FUMSECK cruise

SPASSO Images Analysis

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Executive Summary

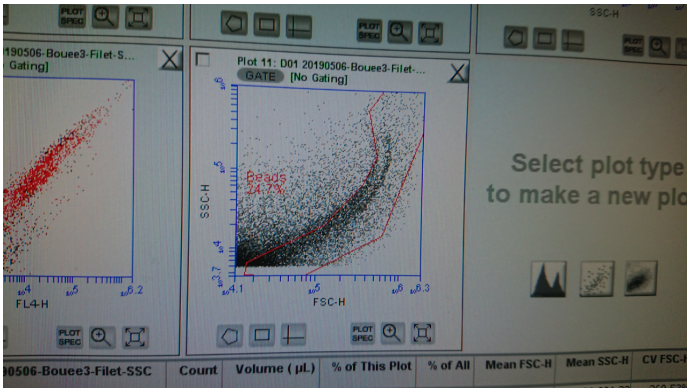
Despite the weather, everything went well on May 6th: glider recovery, the bead experiment and the vertical speed stations.

The bead experiment did not take place at P as scheduled, but at U, since the Captain decided not to do it in the Italian waters.

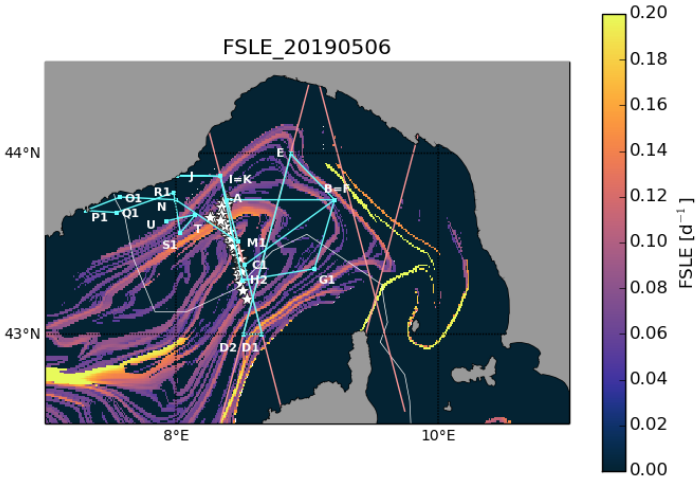
At night, between the 6 and the 7, great news: the flow cytometry is able to detect the beads in the samples: sea water + beads (see Ongoing section). It was fantastic to finish the cruise on that news before the unloading at La Seyne on May 7 (see picture below).

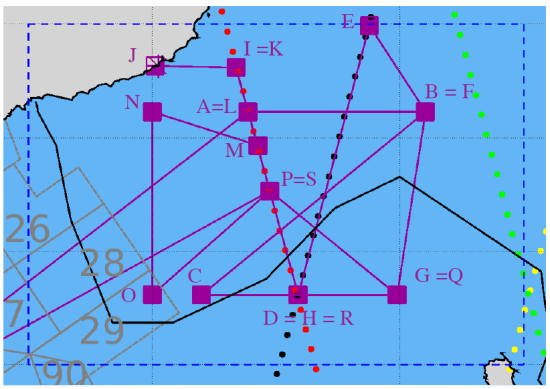
1 Ongoing operations and upcoming stations

The flow cytometry is able to detect the beads in the samples: sea water + beads (picture of Gerald computer screen).



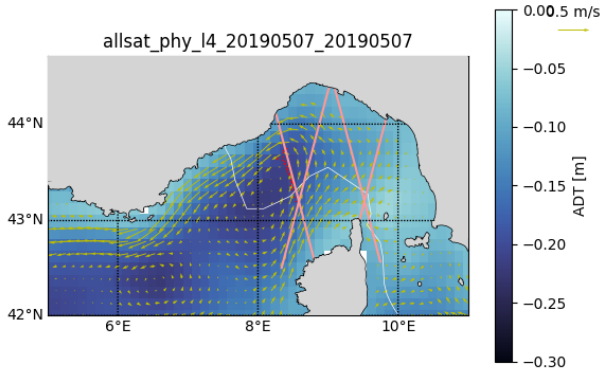
Overall, the cruise went great and the whole area was nicely covered; see below the maps of the cruise (top), vs the original plan (below); as well as the summary figures in the MVP section.



