PREBIOSWOT cruise

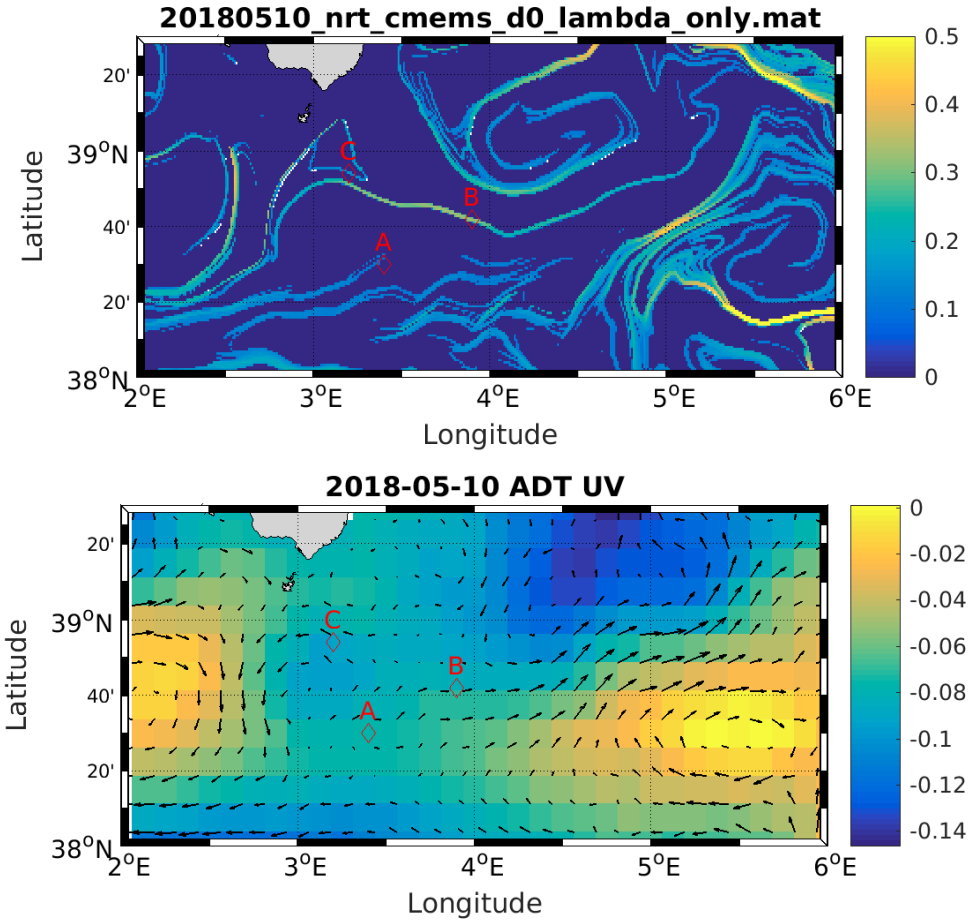
SPASSO Images Analysis

10/05/2018 10:45 UTC

Author(s): S. Barrillon, A. Petrenko, L. Rousselet, A.Doglioli (on board)

Executive Summary

Three different areas are being sampled until Sunday (around the diamonds in the zoomed plots), in a adaptative lagrangian survey using back and forth hippodrome strategy between the points, and with the seasoar and cytometry.
Yesterday the buoys have been launched (numbers 53553 53567, 53605, and 53565). The cytometer results show interesting changes in the species distributions on each side of the FSLE front (see new Section 2.5).
The Lagrangian adaptative strategy is focusing on an oblique NW-SE FSLE that is being crossed by the first transects between point A (about 3.4°E - 38.5°N) and B (about 3.9°E - 38.7°N) and crossed again by the following transects between A and C (about 3.2°E 38.9°N). This FSLE seems to move northward.
No usefull Chl figure today.
The gliders have been turned back yesterday (see Section 2.4 for some glider plots).



