



Fifty Years of Peace and Science

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Scientific and Science-related Collaborations with other Parties during 2008-2009





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Conscious of the importance of collaborations to the spirit of the Antarctic Treaty and in accordance with Article 6 of the Protocol, Korea (Republic of) has cooperated with several parties during 2008-2009 in polar scientific research and related activities.

1. *Hydroacoustic monitoring in the Bransfield Strait*

Korea Polar Research Institute(KOPRI) and the United States National Oceanic and Atmospheric Administration's Pacific Marine Environmental Laboratory(US NOAA/PMEL) have maintained acoustic hydrophone arrays in the Bransfield Strait and Drake Passage since December 2005. During 2008-2009 austral summer expedition, KOPRI and NOAA scientists redeployed five hydrophones in the Bransfield Strait using the *R/V Yuzhmorgeologiya*. They also recovered five new hydrophones in the Scotia Sea near South Georgia Island. These hydrophones record underwater sounds originating from earthquakes, icebergs and marine mammals. We expect these recordings to improve our understanding of tectonic events, volcanic activities, and ice breakup in the region.

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2. *International collaboration on the study of Antarctic oscillations and their impact on mid-latitude climate(2007-2009)*

It is important to understand causes of variability in the Antarctic Oscillation (AAO), particularly low-frequency variability. This depends heavily on the availability of AAO index reconstructions. To improve the quality of low-frequency changes in the reconstructions, we need to take advantage of multiproxy data, including tree-ring and ice-core data sets. The use of ice-core and coral data would greatly improve low-frequency climate signal data and hopefully result in a much better AAO index for the past several centuries. This is essential to understanding whether the recent trend in AAO is caused by ozone, as suggested by recent simulations. To investigate the AAO variability and its connection to mid-latitudes, KOPRI is currently collaborating with Beijing Normal University of China. KOPRI provides matching funds of 20,000 USD for proxy coral data sampled in mid-latitudes, while Beijing Normal University analyzes the AAO index using available meteorological data. This project was initiated by KOPRI to find teleconnections between Antarctica and East Asia over the long term by analyzing coral records in the northern mid-latitudes and integrating these data with modern meteorological data.

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3. *Collaboration with parties for the 2007-2008 IPY Activity*

Together with scientists from other stations (Polish Arktowski Station, Argentine-German Dallmann Laboratory on King George Island, Ukrainian Verndaski Station, and some other groups in the Antarctic Peninsula Region) Korea played an active role in the IPY program, "*Impact of CLimate induced glacial melting on marine and terrestrial COastal communities on a gradient along the Western Antarctic PENinsula (clickOPEN)*" (Activity ID#34). Led by Germany, The interdisciplinary clickOPEN IPY programme, led by Germany, draws a link between the changing glacier mass balance and its effects on coastal communities both on land and in the water. Within this program, the Korean scientists are exploring the significance of stress proteins (heat shock proteins, antioxidant proteins, etc). We have developed tools for the study of population genetics and for the analyses of stress proteins and metabolic regulation that can be used in different locations to better understand the biogeographic background of Antarctic ectothermal tolerance to change.

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4. The 15th International Symposium on Polar Sciences

The International Symposium on Polar Sciences was held at KOPRI, Incheon, South Korea on 24-26 September, 2008. This was the 15th such symposium, and it has been held in Korea every one or two years since 1988 (every year since 2000), with the aim of strengthening the network among polar scientists sharing the polar scientific research, and developing international collaborative research programs.

The theme of the 15th Symposium was ‘Polar Ecosystems: Biodiversity and Adaption,’ and there were more than 50 presentations spanning polar ecosystems, mechanism of cold adaption, classification of polar organisms and biotechnology of polar organism. Ten foreign scientists from seven countries participated in the symposium and gave presentations.

Also, the upcoming 16th symposium, themed is ‘Polar Exploration with ARAON(Korea’s first icebreaker),’ will be held at KOPRI, Incheon, Korea on 10-12 June 2009. This symposium will not only provide information on how to take advantage of research vessels in the polar oceans so as to make the research activities feasible, but will also provide an opportunity to examine the research outcomes. The symposium will consist of four main sessions: (1) Climate change and ocean systems, (2) Paleoclimate, (3) Hydrothermal vent systems, and (4) Tectonics and magmatism at polar ridges. Approximately 200 foreign and domestic researchers are expected to take part in this symposium.

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5. The 9th Asian Forum for Polar Science (AFoPs) Meeting

The Asian Forum for Polar Sciences (AFoPS) was established in 2004, with the intention of providing a foundation for collaborative research activities, presenting Asian achievements toward international polar communities, and encouraging non-polar Asian countries to become involved in polar research. AFoPS’s main activities are to provide a regular forum(biannual) to seek common views on polar affairs, to develop and support cooperative research programs, to convene joint symposia and workshops, to support Asian countries in developing their national polar research programs and to produce joint publications on polar sciences. China, India, Japan, Korea, and Malaysia are regular member countries, and Indonesia, the Philippines, Thailand, and Vietnam participate as observer status countries. The AFoPS committee consists of national representatives and coordinators and five working groups on Earth Science (ES), Life Science (LS), Planetary Science (PS), Engineering & Logistics (E&L), and Public Relations & Data Management (P&D).

At the 9th AFoPS meeting, held at KOPRI, Incheon, South Korea on 22-23 September 2008, a review committee was set up to oversee the AFoPS functions and set recommendations for future AFoPS development. Each delegates presented information on how climate change has caused serious environmental damage in his or her country, the latest domestic polar policy issues, etc.

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