

海水融解期の表層生態系と物質循環解明を目指した漂流系観測

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Drifter experiment to observe the pelagic ecosystem and material flow during sea ice melting season

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The seasonal prevalence of the sea ice zone is a critical element in the Southern Ocean ecosystem structure and dynamics. Sea ice formed in coastal polynyas in autumn and winter is transported northward and covers a vast area of the Southern Ocean. This ice contains a large variety of sea ice biota (SIB), such as ice algae, protozoans, and crustacean larvae. The SIB is released as the sea ice melts from the ice edge in spring and summer. Although a flood of SIB biomass is released into the water column, there is little information on the fate of those components and the relationship with pelagic ecosystem, such as occurrence of the ice edge phytoplankton bloom. This is due to difficulty in time series observation during ice melting season. We developed a drifter system to observing that season. This study presents result from first examination by using a newly developed drifter system in the Antarctic seasonal sea ice zone.

The drifter is consist of GPS buoy with ice guard system, sensor array and time-series sediment trap. On this time, we used only one sensor frame attached with sensor for CT, PAR and Chlorophyll fluorescence. The drifter deployed by Shirase at 63.5°S, 110°E on 9th December, 2016, and retrieved by Umitaka-maru at 63.1°S, 106.1°E on 14th January, 2017. At both location, CTD cast, vertical stratified zooplankton sampling and water sampling for phytoplankton assemblage and particulate organic carbon and nitrogen were conducted. Sediment trap samples, preserved by neutral Lugol' solution were divided into several aliquots after picking up zooplankton swimmers, then, used for chemical and microscopic analyses.

Unfortunately, we have no chance to deploy the drifter in pack ice region because the timing of ice retreat was more than one month earlier than that in past decades. We will show the preliminary results, and introduce future plans.