Characteristics of sedimentation rates around hydrate seep area in the eastern part of Japan Sea

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Background

It is difficult to estimate the sedimentation age in methane hydrate area of eastern parts of the Japan Sea due to unable to find TL (thin laminated) layers, suitable for correlation with Japan sea stratigraphy, from core sediments. Oi et al. (2015MS) anticipated that sediment expands by hydrate growth caused to remarkable differences of sediment age with a reference core and a hydrate bearing core.

Purpose

One purpose is to clear the Chronostratigraphy based on radiocarbon dating and age from diatom fossils of several meter drilled cores in hydrate bearing area, Umitaka Spur and Oki Trough during the cruise from August to October 2015. The other purpose is to compare the sedimentation rate changes with approximately 60 m long core from Mogami Trough off Tobishima West (Oi et al., 2015MS).

Method

For radiocarbon dating, we used shells, woods and foraminiferal picked from undisturbed mud sediments. $\delta^{13}C$ correction and calibration (Reimer et al. 2013; Bronk Ramsey 2009) were dated by the 3MV AMS at the Institute of Accelerator Analysis Ltd. as the basis samples (HOxII) after serial oxidation and reduction reactions. For Analysis of diatom fossils, we made untreated spraying slides using mud samples of core sediments or included massive hydrate. Certifications of Diatom zones followed two standard stratigraphic classifications applied in North Pacific wide area (Yanagisawa and Akiba, 1989) and the upper Quaternary in Japan Sea (Akiba et al., 2014).

Discussions

30 radiocarbon dates of 2015 samples indicate that upper parts of sedimentation rates off Joetsu were 2 to 3 times as fast as those of Oki Trough and Mogami Trough during the last 50 kyr. These difference might have relevance to the distance from Japan Island. Furthermore, we found the basic boundary (300ka) by the distinct of diatom fossils, *Proboscia curvirostris*, from 20-25mbsf of Oki Trough cores and about 88mbsf of Umitaka Spur. These dates and previous data of Mogami Trough (about 42mbsf) also describe both remarkable slow depositions in Oki Trough and fast depositions in Umitaka Spur. In this presentation, we discuss stratigraphy of other cores including methane hydrate.

Reference

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