

[BIOSWOT-Med]: SPASSO Images Analysis

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April 24, 2023

Executive Summary

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1 Ongoing operations and upcoming stations

SWOT passing time (UTC) over:

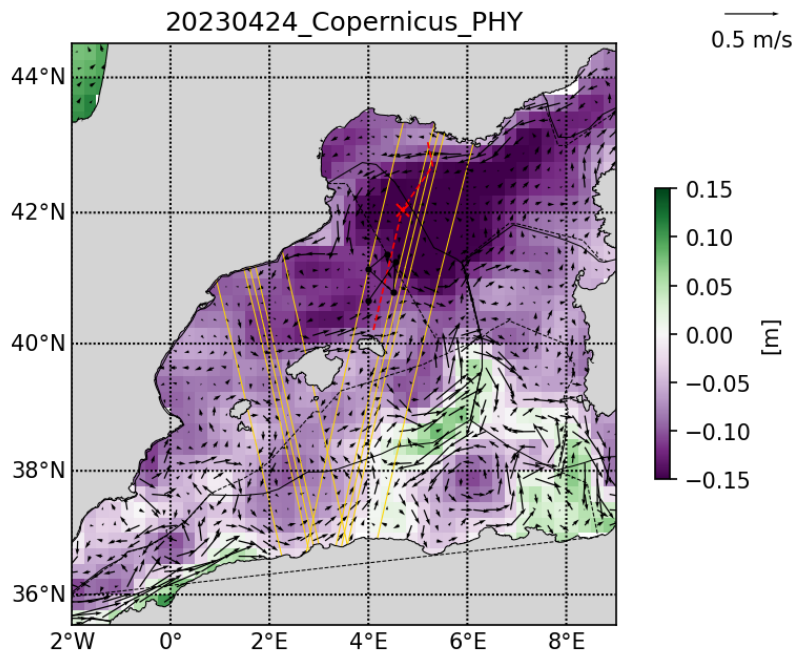
43°N - 5°E Asc 42.7°N - 4.8°E Asc	
:----- :-----	
2023-04-24 20:09:01	2023-04-24 20:09:01
2023-04-25 19:59:38	2023-04-25 19:59:38
2023-04-26 19:50:16	2023-04-26 19:50:16
2023-04-27 19:40:53	2023-04-27 19:40:53
2023-04-28 19:31:31	2023-04-28 19:31:31

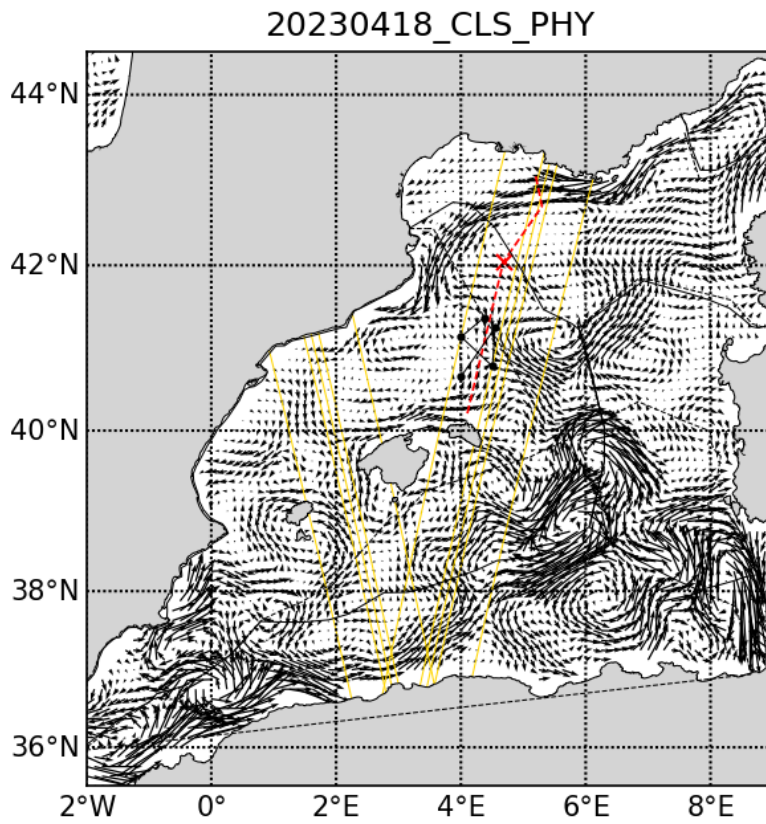
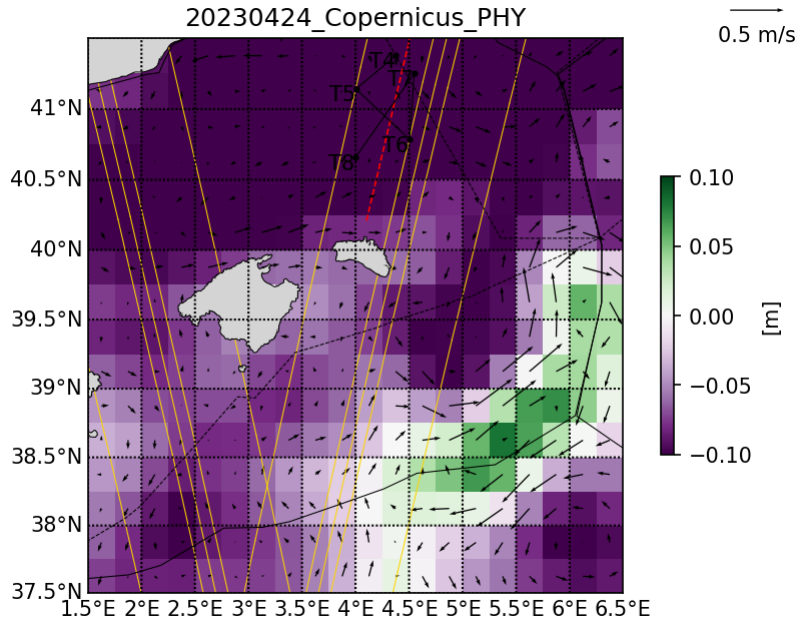
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2 Daily figures analysis

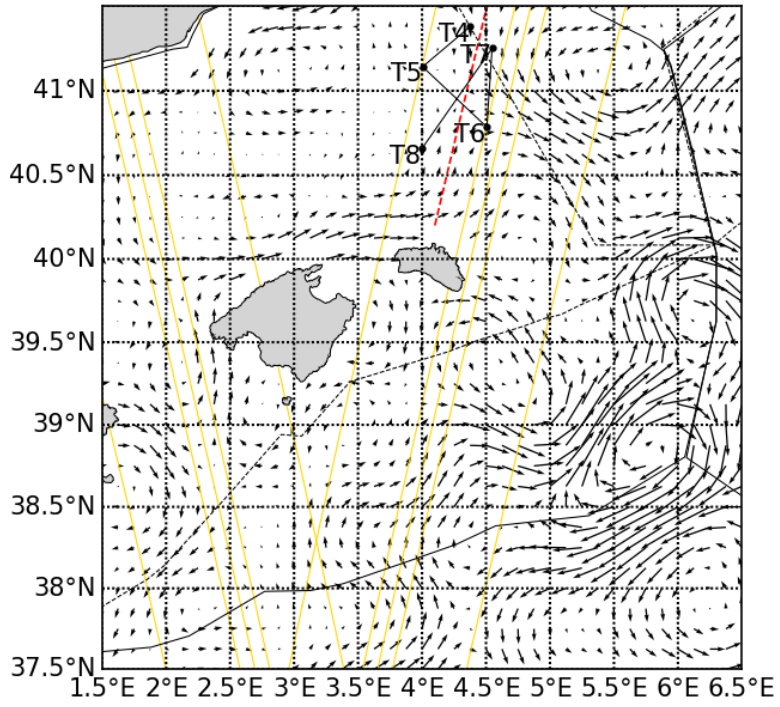
2.1 Altimetry, derived currents

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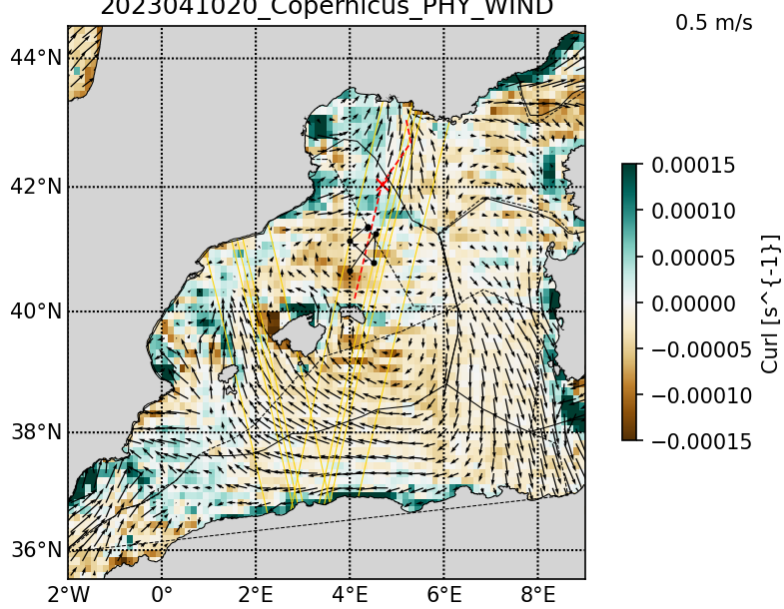


