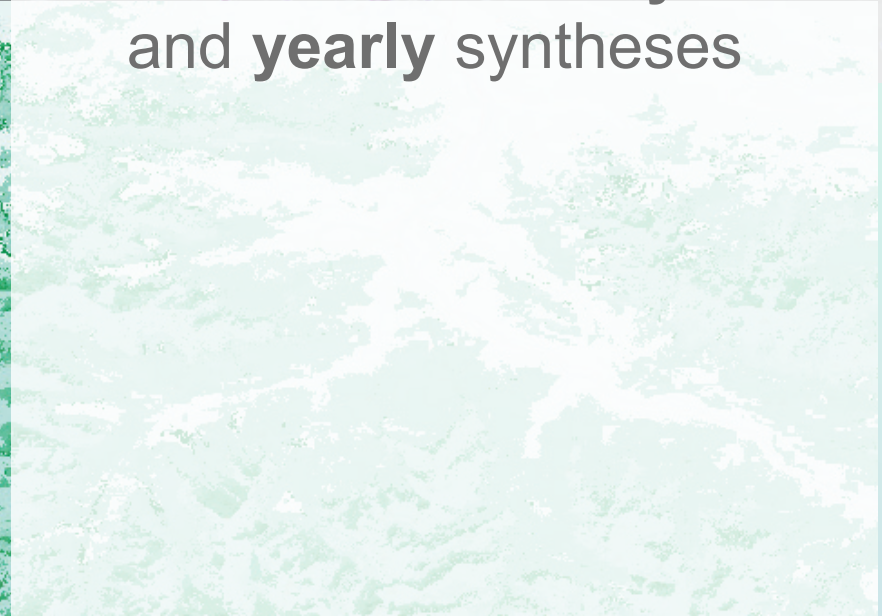
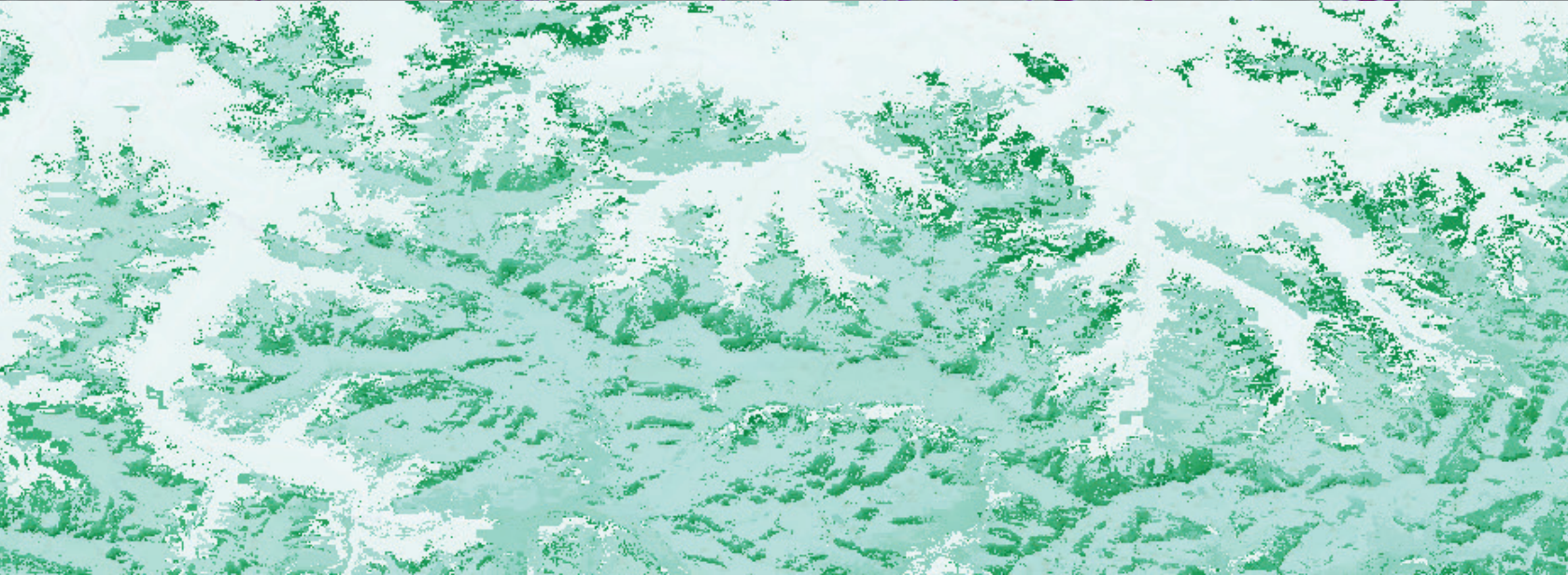
