

Fluctuation of turbidite deposition for the last 250 kyr recorded in the Toyama Deep-Sea Channel levee sediments

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The Toyama Deep-Sea Channel (TDSC), which starts from Toyama Bay and extends for 750km, is one of the most prominent deep-sea channels around the Japanese Islands. The channel transports sediments from the Japan Alps to deep basins through tributary canyons on the narrow shelf, which are directly connected with rivers. This setting allows deposits of the channel to record land climatic fluctuation through fluctuation of supplied sediments. The previous study reported that turbidite deposition was infrequent during the last glacial maximum (LGM) while turbidite deposition was the most frequent just after the last glacial. The longer record of turbidite fluctuation has, however, not reported from the TDSC.

During the KH01-2 Cruise, 15m-long piston cores were recovered from the levees of the channel in the Yamato Basin in order to reveal the longer turbidite fluctuation. In this study, preliminary result of analysis of a piston core TYP-3 is presented. The core is expected to record turbidite fluctuation for the last 250 kyr.

Based on the age estimation of the core TYP-3 by age-known tephra layers and the correlated dark layers, fluctuation of turbidite frequency and thickness in the core has been revealed. Both turbidite frequency and thickness decreased in thick dark layers deposited during the glacial maximum. They suddenly increased during early interglacials after the glacial maximum while they decreased again during late interglacial periods. They also fluctuated in stadials and inter-stadials during the glacial ages.

The fluctuation of turbidite frequency and thickness may represent fluctuations of supplied sediments through rivers into canyons. The decrease in turbidite deposition during glacial maxima may have resulted from the decrease in floods and resultant low sediment supply due to dry climate and consequent low precipitation. The increased floods and consequent higher sediment supply due to higher precipitation caused the increase in turbidite deposition during the early interglacials. The decrease of turbidites during the late interglacials may have been attributed to the stabilization of hill slopes after long warm climatic intervals. The fluctuation of turbidite deposition was interpreted to be associated with cyclic climatic variations during Quaternary.