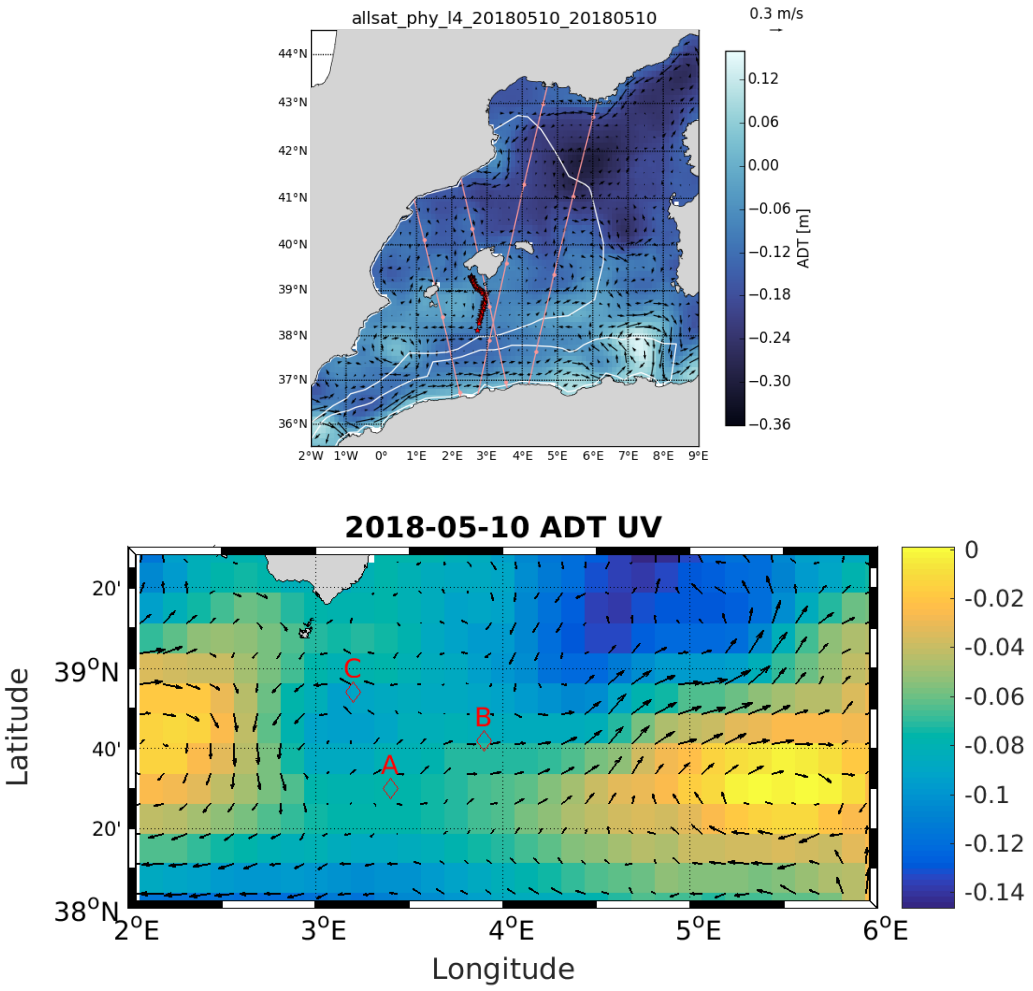
1 Ongoing operations and upcoming stations

Three different areas are being sampled until Sunday (around the diamonds in the zoomed plots), in a lagrangian survey using back and forth hippodrome strategy between the points, and with the seasoar and cytometry. This strategy favors the overlapping with the GdC area (between 2.5-3.5°E and 38-39°N). Moreover the 3 different areas cover quite well the satellite Chl patch observed in the CLS Chl figures.

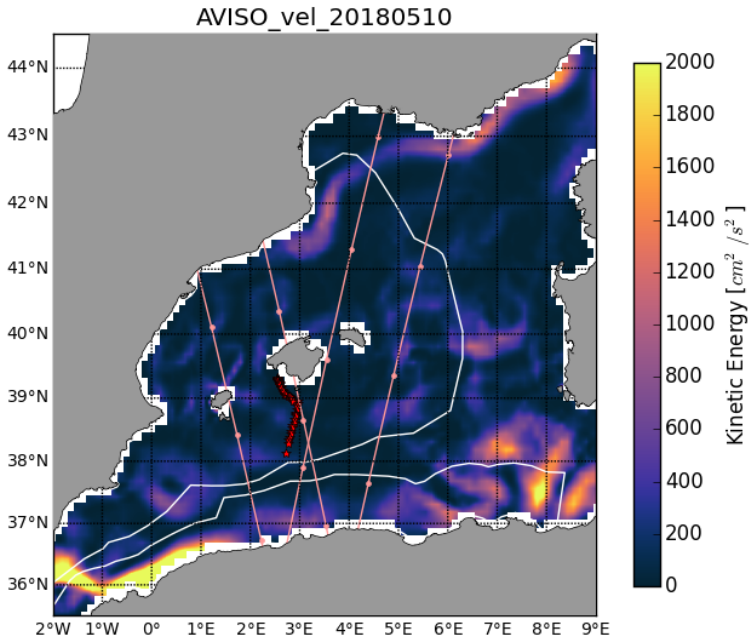
Yesterday some problems with the seasor have been observed, the seasor has been successfully replaced by the rapid cast and then by the other seasor. The buoys have been launched (numbers 53553 53567, 53605, and 53565) and are moving coherently with the ADCP and altimetry measurements. The BB is moving around on a 8h hippodrome. The cytometer results show interesting changes in the species distributions on each side of the FSLE front.

