

[BIOSWOT-Med]: SPASSO Images Analysis

L. Rousselet, A.M. Doglioli

April 26, 2023

Executive Summary

Type here your executive summary

1 Ongoing operations and upcoming stations

SWOT passing time (UTC) over:

| 43°N - 5°E Asc | 42.7°N - 4.8°E Asc |

|:-----|:-----|

| 2023-04-26 19:50:16 | 2023-04-26 19:50:16 |

| 2023-04-27 19:40:53 | 2023-04-27 19:40:53 |

| 2023-04-28 19:31:31 | 2023-04-28 19:31:31 |

| 2023-04-29 19:22:09 | 2023-04-29 19:22:09 |

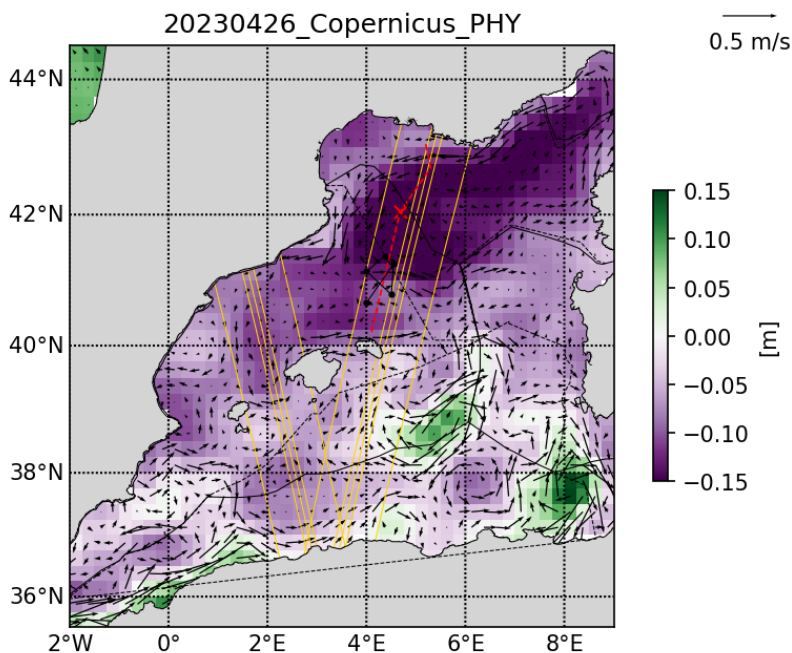
| 2023-04-30 19:12:46 | 2023-04-30 19:12:46 |

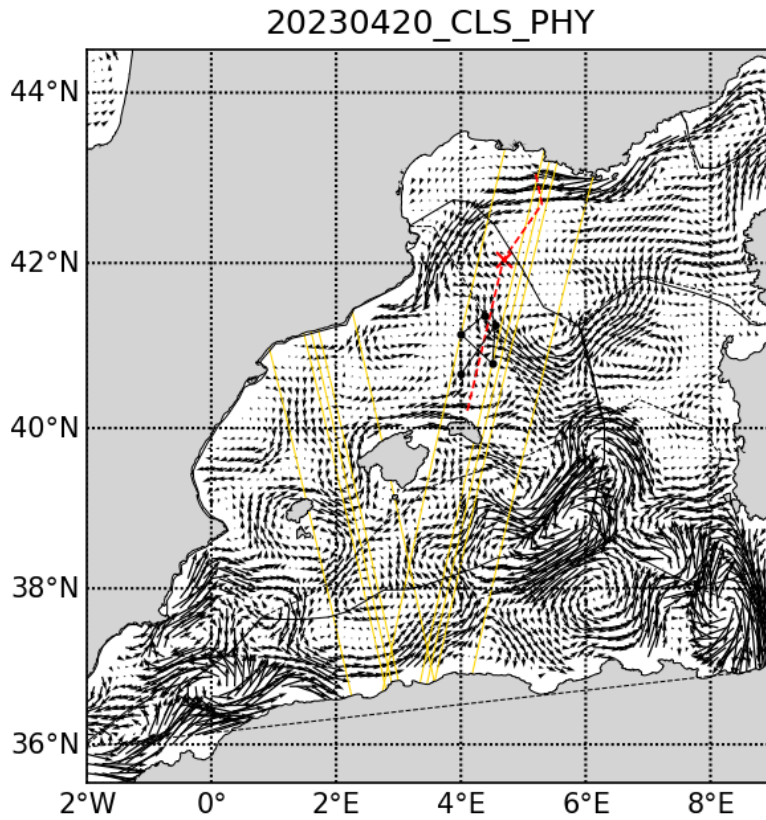
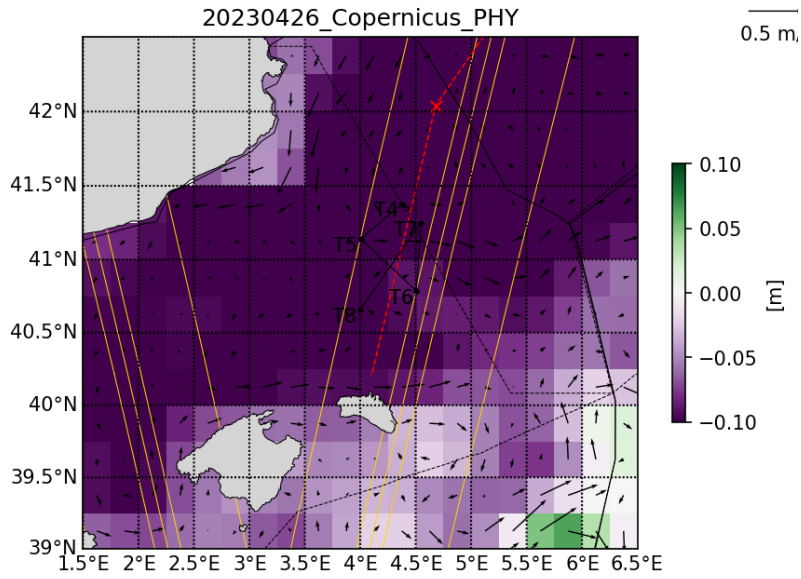
Type here.

2 Daily figures analysis

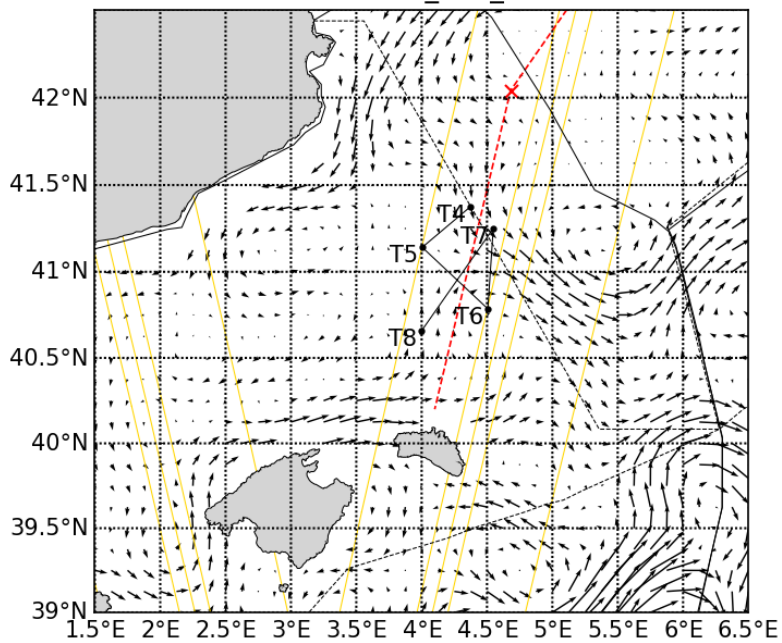
2.1 Altimetry, derived currents

Type here.

