

# [BIOSWOT-Med]: SPASSO Images Analysis

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May 16, 2023

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## Executive Summary

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## 1 Ongoing operations and upcoming stations

SWOT passing time (UTC) over:

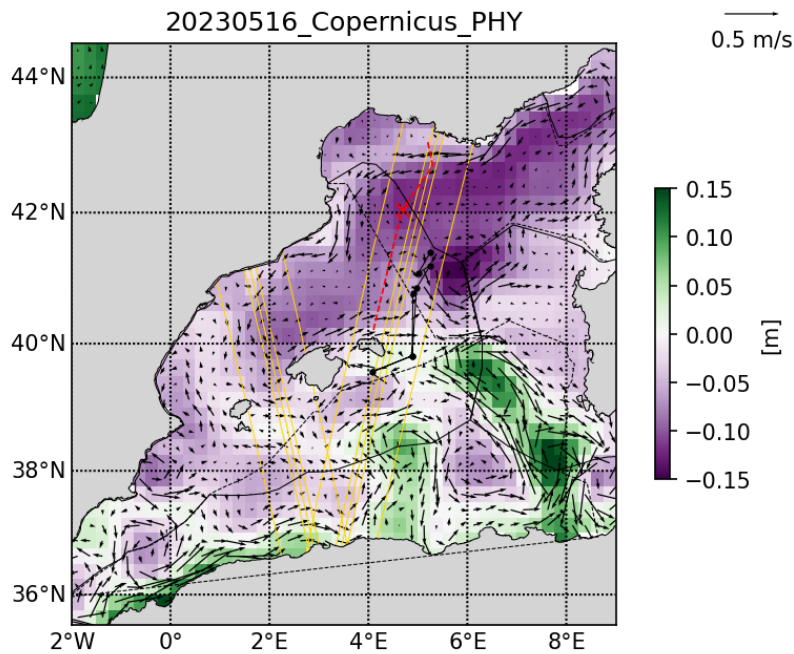
43°N - 5°E Asc   42.7°N - 4.8°E Asc	
:----- :-----	
2023-05-16 16:42:47	2023-05-16 16:42:47
2023-05-17 16:33:24	2023-05-17 16:33:24
2023-05-18 16:24:02	2023-05-18 16:24:02
2023-05-19 16:14:39	2023-05-19 16:14:39
2023-05-20 16:05:17	2023-05-20 16:05:17

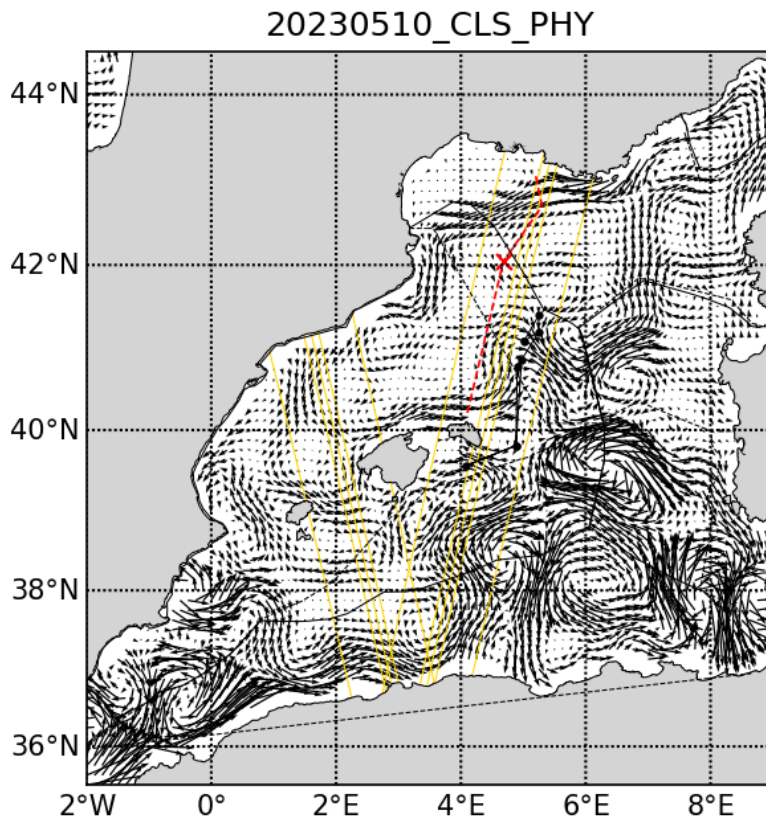
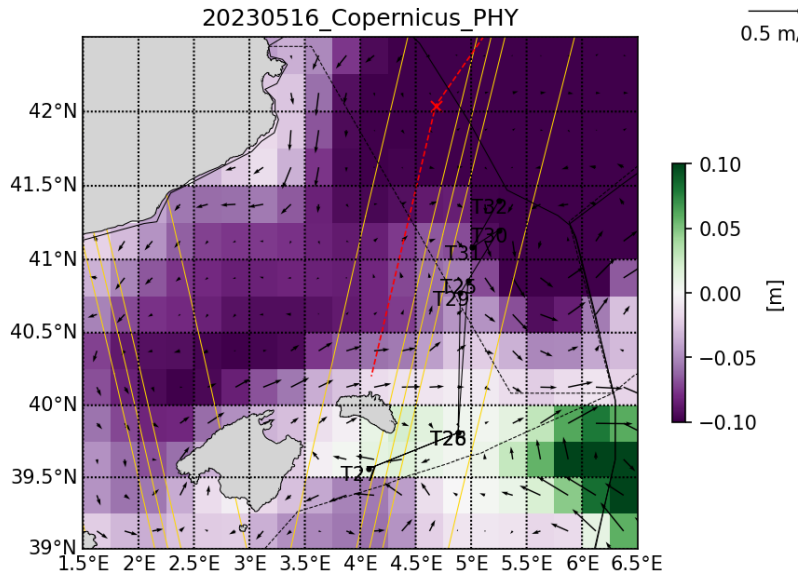
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## 2 Daily figures analysis

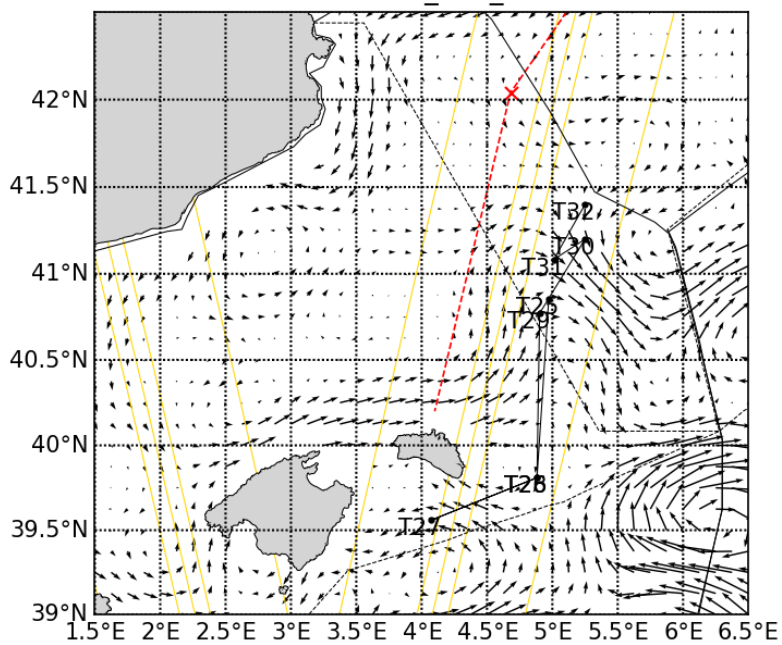
### 2.1 Altimetry, derived currents

Type here.

