

HCG036-P02

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Depositional processes of deep-sea sediments using organic matter analyses, examples from the Kumano Trough

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Deep-sea turbidite is useful tool for long-term paleoseismicity analysis. However turbidity currents occur with not only slope failure by earthquake but also flood and storm. The purpose of this study was to examine depositional processes of turbidite using organic matter analyses.

Study area is in the Kumano Trough, which lies off the Kii Peninsula of central Japan. Sediment cores are from the basin floor (1870 to 1990 m water depth) of western part and submarine canyon (Anoriguchi Canyon, 1660 m water depth) of eastern part of the Kumano Trough. Sediment cores are composed mainly of dark-olive silt layers (hemipelagite) with interbedded turbidites. The turbidite layers are 1 to 15 cm thick. Shirai et al. (2010) revealed that turbidites in western part of the Kumano Trough were deposited by flood due to the 19th century Tostukawa flood (1889) and the Isewan Typhoon (1959). Vertical distributions of ¹³⁷Cs in sediment core from the Anoriguchi Canyon implies that the appearance horizon of ¹³⁷Cs were located at 12-14 cm below sea floor. The turbidite was deposited before 1954 year, because the turbidite is below the ¹³⁷Cs appearance horizon.

Total organic carbon contents and stable organic carbon isotope values were measured using an elemental analyzer and a mass spectrometer of the Atmosphere and Ocean Research Institute, the University of Tokyo. We also observed sedimentary organic matter using reflected light and fluorescence microscopy.

Results of stable carbon isotope analysis showed that terrigenous organic carbon increase above Isewan typhoon and Tostukawa flood induced turbidite in western part of the Kumano Trough. While terrigenous organic carbon does not increase above turbidite in the Anoriguchi Canyon. The turbidite was considered to deposited by failure of canyon head or slope.

Reference: Shirai, M., Omura, A., Wakabayashi, T., Uchida, J. and Ogami, T., 2010, Depositional age and triggering event of turbidites in the western Kumano Trough, central Japan during the last ca. 100 years. *Marine Geology*, 271, 225-235.

Keywords: deep-sea sediment, turbidite, organic matter analyses, Kumano Trough