FUMSECK cruise

SPASSO Images Analysis

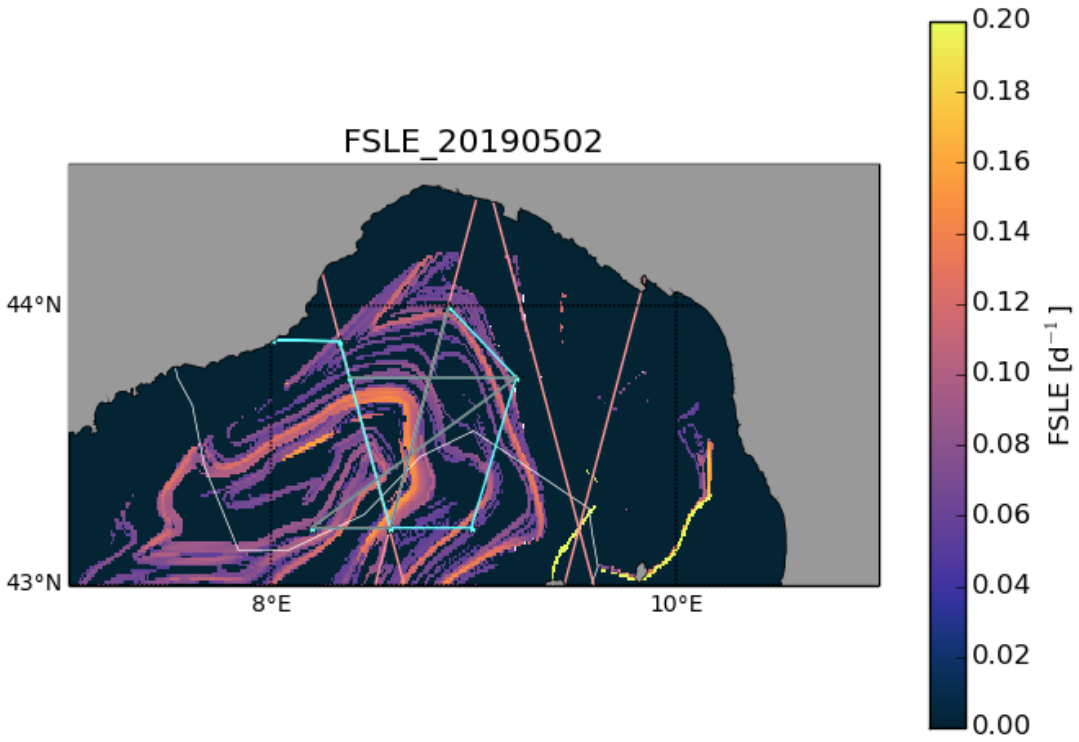
02/05/2019 09:48 UTC

Author(s): A. Petrenko, A. Ricout and F. d'Ovidio (on land)
S. Barrillon A.Doglioli (on board)

Executive Summary

Everything is going fine, nice weather, good vertical speed stations, nice cytometry data, good communication with the glider... and even a nice colocation with the satellite overhead at noon today.

The waypoints still fit amazingly well with the present images. C has been changed to C1; D has been replaced by D1 and D2. Otherwise the route is still as scheduled (Figure below; grey line for May 1 and 2, and blue for May 3).



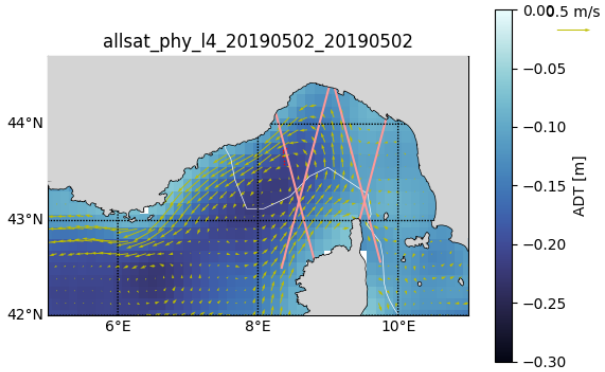
1 Ongoing operations and upcoming stations

Today, May 2nd, the plan is to go to station E, then SouthEast to station B=F, south to station G, and west again to station D=H; scheduled to be reached around 8am on May 3rd. Tomorrow, the plan is go up the altimetry track to J and then to Almeria harbor.