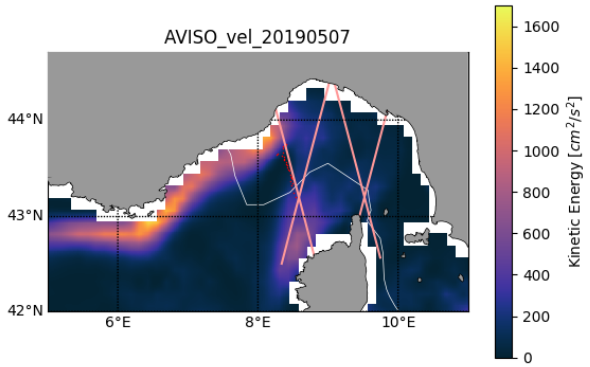


2 Daily figures analysis

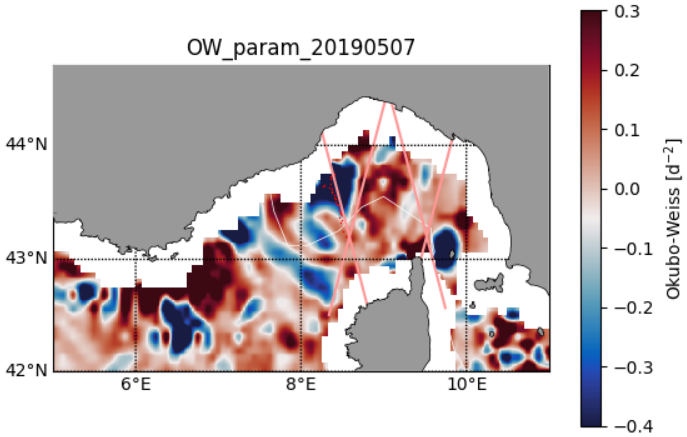
2.1 Altimetry, derived currents and Lagrangian analysis



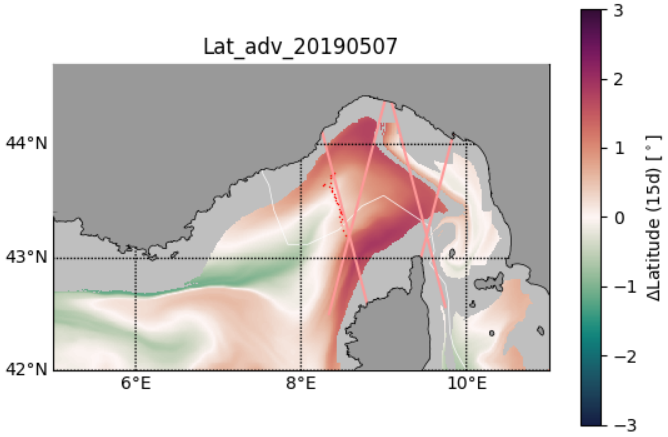
We observe a general cyclonic circulation in the region of interest.

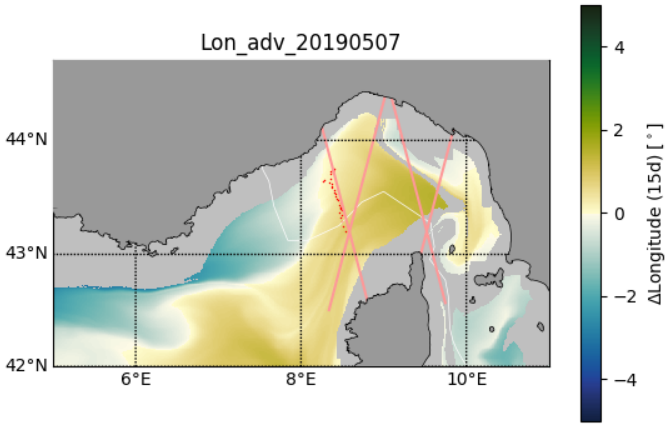


The area has low energy, apart in the cyclonic loop and, especially, along the Northern Current trajectory.



