
 [EJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS06]Global climate change driven by the Southern Ocean and the Antarctic Ice Sheet

convener:Osamu Seki(Institute of Low Temperature Science, Hokkaido University), Akira Oka(Atmosphere and Ocean Research Institute, The University of Tokyo), Ryosuke Makabe(国立極地研究所, 共同), Ryu Uemura(University of the Ryukyus)

Mon. May 21, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

The Southern Ocean and Antarctic ice sheet, which are the giant reservoirs of heat, water, and materials, have a potential to play central roles in long-term global climate change. This system is composed of the following sub-systems; ice shelf which is a place of the interaction of ice sheet and ocean, flowing iceberg, seasonal sea ice zone, Antarctic bottom water which drives the thermohaline circulation, active biological production and Antarctic Circumpolar Current. These sub-systems are interacted with each other and have significant impact on changes in the global environmental system. This session aim to summarize recent observational and simulation studies from various fields relating to the past and present changes in the Antarctic Ice sheet and Southern Ocean, which are essential elements for unraveling the changes in the global climate system. Further, future science plans for understanding of the environmental changes of the Antarctic Cryosphere is also discussed.

[MIS06-P08]Under-ice application of Remotely-Operated Vehicle on the Antarctic continental shelf

*Shigeru Aoki¹, Takeshi Tamura², Daisuke Hirano¹, Masato Itoh¹, Kazuya Ono¹, Haruhiko Kashiwase²
(1.Hokkaido University, 2.National Institute of Polar Research)

Keywords:Antarctica, ROV, tethered profiler

What is most characteristic on the Antarctic continental shelf is presence of ice. Antarctic sea ice and land ice play pivotal roles in the global climate system, but the presence of ice itself has been a big obstacle for the conventional research platforms. Recently revealing the Antarctic ice-ocean environment has become a pressing issue, and the developments of appropriate platforms for ice-covered ocean is indispensable. Strategies are highly dependent on the various ice conditions and different seasons. We are developing a Remotely Operated Vehicle (ROV) – NIPROV-2K – capable of 2000m-deep dive at National Institute of Polar Research. In January 2018, Icebreaker *Shirase* launched NIPROV-2K for the first time on the landfast ice region near the coast. It successfully took images near the bottom and proved its capability as a platform for the ice-ocean ecosystem study. We will broaden the operating conditions and areas, and improve the varieties of attached sensors. The most unknowns on the Antarctic oceanic shelf exist in winter. In winter when approach by a ship is usually difficult, mooring is an important option as a platform. We are developing an under-ice tethered profiling platform, which can automatically avoid to collide with sea ice and transmit the acquired data through satellite link when it can successfully surface. This platform should be effective for time-series observations in coastal polynyas. Together with a ship-board platform such as ROV, these development help revealing the mysteries of Antarctic ice-covered ocean environment.