Science in the Arctic Region

Convener:*Sei-Ichi Saitoh (Faculty of Fisheries Sciences, Hokkaido University), Jun Inoue (National Institute of Polar Research), Naomi Harada (Japan Agency for Marine-Earth Science and Technology), Rikie Suzuki (Research Institute for Global Change, Japan Agency for Marine-Earth Science and Technology), Chair: Sei-Ichi Saitoh (Faculty of Fisheries Sciences, Hokkaido University)

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The Arctic region and surrounding circumpolar region is the key area for the study of global change because the anthropogenic impact is projected to be the largest in this area due to the complicated feedback processes of the nature. A number of international and interdisciplinary research projects are in progress for the studies on the atmosphere-ocean-land system under the extension program of the International Polar Year (IPY) during 2007 to 2008. In order to understand the feedback processes occurring in the Arctic and to project the global warming in the future, we need to establish the intense observational network and to exchange the knowledge and information by combining the different scientific communities under the common interest of the Arctic. Contributions from Green Network of Excellence (GREENE) Arctic Climate Change Research Project are also welcome.

2:15 PM - 2:30 PM

[ACG36-P06_PG] Age of the Pacific Winter Water in the Canada Basin estimated from SF6

3-min talk in an oral session
*Yusuke OGIWARA1, Michiyo KAWAI2 (1.Tokyo University of Marine Science and Technology, 2.Tokyo University of Marine Science and Technology)

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In the Pacific sector of the Arctic Ocean, Pacific Winter Water (PWW) distributes between 100m and 200m depths. Because the PWW has high nutrient concentrations and low pH, its spreading pathway has implications on primary production and ocean acidification in the Arctic Ocean. In this study, we have observed distribution of SF6, a transient tracer alternative to CFCs, in order to trace newly formed PWW into the Canada Basin. Sampling was carried out in summer of 2013 on the CCGS Louis S. St-Laurent. Seawater at the core of PWW (salinity = 33.1) were collected in Niskin bottles and then transferred into custom-made glass bottles. Samples were kept at low temperature and brought back to Japan. Concentrations of SF6 in seawater samples were determined by an ECD-GC following the method described in Bullister and Wisegarver (2008). Results show that younger PWW distributes at the periphery of the Beaufort Gyre, a major anticyclonic circulation in Canada Basin. The age of PWW estimated from SF6 was 13~15 years in the center of the gyre, whereas age was 6~9 years around the gyre. From the distributions of SF6 age, dissolved oxygen and nutrients, it is suggested that there is a pathway of PWW from the Siberian shelves or slopes into the northeastern Canada Basin.