

[BIOSWOT-Med]: SPASSO Images Analysis

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March 12, 2023

Executive Summary

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1 Ongoing operations and upcoming stations

SWOT passing time (UTC) over:

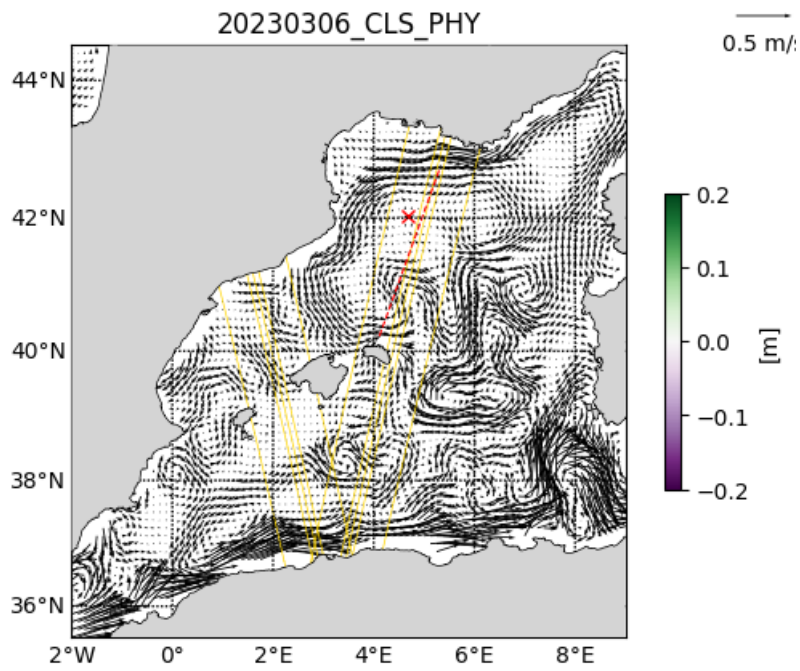
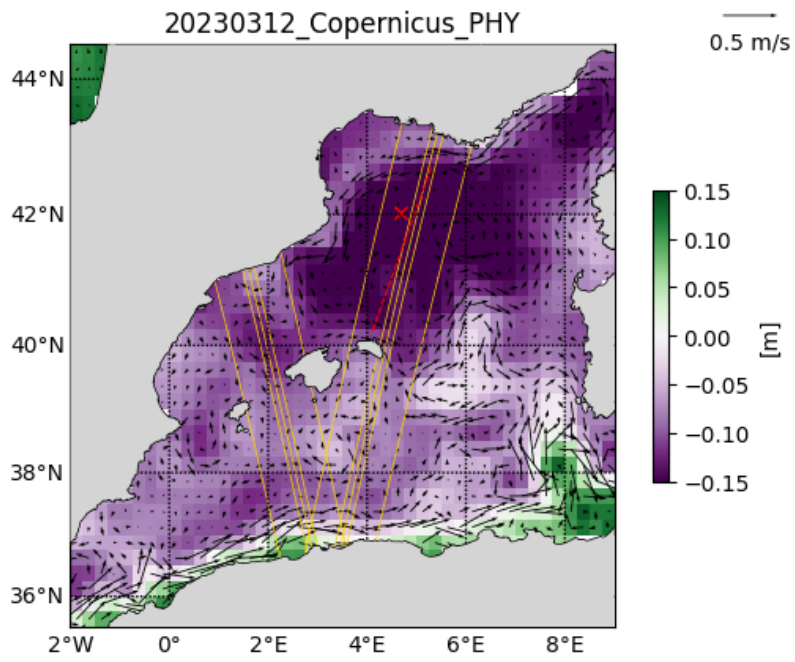
43°N - 5°E Asc 42.7°N - 4.8°E Asc
:----- :-----
2023-03-12 03:01:29 2023-03-12 03:01:29
2023-03-13 02:52:07 2023-03-13 02:52:07
2023-03-14 02:42:44 2023-03-14 02:42:44

