**Practical 4: Ocean Colour and Bathymetry Visualization**

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This notebook demonstrates the visualisation and analysis of chlorophyll concentration and bathymetry data in a selected coastal region using remote sensing data from the ESA-CCI Ocean Colour Climatology and GMRT bathymetry data.

**Introduction**

I have chosen a coastal region in the Eastern Cape, specifically around **East London**, for this analysis. Growing up in East London, I developed a deep connection to the ocean, which has always been a significant part of my life. The rich marine environment of the Eastern Cape is not only a place I cherish but also one that plays a crucial role in the local ecosystem. This region is known for its diverse marine life, including areas of high productivity, which makes it an interesting location to explore chlorophyll concentrations and bathymetric features. Given my personal connection to this region and its ecological significance, I thought it would be both meaningful and insightful to analyze the ocean colour data and bathymetry of this area.

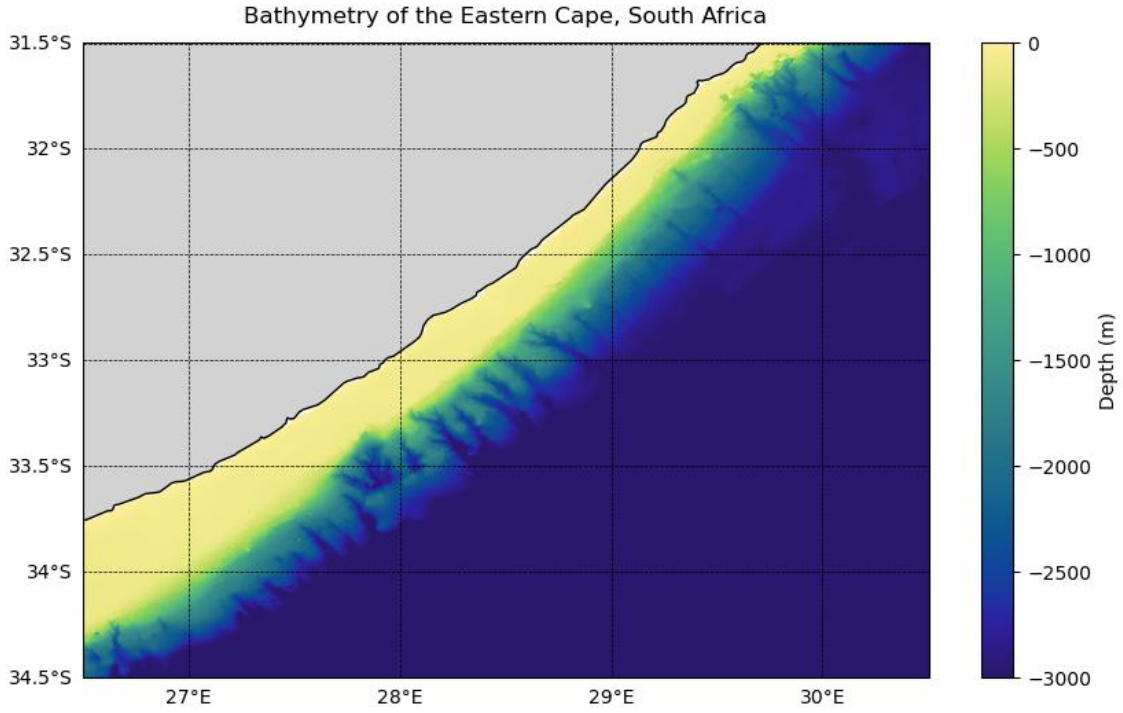


**Figure 1: The bathymetry of the selected portion of the Eastern Cape coast, where the depth is represented by colour. The bathymetry data is an essential factor in understanding phytoplankton development, as it can influence nutrient availability.**