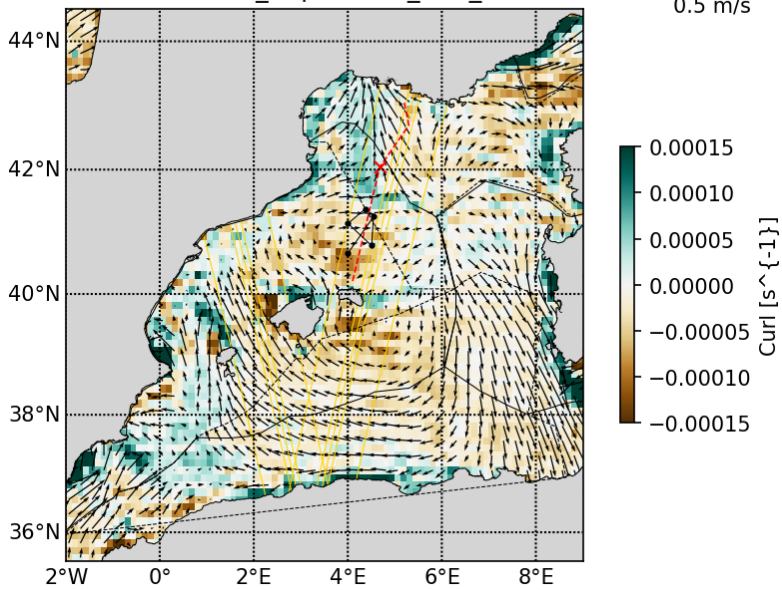


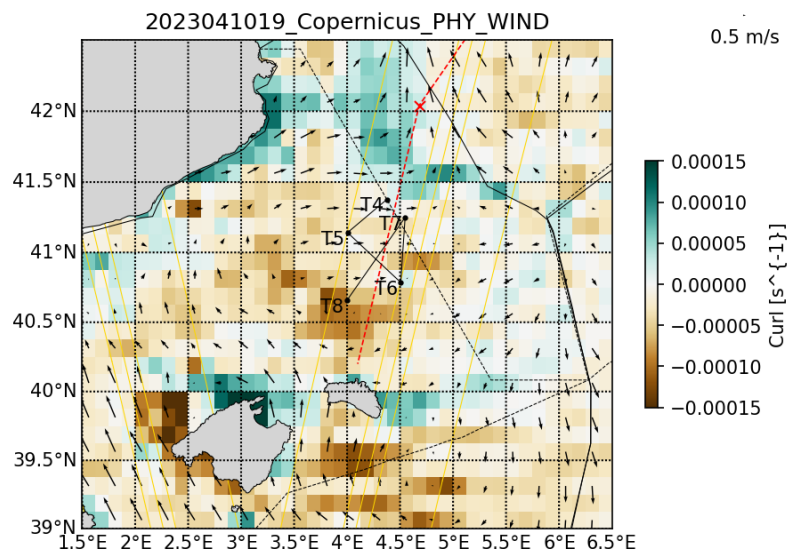


20230420_CLS_PHY



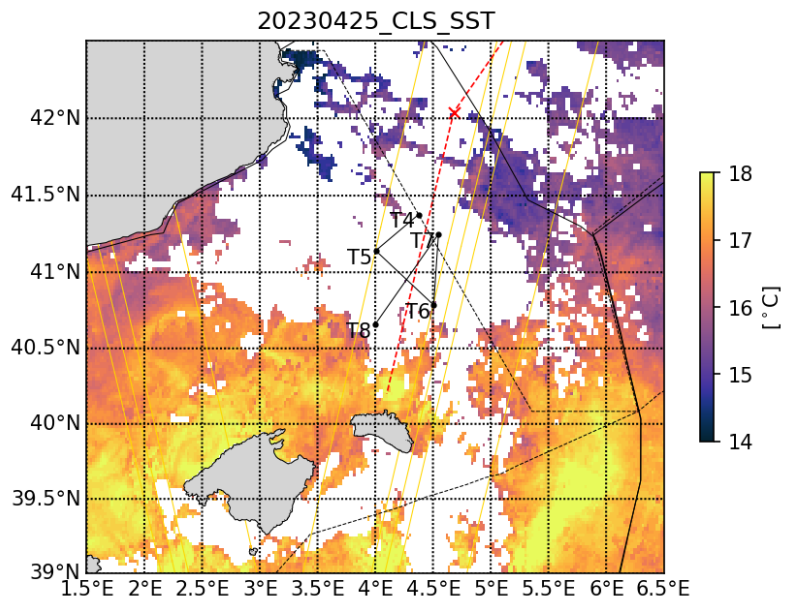
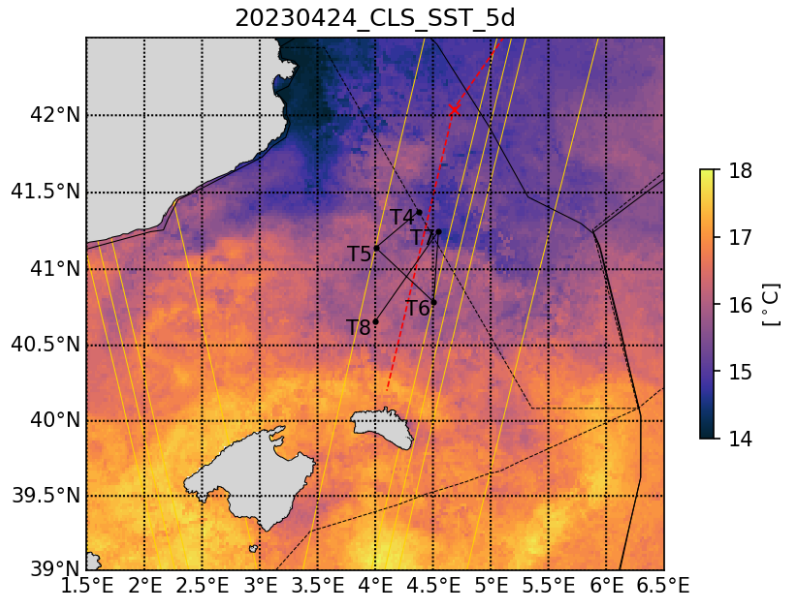
2023041019_Copernicus_PHY_WIND



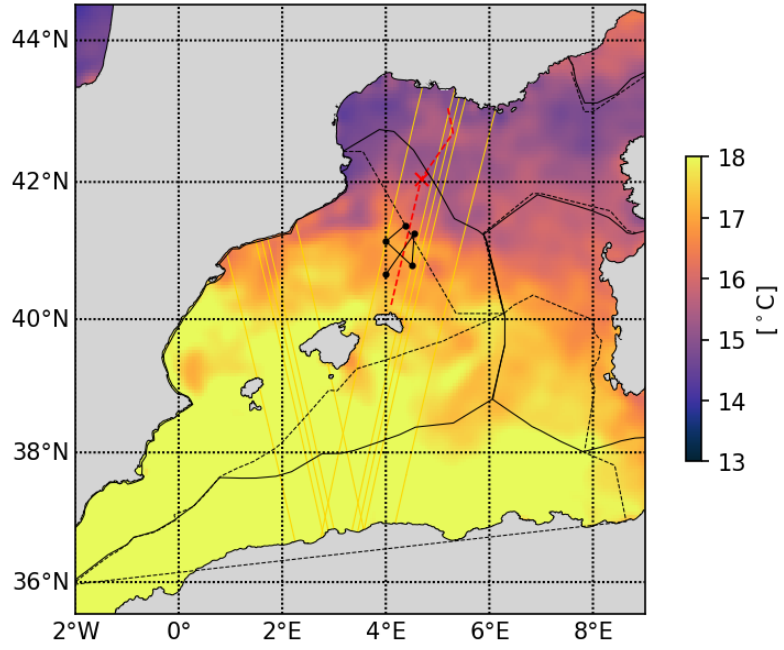


2.2 SST analysis

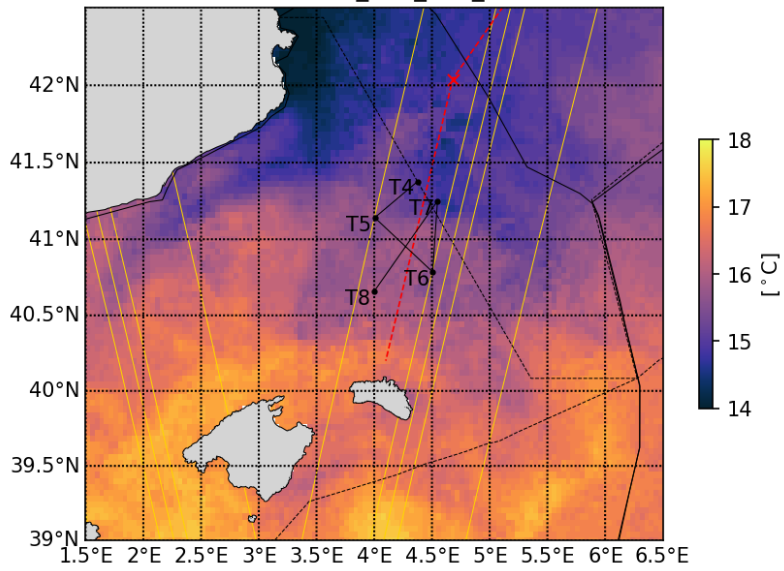
Type here.



