

# [BIOSWOT-Med]: SPASSO Images Analysis

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April 17, 2023

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## Executive Summary

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## 1 Ongoing operations and upcoming stations

SWOT passing time (UTC) over:

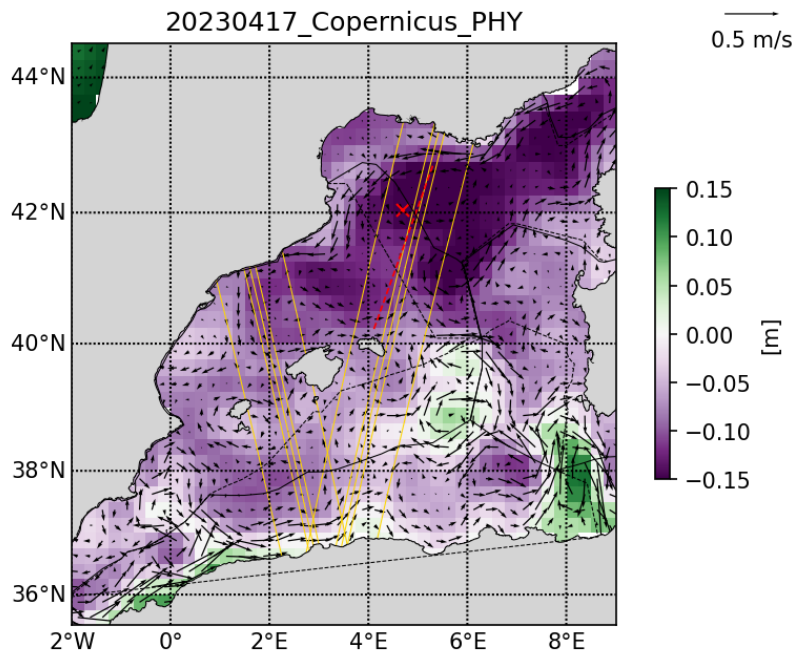
43°N - 5°E Asc   42.7°N - 4.8°E Asc	
:----- :-----	
2023-04-17 21:14:38	2023-04-17 21:14:38
2023-04-18 21:05:16	2023-04-18 21:05:16
2023-04-19 20:55:53	2023-04-19 20:55:53
2023-04-20 20:46:31	2023-04-20 20:46:31
2023-04-21 20:37:08	2023-04-21 20:37:08

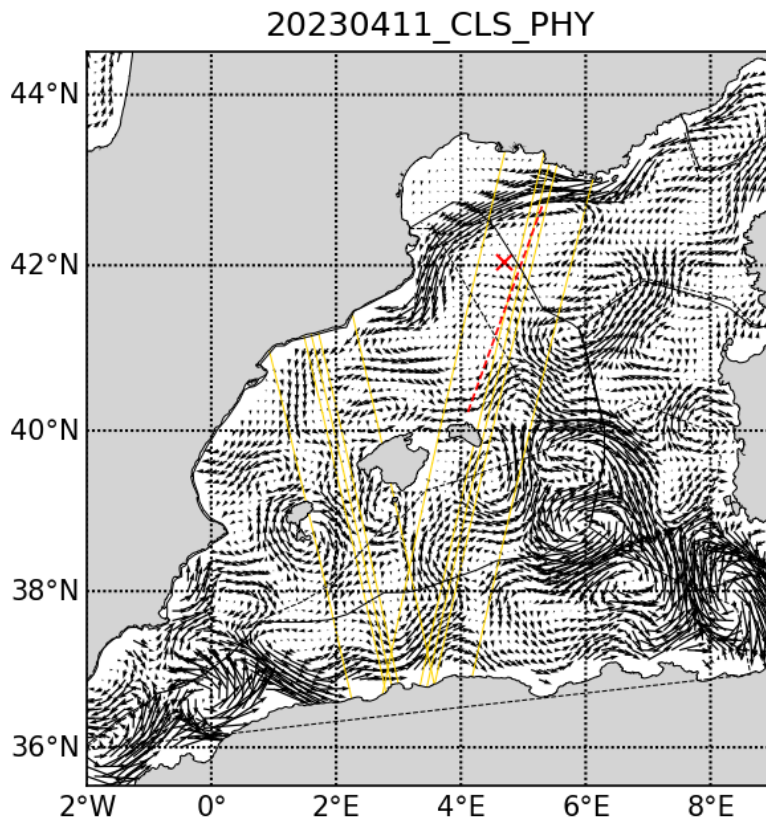
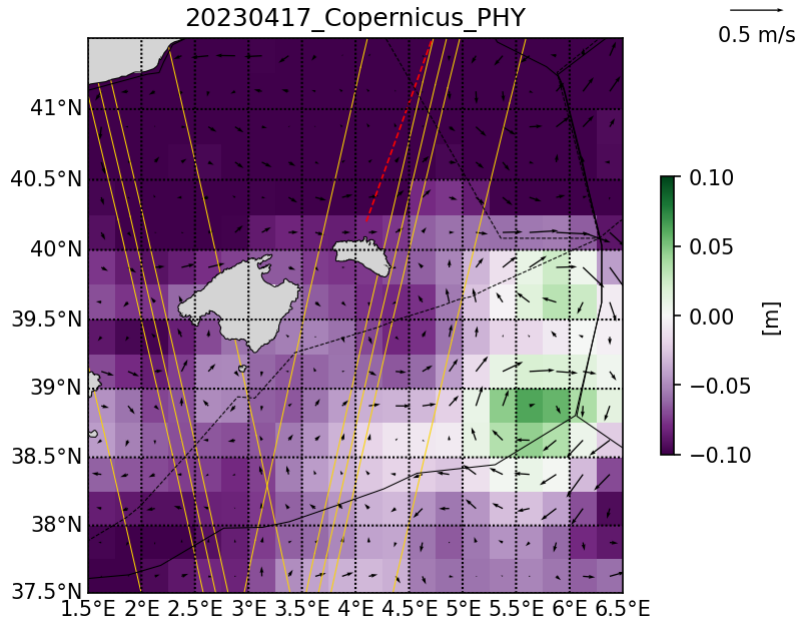
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## 2 Daily figures analysis

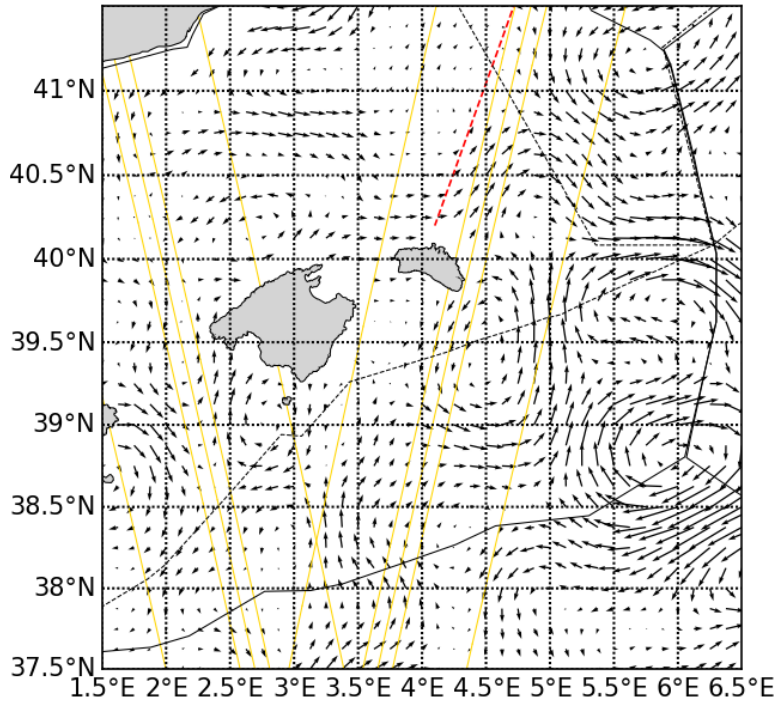
### 2.1 Altimetry, derived currents

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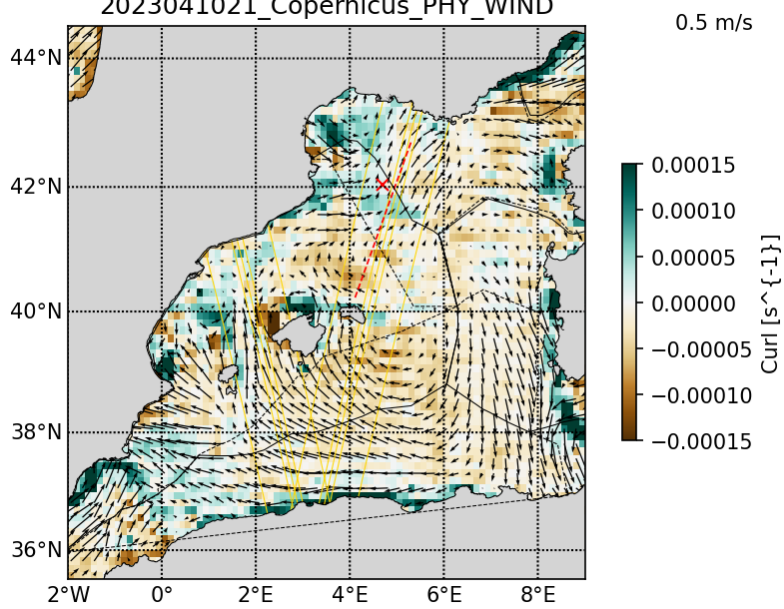