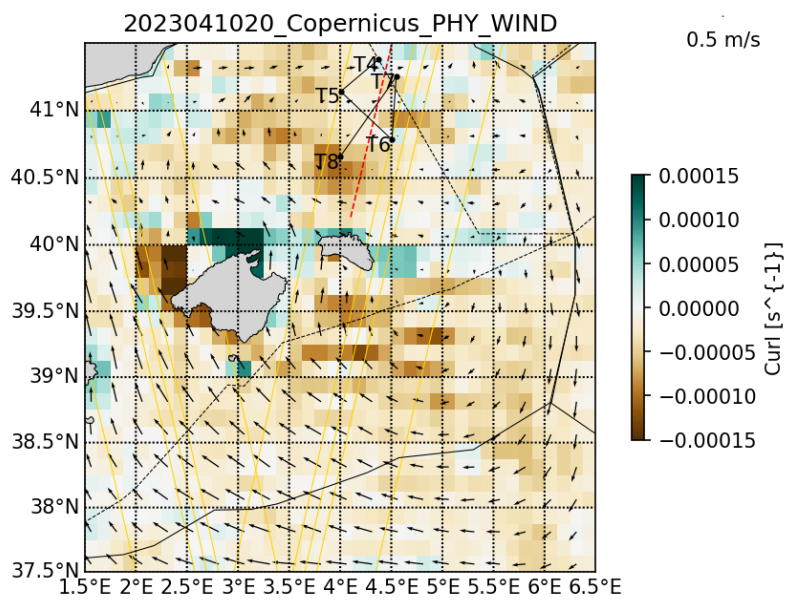


20230418_CLS_PHY



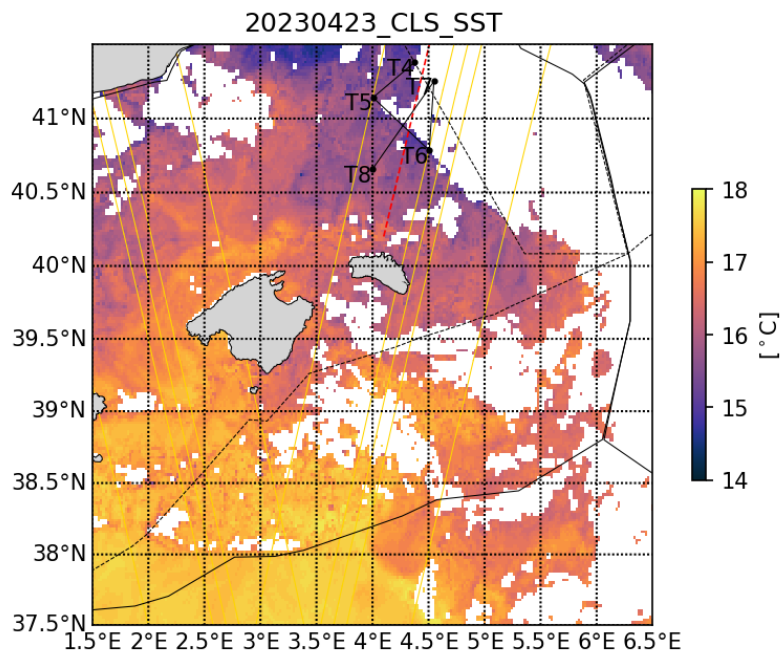
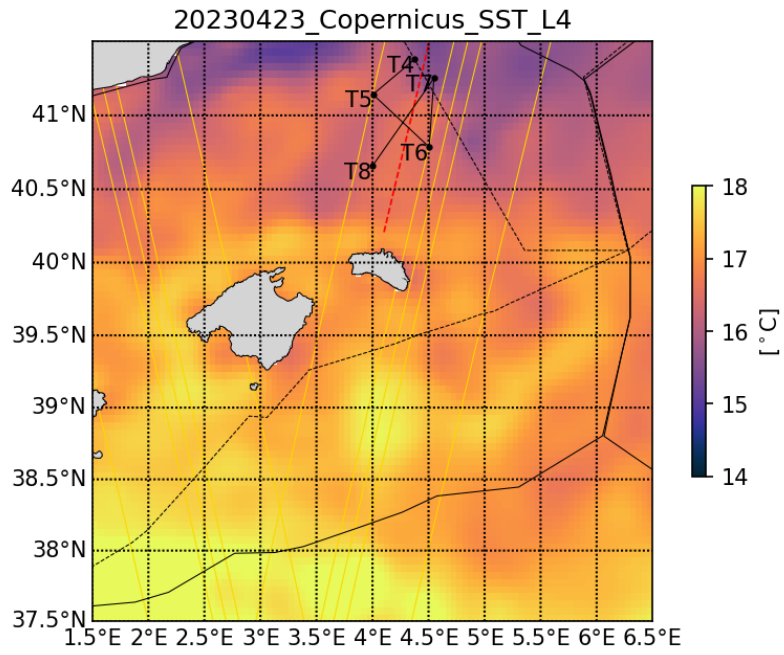
2023041020_Copernicus_PHY_WIND



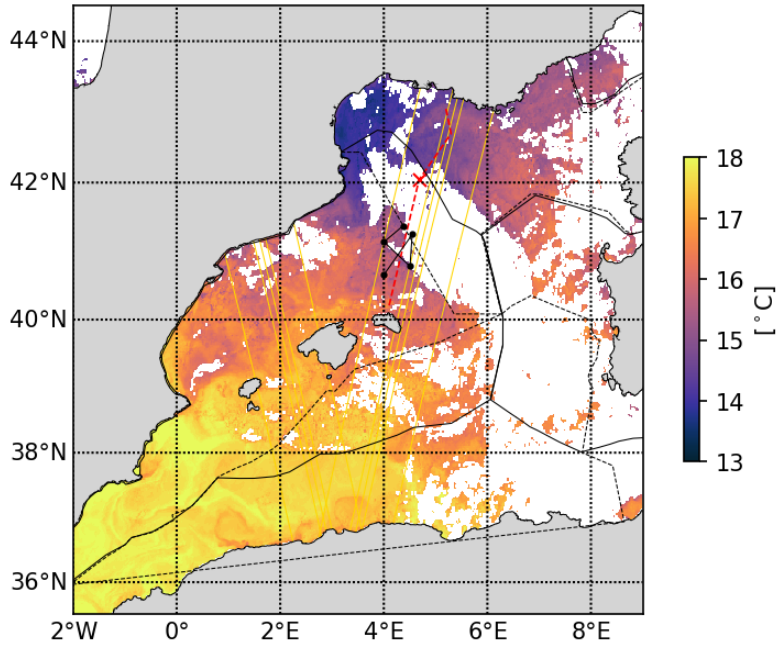


2.2 SST analysis

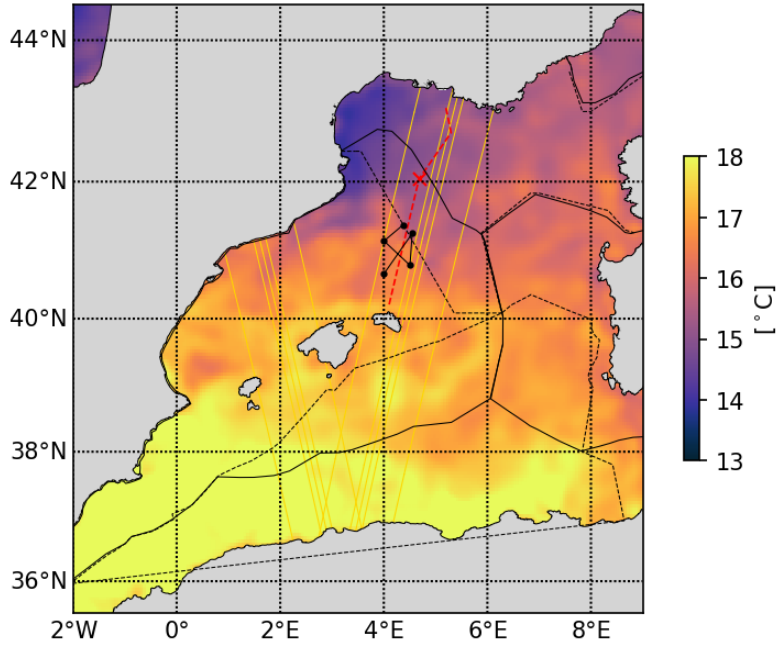
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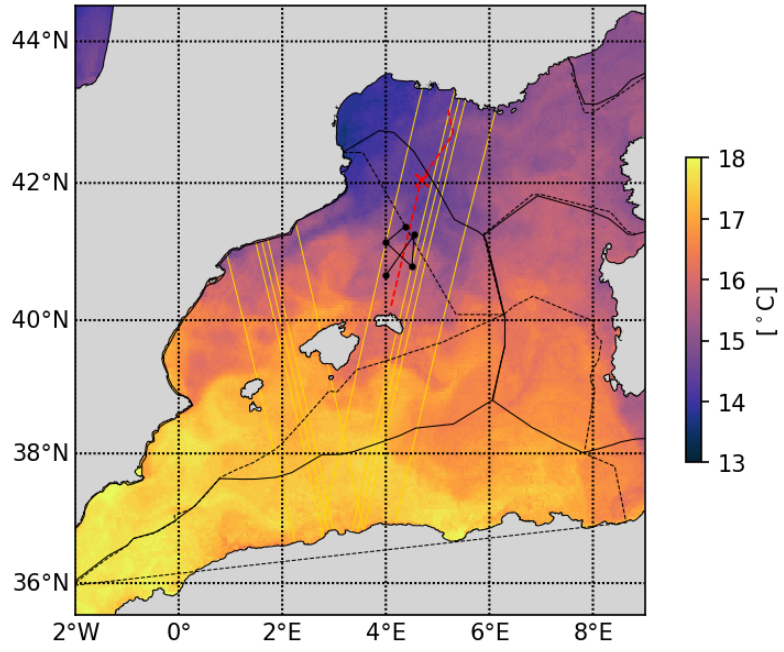
20230423_CLS_SST