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2 Daily figures analysis

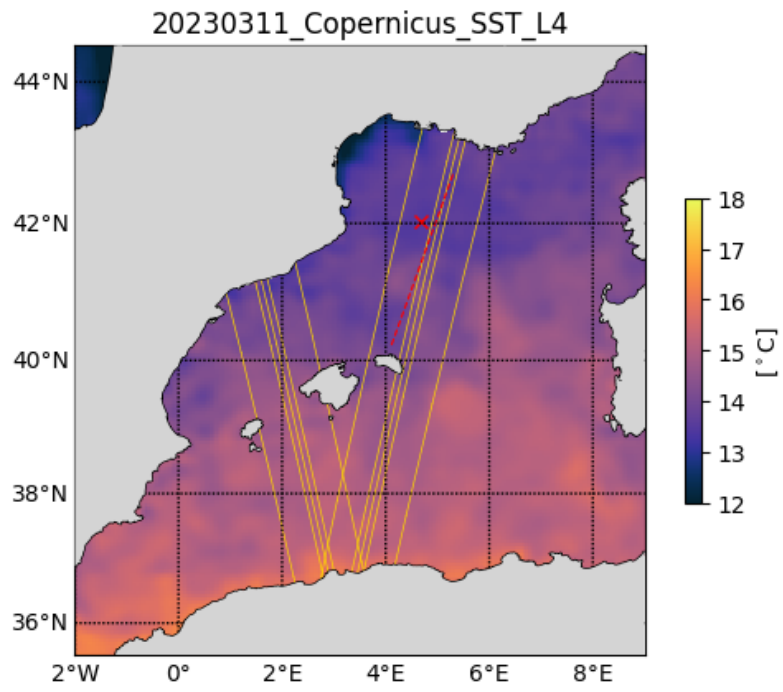
2.1 Altimetry, derived currents

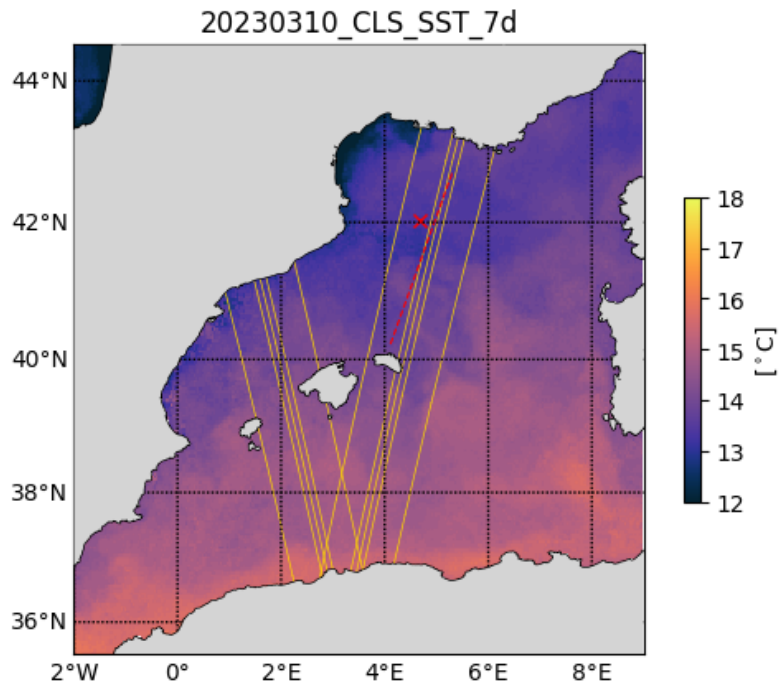
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2.2 SST analysis

