
Poster Presentation

GEOPHYSICAL INVESTIGATION OF GAS HYDRATE IN THE CHUKCHI PLATEAU, ARCTIC

Seung-Goo Kang

Seung-Goo Kang^{1}, Ugeun Jang¹, Sookwan Kim¹, Yeonjin Choi¹, Jong Kuk Hong¹,
and Yong Keun Jin¹*

¹ *Korea Polar Research Institute, Incheon, Republic of Korea.*

ksg9322@kopri.re.kr

ABSTRACT

The Expedition ARA09C was a multidisciplinary undertaking in the Chukchi Plateau (CP) and the East Siberian Sea (ESS) from August 29 to September 20, 2018. The program was conducted as an international collaboration between the Korea Polar Research Institute (KOPRI), the Kitami Institute of Technology (KIT), and the P.P. Shirshov Institute of Oceanology (IORAS). This is the second geoscience expedition for the IBRV Araon in these regions after the first cruise in 2016. During this expedition in 2018, several mounds were founded in CP area by geophysical survey, and two gas hydrate samples were successfully recovered from the subsea surface of founded mound structures by gravity coring. Actually, CP is an area where there are no scientific reports or evidence that gas hydrates have been discovered or are present. Therefore, recovered gas hydrate samples are the first discovery. In order to collect more detailed information such as the gas hydrate distribution, geophysical characteristics, and estimation of gas hydrate stability zone, the seismic survey was conducted. However, the sea ice situation was worse than in 2016, a multi-channel seismic (MCS) survey with a 1.5-km long towing streamer could not be carried out. Instead, a sparker seismic (SS) survey with an about 140-m short streamer (single channel) was performed. The total survey length was about 500 L-km with 19 lines. The main frequencies of the sparker source are ranging from 100 Hz to 1,000 Hz. Also, several geothermal measurements were performed to get a geothermal gradient for estimating the basement of the gas hydrate stability zone. In the seismic images for entire survey lines, many BSR events were detected on the shelf and slope areas in CP. The basement of the gas hydrate stability zone which was calculated from the geothermal gradient shows a similar depth of BSR events. Hereby, BSR events in seismic data have been proven. This BSR distribution will be used to estimate the amount of gas hydrate in this area.