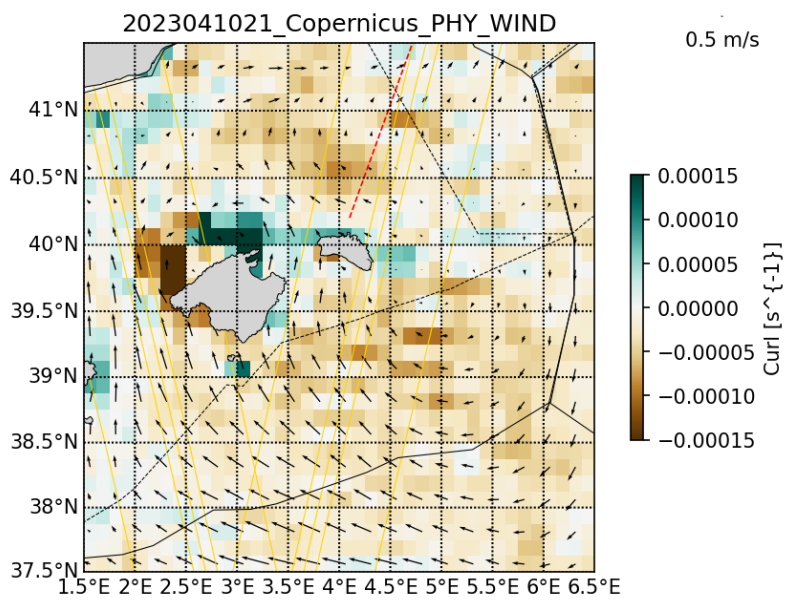


20230411\_CLS\_PHY



2023041021\_Copernicus\_PHY\_WIND

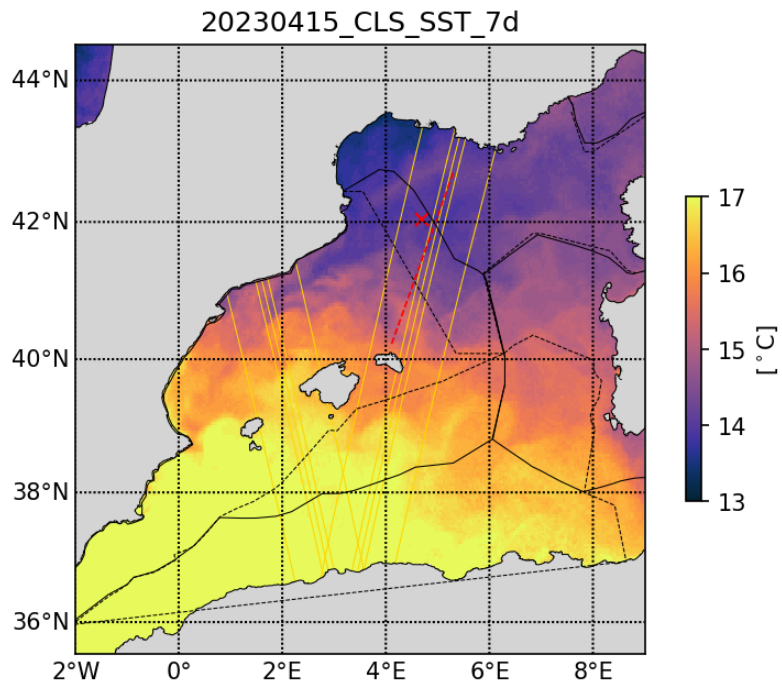
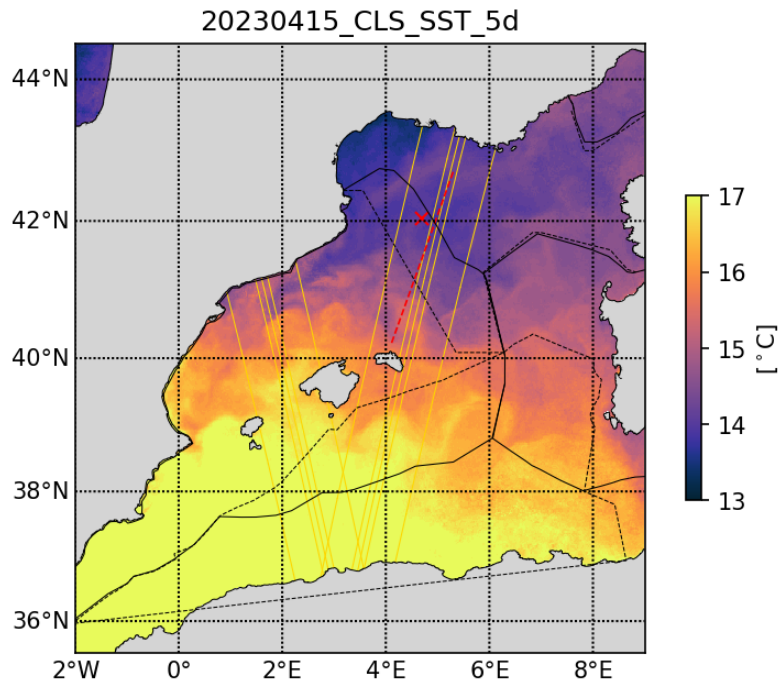




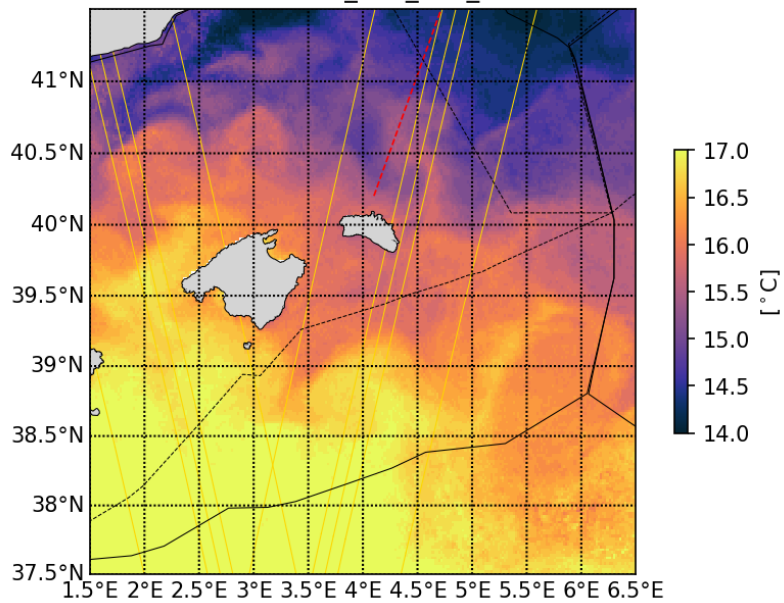


## 2.2 SST analysis

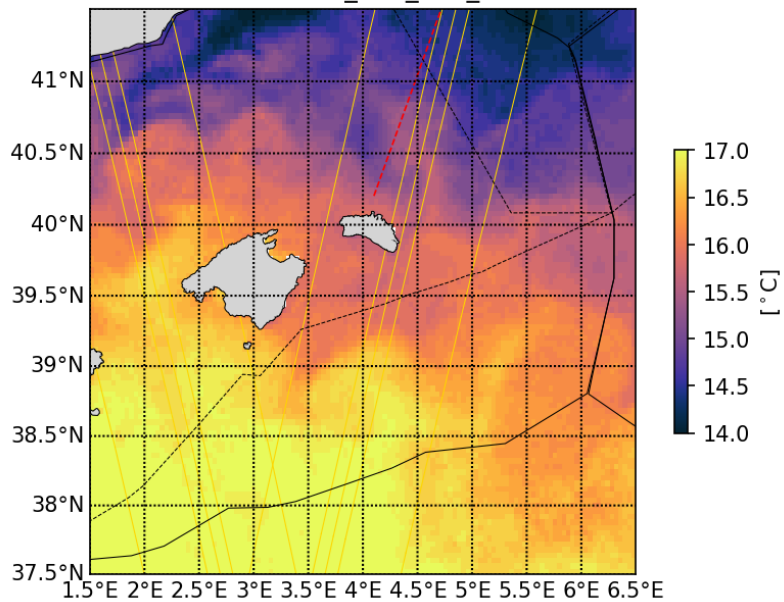
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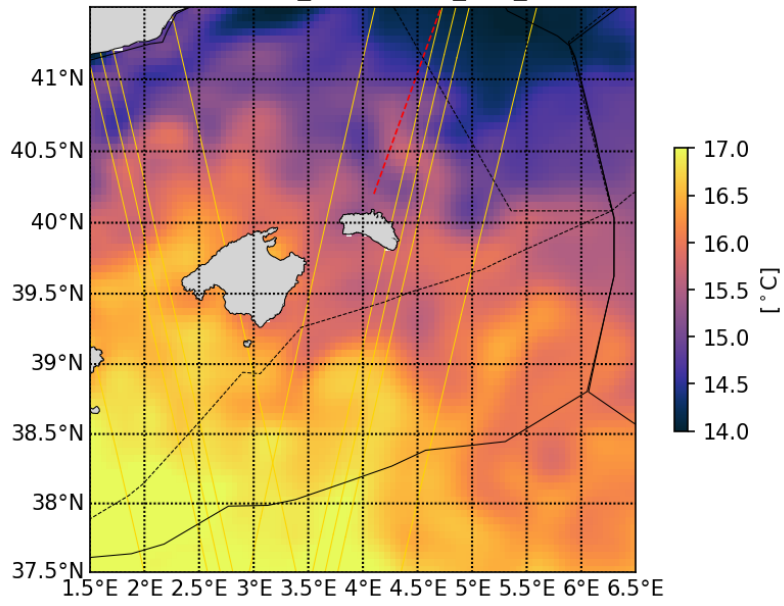
20230415\_CLS\_SST\_5d



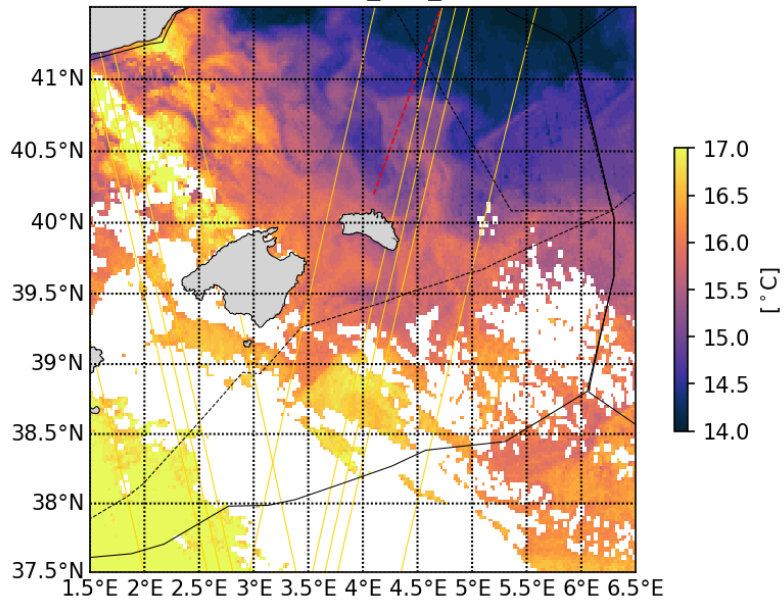
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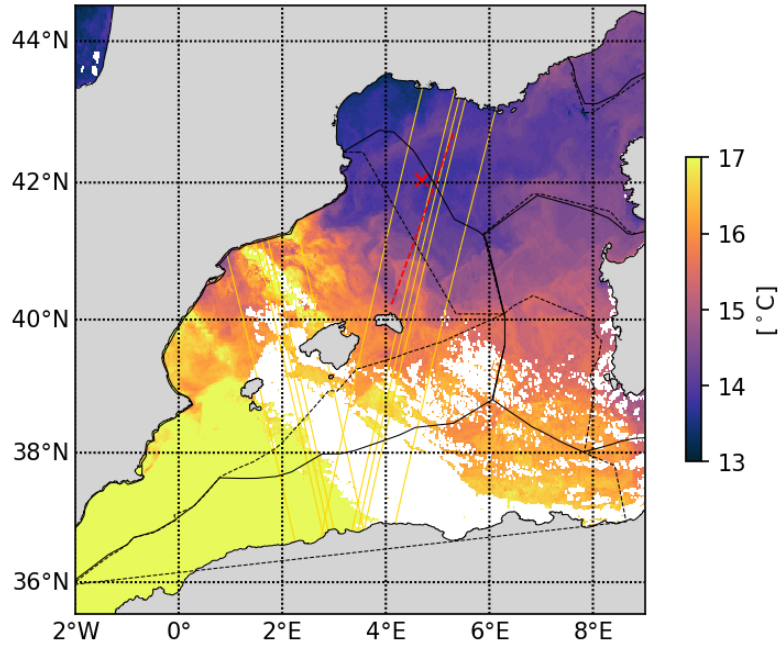
20230416\_Copernicus\_SST\_L4