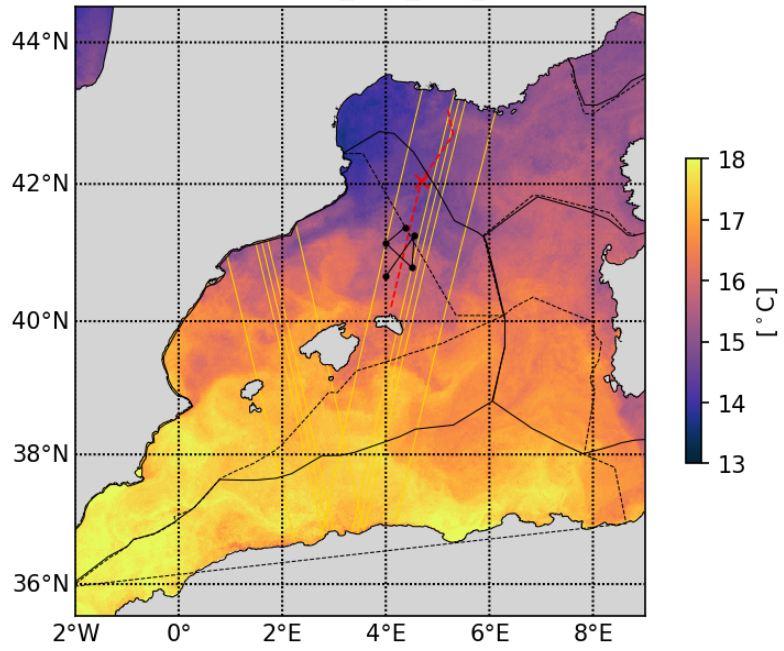
20230423_Copernicus_SST_L4



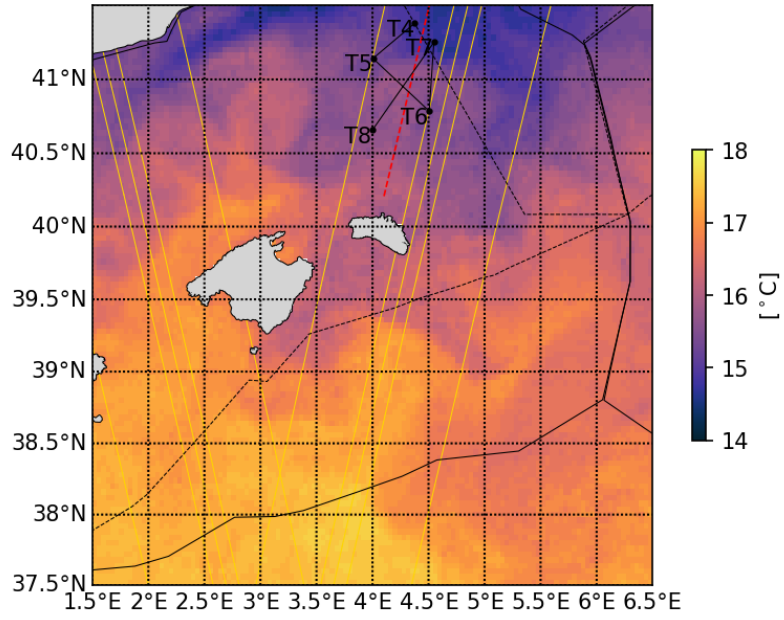
20230422_CLS_SST_7d



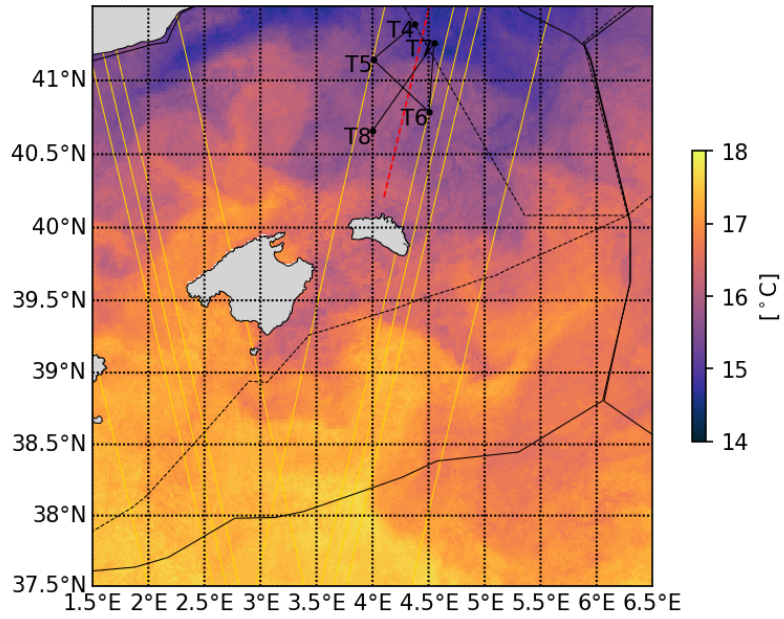
20230422_CLS_SST_5d



20230422_CLS_SST_7d

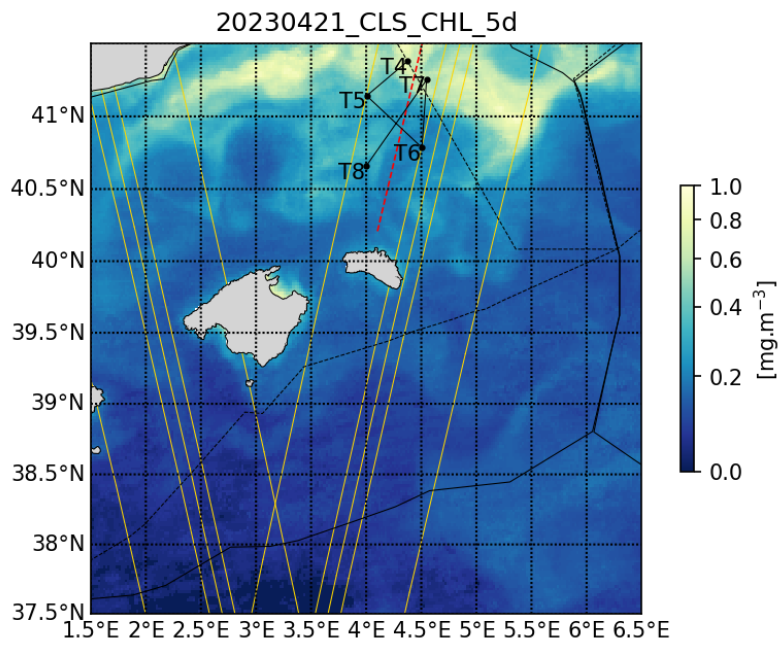
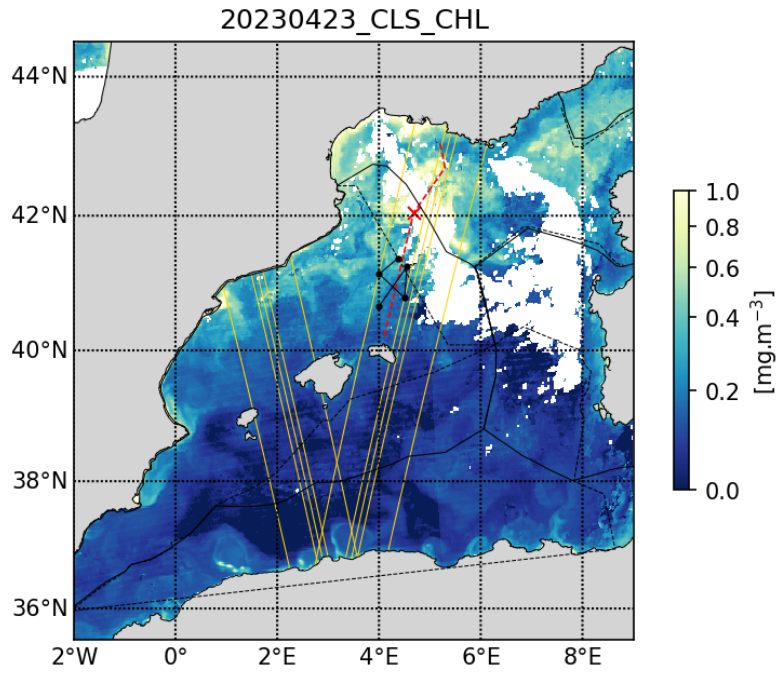


20230422_CLS_SST_5d

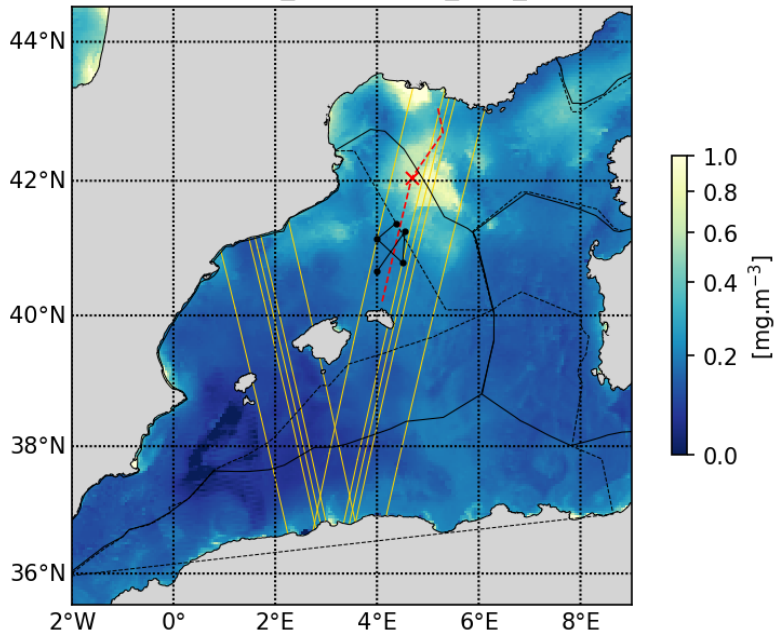


2.3 Chlorophyll analysis

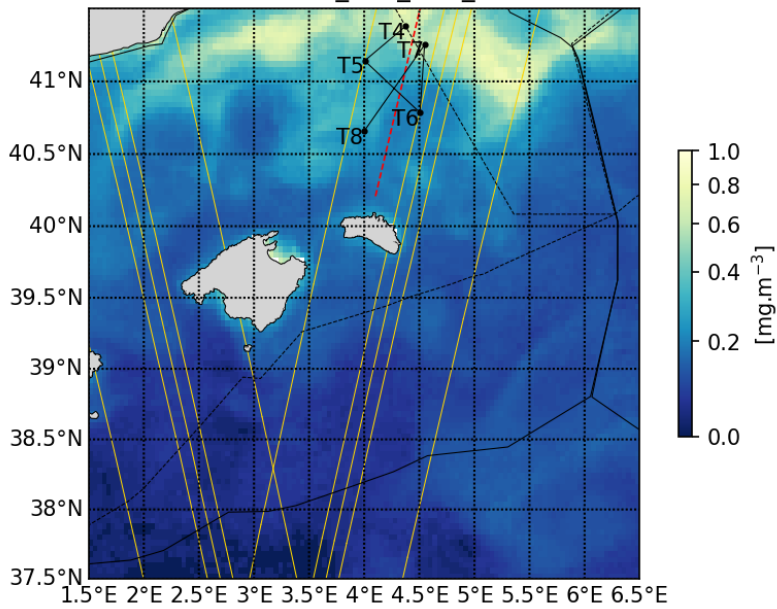
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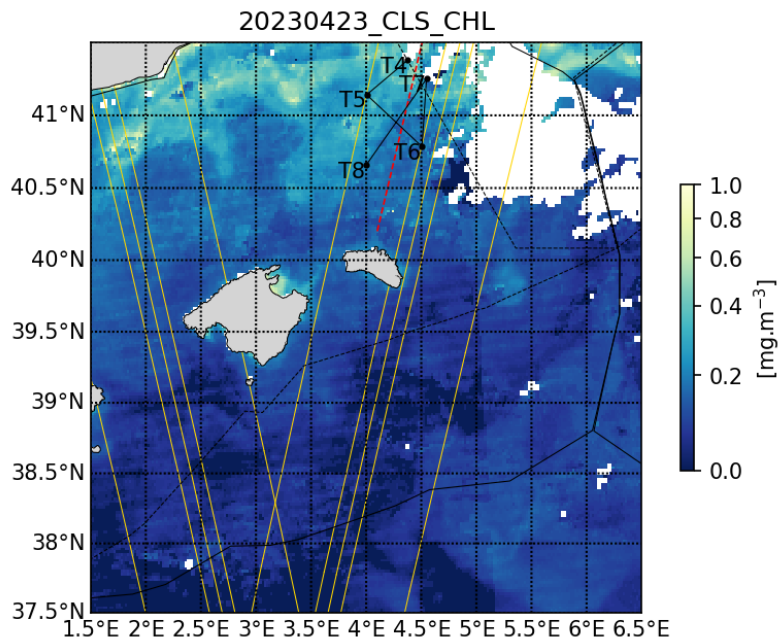
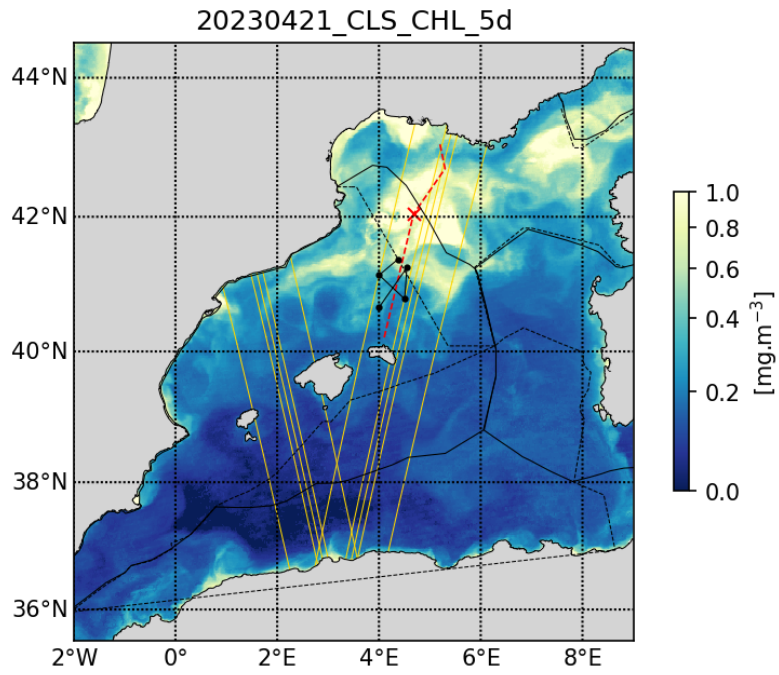