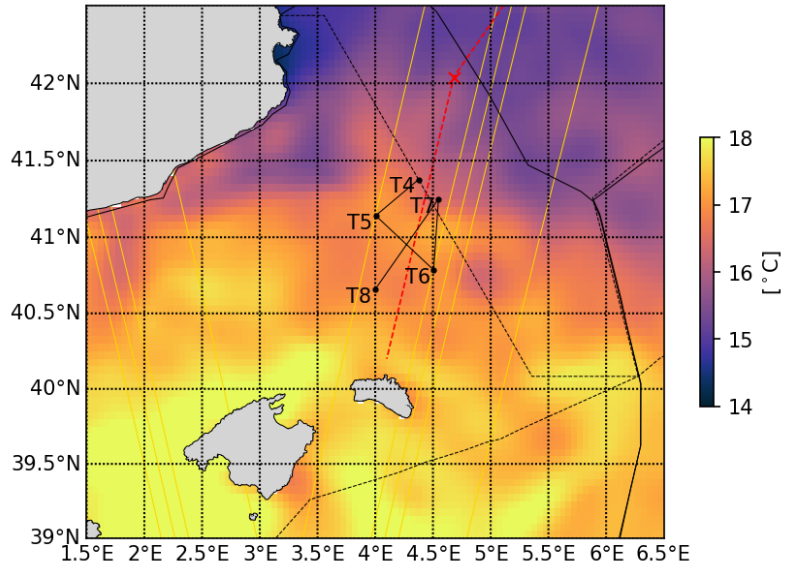
20230425_Copernicus_SST_L4



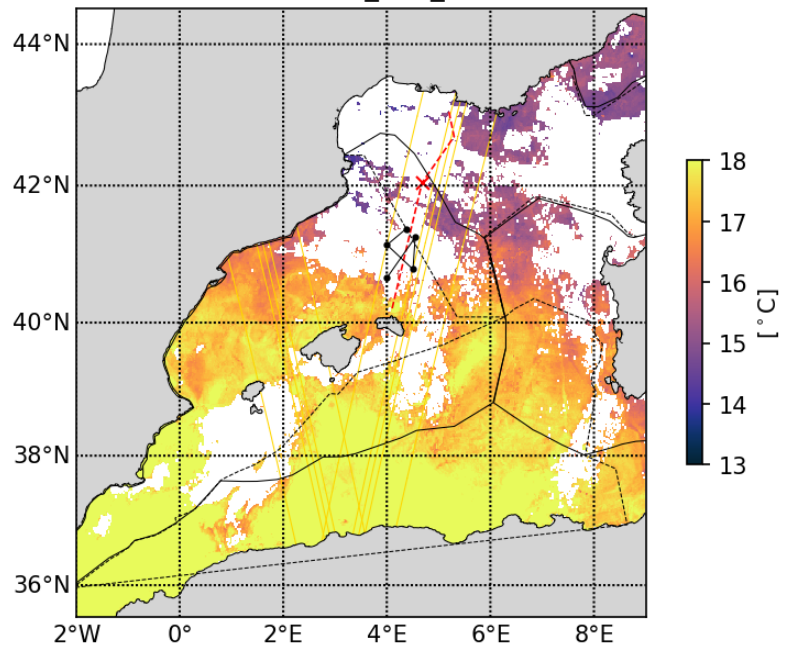
20230424_CLS_SST_7d



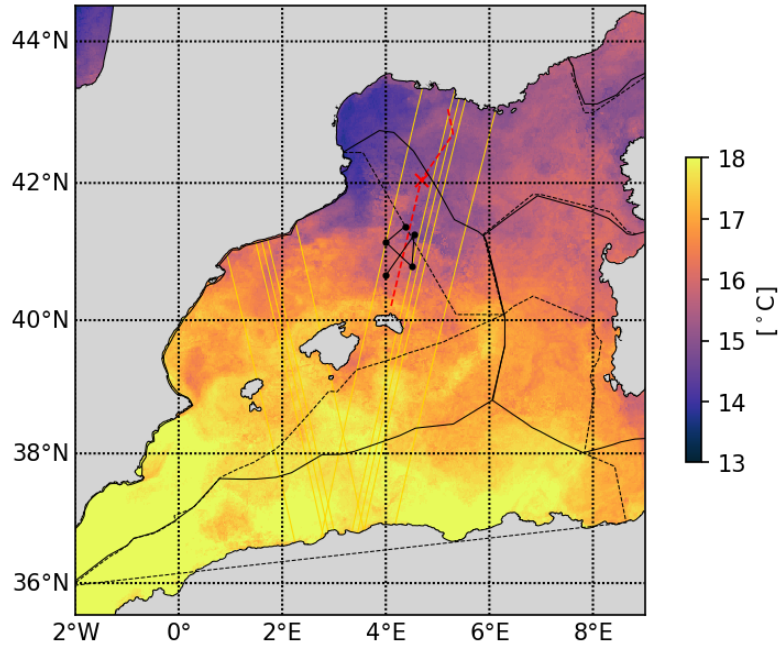
20230425_Copernicus_SST_L4



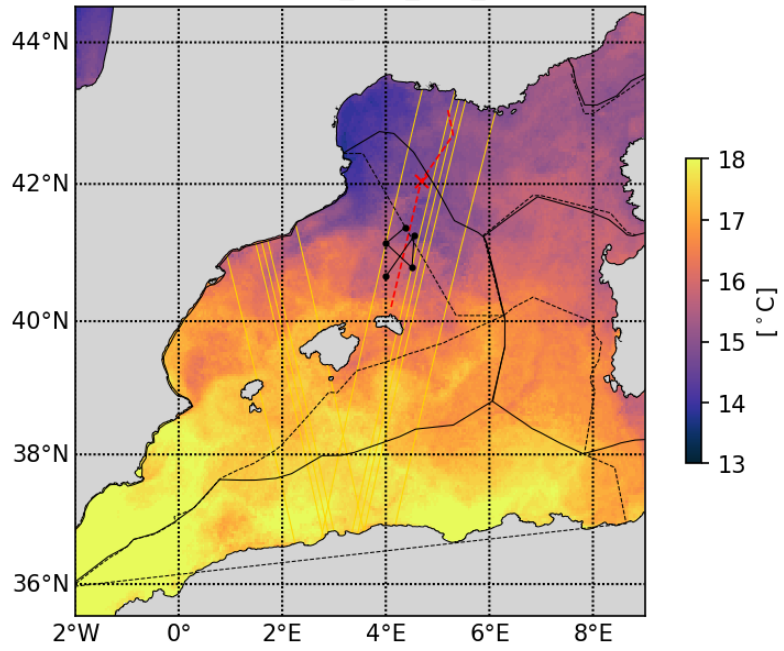
20230425_CLS_SST



20230424_CLS_SST_5d

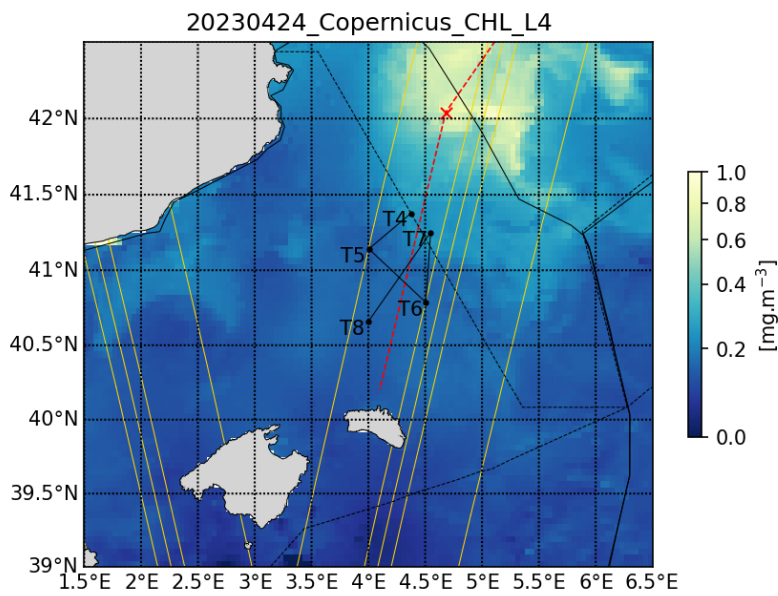
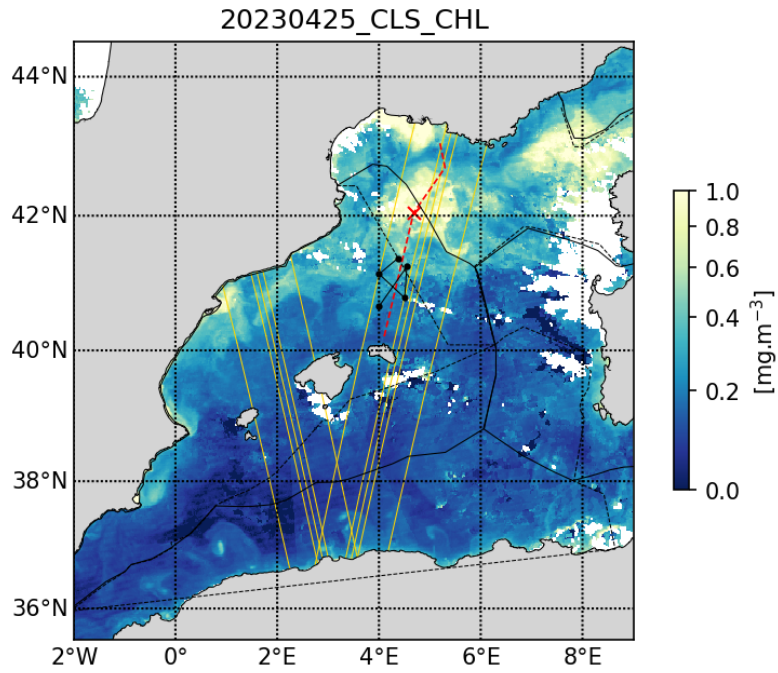


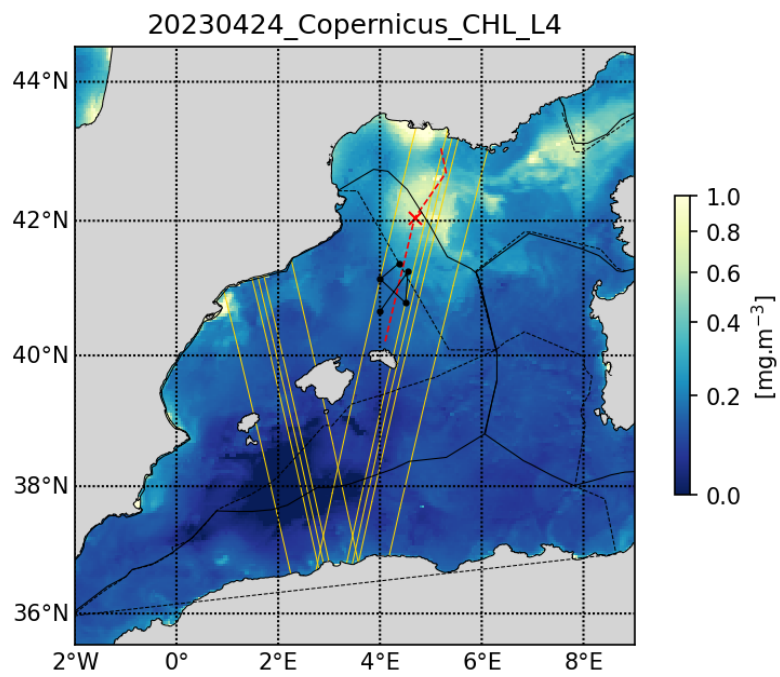
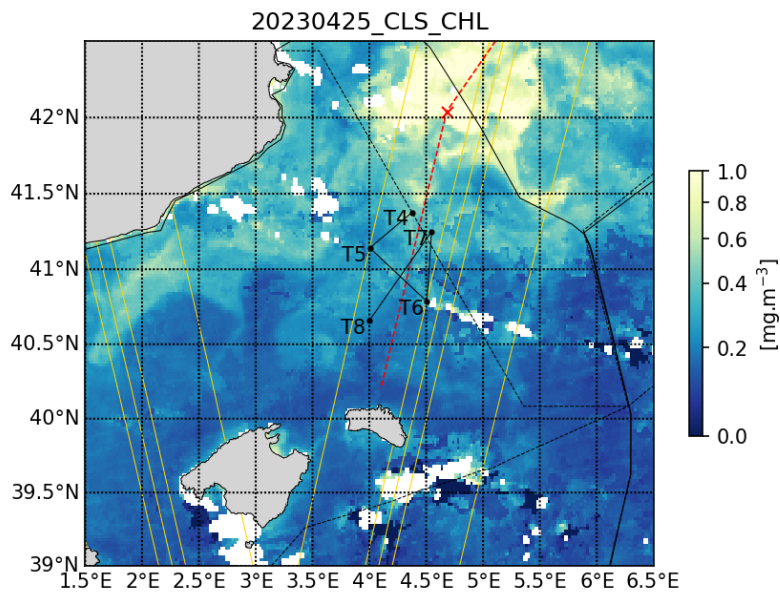
20230424_CLS_SST_7d



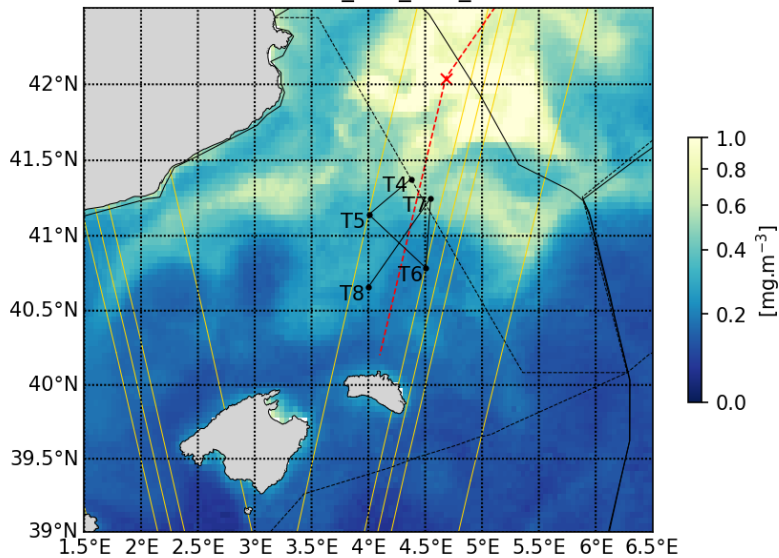
2.3 Chlorophyll analysis

Type here.