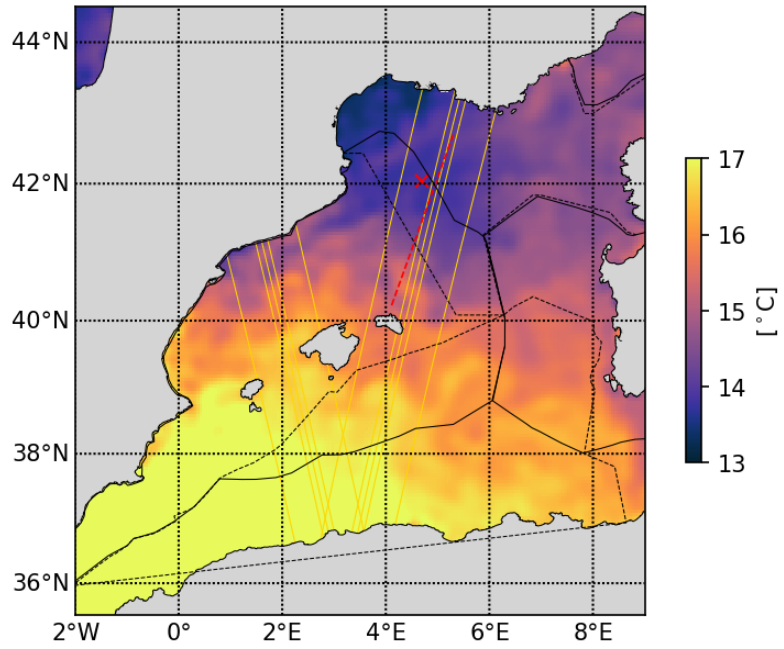
20230416\_CLS\_SST



20230416\_CLS\_SST

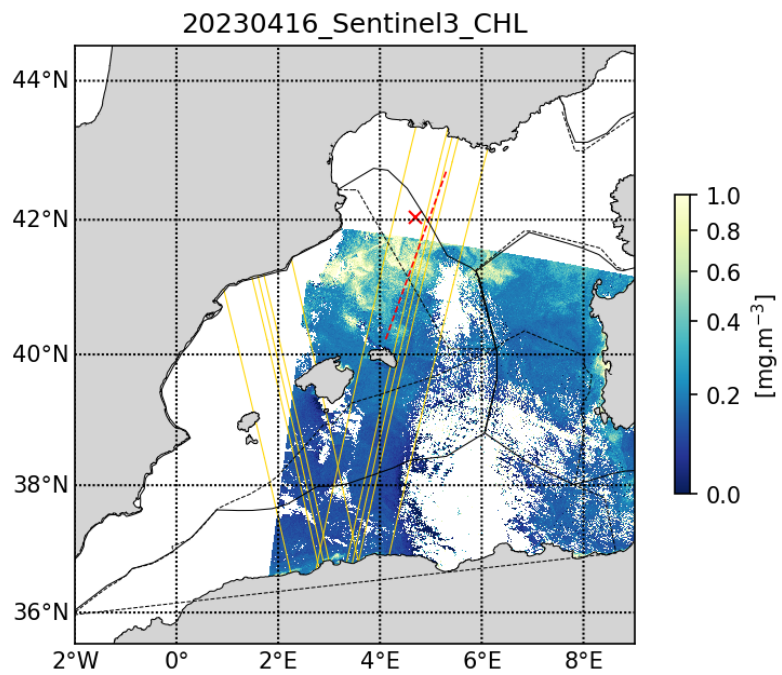
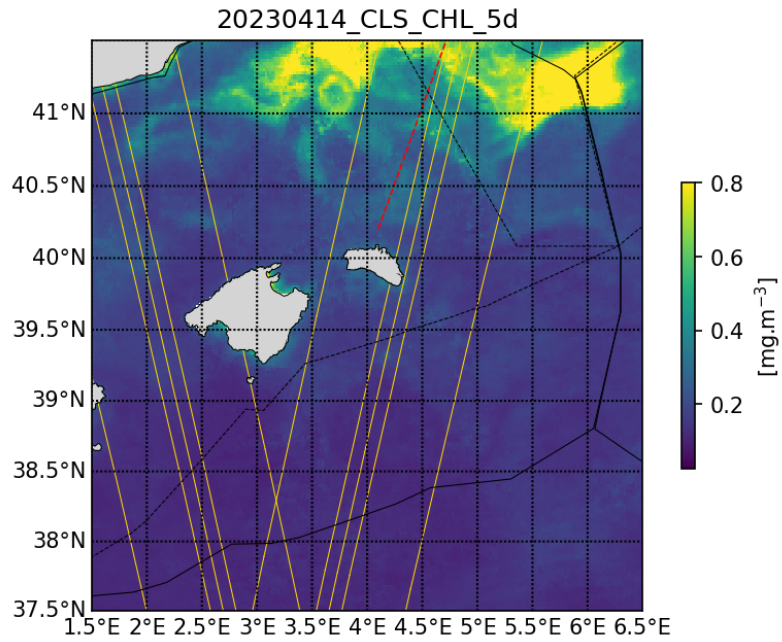


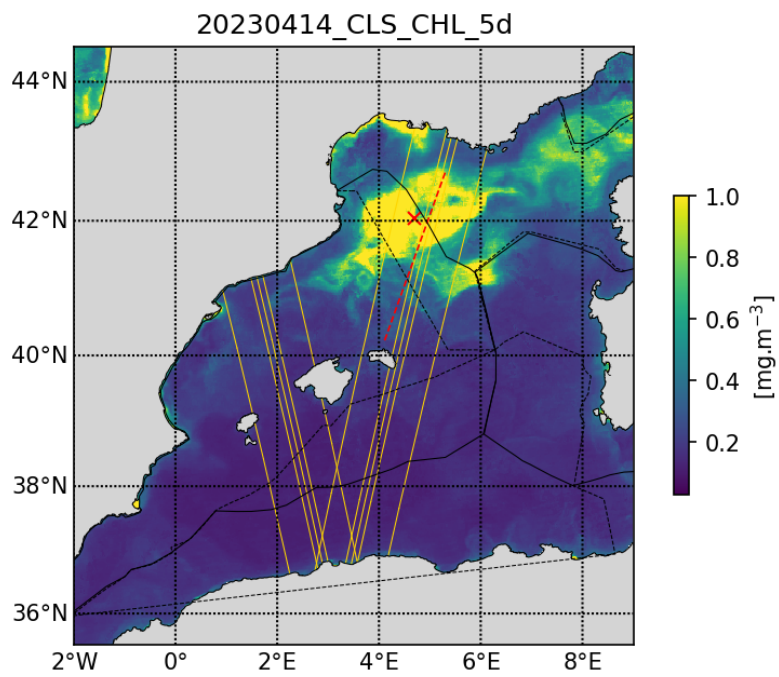
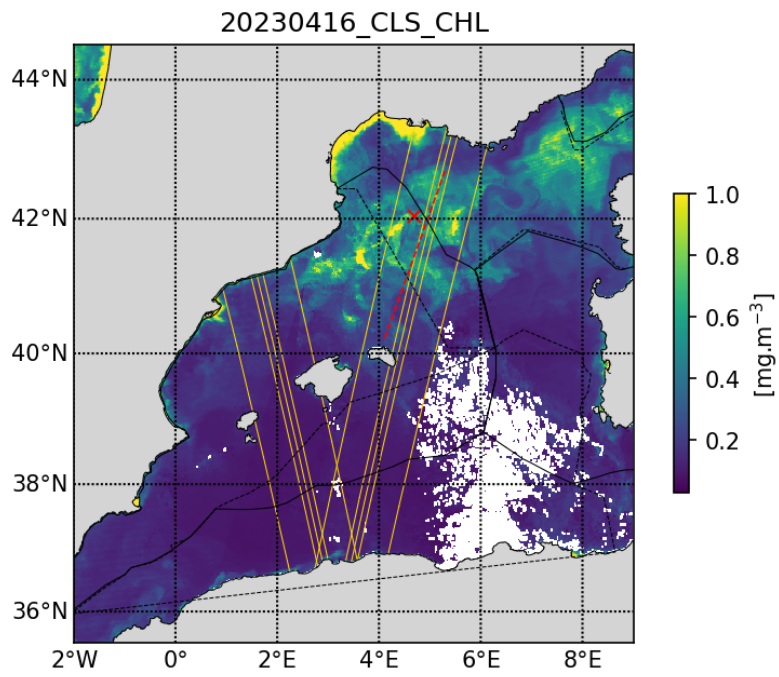
20230416\_Copernicus\_SST\_L4



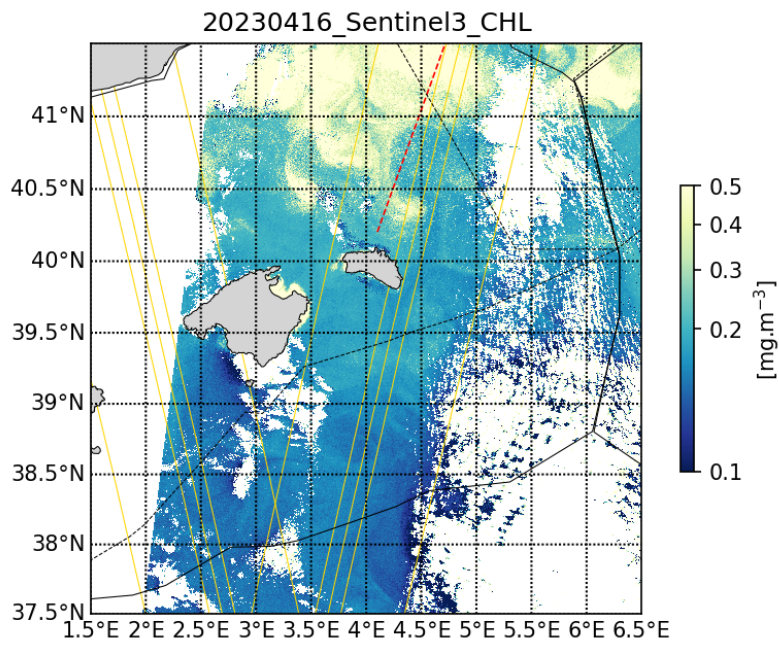
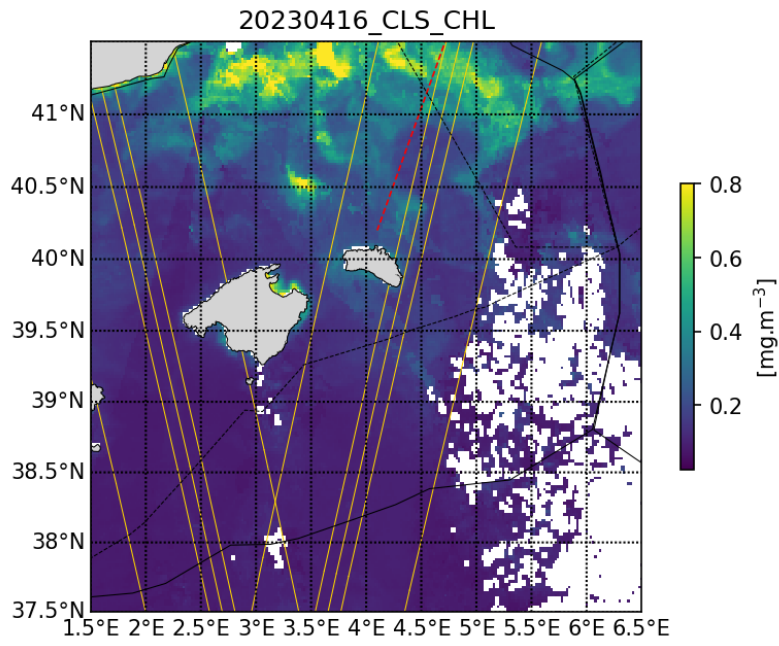
## 2.3 Chlorophyll analysis

