

Chikyu Shallow Coring Program (SCORE) in the active gas hydrate system on the southeastern Tsushima Basin

*Hitoshi Tomaru¹, Katsunori Yanagawa², Naoto Ishida³, Haruka TAKAGI¹

1. Department of Earth Sciences, Chiba University, 2. Faculty of Environmental Engineering, The University of Kitakyushu, 3. Center for Advanced Marine Core Research, Kochi University

Recent intensive marine expeditions focused on the shallow gas hydrate system in the Japan Sea margins found a significant distribution of mounds/pockmarks associated with formation/dissolution of gas hydrates near the seafloor. Massive development of these gas hydrates causes solidification of shallow sediment as well as an accumulation of methane (carbon) in the hydrate phase. In contrast, massive dissolution of gas hydrates, possibly triggered by the global sealevel drop, weakens the sediment structure and releases a vast amount of methane into marine environments. It significantly impacts on the seafloor environments, e.g., seafloor topography, bottom water oxic condition, benthic macro/micro-communities, stratigraphic sequences. In addition, these mounds/pockmarks often accompany subseafloor gas chimney structures, which reflect a large and continuous upward flux of thermogenic/biogenic materials generated in deep sediments. The delivery of such materials essentially enhances the microbial activities in shallow sediments.

We proposed a shallow coring expedition at the gas chimney structures on the southeastern Tsushima Basin, where the mounds/pockmarks are well developed, under the Chikyu Shallow Coring Program (SCORE) framework. This proposal aims at 1) elucidating how the gas hydrate system (amount, distribution, stability, etc.) has changed in response to the global environmental changes and 2) understanding the linkages between shallow and deep biosphere responsible for the gas-accumulated system. The proposal outline will be introduced and discussed during the session.

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