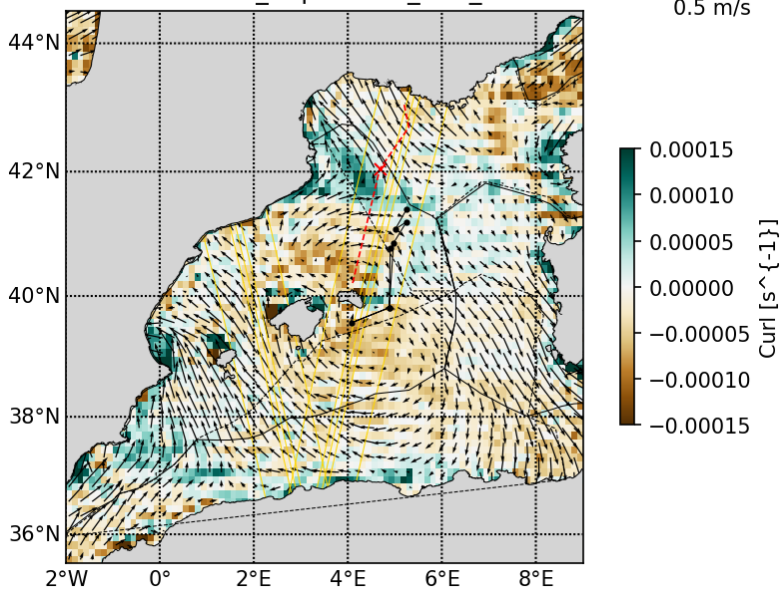


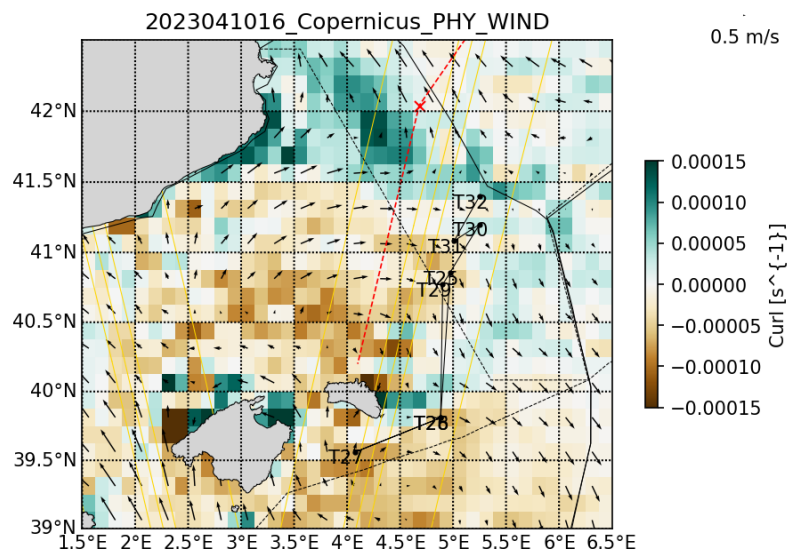


20230510\_CLS\_PHY



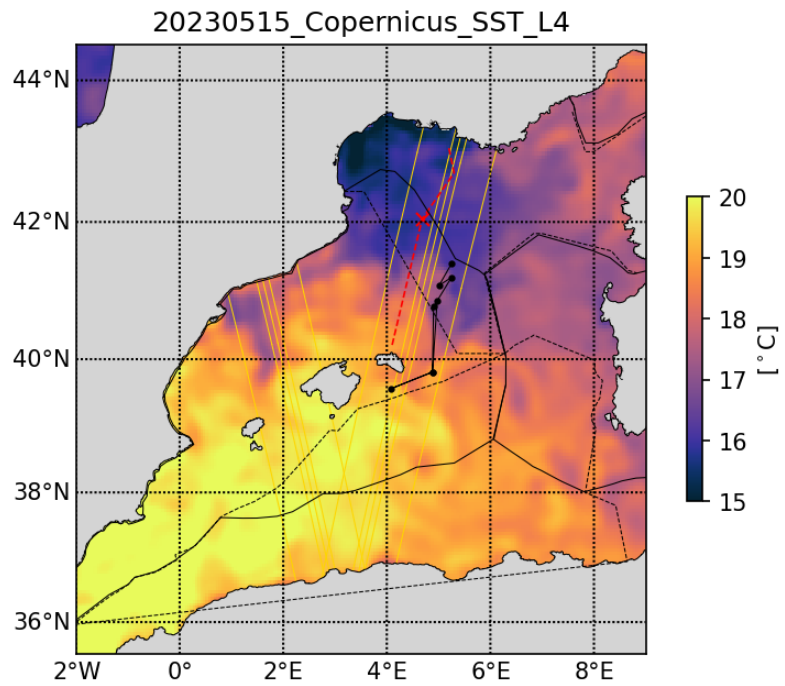
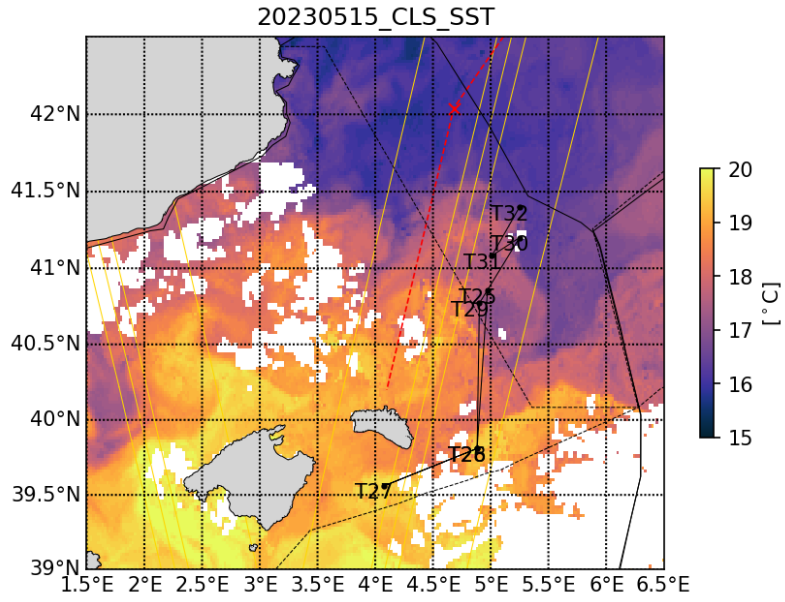
2023041016\_Copernicus\_PHY\_WIND



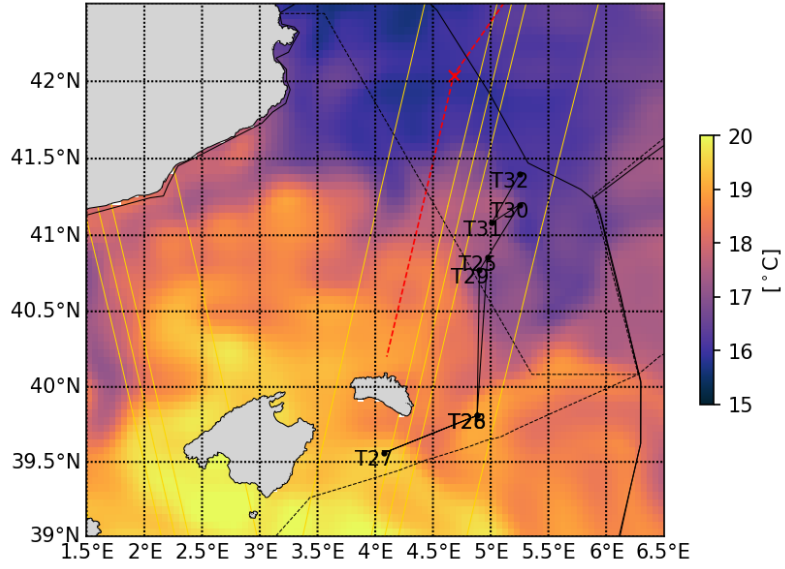


## 2.2 SST analysis

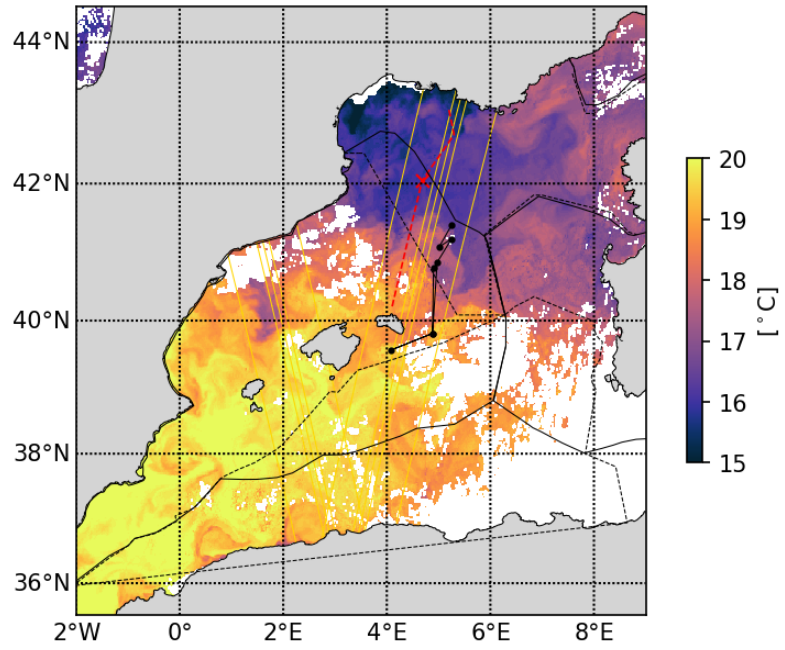
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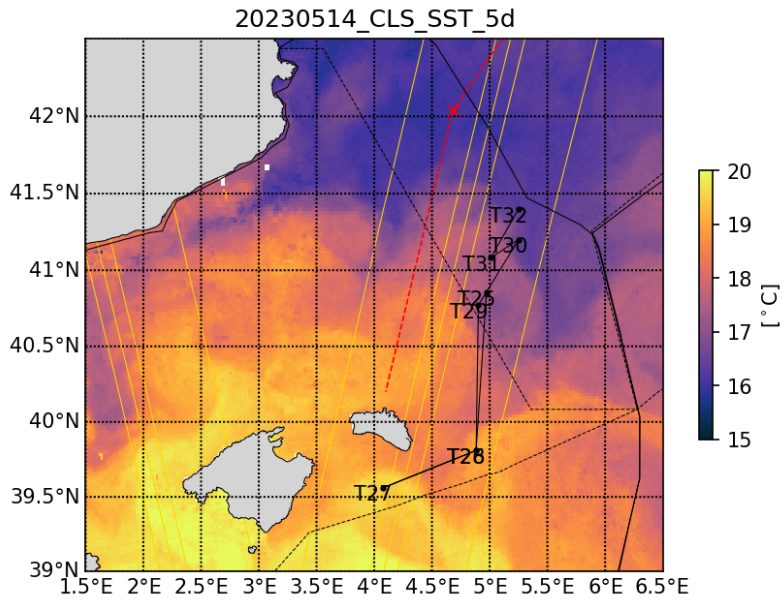
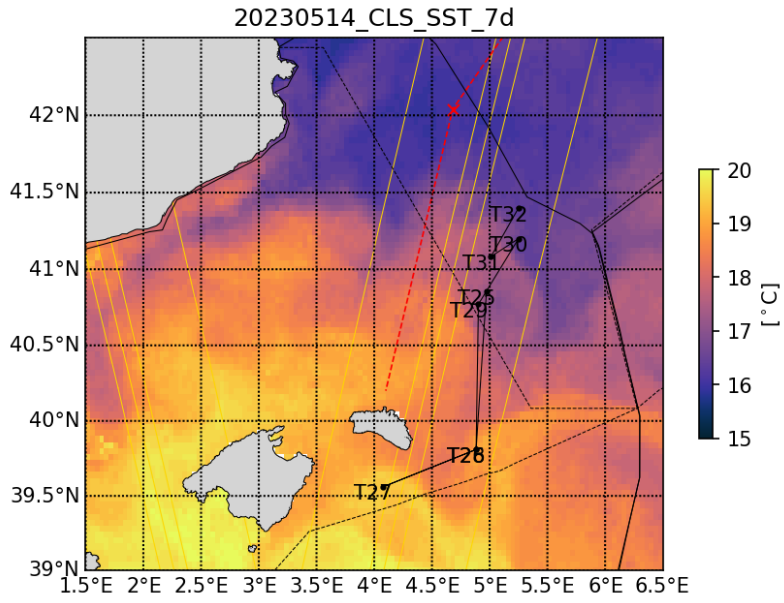


