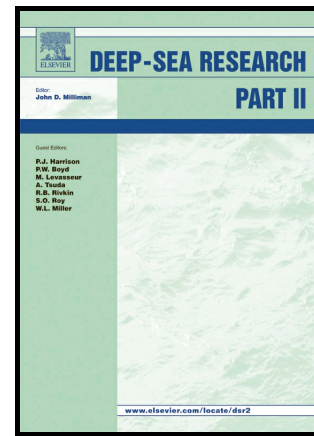


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Interannual variability in lower trophic levels on the Alaskan Shelf

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**Interannual variability in lower trophic levels on the Alaskan Shelf**

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**Abstract**

This study describes results from the first 16 years of the Continuous Plankton Recorder (CPR) program that has sampled the lower trophic levels (restricted to larger, hard-shelled phytoplankton and robust zooplankton taxa) on the Alaskan shelf. Sampling took place along transects from the open ocean across the shelf (to the entrance to Prince William Sound from 2000 to 2003 and into Cook Inlet from 2004 to 2015) to provide plankton abundance data, spring through autumn of each year. We document interannual variability in concentration and composition of the plankton community of the region over this time period. At least in part and through correlative relationships, this can be attributed to changes in the physical environment, particularly direct and indirect effects of temperature. For example; spring mixed layer depth is shown to influence the timing of the spring diatom peak and warmer years are biased towards smaller copepod species. A significant positive relationship between temperature, diatom abundance and zooplankton biomass existed from 2000 to 2013 but was not present in the warm years of 2014 and 2015. These results suggest that anomalous warming events, such as the “heat

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