

[BIOSWOT-Med]: SPASSO Images Analysis

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April 12, 2023

Executive Summary

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1 Ongoing operations and upcoming stations

SWOT passing time (UTC) over:

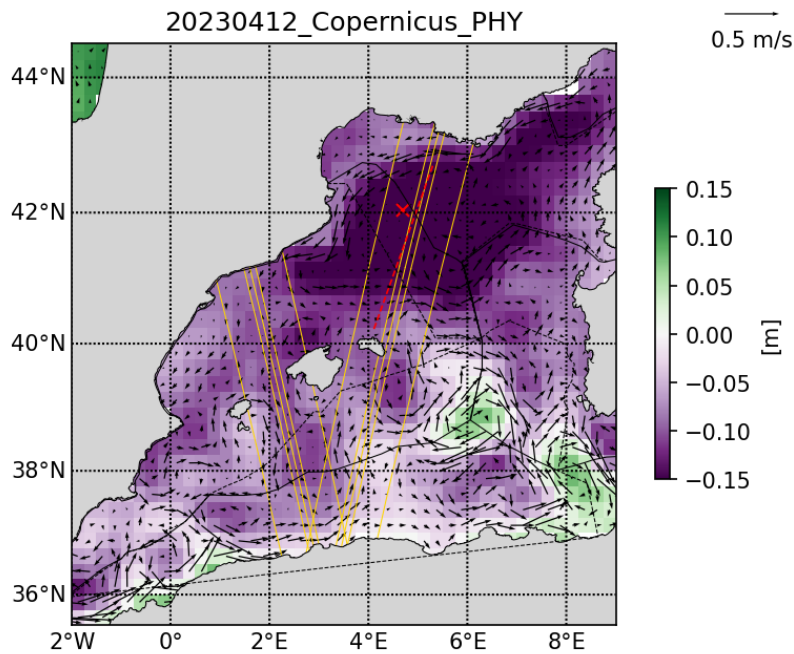
43°N - 5°E Asc		42.7°N - 4.8°E Asc	
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2023-04-12 22:01:30		2023-04-12 22:01:30	
2023-04-13 21:52:08		2023-04-13 21:52:08	
2023-04-14 21:42:46		2023-04-14 21:42:46	
2023-04-15 21:33:23		2023-04-15 21:33:23	
2023-04-16 21:24:01		2023-04-16 21:24:01	

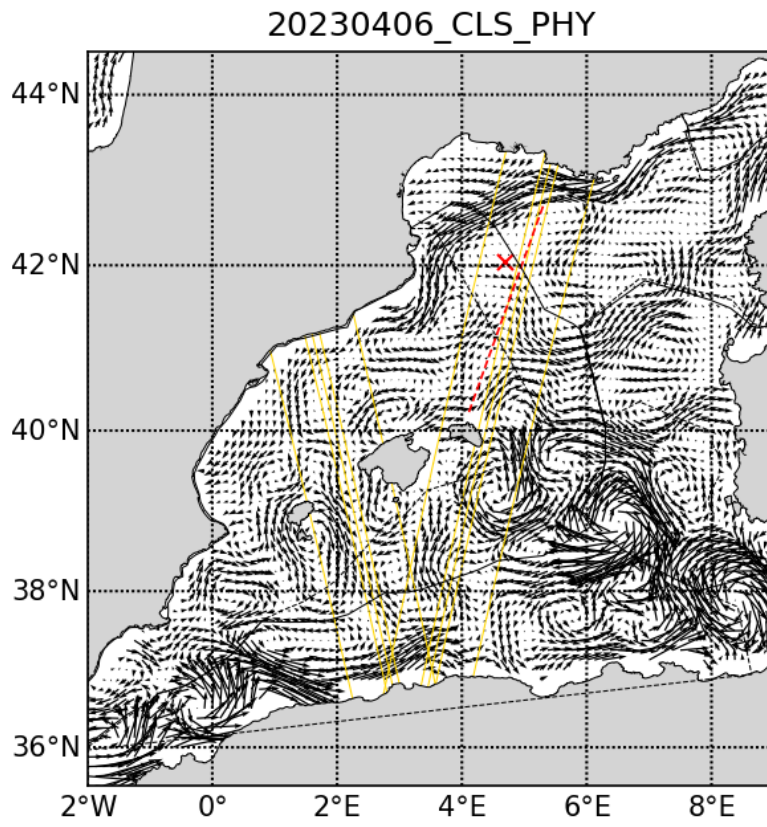
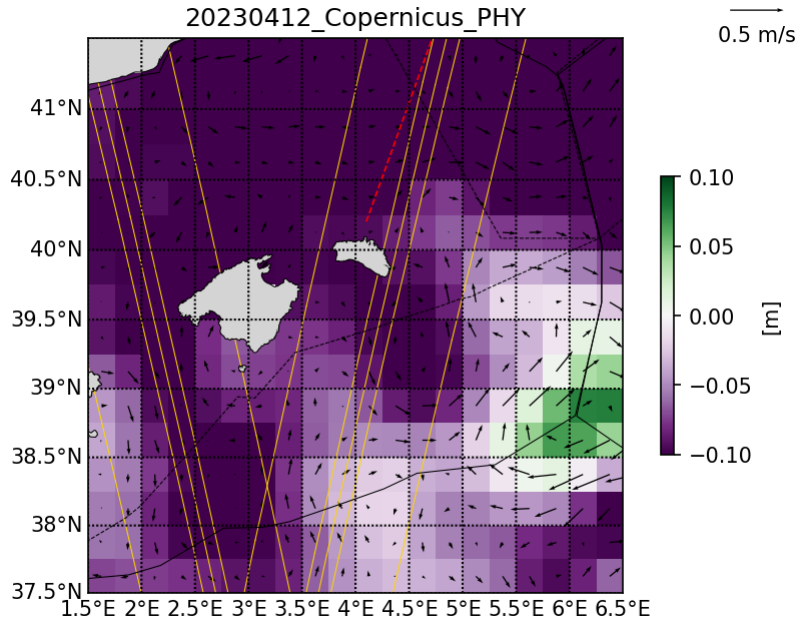
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2 Daily figures analysis

