

Accumulation process of earthquake-induced turbid layer in the slope basin -An example from the Nankai Trough off Kuman-

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Earthquake shaking is one of triggers for submarine slope failures and causes sediment redeposition in the base of the slope. Sedimentary section of the slope basin in an accretionary prism continuously and well records past activity of earthquakes for a long term and with a high accuracy. Therefore, it is one of useful proxy to understand coseismic geological phenomenon. However, it is inferred that earthquake-induced turbid mud settles out so fast. In this study, because sedimentation processes on earthquake-induced sediment are not well illustrated so far, I am analyzing settling processes of earthquake-induced turbid mud in deep sea.

Muddy deposits in a deep-sea region generally show slow sedimentation rate. The velocity is several mm to several dozen mm per one thousand years. However, the observation by ROV "NSS" during KH-10-3 cruise (*R/V Hakuho-maru*) illustrated that thick turbid layers in the prism slope completely settled six years after the 2004 off Kii peninsula. Therefore, it is inferred that earthquake-induced turbid mud settles out during short period. Two turbid layers specifying different degrees of turbidity are composed of upper dilute suspension layer and bottom dense suspension layers. The measured water depth at the slope basin in 2010 shows high variation suggesting seafloor undulation. In contrast, the measured water depth in 2004 by NSS during KY04-11 cruise (*R/V Kaiyo*) was very constant. This observation indicates that the measured water depth corresponds to the upper boundary of a dense suspended layer as a pseudo-seafloor.

A chirp subbottom profiler (SBP) surveys were carried out during the KH-10-3 and KH-11-9 cruises. We successfully obtained high resolution structural images down to a maximum of about 30m. Sedimentary reflectors of the slope basin are mostly flat-lying and laterally coherent. Moreover, three transparent layers are developed at a depth shallower than about 10 meter below a seafloor. Observation of dense turbid layers after the 2004 earthquake and existence of distinct transparent layers in the slope basin suggest periodic accumulation of earthquake-induced turbid layer.

Keywords: turbid layer, redeposition, earthquake-induced sediments, sedimentary structure