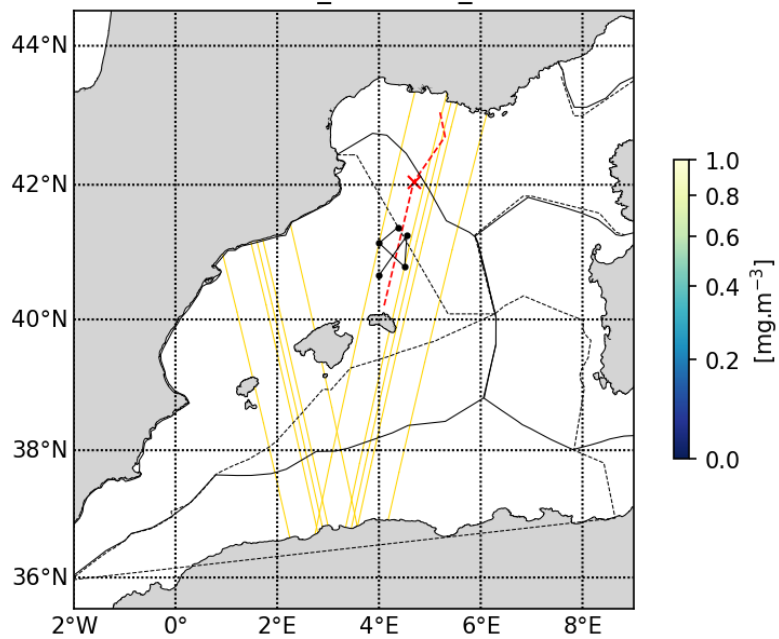


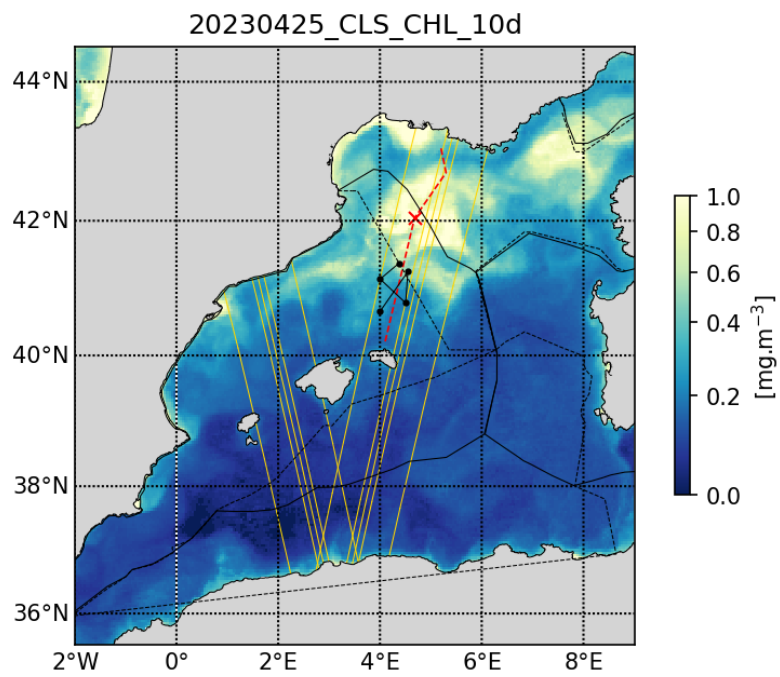
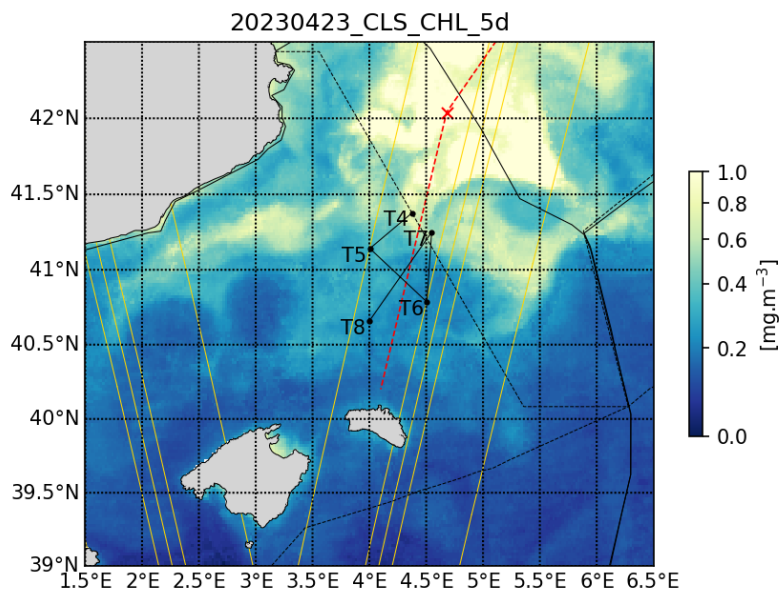


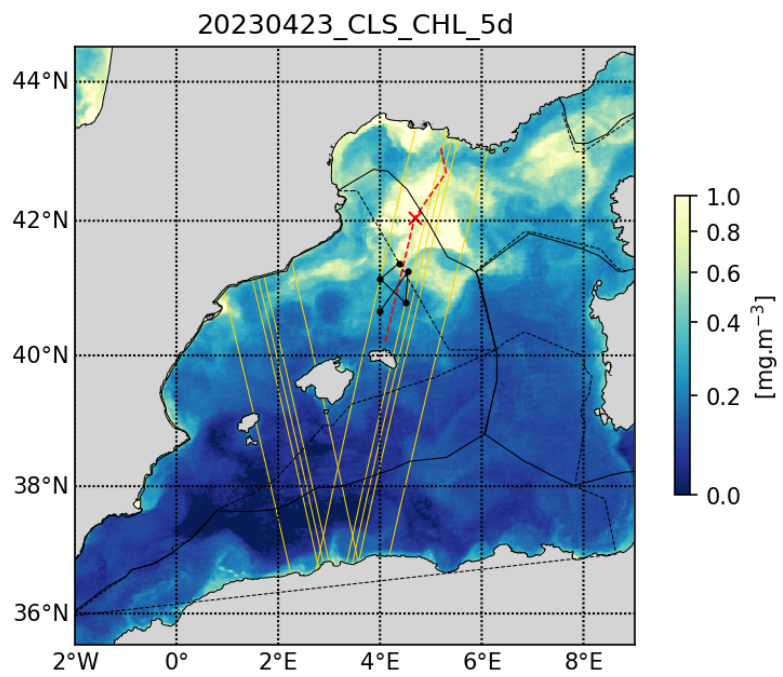
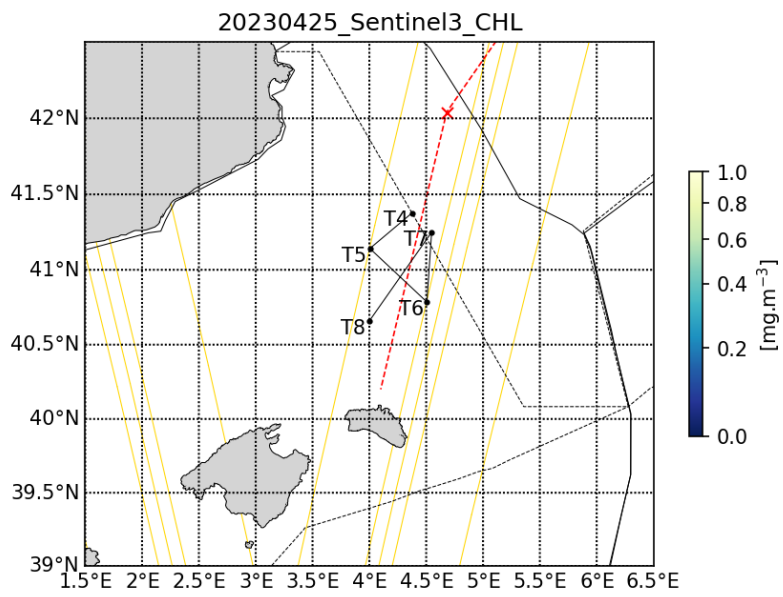
20230425_CLS_CHL_10d



20230425_Sentinel3_CHL







2.4 Eulerian/Lagrangian analysis

Eulerian diagnostics computed with Copernicus_PHY velocities:

KE: kinetic energy

OW: Okubo-Weiss parameter

Lagrangian diagnostics computed by seeding Lagrangian particles every 0.02deg and advected for 30 days backward in time with Copernicus_PHY velocities:

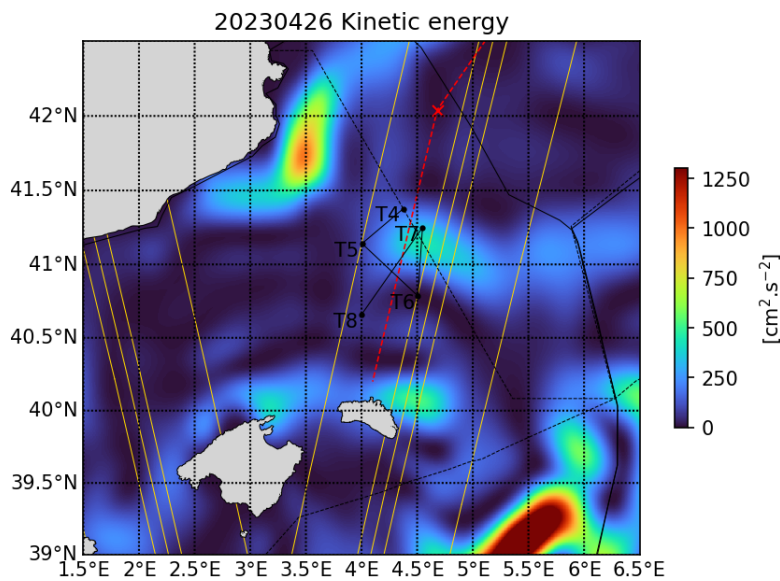
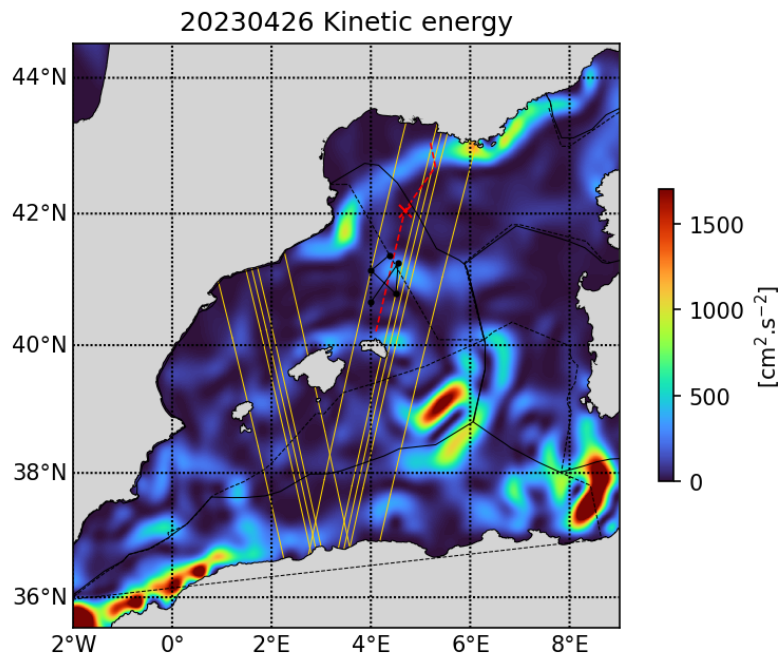
FTLE: finite time Lyapunov exponents (convergent fronts detection)

