

Retrieve Ocean current from remote sensing observation

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OceanVirtualLab training

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The following collection will be used in the next hour:

- cmems_geos
- globcurrent_l4_total_15m_nrt
- ecmwf_model_wind
- Coriolis_surface_drifter

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

links to download notebooks and python scripts are available at www.oceandatalab.com

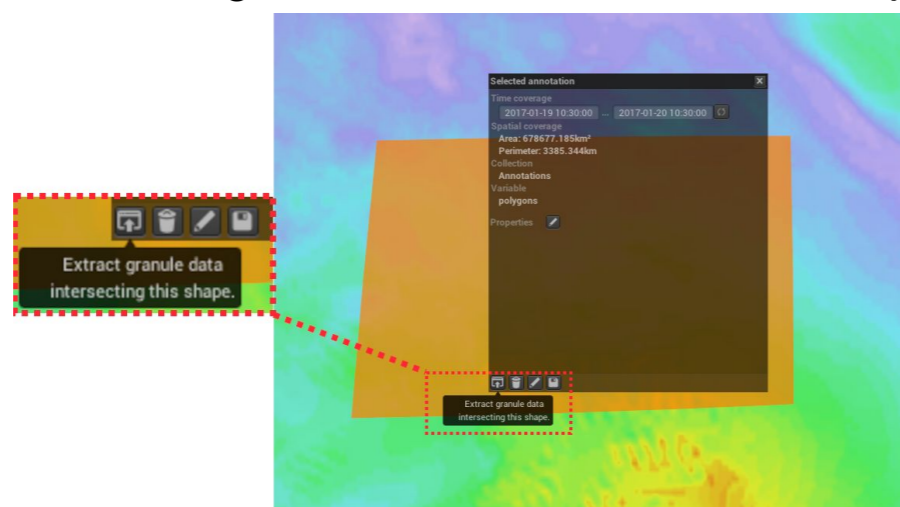
In this session, we are going to derive geostrophic current from Absolute Dynamic Topography (also called Sea Surface Height)

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 geostrophy.ipynb notebook and follow the instructions in the notebook:
- Select the Absolute Dynamic Topography from the GlobCurrent geostrophic collection in SEAScope
- Draw a polygon following instructions from the SEAScope_instruction slides or from the next slide

- Extract data:



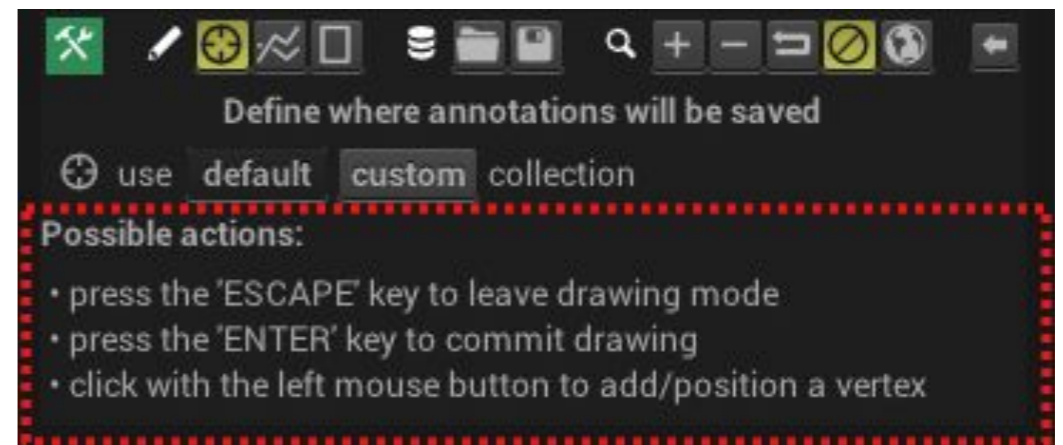
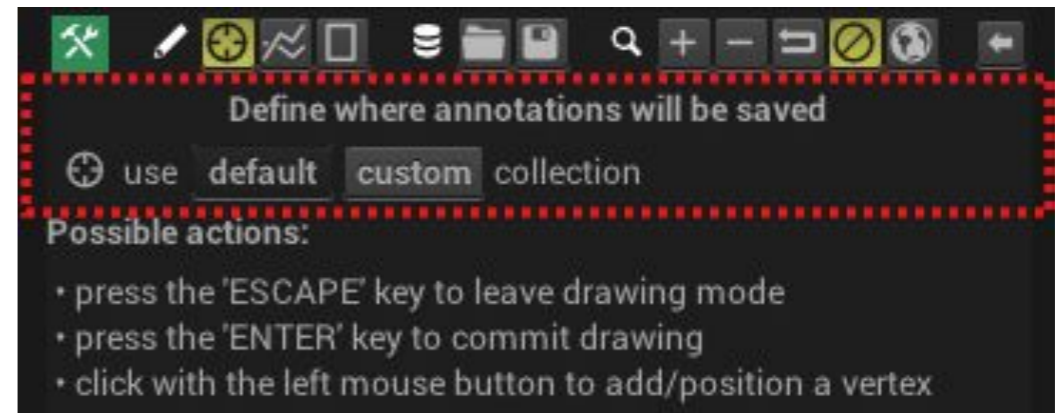
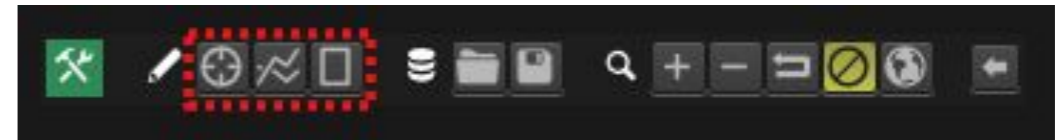
- Run cells in the notebooks to import SSH, compute and export geostrophic velocity into SEAScope
- Go back to SEAScope and compare the computed geostrophic velocity with the one from GlobCurrent geostrophic velocity collection (resolution, smoothness ...)