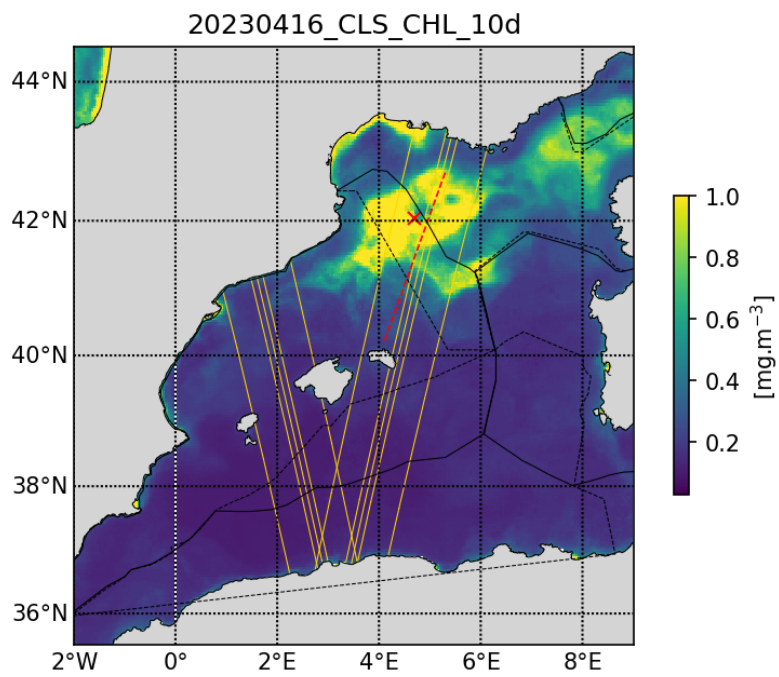
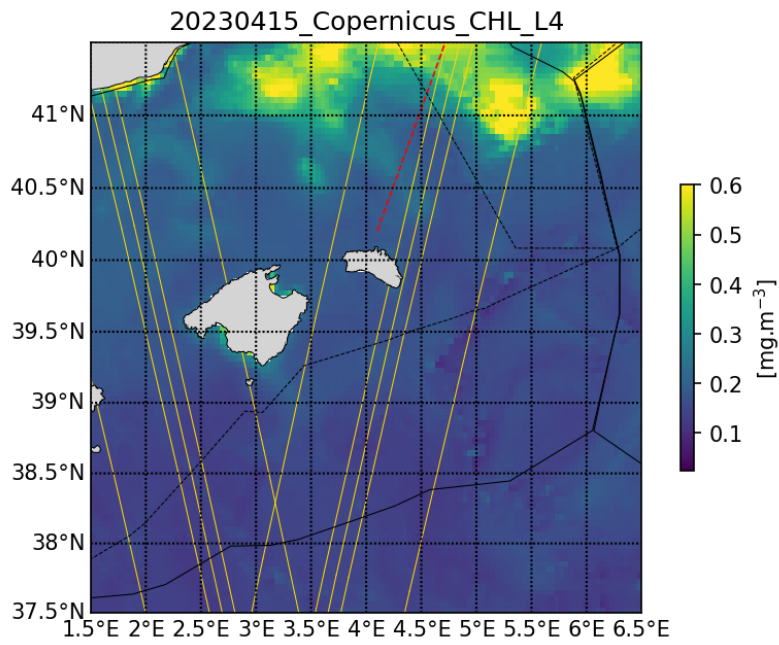
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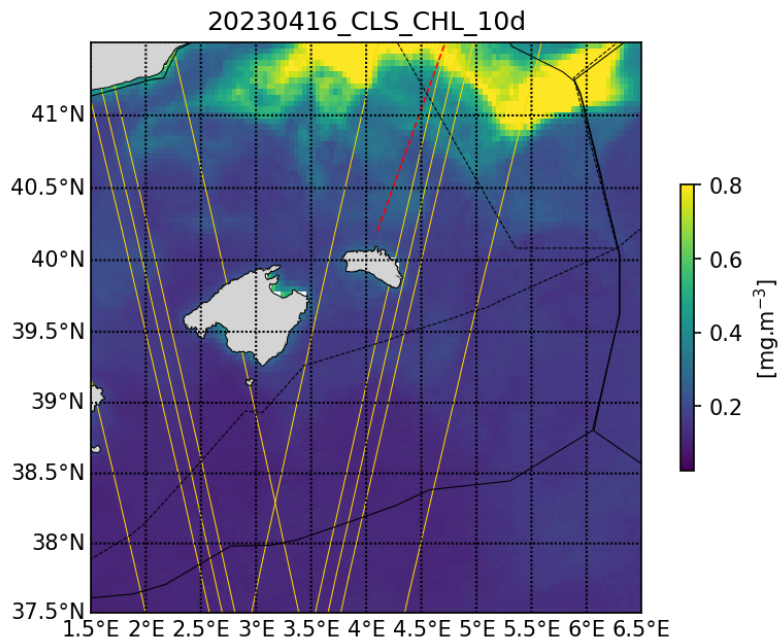
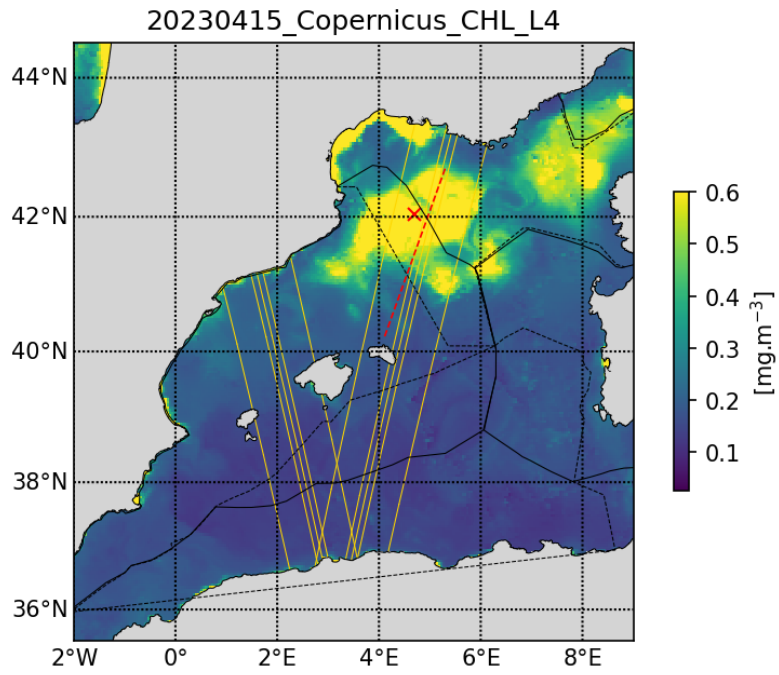












## 2.4 Eulerian/Lagrangian analysis

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:

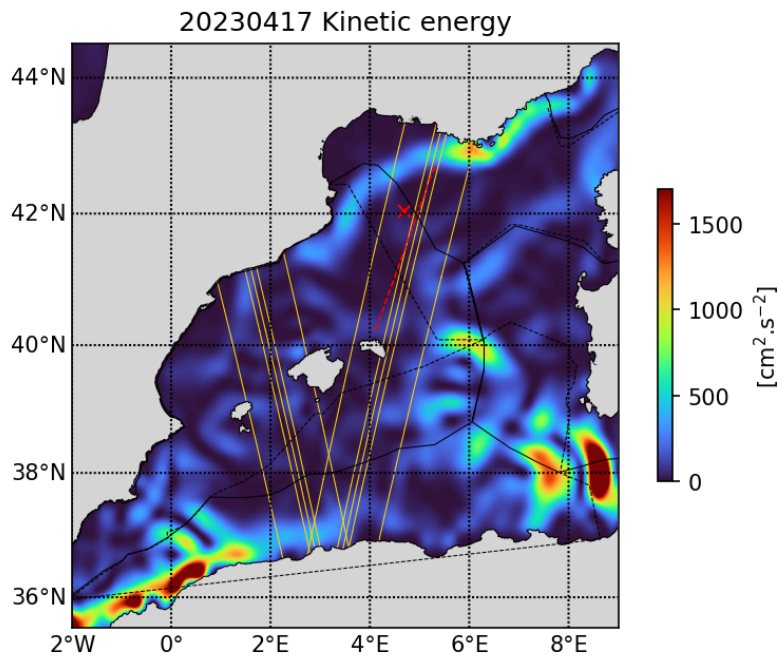
FTLE: finite time Lyapunov exponents (convergent fronts detection)

LLADV: longitude and latitude advection

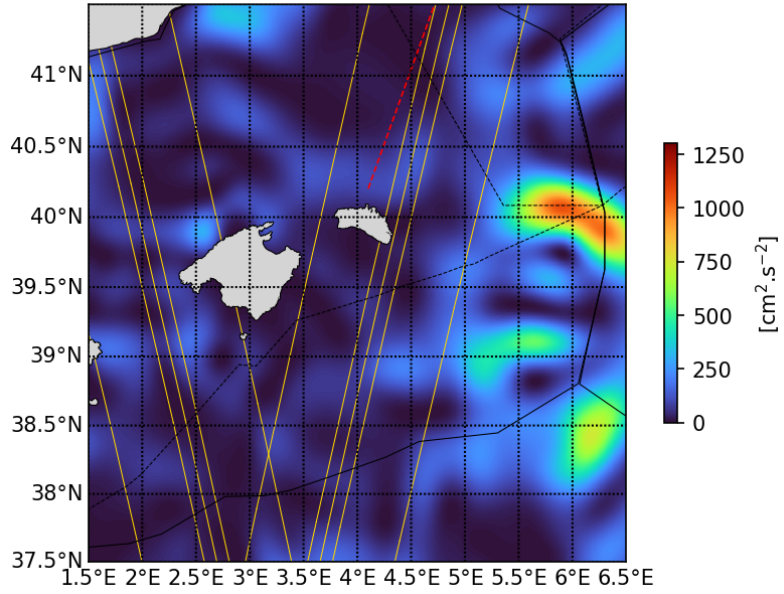
Retention parameter (based on computing the okubo Weiss parameter along a particle trajectory): Detect trapping structures (colorbar = days water parcels have a positive vorticity)

