# Synoptic Chart Analysis

Lucile Gaultier (OceanDataLab)

OceanVirtualLab training
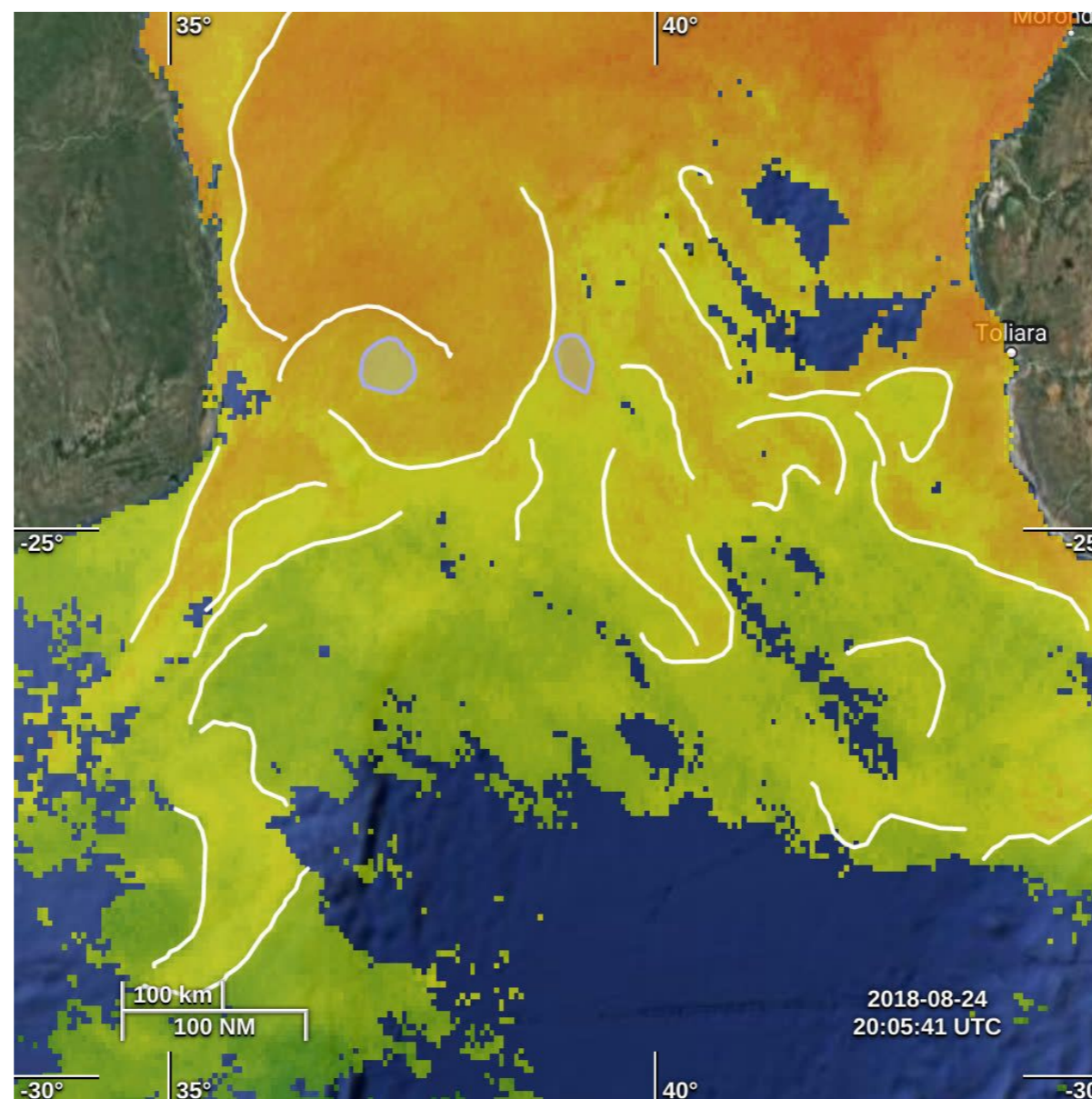
2022-06-15

OceanDataLab

- Open the OceanVirtualLab portal on January 7th, 2022, select SLSTR SST, SRAL SSHA and OLCI Chl or click on this link: https://odl.bzh/K4a8ku-S

- Select the "User shapes" in the list of products (in the Annotation group)

- Use the right panel to draw polylines / polygons / eddies / mushrooms

- Select the desired shape and click on the map to draw
  TIP: for continuous line drawing, hold down Ctrl (or Cmd on mac)