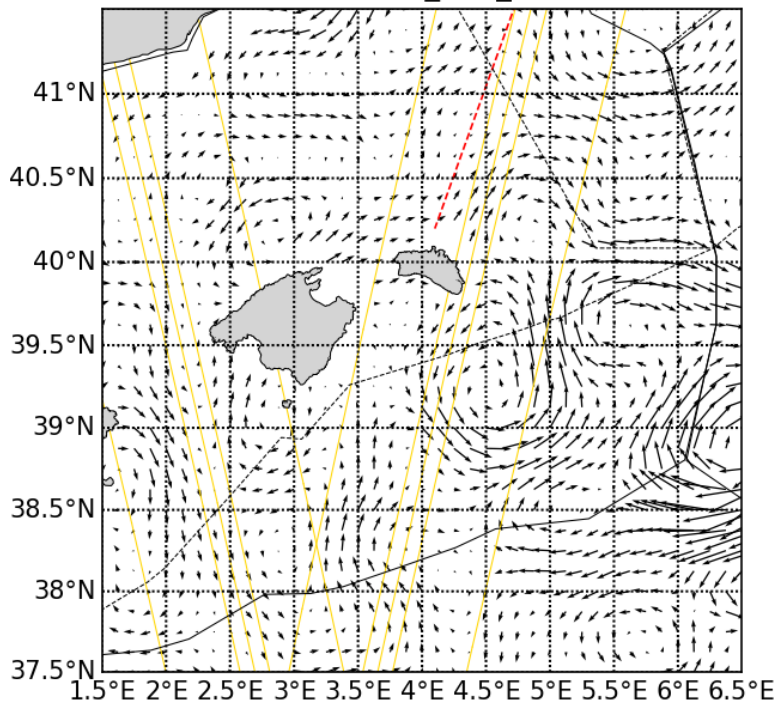
2.1 Altimetry, derived currents

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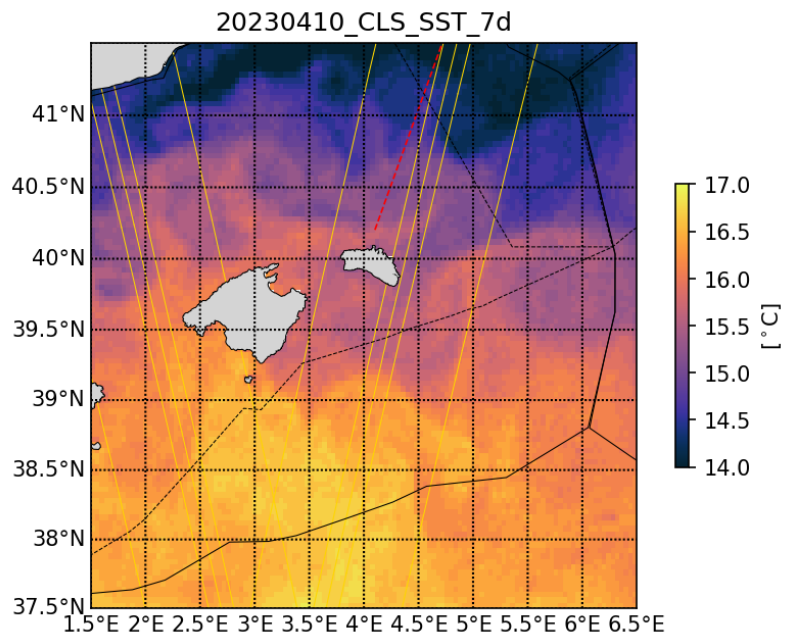
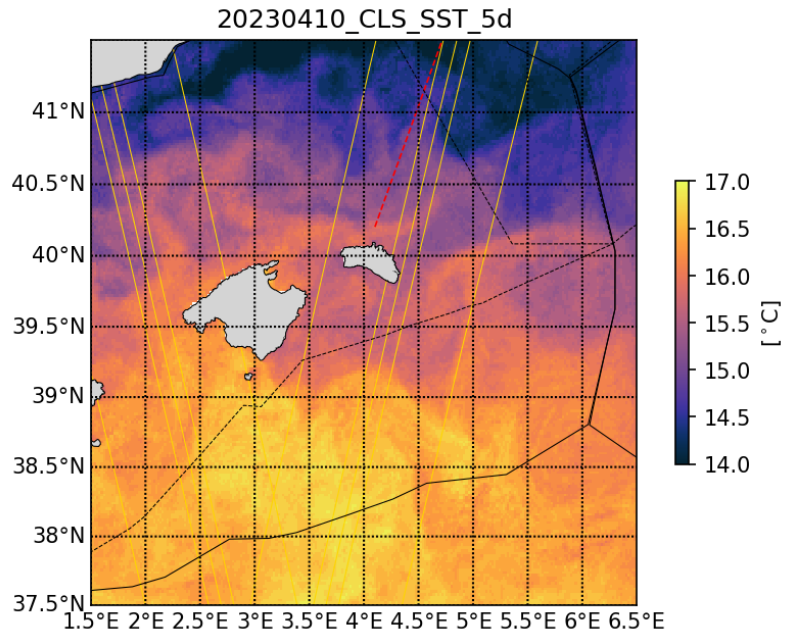


20230406_CLS_PHY

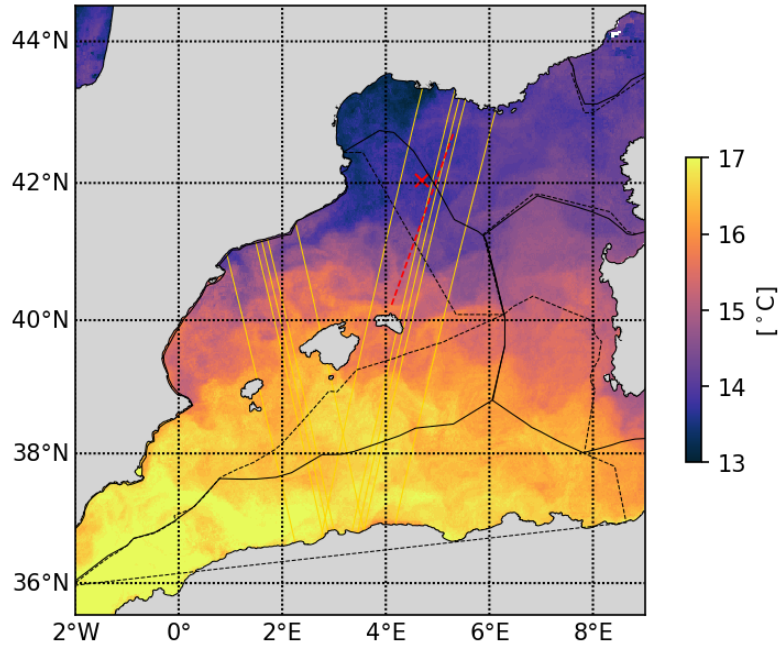


2.2 SST analysis

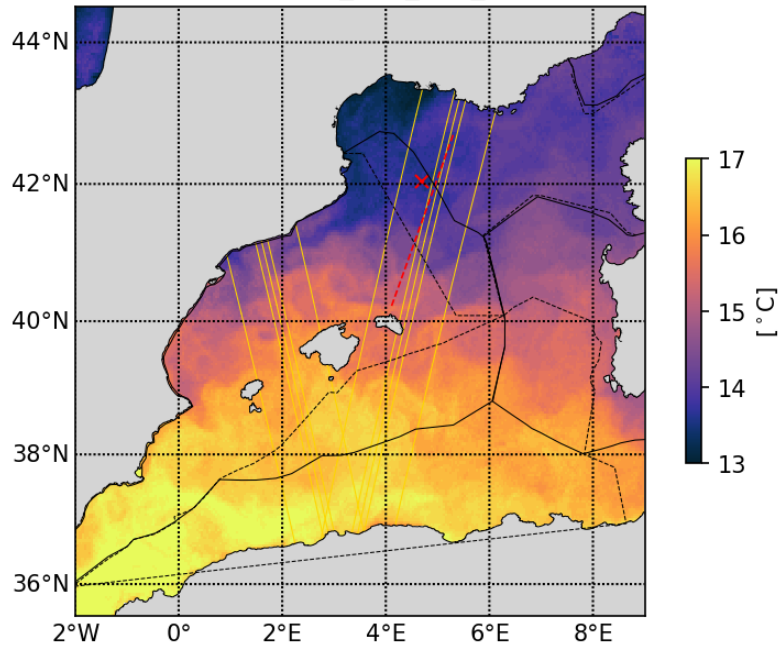
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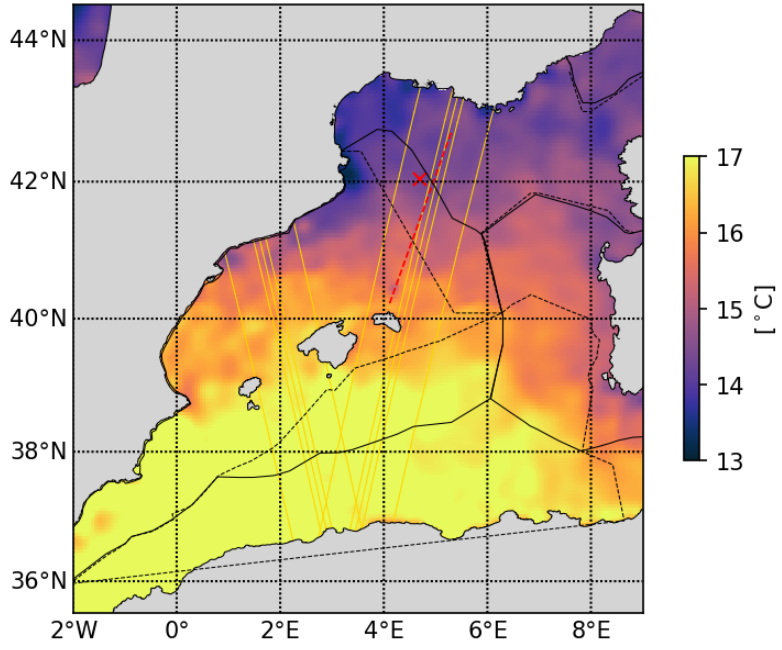
20230410_CLS_SST_5d