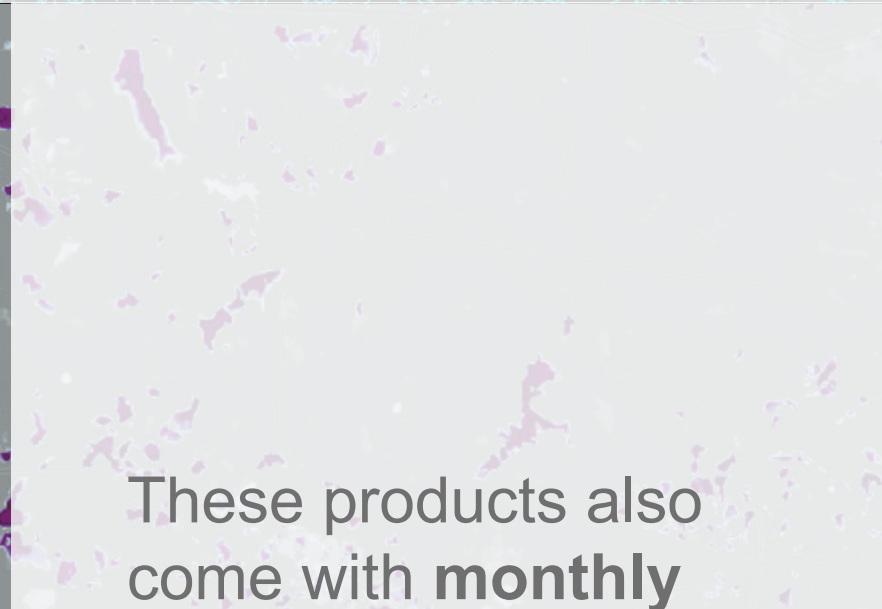
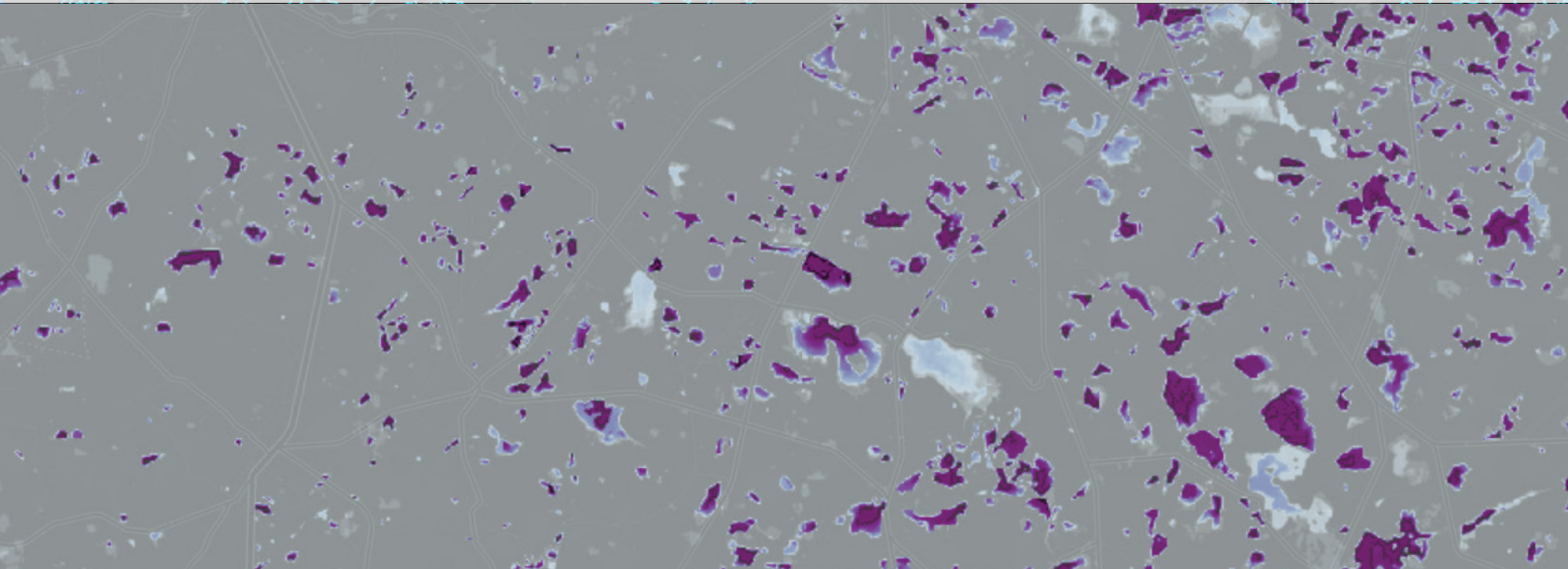
20 meters