- You can select a single shape by clicking on it or an ensemble of shapes using Ctrl+A (or Cmd+A on mac), you can edit your selection and export them using the right panel
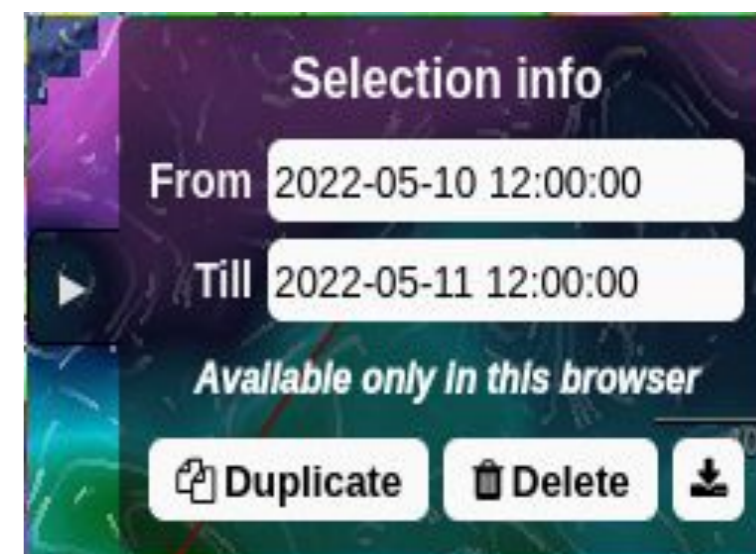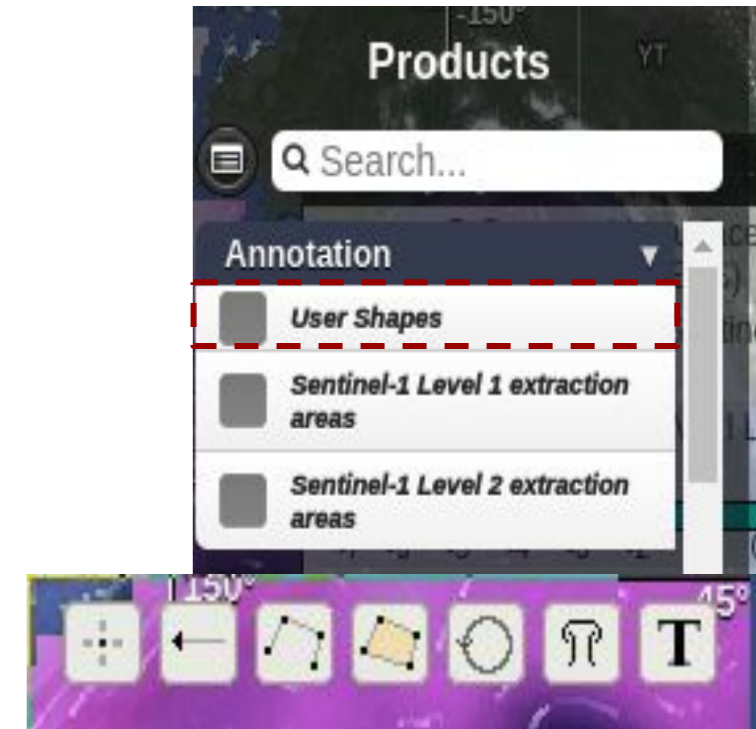