



The 26th International Symposium on Polar Sciences

Responding to Climate Crisis: Contributions of Polar Science and Technology

September 27-29, 2021
Korea Polar Research Institute
Incheon, Republic of Korea

SECOND CIRCULAR

The Korea Polar Research Institute is pleased to invite you to the 26th International Symposium on Polar Sciences (ISPS2021) which will take place in Incheon* from September 27 to 29, 2021. The symposium aims to bring together polar scientists and engineers with diverse background to share their research findings and explore further research opportunities at the international level. With “Responding to Climate Crisis” as its overarching theme, ISPS2021 invites researchers to discuss how polar science and technology can contribute to our understanding of climate change.

* The symposium may move online depending on the developments surrounding COVID-19.

Theme

Climate change is the greatest crisis of our times, as it brings devastating consequences to our planet. We have witnessed many communities suffering from heatwave, drought and wildfire, while others suffered heavy rainfall, typhoon and flood. We are facing extreme events at an unprecedented rate, and they require our immediate and collective attention.

It is the mission of science to continue the observation, and provide scientific understanding and prediction upon which we can implement mitigation efforts. Polar sciences are crucial in the sense that these regions are especially sensitive to climate change, which adds to the instability of the earth system. Warming and cooling patterns are amplified, and the melting of ice sheets causes catastrophic sea level rises.

During this symposium, we will discuss the findings in polar sciences that are closely linked to climate change, and the cutting-edge technologies that enable more efficient and sustainable monitoring under harsh environments, while shedding new light on the unseen.

Sessions

• Polar climate science in the context of global climate crisis

The consequences of climate change to the planet are becoming more concerning, so much that we are describing it as a “climate crisis.” The polar regions are highly sensitive, and polar observations show the impact of climate change vividly. Polar climate system also has substantial impacts on lower latitudes. Climate science monitors polar climate and unveils dynamic mechanism of global climate system, thereby contributing to our understanding of the climate change and ability to make better predictions. In this session, we will share the latest research findings and identify where we stand in order to go forward in facing the climate crisis.

• Cryosphere evolution and sea-level change

Cryosphere is one of the most vulnerable components on Earth challenged by the climate crisis. Global warming accelerates the collapse and melting of ice shelves and glaciers, and we have seen the massive loss of the ice sheets in Greenland and West Antarctica contributing to the recent fast global mean sea level (GMSL) rise.

This session invites studies using observational and/or modeling approaches to understand the recent sea-level changes, and to project future sea-level changes, especially related to the ongoing cryospheric evolutions such as ice sheet dynamics, ice-ocean boundary interactions, and atmosphere-ice-ocean interactions.

• Sea ice and polar oceans in rapid transition

The ice-covered environment of the polar oceans is at the frontlines of climate change, and there is a great need for reliable scientific data and information about the complex changes that are currently underway. However, due to the difficulty of accessing the polar oceans, there is a significant gap when it comes to in-situ observations, especially when compared to other oceans. Continuous efforts are required to understand the rapid changes in the sea ice and polar ocean environment, and with new technologies that can overcome the challenging environmental conditions. To this end, this session invites relevant multidisciplinary researches conducted by various means, including field observations, remote sensing, and modeling.

• A paleoclimate perspective on climatic and environmental extremes

Paleoclimate archives have provided a unique opportunity to assess how the Earth’s system responds to changes in natural forcings. The reconstruction of the past from paleorecords is essential not only in understanding the natural climate evolution, but also in exploring the consequences of the anthropogenic forcing that have brought about the climate crisis we face today. This session gathers perspectives from reconstruction and modeling of past climatic and environmental extremes at a variety of scales in time and space.

• **Integrated study of subglacial Antarctic lake ecosystems**

We now know that huge amounts of water are present beneath the Antarctic ice sheet, in subglacial lakes connected by rivers and streams in between. The discovery of these subglacial aquatic ecosystems raises several questions on hydrological dynamics, ancient climate records in sediments, and unique microbial evolution inhabiting this harsh environment. Scientifically integrated study can demonstrate how we can understand ecosystem dynamics based on physical, chemical and biological components. This session will focus on an overview of subglacial lake research and a vision for future exploration in the context of scientific priorities and engineering supporting the research.

• **Technological advances enabling new polar science**

Despite the importance of polar regions in understanding climate change, research activities in the region are limited by harsh environment and insufficient infrastructure. In addition, unexpected disasters such as COVID-19 pandemic hinder our ongoing research efforts. In this session, we would like to invite innovative technological achievements that will help make polar research activities safer and more efficient in these extreme conditions. Topics to be investigated include: Advanced technologies for observation, monitoring and sampling; Data science including big data and artificial intelligence; Overarching and integrative technologies such as logistics and infrastructure.

Side Meetings

Side meetings can be accommodated during the course of the symposium. If you wish to take advantage of this opportunity and hold a meeting to exchange ideas on a subject relevant to the conference theme, please contact us at symposium@kopri.re.kr.

Abstract Submission

Please submit your abstract at the [symposium website](#) from April 12 to May 9, 2021.

Registration

Registration will be available at the [symposium website](#) from June 2021.

Even if the symposium is held as an in-person event, the secretariat will support presenters to participate virtually if they wish to do so. The participants may indicate their preferred method of presentation during registration.

More information about the symposium will be updated on the [website](#) as the date approaches. If you have any questions, please do not hesitate to contact us at symposium@kopri.re.kr.

We look forward to your participation.

The 26th International Symposium on Polar Sciences Secretariat