2 Daily figures analysis

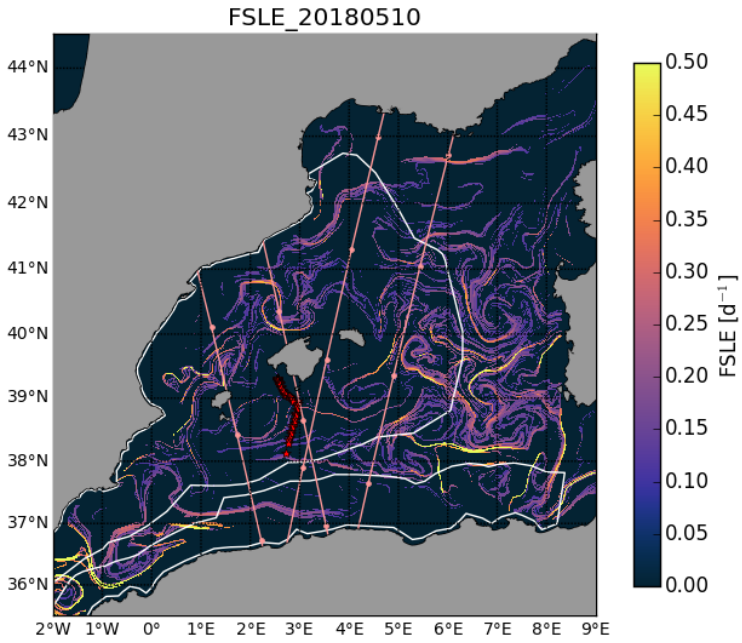
2.1 Altimetry, derived currents and Lagrangian analysis

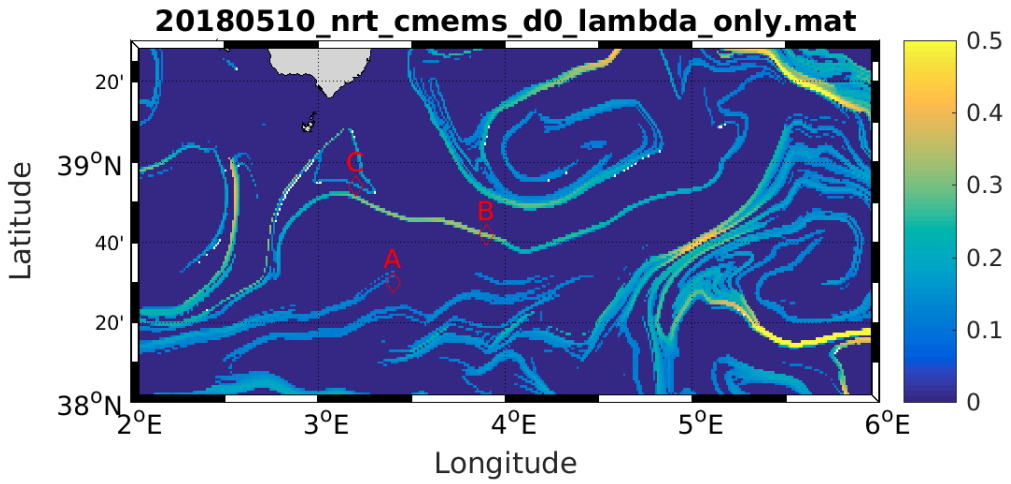


The currents are relatively weak in the chosen area. Section AB crosses northeastward currents. Around C, the currents are northwestward.
The eastern side of the AB hippodrome may touch the western side of the anticyclonic structure mentioned in the last bulletins and centered at 5.5°E - 38.5°N .

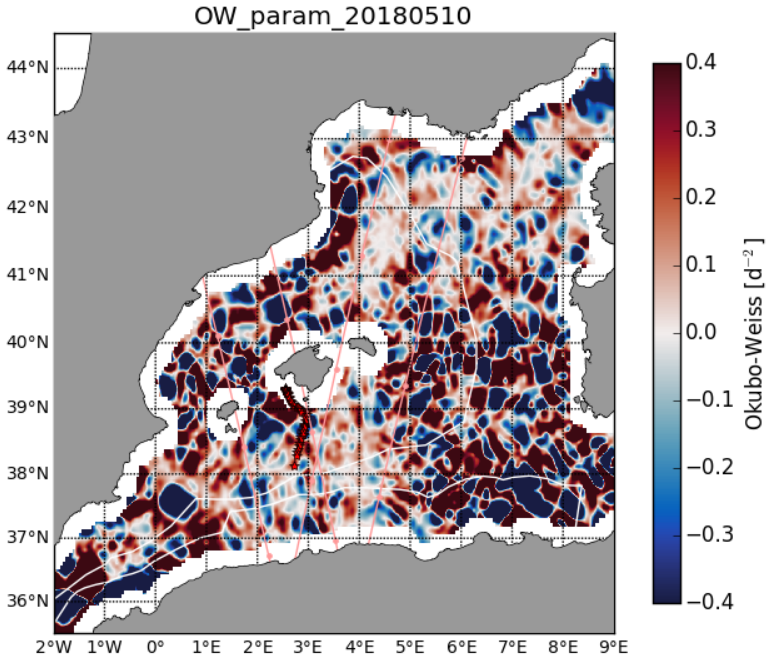


The area has low energy.