LLADV: longitude and latitude advection

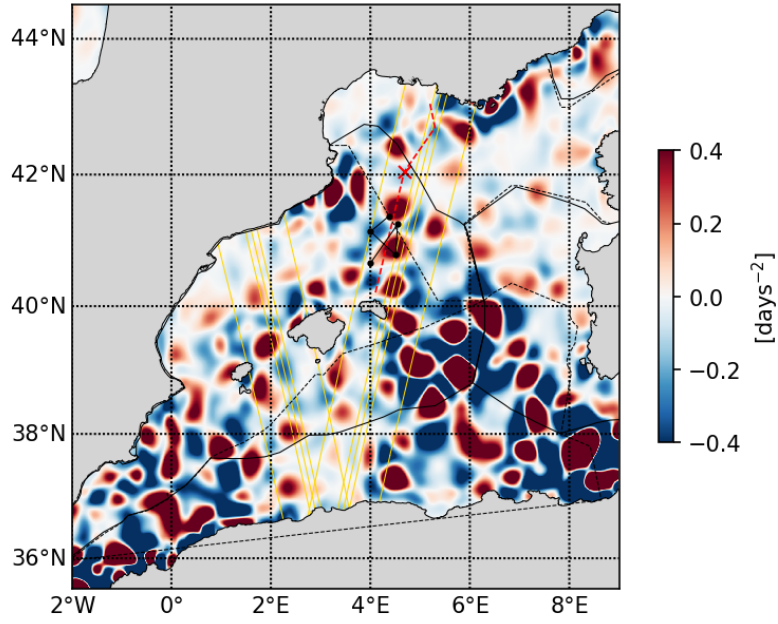
Retention parameter (based on computing the okubo Weiss parameter along a particle trajectory): Detect trapping structures (colorbar = days water parcels have a positive vorticity)

Timefrombathy: Water age since last contact with isobath XXm (precised in figure title)

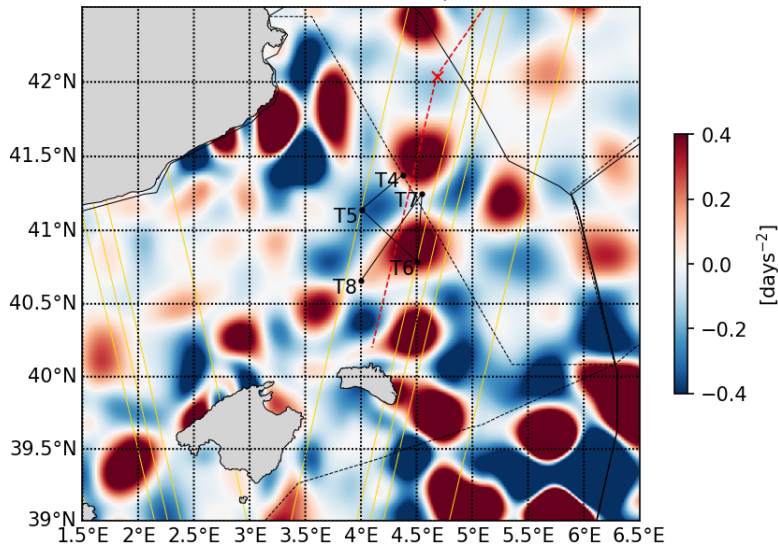
More details available at: <https://www.swot-adac.org/resources/swot-adac-products-access/>