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

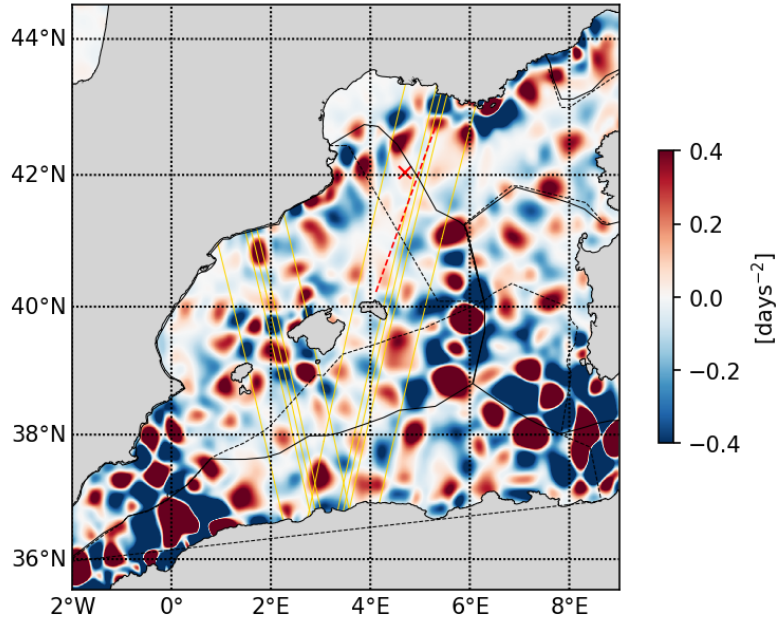
More details available at: <https://www.swot-adac.org/resources/swot-adac-products-access/>



20230417 Kinetic energy

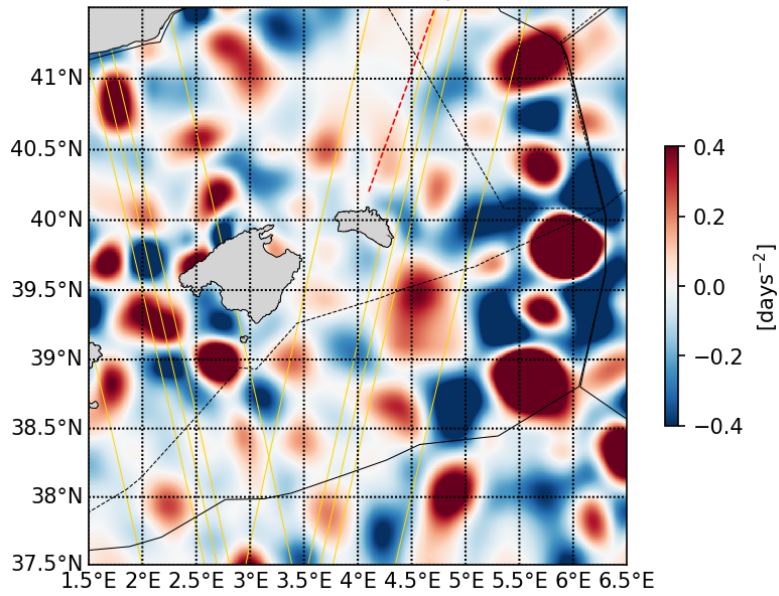


20230417 Okubo-Weiss parameter

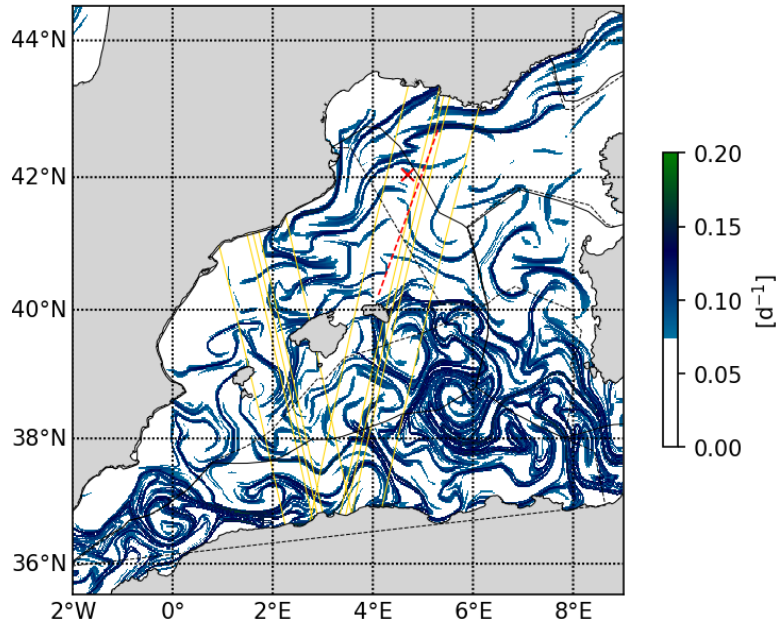




20230417 Okubo-Weiss parameter

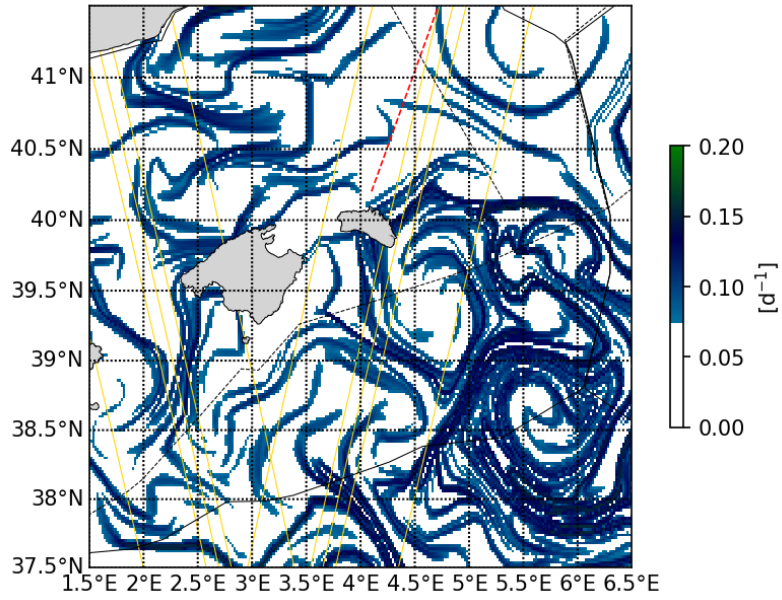


20230417 Finite Time Lyapunov Exponent

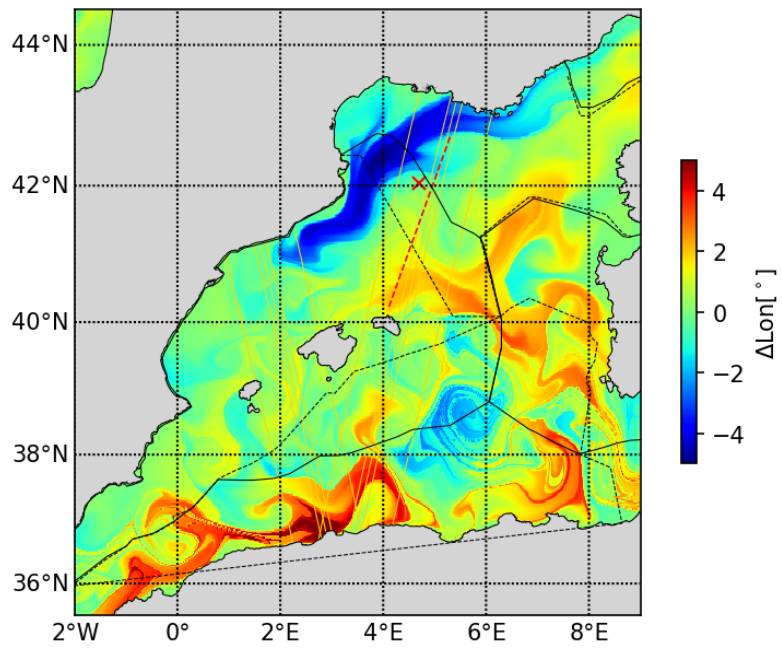


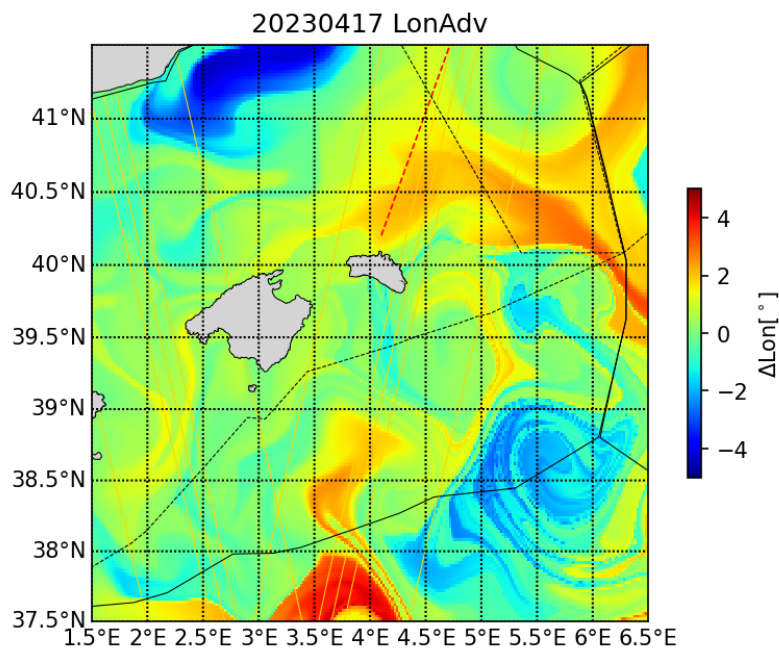
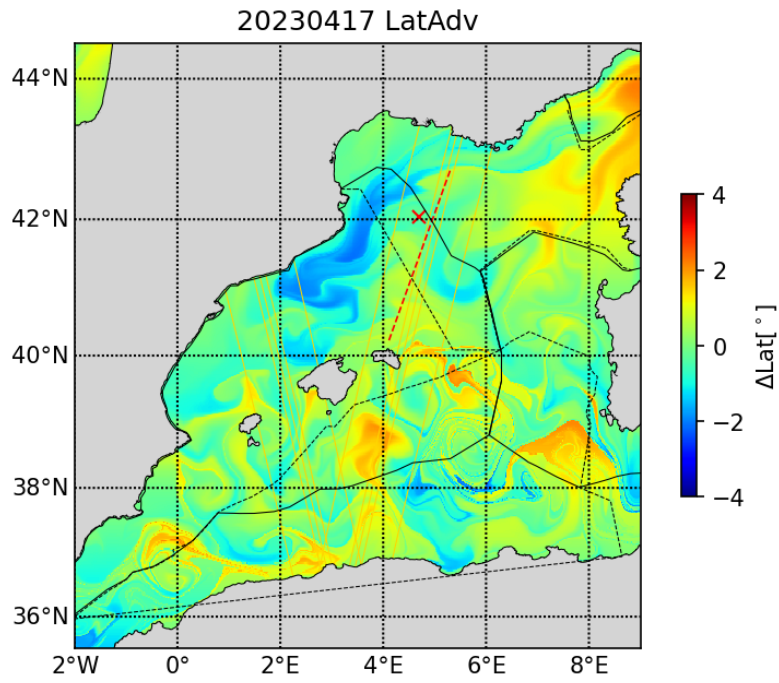