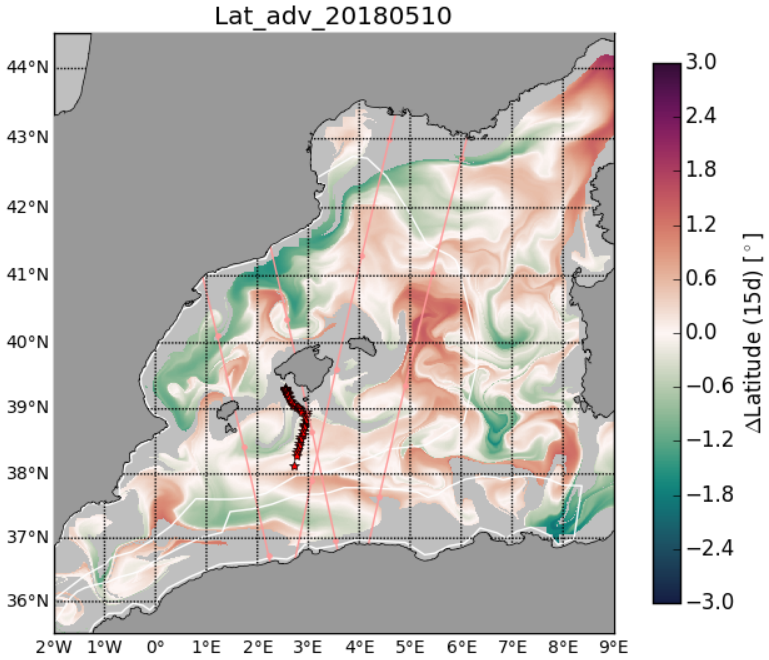


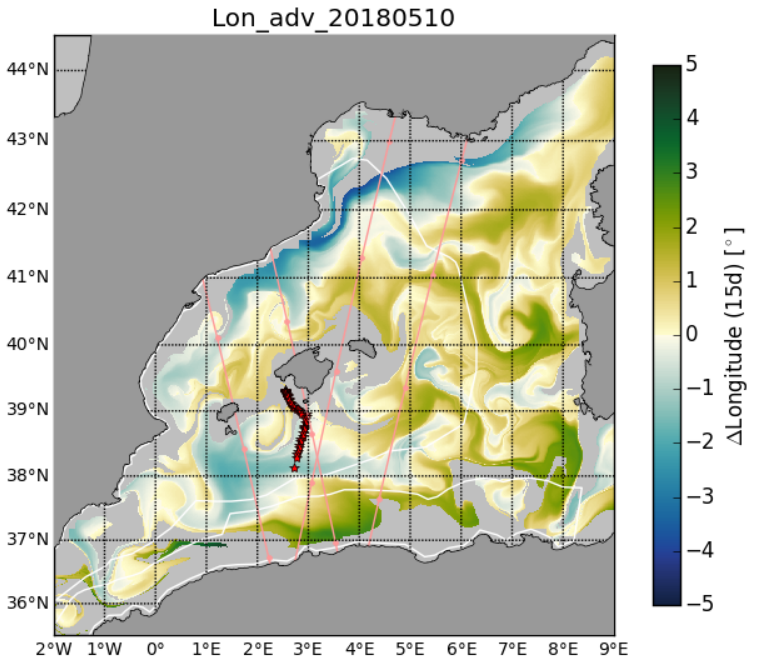


The Lagrangian adaptative strategy is focusing on an oblique NW-SE FSLE that is being crossed by the first transects between point A (about 3.4°E - 38.5°N) and B (about 3.9°E - 38.7°N) and crossed again by the following transects between A and C (about 3.2°E 38.9°N). This FSLE seems to move northward (former point B is now on the front while it was situated North of it before). In any case, the end points are (and will be) adapted following the buoys trajectories.