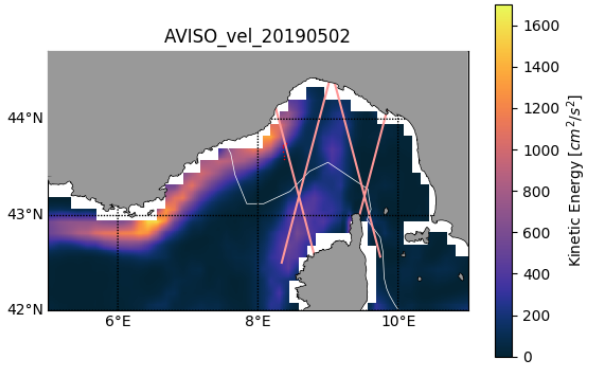
Team on Téthys II has just made a point with the satellite trajectory: they are currently traveling the S3B044 track (between D2 and E). According to the forecasts provided, at noon local time, the satellite will passes over them and the Téthys II should be at 43.387°N 8.649°E, in the middle of the colocated transect with the trace. A common point should be obtained, with the satellite on its descending track while the Téthys II ascends.

2 Daily figures analysis

2.1 Altimetry, derived currents and Lagrangian analysis

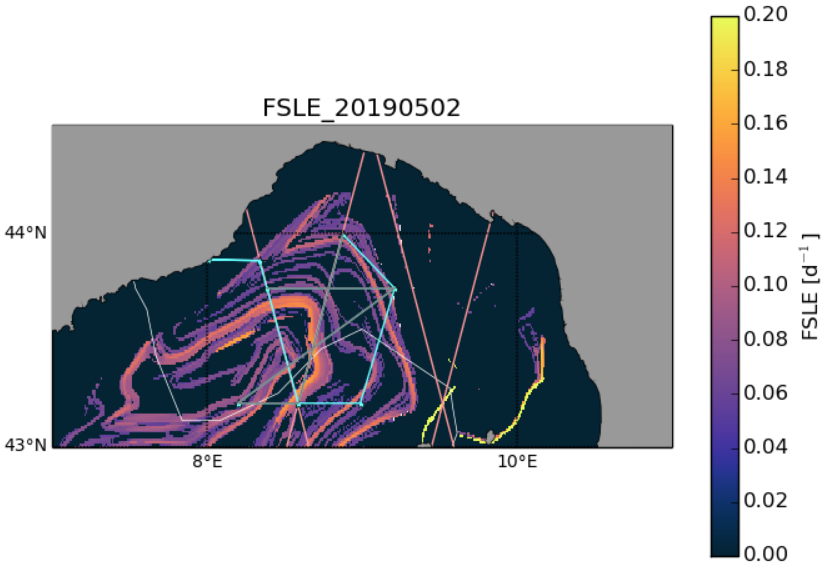


We observe a general cyclonic circulation in the region of interest.

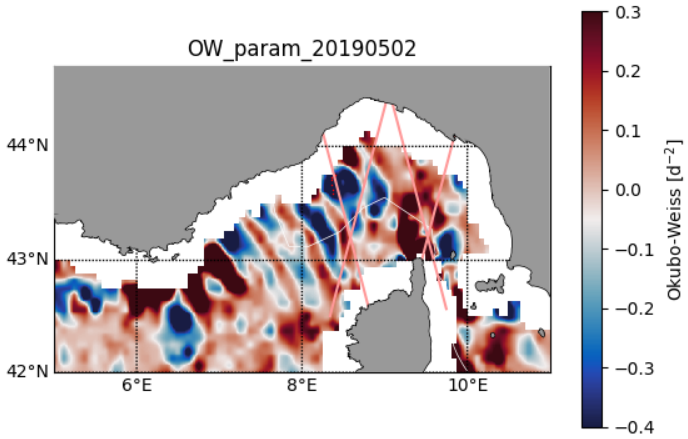


The area has low energy, apart in the cyclonic loop and, especially, along the Northern Current trajectory.