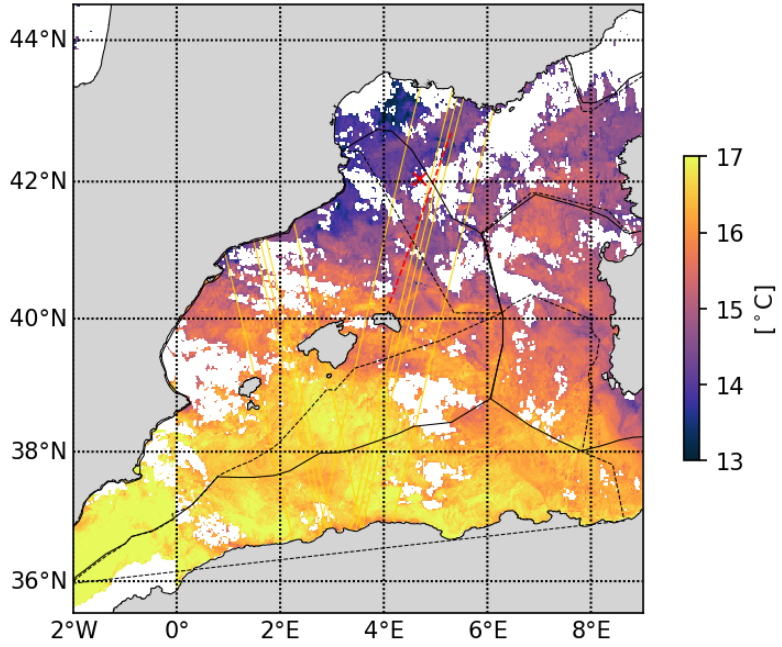
20230410_CLS_SST_7d



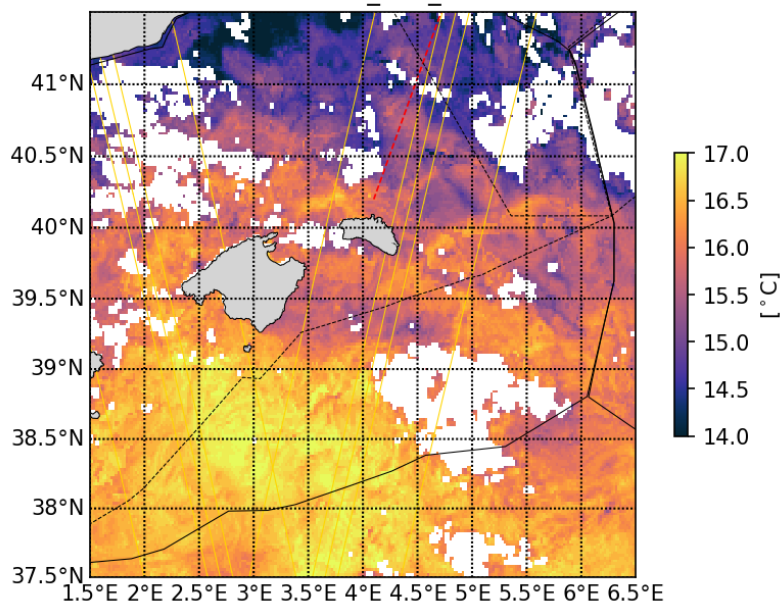
20230411_Copernicus_SST_L4



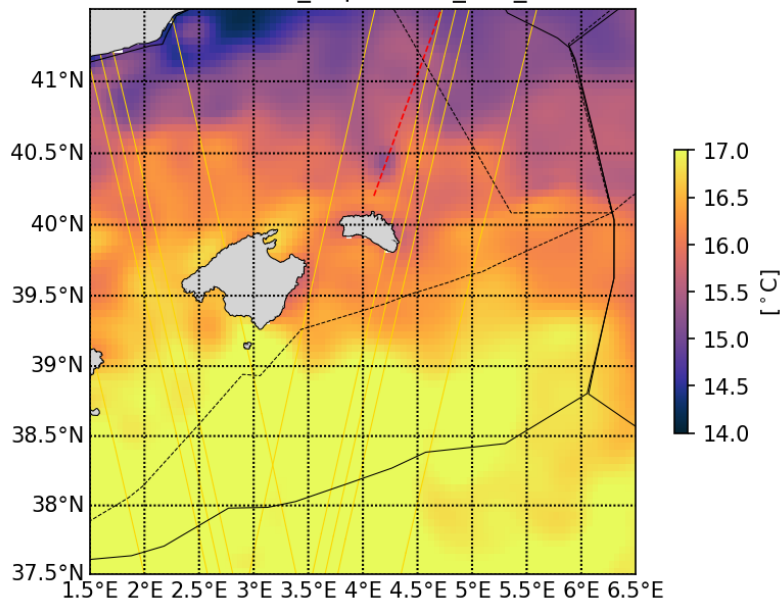
20230411_CLS_SST



20230411_CLS_SST

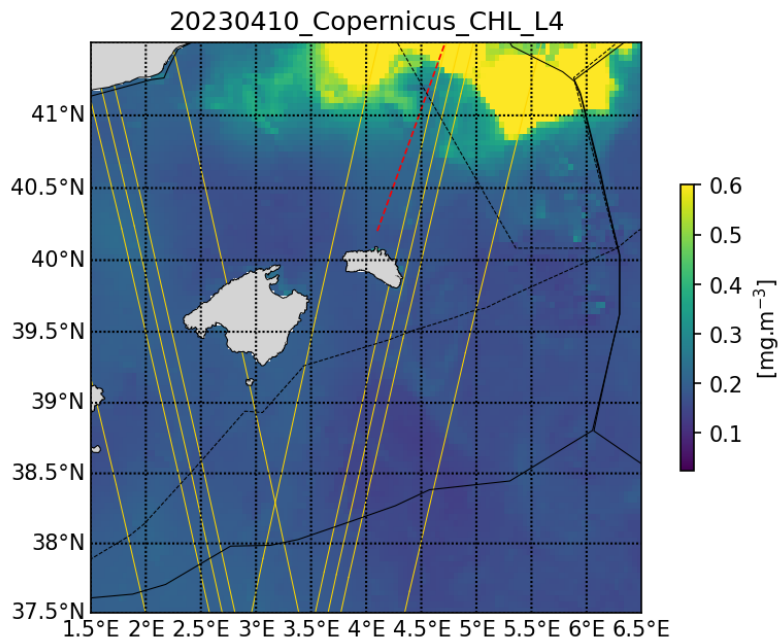
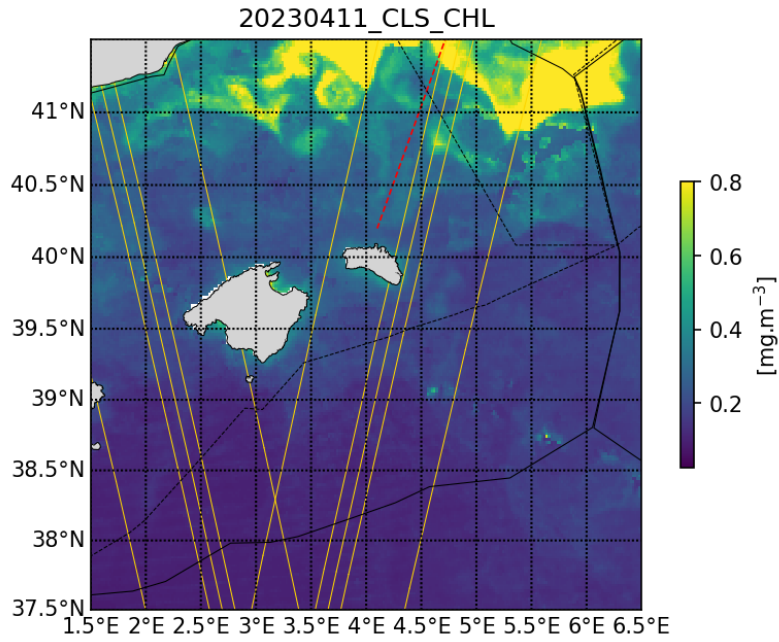