5 days



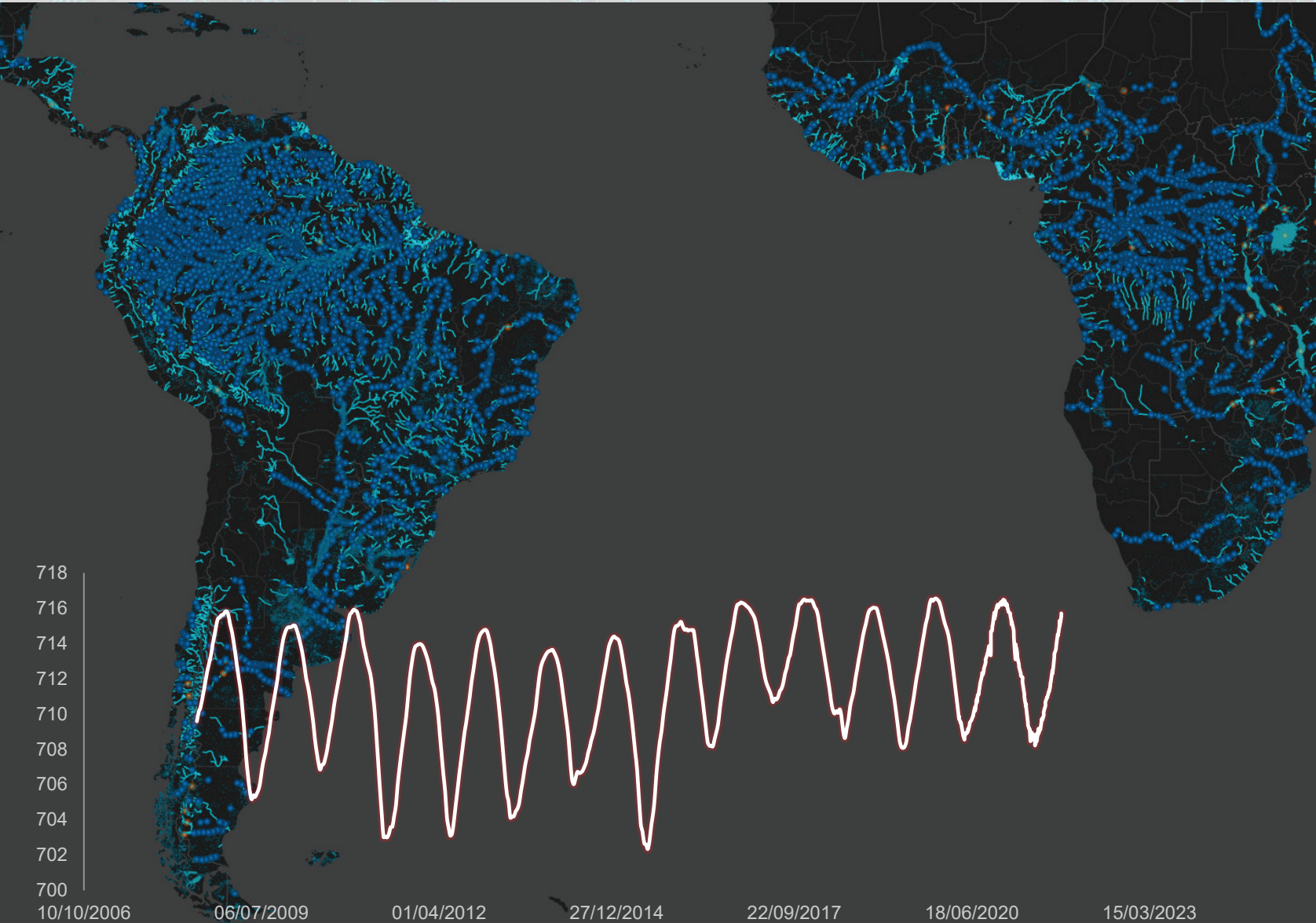
Short-term (2023) : 4 Essential Water Variables routinely provided



These products also come with **monthly** and **yearly** syntheses



Short-term (2023) : 4 Essential Water Variables routinely provided



Water Level (Hydroweb)



River and Lake water Level



Sentinel-3\SRAL, Sentinel-6 and historic nadir altimetry constellation



N/A



1-to-27 days



**an advanced webGIS for
hydrology users**

Project: New project

- SWOT Level-2 HR River Single Pass - Reach
 - Total estimated water surface area
 - Water surface slope with respect to the geoid
 - River Reach Width