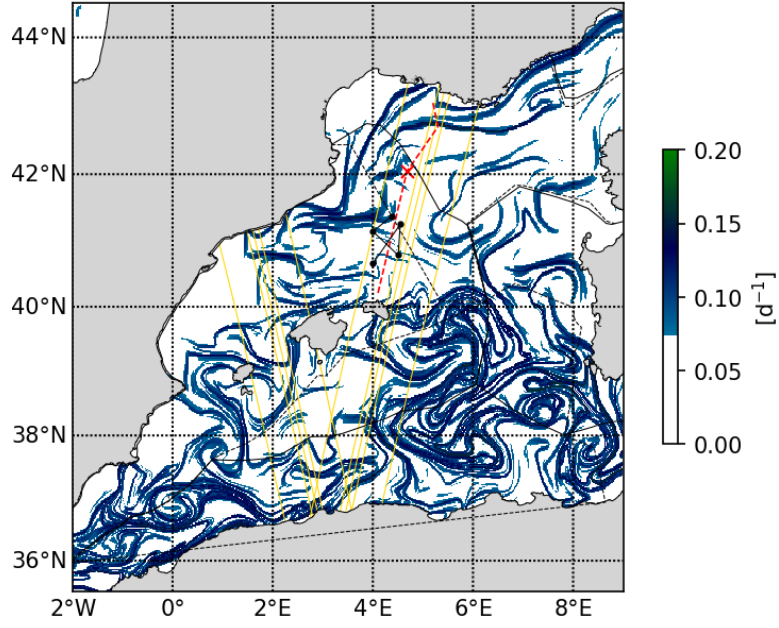
20230426 Okubo-Weiss parameter



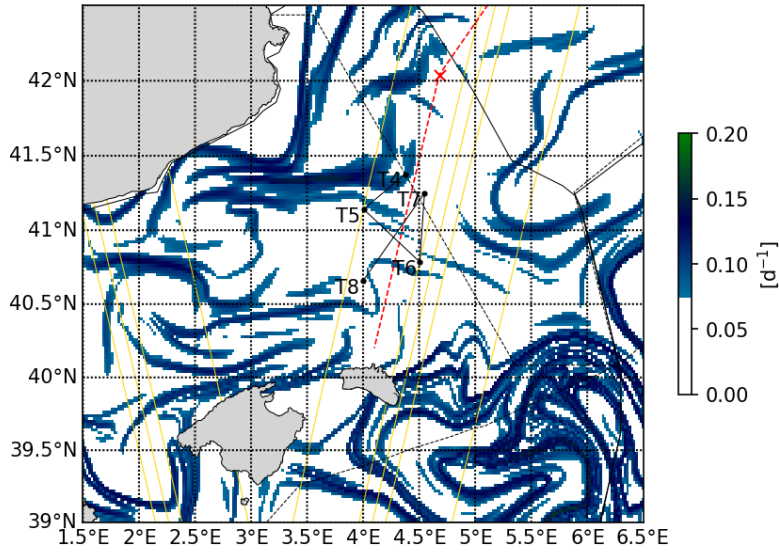
20230426 Okubo-Weiss parameter



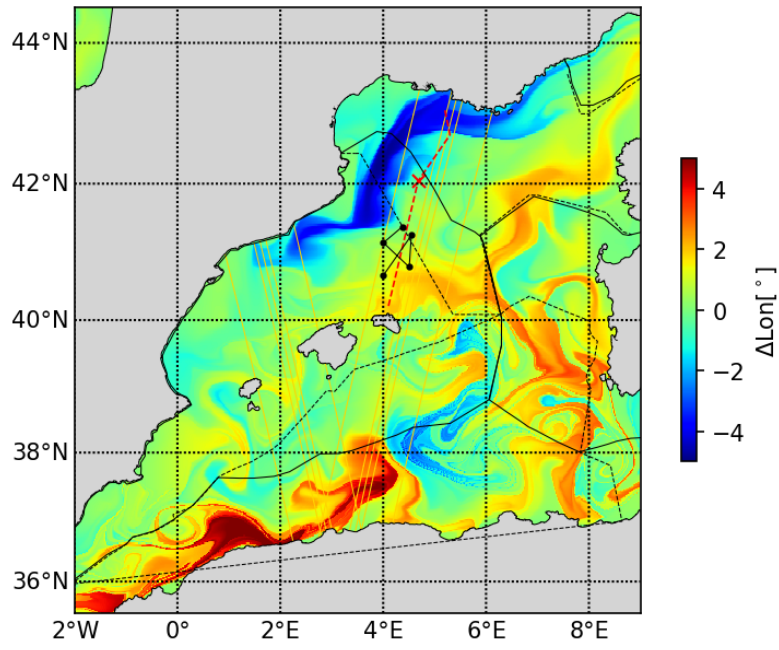
20230426 Finite Time Lyapunov Exponent



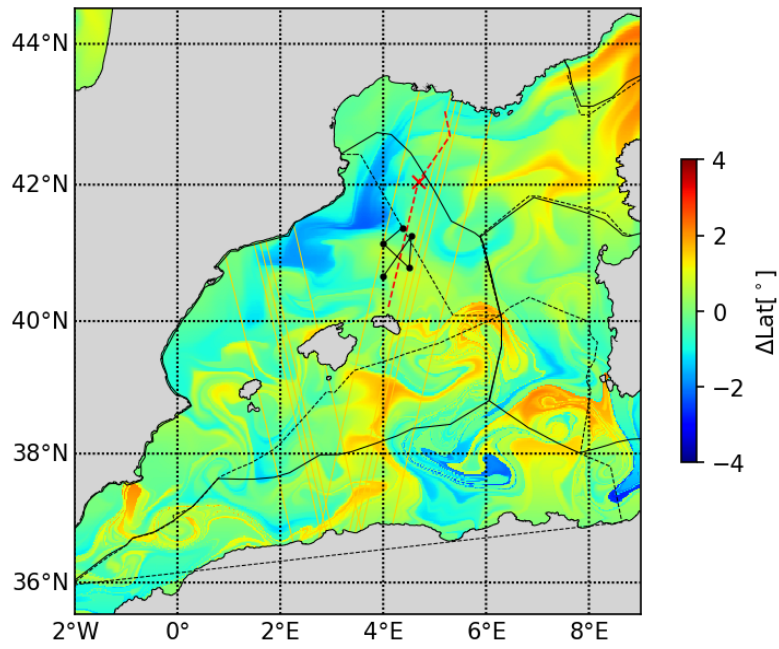
20230426 Finite Time Lyapunov Exponent

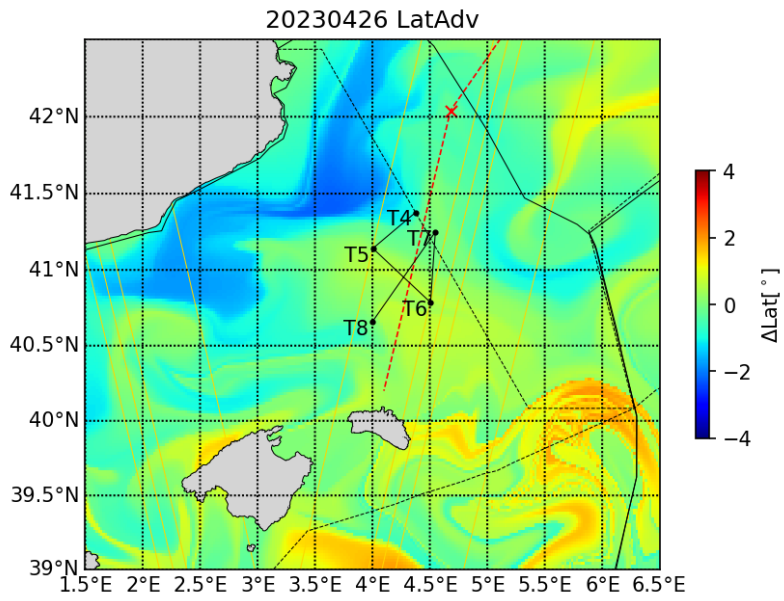
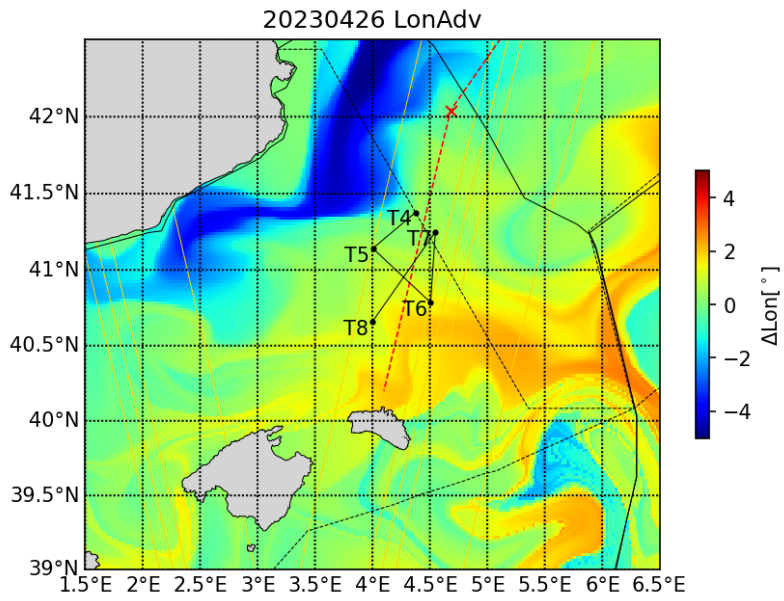