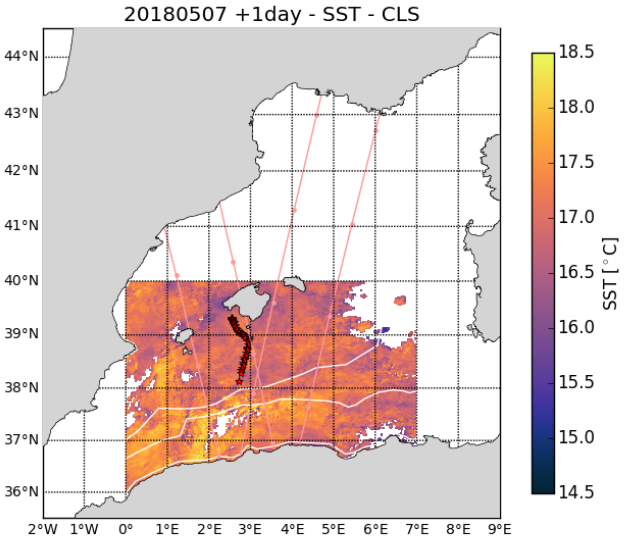
The gliders (see new Section 2.4 below) did their route east of the distorted mesoscale structure mentioned in the last bulletins (located southeast of Ibiza and southwest of Majorqua). The BB may cross a smaller feature betweeen Ibiza and Majorqua on Sunday.

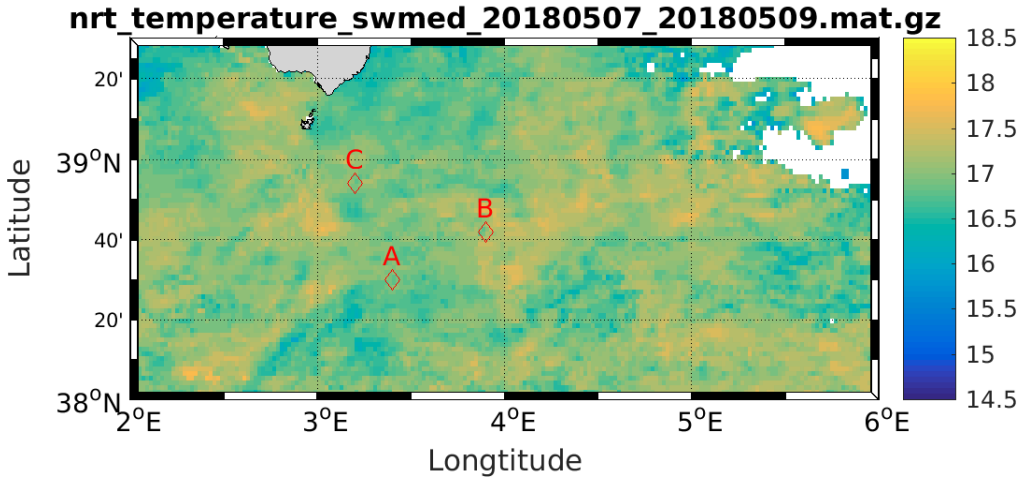


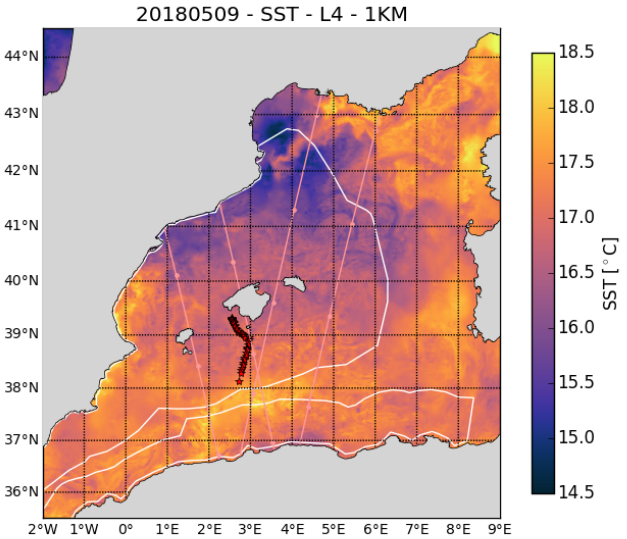


The Lat_adv and Lon_adv images agree with the FSLE structures.
The FSLE structure crossed by the BB transects seems to separate local waters or waters originating slightly from the south-west on its south-west side (around A) and coastal waters on its north-east side (around B and C).