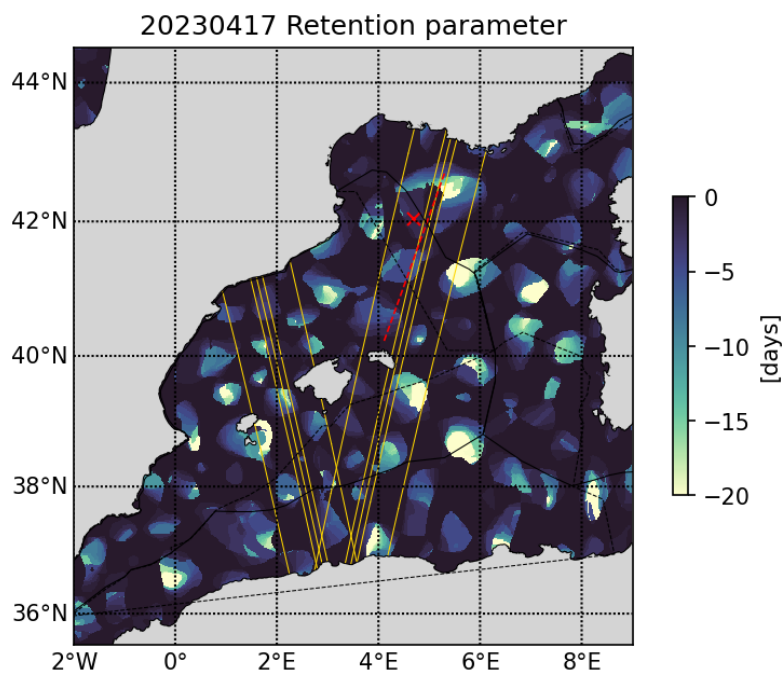
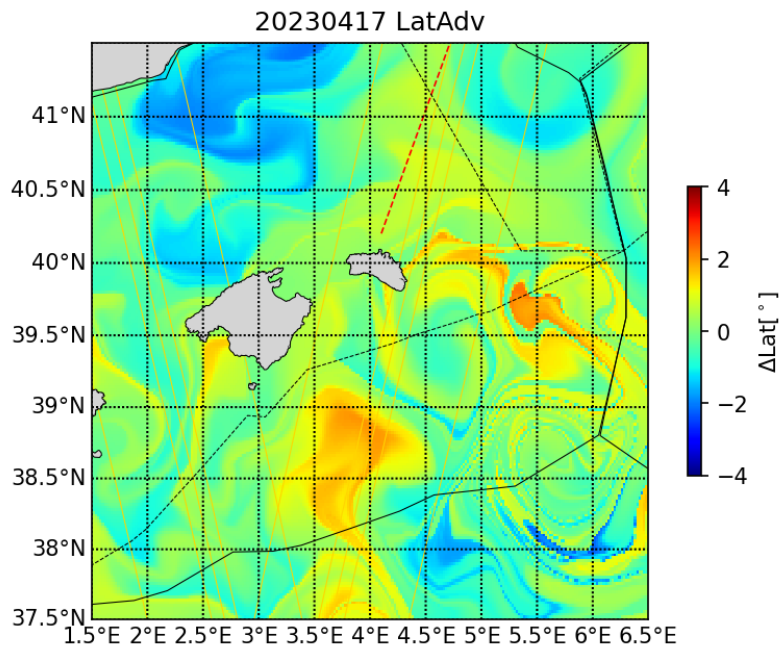
20230417 Finite Time Lyapunov Exponent