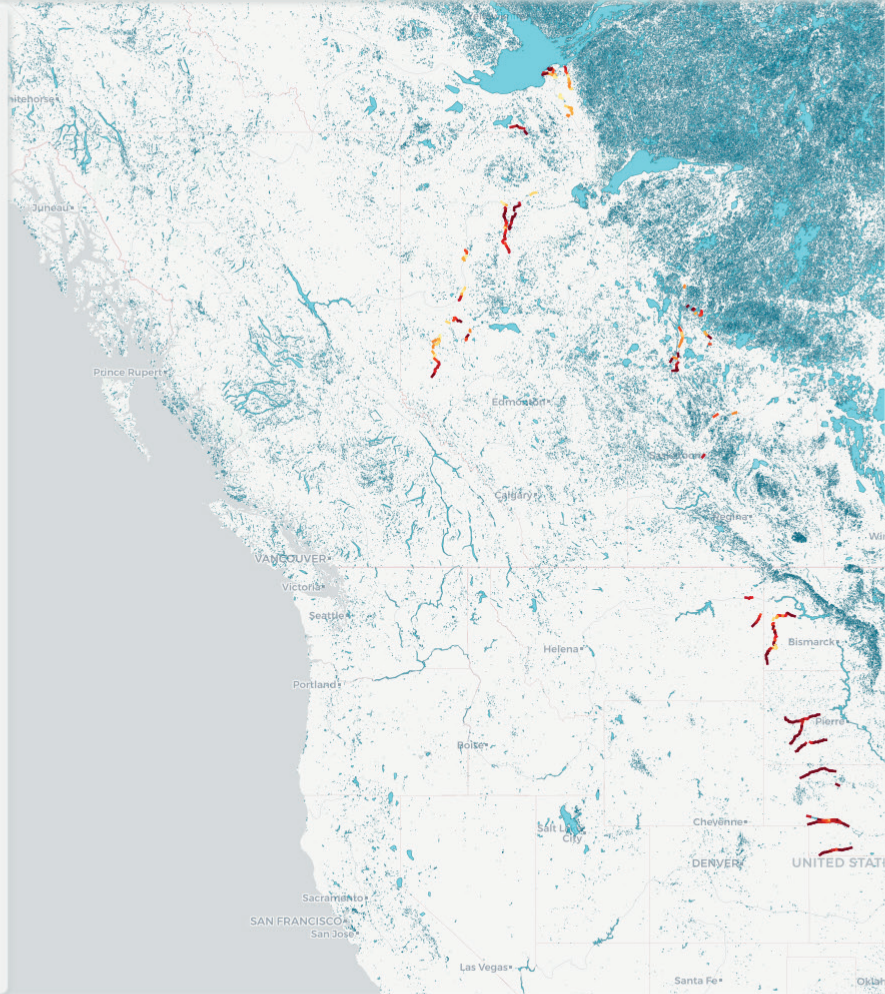
Legend

Width Vector Line Y1OrRd

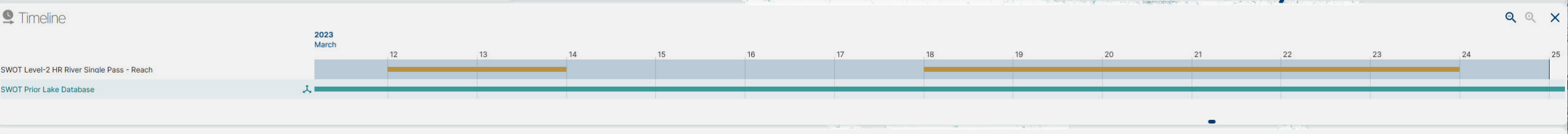
- 0m to 125m
- 125m to 250m
- 250m to 375m
- 375m to 500m
- 500m to 625m
- 625m to 750m
- 750m to 875m
- 875m to 1,000m

Water Surface Elevation

SWOT Prior Lake Database



Pre-visualize data to check their quality, (future: export the stream in your favorite GIS software)

