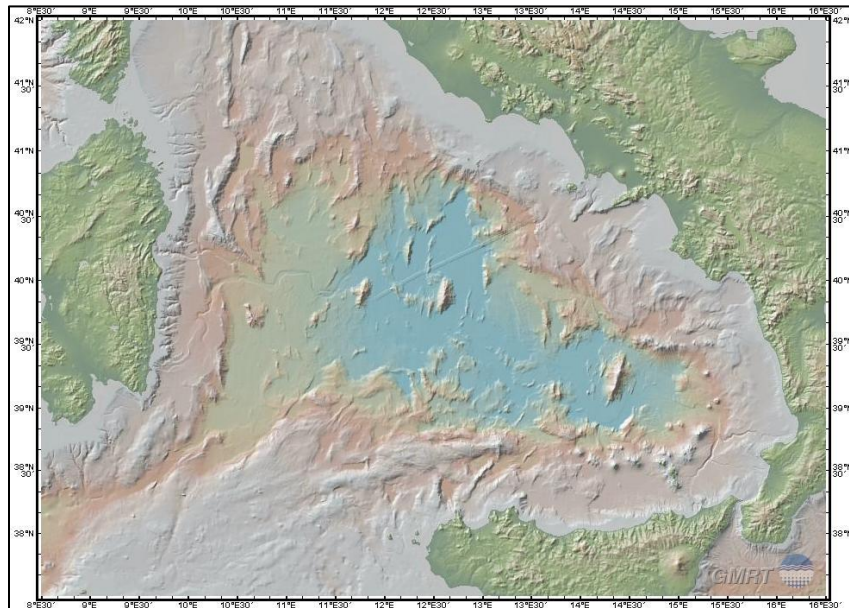


Practical 4

Donnella le Roux

The Tyrrhenian Sea

The Tyrrhenian Sea is a semi-enclosed basin in the Mediterranean, located between the western coast of Italy and the islands of Sardinia and Corsica.



This region features deep basins exceeding 3500 meters, contrasting with shallow coastal areas and continental shelves, making for interesting bathymetric variation.

This region also experiences distinct seasonal variability, with higher concentrations observed in winter and early spring due to nutrient mixing, followed by oligotrophic conditions in summer. The interaction between coastal processes, riverine inputs further influence chlorophyll.

Data Sources

1. Chlorophyll-a Concentration

Source: ESA-CCI Ocean Colour Climatology

Description: Climatological monthly means of satellite-derived chlorophyll-a concentration (mg/m^3) at a 4 km resolution.

Reference: ESA Climate Change Initiative (CCI) Ocean Colour dataset (<https://esa-oceancolour-cci.org>)

2. Bathymetry Data

Source: Global Multi-Resolution Topography (GMRT)

