

## Pore Characteristics and Early Diagenesis of Muddy Sediments below the Sea Floor in the Eastern Margin of Japan Sea

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Fine-grained sediment samples below the seafloor were retrieved by the MD179 in 2010 and the HR14 in 2014 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.

They usually contain much opal-A, quartz, feldspar, illite and smectite that do not change definitely with depth. By optical and microscopic observations, diatom tests, foraminifers and framboidal pyrites are commonly observed, and, in particular, the shapes of diatom are usually various, dominantly fragmental and infrequently preserved. It is remarked that physical diagenesis proceeds first due to mechanical compaction, whereas chemical diagenesis advances very slowly in early diagenesis.

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