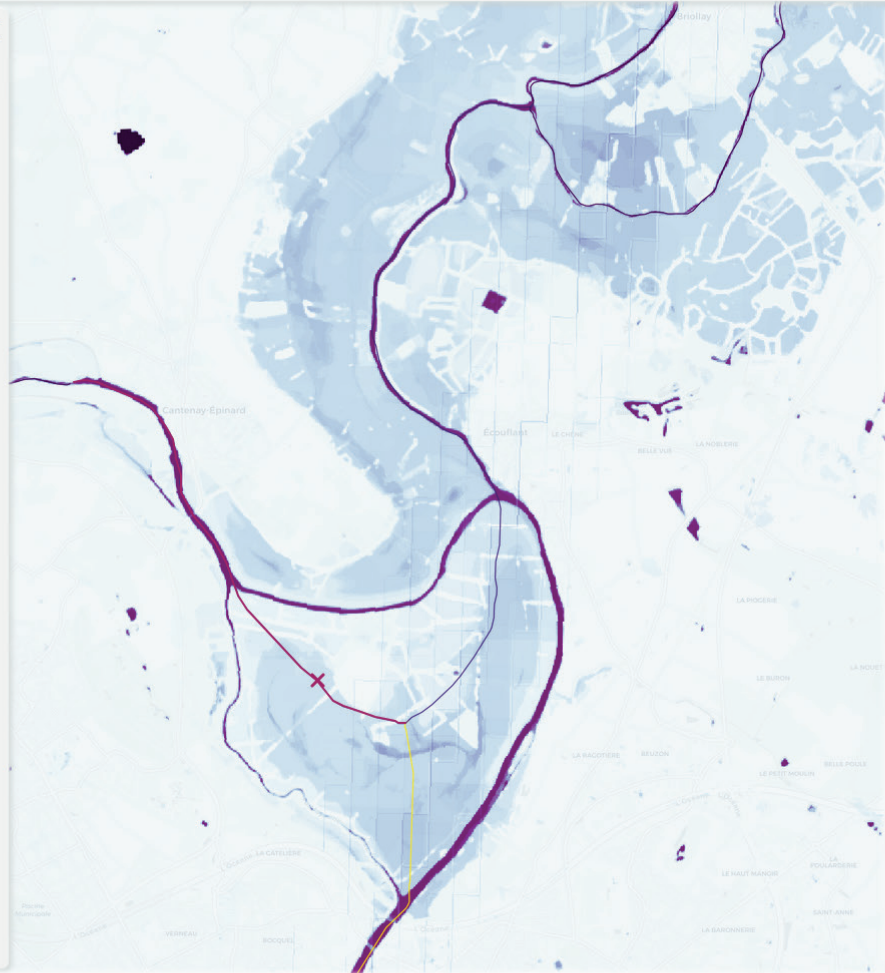


Project: New project

- SWOT lake and rivers
 - SWOT RiverSP Reach (999+)
 - SWOT LakeSP Prior (999+)
 - Total Estimated Water Surface Area
 - Water Surface Elevation
 - Theia Sentinel-2 Surface Water Yearly Synthesis- Level-3B (181)
 - Water Occurrence
- Hydrography
 - SWORD (59)