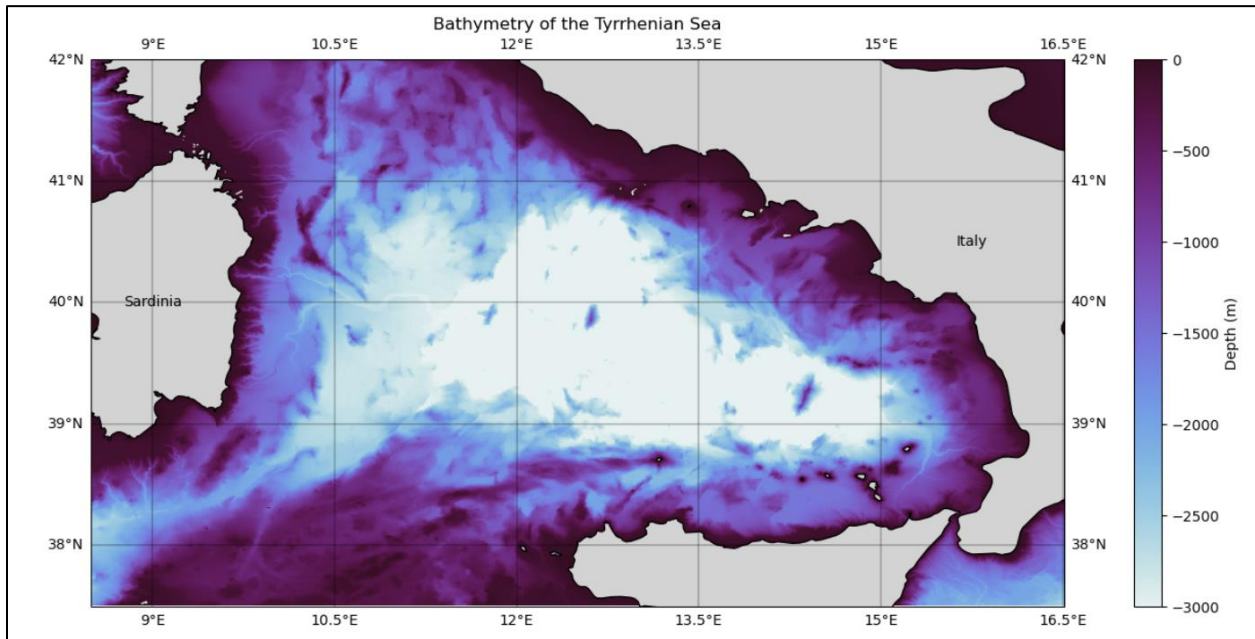
Description: Digital elevation model combining high-resolution sounding data with the General Bathymetric Chart of the Ocean (GEBCO) data.

Reference: GMRT (<https://www.gmrt.org>)

Analysis and Figures

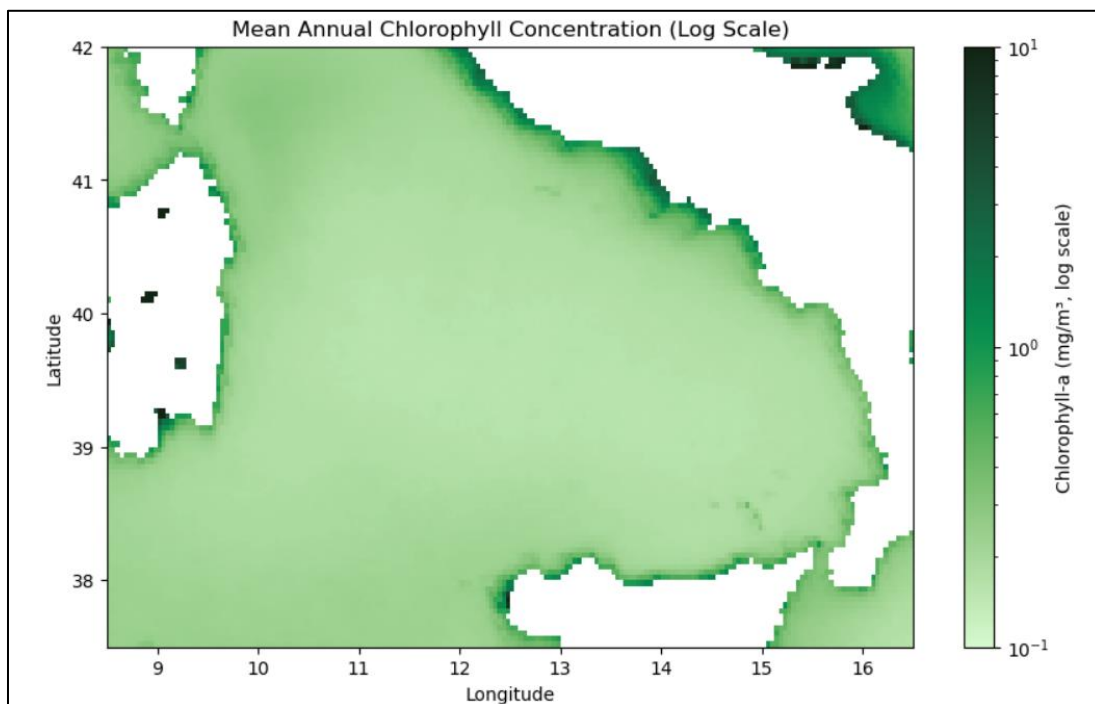
a. Bathymetry of the Tyrrhenian Sea

Figure 1: A medium-resolution bathymetric map of the Tyrrhenian Sea visualized using the 'dense' cmocean colormap to differentiate depth variations.



