

Distribution of atmospheric gas concentration in eastern margin of Japan Sea: A preliminary report from the 7K14 cruises

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Hydrate of natural gas is widely distributed in marine sediments in the eastern margin of Japan Sea. The natural deposits of gas hydrates are estimated to hold higher reserves than known conventional gas reservoirs. An active seepage of gas from the seafloor has previously been reported from gas hydrate fields worldwide. Atmospheric methane (CH₄), major component of seep gases, is an important short-lived climate pollutant. Our objective was to measure the distribution of atmospheric CH₄ concentration over the sea surface of gas hydrate areas along the eastern margin of Japan Sea.

We used the R/V Kaiyo-Maru No.7 (Kaiyo Engineering Co., Ltd., Japan) for the survey in the Oki Trough and offshore Akita-Yamagata (Mogami Trough) from mid April to early June 2014. Continuous measurement of atmospheric CH₄ was performed on the ship using a wave-length-scanned cavity ring-down spectrometer (WS-CRDS) (model G2201-i, Picarro Inc., USA). Air sample was collected from an air intake at the top deck of the ship using an air pump placed in the observation room. To our experience, the ship sailed at approximately 6 knot. Location data were obtained from the nautical GPS.

Observed CH₄ concentration over the sea surface was not uniform in Mogami Trough, while mostly uniform throughout the Oki Trough. In addition, there was a tendency that CH₄ concentration in Mogami Trough was higher than that in Oki Trough.

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Keywords: shallow gas hydrates, methane gas, distribution of gas concentration