

# [BIOSWOT-Med]: SPASSO Images Analysis

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April 21, 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 |

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

| 2023-04-21 20:37:08 | 2023-04-21 20:37:08 |

| 2023-04-22 20:27:46 | 2023-04-22 20:27:46 |

| 2023-04-23 20:18:23 | 2023-04-23 20:18:23 |

| 2023-04-24 20:09:01 | 2023-04-24 20:09:01 |

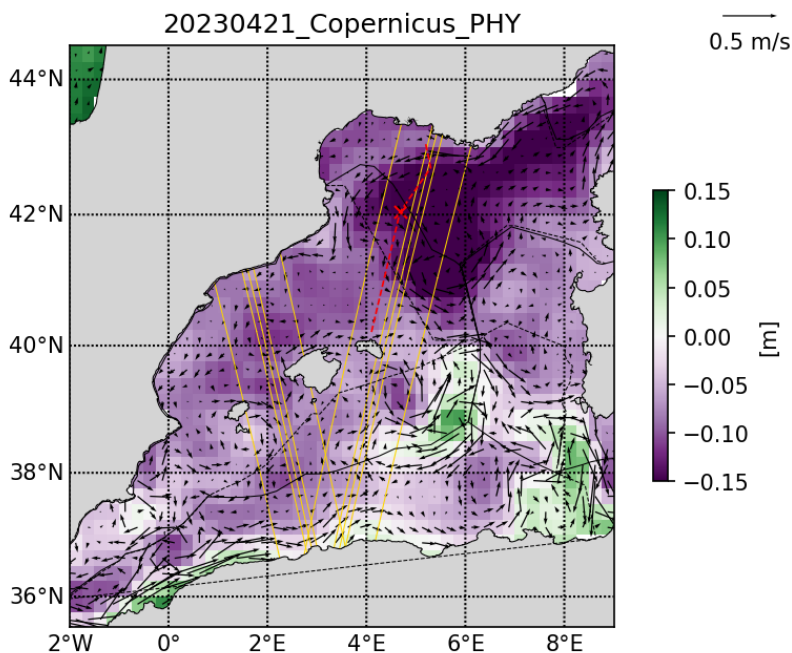
| 2023-04-25 19:59:38 | 2023-04-25 19:59:38 |

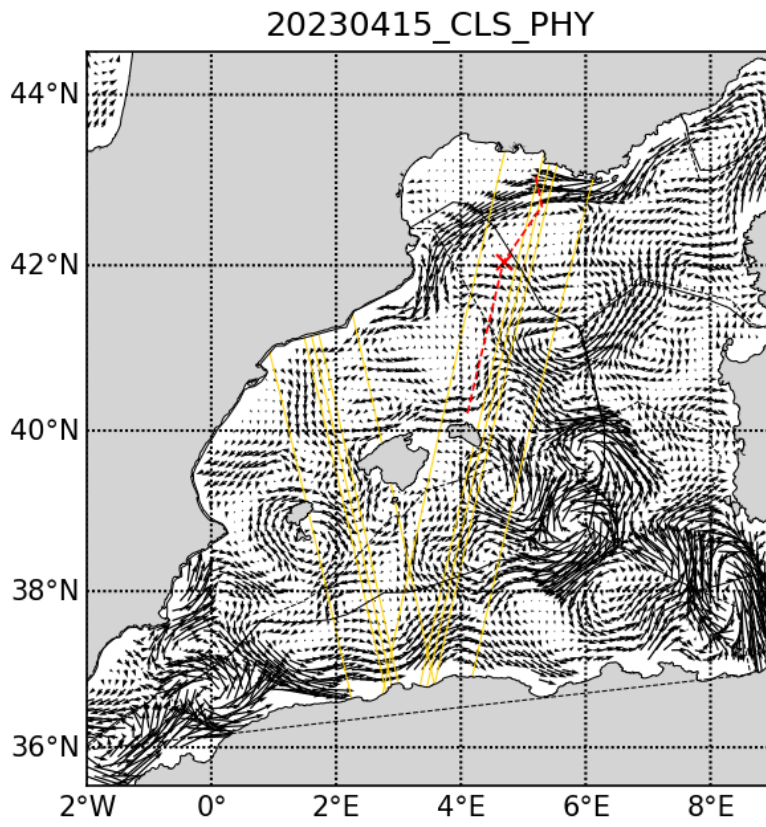
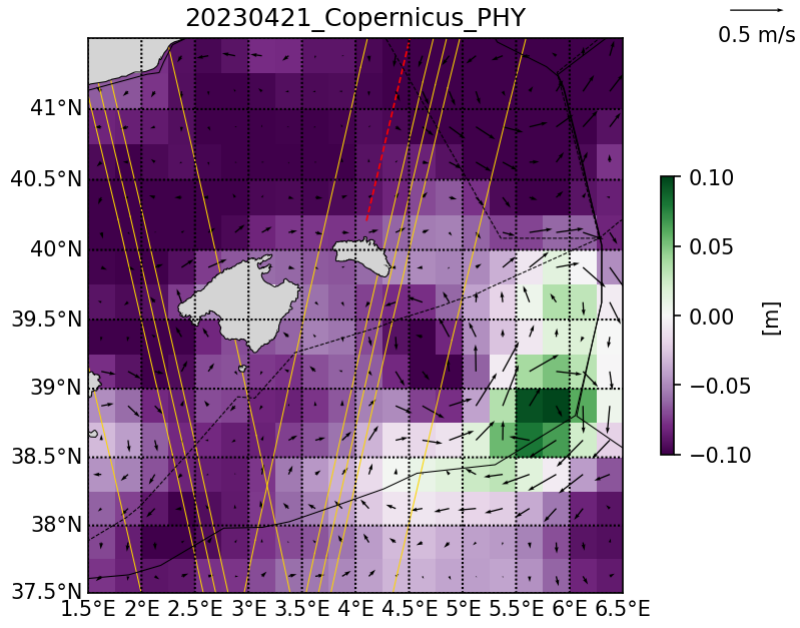
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## 2 Daily figures analysis

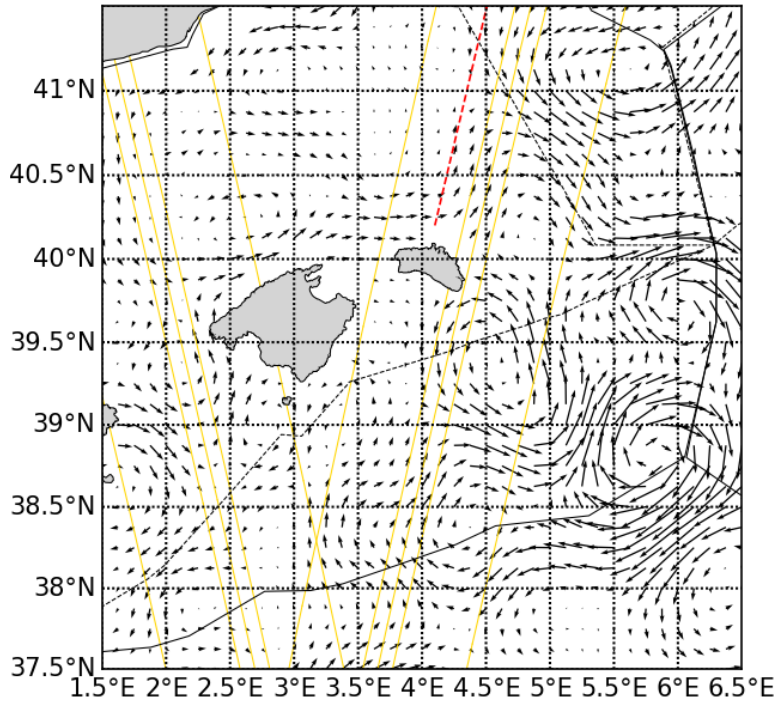
### 2.1 Altimetry, derived currents

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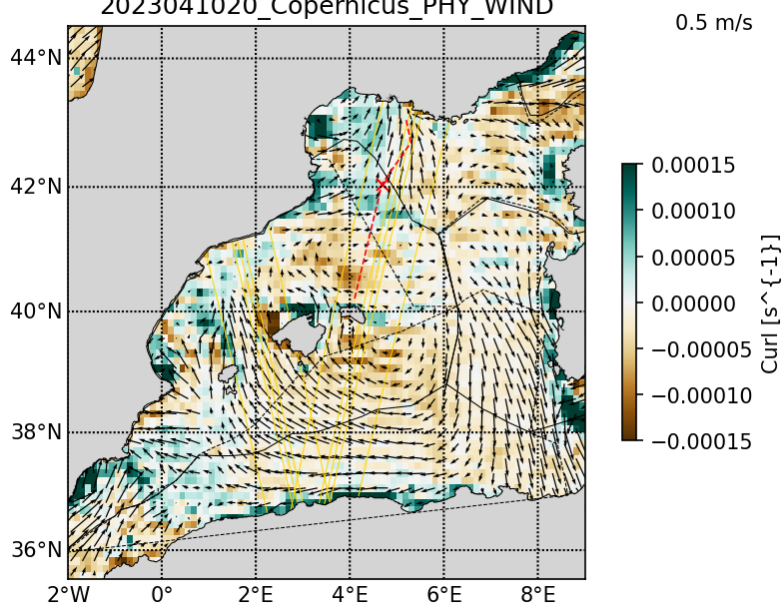