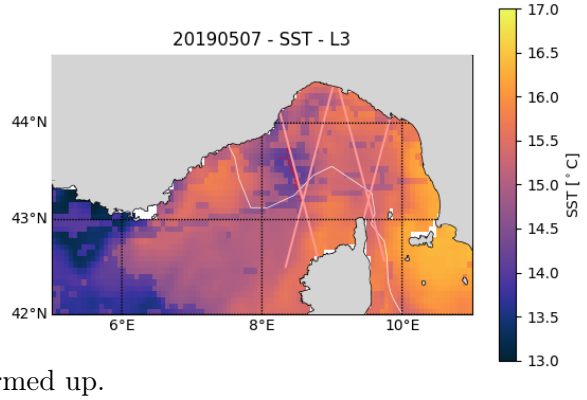
The OW Near Real Time (NRT) data look now perfectly fine.





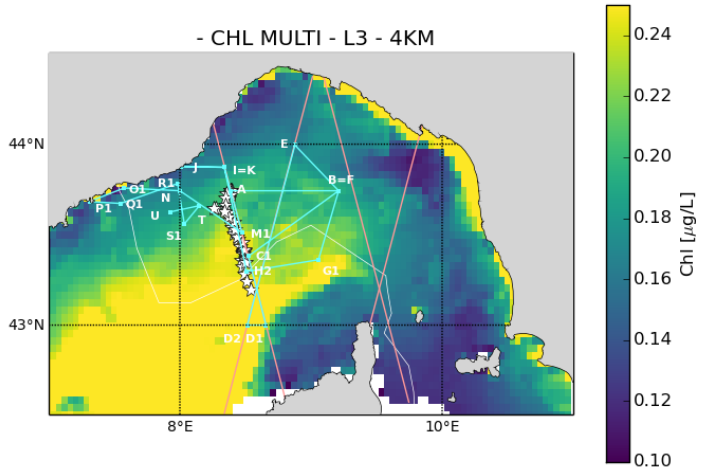
Note the tilting of the FSLE2 structure that is not parallel to the satellite track anymore, but tilted more Southeast to Northwest, with a bend at its northern end.
Reminder: In the Lat_adv, the red goes North while the green goes south; in the Long_adv, the green goes east, the blue goes west).

2.2 SST analysis



The whole area has warmed up.

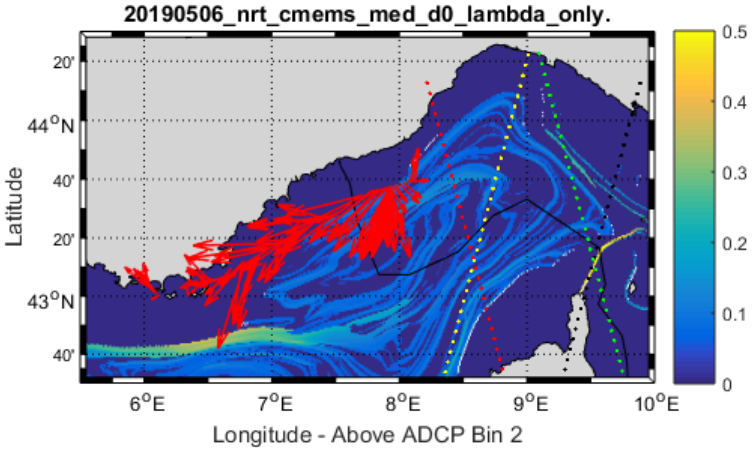
2.3 Chlorophyll analysis



Note the change of scale in the Chl data. Before the scale was between 0.1 and 0.4, now it is between 0.1 and 0.25 mg/m3.