20230411_Copernicus_SST_L4

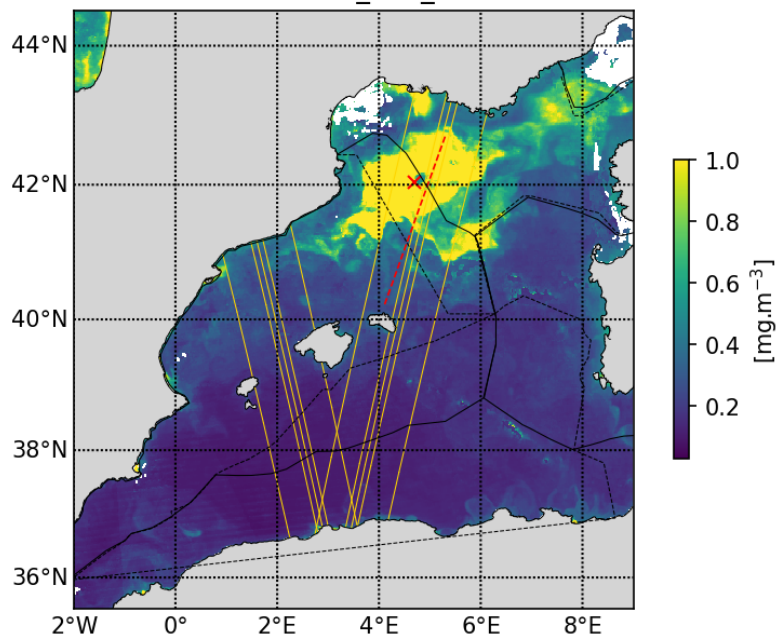


2.3 Chlorophyll analysis

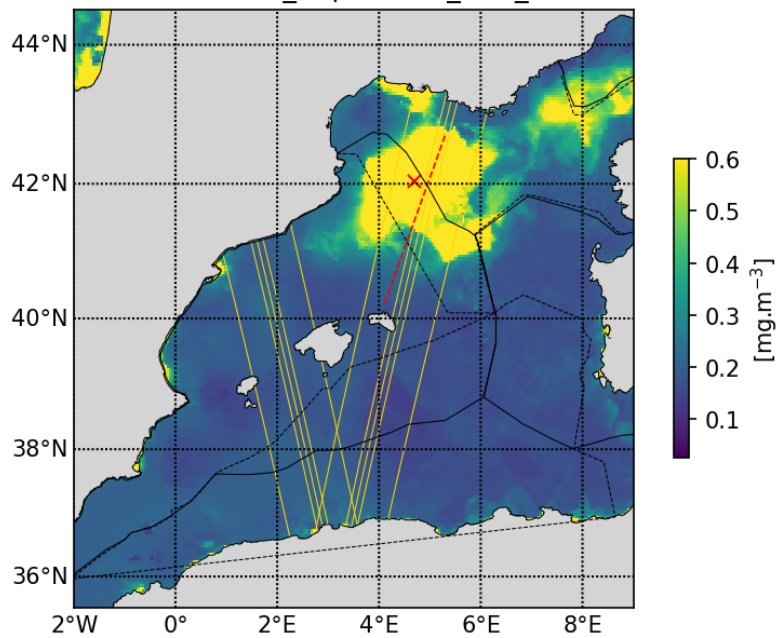
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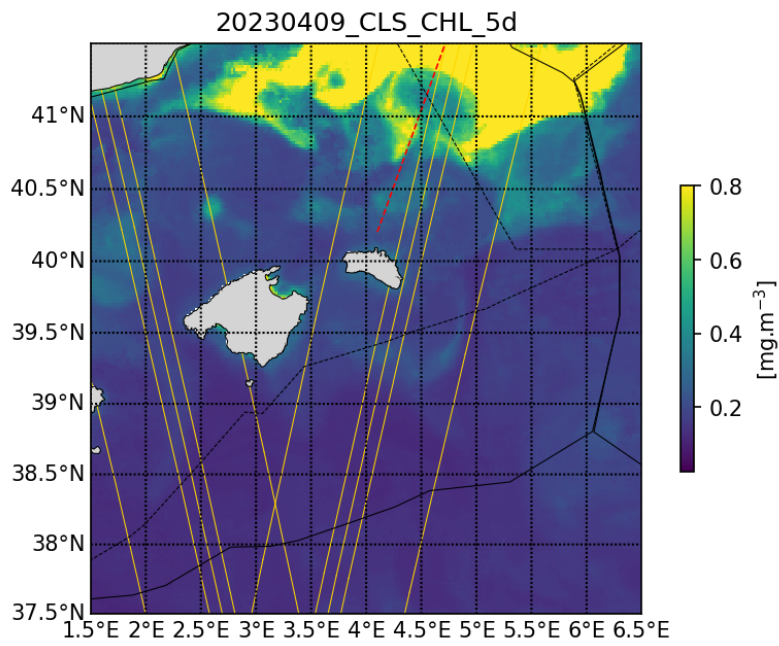
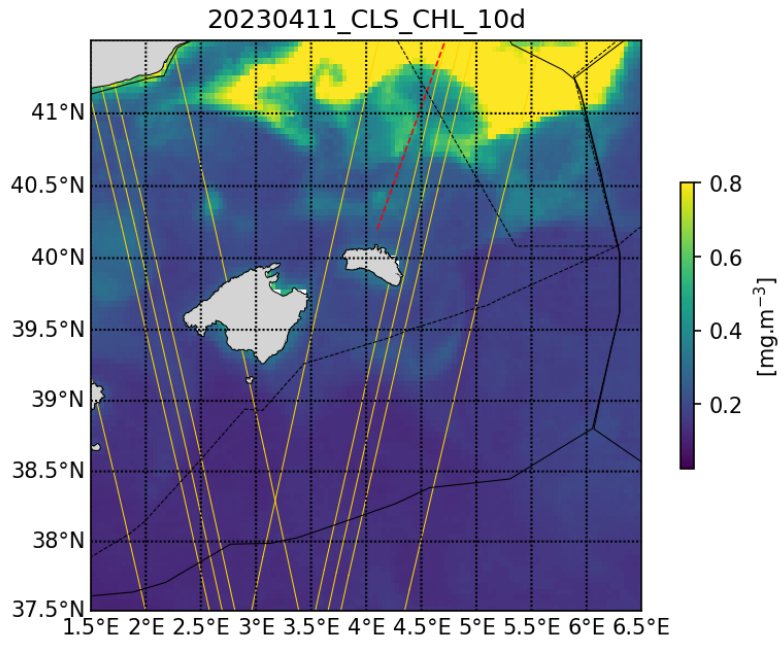


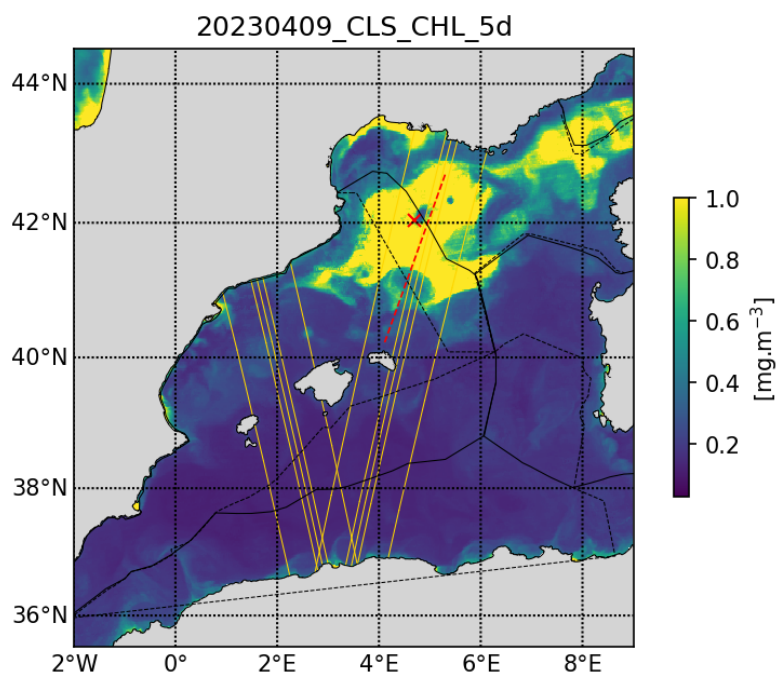
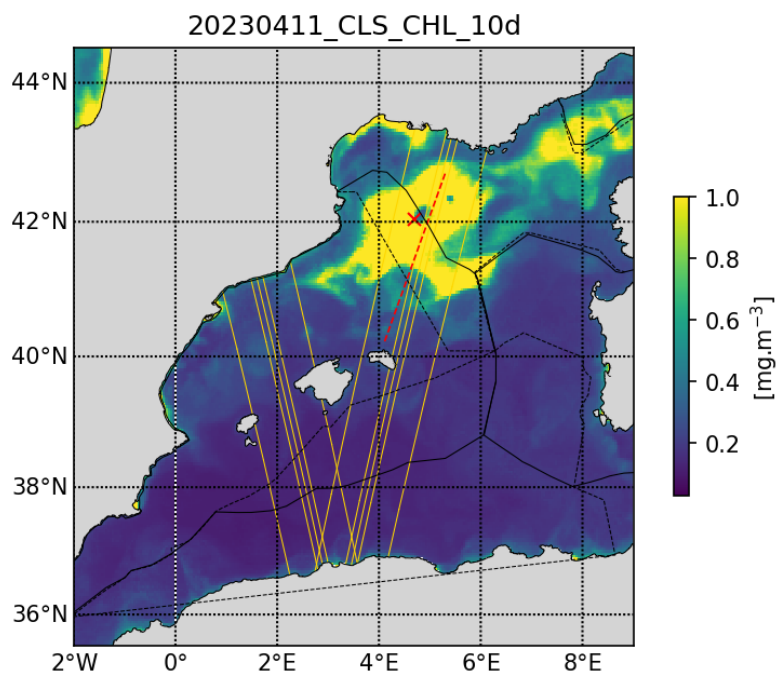
20230411_CLS_CHL