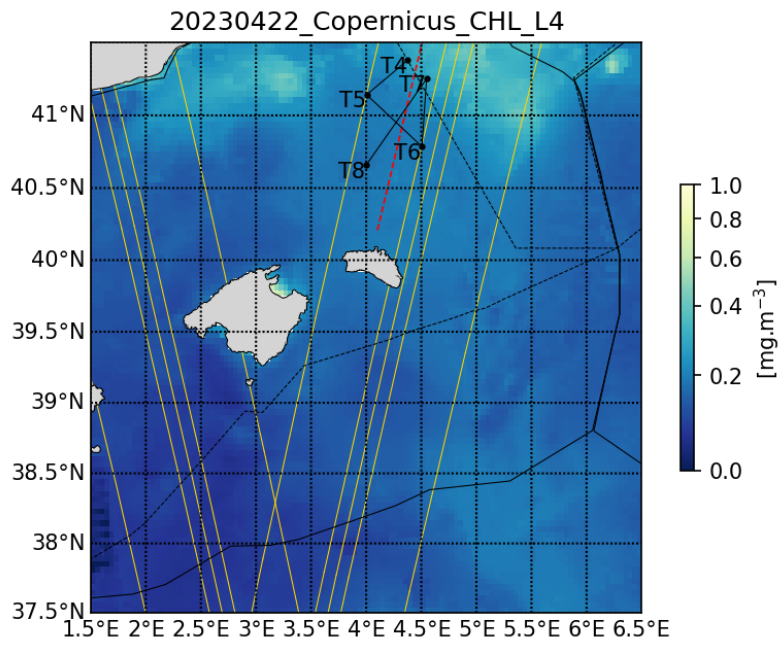
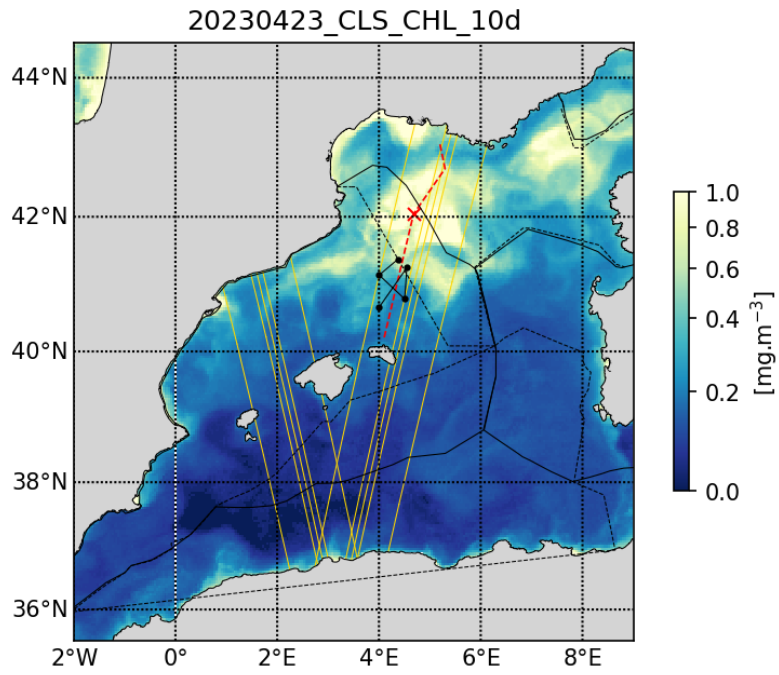
20230422_Copernicus_CHL_L4



20230423_CLS_CHL_10d







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:

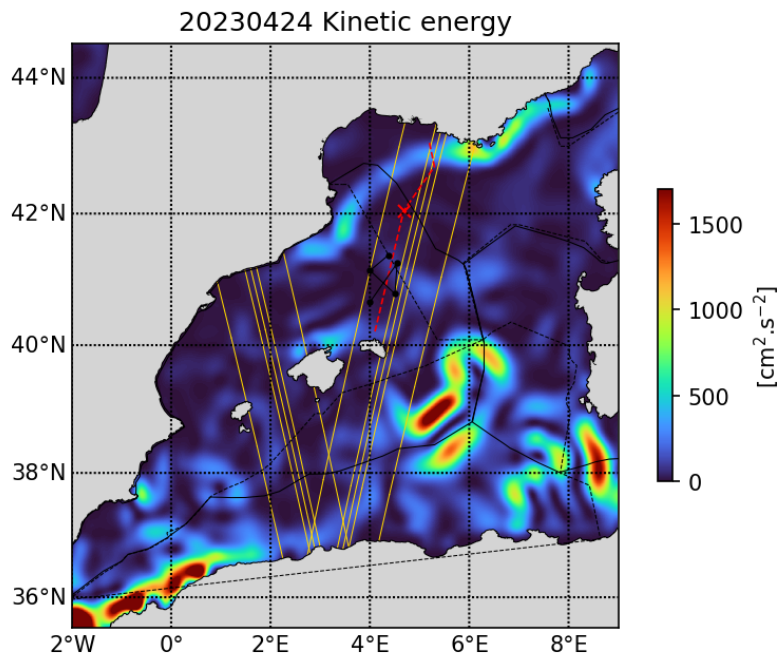
FTLE: finite time Lyapunov exponents (convergent fronts detection)

LLADV: longitude and latitude advection

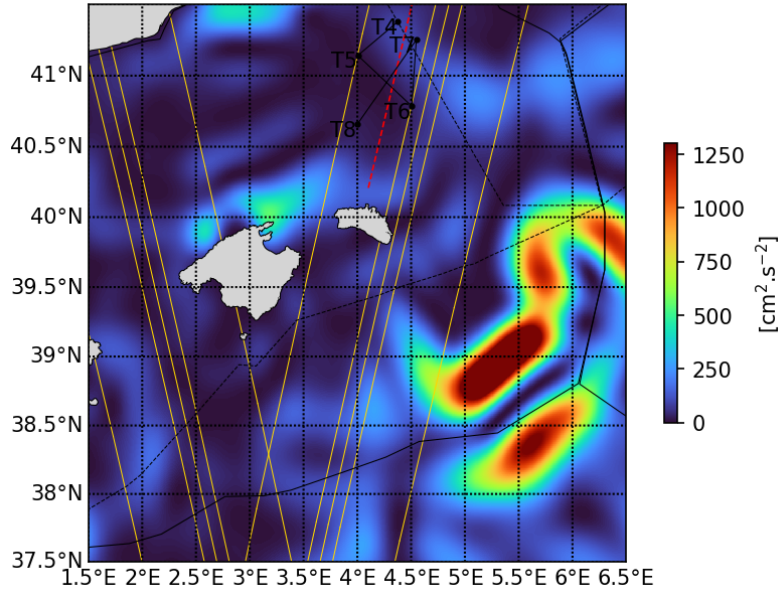
Retention parameter (based on computing the okubo Weiss parameter along a particle trajectory): Detect trapping structures (colorbar = days water parcels have a positive vorticity)

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

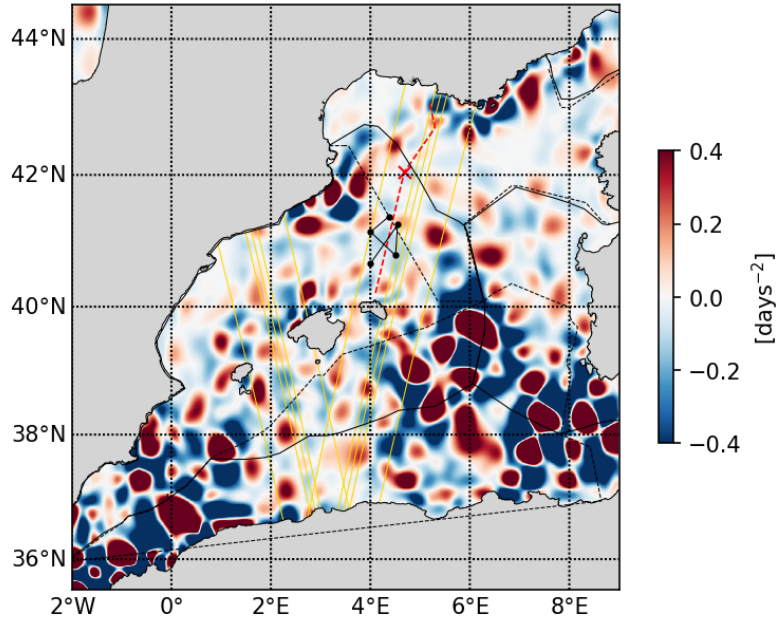
More details available at: <https://www.swot-adac.org/resources/swot-adac-products-access/>