20230515\_Copernicus\_SST\_L4

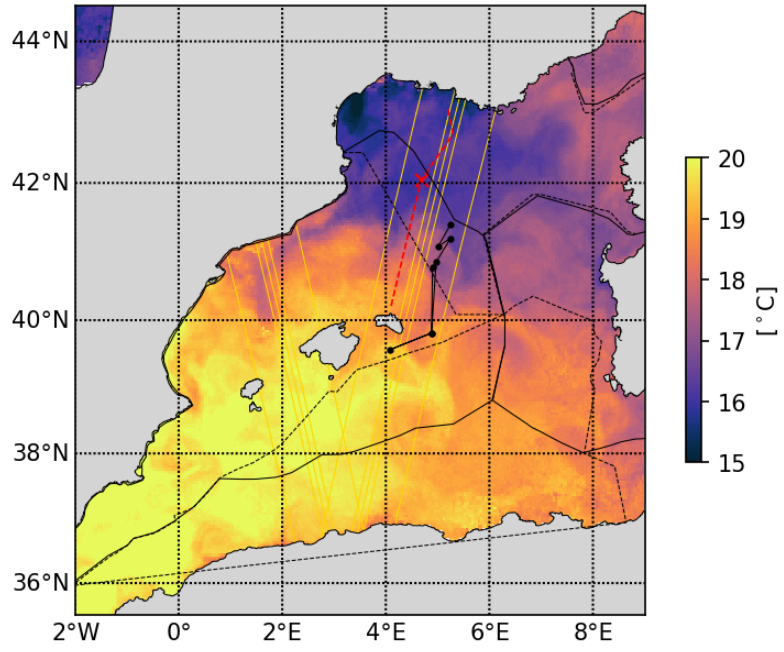


20230515\_CLS\_SST

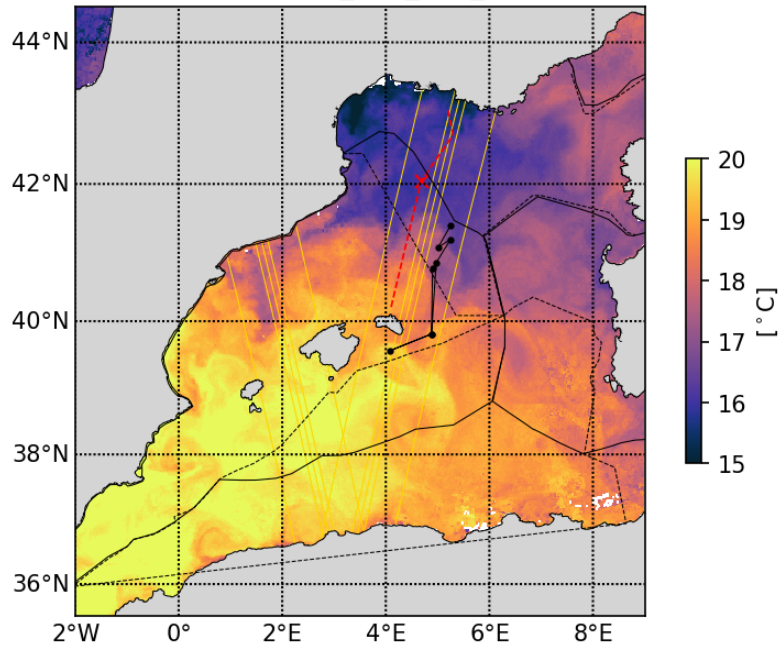




20230514\_CLS\_SST\_7d



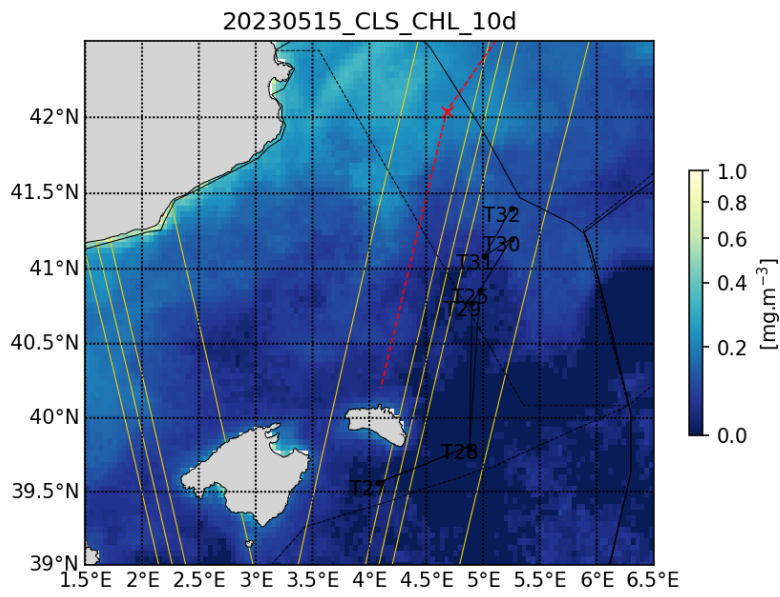
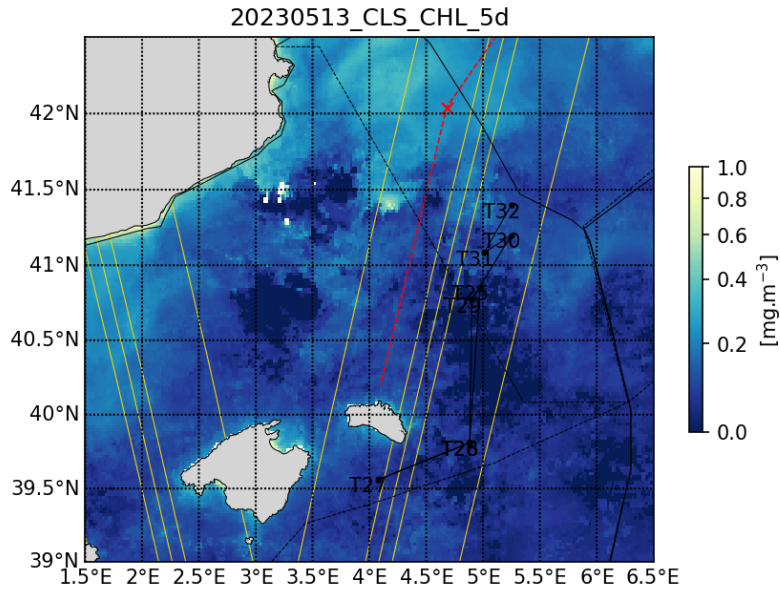
20230514\_CLS\_SST\_5d



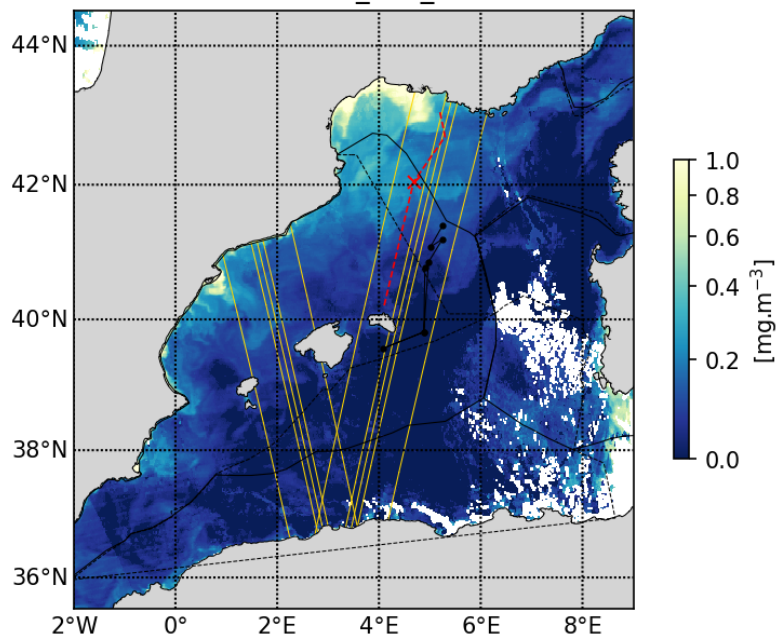


### 2.3 Chlorophyll analysis

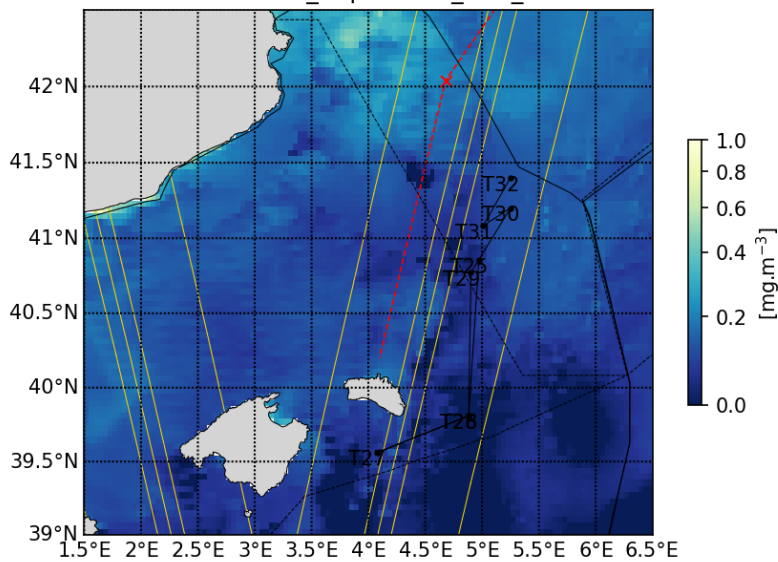
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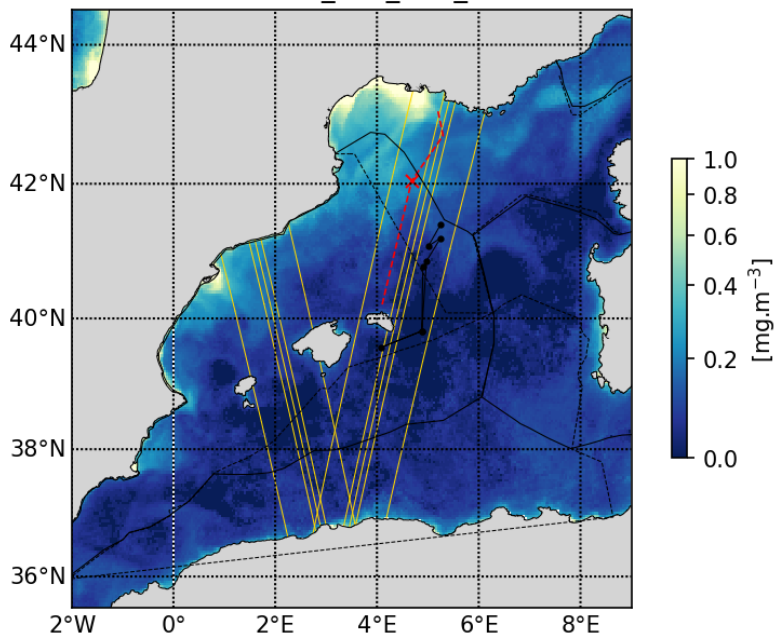
20230515\_CLS\_CHL