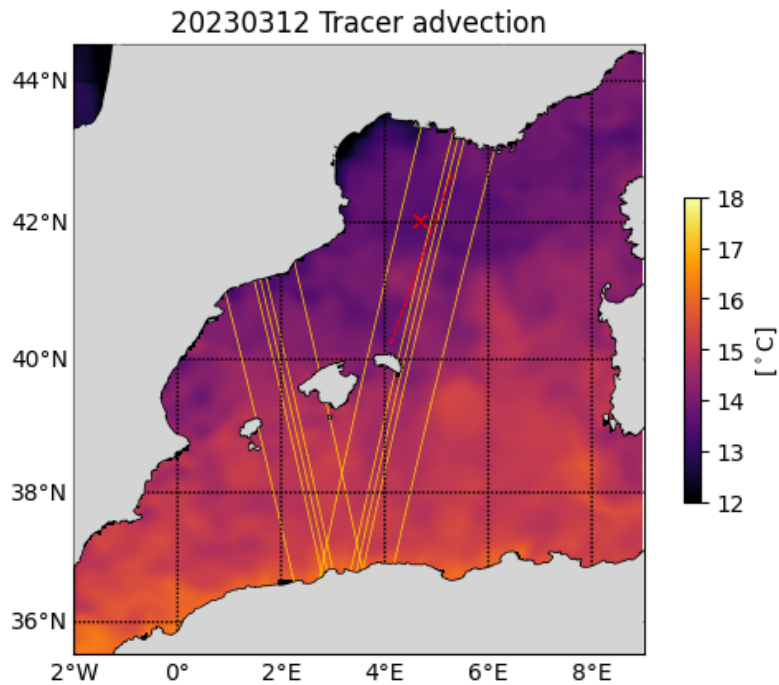
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2.3 Chlorophyll analysis

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2.4 Eulerian/Lagrangian analysis

Eulerian diagnostics computed with Copernicus_PHY velocities:

KE: kinetic energy

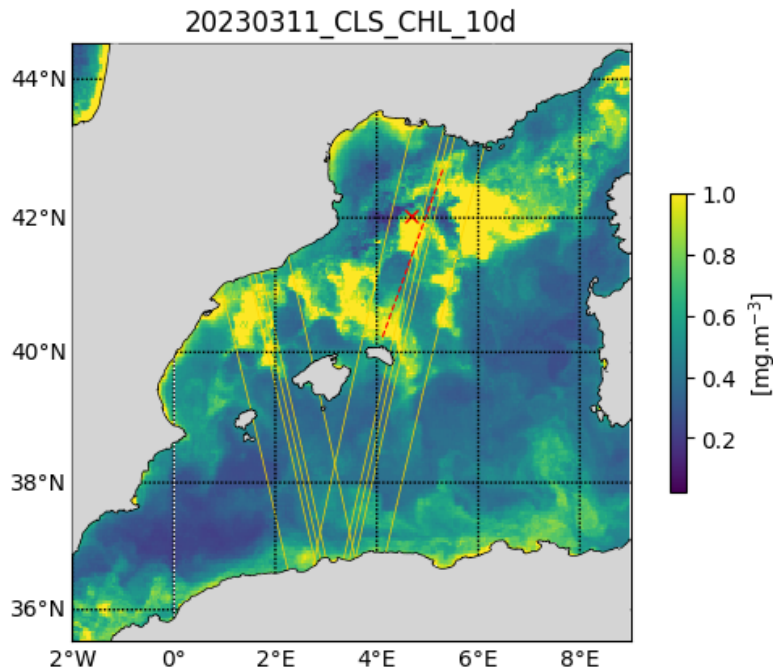
OW: Okubo-Weiss parameter

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)



