

Determining the change of pH in the under-sampled Southern Ocean

Andrew Margolin[†]; Nicole Lovenduski

[†] INSTAAR, University of Colorado at Boulder, USA

Leading author: andrew.margolin@colorado.edu

The Southern Ocean has been experiencing changes in its carbon chemistry due to the uptake of anthropogenic carbon dioxide, a process that lowers the pH and acidifies the water. These changes have reduced the surface carbonate concentration of the Southern Ocean by more than 10%, altering the structure of the Southern Ocean's ecosystems and impacting multiple trophic levels. Here, we use data collected on multiple hydrographic cruises to quantify the change of pH from 1970's to the present day in the Southern Ocean. We examine in detail the vertical and spatial heterogeneity in trend patterns, and comment on the statistical significance of the pH trends. We aim to use these results for carbon-climate model evaluation.