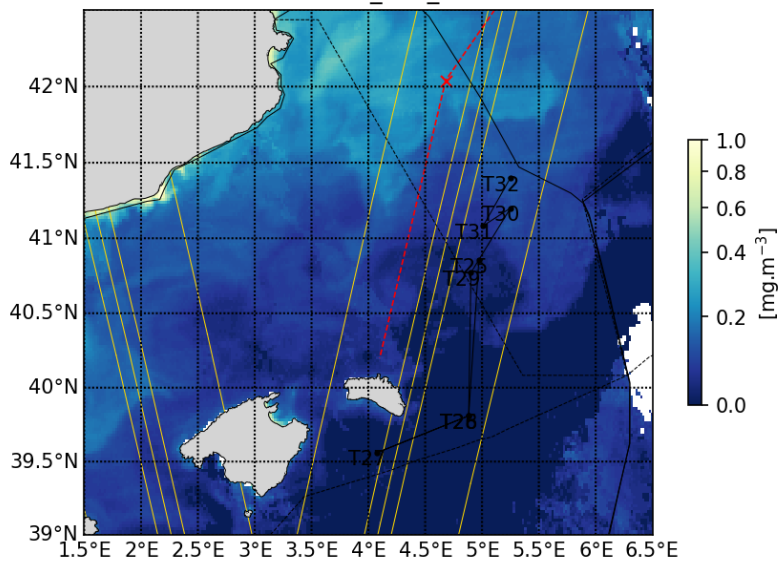
20230514\_Copernicus\_CHL\_L4

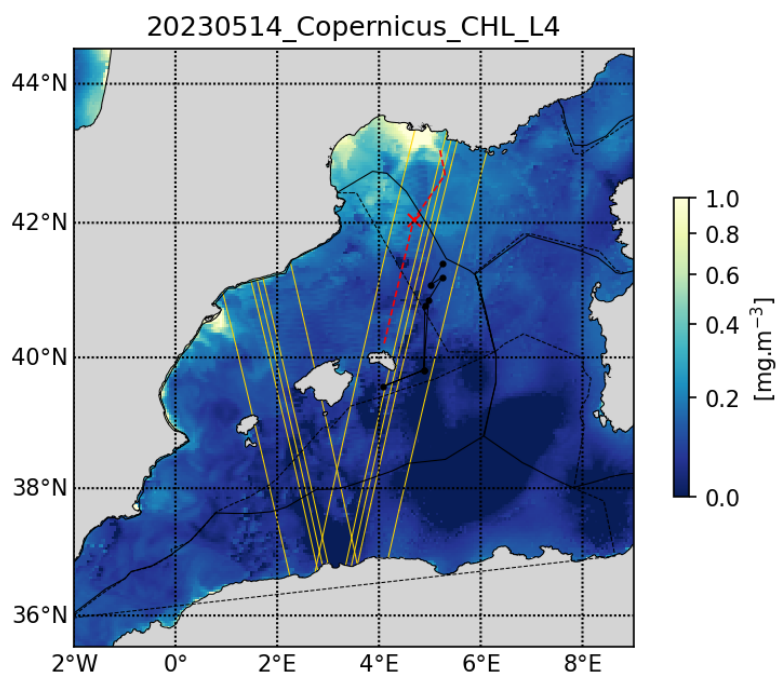
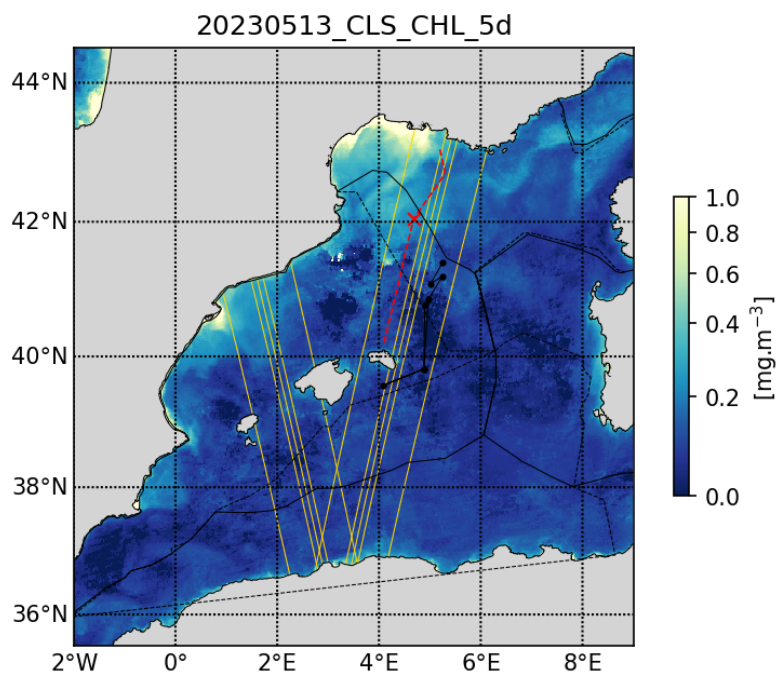


20230515\_CLS\_CHL\_10d



20230515\_CLS\_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:

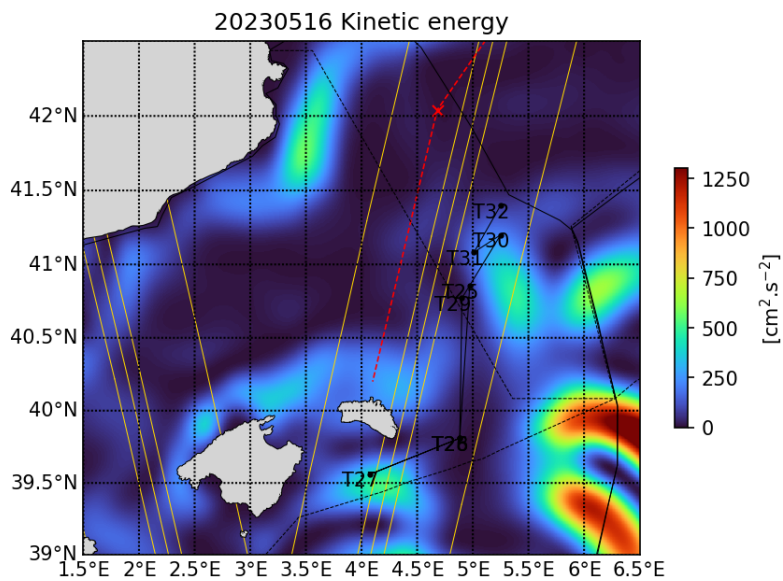
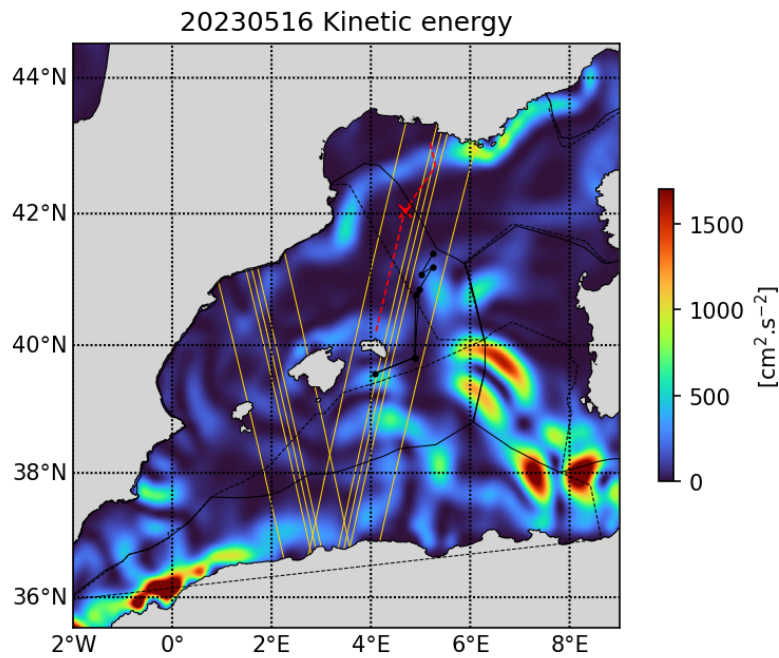
FTLE: finite time Lyapunov exponents (convergent fronts detection)

LLADV: longitude and latitude advection

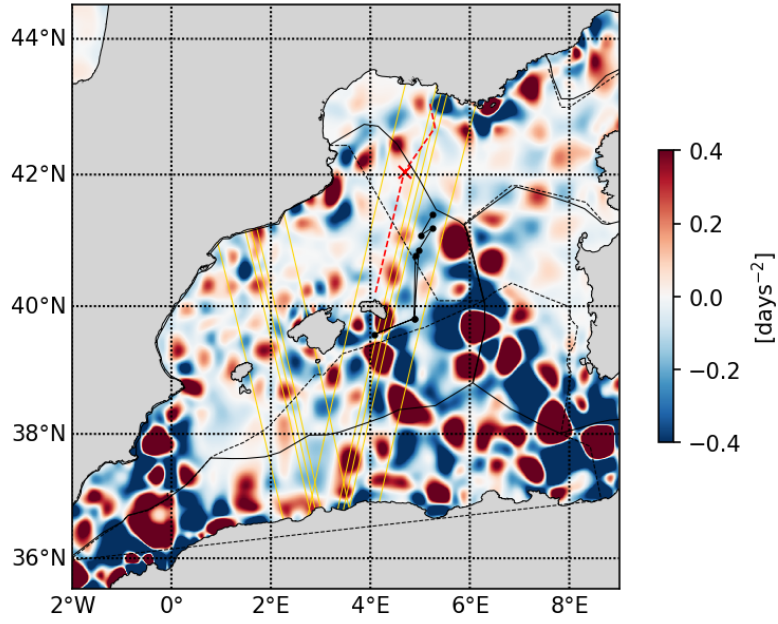
Retention parameter (based on computing the okubo Weiss parameter along a particle trajectory): Detect trapping structures (colorbar = days water parcels have a positive vorticity)

