

## Surveys of gas plumes off Hokkaido, Sea of Okhotsk

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Gas hydrates (GH) are attracting attention as a future energy resource, with projects aimed at their utilization under way in various countries. In Japan, the MH21 R&D project in the Nankai Trough region has entered its production test stage. On the other hand, in 1995, when Japan pioneered a project for the utilization of GH, clear bottom-simulating reflectors (BSR) were confirmed also at the Kitami-Yamato Bank in the Okhotsk Sea offshore of Abashiri, indicating the possible existence of GH there. In addition to this, seismic survey records collected by the National Institute of Advanced Industrial Science and Technology (AIST) during a cruise for their GH01 project in 2001 also confirmed noticeable BSR.

On the zone which GH exists in stability by temperature and pressure conditions (HSZ: Hydrate Stability Zone), GH existed in the upper part of HSZ is called shallow type GH, and that existed in the lower part is called deep type GH. This deep type GH is observed in a zone immediately above a BSR. Therefore, observation of BSR becomes an index of deep type GH existence. This BSR is confirmed in off Okushiri Island, off Hidaka, off Tokachi and off Abashiri in the around of Hokkaido Island.

On the other hand, shallow type GH is found in sediments of the surface layer or the exposed seafloor. That have been recovered off Abashiri in the Okhotsk Sea in the around of Hokkaido. In the area existed shallow type GH, gas plumes are also observed by echo sounder. Therefore, observation of gas plume becomes an index of shallow type GH existence.

In this study, to clarify the distribution of gas plume off Hokkaido in the Okhotsk Sea, a survey using the Oshoro-Maru, the research training ship of the Hokkaido University, was conducted in November 2015, and analysis of the data of quantitative echo sounder that was acquired in the past by research ships of the Hokkaido Research Organization (ORC). As a result, including past surveys, the number of locations where gas plumes have been confirmed is about 300 in the Okhotsk Sea offshore of Hokkaido.

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