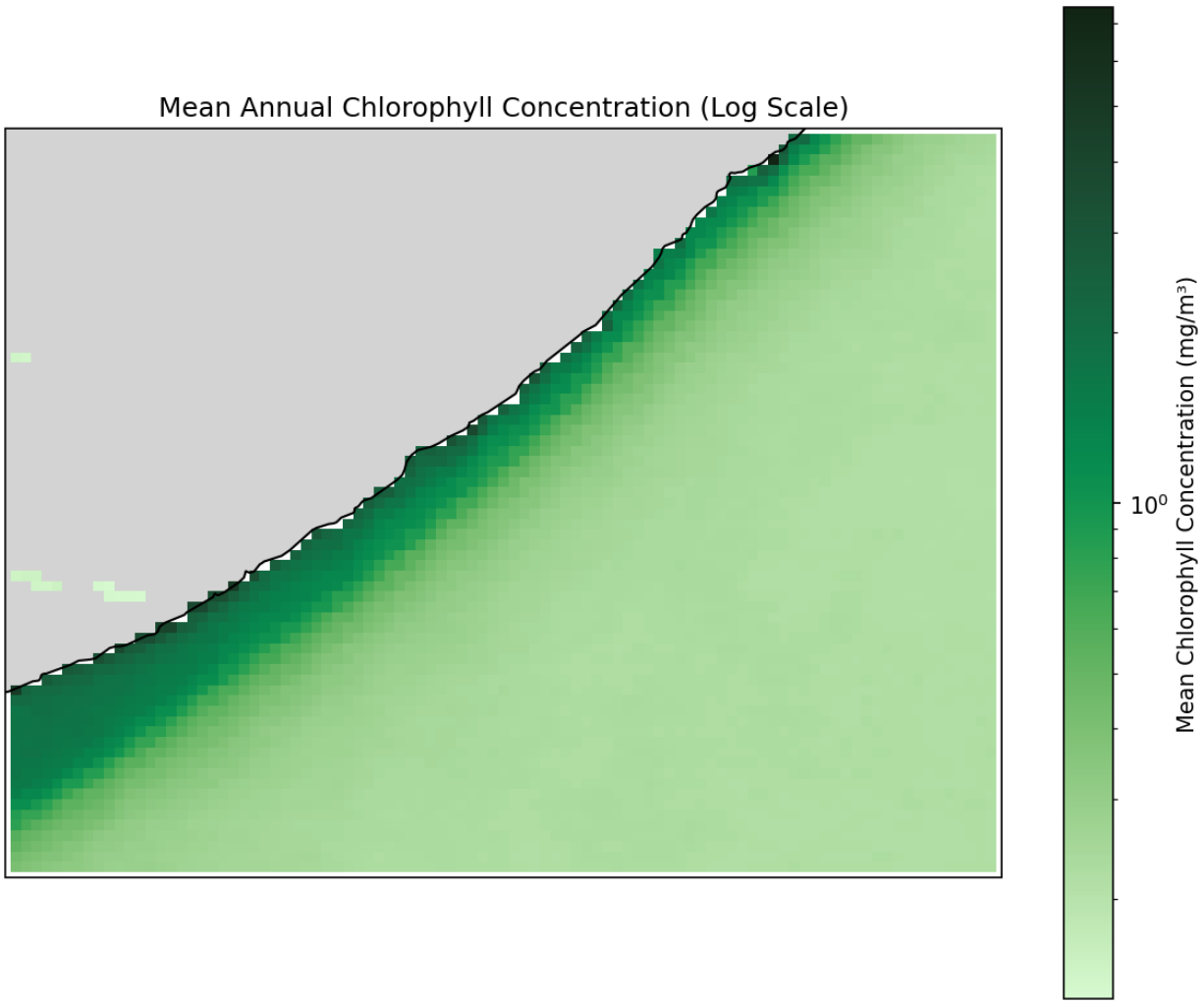


**Figure 2: The mean annual chlorophyll concentration in the selected region. Chlorophyll concentration is commonly used as an indicator of phytoplankton biomass, with higher concentrations indicating more productive areas.**

