

Title

Korean contribution in the Pacific Central Arctic Ocean (CAO) for implementing and optimizing a pan-Arctic observing system

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Abstract - text box

Sea ice-covered waters in the Pacific Central Arctic Ocean (CAO) is a major study site of the Korean Arctic program, regularly visited by its flagship icebreaker, IBRV Araon. Annually conducted ocean-going expeditions occupy a number of oceanographic stations and place a few moorings, focusing on baseline oceanography, sea ice dynamics and lower trophic level. Mid trophic level and fish, however, are yet to be the principal targets of the project. But fisheries potential in the Central Arctic Ocean and the basis for its sound management are of interest to Korea, as a party to the recent negotiation of the proposed fisheries agreement in the CAO. Korea-Arctic Ocean Observing System (K-AOOS) program (2016-2020) has provided a platform of international cooperation, welcoming numerous foreign scientists on board and providing instrument deployment opportunities. K-AOOS advocates a data policy that promotes a wide sharing of validated and calibrated data. K-AOOS takes a view that a dedicated scientific leadership in the CAO is warranted that can coordinate multi-national and multi- partner field expeditions and

maximize the scientific output. Repeated transect observations and time-series records from icebreaker Araon and moorings are to investigate the relationship between the amount of heat that this region of Pacific Central Arctic Ocean (CAO) releases into the atmosphere, the enhanced mixing of both surface and intermediate waters in response to increased storms, increased ocean absorption of solar radiation, and the consequent impacts on the changing weather and climate of the Northern Hemisphere. Araon's Arctic cruises, usually conducted from August to September, focused on investigating water column structure and processes around the Chukchi Borderland and East Siberian Sea that is a region undergoing rapid transition in both sea ice conditions and sea water temperatures. In addition, sea ice dynamics and sea ice ecosystem analysis are included in the research program to identify key environmental parameters (physical and biogeochemical) in rapid transition due to the sea-ice decrease in the western Arctic Ocean (Chukchi and East Siberian Seas). Currently Korea participates in the Pacific Arctic Group (PAG)-endorsed Distributed Biological Observatory (DBO) and Pacific Arctic Climate and Ecosystem Observatory (PACEO) networks by occupying the DBO3 line in the southern Chukchi Sea as Araon transits northward to the core study area in the Chukchi Borderland region.