2.2 SST analysis

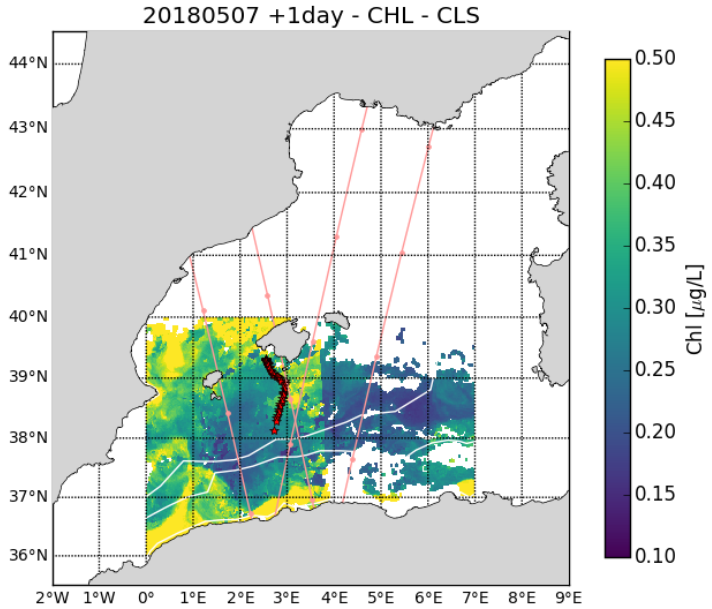


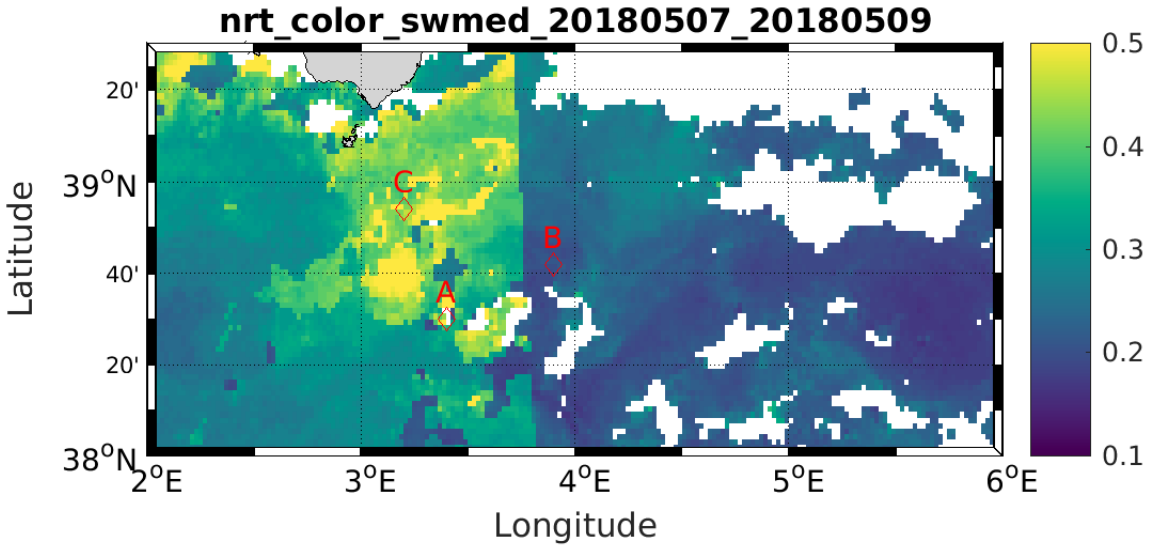




Since the water has significantly warmed up, the color bar scale has been changed to [14.5;18.5°] (half a degree higher). No particular pattern is seen on the SST for the BB zone.

