

Tuesday, April 22, 2025 at 4pm CEST / 2pm UTC  
Zoom Link: <https://washington.zoom.us/meeting/register/3UItU4NaSLCTVtDscOhd3A>  
Meeting ID: 951 4265 7054 • Passcode: 044961  
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## **SCOR Working Group 168 Webinar #4**

**Title:** Advancing Southern Ocean phytoplankton phenology Using 4D-BGC data products

**Presenter:**

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The Southern Ocean plays a crucial role in the global carbon cycle, with phytoplankton production influencing air-sea CO<sub>2</sub> exchanges during the summer. However, global ocean biogeochemistry models often struggle to capture the phytoplankton production phenology in the Southern Ocean. To address this, we use a 24-year (1998–2022) 4D dataset combining chlorophyll-a concentration and particulate backscattering coefficient profiles, generated by merging satellite and hydrographic data using machine learning techniques trained on Biogeochemical-Argo observations. By applying Principal Component Analysis and Gaussian Mixture Models, we identify new regional patterns of phytoplankton biomass variability, revealing distinct latitudinal and zonal differences. These patterns align with oceanic fronts and reflect variability in environmental factors such as light, nutrient availability, and mixing. We also examine the interannual variability of these patterns.

### **Webinar Series Information**

The [4D-BGC Working Group](#) seeks to enhance access and utility of Biogeochemical (BGC) Argo observations through four-dimensional (4D) data products. These advanced data products aim to refine our understanding of ocean biogeochemistry, improve biogeochemical models and reanalysis products, and provide valuable insights for policy-making. The goal of this webinar series is to introduce new and in-development BGC data products, review techniques used to develop data products from in situ observations, and to explore way in which 4D-BGC products are leveraged to answer scientific questions.