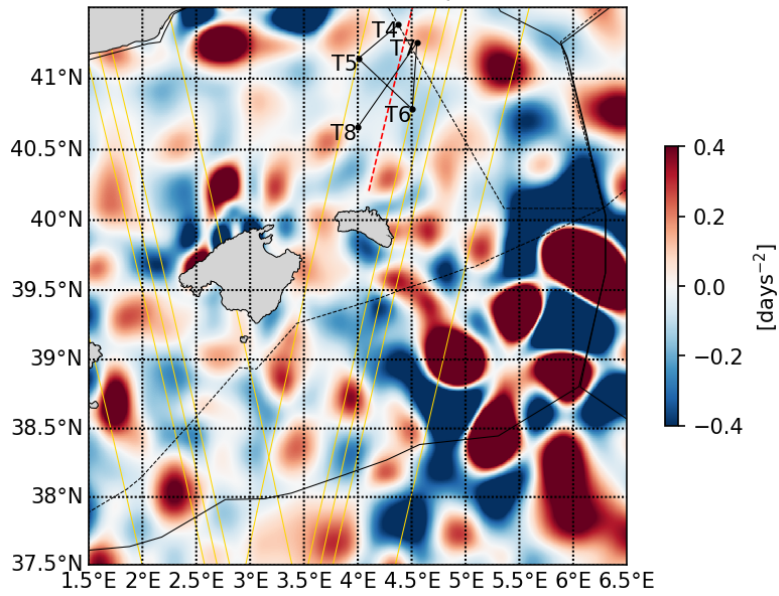
20230424 Kinetic energy



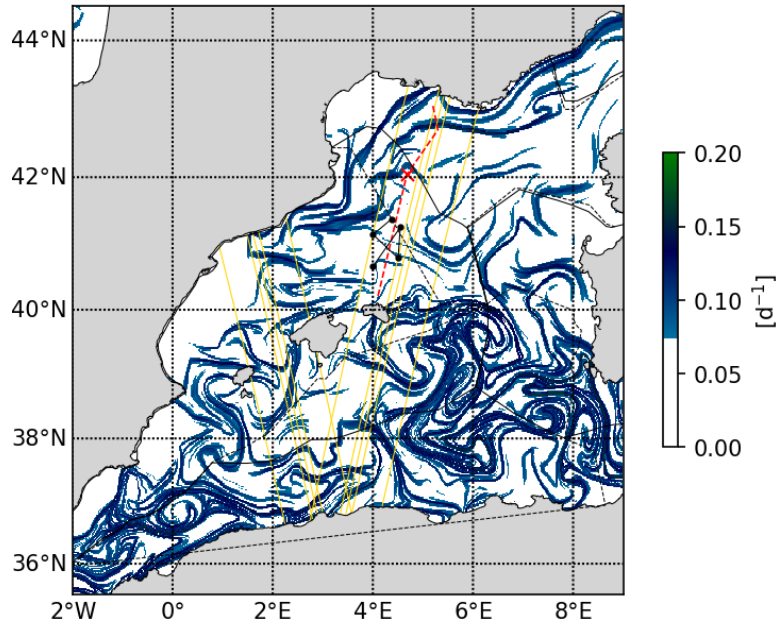
20230424 Okubo-Weiss parameter

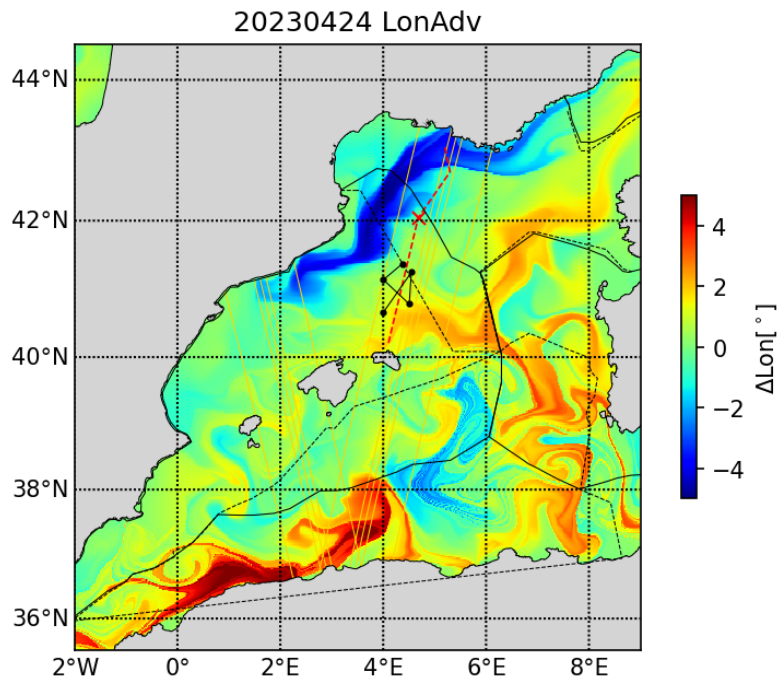
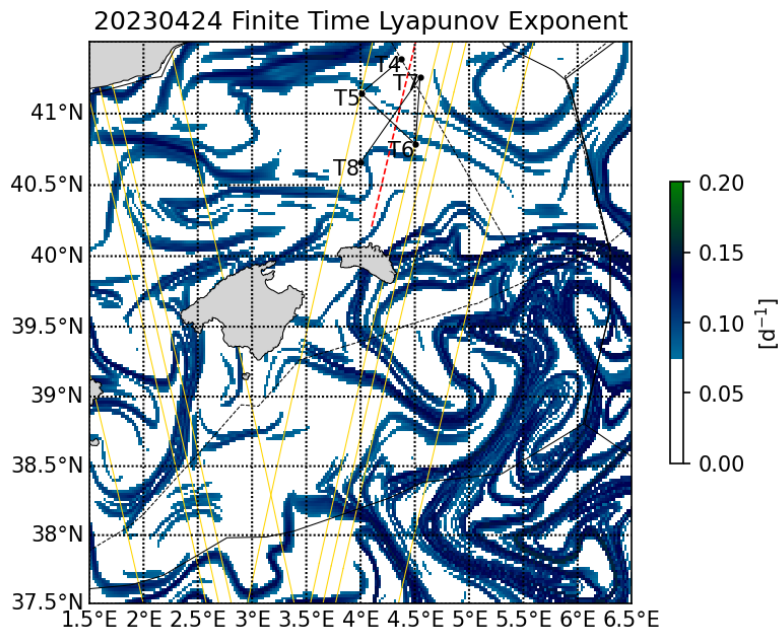


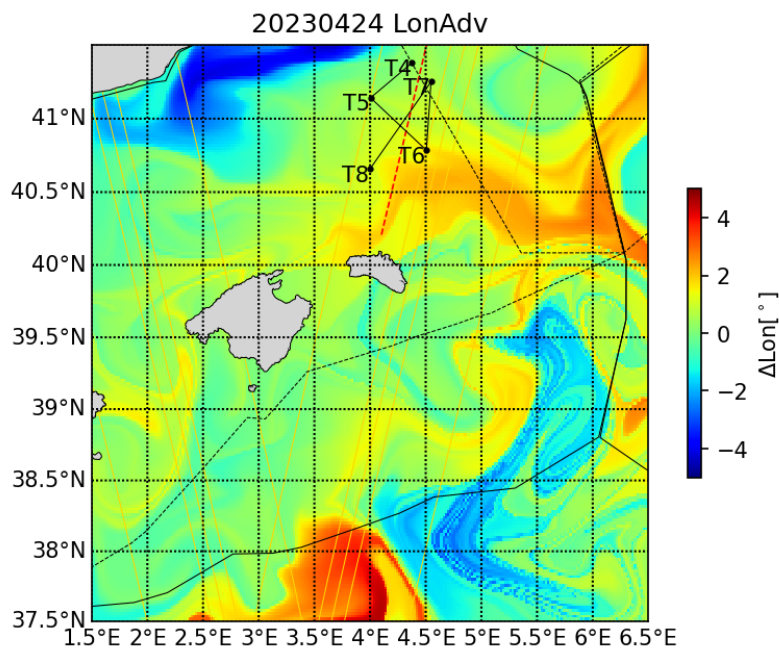
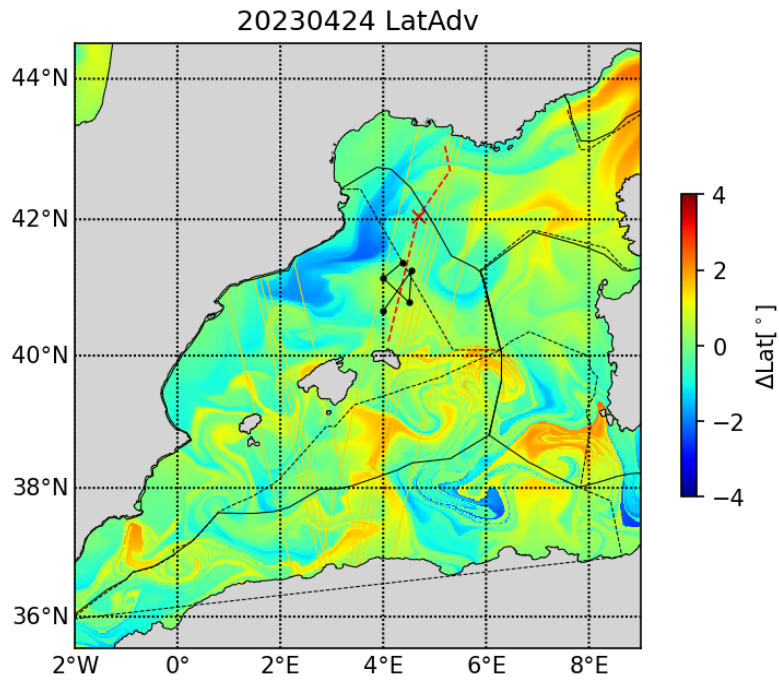
20230424 Okubo-Weiss parameter