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

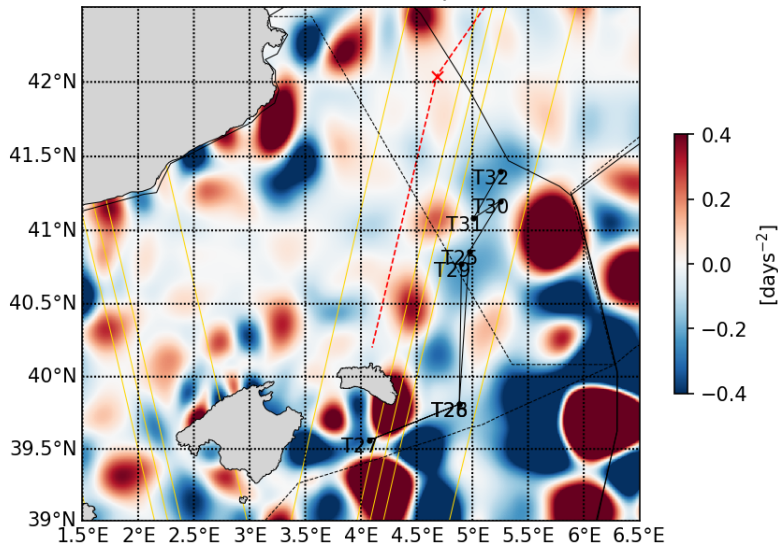
More details available at: <https://www.swot-adac.org/resources/swot-adac-products-access/>



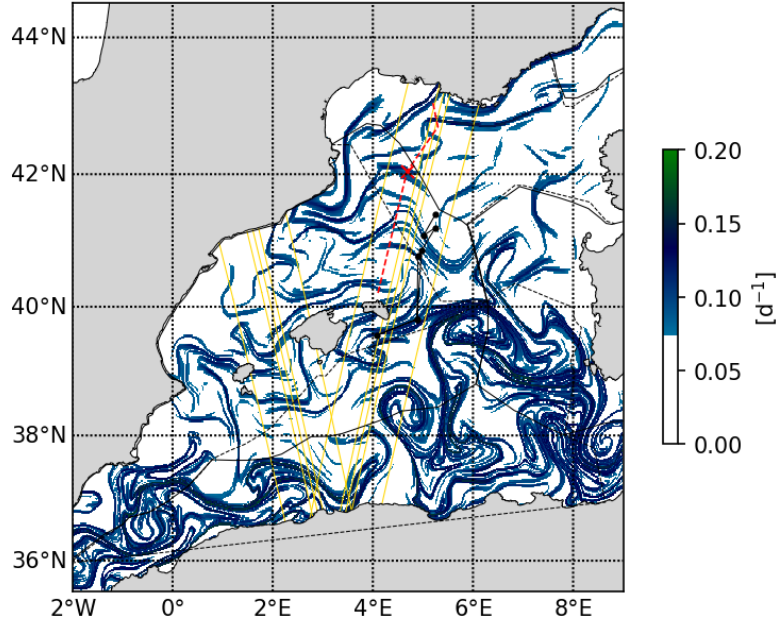
20230516 Okubo-Weiss parameter



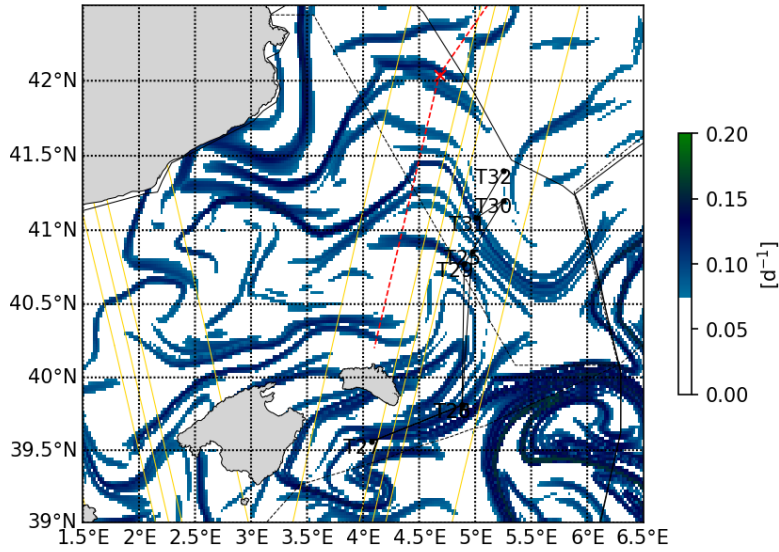
20230516 Okubo-Weiss parameter



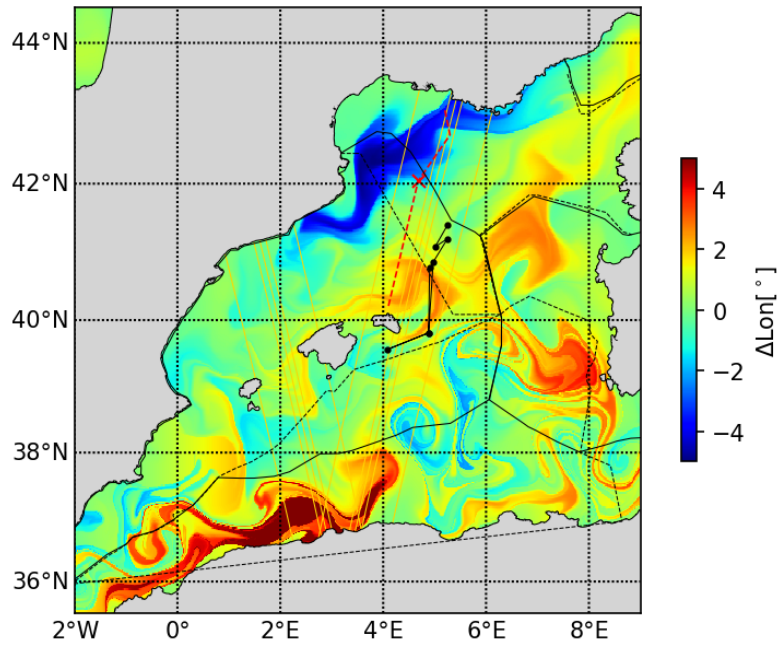
20230516 Finite Time Lyapunov Exponent



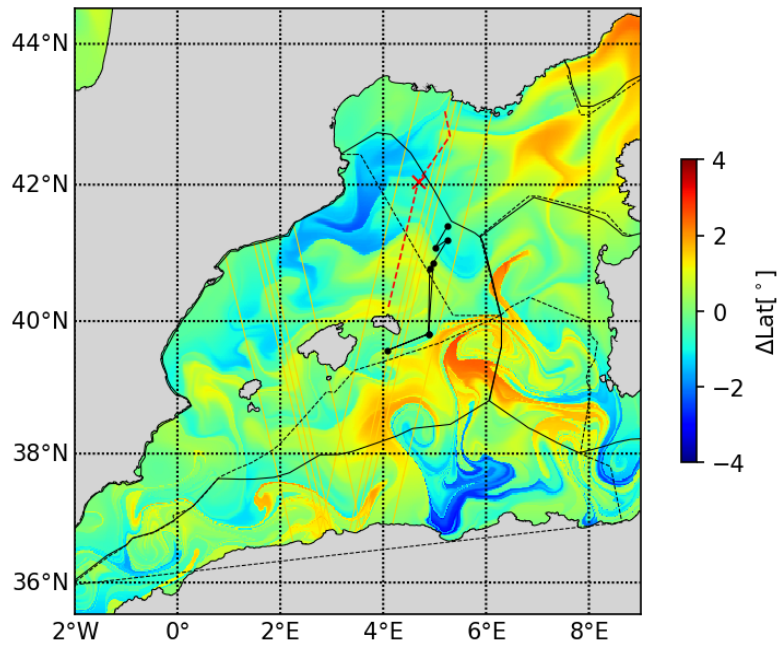
20230516 Finite Time Lyapunov Exponent



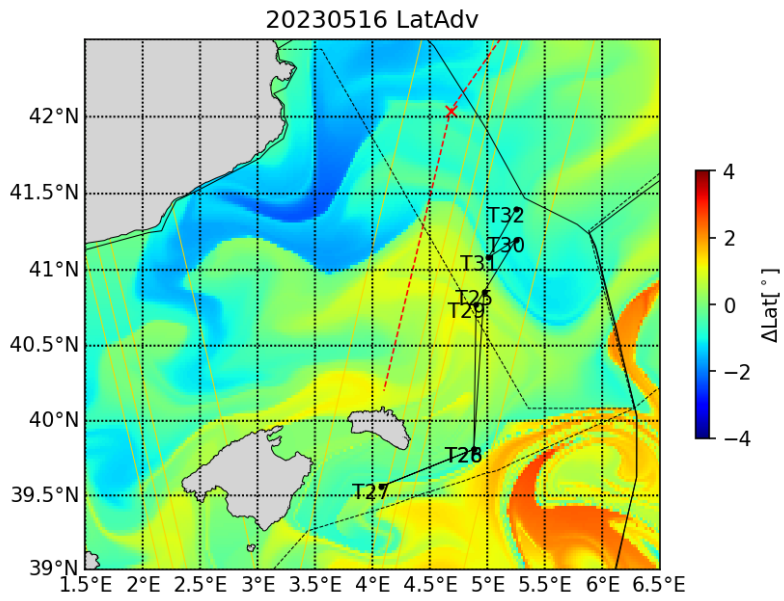
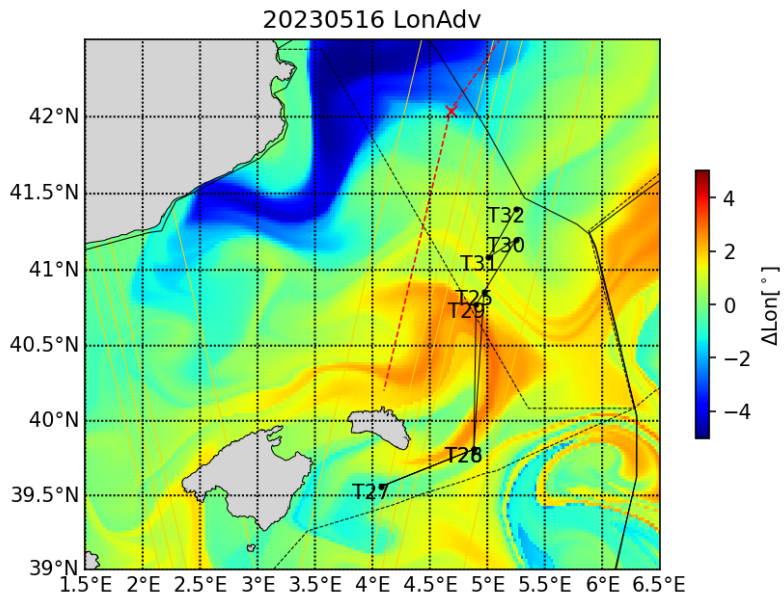
20230516 LonAdv