2.3 Chlorophyll analysis

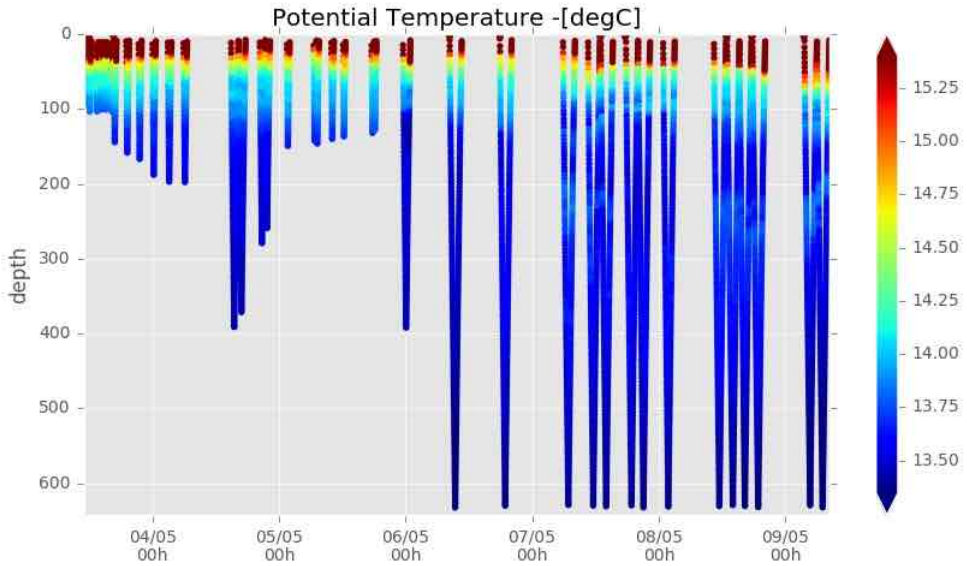


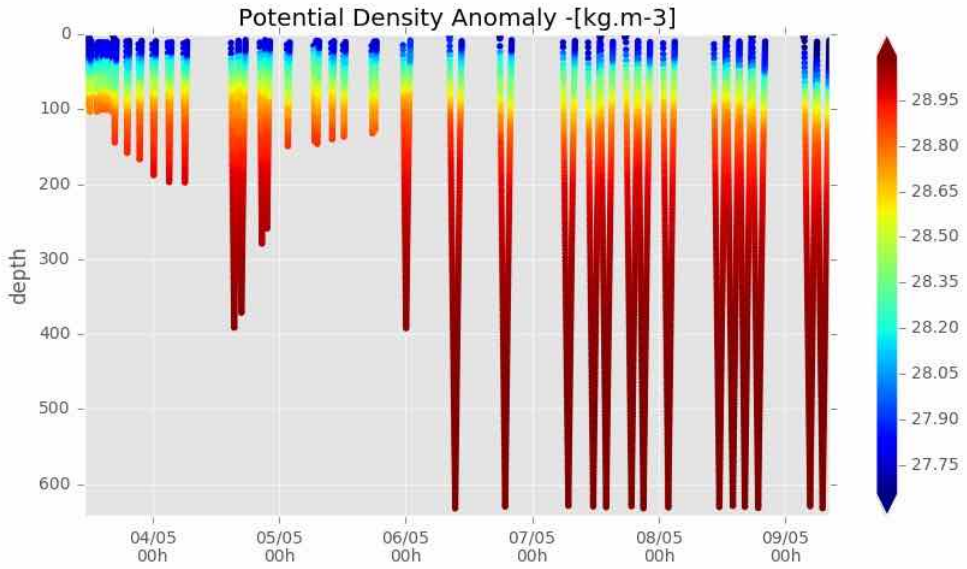


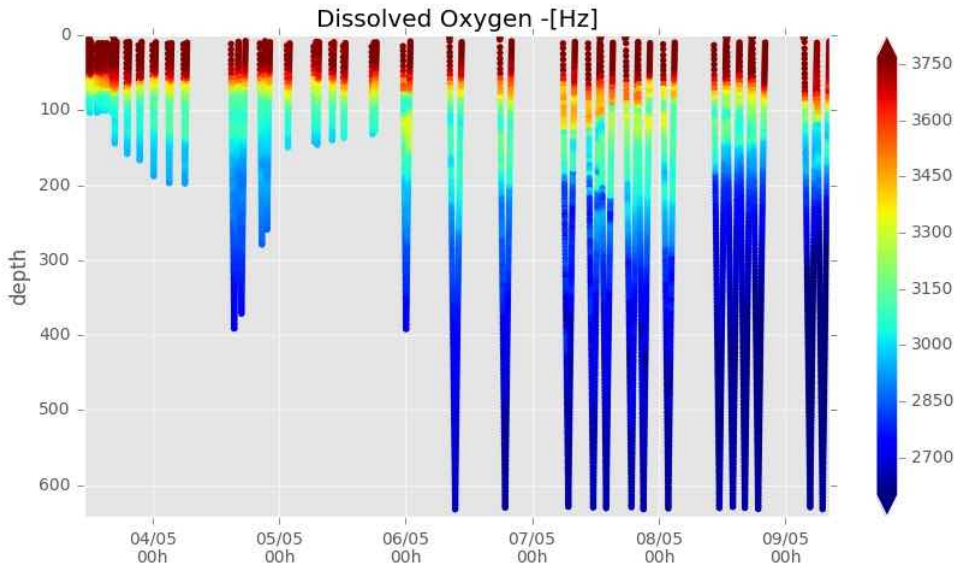
The CLS Chl figure seems buggy in its left part showing artificially high Chl, while compared to its right side which seems to be correct with respect to yesterday's figure. We would recommend not to trust this figure for today. The other Chl figures are cloudy.

2.4 Gliders

The gliders has turned around yesterday afternoon. The MIO glider is planned to come back on the same track and to be retrieved on May 15.
The MIO glider positions and website have not been updated today, but the glider is sending data, maybe a firewall problem again, impossible to solve today as it is a day off. See below some nice plots kindly provided by Nagib.