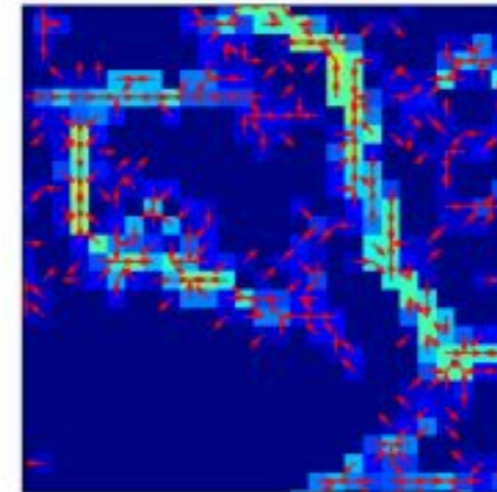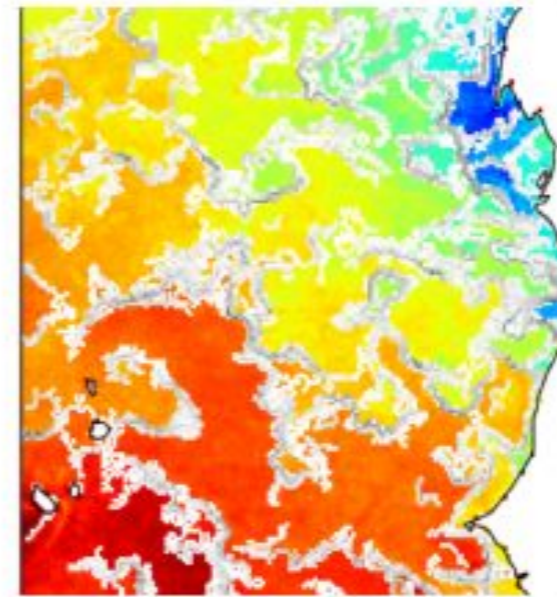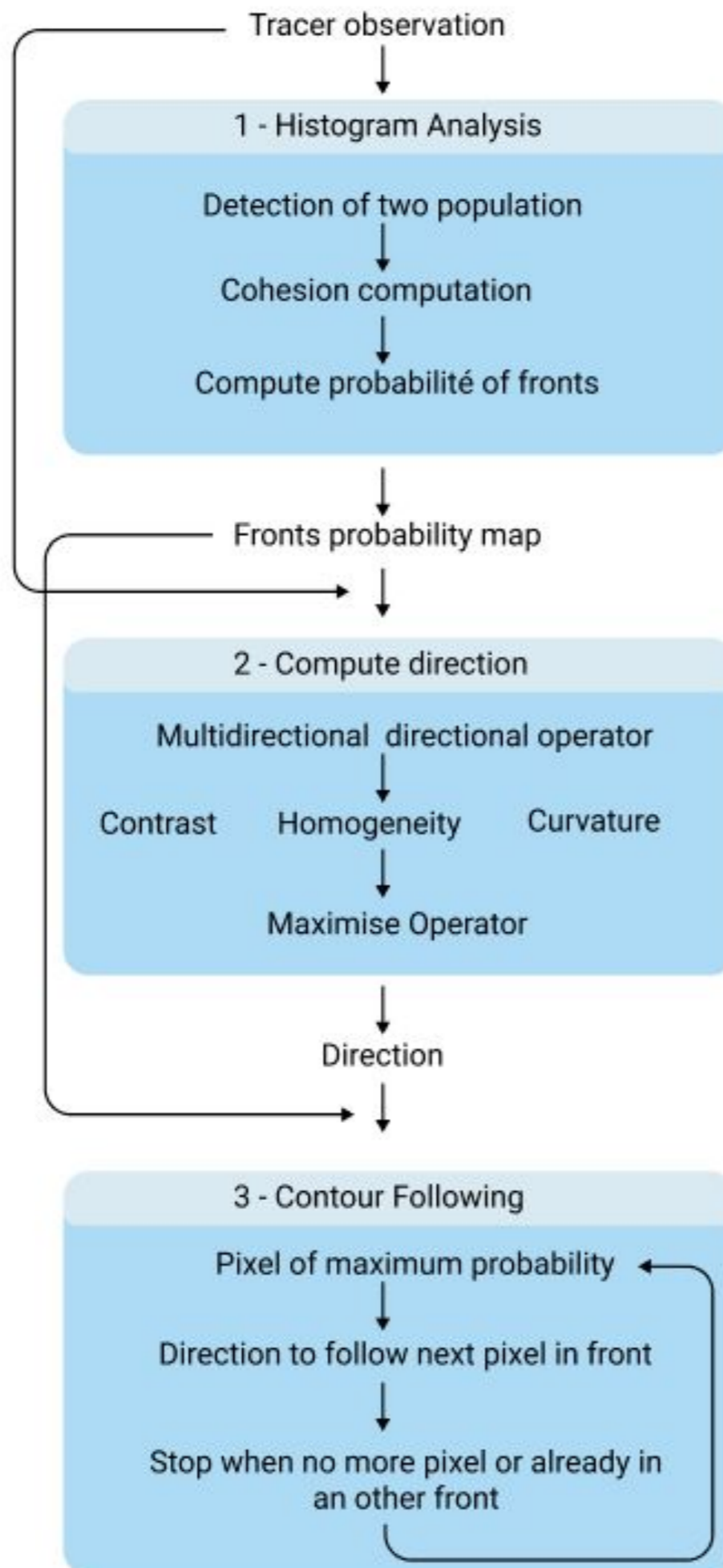
- Draw fronts and eddies using the S3 SLSTR SST and play with transparency to compare with S3 SLSTR Chlorophyll and vice versa