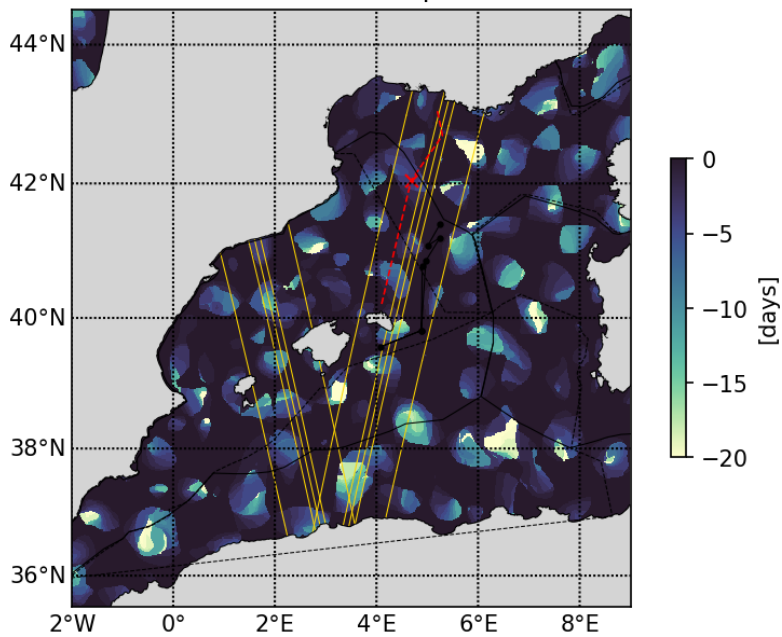
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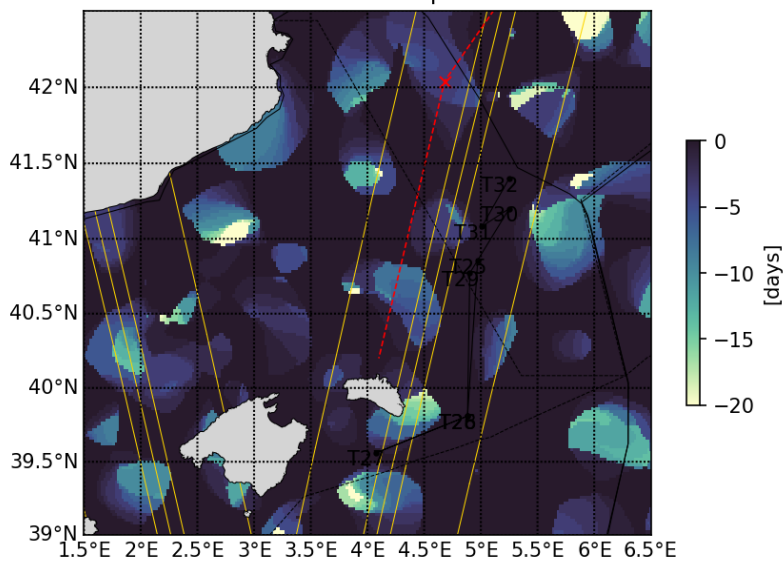