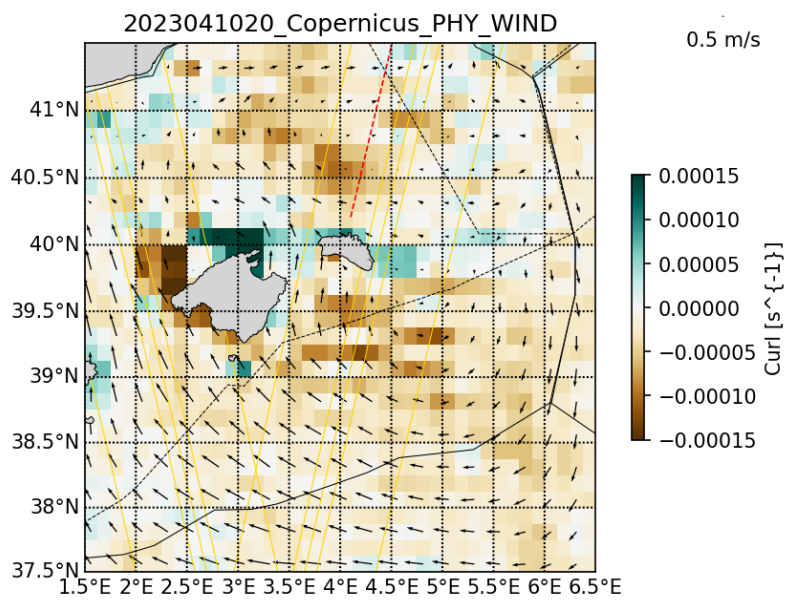


20230415\_CLS\_PHY



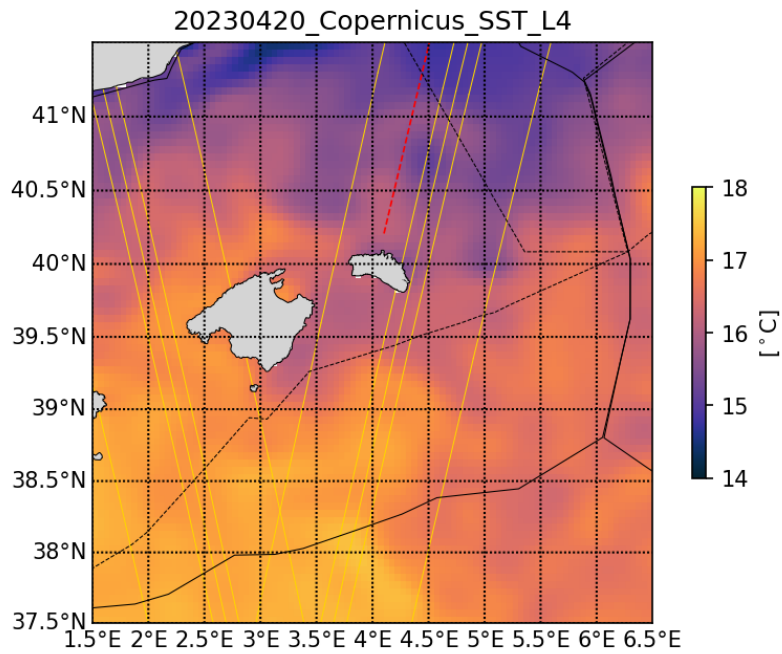
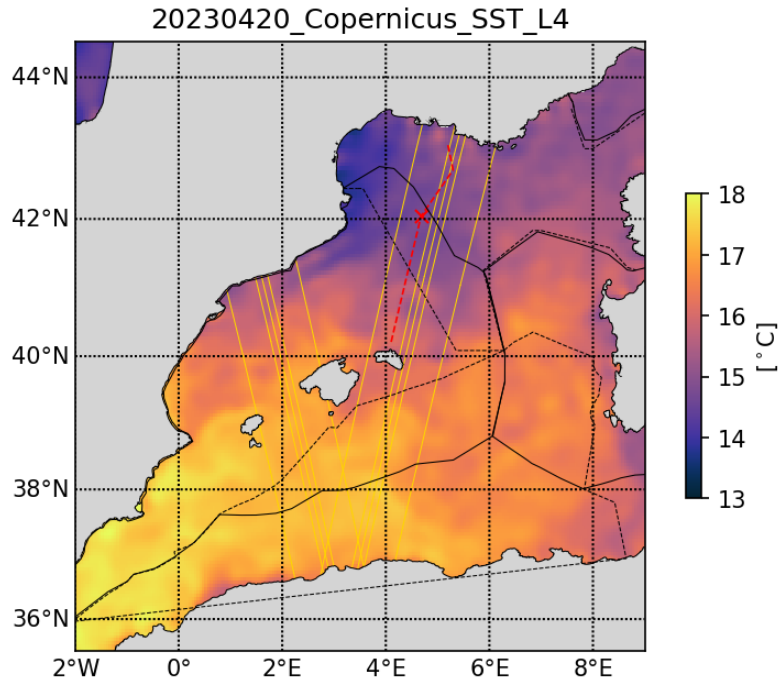
2023041020\_Copernicus\_PHY\_WIND



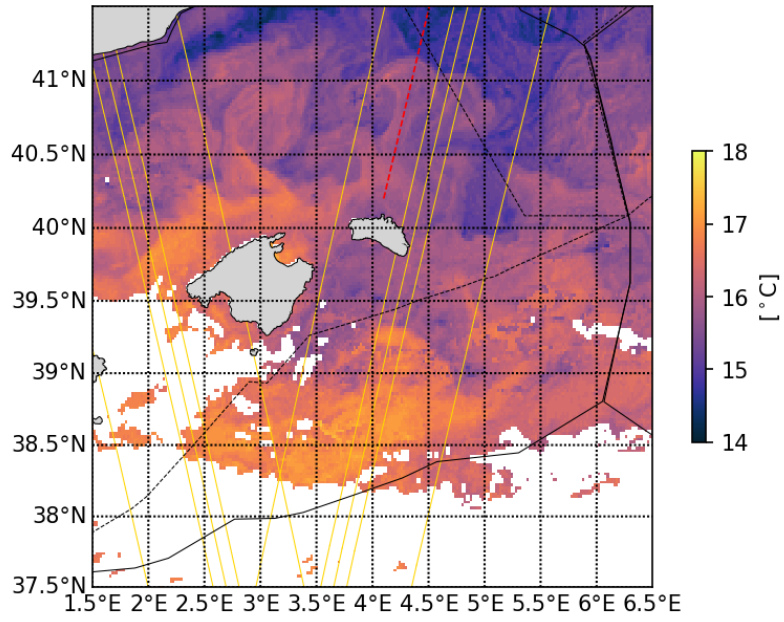


## 2.2 SST analysis

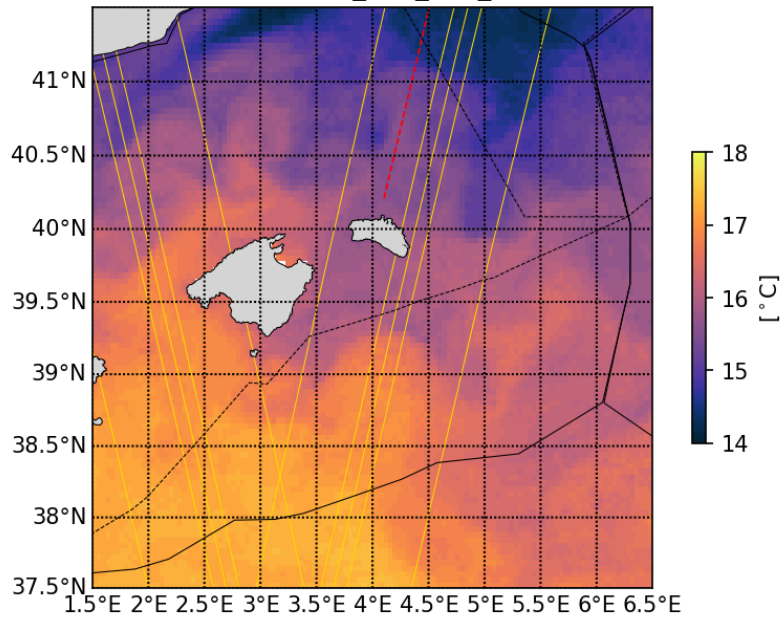
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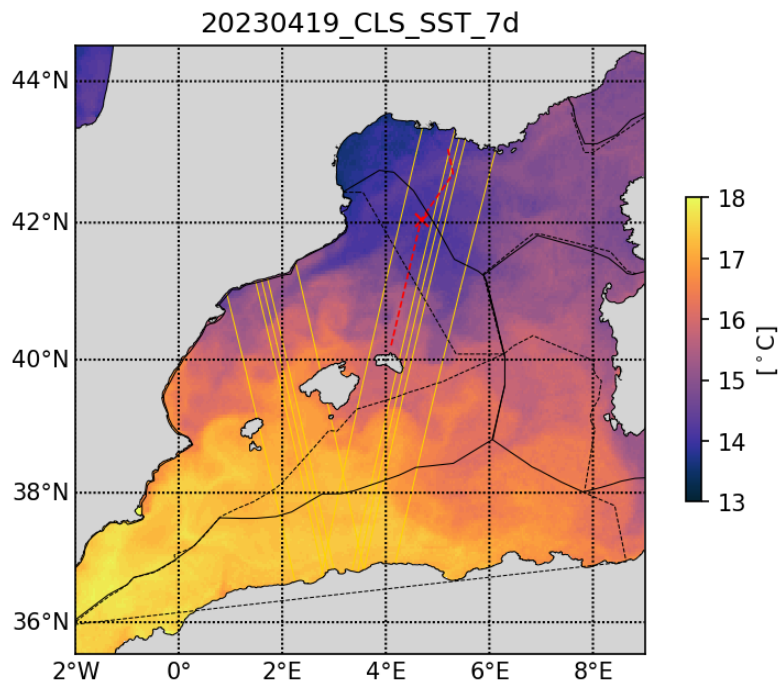
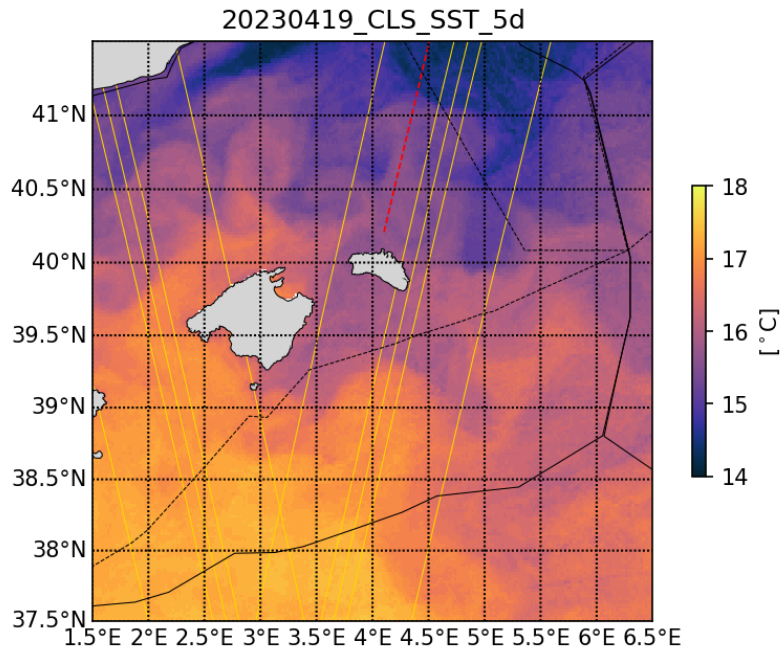