- Below synoptic chart has been drawn on SST and dynamical signature is compared with Chlorophyll, seashot is available: https://seashot.odl.bzh/s/NmOLlkP50e4
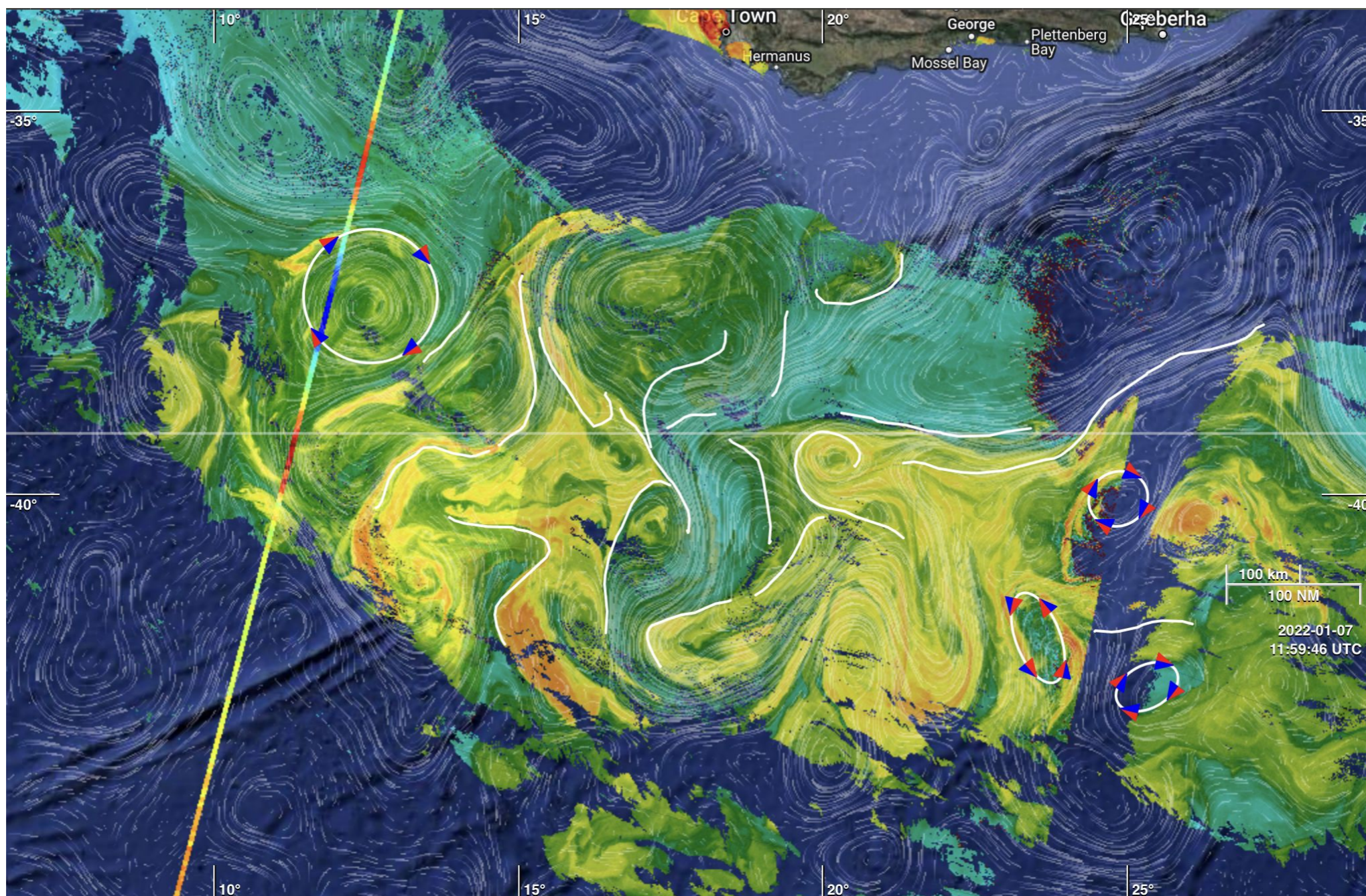
- Go to this link to have a look at seviri SST data on the 24th-25th of August 2018: https://odl.bzh/wuGCcrnP