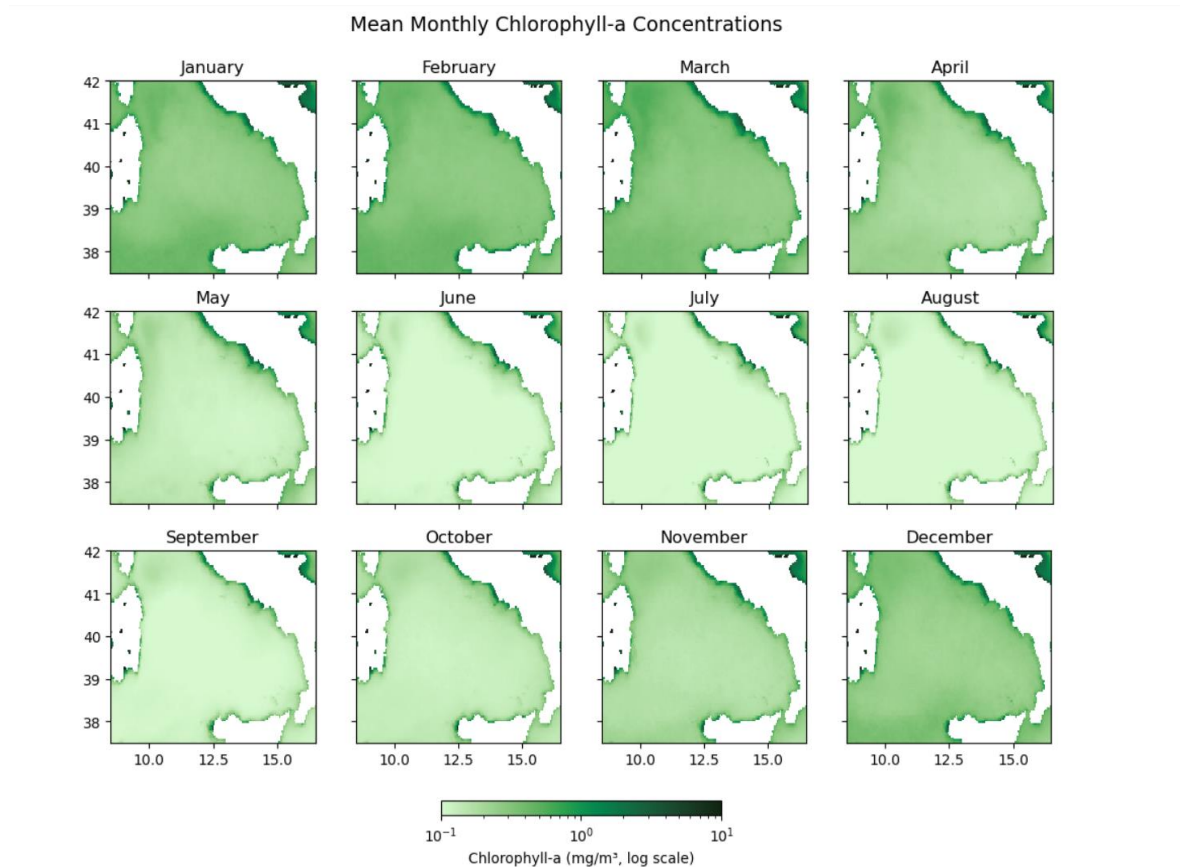
b. Mean Annual Chlorophyll-a Concentration

Figure 2: A map of mean annual chlorophyll-a concentration (logarithmic scaling).



c. Monthly Chlorophyll-a Variation

Figure 3: A faceted figure displaying chlorophyll-a concentration for each month to visualise seasonal variability.



d. Seasonal Chlorophyll-a Trends

Figure 4: A time series plot comparing the mean seasonal cycle of chlorophyll-a across the entire region with a specific grid point (40.75°N, 13.75°E - near an area of high chlorophyll concentration).