Legend: White/Blue/Purple

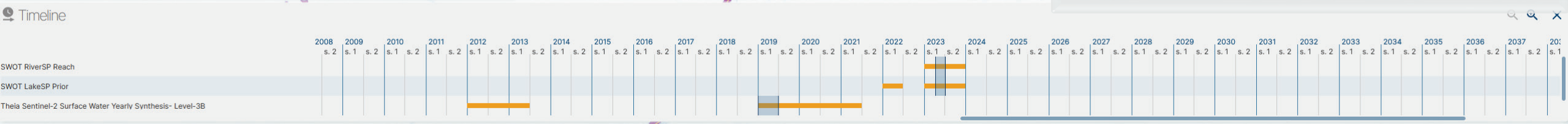
0 0.25 0.5 0.75 1



Map selection

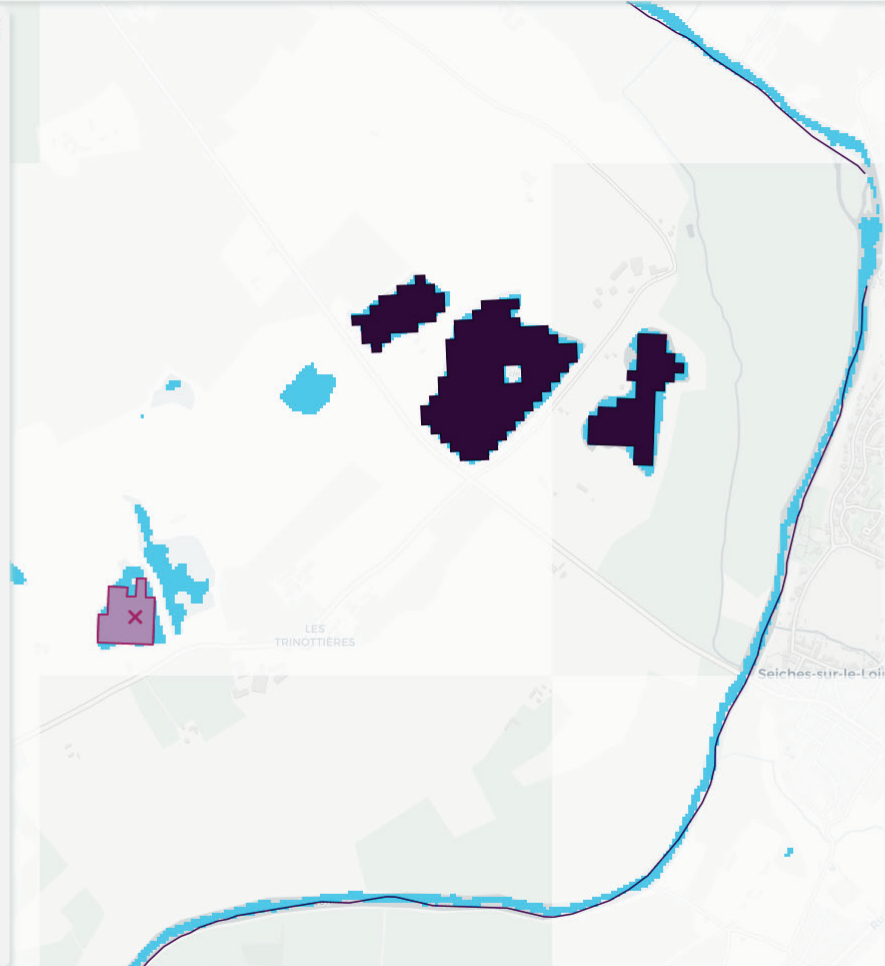
- SWOT RiverSP Reach
 - 23222000021
 - Total estimated water surface area: 2.515E6m²
 - Selection period on timeline
 - Drawing
- Theia Sentinel-2 Surface Water Yearly Synthesis- Level-3B
 - At location 47,511, -0.553
 - Water Occurrence: 0.139
 - Selection period on timeline
 - Drawing

Compare values between products



Project: New project

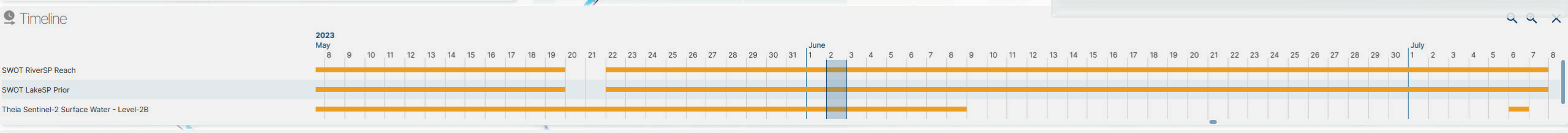
- SWOT lake and rivers
 - SWOT RiverSP Reach (999+)
 - SWOT LakeSP Prior (999+)
 - Total Estimated Water Surface Area
 - Water Surface Elevation
- Theia Surfwater
 - Theia Sentinel-2 Surface Water - Level-2B (999+)
 - Land/Water Mask
 - Theia Sentinel-2 Surface Water Yearly Synthesis- Level-3B (181)
 - Water Occurrence
- Hydrography
 - SWORD (59)



Map selection

- SWOT LakeSP Prior
 - 2320021492
 - Total Estimated Water Surface Area (0.023km²)
 - Selection period on timeline
 - Drawing
- Theia Sentinel-2 Surface Water - Level-2B
 - At location 47.578, -0.391
 - Land/Water Mask (1)
 - Selection period on timeline
 - Drawing