- Draw a synoptic chart as in the example below using Polygons and Polylines, you can also retrieve my synoptic chart following the link on SEAShot: https://seashot.odl.bzh/s/JHJVVfu1Np8

- Use Ctrl (or cmd) + A to select all the shapes and export data in ShapesJSON. Note that only Polygons and Polylines shapes can be represented in SEAScope

Tracer observation

1 - Histogram Analysis

Detection of two population

↓

Cohesion computation

↓

Compute probabilité of fronts

↓

Fronts probability map

↓

2 - Compute direction

Multidirectional directional operator

↓

Contrast   Homogeneity   Curvature

↓

Maximise Operator

↓

Direction

↓

3 - Contour Following

Pixel of maximum probability

↓

Direction to follow next pixel in front

↓

Stop when no more pixel or already in an other front

The following collection will be used in the next hour:

- cmems_geos
- globcurrent_l4_total_15m_nrt
- **msg_serviri_l3c_sst**
- Coriolis_surface_drifter

Copy the required collection from [usb_key]/data into [seascope_workspace] / data if they are not already present.

Select one of the drawing tools:
- point (Shift + D)
- polyline (Shift + L)
- polygon (Shift + P)

By default the shapes you draw will be associated with a collection that SEAScope creates automatically, but you can select a custom collection if you want (not demonstrated here)

SEAScope will provide some guidance regarding the actions that you can perform:
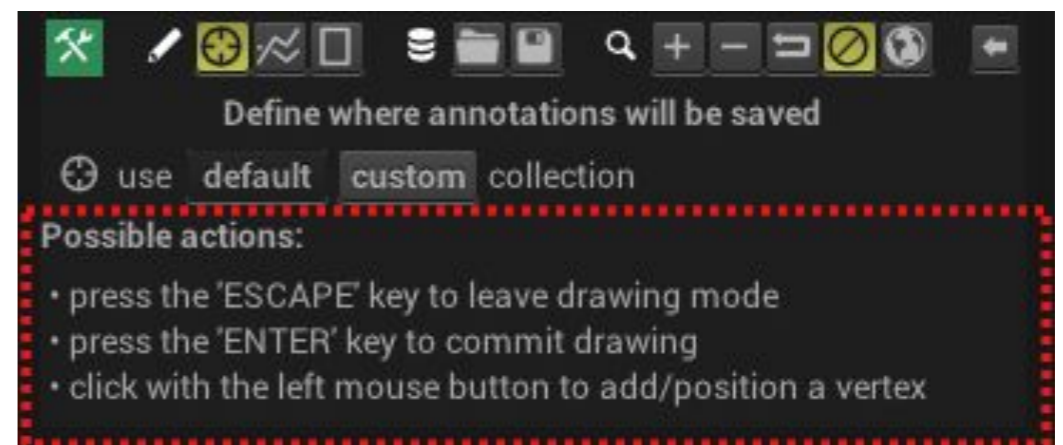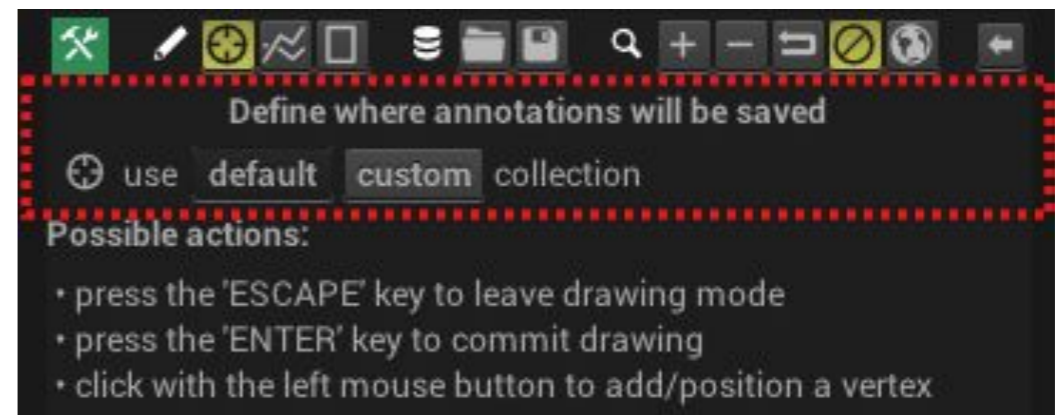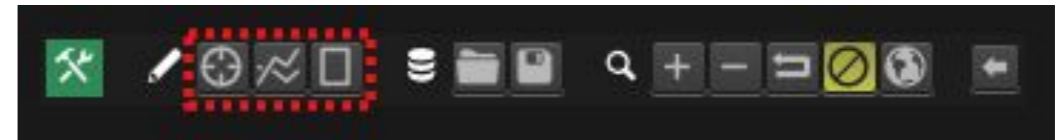
Links to download notebooks and python scripts are available at www.oceandatalab.com