20230410_Copernicus_CHL_L4







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:

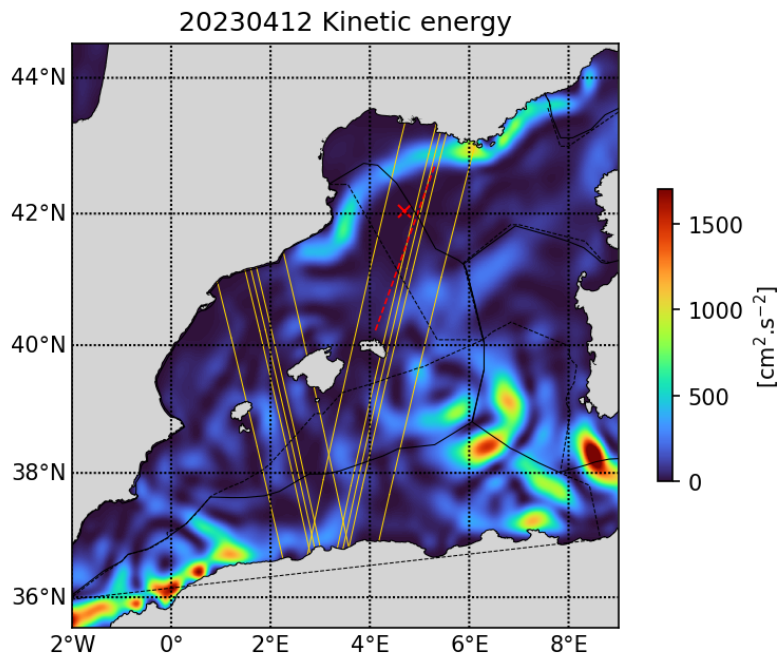
FTLE: finite time Lyapunov exponents (convergent fronts detection)

LLADV: longitude and latitude advection

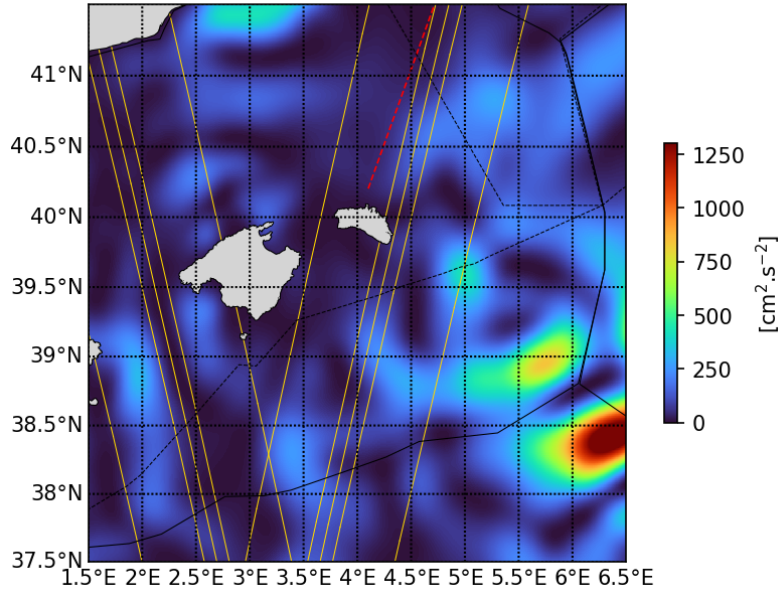
Retention parameter (based on computing the okubo Weiss parameter along a particle trajectory): Detect trapping structures (colorbar = days water parcels have a positive vorticity)

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

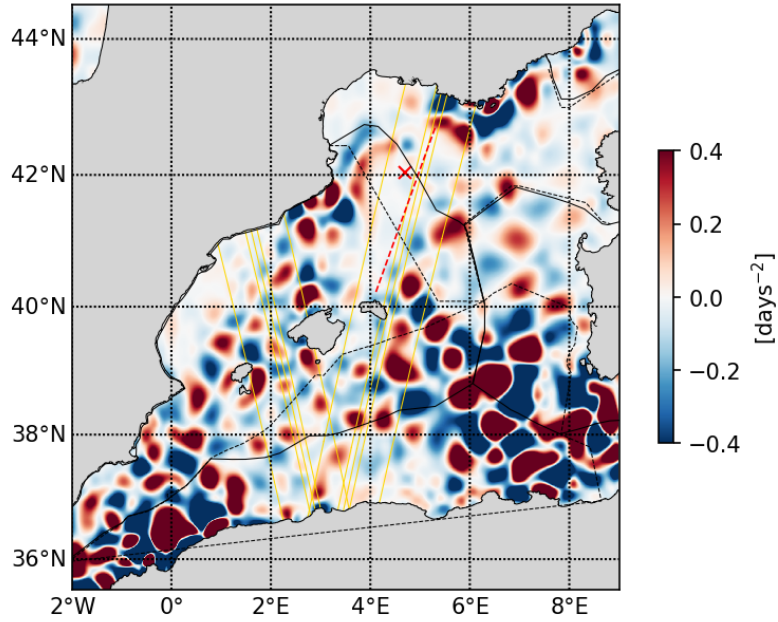
More details available at: <https://www.swot-adac.org/resources/swot-adac-products-access/>