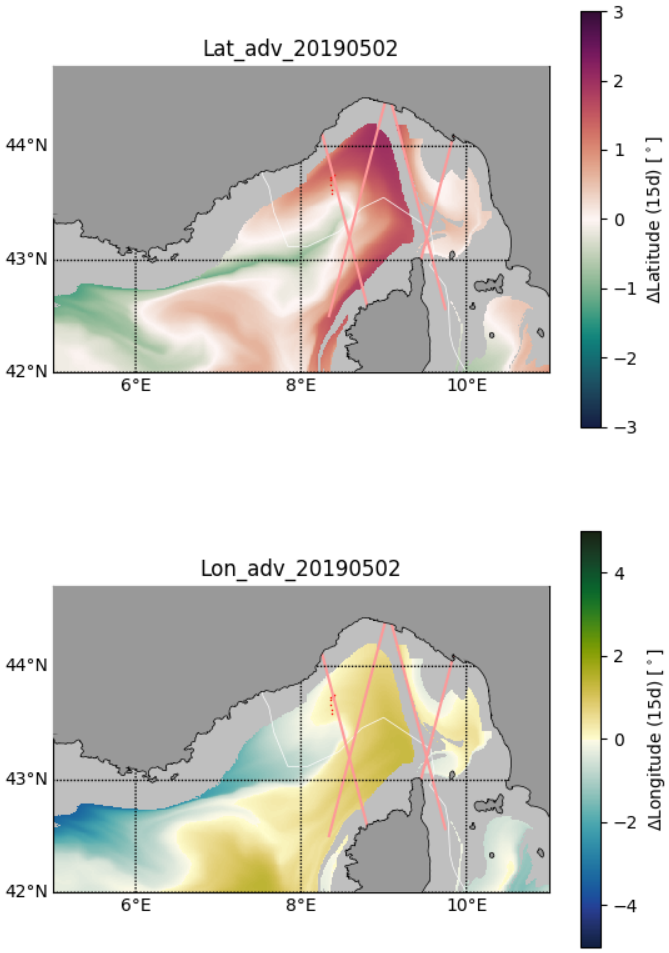
The FSLE structure also corresponds to the cyclonic loop. By convention, we will hereafter call FSLE1 the highest FSLE structure looping cyclonically between 8°E and 9°E, and FSLE2 the structure East of the cyclonic loop, between 9°E and 10°E, 43°N and 44°N, nearly in a South-North direction but slightly tilted, and parallel to the altimetry track.



You are right now probably going along FSLE1, then will get out of it going towards E up north. Then you should be crossing FSLE2 between F and G. And tomorrow, you will cross again FSLE1 when going to Almeria. Great cytometry in perspective :).



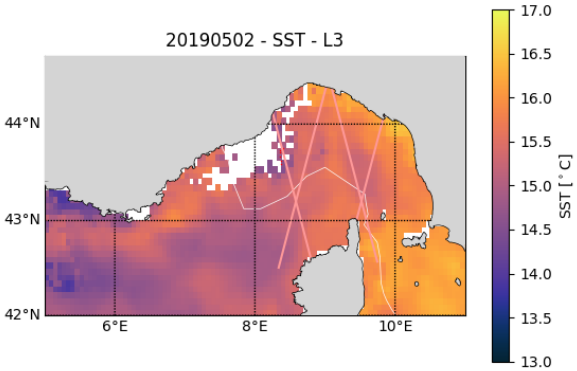
The OW Near Real Time (NRT) data may have some trouble which could be responsible for the striated figure, looking a bit unnatural.



The Lat_adv and Lon_adv images agree with the cyclonic circulation and FSLE structure. We can indeed clearly see the structure East of the cyclonic loop, between 43°N and 44°N, nearly in a South-North direction but slightly tilted, parallel to the altimetry track. It corresponds to the West Corsican current coming straight from along the Corsican coast (hence in grey).

