Insights into the last glacial–interglacial shift: Microfossils and geochemical evidence from the Argentine continental margin

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https://doi.org/10.58998/jnr3266

The Argentine Continental Margin (ACM), located in the southwestern Atlantic Ocean, is one of the widest continental shelves in the world and is the only place in the Southern Ocean were water masses of south polar and equatorial origin interact. Its micropaleontological and geochemical record is key to understanding the oceanographic and climatic changes that occurred in the recent past. In this contribution, we present preliminary results on the calcareous nannofossils, foraminifera, and geochemical (total organic carbon [TOC], X-ray fluorescence [XRF], and stable isotopes) records from one gravity core retrieved in the ACM at the Piedra Buena Terrace (AU_GEO02_GC30: 57.967˚S, 44.5202˚W; 2756 m water depth). This core is 678.8 cm long and based on calcareous nannofossil assemblages, which are dominated by *Emiliania huxleyi*, is restricted to Subzone NN21b (Rivas, 2023). Absolute dating (^{14}C), measured on bulk sediment and planktonic foraminifera, indicates a Late Pleistocene to Holocene age. The core can be divided into six alternating barren and fertile intervals based on calcareous microfossils (nannofossils and foraminifera) that correlate with variations in TOC, $\delta^{13}C_{org}$, Mo, S, Al_2O_3, SiO_2, CaO, Sr, P, Ba, and C:N values. These intervals are interpreted to represent advances and retreats of the Polar Front during Marine Isotope Stages (MIS) 1 to 6. According to productivity (P, Ba) and redox (Mo, S) sensitive elements and TOC values, primary productivity was slightly enhanced during cold stages, showing a switch to a diatom-dominated phytoplankton community. The core AU_GEO02_GC30 represents one of the most complete records for the last glacial–interglacial transition in the ACM and offers an opportunity to study its impact on oceanography and the response of the phytoplankton community.

References:

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