Here we will compute frontal structures automatically from the SEVIRI SST using histogram analysis
Data are extracted from SEAScope and results are exported back to SEAScope for easy comparison

Go to the browser where jupyter has opened :
- Open the compute_front_from_SST.ipynb notebook and follow the instructions in the notebook:

- Select the "sea surface temperature from the OSISAF MSG SEVIRI L3C SST collection in SEAScope

- Draw a polygon following instructions from the SEAScope_instruction slides or from the previous slide

- Extract data:
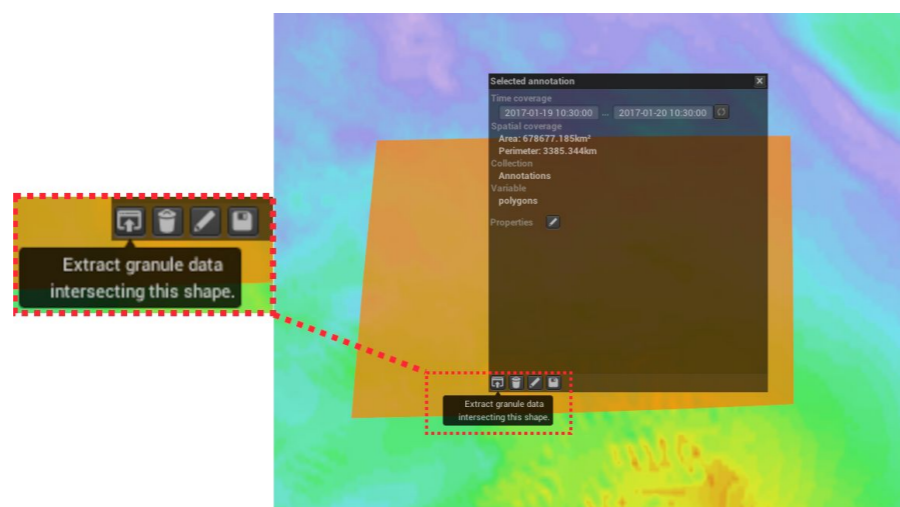
- Run cells in the notebooks to import SST, compute and export frontal structures into SEAScope

- Go back to SEAScope and compare the computed frontal structures with the one from SEVIRI SST. We will import the fronts you have manually drawn on Syntool to compare them with the one you have computed

1. SEAScope lets you import (folder icon) and export (floppy disk icon) shapes in a Syntool-compatible format
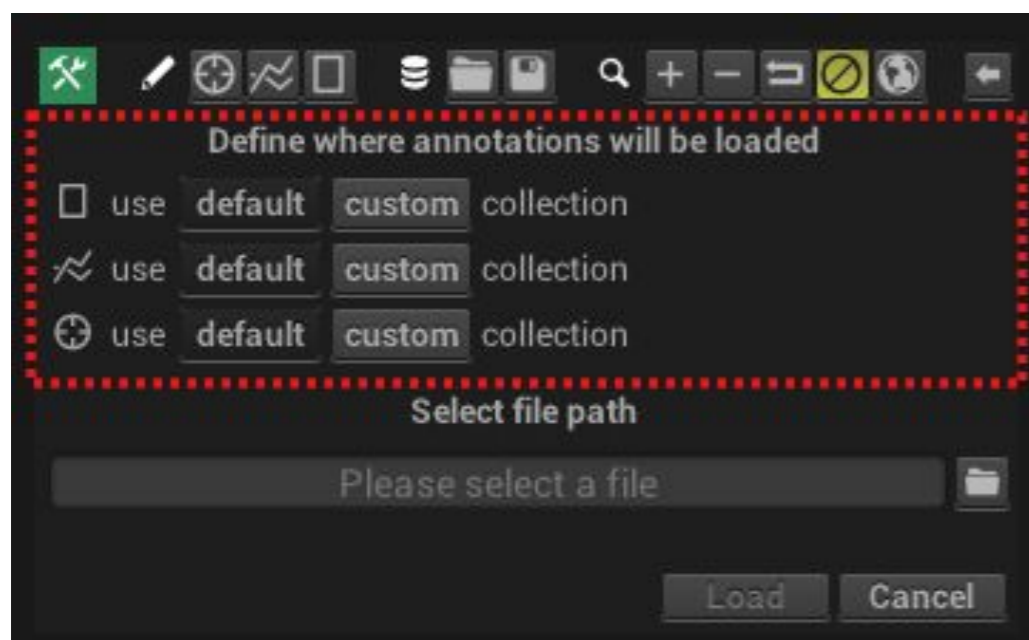