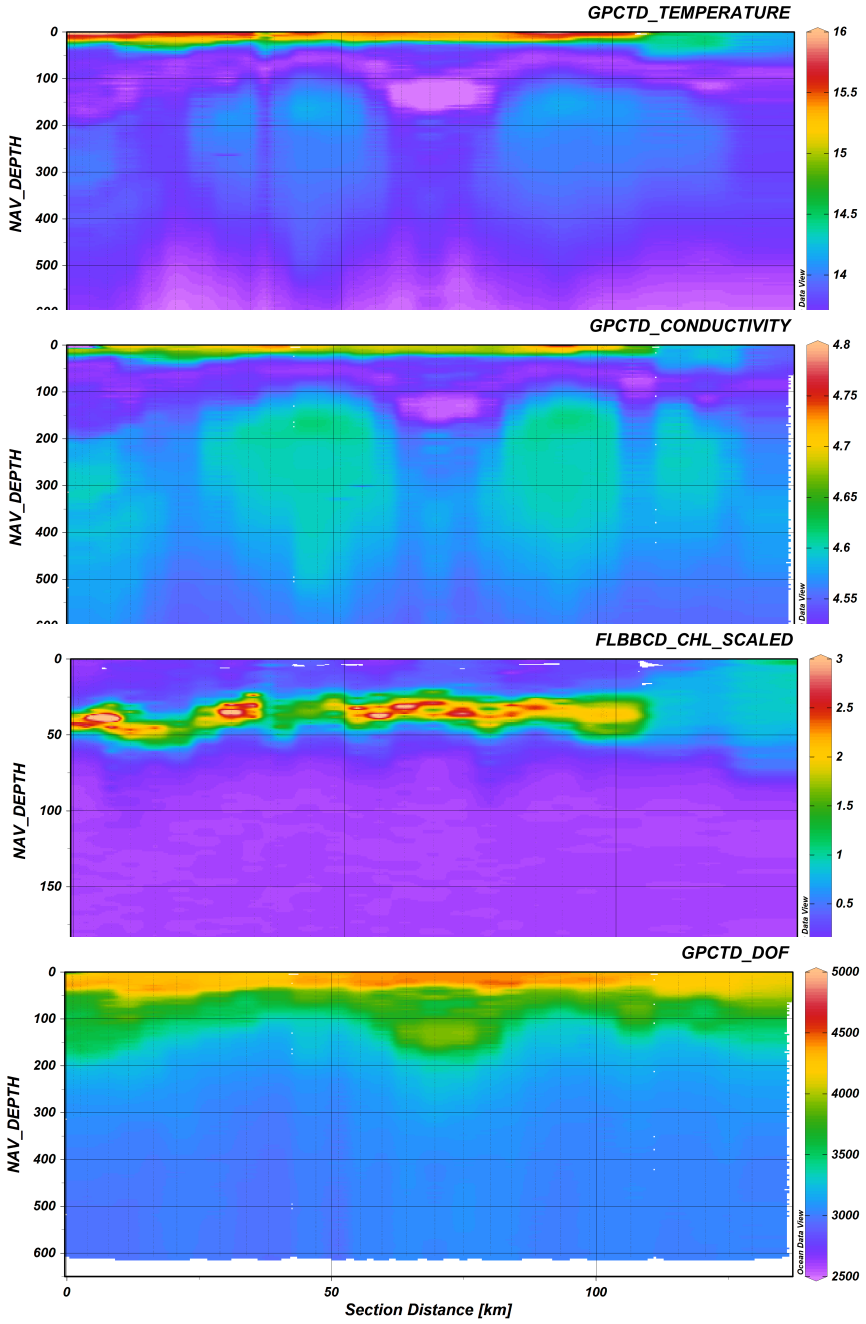
2.4 Hull-mounted ADCP

Here the picture of ADCP horizontal currents along the track of the Téthys II during May 6th at 27m depth, superimposed on the corresponding FSLE.