2.5 Other analysis

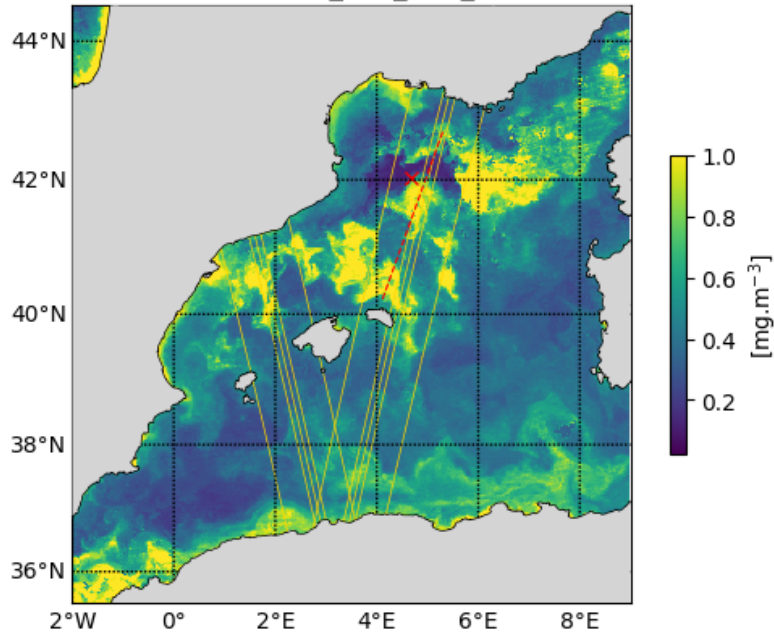
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Acknowledgments

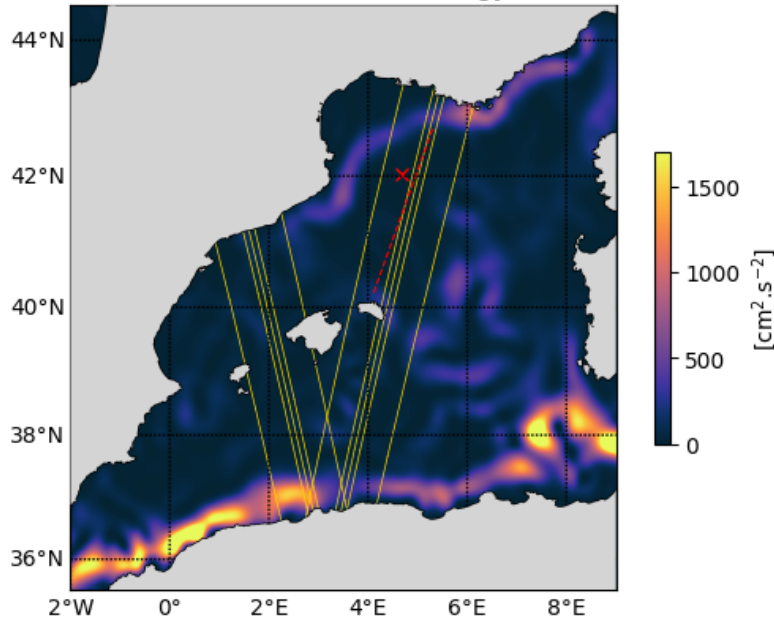
Example:

The altimetry data are the AVISO Mediterranean regional product: <http://www.aviso.altimetry.fr/index.php?id=1>
 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.