2. It is possible to define which collection will store the imported shapes (resp. which collections to export)
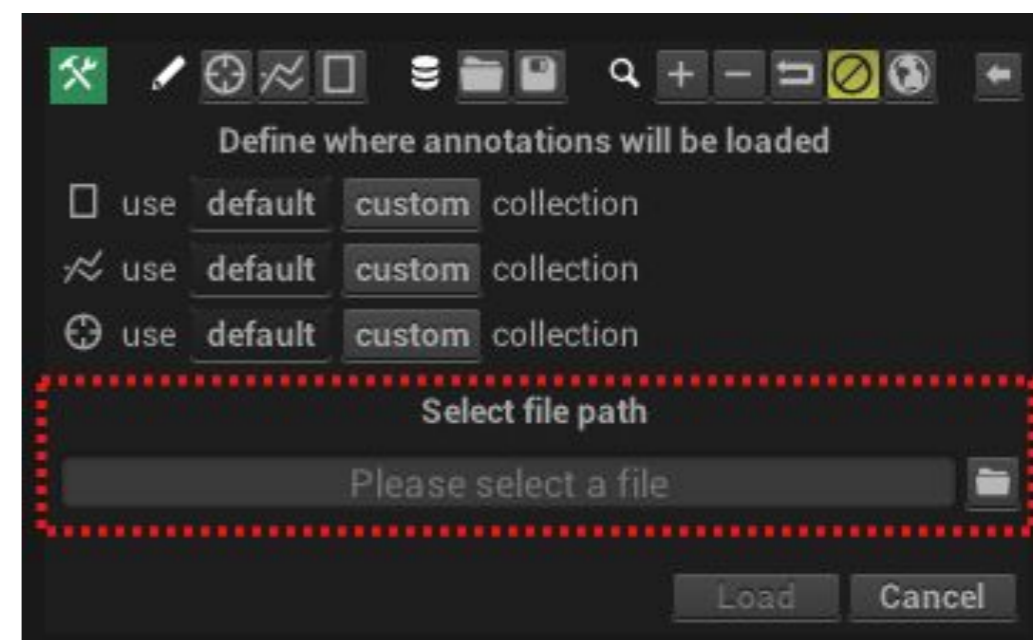
3. You can type the path of the file to import from (resp. to export to) or click the folder icon to browse the storage available on your computer

