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Impact of sea ice on the structure of phytoplankton communities in the northern Antarctic Peninsula

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Abstract

The seasonal advance and retreat of sea ice around the northern Antarctic Peninsula can have a significant impact on phytoplankton, mainly due to alterations in the availability of ice-free areas, micro-nutrient inputs by meltwater and variations in water column structure. The aim of this work was to evaluate the effect of sea ice conditions on phytoplankton biomass and community composition in an area off the northern Antarctic Peninsula, a region undergoing important warming processes. In two consecutive summer cruises (2013 and 2014), seawater samples were analysed for nutrients and phytoplankton (through HPLC-CHEMTAX approach), and measurements were made for water column physical structure evaluation. Two contrasting conditions were studied: a strong environmental gradient around the sea ice edge, with a marked meltwater signal (summer 2013) and the same area with little indication of meltwater and no detectable sea ice conditions (summer 2014). In the first year,

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