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Title:
The variability of zooplankton community structure along the 110°E meridian in the Southern Ocean, 1972-2014

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Abstract:
In the Indian Ocean sector of the Southern Ocean, the Japanese Antarctic Research Expedition (JARE) has been conducting routine zooplankton observations with a NORPAC standard net (mesh size: 330m, mouth diameter: 0.45m) every austral summer since 1972/73 season. This program is the only current long-term time-series zooplankton study in the Antarctica, which has been carried on for more than 35 years. Taking the opportunity to use the multiyear samples along a south-north transect at ca 110°E between 45°S and 60°S, we conducted multivariate analyses on the temporal variability of the zooplankton community structure. The objectives of the present study were to evaluate the characteristics of zooplankton communities and to assess the long-term variability in zooplankton abundance, species composition and distribution patterns and associated events in this study area.
Copepods were found at all stations, and six dominant copepod species accounted for 38 to 87% of total zooplankton abundance. We detected some sporadic changes of density of foraminiferans, appendicularians, and pteropods. We also detected the shift in zooplankton density in the 55ºS line from late 1990s. Densities of copepod species (cyclopoid copepod *Oithona similis* and small calanoid copepods) were mainly decreased in 1999. On the other hand, surface chlorophyll *a* concentrations were increased from 1998 along the 110ºE meridian. No significant relationship between densities and environmental factors at the time of sampling.

Keywords: long-term monitoring, Southern Ocean

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