Compare values between products

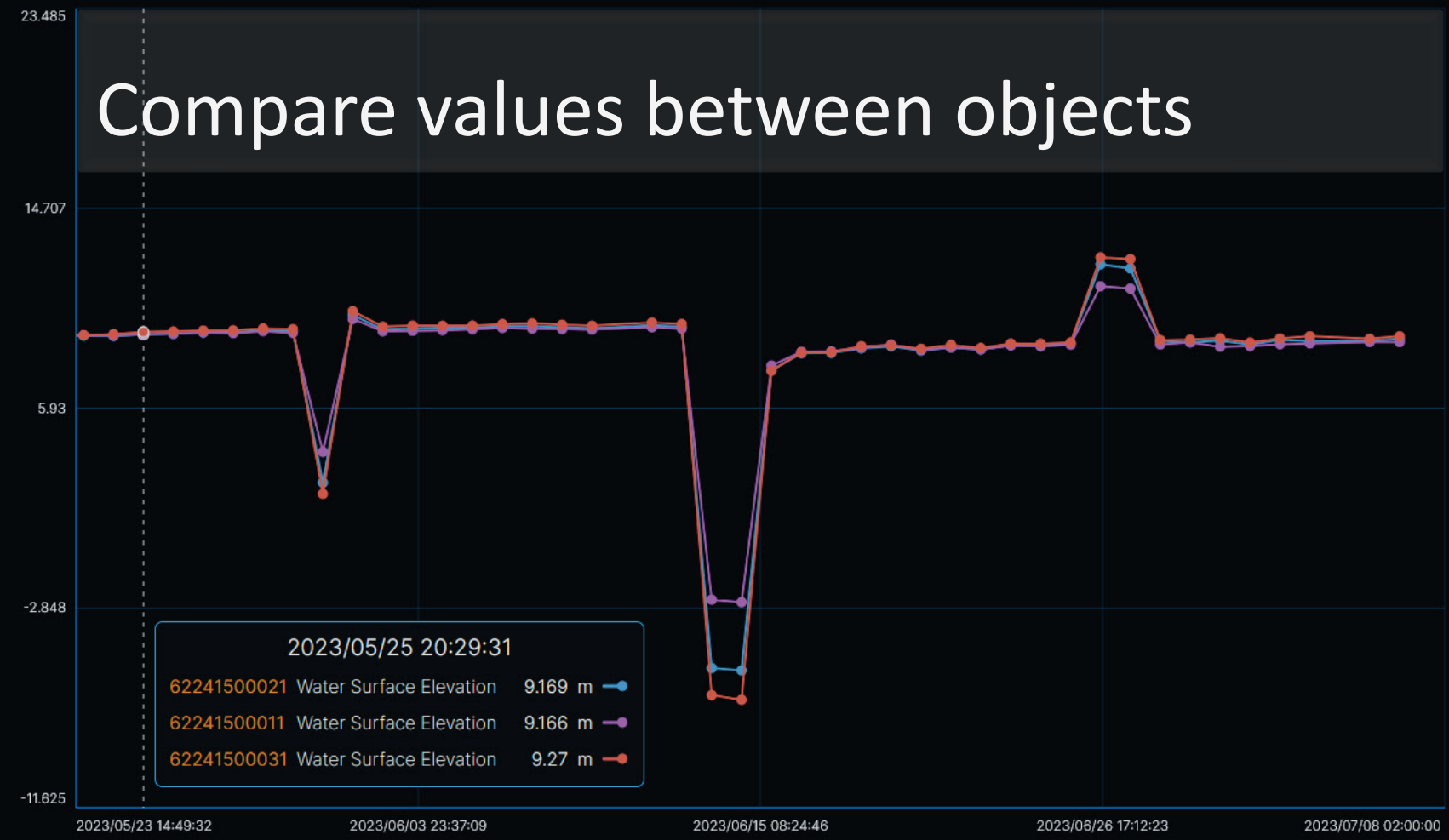


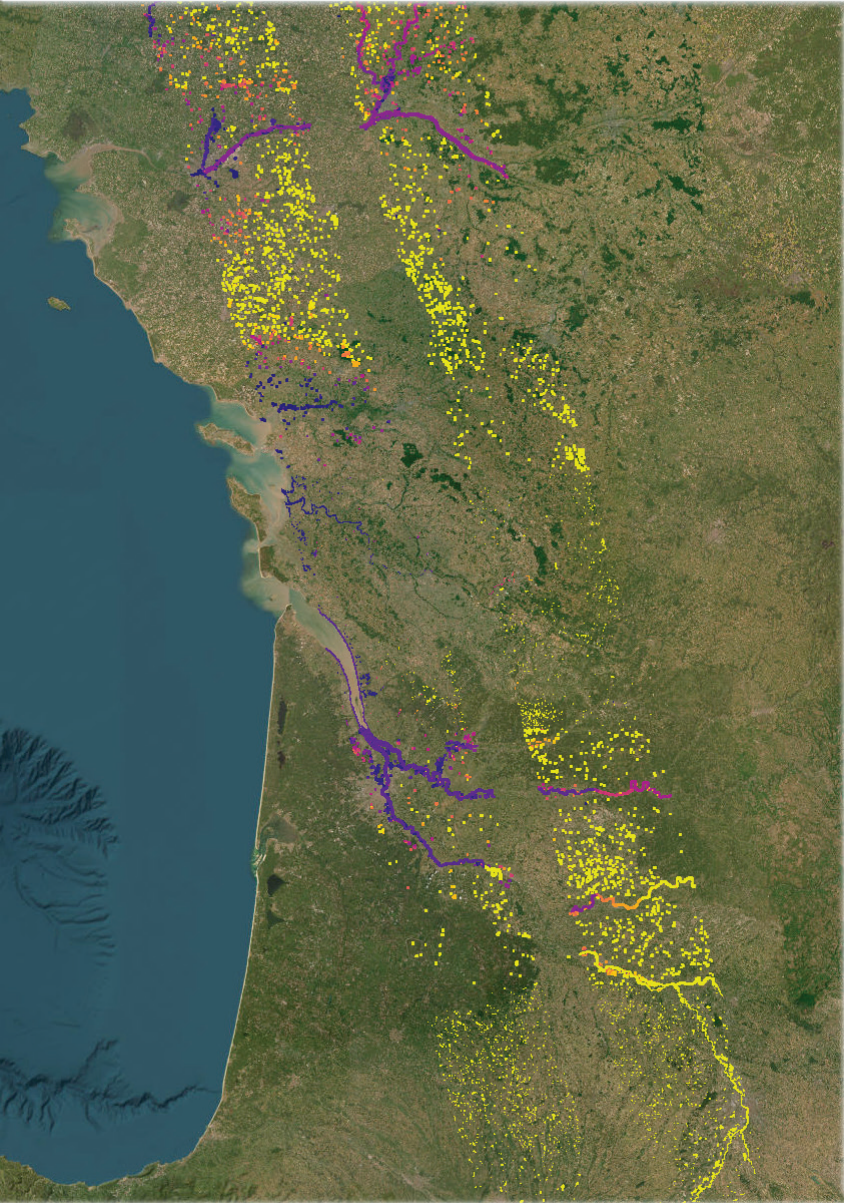


Plot: RiverSP Reach WSE

Display unit: m

Compare values between objects





Download order

Web download 3TB | Download by script

10 SWOT Level-2 HR Raster - 100m - Sample V1.2
Product (3GB) | Sample (276MB) | No filter

999+ SWOT Level-2 Pixel Cloud Vector
Product (3TB) | Sample (294MB) | No filter

92 SWOT Level-2 HR River Single Pass - Reach
Product (306MB) | Sample (1MB) | No filter

3 selected products
6,126 included items
49,122 files to download

My order

- Download products if necessary, via your browser or a script
- ...or use a STAC API to harvest the catalog in your own GIS platform


```
# pip install eodag or conda install  
# Generate an API-Key from hydroweb.next and use it in environment variable or eodag config file  
# It is all explained in downloaded scripts
```

```
from eodag import EODataAccessGateway, SearchResult  
dag = EODataAccessGateway()  
my_awesome_products = [  
    {"productType": "SWOT_L2_HR_LAKESP_PRIOR", "geom": "POLYGON ((3.86 45.44, 8.83 45.44, 8.83 47.37, 3.86 47.37, 3.86 45.44))"},  
    {"productType": "SW_L3_S2_YEARLY", "geom": "[1, 43, 2, 44]"},  
    {"productType": "SWOT_L2_HR_RIVERSP_REACH", "geom": "[1, 43, 2, 44]", 'start': "2023-09-18", 'end': "2023-10-18"}  
],  
project_search_results = SearchResult([])  
for query_args in my_awesome_products:  