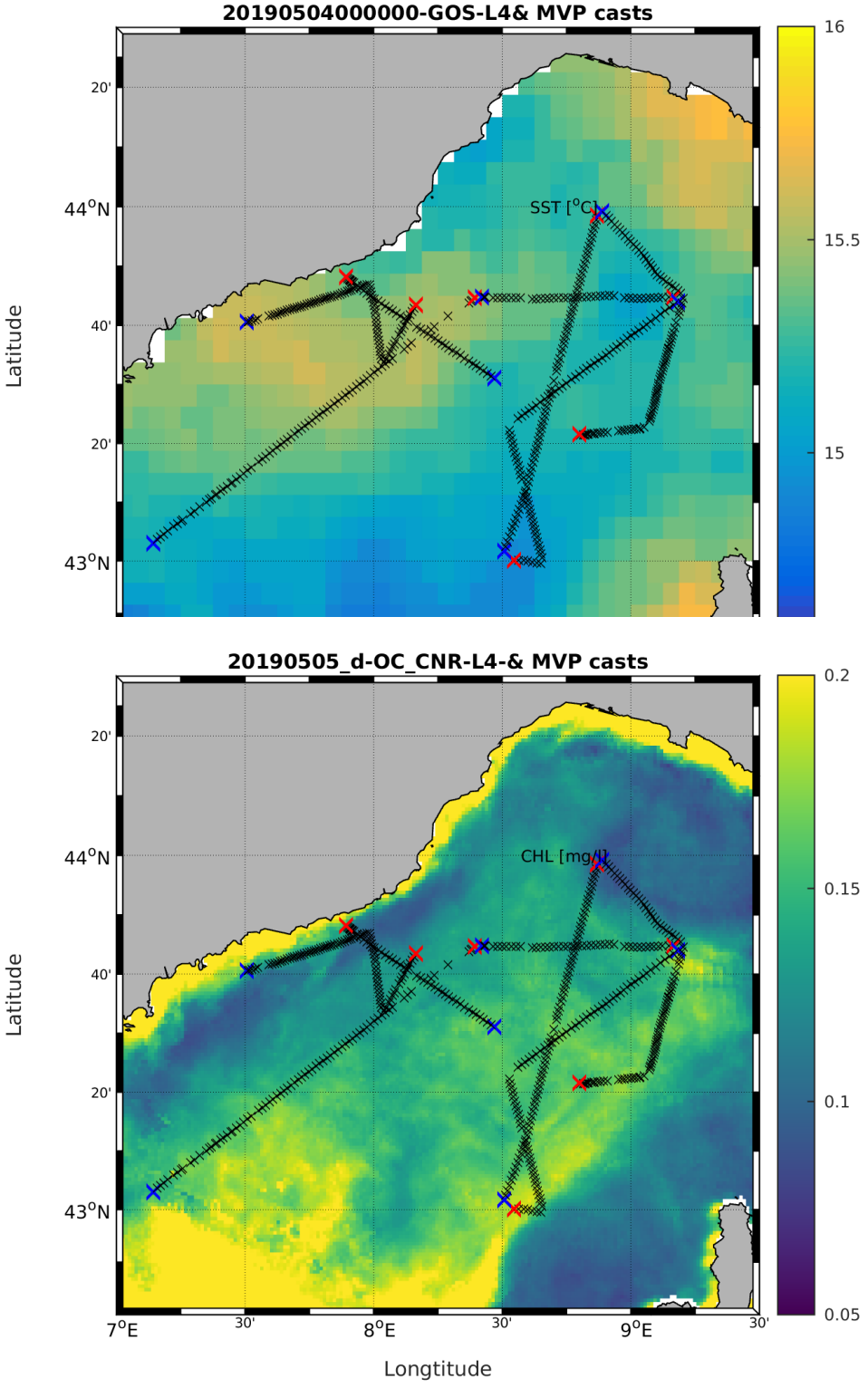
2.5 Glider

The glider was recovered nicely at point T (see final map in the Ongoing section) despite the bad weather. Follow some preliminary examples of the collected data sections.