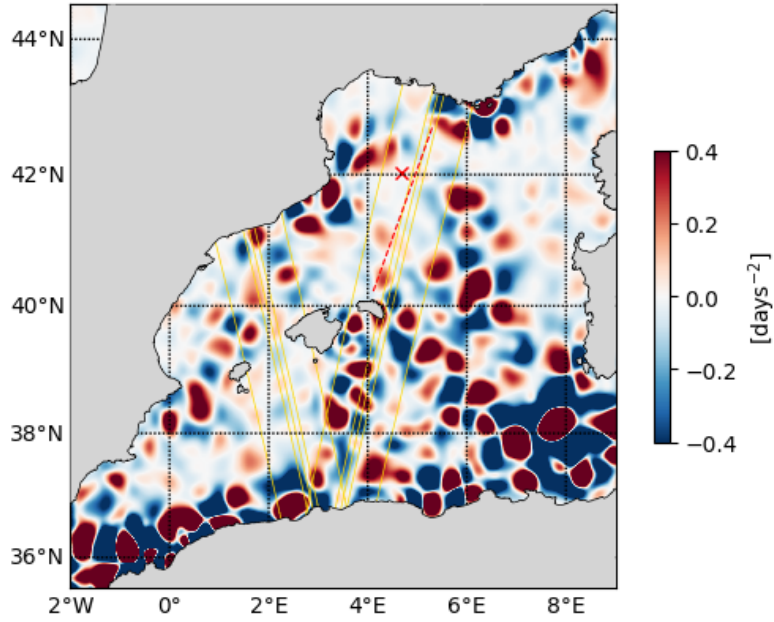
20230309_CLS_CHL_5d



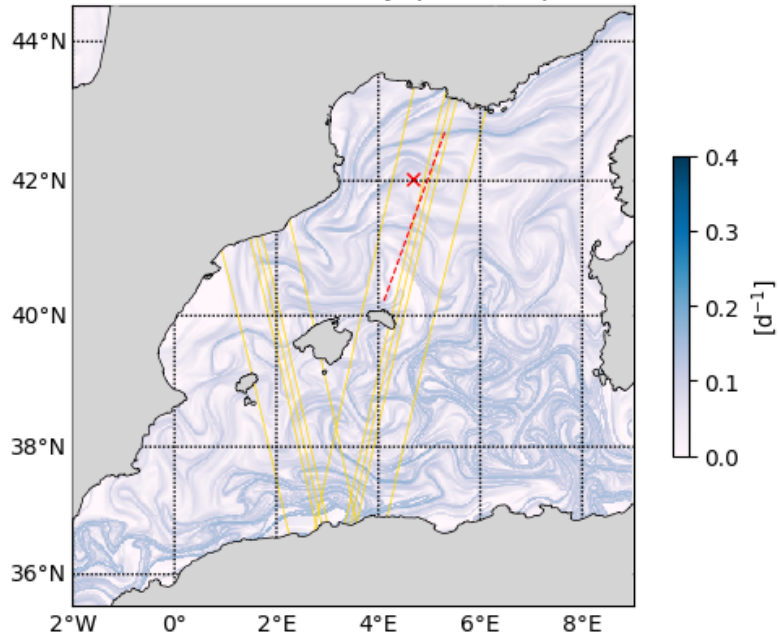
20230312 Kinetic energy



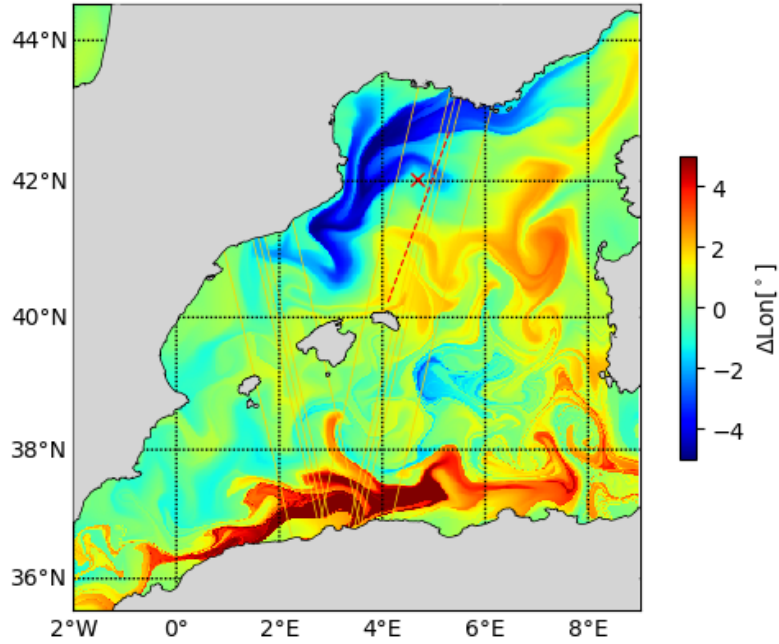
20230312 Okubo-Weiss parameter