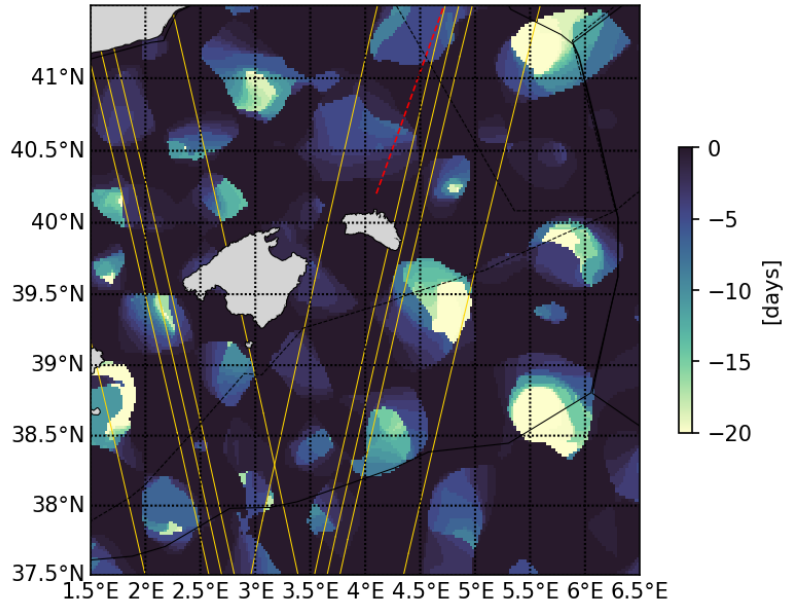
20230417 LonAdv



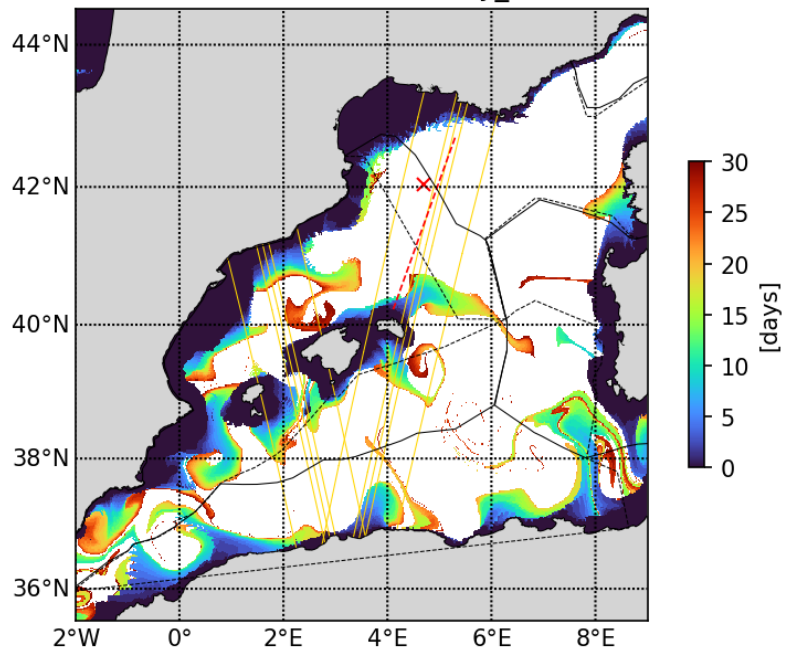




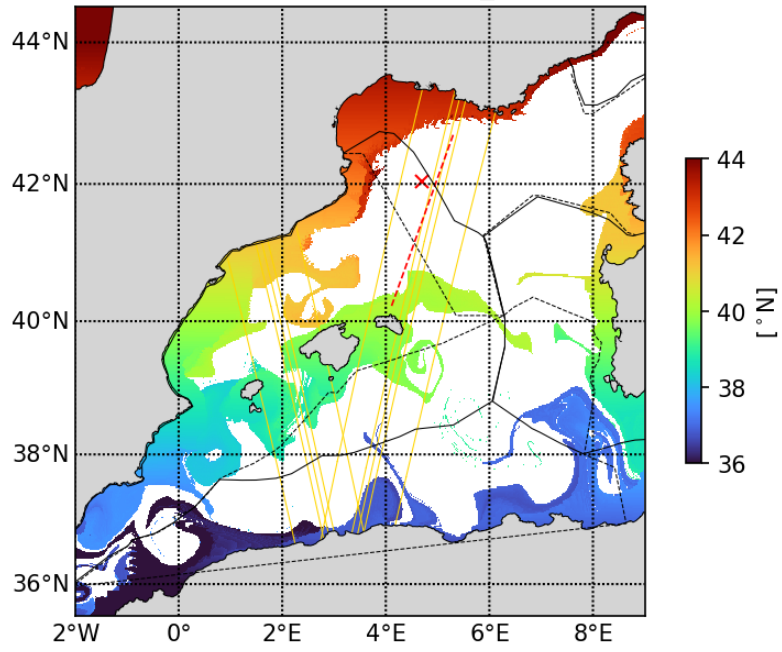
20230417 Retention parameter



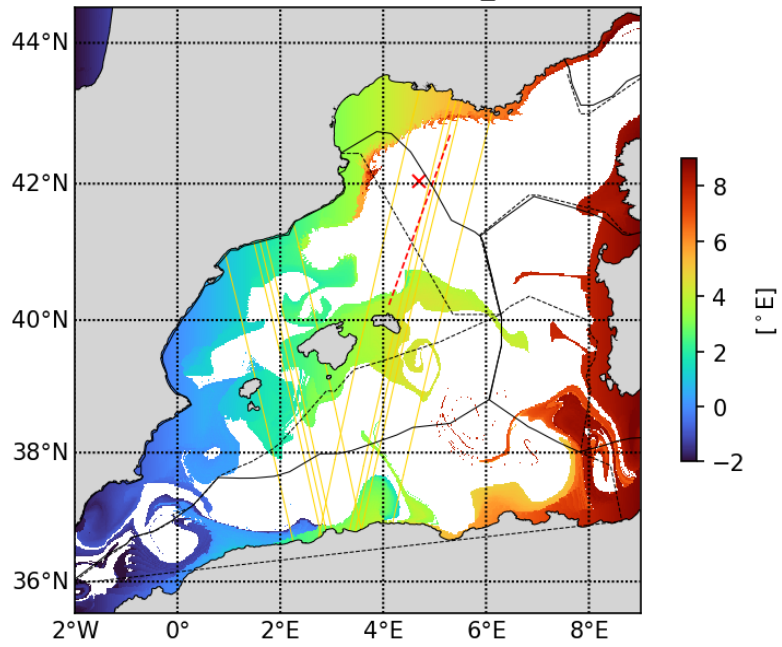
20230417 Timefrombathy\_500m



20230417 Latfrombathy\_500m

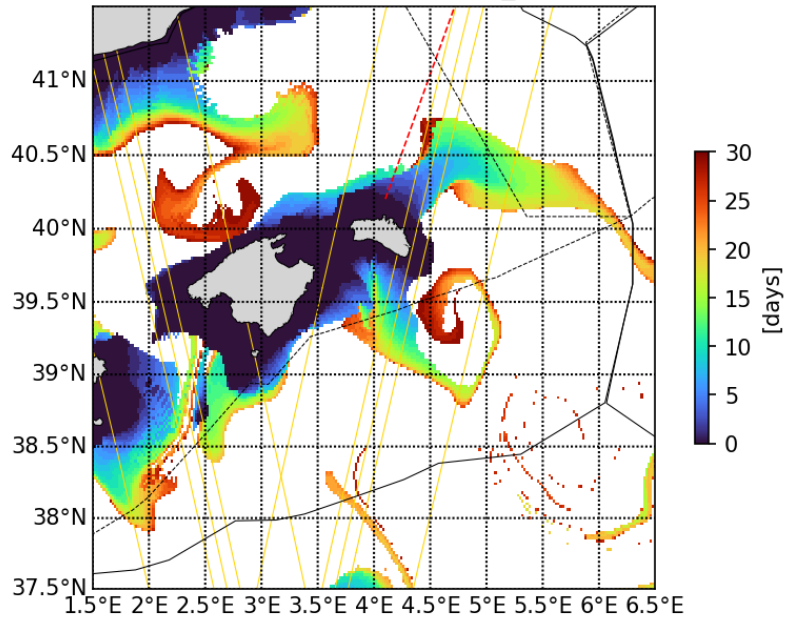


20230417 Lonfrombathy\_500m

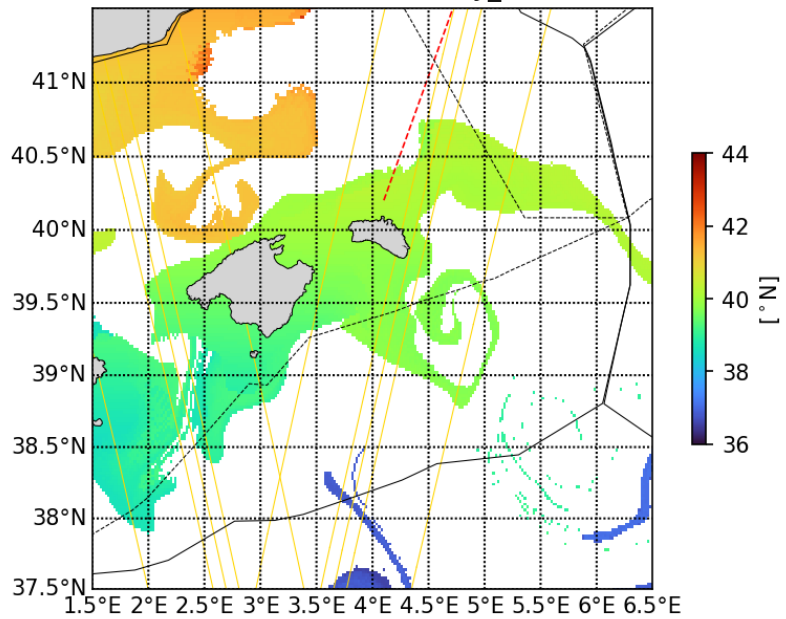




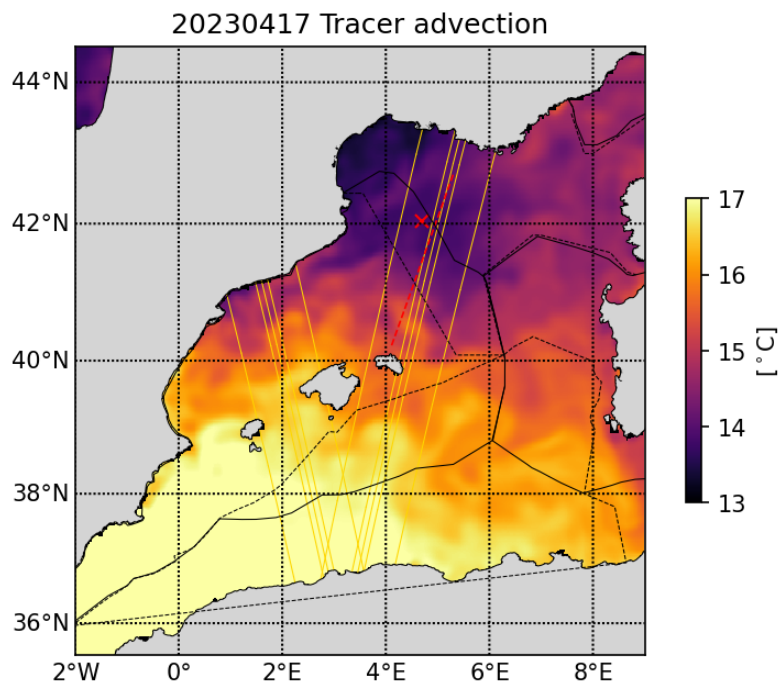
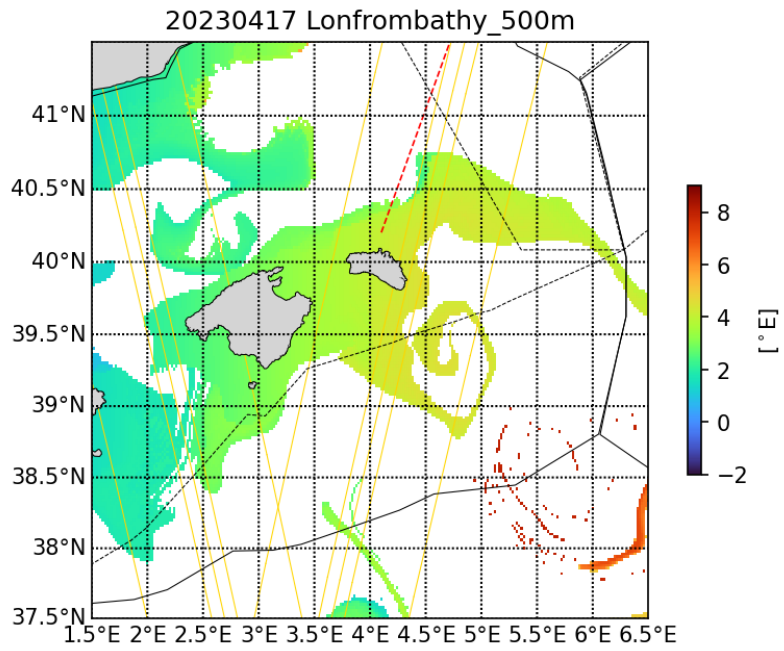
20230417 Timefrombathy\_500m



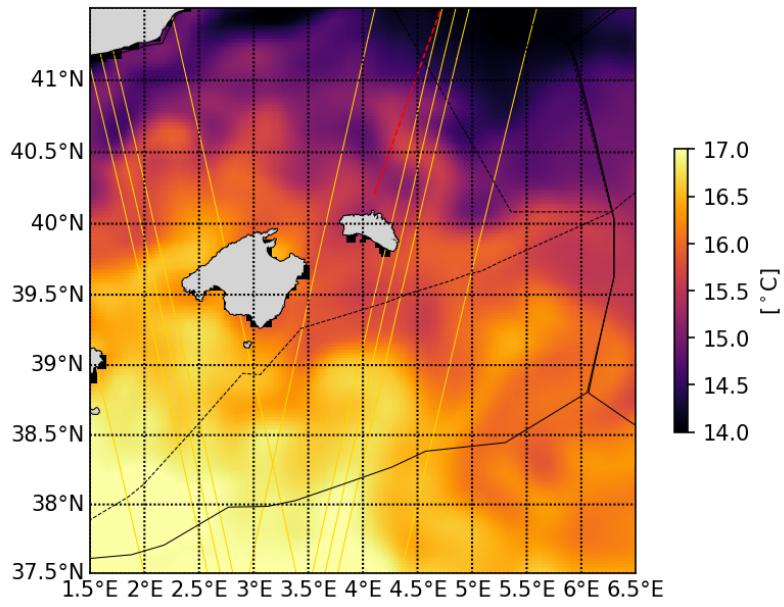
20230417 Latfrombathy\_500m





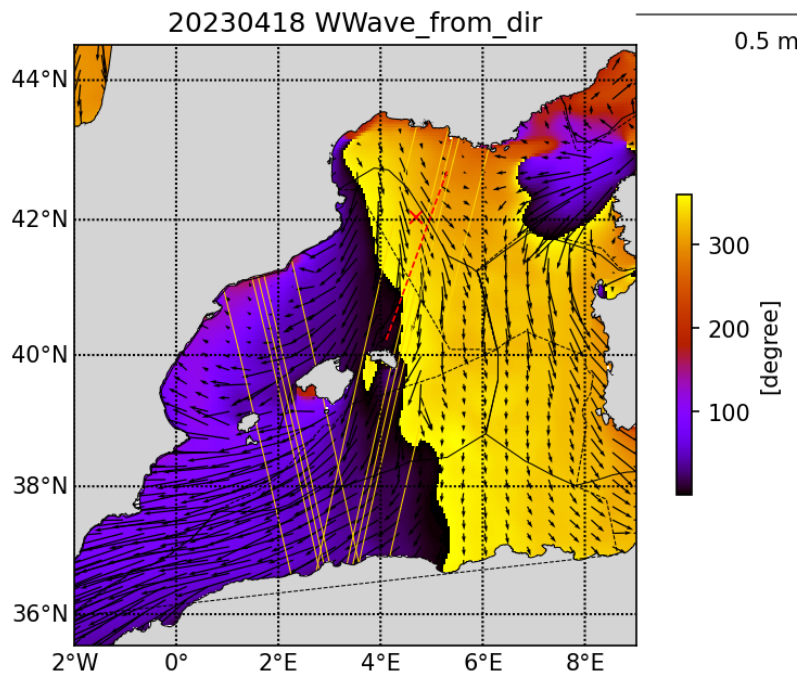
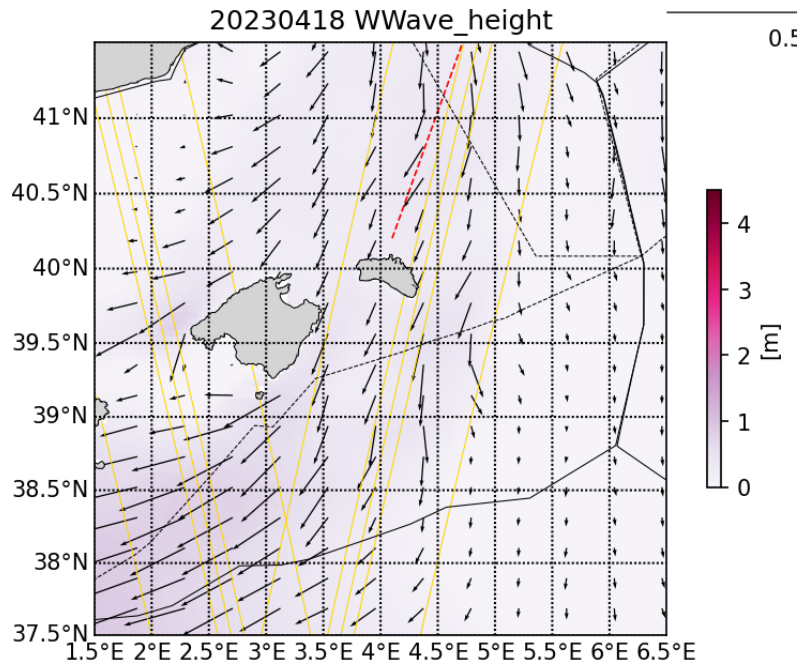


