

Sedimentary Environment and Early Diagenesis of Thin Sandy Sediment Layers below Sea Floor in the Eastern Margin of Japan Sea

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Sediments in most of the sites along the eastern margin of Japan Sea are mainly composed of muddy fine clastics, and can be often found accompanied by a small amount of very fine to medium grained sandy intercalations, which are usually observed as thin layers and laminations in muddy layers. Fine-grained sediment samples below the seafloor were retrieved by the MD179 in 2010, the HR14 in 2014 and the PS15 in 2015 at the Umitaka Spur, Joetsu Channel, Toyama Trough, Japan Basin, Nishi Tsugaru and Okushiri Ridge areas. It is important to clarify the relationship between burial depths and absolute porosities of the argillaceous sediments in relation to early diagenesis. They consist of silt- to clay-grained particles, and they sometimes contain very fine- to medium-grained thin sandy layers. Average porosities of these fine-grained sediments are 50 % in all study areas, which quickly reduce from 60% to less than 50% within 10 meters and gradually decrease to the depth. However, mean pore sizes in the Nishi Tsugaru are around 1000 nm while 100 nm in the other areas, which tend to decrease with depth. It is suggested that repacking of the muddy particles gradually advances by mechanical compaction, which may crucially influence permeability. This research is a part of the METI project entitled "FY2015 promoting research and development on methane hydrate."