20230420\_CLS\_SST

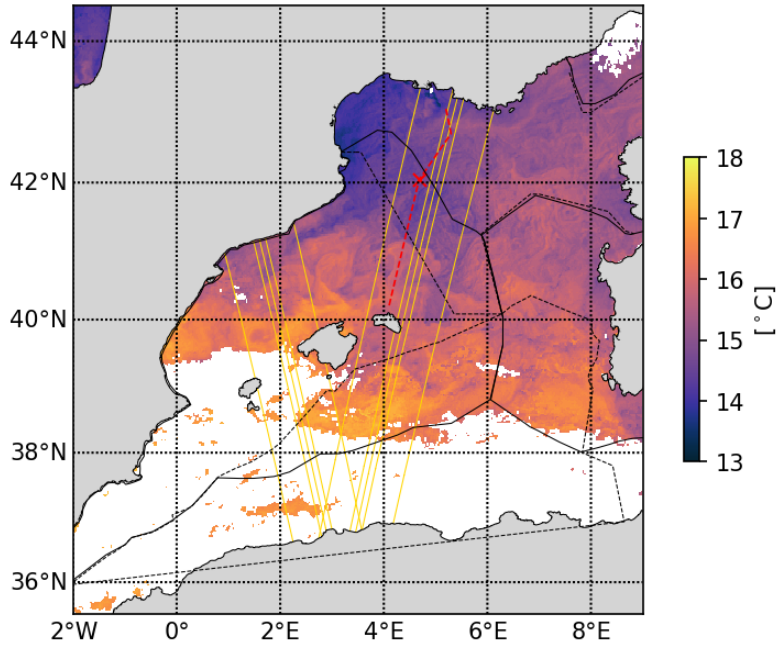


20230419\_CLS\_SST\_7d

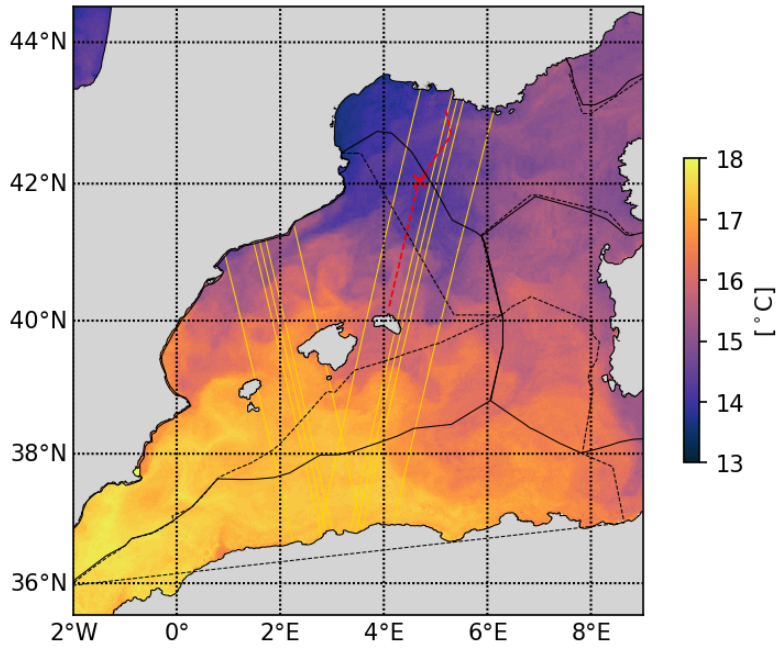




20230420\_CLS\_SST



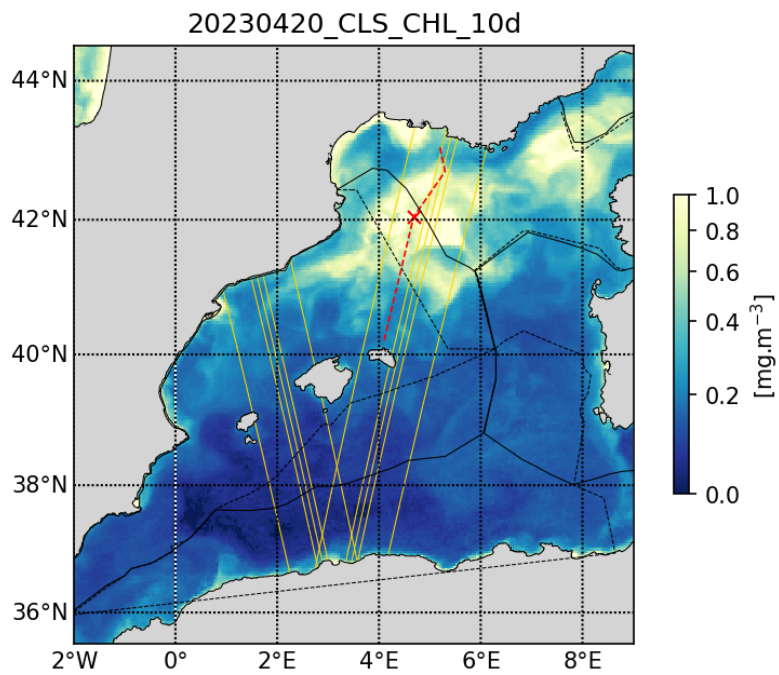
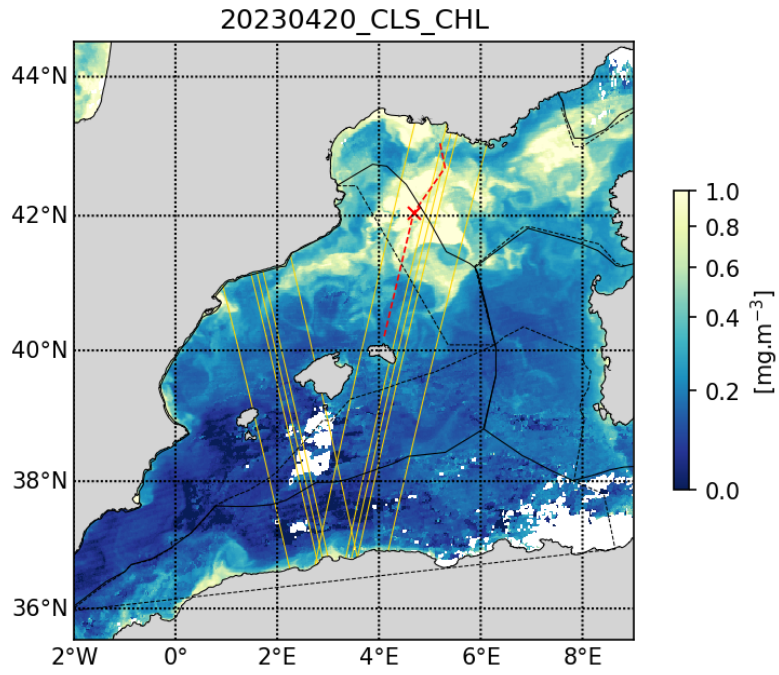
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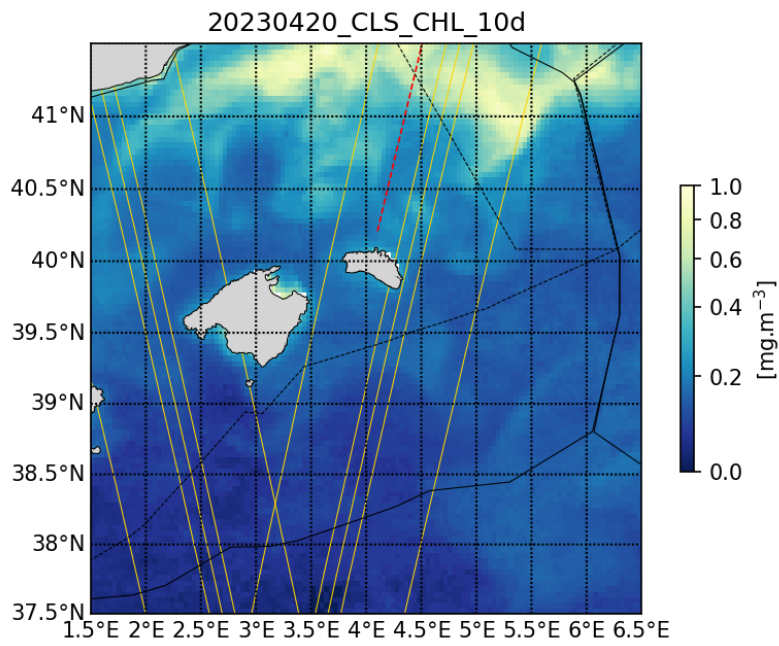
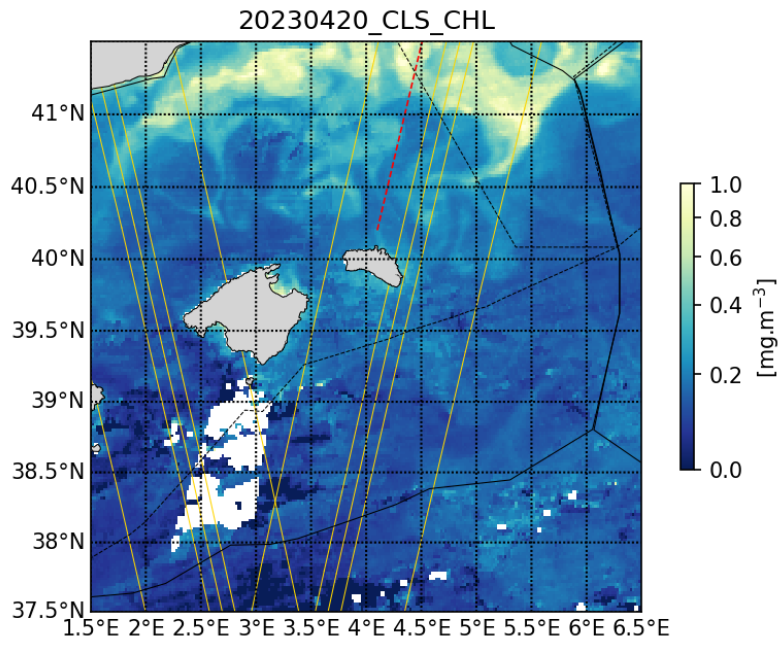