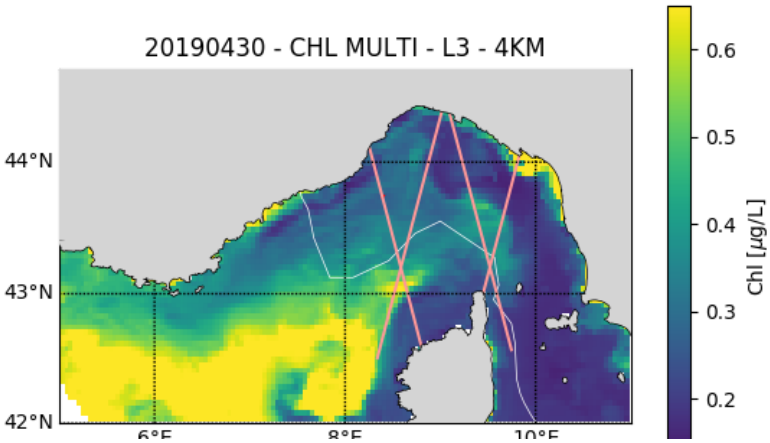
Note: In the Lat_adv, the red goes North while the green goes south; in the Long_adv, the green goes east, the blue goes west).

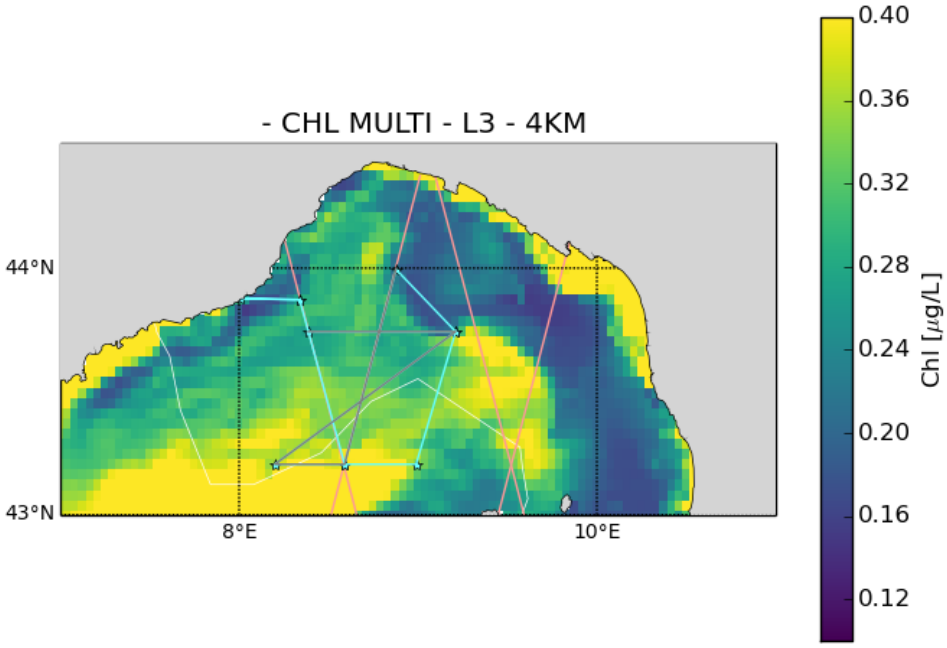
2.2 SST analysis



The zone is warming up, especially around the cyclonic gyre.

2.3 Chlor





The highest Chl concentrations are southwest. In our area of interest, there is still a bulb of medium Chl concentrations with patchiness and nice transitions in phytoplankton community detected by cytometry. According to Gerald the front (between a and B) may be characterized by cryptophytes and a little bit more Prochlorococcus.

2.4 Glider

Glider communication is going fine.

There is concern about Saturday May 4; because server maintenance work may prevent mail communication, and hence glider detection.

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Acknowledgements

The FUMSECK cruise is part of the BIOSWOT program.
The altimetry data are the AVISO Mediterranean regional product:
http://www.aviso.altimetry.fr/index.php?id=1275.
The derived currents are processed by SPASSO to derive Eulerian and Lagrangian diagnostics of ocean circulation: OkuboWeiss parameter, particle retention time and advection, Lagrangian Coherent Structures. Sea surface temperature (level 3 and 4, 1 km resolution) and chlorophyll concentration (level 3, 1km resolution, MODISAqua and NPPVIIRS sensors combined (after May 27, 2017) into a new product called MULTI) have been provided by CMEMS Copernicus Marine Environment Monitoring Service (http://marine.copernicus.eu). Another SST product (level 4, composite, 1 km resolution) is provided by the Jet Propulsion Laboratory (JPL), Pasadena, CA.

Useful links:

FUMSECK is a cruise from the BIOSWOT project

SPASSO FUMSECK webpages