

OVERVIEW OF 2013-2014 KOREA-CANADA-USA BEAUFORT SEA GEOSCIENCE RESEARCH PROGRAM

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ABSTRACT

The Korea Polar Institute (KOPRI) is engaged in a long-term collaborative research program in the southern Beaufort Sea with the Geological Survey of Canada/Natural Resources Canada (GSC), the Monterey Bay Aquarium Research Institute (MBARI), Fisheries and Oceans Canada (DFO) with participation by Bremen University (BARUM). The ongoing focus is research activities on the KOPRI ice breaker IBRV Araon to investigate geological processes related to degrading permafrost, fluid flow and degassing, seismostratigraphy, and associated geohazards, of the Beaufort shelf and slope region. In addition, physical and chemical oceanography measurements of the Arctic Ocean were undertaken with linked atmospheric studies from the vessel. The expedition focused on two main research areas in the Canadian Beaufort Sea: the central shelf and slope areas offshore of the Tuktoyaktuk Peninsula and areas offshore of the Mackenzie Trough area.

Priorities for the Araon Expeditions, ARA04C (2013) and ARA05C (2014) in the southern Beaufort Sea included multi-channel seismic surveys and detailed bathymetric mapping to evaluate the interactions and linkages between oceanography and geologic processes in the outer shelf and slope area with the hope to collect sufficient site-survey data for the IODP proposal #806 and #753. The Araon also has several unique sediment coring instruments and underway water-property and atmospheric measurement devices. One of the highlights of these expeditions was the first documentation and collection of gas-hydrates from the mud volcano at 740 m water depth. Another important finding was the first documented presence of freshwater ice in the Cyan unit at 110 m water depth close to the shelf edge.