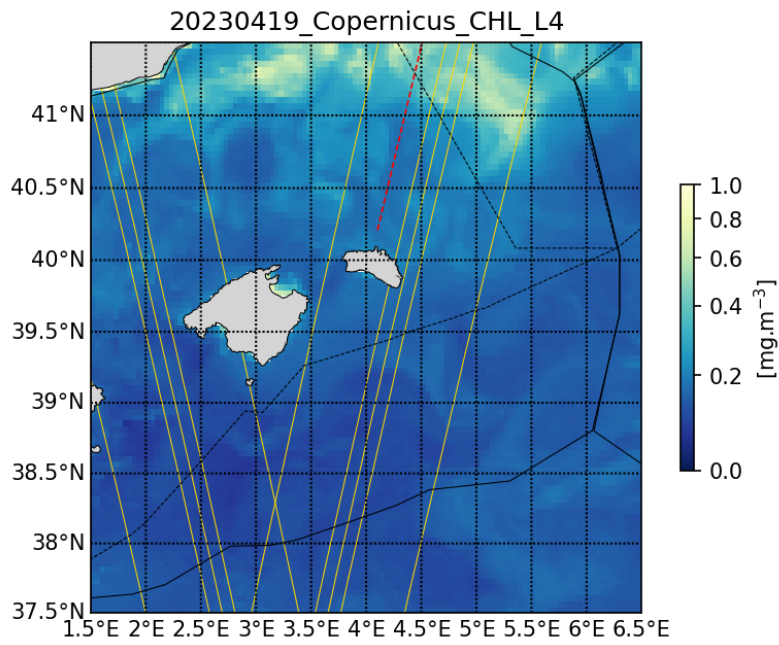
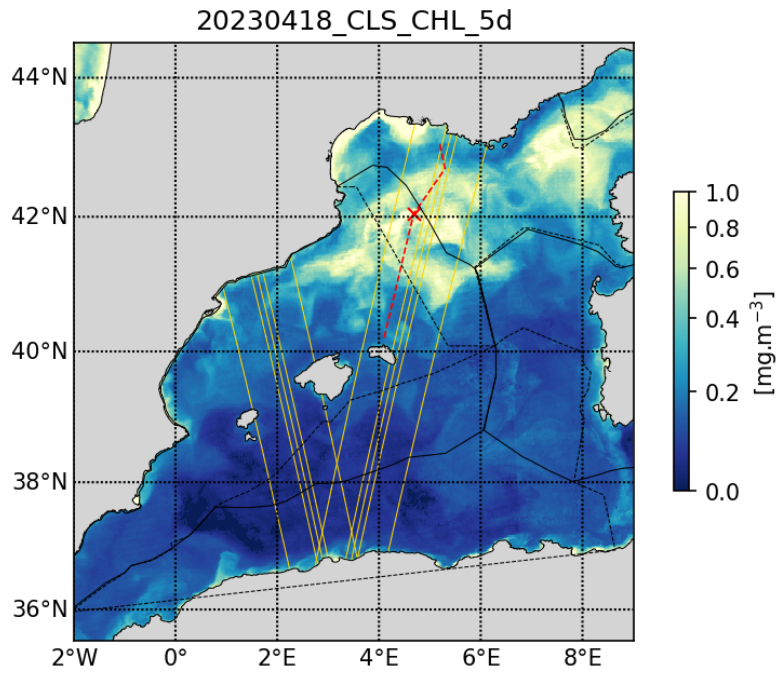


## 2.3 Chlorophyll analysis

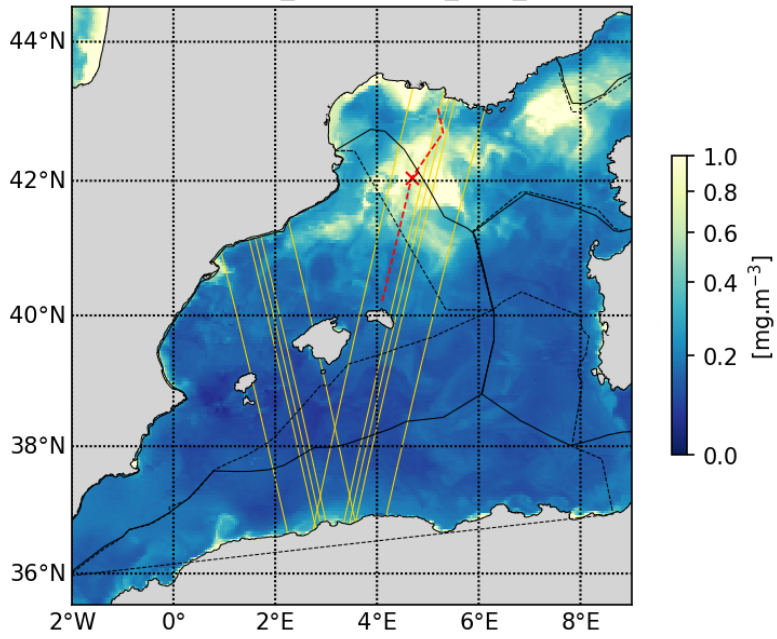
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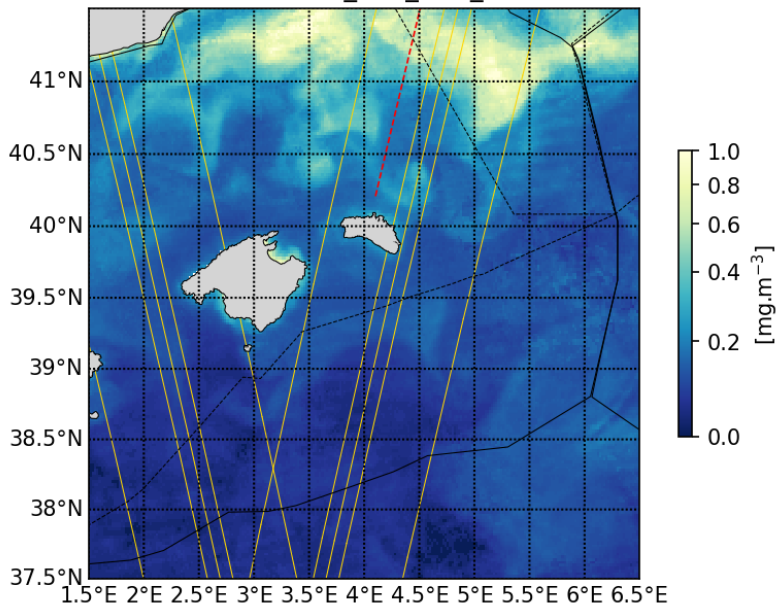




20230419\_Copernicus\_CHL\_L4



20230418\_CLS\_CHL\_5d



## 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:

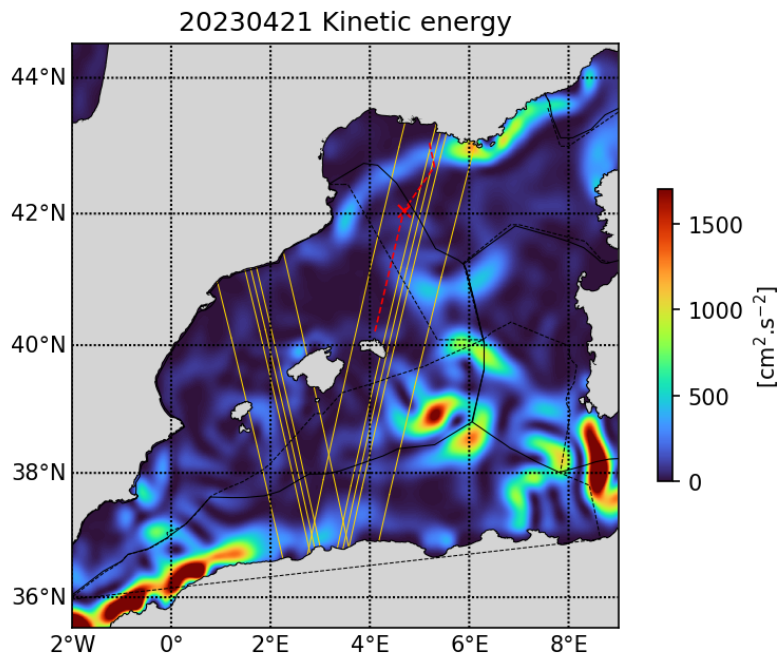
FTLE: finite time Lyapunov exponents (convergent fronts detection)

LLADV: longitude and latitude advection

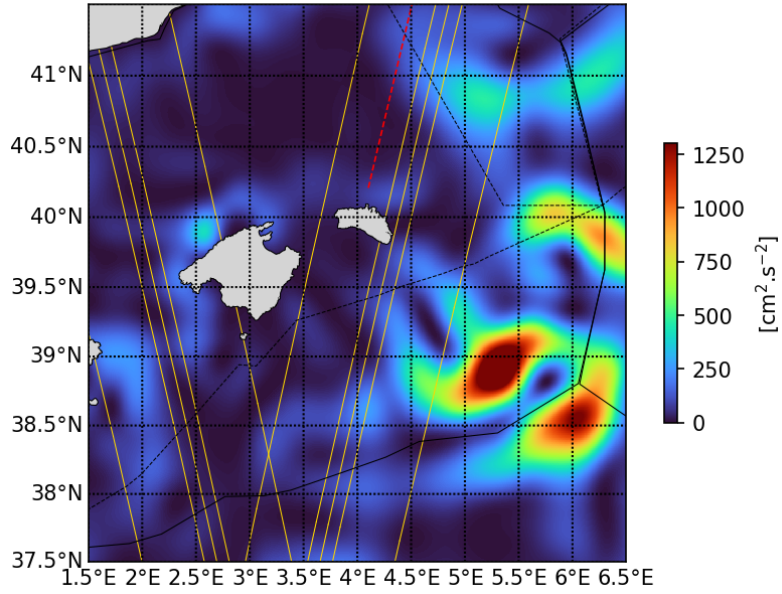
Retention parameter (based on computing the okubo Weiss parameter along a particle trajectory): Detect trapping structures (colorbar = days water parcels have a positive vorticity)

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

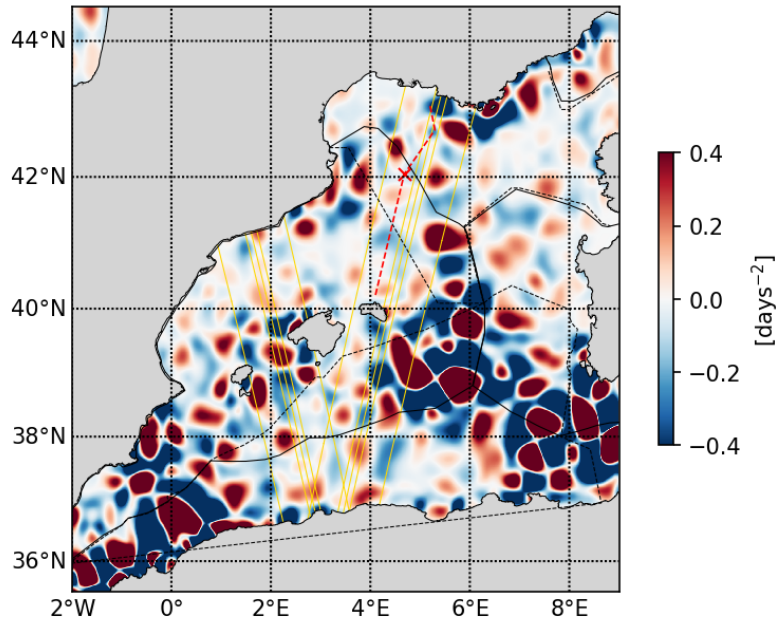
More details available at: <https://www.swot-adac.org/resources/swot-adac-products-access/>