    project_search_results.extend(dag.search_all(**query_args))  
downloaded_paths = dag.download_all(project_search_results, outputs_prefix=path_out)
```

Download order

Web download 3TB | Download by script

3 selected products
6,126 included items
49,122 files to download

SWOT Level-2 HR Raster - 100m - Sample V1.2

Product (3TB) | Sample (294MB) | No filter

SWOT Level-2 HR River Single Pass - Reach

Product (306MB) | Sample (1MB) | No filter

Access SWOT-HR products

- Some SWOT-HR reprocessed data is available on aviso ftp for this week as a quick, temporary, solution

AVISO FTP/SFTP (restricted access only):

FTP access: <ftp://ftp-access.aviso.altimetry.fr:21/>

SFTP access: <sftp://ftp-access.aviso.altimetry.fr:22/>

FTP/SFTP server directory main tree = /swot_st/swot_beta_products/karin/l2_hr/2023/04/

SWOT ST credentials:

login/password are respectively swot_st/swot_st;23

Access SWOT-HR products

- It will be available at hydroweb.next.theia-land.fr in a few more days:
 - Register at hydroweb.next,
 - ask service desk for a `swot_expert` status to access the SWOT reprocessed data samples
 - Once this private access has been granted, you will be able to see and download this data

-  **Hydroweb.next** is free and open
- **SWOT-HR data will be publicly available in November 2023**
- Along with other complementary hydrology products
- **It's just a start**, more product and features will keep coming