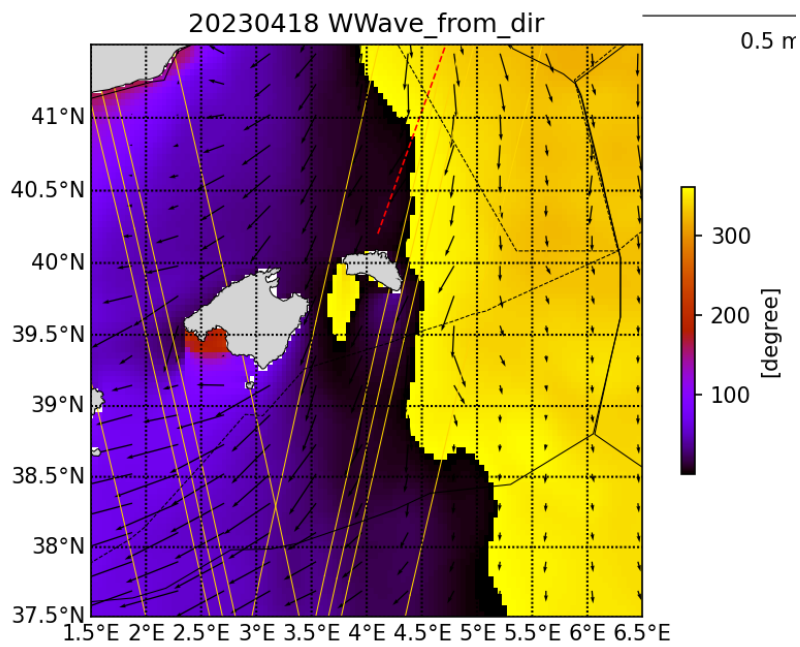
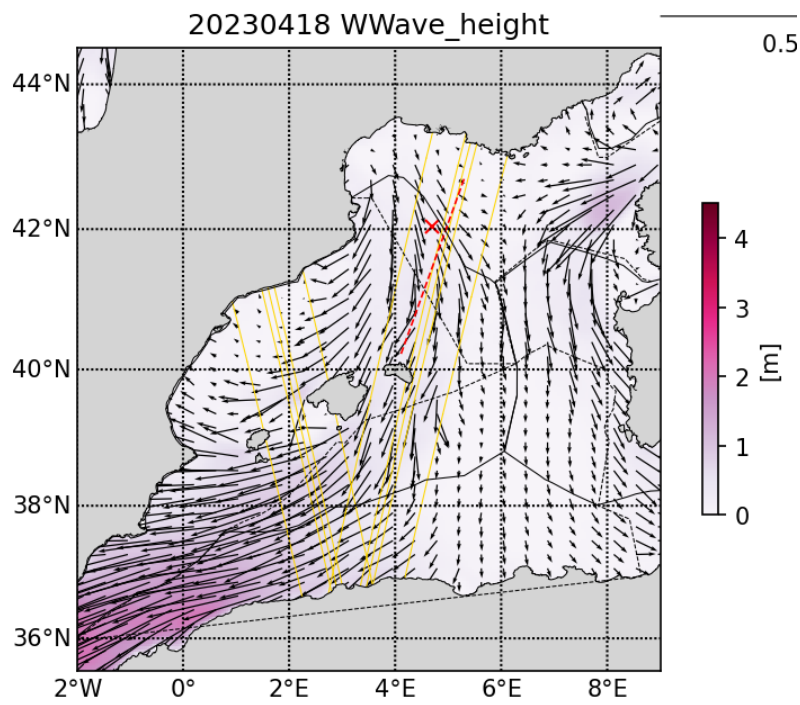
20230417 Tracer advection

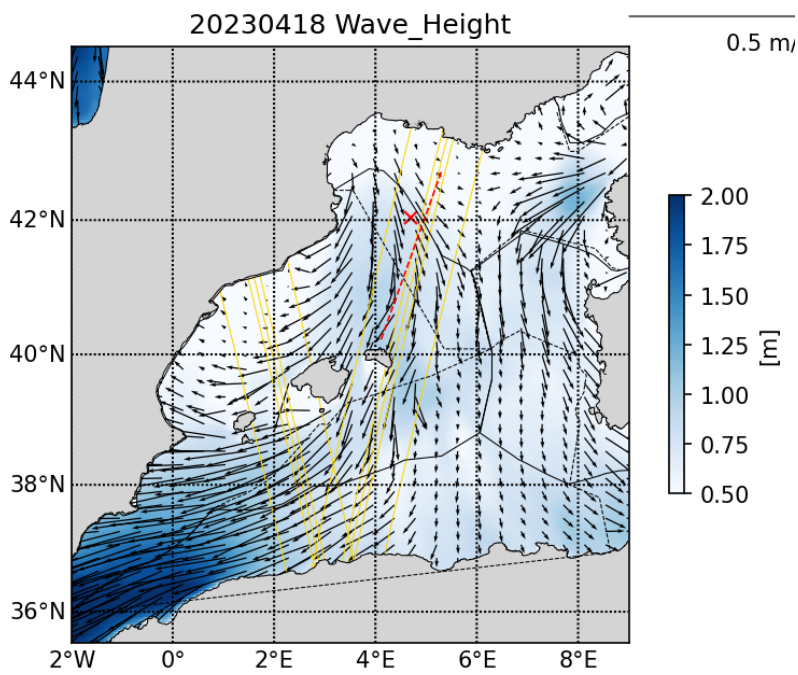
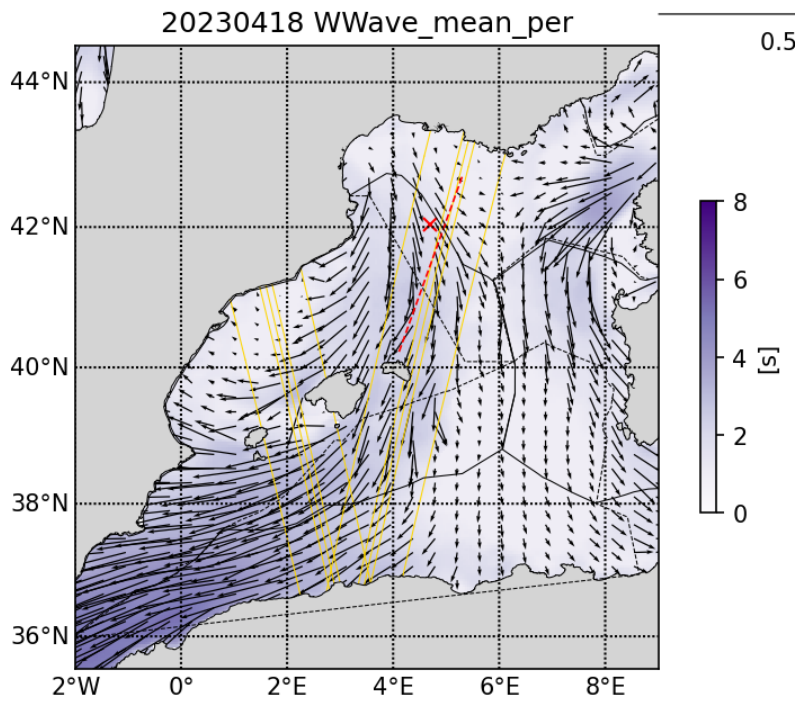


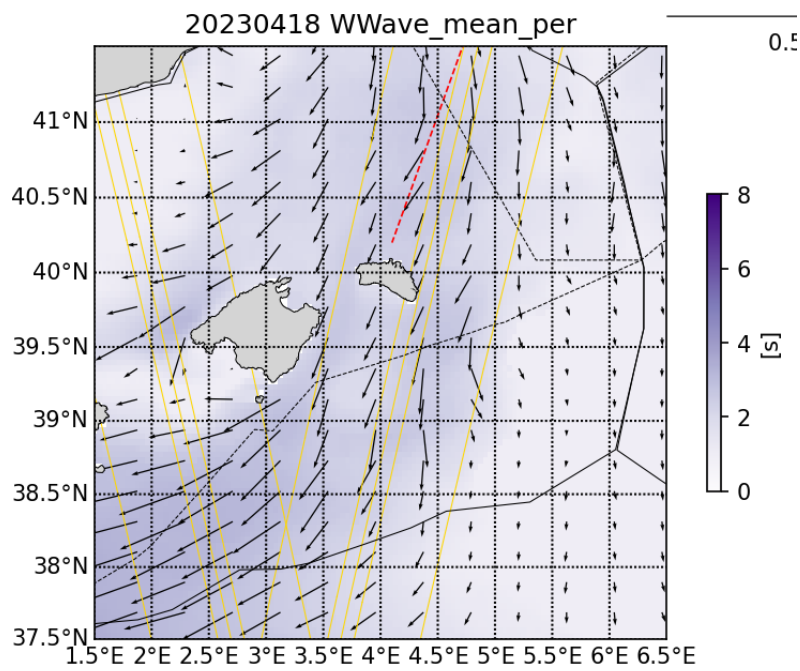
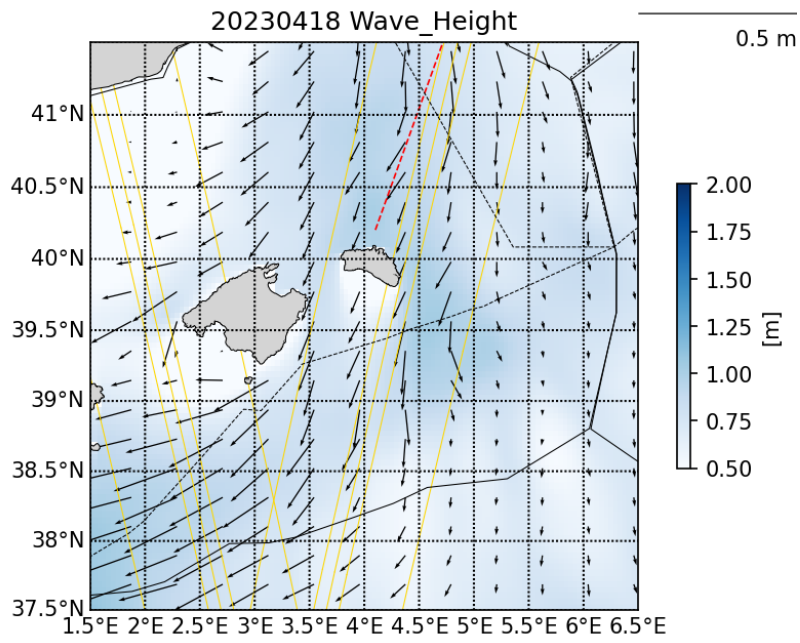
## 2.5 Wave forecast analysis

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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).