20230426 LonAdv

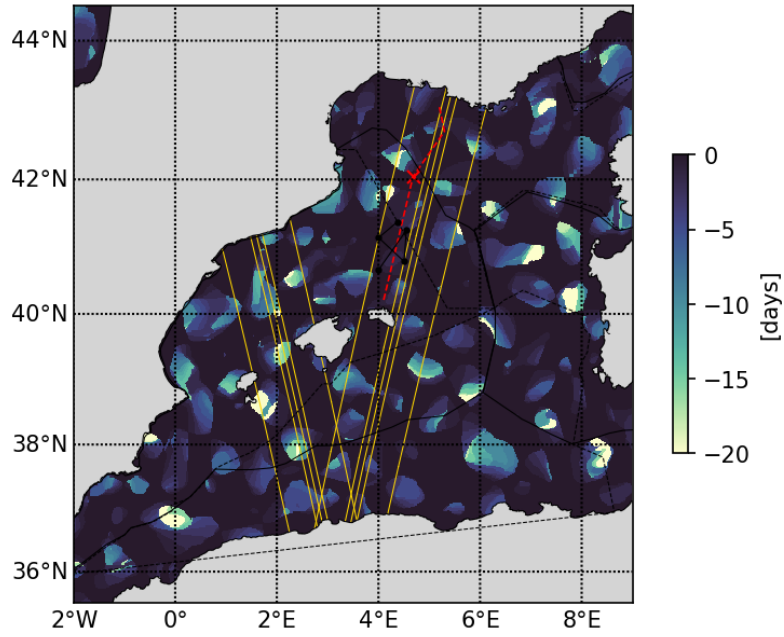


20230426 LatAdv

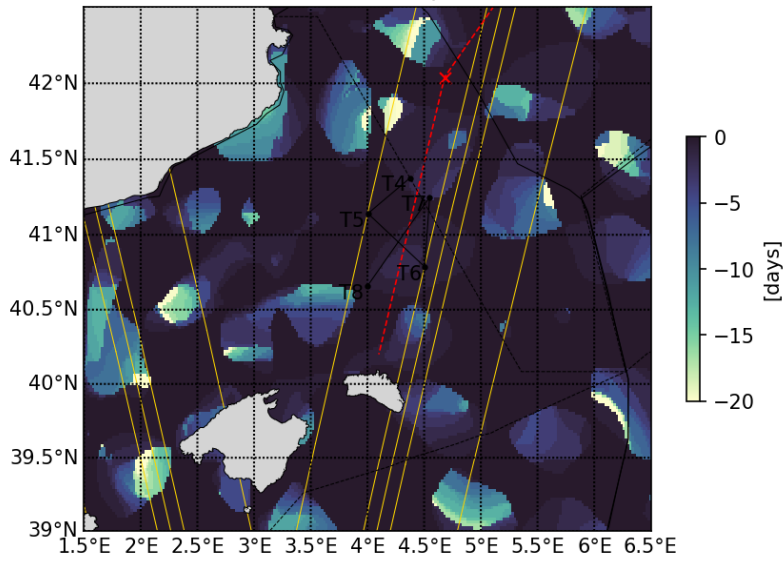




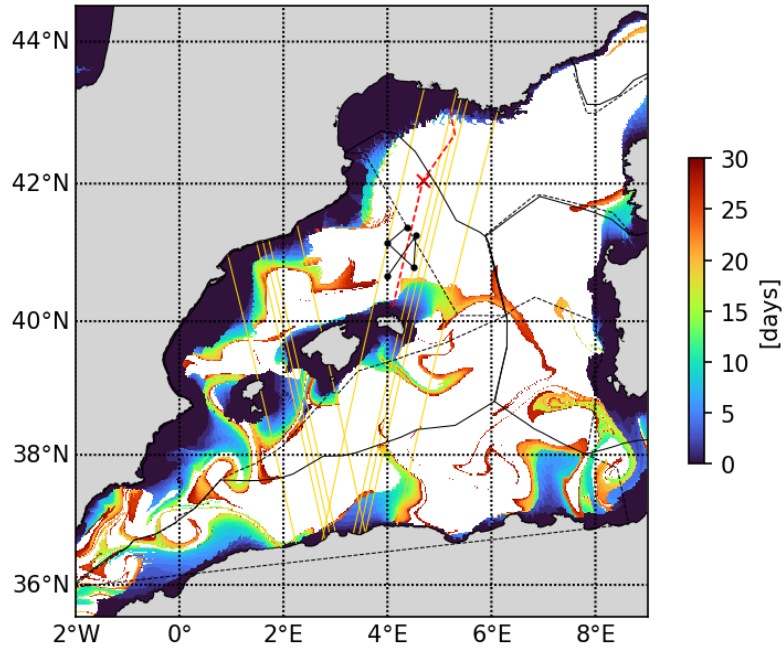
20230426 Retention parameter



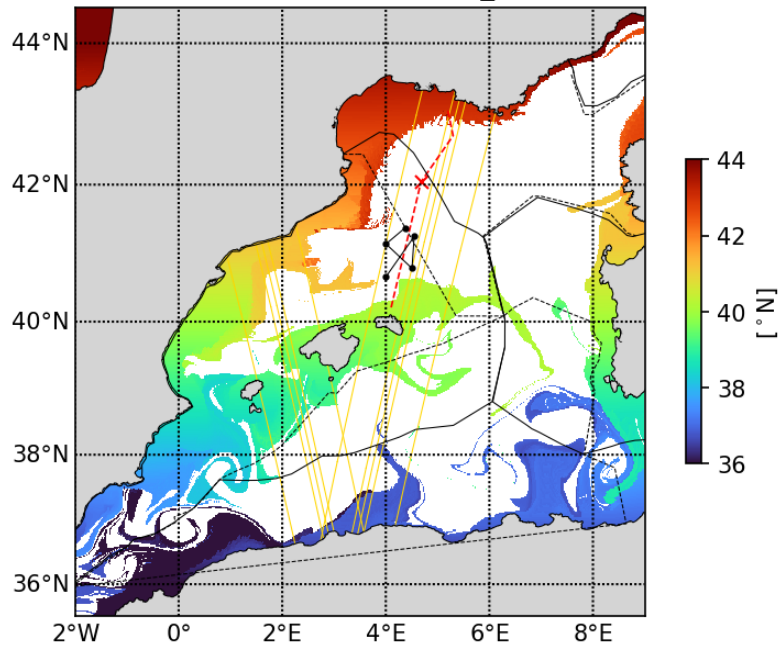
20230426 Retention parameter



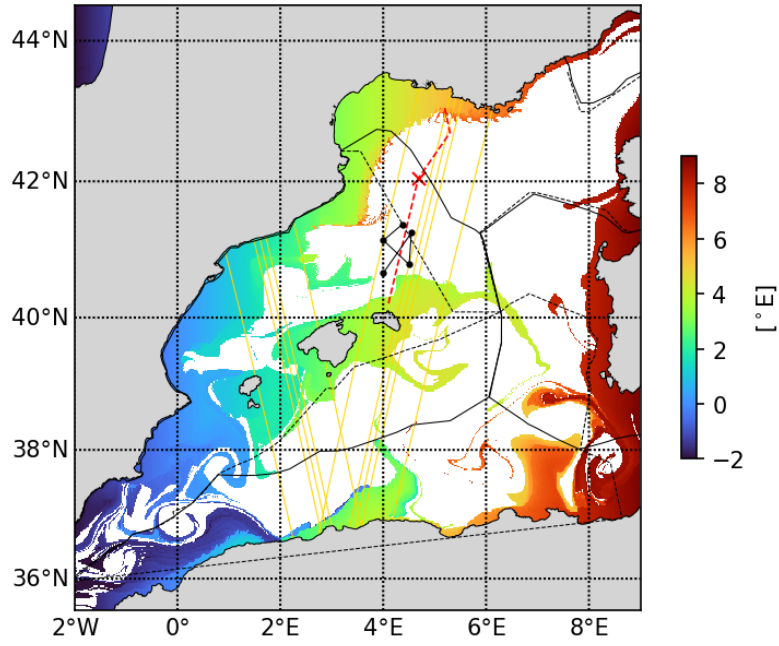
20230426 Timefrombathy_500m



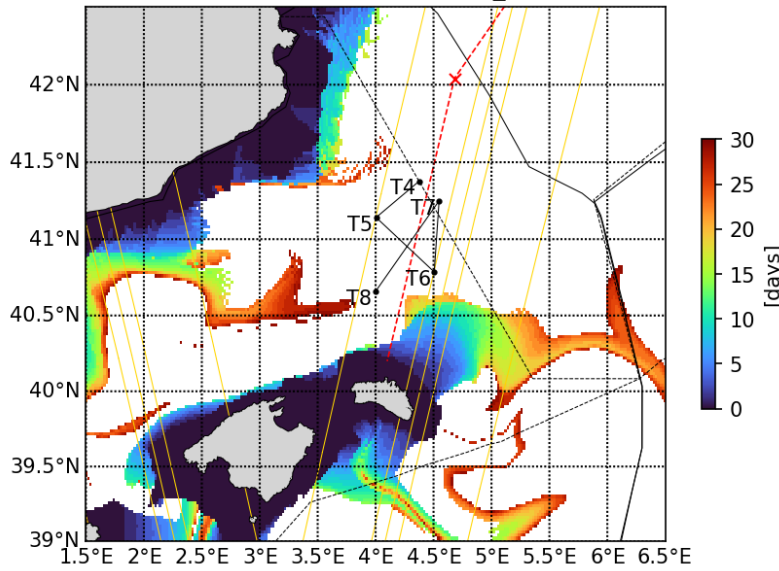
20230426 Latfrombathy_500m

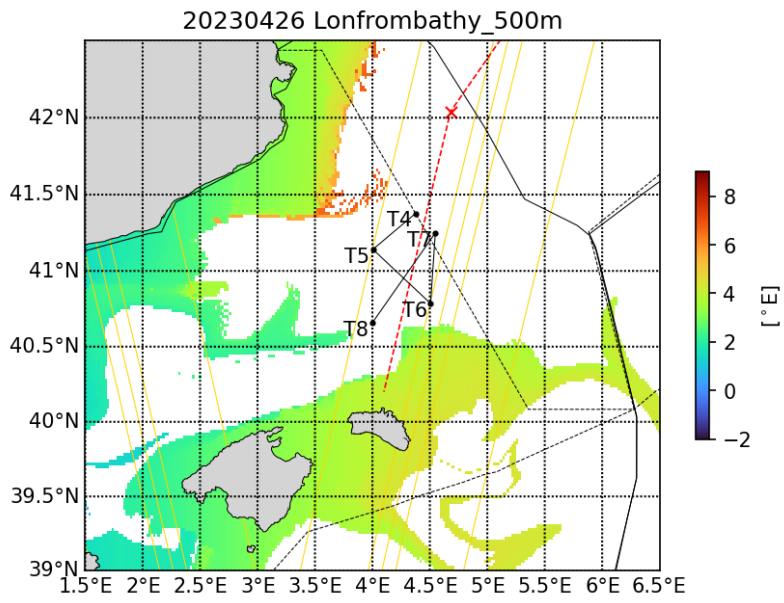
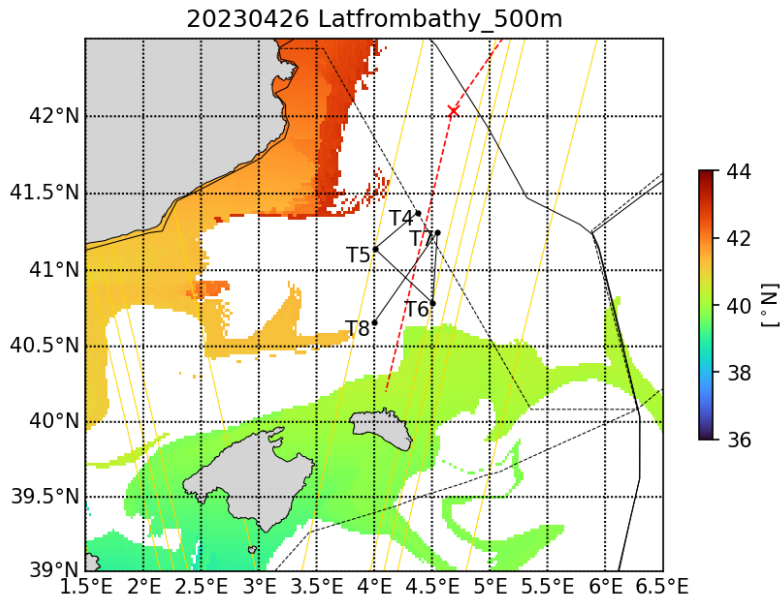


20230426 Lonfrombathy_500m

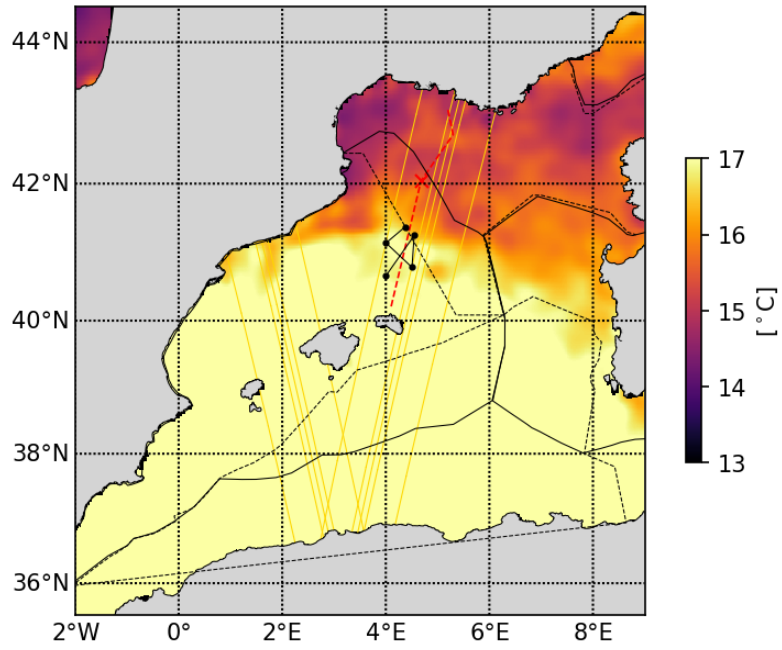


20230426 Timefrombathy_500m

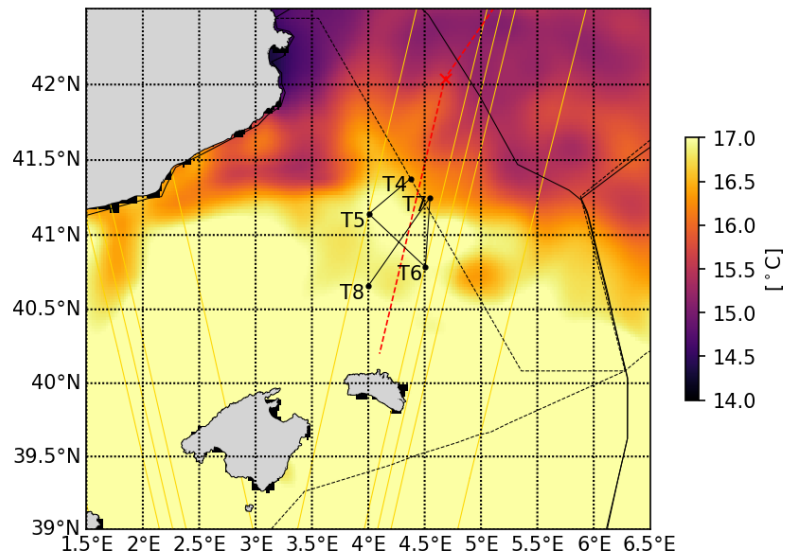




20230426 Tracer advection

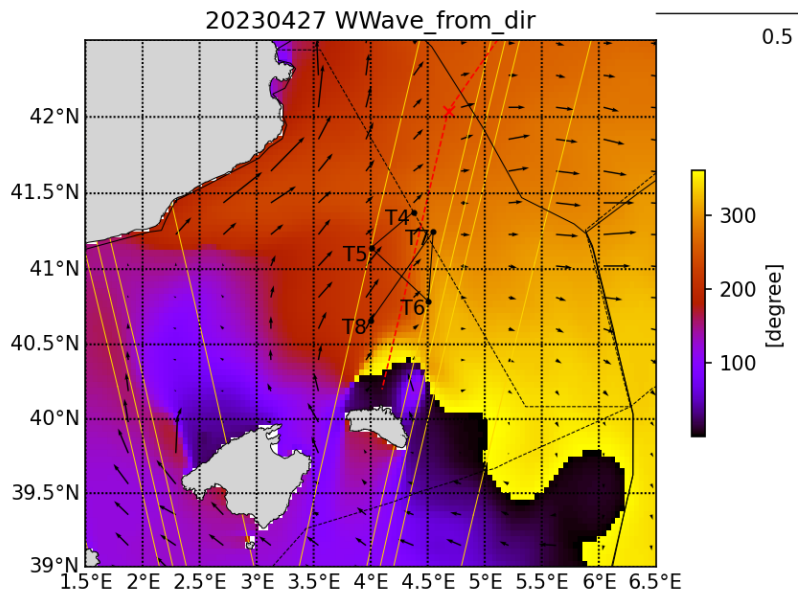
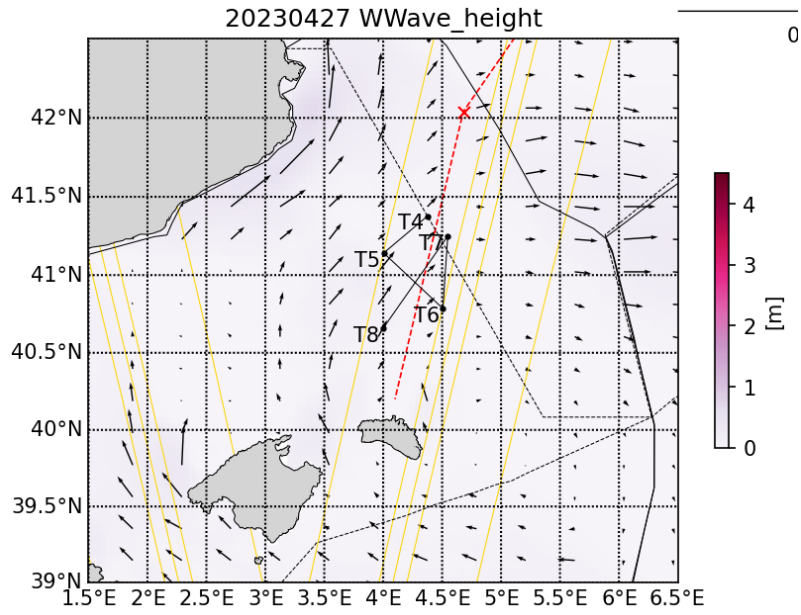