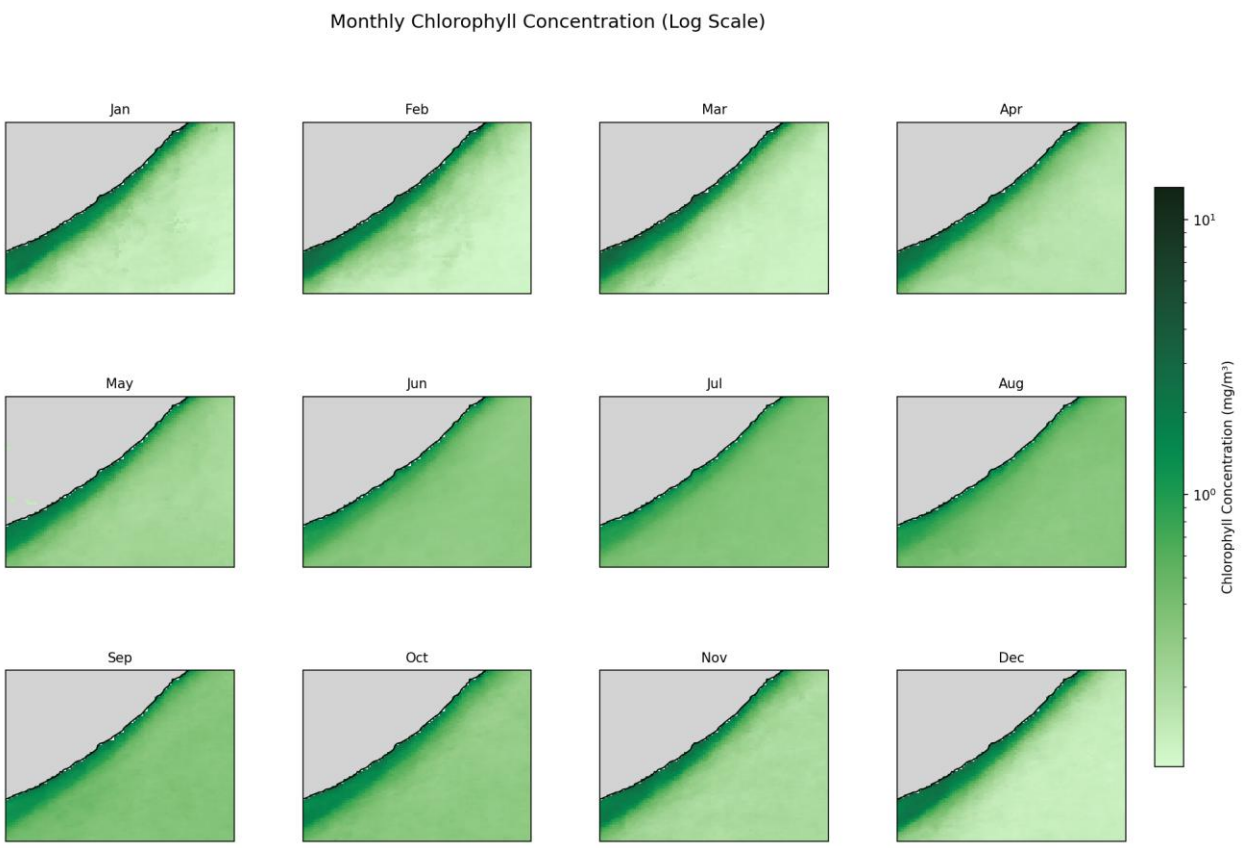


**Figure 3: These maps show the seasonal variation in chlorophyll concentration for each month. The color scale is adjusted to highlight changes over the course of the year, indicating how chlorophyll concentration fluctuates with time.**

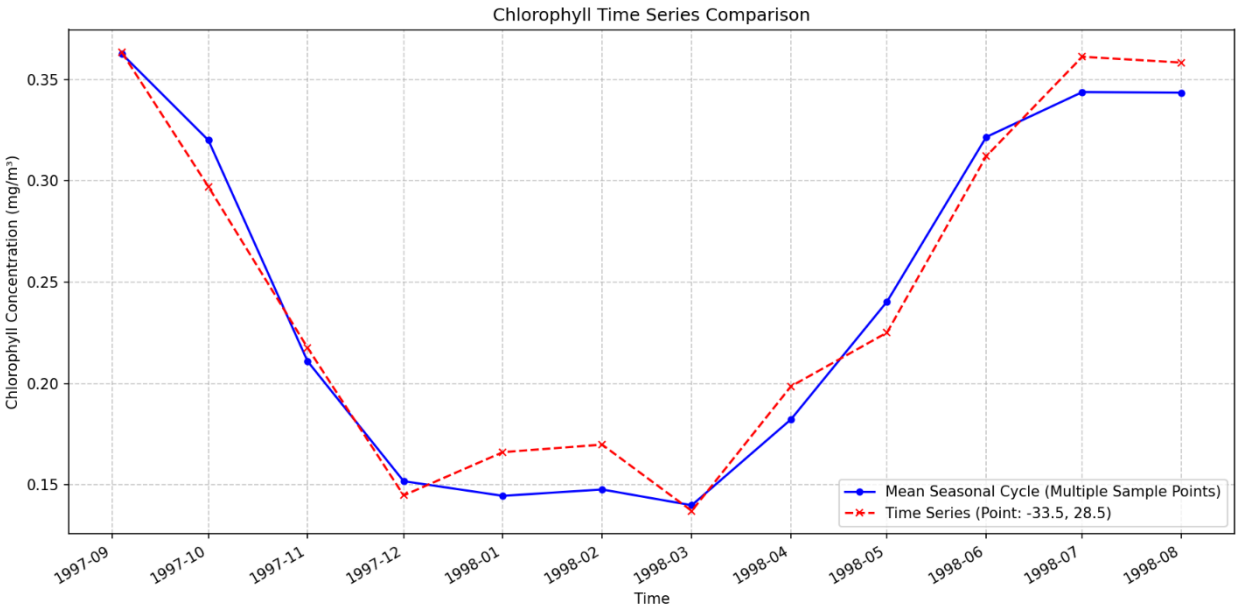


**Figure 4: This timeseries compares the mean seasonal cycle of chlorophyll concentration for the entire region with that of a single grid point, which is likely to be located near an area of high chlorophyll concentration.**

### Conclusion

In this notebook, we visualized the bathymetry and chlorophyll concentration in a coastal region. We analyzed the seasonal variations in chlorophyll and compared the regional cycle with a grid point's data. This analysis provides insight into how bathymetric features and seasonal changes influence phytoplankton biomass.