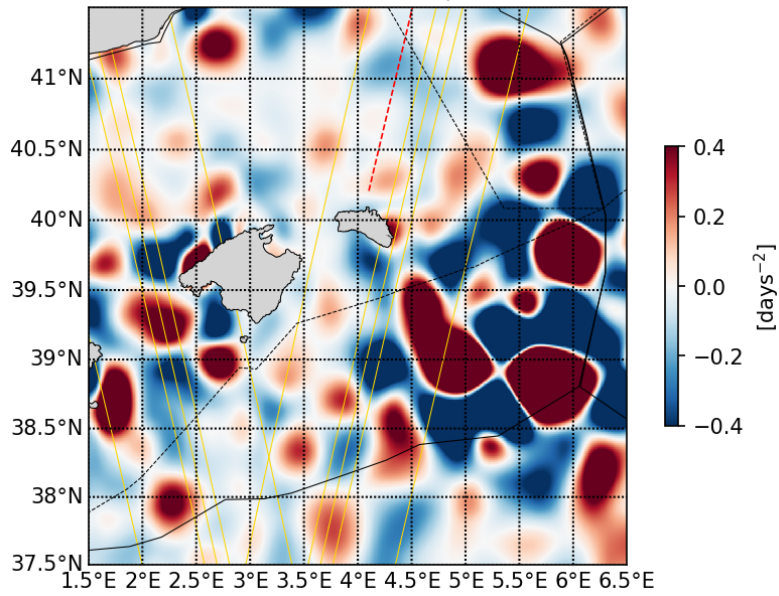
20230421 Kinetic energy



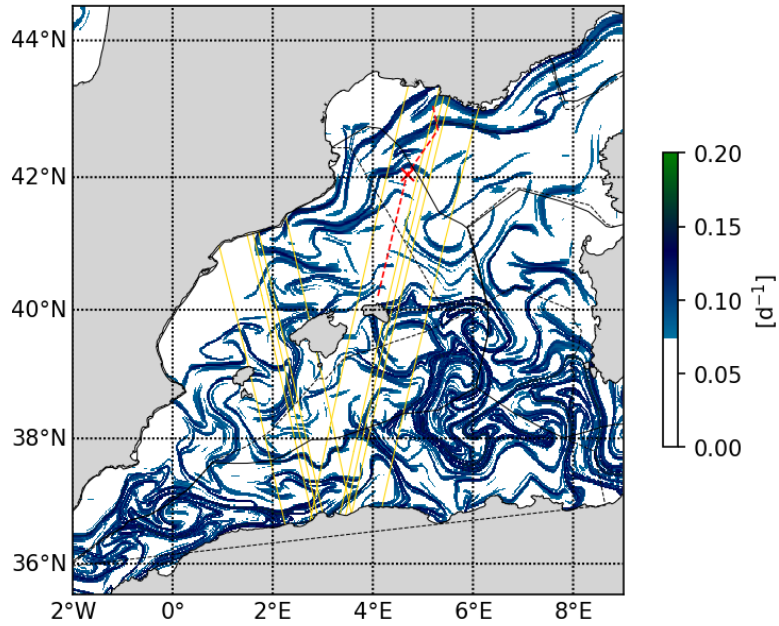
20230421 Okubo-Weiss parameter

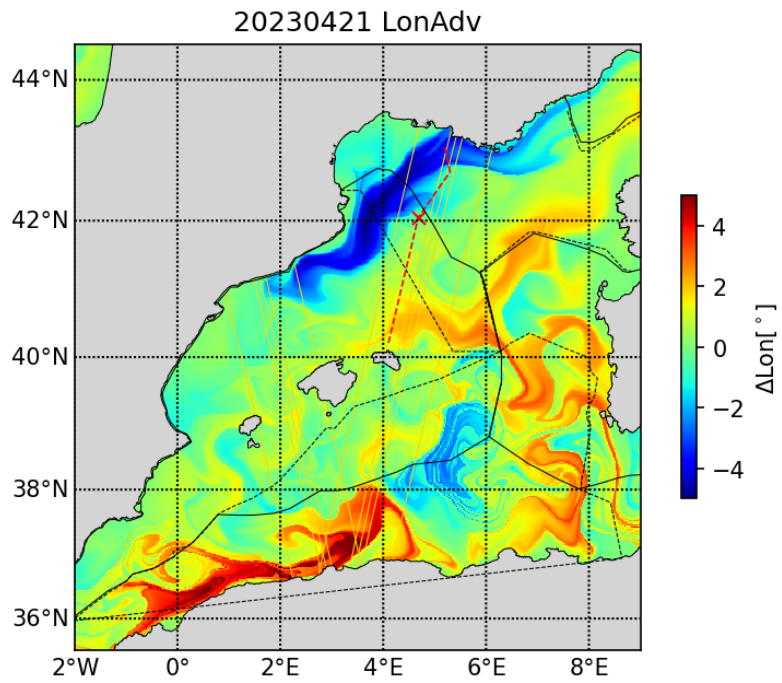
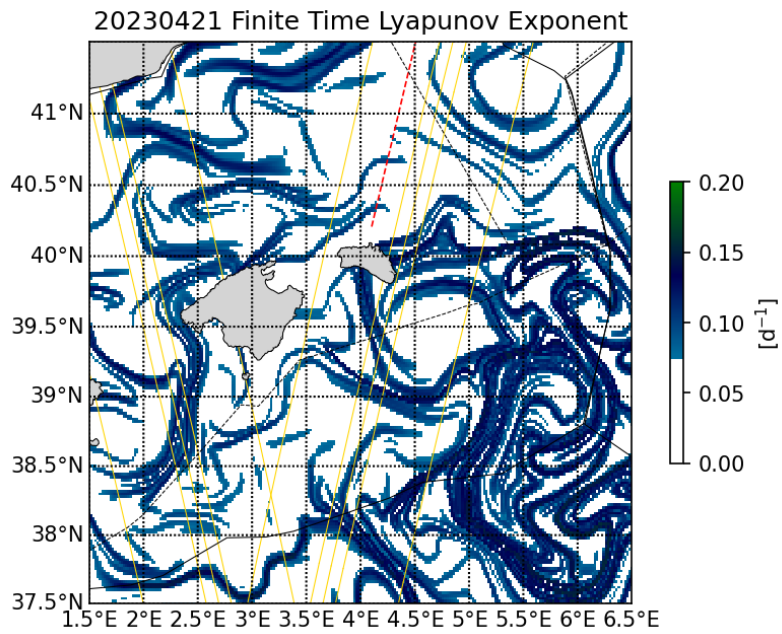


20230421 Okubo-Weiss parameter

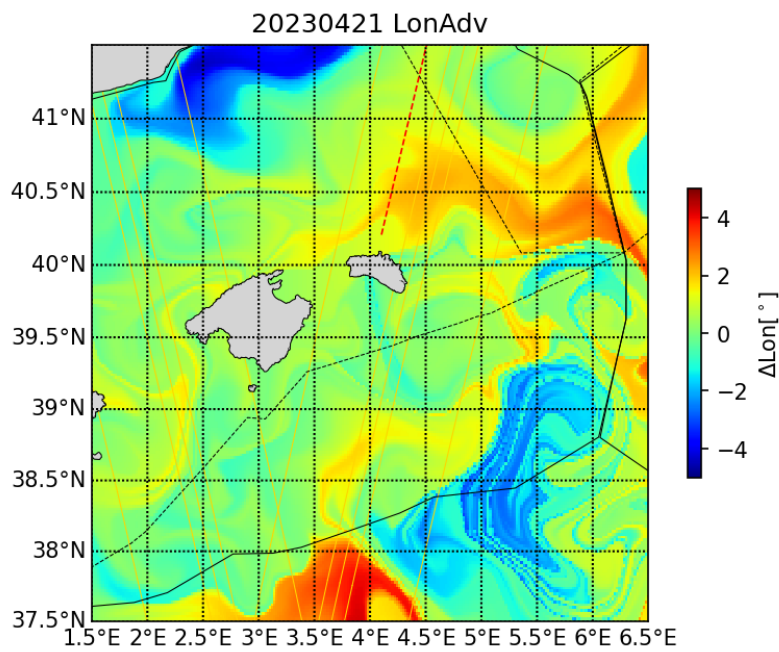
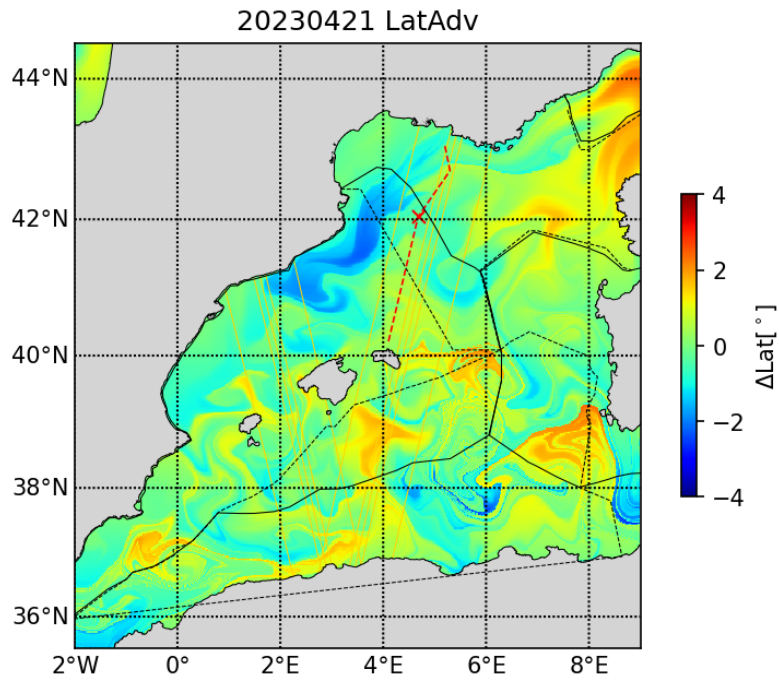