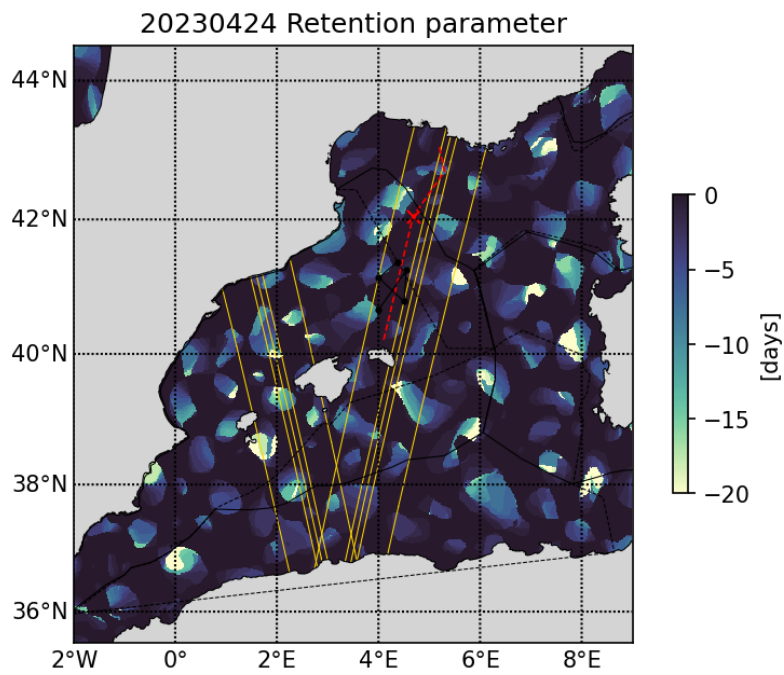
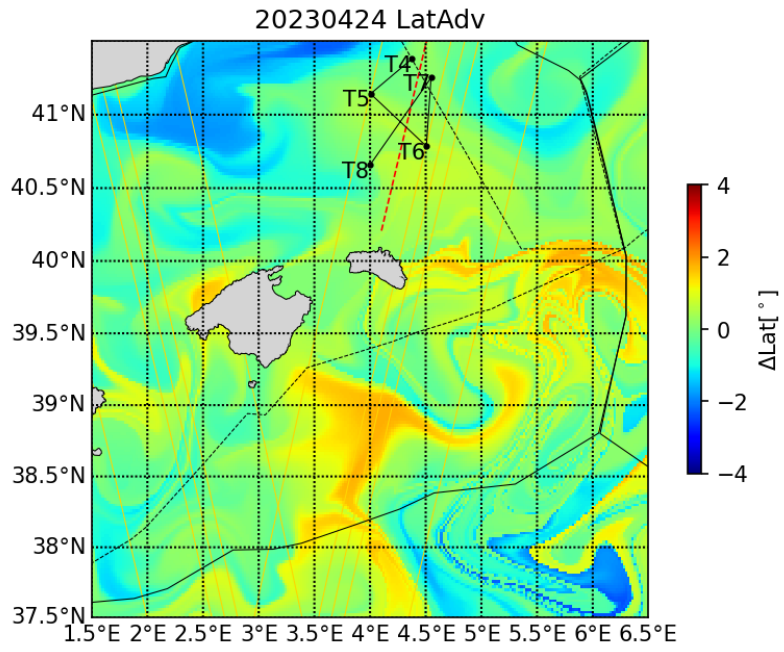


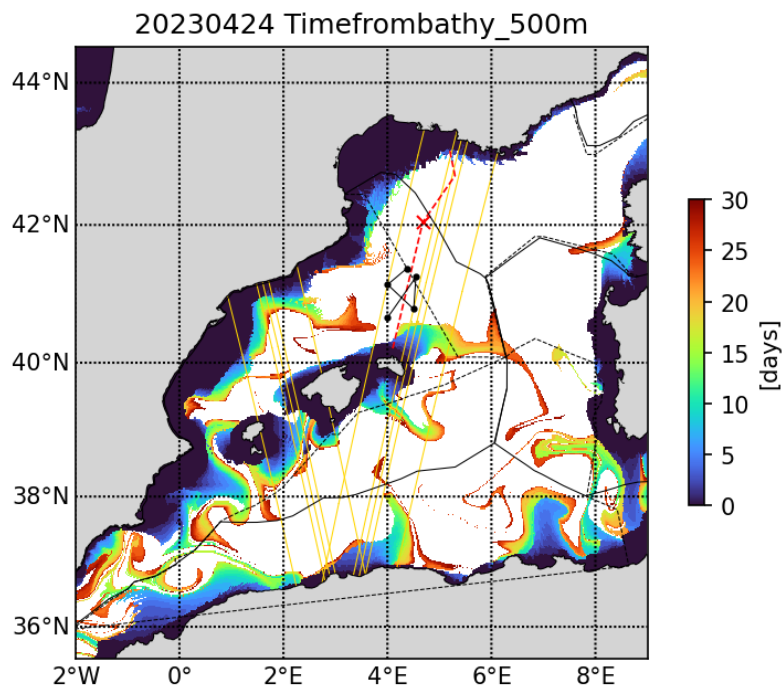
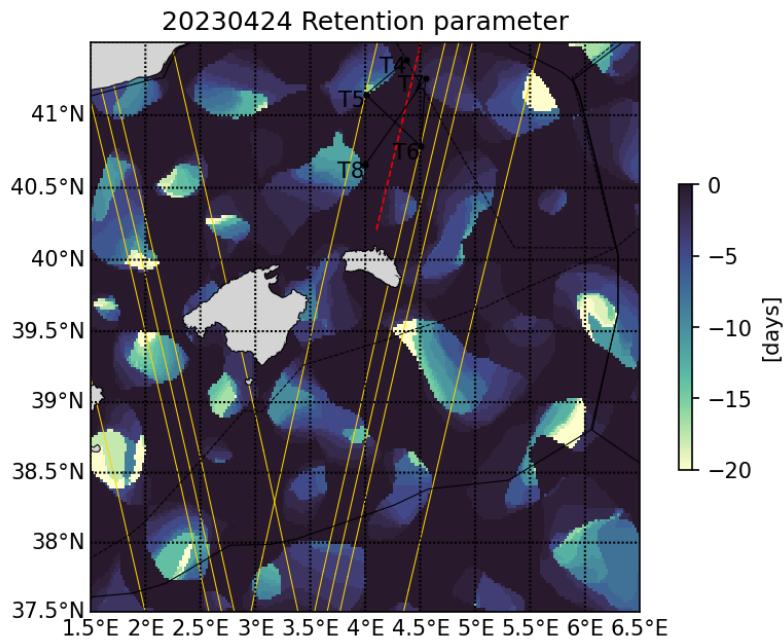
20230424 Finite Time Lyapunov Exponent