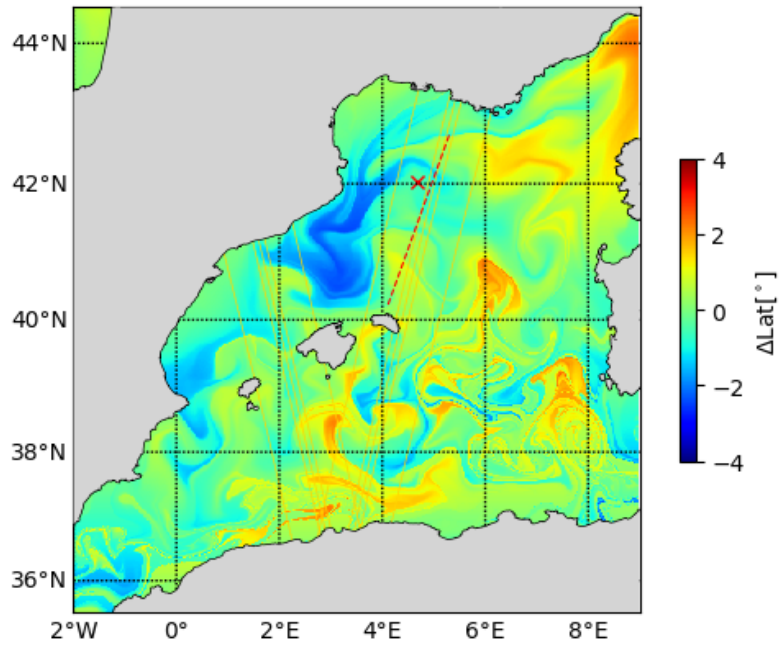
20230312 Finite Time Lyapunov Exponent



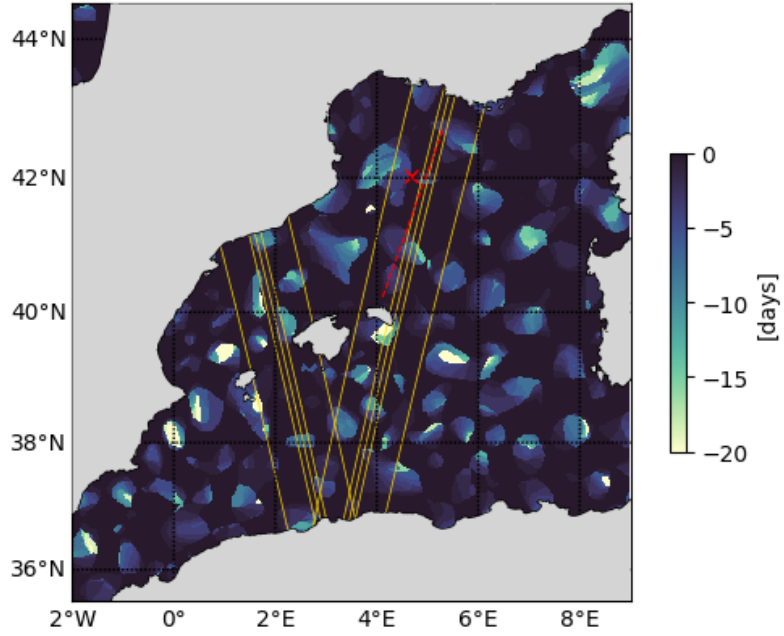
20230312 LonAdv



20230312 LatAdv



20230312 Retention parameter



20230312 Tracer advection

