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Scientific & Science-related Collaborations with Other Parties During 2013-2014

Scientific and Science-related Collaborations with Other Parties during the 2013/2014 Antarctic Season

Background Paper Submitted by the Republic of Korea

Conscious of the importance of the international collaborations and the spirit of the Antarctic Treaty, and in accordance with Article 6 of the Protocol, the Republic of Korea collaborated with other parties during 2013-2014 in conducting Antarctic scientific research and related activities. Some highlights of the Korean activities with more significant international collaboration are presented.

1. The ARAON Expedition to the Amundsen Sea, cooperative efforts with Antarctic Treaty Parties

The KOPRI Amundsen project is one of the flagship programs using Korean research icebreaker *ARAON* as the platform. The project has focused on the Amundsen Sea characterized by rapid oceanic melting of the ice shelves as well as highly productive polynyas, and is a largely international effort involving UK, Sweden, USA besides Korea. It entered its second phase in 2013, having conducted two field expeditions during the three-year block of the first stage, 2010 to 2012. The ultimate goal of the Amundsen project is to assess the warming trends and physical mechanisms of the temperature rise in the study area, as well as the chemical, biological, and biogeochemical consequences of the rapid warming in the western Antarctic.

It was expected that this season's expedition would be short and intense, because the *ARAON* ship time was allocated in the first place with priority to the logistics support for the construction of the 2nd Korean station at Terra Nova Bay. Impending on our departure, there came another 5-day cut on top of the already shrunken itinerary. During the 15-day stint, the field party that had a few international members has serviced 9 moorings, 6 in and 8 out; occupied more than 30 CTD stations, some were re-visited; carried out 5 sets of process study that was meticulously combined with trace metal study. The work proceeded seamlessly, turning out to be a success of team efforts thanks to everybody who gladly worked around the clock including the *ARAON* master and crew.

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2. Scientific Cooperation in Antarctic Ice Core Drilling and related Paleoclimate Studies

A group of Korean scientists undertook a field campaign to conduct a multiple firn and ice core drilling at the site of GV7, Northern Victoria Land, Antarctica during the 2013/2014 season. This was a joint venture with Italian colleagues and aimed to reconstruct the past climate and environmental conditions during the last 1000 to 2000 years. The cooperation research party made a 500 km return trip from Talos Dome to GV7 and set up a camp to drill ice cores. This 77 day expedition resulted in a number of core samples up to 250 meters long.

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3. Scientific Cooperation in Geosciences at Terra Nova Bay and Victoria Land

Geosciences group of KOPRI completed a 3 month field investigation in the vicinity of the newly built Jang Bogo station from mid-November 2013 to mid-February 2014. This endeavour encompassed geophysics, geology and meteorite studies and was attended by 20 personnel and required 2 helicopter support. The trip covered most of Northern Victoria Land, Antarctica, making the total length of journey to 50 000 km.

Seismometers and GPS have been installed for 3 consecutive years in order to monitor the movement of David Glacier near to Jang Bogo Station. Data were recovered and a new set of instruments was put in this season.

Overboard from the Korean research icebreaker *ARAON*, OBS (Ocean Bottom Seismometer) and OBH (Ocean Bottom Hydrophone) were recovered and re-deployed in the Ross Sea. This was an international collaboration among KOPRI, AWI Germany and NOAA, USA. Geological survey was conducted from a base camp in Eureka Spurs, 230 km north of Jang Bogo Station, examining detailed stratigraphy and paleontography. The team also carried out a baseline study on Mesozoic stratigraphy around Jang Bogo.

A field trip by KOPRI's meteorite group focusing on the blue ice region of Victoria Land acquired about 60 meteorites in a range of sizes in addition to the clean snow samples taken to recover cosmic dust.

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4. Scientific Cooperation with the Chilean Antarctic Program around the South Shetland Islands

In the umbrella of the Chile-Korea science cooperation in Antarctic research, and out of established cooperative relations between Korea Polar Research Institute (KOPRI) and Chilean Antarctic Institute (INACH), a group of Korean scientists went on board the INACH arranged vessels and participated in 2 leg voyages around South Shetland Islands from mid-January to mid-March 2014. The Korean party landed at a number of locations and collected biological specimens, mostly lichens, with generous support and assistance from the Chilean colleagues.

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