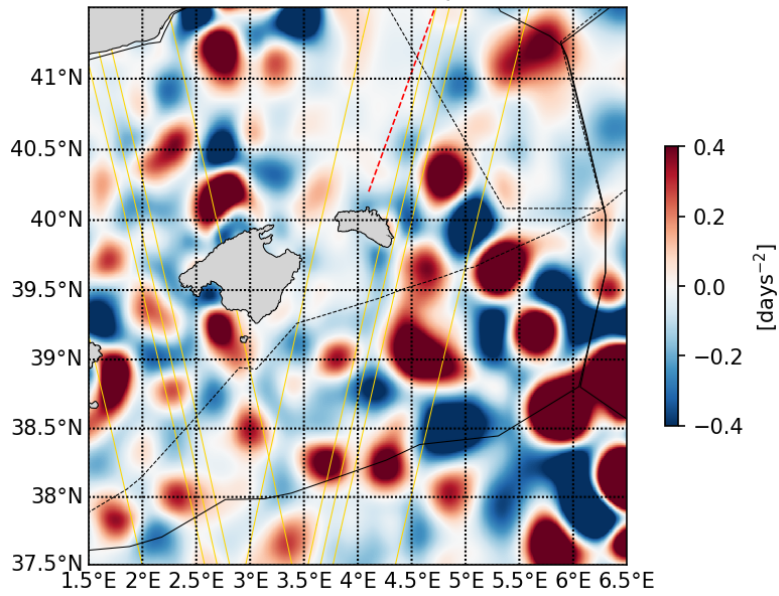
20230412 Kinetic energy



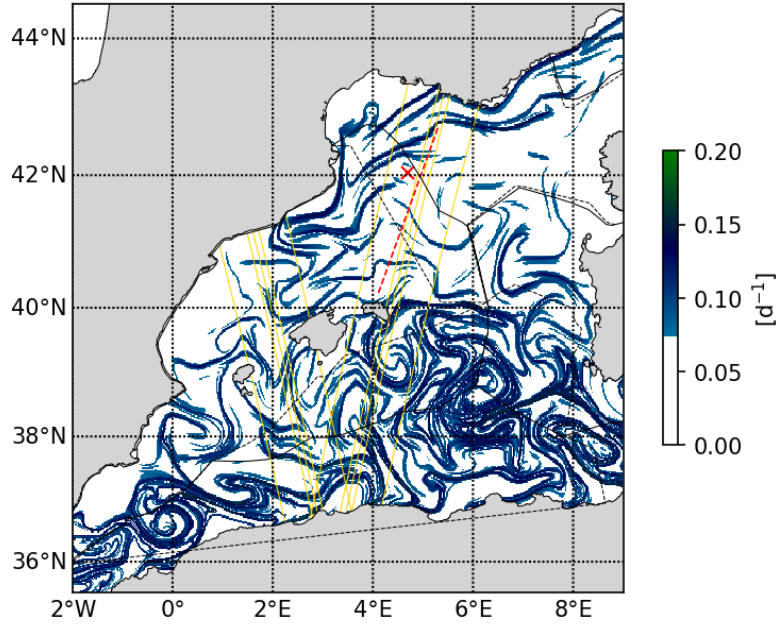
20230412 Okubo-Weiss parameter



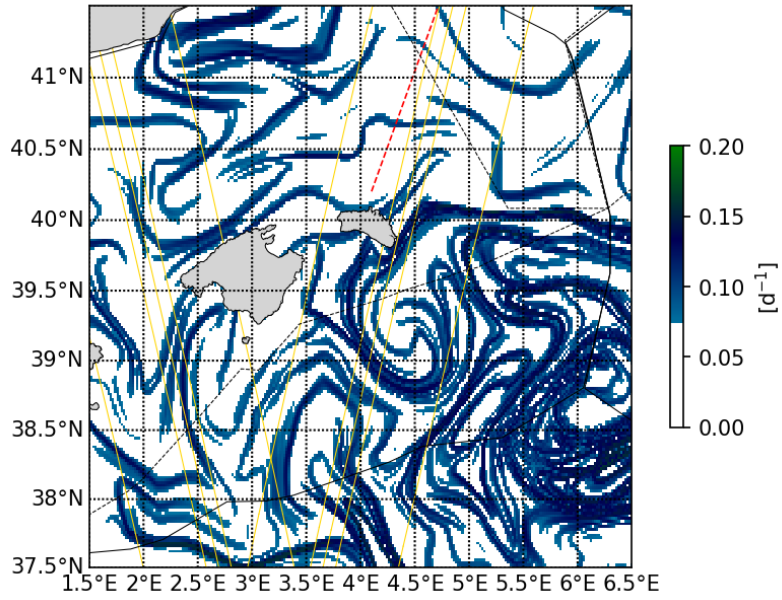
20230412 Okubo-Weiss parameter



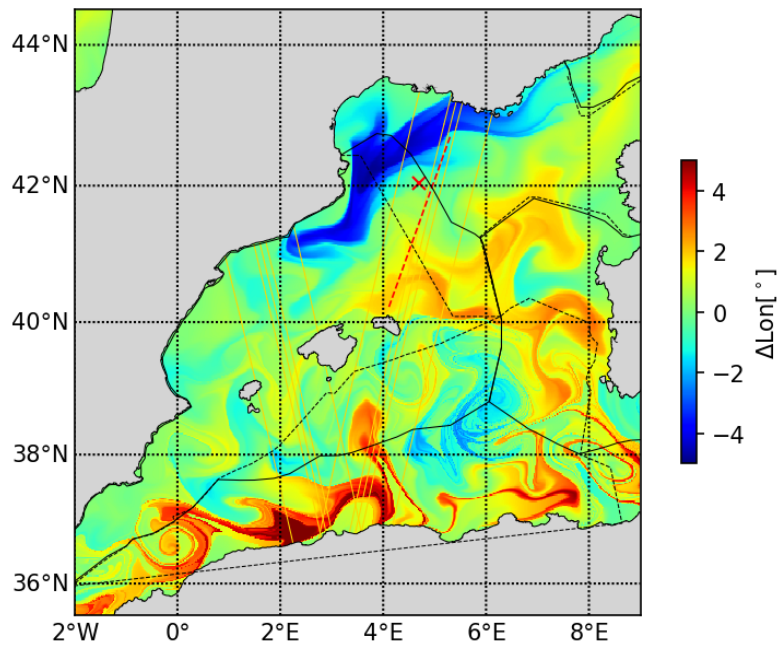
20230412 Finite Time Lyapunov Exponent

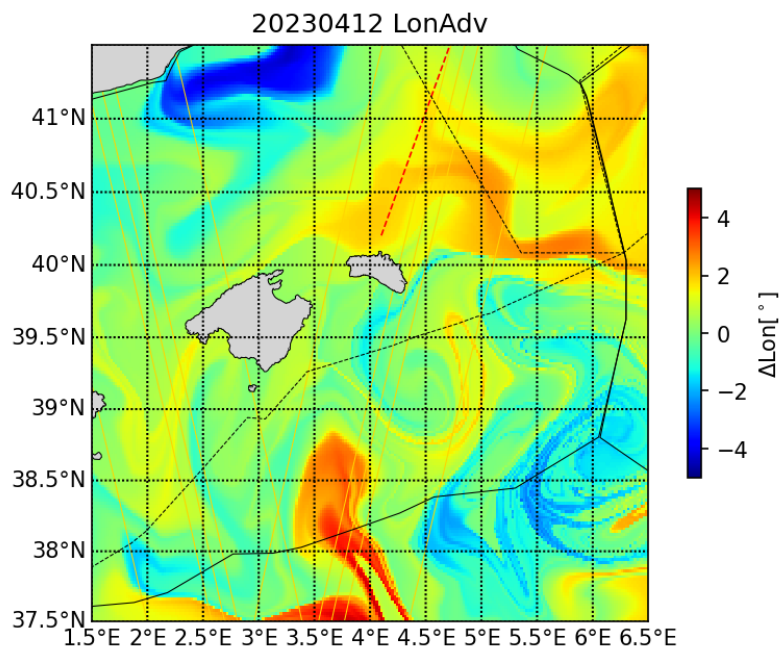
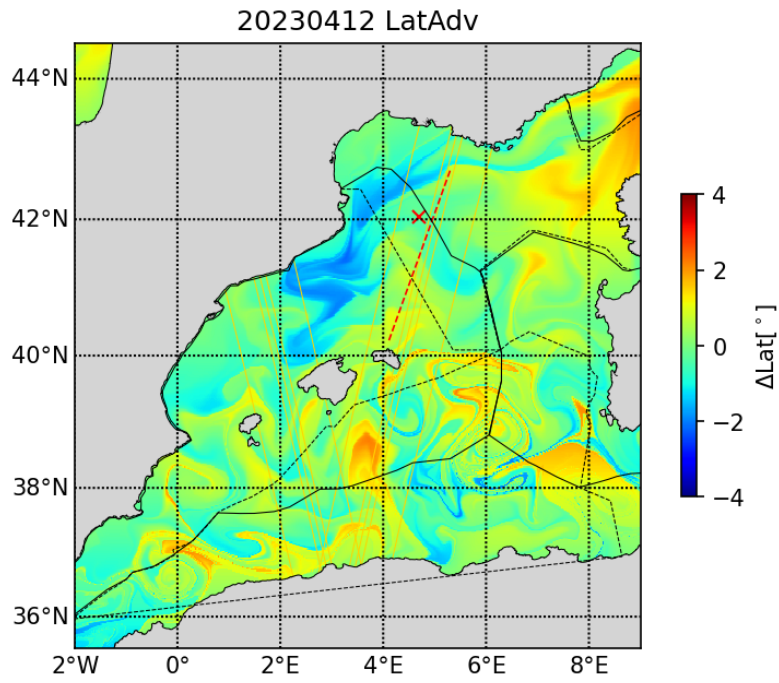


