

ICES/PICES 6ZPS 2016/S2

Pteropod abundance in correlation to sea ice- finally some good news for Southern Ocean pteropods? Results from a 20-year sediment trap study

Nina Keul^{1,2} and Hugh Ducklow²

1Christian-Albrechts Institute of Geosciences, Kiel University, Kiel, Germany

2 Lamont-Doherty Earth Observatory, Columbia University, Palisades, USA

About 30% of the anthropogenically released CO₂ is taken up by the oceans causing surface ocean pH to decrease, which, in turn can affect calcifiers by increasing dissolution of their skeletons. Pteropods, aragonite-shelled organisms, have shown extreme shell dissolution in Southern Ocean regions undersaturated with respect to aragonite. In this context, long-term observations are crucially important as they provide the baseline against which modern changes can be compared. Pteropod fluxes for the past 21 years from a sediment trap located in the Southern Ocean are presented and discussed in the context of biological and physical parameters (West Antarctic Peninsula, Palmer Long Term Ecological Research program: PAL-LTER, 64.5 S, 66 W). *Limacina helicina antarctica* is by far the most abundant species (>99%), with fluxes varying by three orders of magnitude from <1 to 380 ind/m²/day. Sedimentation showed a strong seasonality, with elevated fluxes during austral spring (September-November). Interestingly, pteropods also occur when sea-ice is present, however, strong and persistent ice cover causes pteropod numbers to decrease. Pteropod abundance is correlated to ice cover: pteropod flux increases when ice cover declines, and during years with low ice coverage and short ice seasons, pteropod flux increases. Our results highlight the importance of long-term studies to estimate natural variability co-occurring often with multi-decadal oscillations.

keywords: long term, sediment trap, pteropods, *Limacina*, Palmer Station

Contact author: Nina Keul, Christian-Albrechts Institute of Geosciences, Kiel University, nina.keul@gmail.com