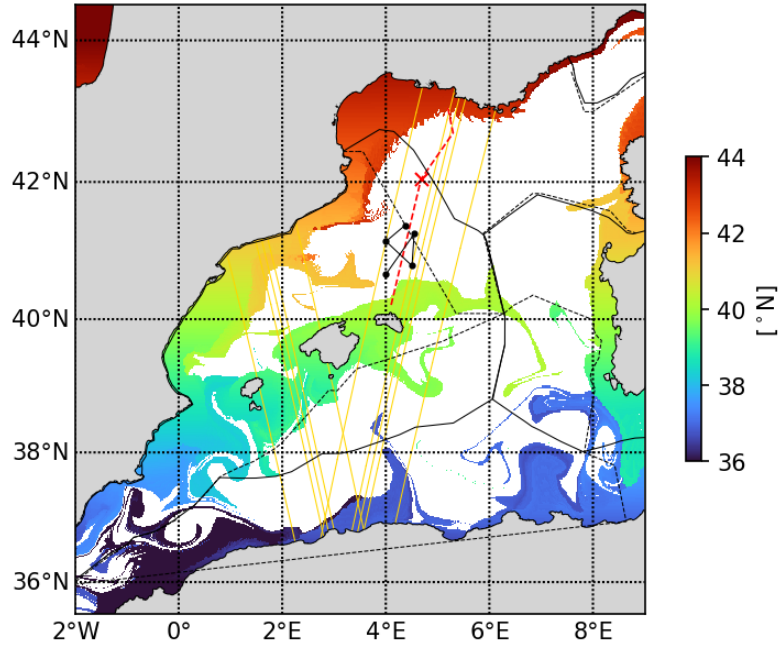




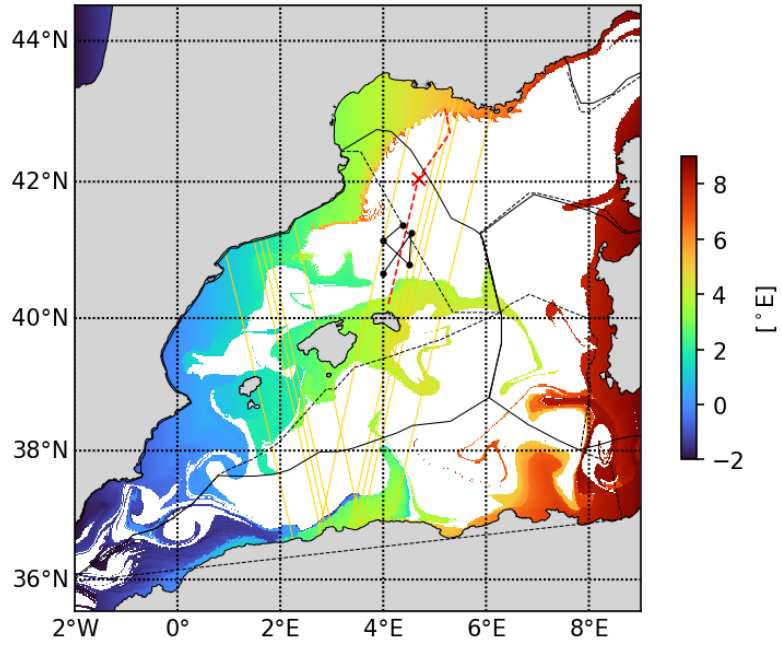


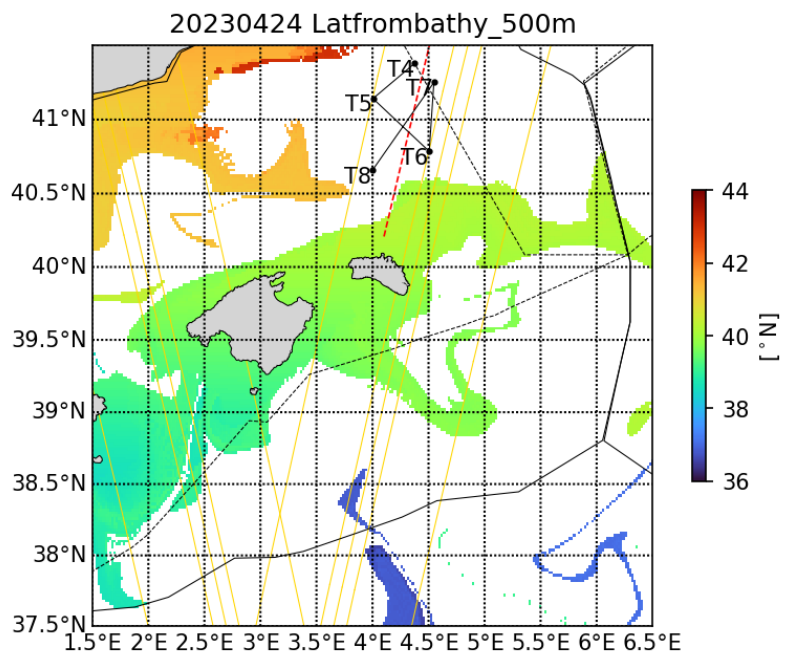
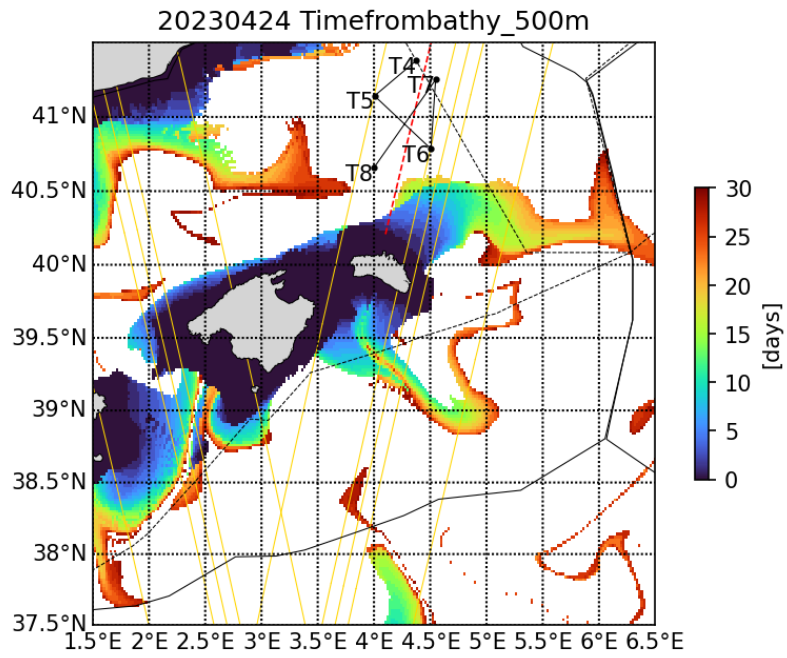


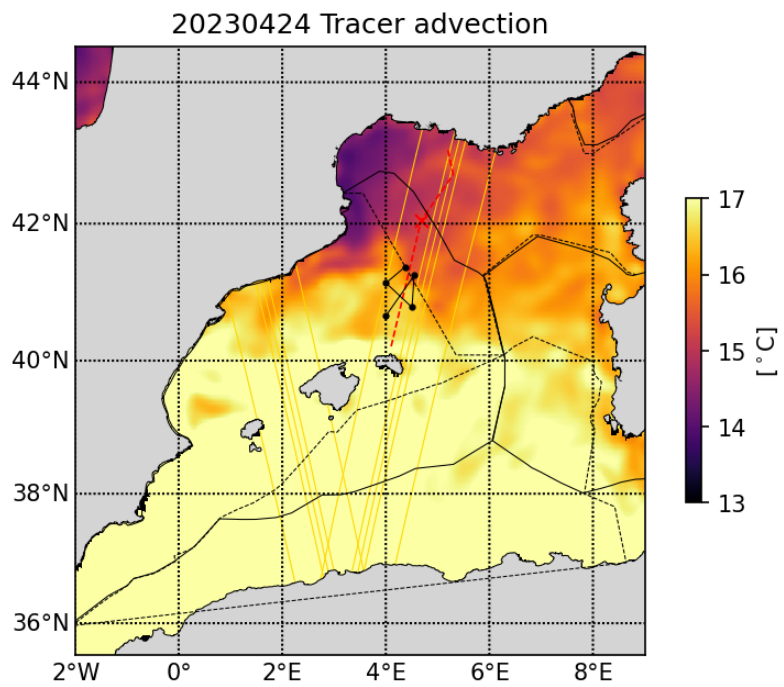
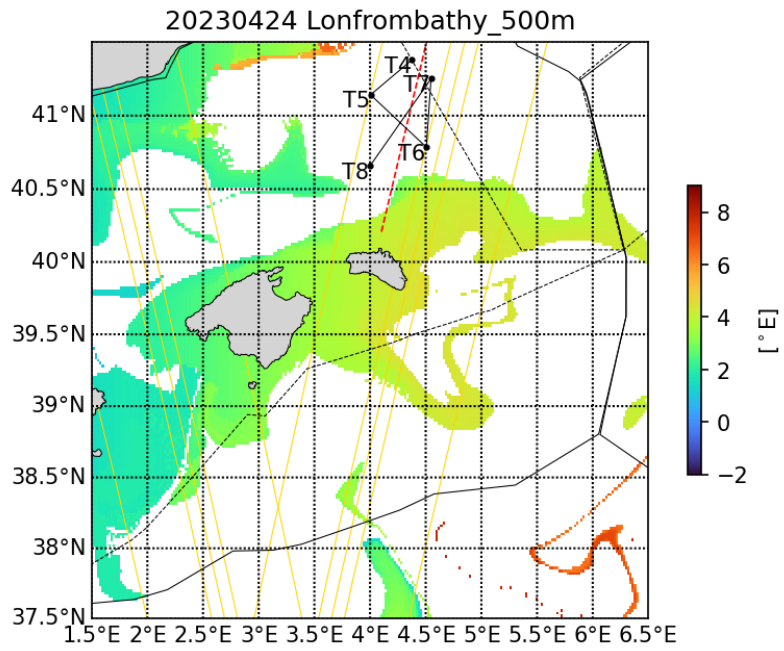
20230424 Latfrombathy_500m



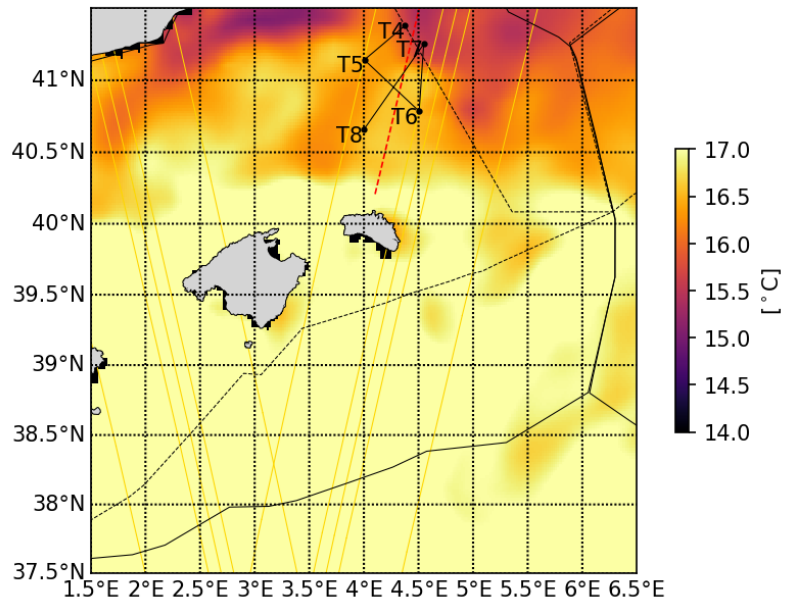
20230424 Lonfrombathy_500m





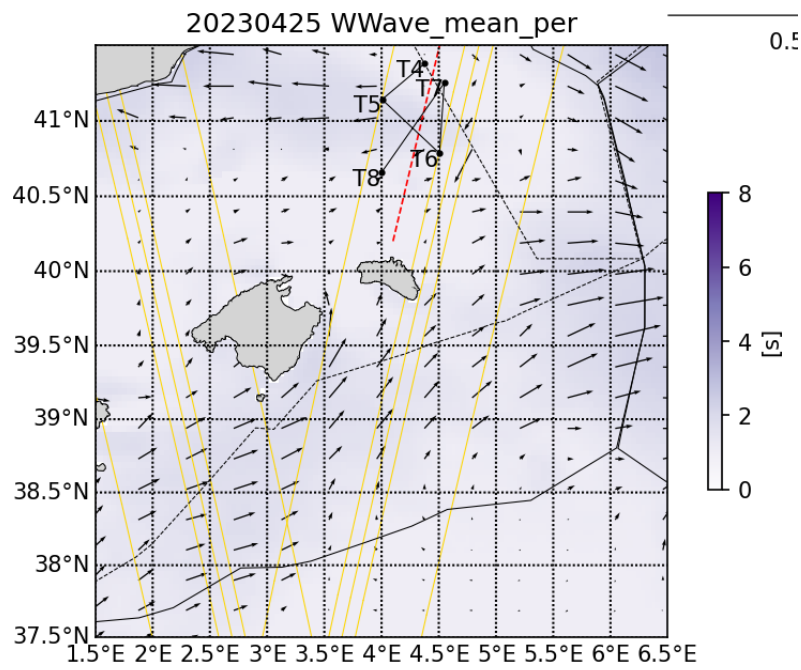
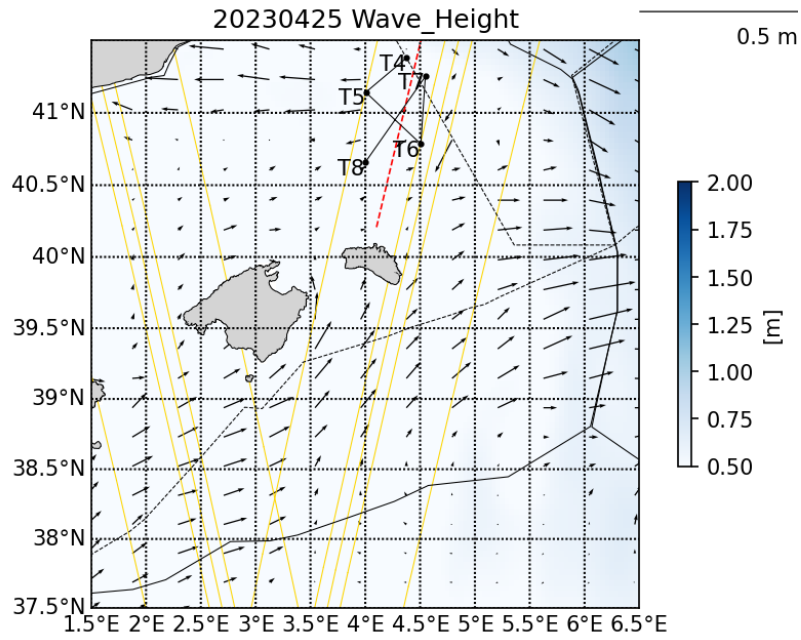