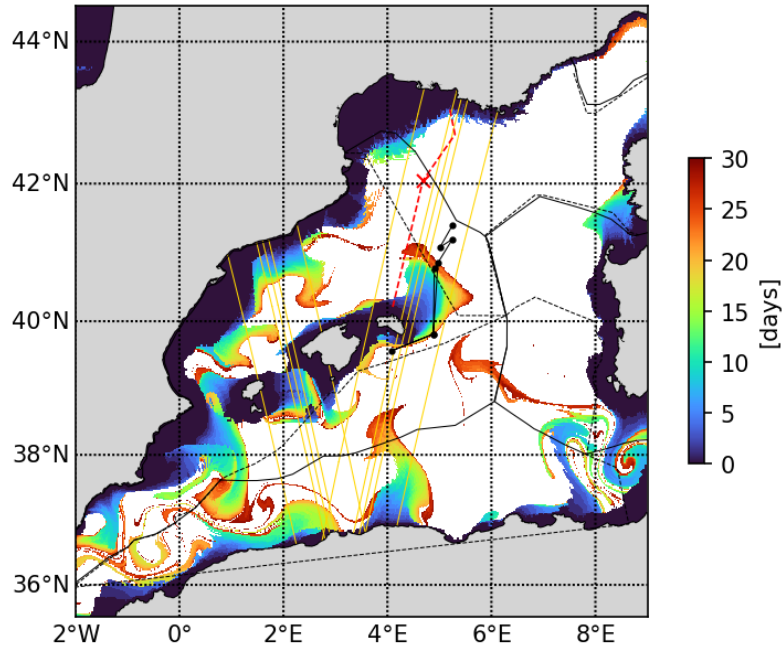
20230516 Retention parameter



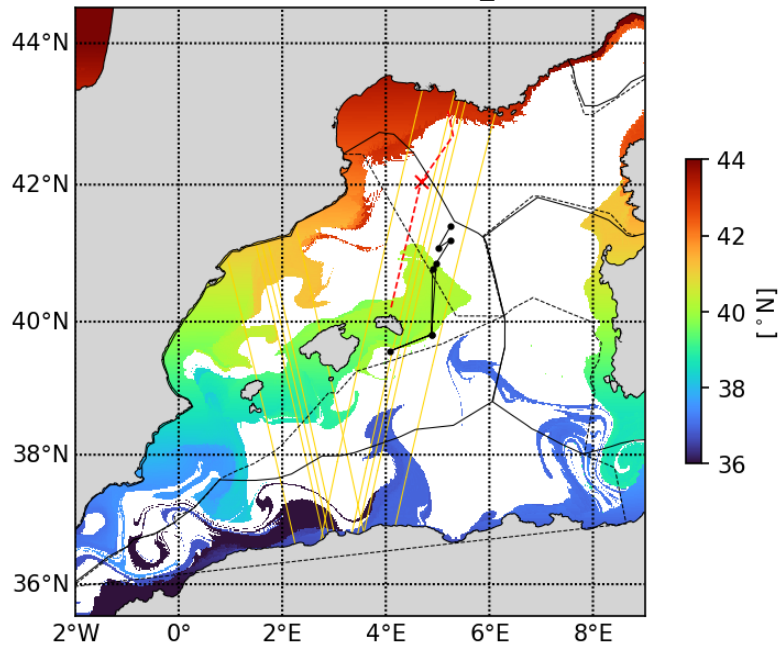
20230516 Retention parameter



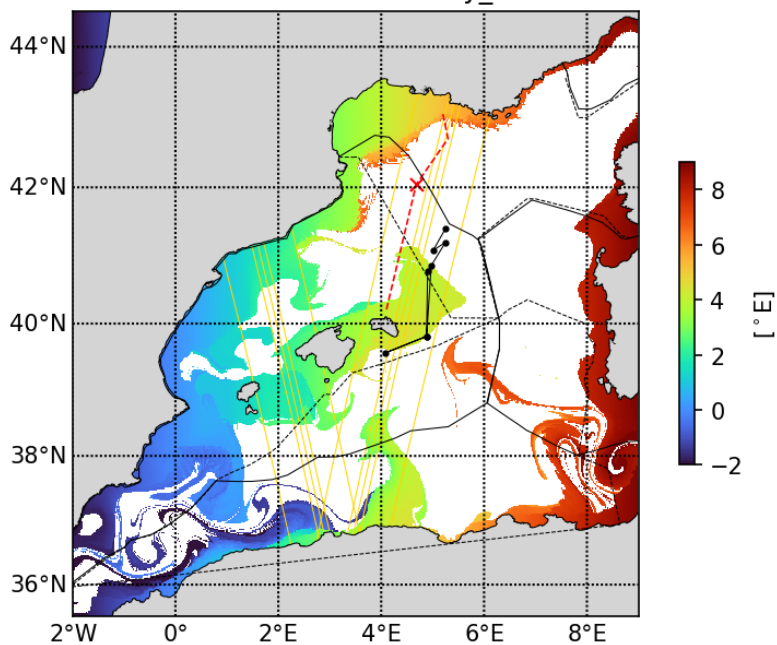
20230516 Timefrombathy\_500m



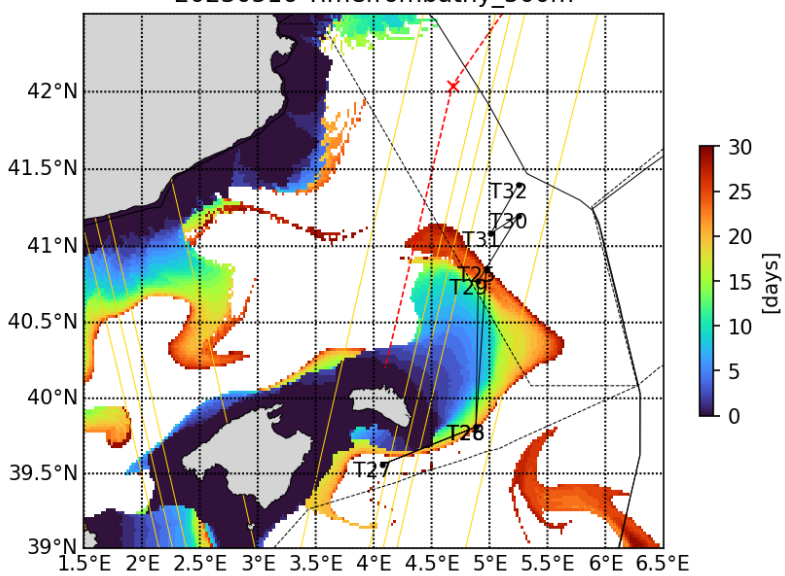
20230516 Latfrombathy\_500m

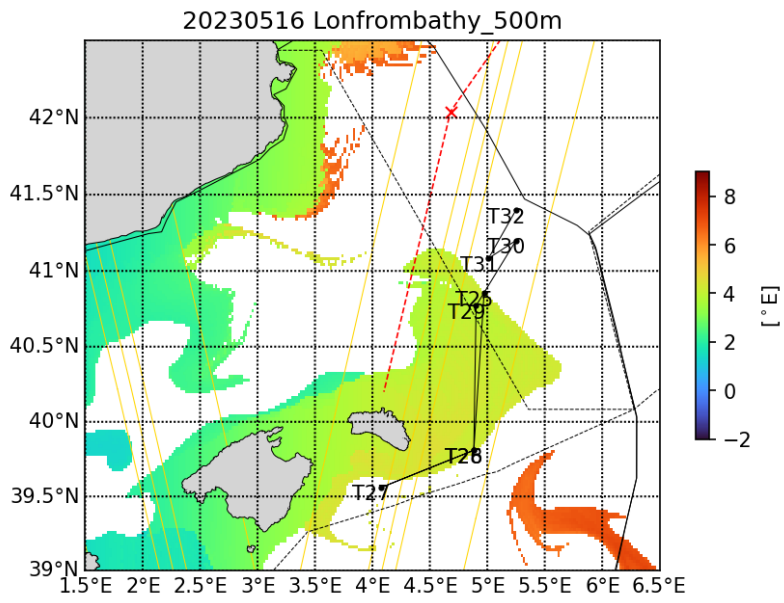
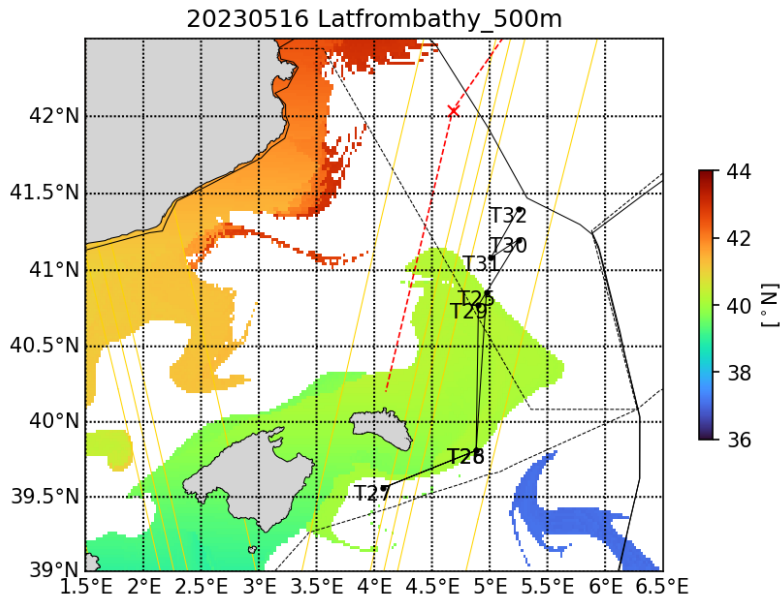


20230516 Lonfrombathy\_500m

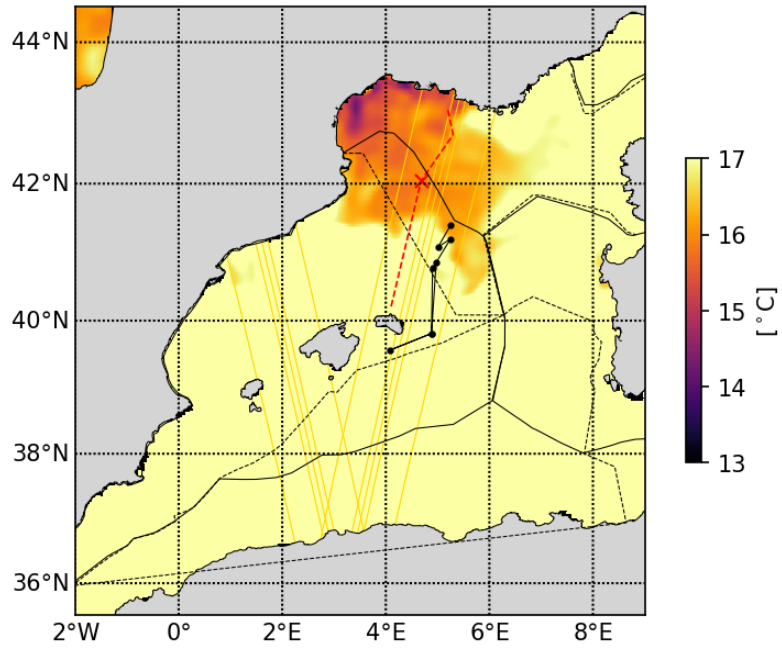


20230516 Timefrombathy\_500m

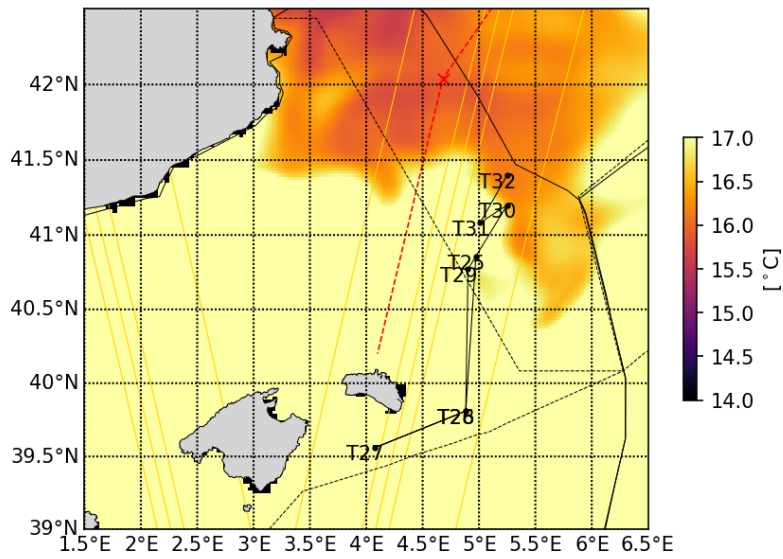




20230516 Tracer advection

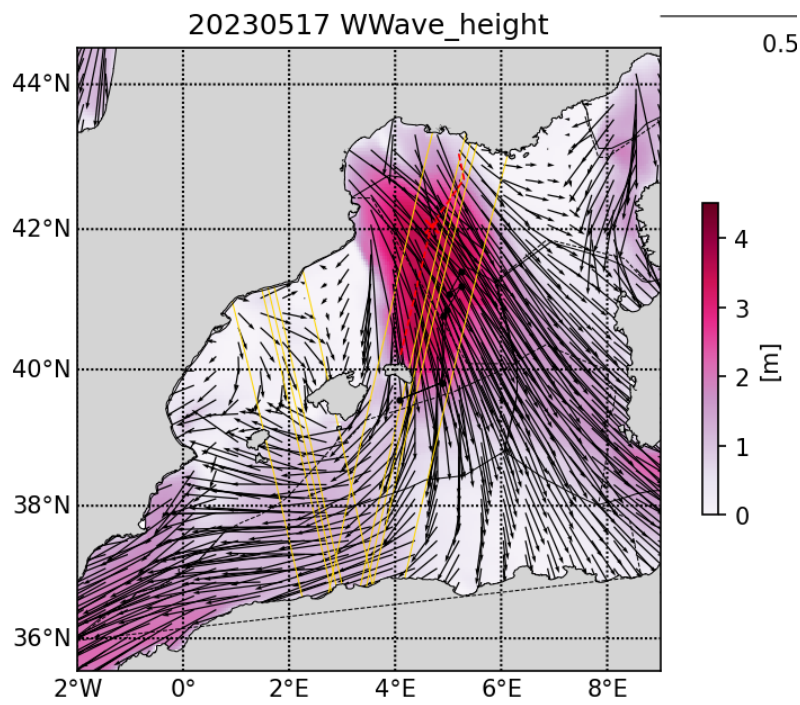
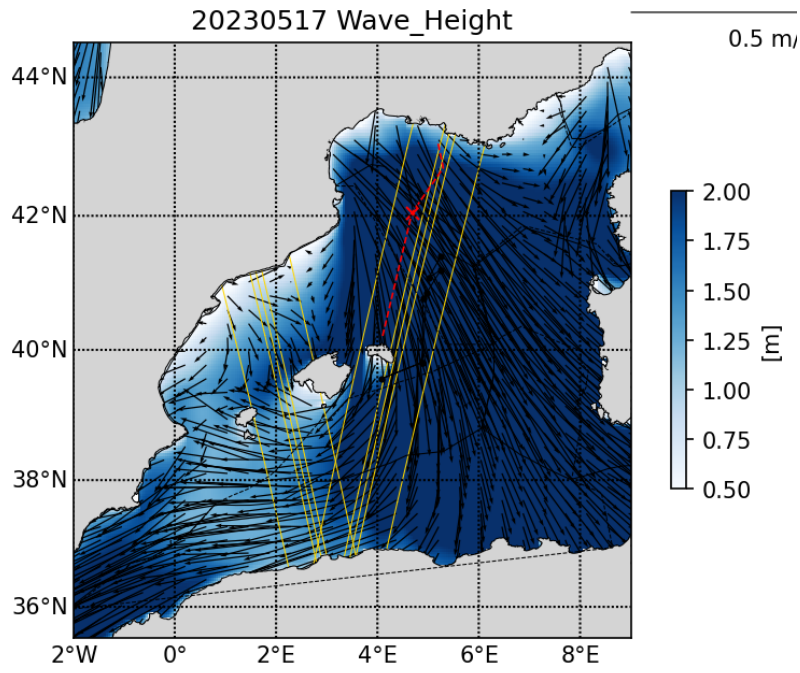