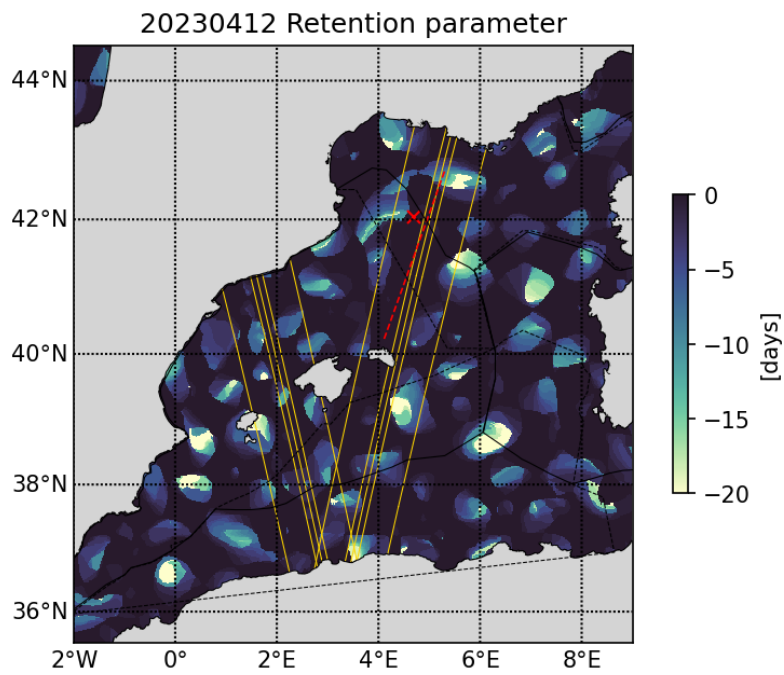
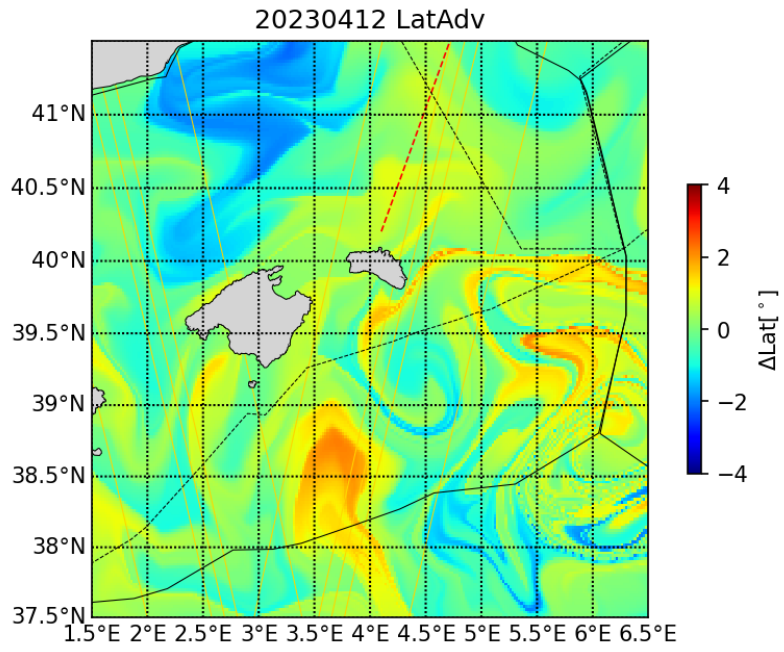
20230412 Finite Time Lyapunov Exponent

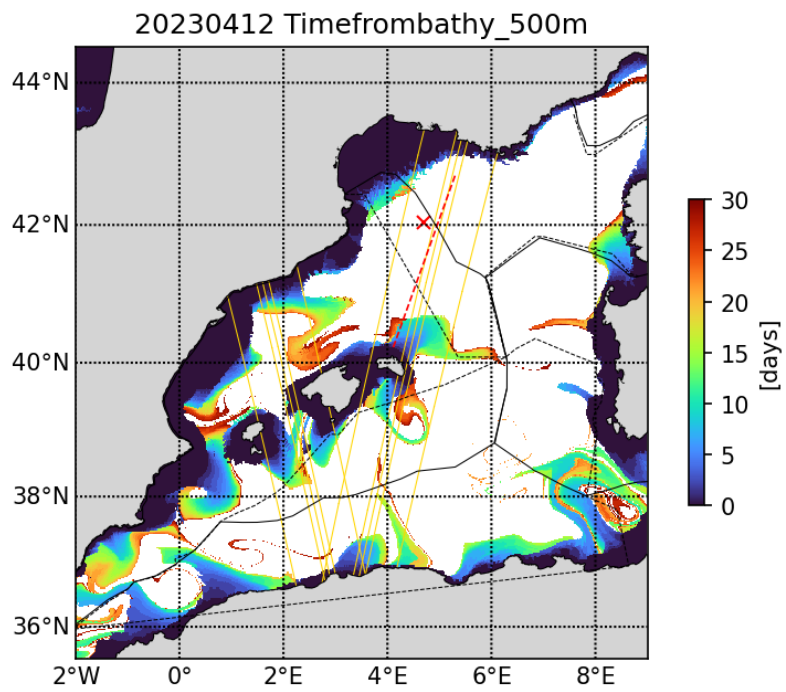
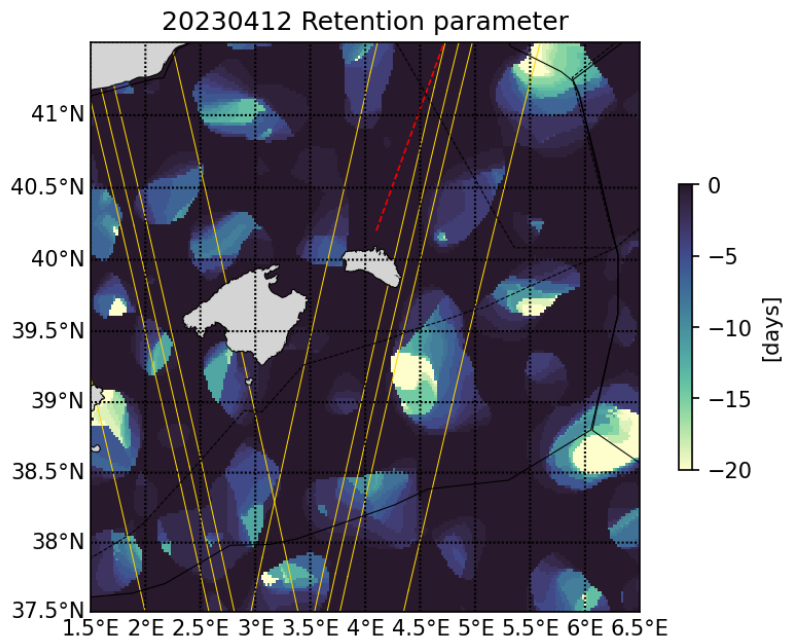


