

## Recent activities of KOPRI geosciences in Polar areas based on the Jang Bogo Station and Icebreaker R/V Araon

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Korea Meteorite Search Team (KOREAMET) has been collecting meteorite in the Antarctica since 2006. 240 meteorites were recovered from the seven KOREAMET expeditions. Initial expeditions were to the Thiel Mountains, West Antarctica. Nowadays the expedition focuses on blue ice field of the Victoria Land, with logistical support from the Jang Bogo Station. For last two years the KOREAMET started collecting micrometeorites and space dust from bulk sample of clean snow, thus the research material is being diversified.

Geological researches on the Antarctica are also concentrated on the exposed rocks of the Victoria Land. The Victoria Land consists of Precambrian metamorphic rocks, early Paleozoic metasedimentary rocks, Mesozoic sediments and volcanics, and Cenozoic volcanics. Korea Antarctic Geological Expedition (KAGEX) is focusing on the geological age metamorphism of the basement, stratigraphy and depositional processes of the sedimentary basins concurrent to the Ross Orogeny (Cambrian-Ordovician), paleoenvironments of Mesozoic sandstones with plant fossils, and Cenozoic volcanic processes of Mt. Melbourne and related volcanoes.

In 2009 the first Korean Icebreaker, *Araon*, equipped with multichannel seismic instruments and swath bathymetry was constructed. Before the construction of the Korean Icebreaker, marine study area was focused on the Antarctic Peninsula region where Korean King Sejong station located. After the commission of the Korean icebreaker, however, the study area expands to both Polar seas, the Southern Ocean and the Arctic Ocean.

In 2012, KOPRI and AWI scientists studied on the seafloor structures in the East Siberian Sea. They found mega-scale glaciation ploughed by a big ice mass thicker than 1000 meters, which is a strong evidence indicating that thick ice sheets advanced to the offshore of the East Siberian Sea. In 2013 and 2014, *Araon* sailed on the Canadian Beaufort Sea to conduct the Canada-Korea-USA Beaufort Sea Geoscience Research Program. The program investigates degrading permafrost and gas hydrates in the continental shelf and slope, paleoceanography, microbiology, monitoring of the upper-ocean waters and atmospheric science. These activities address issues of geological processes and fluid/gas flux, offshore geohazards, ocean variability and the broad consequences of global climate change. A primary objective of the 2014 field work is to acquire baseline geophysical data (primarily seismic data) which could be used as a basis for siting of IODP pre-proposal #806 wells.

One of the untouched Pacific-Antarctic mid-ocean ridge between New Zealand and the Ross Sea, Antarctica was studied so that the detailed seafloor structure and rock properties revealed and evidences of hydrothermal vents were also collected. In the Ross Sea, KOPRI investigates sedimentary structures related to the evolution of East Antarctic Ice Sheet with the collaboration of Italy. For this study, KOPRI has a plan to conduct multichannel seismic survey in the coming season, which is related to a IODP drilling proposal on the slope of the Ross Sea.