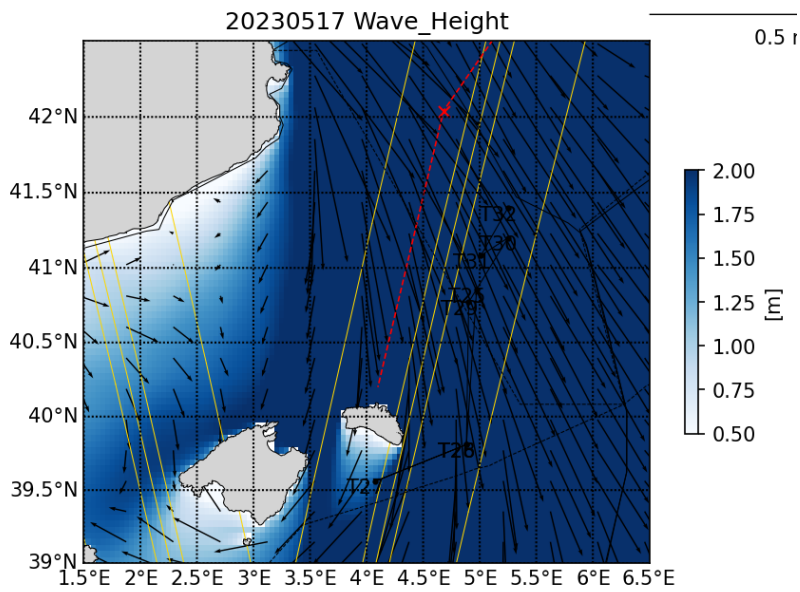
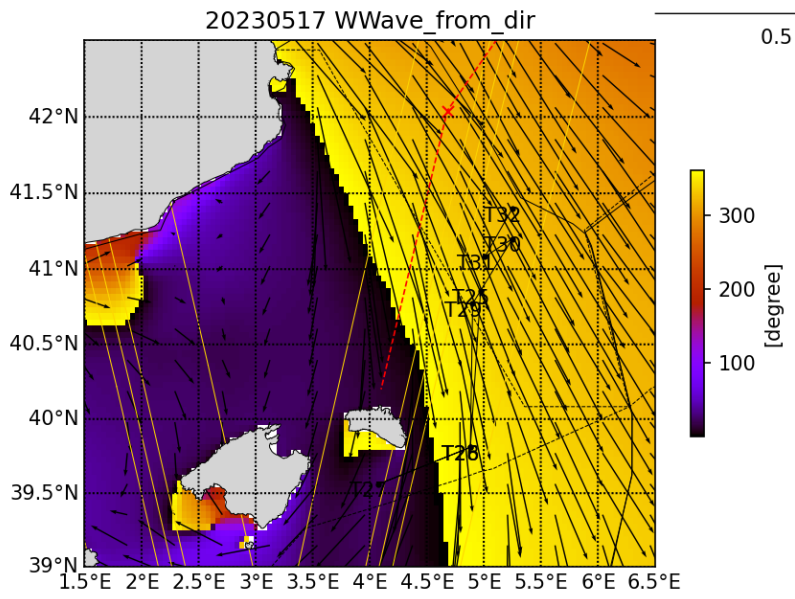
20230516 Tracer advection



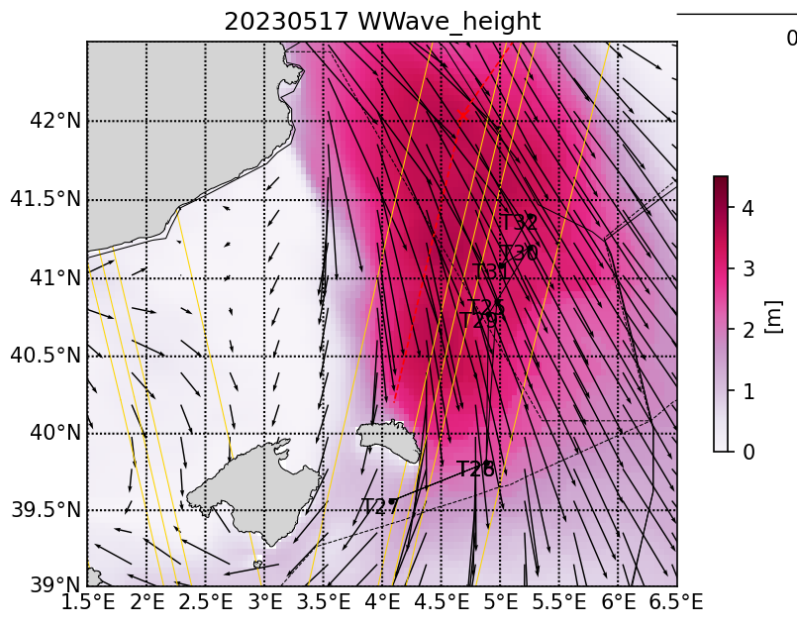
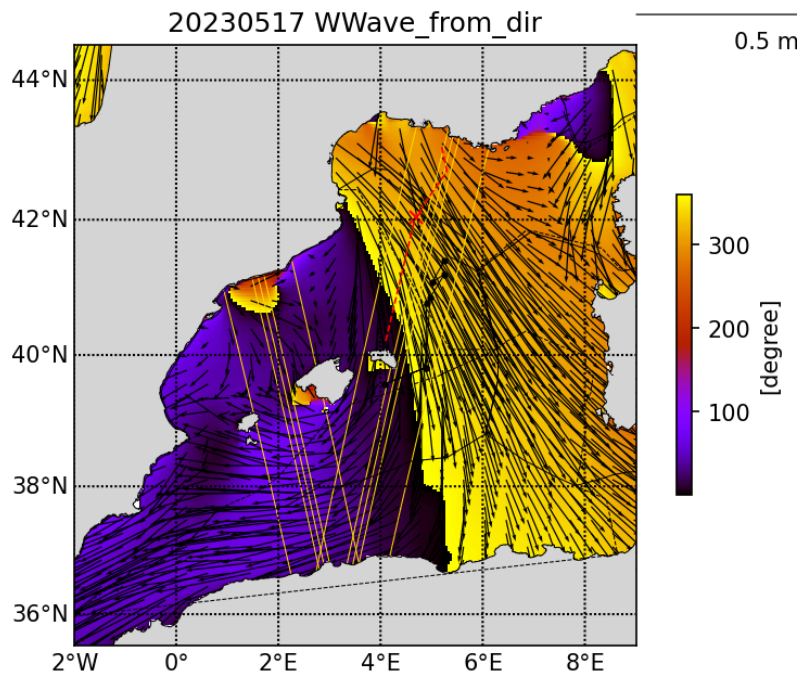
## 2.5 Wave forecast analysis

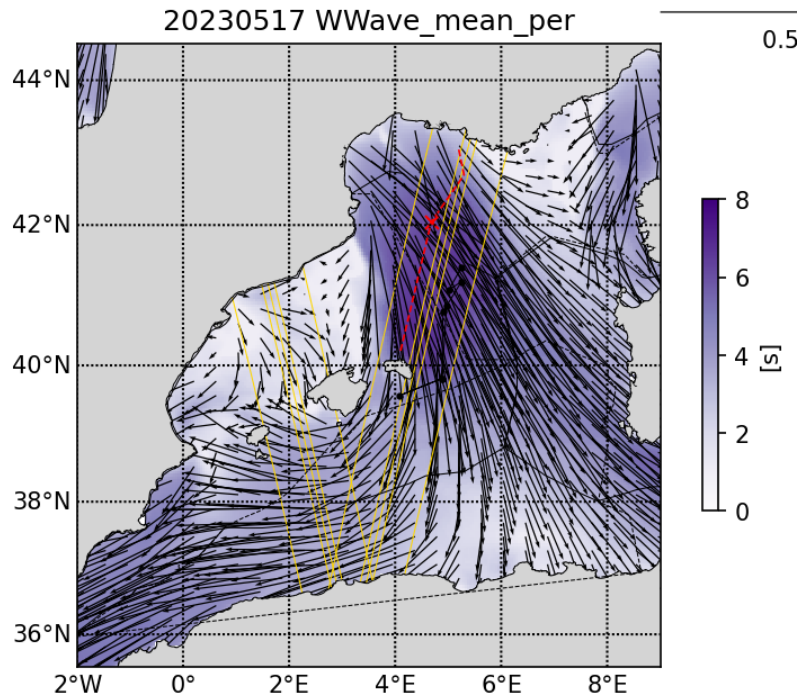
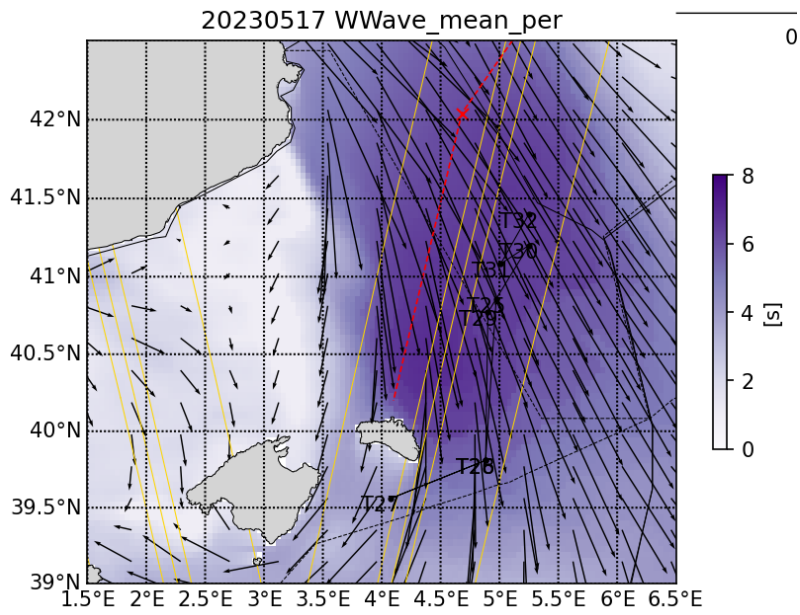
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## Acknowledgments

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).