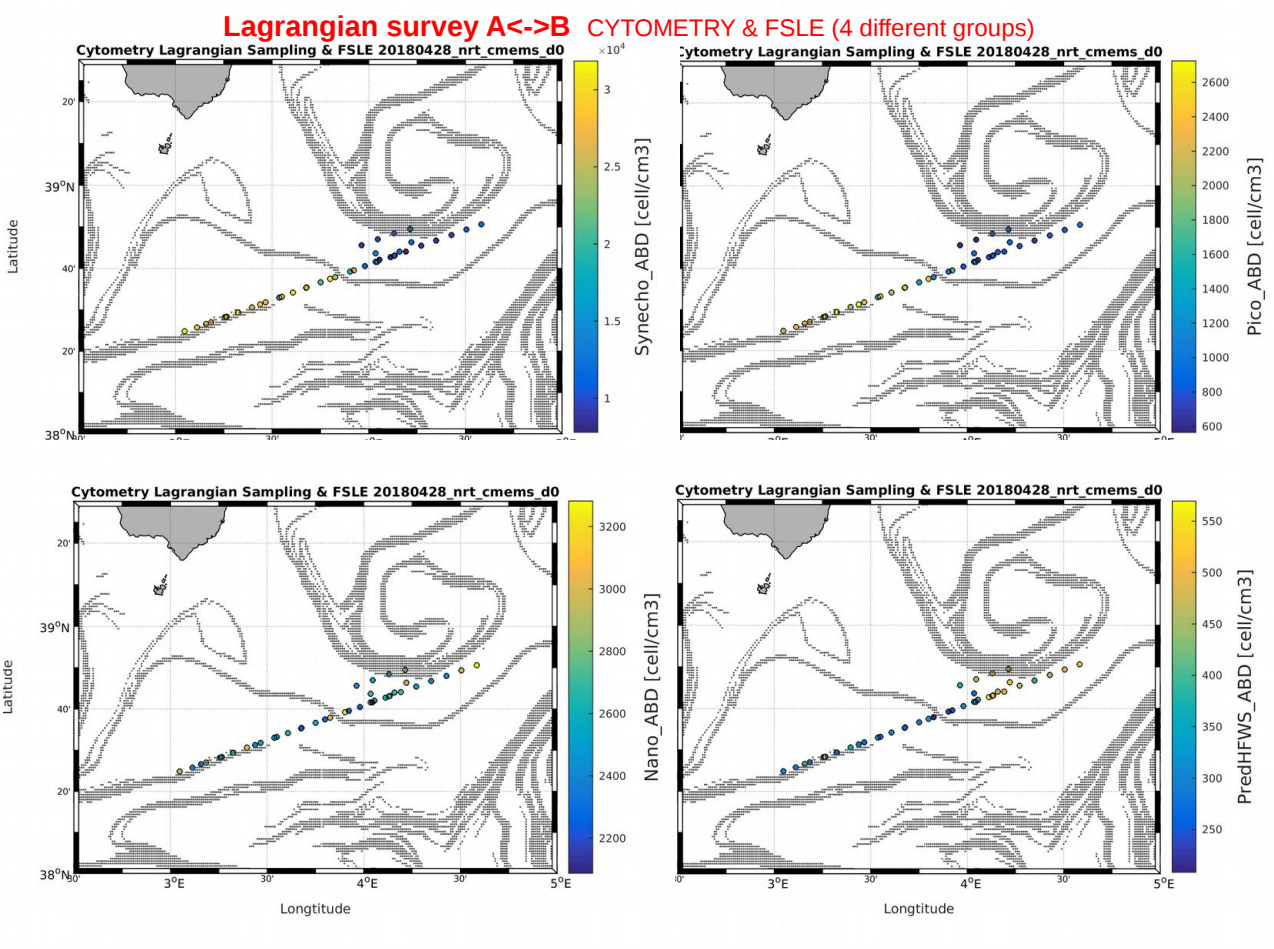

Potential Temperature -[degC]
depth
0
100
200
300
400
500
600
04/05 00h
05/05 00h
06/05 00h
07/05 00h
08/05 00h
09/05 00h
15.25
15.00
14.75
14.50
14.25
14.00
13.75
13.50


Potential Density Anomaly -[kg.m-3]
depth
0
100
200
300
400
500
600
04/05 00h
05/05 00h
06/05 00h
07/05 00h
08/05 00h
09/05 00h
28.95
28.80
28.65
28.50
28.35
28.20
28.05
27.90
27.75


Dissolved Oxygen -[Hz]
depth
0
100
200
300
400
500
600
04/05 00h
05/05 00h
06/05 00h
07/05 00h
08/05 00h
09/05 00h
3750
3600
3450
3300
3150
3000
2850
2700

2.5 Online analysis

See below nice plots from Andrea and Gerald showing the changes of species distributions on each part of the FSLE.



.

Acknowledgements

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. CLS provided the SST and surface CHL concentration composite products. 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.

PREBIOSWOT project webpages

(à définir)

SPASSO PREBIOSWOT webpages

http://www.mio.univ-amu.fr/SPASSO/PREBIOSWOT/