

海洋地球研究船「みらい」2012年北極航海速報 及び ECOARCS/GRENE プロジェクトにおける観測計画

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Preliminary results on R/V Mirai 2012 Arctic Ocean cruise and future observation plan of ECOARCS/GRENE project

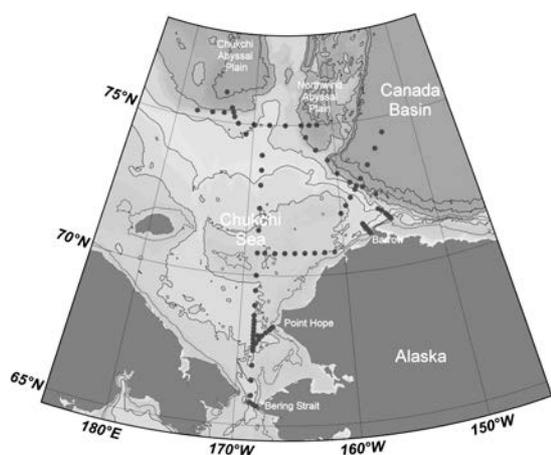
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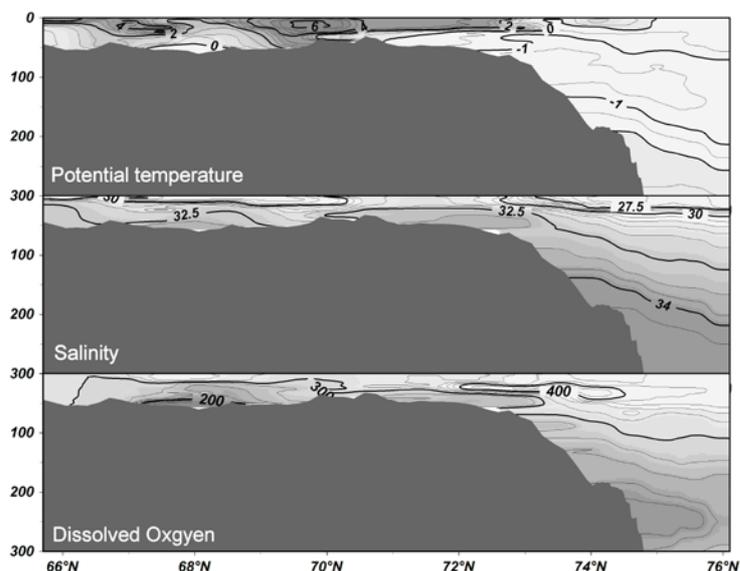
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The recent drastic decrease in the Arctic sea ice may cause various changes in the Arctic environmental conditions. However, it is still highly uncertain how sea ice variability (ice melting/formation, ice motion, seasonal cycle, and recent inter-annually rapid decrease and so on) affects the Arctic environments from physical, chemical, and biological points of views. Is the decrease in sea ice favourable or unfavorable for the Arctic marine ecosystems? To clarify and predict the influence of sea ice reduction to the Arctic marine environments, a research project “Ecosystem studies on the Arctic Ocean declining sea ice (ECOARCS)” was initiated under GRENE Arctic Climate Change Research Project. In this project, we focus on the environmental change in the Pacific side of the Arctic Ocean, where various changes have been already accompanied by the sea ice reduction.

As part of GRENE Arctic Climate Change Research Project, R/V *Mirai* Arctic Ocean cruise (MR12-E03) was conducted from September 3rd to October 17th, 2012. During the cruise, multi-disciplinary observations were carried out mainly in the Chukchi Sea and Canada Basin, in addition to environmental monitoring over the cruise track. Figure 1 shows locations of CTD/water sampling during the cruise. There are a couple of hot spots on marine biological activities in the Chukchi Sea. One of them is the area off Point Hope in the southern Chukchi Sea. An interesting water mass, which is characterized by low temperature, high salinity, and extremely poor dissolved oxygen, was found at the bottom in the area (Figure 2), in addition to findings of higher biomass of planktons and lots of sea-bird and whales. Mooring observations in the southern Chukchi Sea (the above area) and in the Barrow canyon have started in July 2012. These moorings were recovered/re-deployed during this cruise. The mooring data can show seasonal variation of not only water mass characteristics but also biological activities. In summer and autumn 2013, we will have multi-disciplinary collaborative cruises by R/V *Mirai* (JAMSTEC) and *TS Oshoro Maru* (Hokkaido University) in the Pacific side of the Arctic Ocean. This presentation will outline future observation plan in ECOARCS/GRENE project, in addition to preliminary results during MR12-E03 cruise.



(Left) Figure 1. Locations of CTD/water sampling during R/V *Mirai* 2012 Arctic cruise (MR12-E03)



(Right) Figure 2. Vertical section of potential temperature, salinity, and dissolved oxygen from the Bering Strait to Chukchi Abyssal Plain, which were observed during R/V *Mirai* 2012 Arctic cruise