4. You can select a file by double clicking on it in the dropdown list, or by clicking once on the file in the list and once on the "Select" button
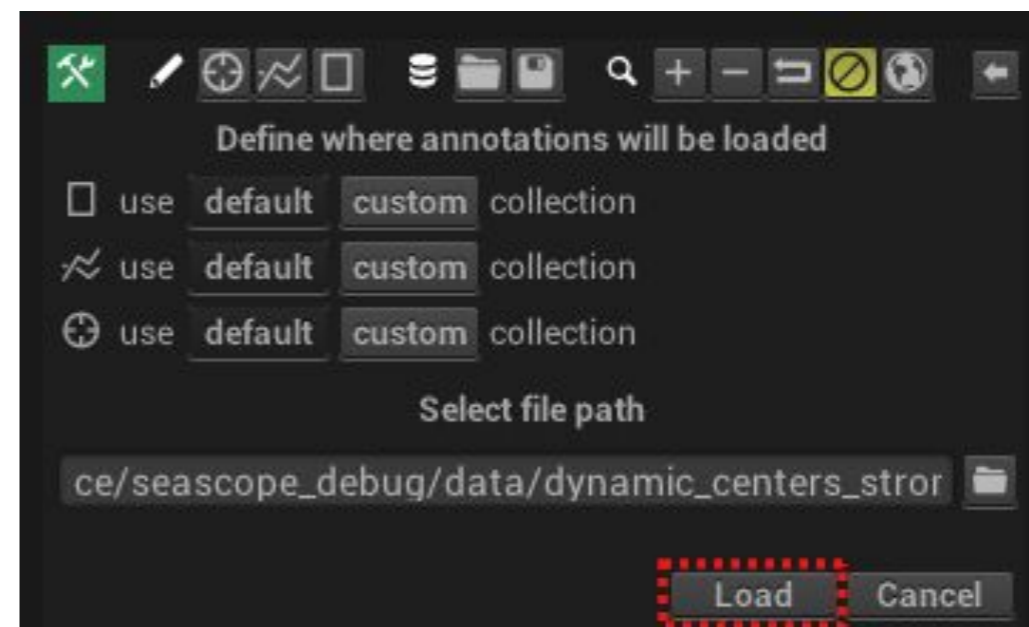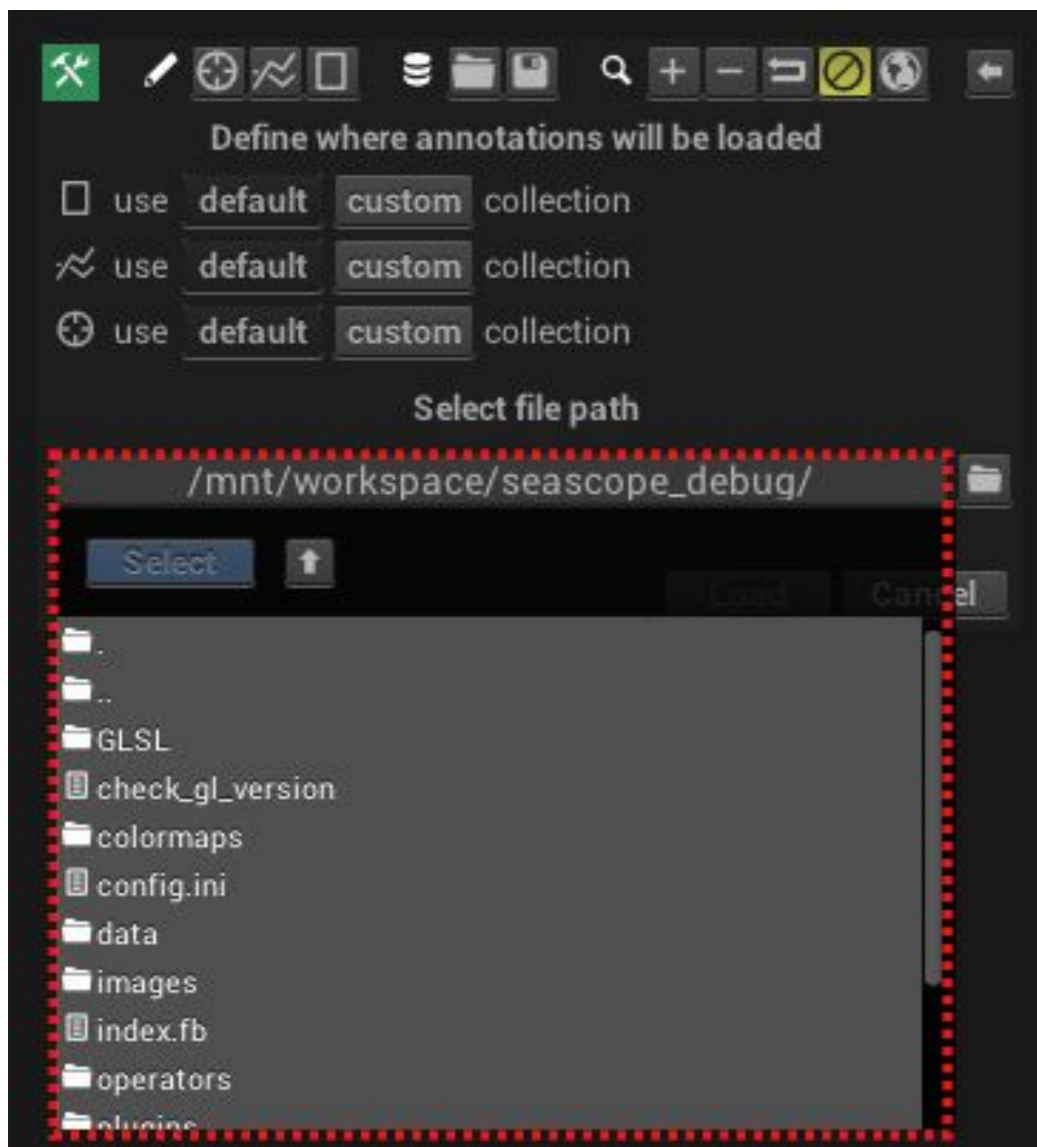
5. Finally, click on the Load (resp. Save)
Button: the import/export menu will disappear once the operation is complete