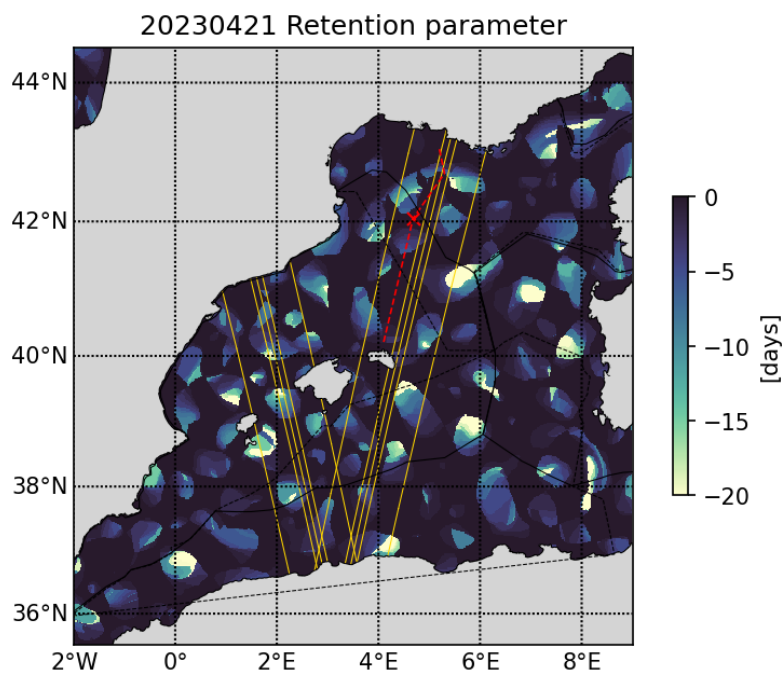
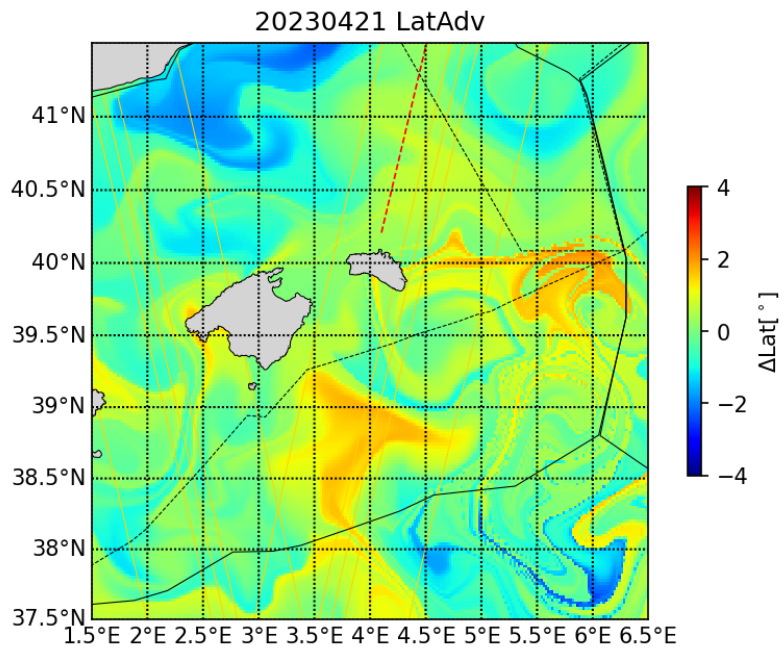
20230421 Finite Time Lyapunov Exponent

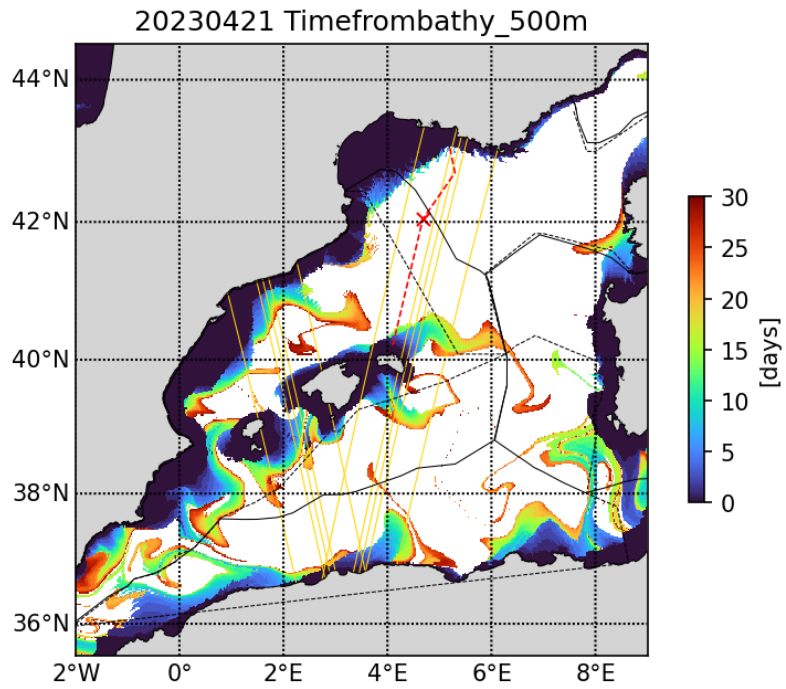
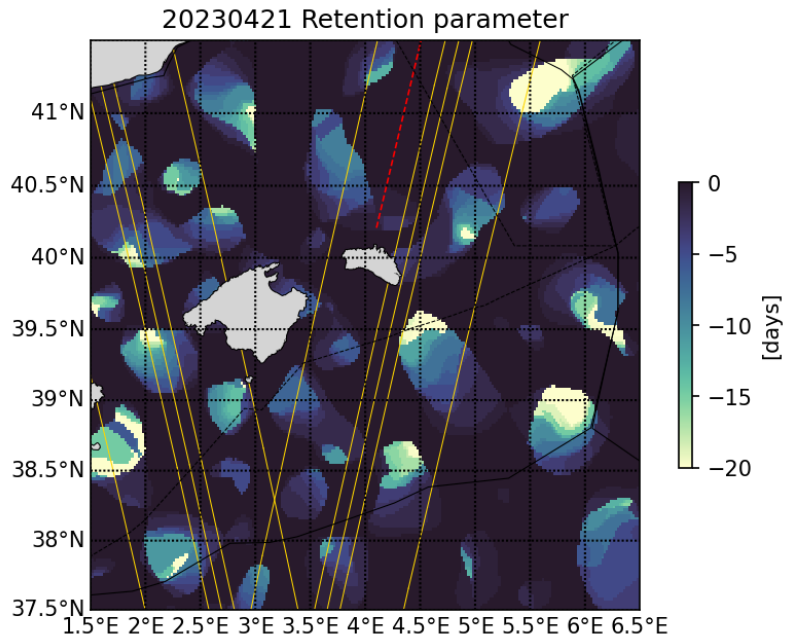