20230412 LonAdv

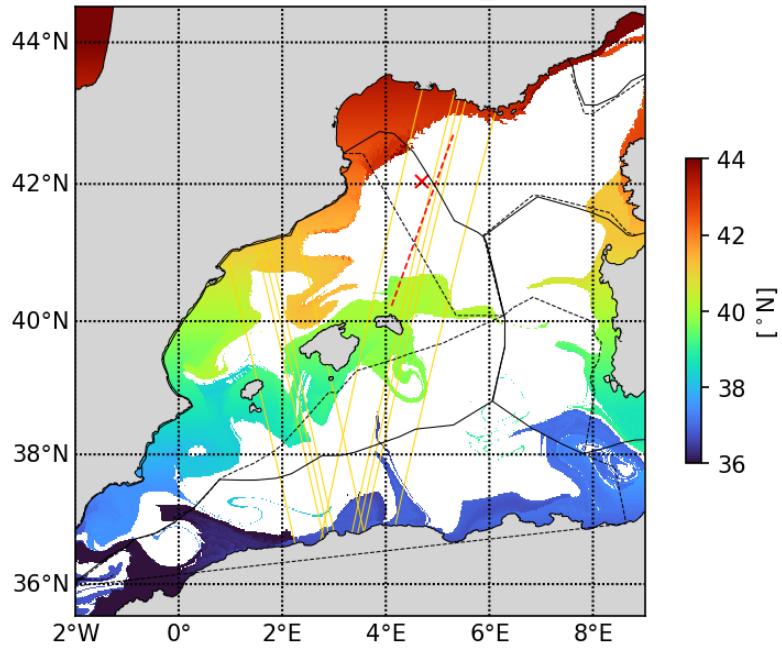




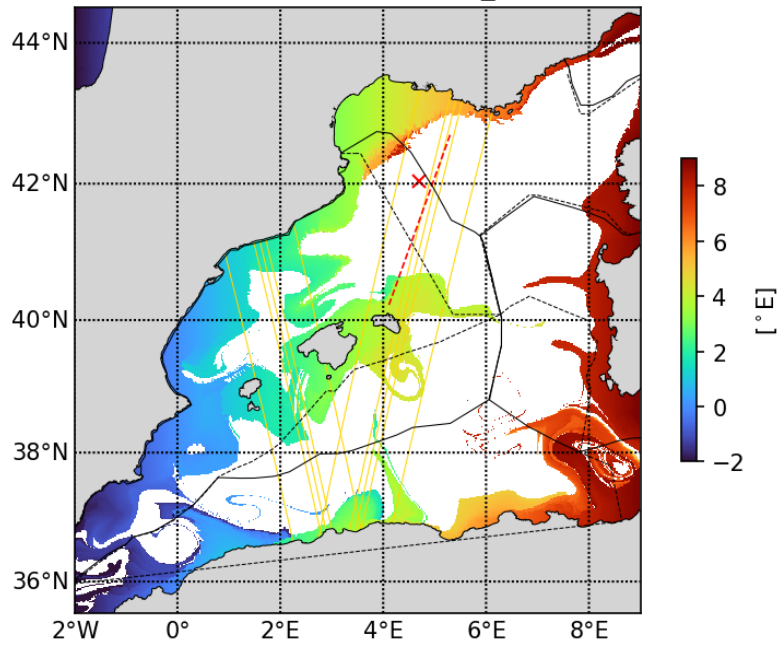




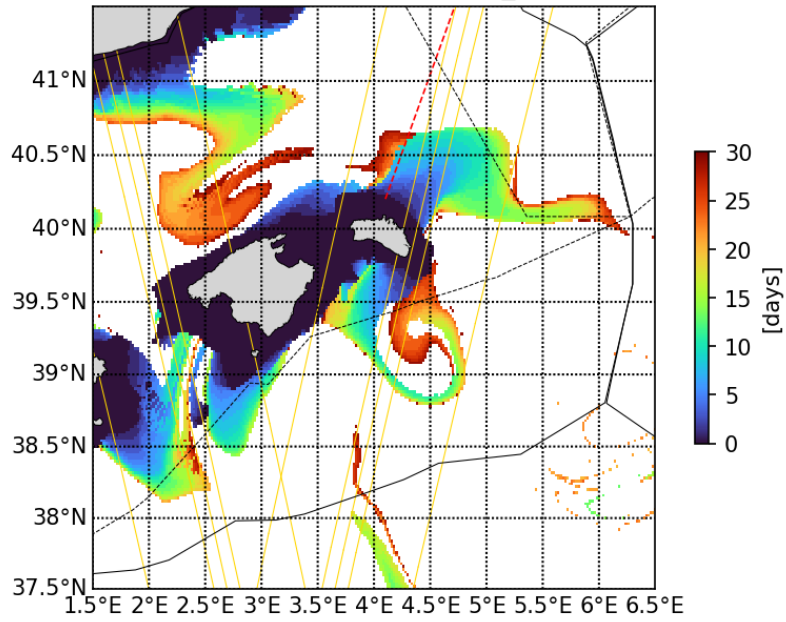
20230412 Latfrombathy_500m



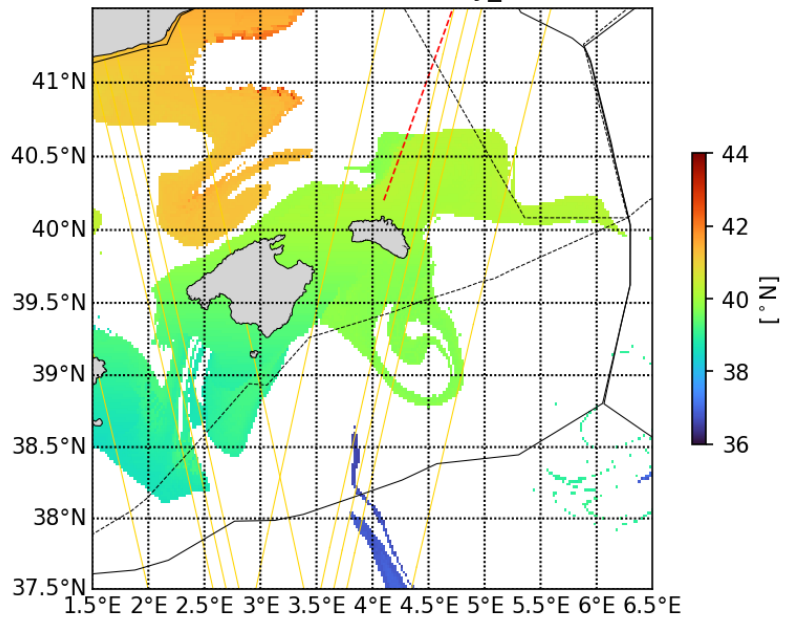
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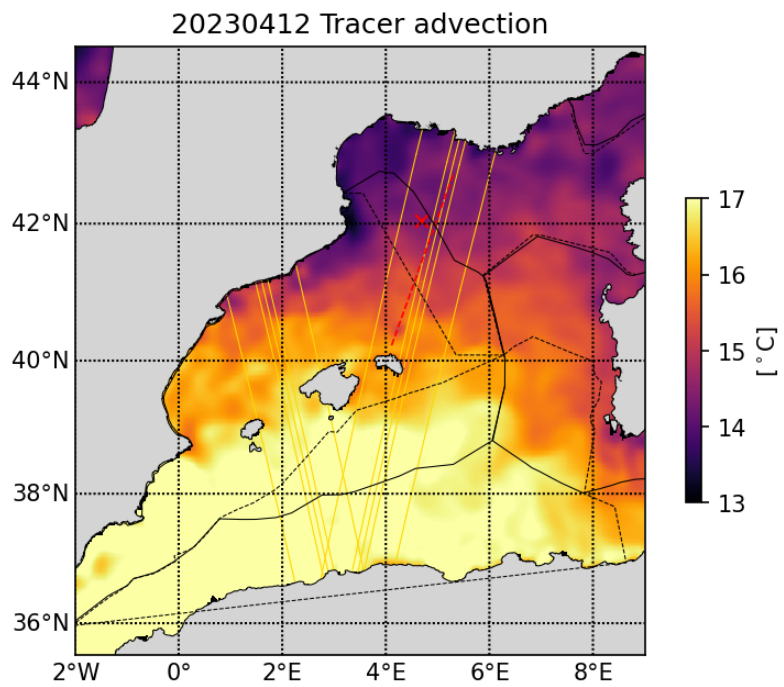
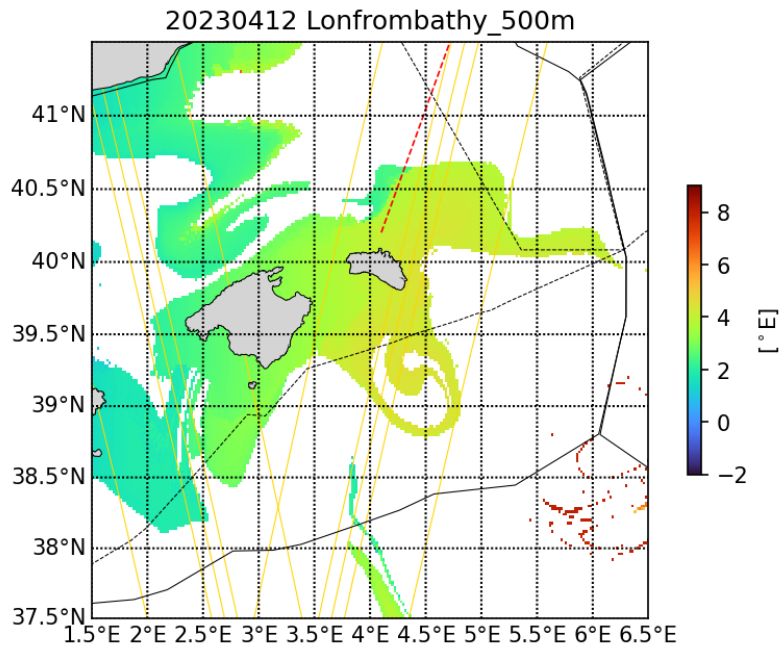


20230412 Timefrombathy_500m

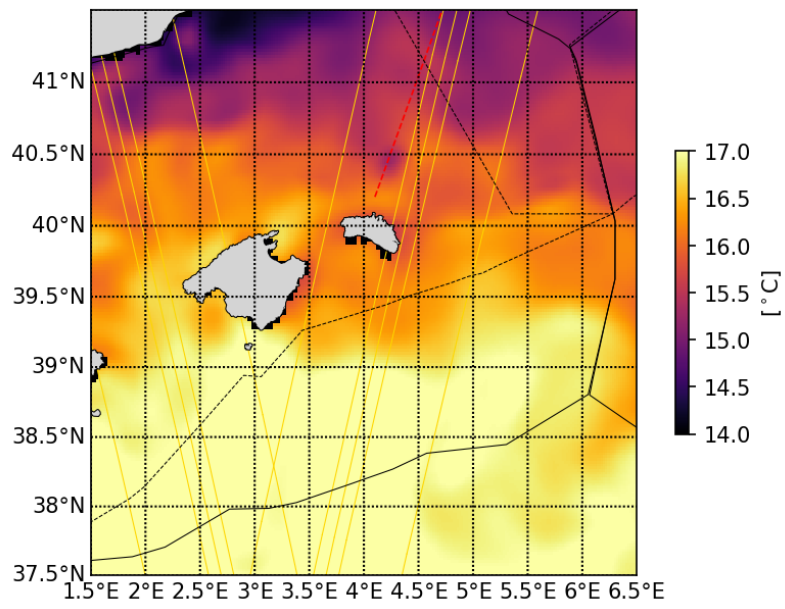


20230412 Latfrombathy_500m





20230412 Tracer advection



2.5 Other 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).