



The 25th International Symposium on Polar Sciences

Araon's Journey through the Decade: Findings in Ocean, Earth and Paleoclimate Science

May 13-15, 2019
Korea Polar Research Institute
Incheon, Republic of Korea

First Circular

The 25th International Symposium on Polar Sciences organized by Korea Polar Research Institute (KOPRI) will be held on May 13-15, 2019 in Incheon, Republic of Korea. This Symposium aims to bring polar scientists together to discuss their research findings and to promote international collaborative research. We cordially invite you to share your knowledge and perspectives on future outlook in Polar research.

THEME

Korea's first icebreaking research vessel, *Araon*, was launched in 2009 and made her official maiden voyage to the Antarctica in 2010. Since then, she has made a series of research and supply cruises and became one of the world's busiest research icebreaker, spending 294 days in the Arctic and Antarctic Oceans. With *Araon*, KOPRI has devoted its passion and commitment to unveil the mysteries of Polar regions. In commemoration of the scientific dedication over the years and celebrating the 10th anniversary of *Araon*, the theme of the 25th International Symposium on Polar Sciences will be "*Araon's Journey through the Decade: Findings in Ocean, Earth and Paleoclimate Science*".

SESSIONS

The following six sessions are proposed;

Response of the Southern Ocean to the Changing Climate

The Southern Ocean plays a critical role in controlling the exchange of heat, carbon and nutrients between the atmosphere, surface and deep oceans. Since this region is highly under-sampled for the purpose of assessing the environmental variability, understanding how the Southern Ocean responds to external forcing is critical to our understanding of

the climate change. We invite presentations from observational and modeling studies to enhance our understanding of the physical, chemical, and biological processes of the Southern Ocean, linkages between these processes, ocean-ice interactions, and response of these processes and interactions to the changes in climate.

Changing Arctic Ocean: Understanding the impacts of climate changes and their global consequences

The Arctic Ocean is experiencing rapid environmental changes due to rising air and water temperatures, and loss of sea ice. The rapid environmental changes in the Arctic Ocean have resulted in ocean circulation changes, freshwater budget changing, the ecosystem and biochemical cycles as well as extreme weather events. How is the Arctic Ocean environment expected to change in the future under the influence of climate change? What are the consequences of these changes for biogeochemical cycles in the Arctic and beyond? How will the ecosystem respond to these changes? This session seeks to understand major changes occurring in the Arctic Ocean and the mechanisms responsible for these changes.

Geological and Geophysical (& Biological) processes in Circum-Antarctic Ridges

The Circum-Antarctic Ridges (CAR) occupy about one-third the length of the global ocean ridge system, and yet they remain as the least surveyed area because of rough Antarctic sea conditions. Since 2011, KOPRI went on 4 expeditions and brought back excellent science results about tectonics, geochemistry and biology. This session provides a forum to discuss the scientific results obtained from past cruises and the international collaborations for the future cruises on this remote mid-ocean-ridge system.

Rapid change in Arctic sub-seabed

The warming of the Arctic is causing rapid changes in the Arctic active geological processes at the seabed. One concern is the potential release of methane from decomposing subsea permafrost and the associated permafrost gas hydrates. While our knowledge of the amount and mobility of methane in this environment is limited, there is a potential that it could represent a 'time bomb' that may influence future global warming. This session aims to introduce the latest international research results on the rapid changes of the Arctic sub-seabed and to assert future research priorities that can be pursued through international collaboration.

Late Quaternary Ocean-Cryosphere interactions in the Antarctic Ocean

The Antarctic ice sheets and sea ice have repeatedly retreated and advanced on orbital-scale during the late Quaternary. The variations in cryosphere influenced surface water conditions in the Antarctic Ocean, including changes in light intensity/open ocean duration, primary production, and water mass circulation. Deposition on the Antarctic Ocean is determined by surface environmental changes in association with changes in ocean-cryosphere interaction. Thus, the sediment core records from the Antarctic continental slope and rise would provide glacial-interglacial records on dynamics of paleo-ice sheets and sea ice and their relevant surface water condition changes. In addition, Antarctic continental shelf records would provide information on how oceanic condition changed in response to the retreat of ice sheets/shelves since the last glacial period. Researches on paleoceanographic changes and paleo-ice sheet changes using various proxies in the Antarctic continental margin are welcome in this session.

Past analogue for future Arctic: Glacial and oceanographic perspective

The Arctic Ocean has been subject to rapid and dramatic environmental changes on both historical and geological time scales that, in turn, modulate the Earth's climate forcing such as surface albedo, global overturning circulation, and carbon cycle. All contributions on paleoceanographic and paleoclimatic variability in the Arctic Ocean are welcome to this session, particularly those integrating paleo-records with modern processes and observation. We aim to advance our knowledge and understating of the Arctic Ocean and its role in the global climate system.

SIDE MEETINGS

Southern Ocean Observing System (SOOS) Meetings

- Amundsen and Bellingshausen Sector Working Group : May 8-10, 2019
- Executive Committee : May 13, 2019
- Data Hack : May 15, 2019
- Science Steering Committee : May 16-18, 2019
- Data Management Sub-Committee: May 16-18, 2019

Side meetings will be organized during the course of the symposium to provide a platform for exchanging ideas with experts on appropriate themes as proposed. If you wish to hold a meeting, please contact us at: symposium@kopri.re.kr

INFORMATION

The symposium website is currently under renovation. More information including the overview and preliminary program of the 25th International Symposium on Polar Sciences will be provided on the symposium website from January 14, 2019. (<http://www.kopri.re.kr/eng/html/sym/060201.html>)

ABSTRACT SUBMISSION

Please submit your abstract at the symposium website from January 14 to February 13, 2019 .

REGISTRATION

Registration will be available on the symposium website from February 13 to April 26, 2019 .

If you have any questions, please do not hesitate to contact us at: symposium@kopri.re.kr

We look forward to your participation.

Ho Il YOON
President
Korea Polar Research Institute

Coordinators:

Dr. Jong Kuk Hong
jkhong@kopri.re.kr

Dr. Hyoung Sul La
hsla@kopri.re.kr

Dr. Eun Jin Yang
ejyang@kopri.kr

Dr. Jung-Hyun Kim
jhkim123@kopri.re.kr

Dr. Sung-Hyun Park
shpark314@kopri.re.kr

Dr. Young Keun Jin
ykjin@kopri.re.kr

Dr. Sunghan Kim
delongksh@kopri.re.kr

Secretariat:

Dr. Hyoung Chul Shin
hcshin@kopri.re.kr

Mr. Sunhwi Kim
sunhwikim@kopri.re.kr