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Decadal variability in coastal phytoplankton community composition in a changing West Antarctic Peninsula

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Abstract

The coastal waters of the West Antarctic Peninsula (WAP) are associated with large phytoplankton blooms dominated by large (>20 microns) diatoms however, nanoplankton (<20 microns) are also an important component of the food web. The dominant nanoflagellates in the WAP are cryptomonad algae. Using a twenty-year time series collected by the Palmer Long Term Ecological Research program at the United States Palmer Research Station, we assessed long-term patterns and stability in the coastal phytoplankton communities in the WAP. There was significant interannual variability in the integrated water column chlorophyll *a* (chl-*a*) concentrations, which varied by a factor of 5 over the 20-year time series. There has been a significant positive increase in the seasonally integrated concentration of chl-*a* over the time series. The dominant phytoplankton were diatoms, with cryptophytes the second most abundant. Mixed flagellates also constituted a significant fraction of the chl-*a* but showed less interannual