

P3.11**Monitoring 20-year inter-regional changes in phytoplankton biomass off the Antarctic Peninsula using ocean colour remote sensing**

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Abstract

The marine ecosystems off the Antarctic Peninsula are amongst the most impacted by climate change, particularly by ocean warmth and ice melting. One of the main predicted consequences for marine communities are structural changes to the water column, such as increased stratification. Consequently, changes in the structure and composition of more sensitive biological communities, such as phytoplankton, have already been observed. Due to their vital role as the main marine primary producers, it becomes instrumental to monitor phytoplankton biomass and community changes. However, in-situ sampling in the Antarctic Peninsula is scarce, discrete and, typically, highly limited in time and space. Ocean colour remote sensing (OCRS) can complement in-situ data, enabling a continuous flow of data with good spatiotemporal coverage. While sea ice and cloud coverage are strong limitations, the advent of robust, high-resolution, multi-sensor ocean colour products will contribute to establish OCRS as a tool to monitor phytoplankton in Antarctic waters. This work takes benefit of two robust in-situ (10-year) and remote sensing (20-year) datasets to evaluate changes in phytoplankton biomass. Analyses performed were focused on phytoplankton biomass, uncovering its seasonality and identifying and extracting summer trends and anomalies across the Antarctic Peninsula. Subsequently, specific regions were evaluated through OCRS and compared with the in-situ data collected during summer cruises. Results exhibit significant inter-regional variability, as distinct characteristics and trends were observed. Results are expected to contribute to the existent knowledge on biological communities in the Antarctic Peninsula, establishing OCRS as an essential tool for monitoring the Antarctic ecosystem.

Keywords

North Antarctic Peninsula, phytoplankton, ocean colour remote sensing