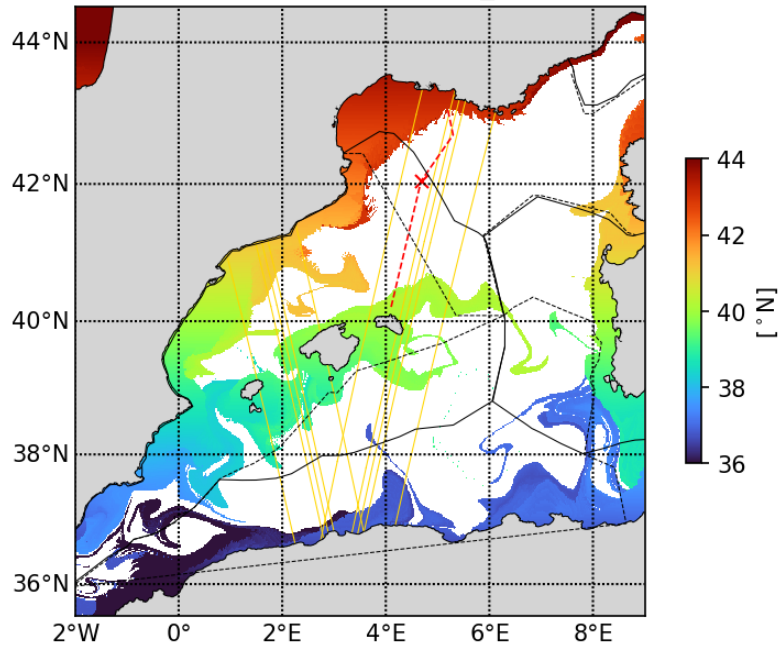




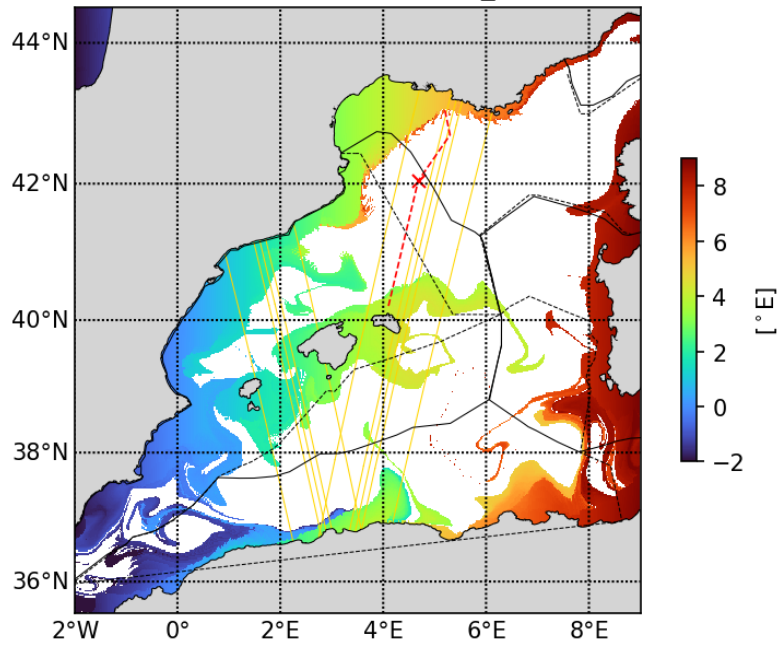


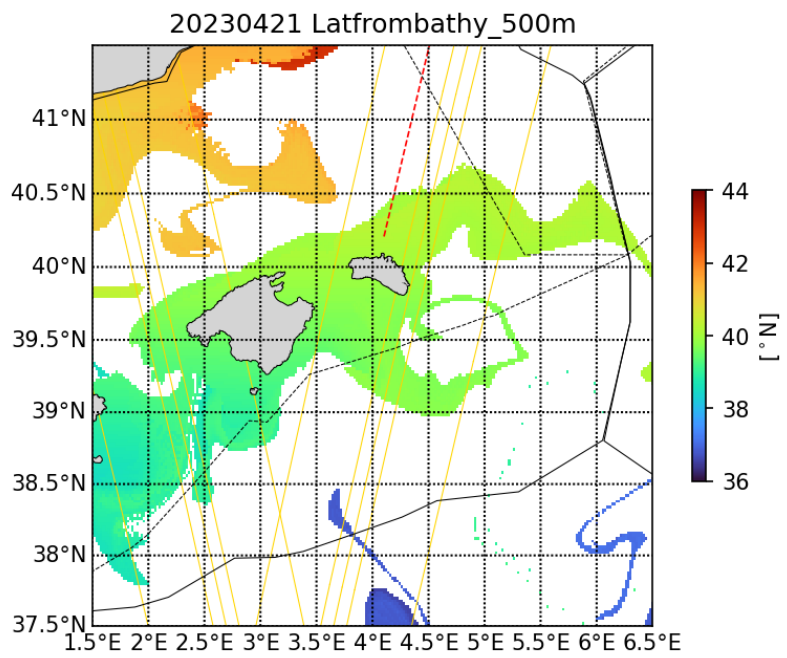
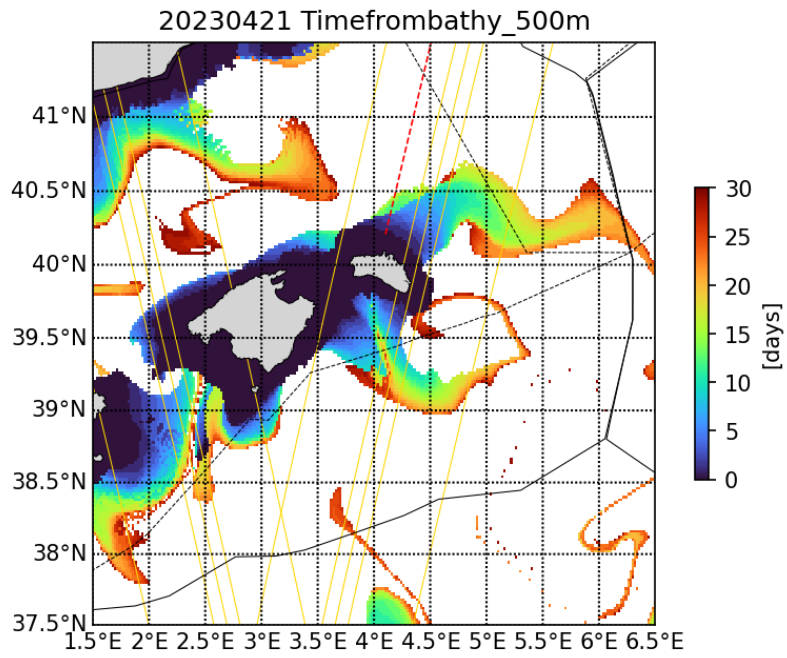


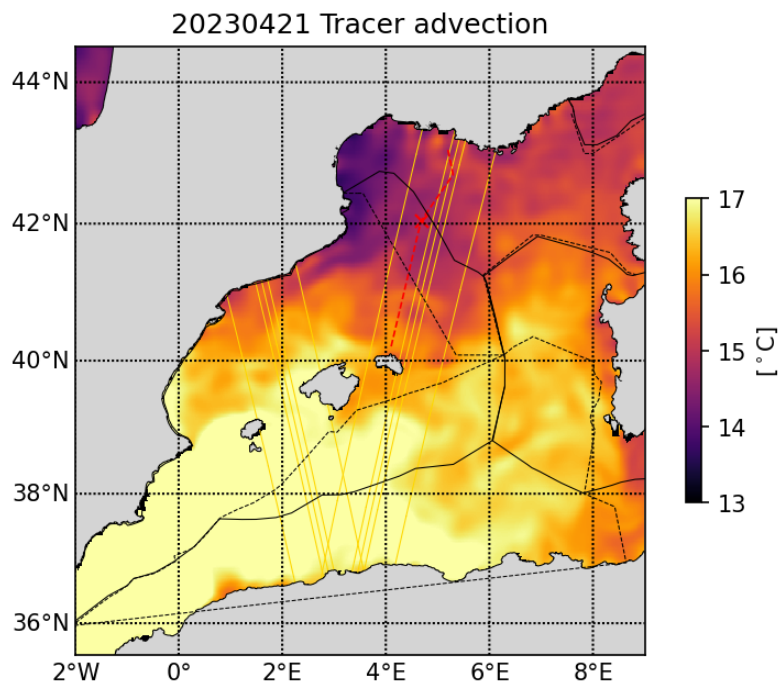
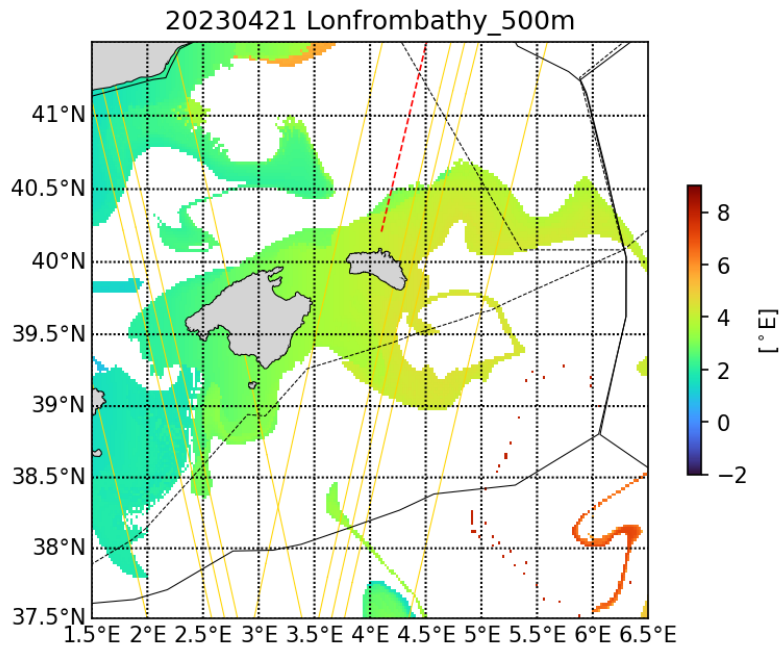
20230421 Latfrombathy\_500m



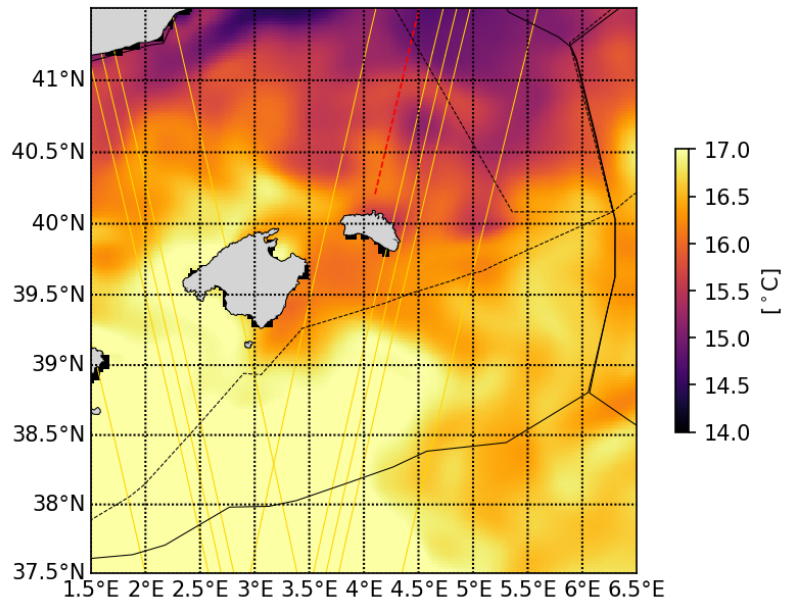
20230421 Lonfrombathy\_500m





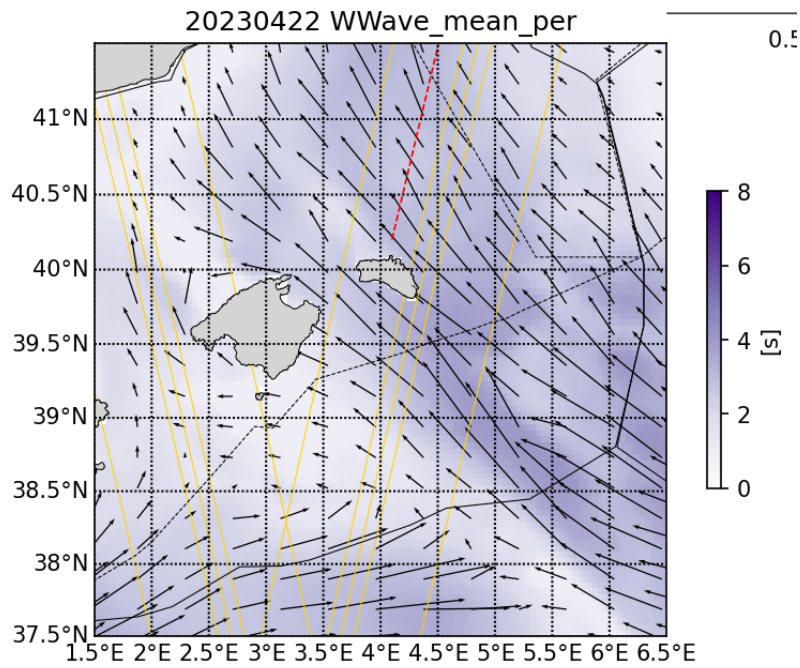
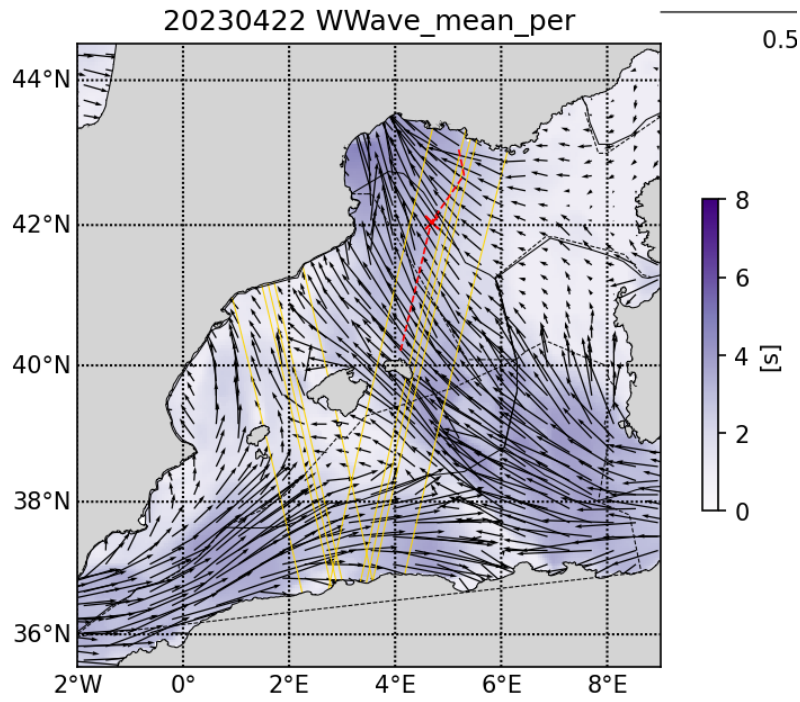