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:

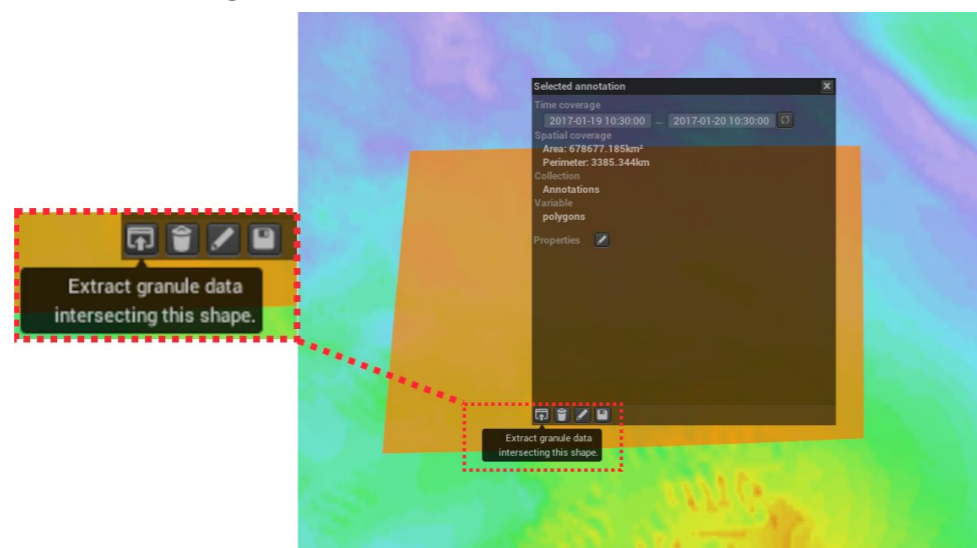


In this session, we are going to derive Ekman current from the ECMWF wind. Data are extracted from SEAScope and results are exported back to SEAScope for easy comparison

Go to the browser where jupyter has opened :

- Open the ekman.ipynb notebook and follow the instructions in the notebook:
- Select the mean wind field raster from the Wind ECMWF 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 wind, play with theta and beta parameters according to Rio et al, compute and export ekman velocity into SEAScope
- Go back to SEAScope and compare the computed Ekman velocity with the GlobCurrent geostrophic current and Current Total 15m GlobCurrent (results may differ depending on your choice of theta and beta parameters)

In this session, we are going to compute a Virtual Lagrangian trajectory and compare it with in-situ drifter from Coriolis CMEMS data.

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 `lagrangian_advection.ipynb` notebook and follow the instructions in the notebook:
- Select the current norm raster from the Current Total 15m GlobCurrent collection in SEAScope
- Select the 1st september as a first date and a time span of 1 week
- Select the Coriolis surface drifter collection to have a look at a 1-month drifter trajectory. Pick a drifter and note the coordinates of the beginning of its trajectory
- Draw a polygon that includes your drifter and extract data as you have already done in the previous exercises
- Run cells in the notebooks to import currents, set your virtual drifter initial location, compute your virtual drifter trajectory and export it into SEAScope
- Go back to SEAScope and compare the computed trajectory with the real drifter trajectory. Do they differ ? Why do you think they differ ?