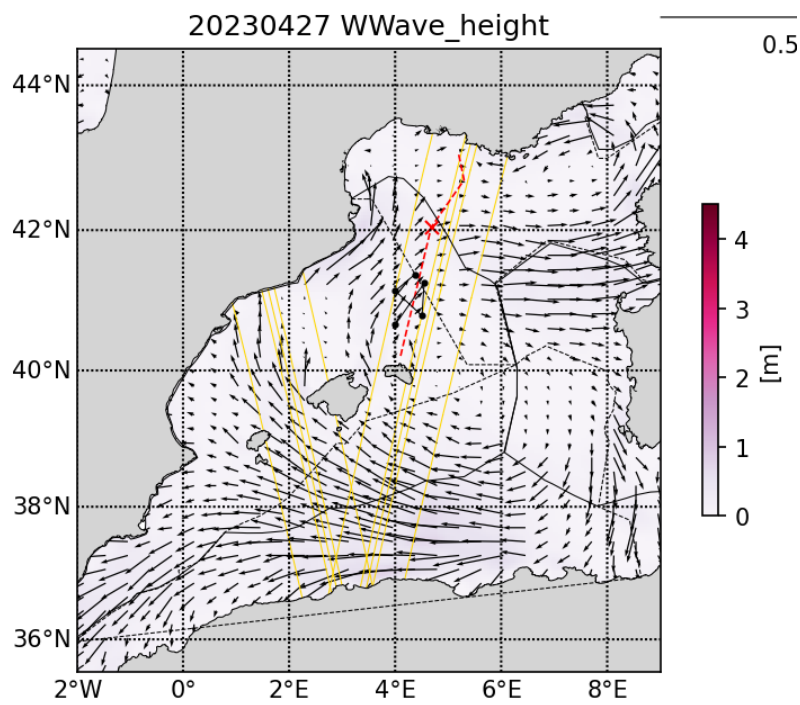
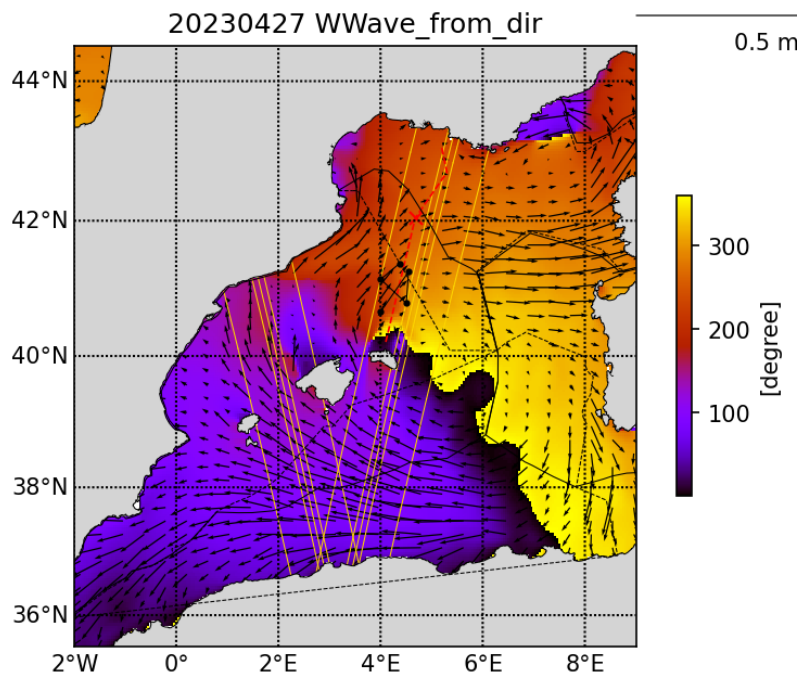
20230426 Tracer advection

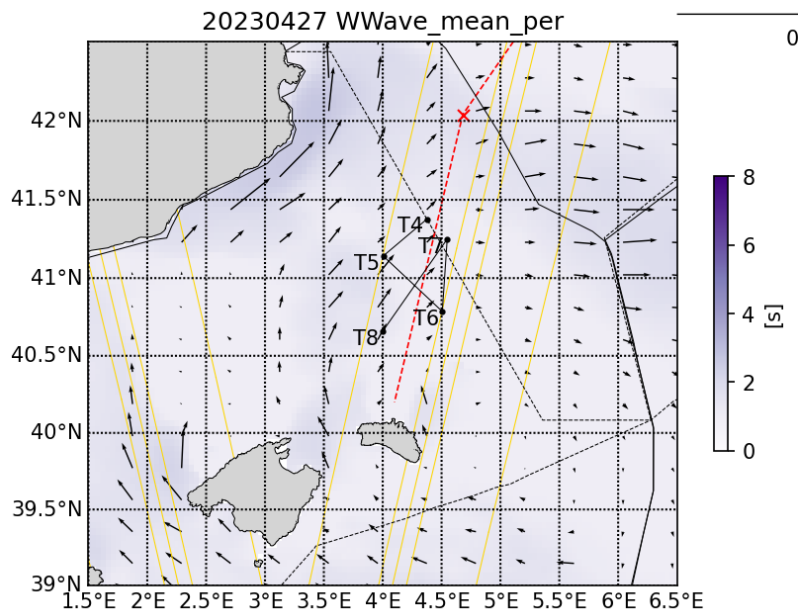
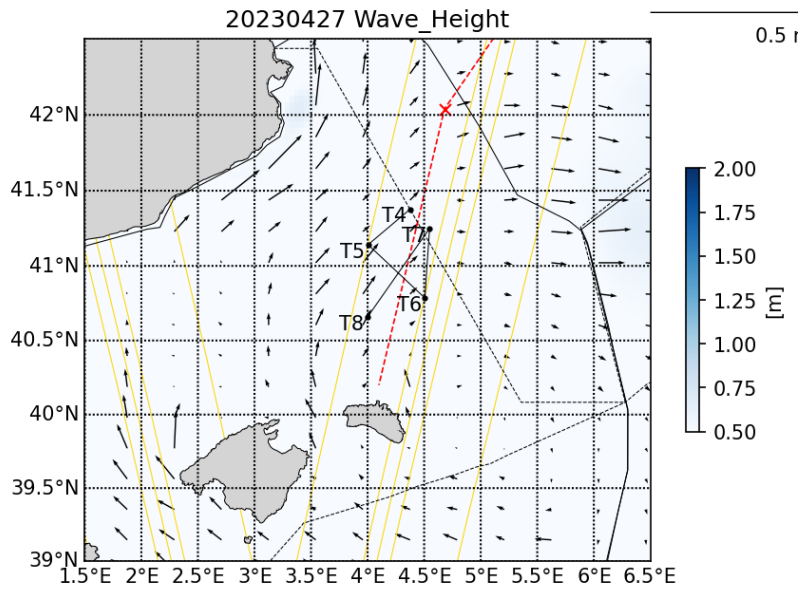


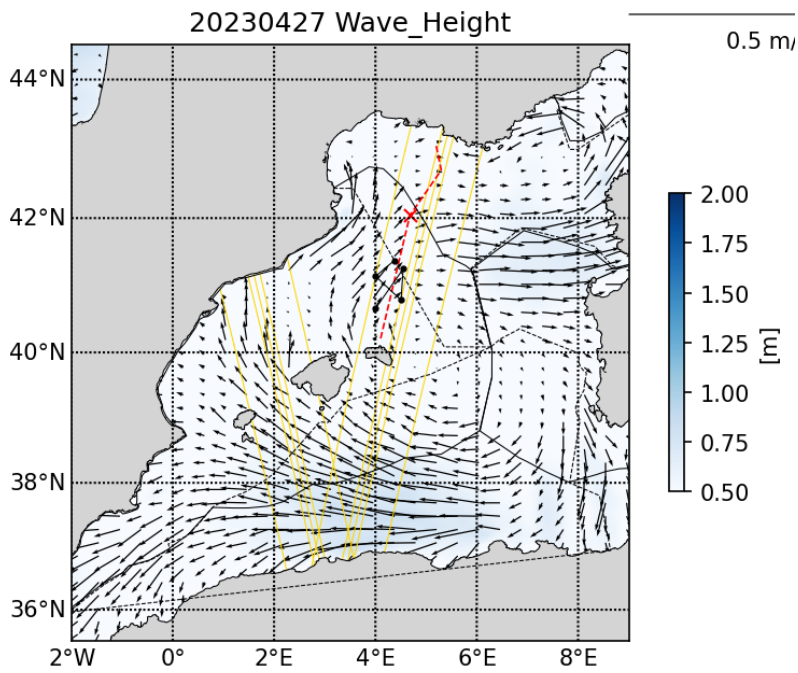
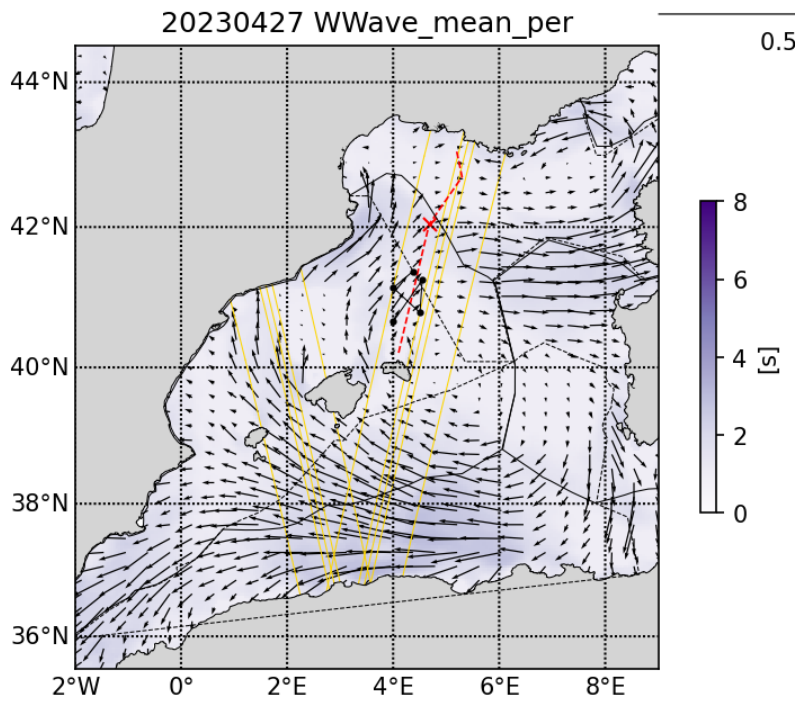
2.5 Wave forecast analysis

Type here.









Acknowledgments

Example:

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. SPASSO is operated with the support of the SIP (Service Informatique de Pythéas) and in particular C. Yohia, J. Lecubin. D. Zevaco and C. Blanpain (Institut Pythéas, Marseille, France).