20230421 Tracer advection

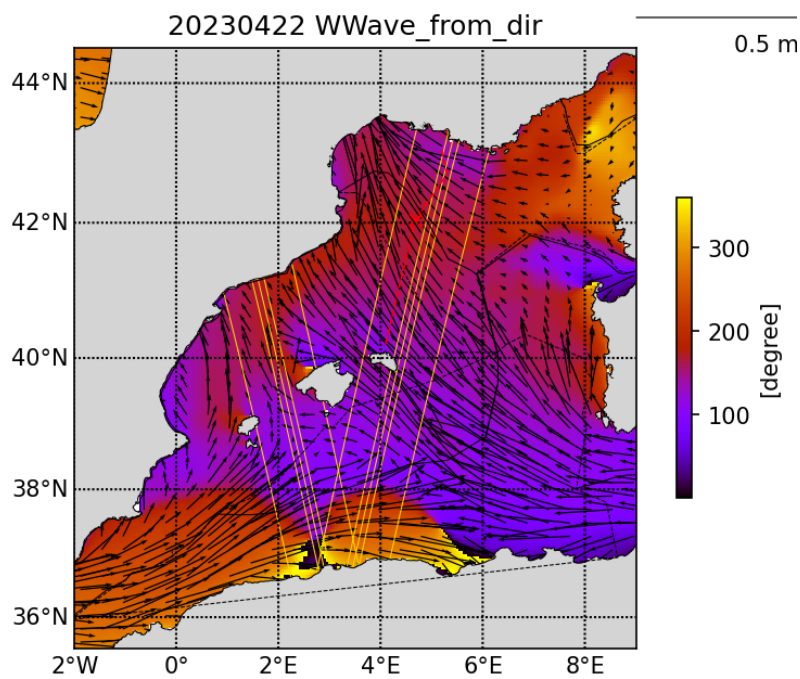
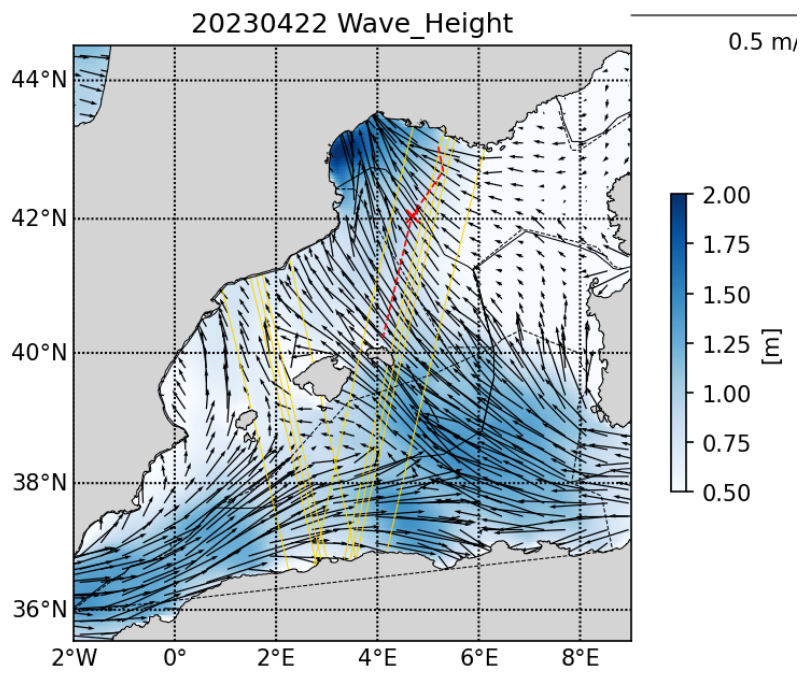


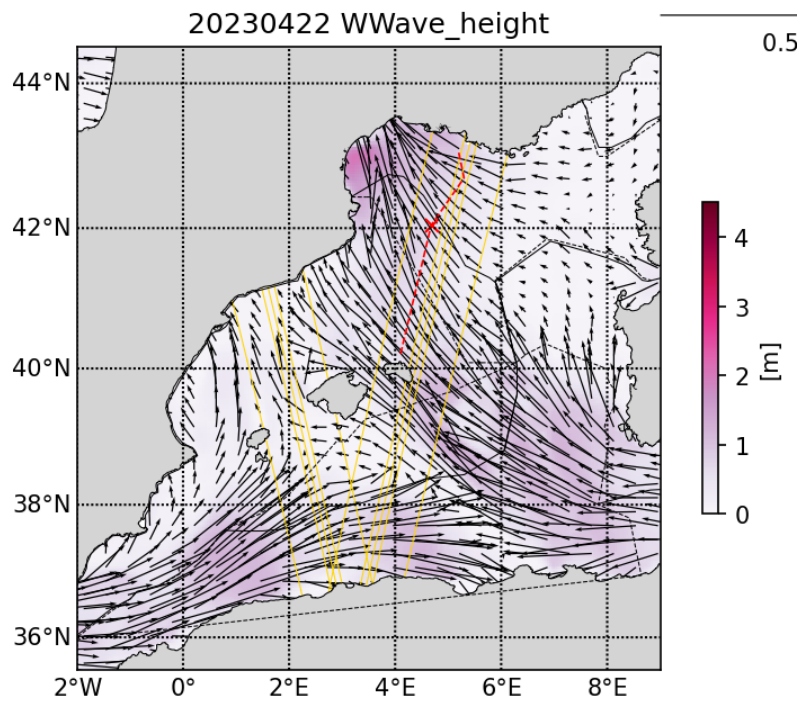
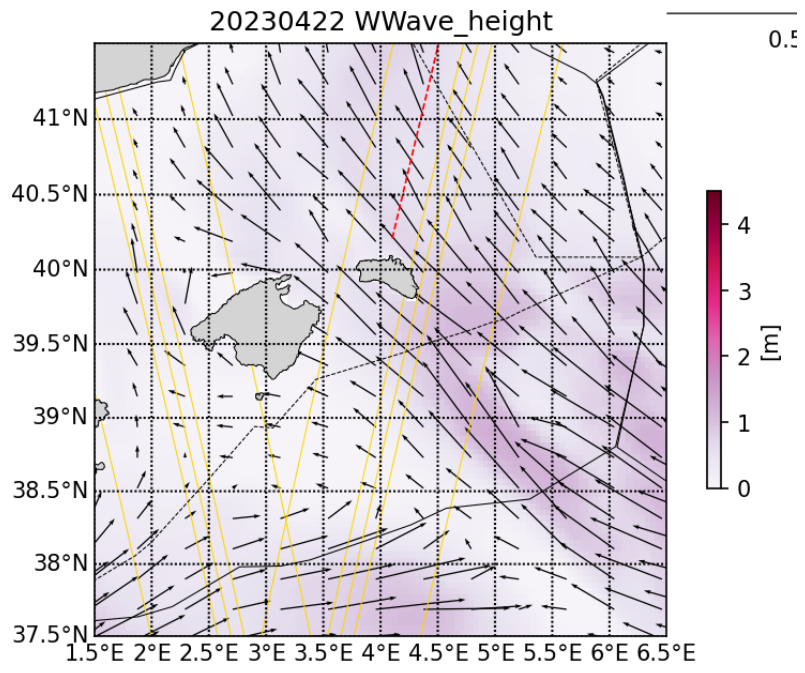
## 2.5 Wave forecast analysis

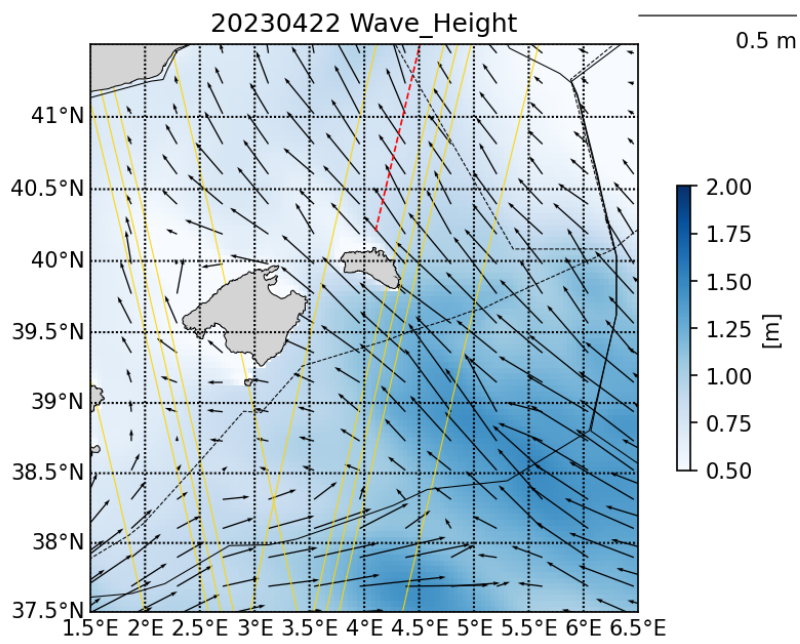
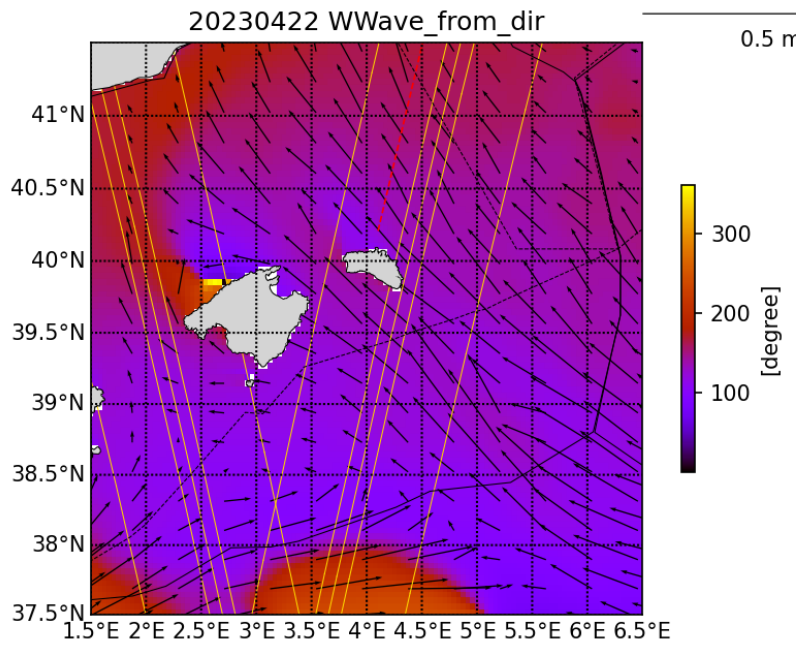
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## Acknowledgments

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).