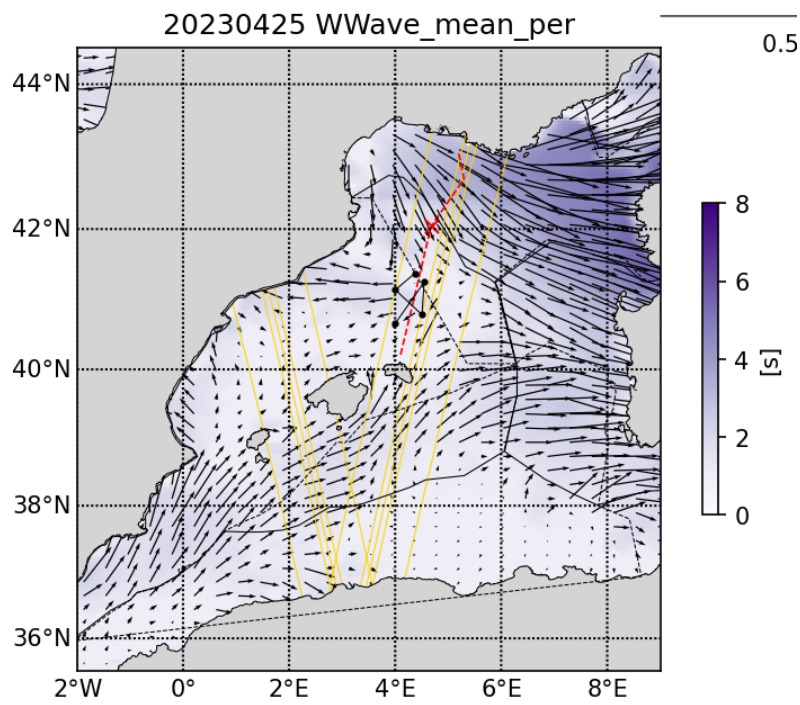
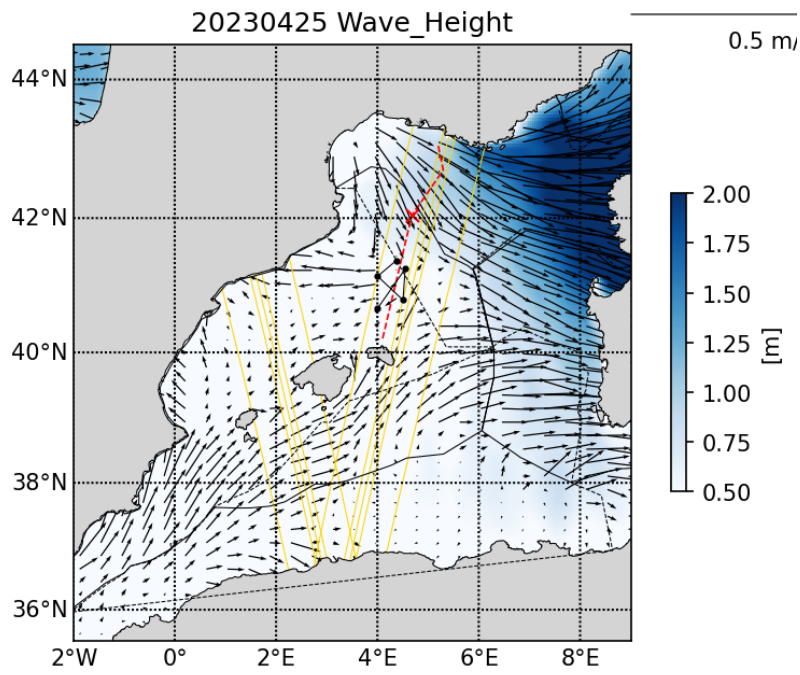
20230424 Tracer advection

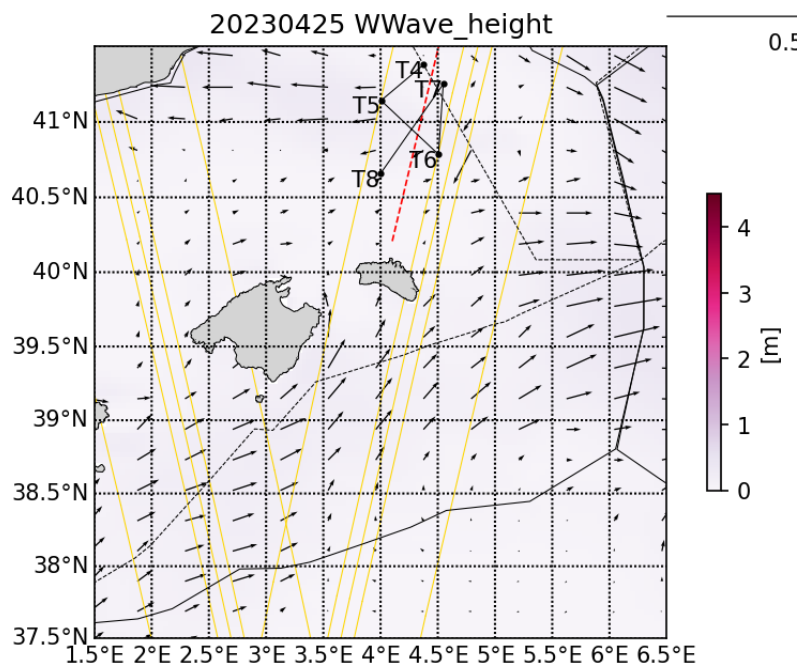
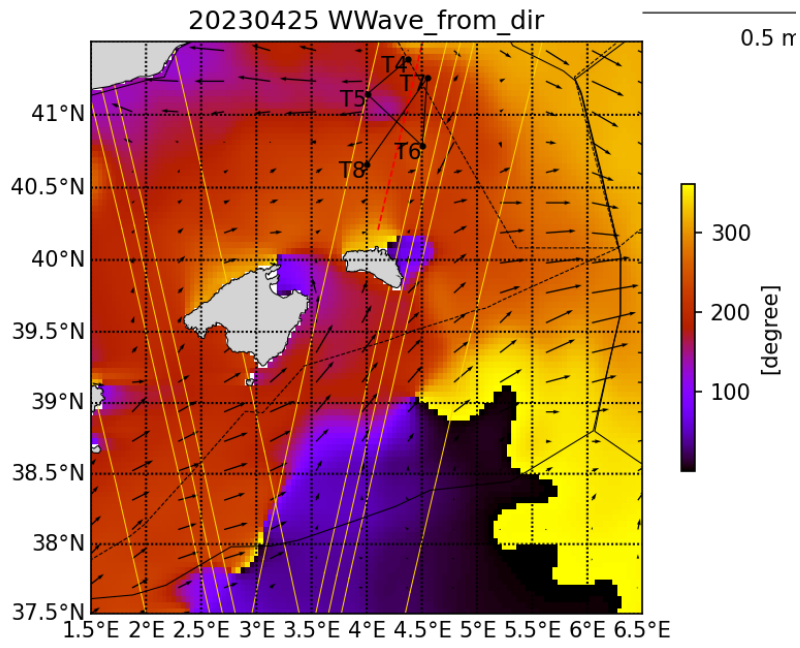


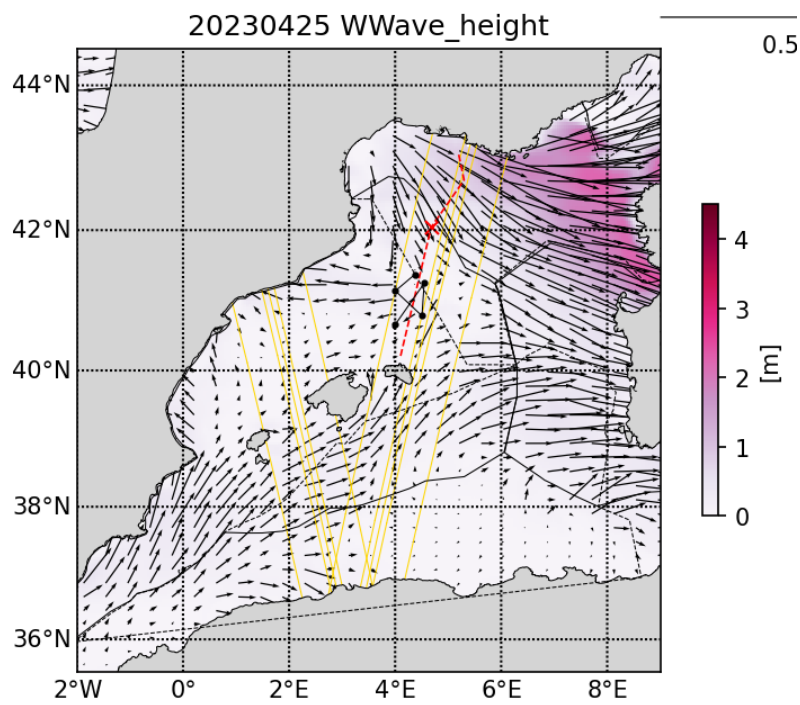
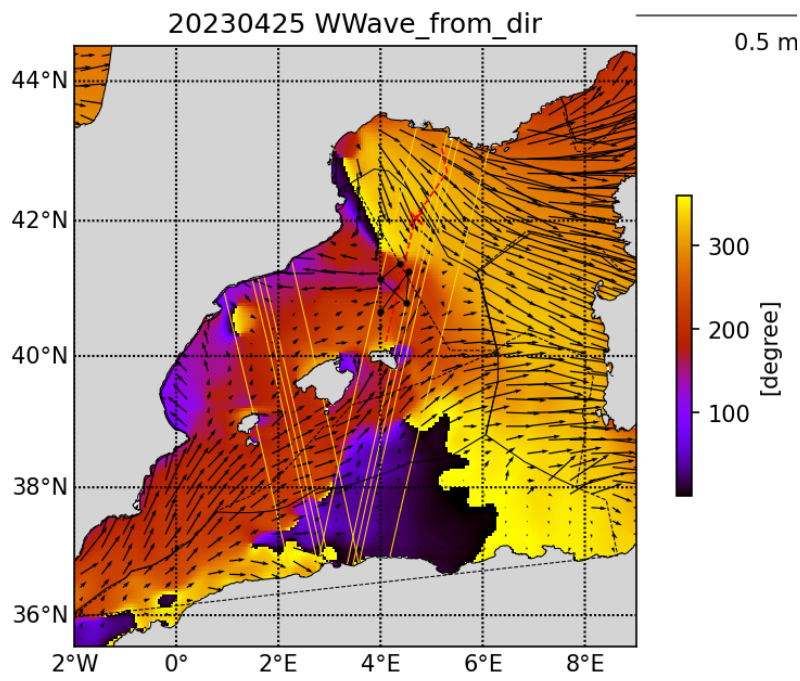
2.5 Wave forecast analysis

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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).