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TITLE: Recent Changes in Phytoplankton Communities Associated with Rapid Regional Climate Change Along the Western Antarctic Peninsula

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ABSTRACT:

The climate of the western shelf of the Antarctic Peninsula (WAP) is undergoing a transition from a cold-dry polar-type climate to a warm-humid sub-Antarctic-type climate. Using three decades of satellite and field data, we document that ocean biological productivity, inferred from chlorophyll a concentration (Chl a), has significantly changed along the WAP shelf. Summertime surface Chl a (summer integrated Chl a approximately 63% of annually integrated Chl a) declined by 12% along the WAP over the past 30 years, with the largest decreases equatorward of 63 degrees S and with substantial increases in Chl a occurring farther south. The latitudinal variation in Chl a trends reflects shifting patterns of ice cover, cloud formation, and windiness affecting water-column mixing. Regional changes in phytoplankton coincide with observed changes in krill (*Euphausia superba*) and penguin populations.

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