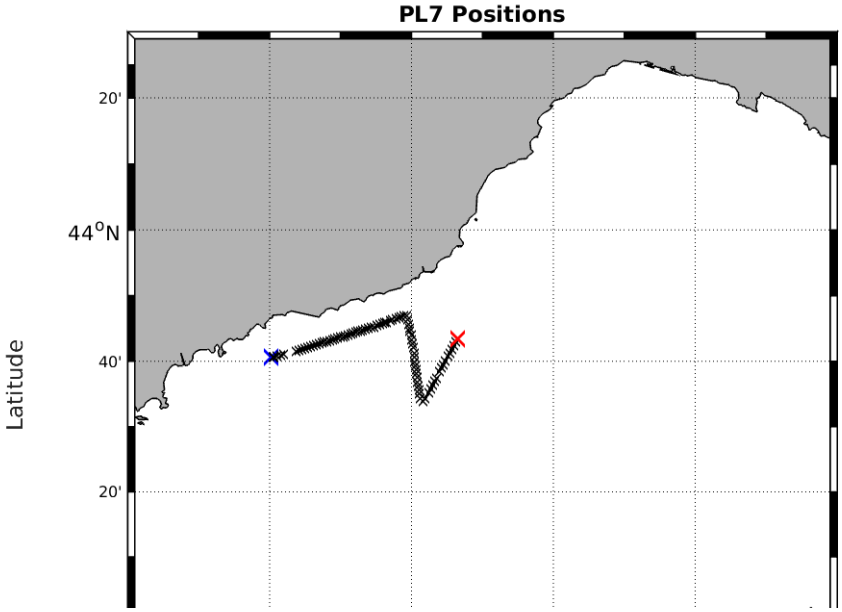

GPCTD_TEMPERATURE
NAV_DEPTH
0
100
200
300
400
500
16
15.5
15
14.5
14
Data View
GPCTD_CONDUCTIVITY
NAV_DEPTH
0
100
200
300
400
500
4.8
4.75
4.7
4.65
4.6
4.55
Data View
FLBBCD_CHL_SCALED
NAV_DEPTH
0
50
100
150
3
2.5
2
1.5
1
0.5
Data View
GPCTD_DOF
NAV_DEPTH
0
100
200
300
400
500
600
5000
4500
4000
3500
3000
2500
Ocean Data View
0
50
100
Section Distance [km]

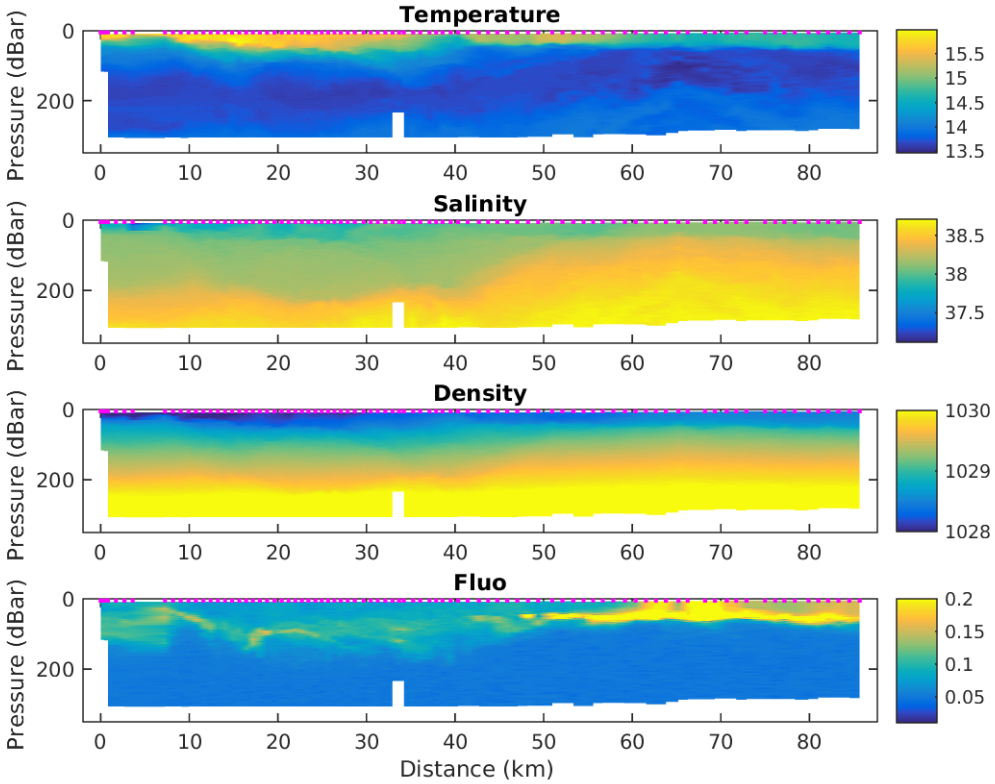
2.6 MVP

Here are two figures (SST and CHL, L4 at the middle of the cruise) that recapitulate the MVP transects of the cruise. The blue dot is the start, the red one the final point.



Here are the figures of the 7th MVP transects (two figures: the map of the transect route and the vertical transect). Some salinity corrections need to be done. The blue dot is the start, the red one the final point.





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Acknowledgements

The FUMSECK cruise is part of the BIOSWOT program.
The calculated hull-mounted ADCP currents are processed by Celine Heyndrickx, La Seyne sur Mer.
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