

## Identification of muddy seismogenic turbidite from sedimentary structure and chemical composition

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Paleoseismology using marine seismogenic turbidites has been conducted on many seismically active continental margins. In recent years, “muddy turbidites” which do not contain clear signs of sand grain sedimentation is drawing attention. However, few studies have illustrated muddy turbidite characteristics. The purpose of this study is to identify the muddy turbidites mainly from sedimentary structures and chemical compositions.

The samples are multiple and piston cores collected from the sedimentary basin off Kii peninsula and Hyuga-nada, SW Japan. Visual observation, X-ray CT scans and other measurements such as anisotropy of magnetic susceptibility (AMS), paleomagnetism, electrical resistivity and X-ray fluorescence core scanning (XRF core scanner) were conducted.

X-CT scans clearly reveals sedimentary structure of homogeneous clay sequence above the silty lamination as reported by Okutsu et al. (2016, JpGU abstract) even on structureless mud interval by visual observation. Ca and Fe analyses by XRF core scanner show peaks at around the basement of turbidite layers identified by X-CT scanner. Mn peak also shows similar tendency, but does not always exhibit the same trend. Those variations of Ca and Fe contents are consistent with the previous work of Iwai et al. (2014, Geol. Soc. Japan abstract). More specifically, Ca peaks were always observed at the slightly upper level than the Fe peaks position. Because correlation of Ca and Fe show different trends between the turbidite layers and other layers, the difference could be available for discrimination between turbidite and hemipelagic mud. Ca and Fe peaks can be recognized even in the heavily bioturbated turbidite which have no original sedimentary structure in X-CT image. Therefore, XRF core scanner can be a useful tool to identify the muddy turbidite layer in addition to X-ray CT scanner.

Keywords: turbidity current, event deposit, paleoseismic records, Nankai trough