

Estimation of recurrence intervals of large earthquakes using deep-sea turbidites around Japan

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Most of the epicenters of large earthquakes along the plate boundaries have located under the sea bottom. Many submarine slope failures have been triggered by the strong shaking by the large earthquakes. Therefore, the turbidite, which is a gravity-flow deposit, has a potential for the recorder of past large earthquakes. Along the eastern margin of Japan Sea, which is thought to be young and immature plate boundary, recurrence intervals of earthquakes were estimated from deep-sea turbidite records at the source area of the 1940 Shakotan-oki, 1993 Hokkaido-nansei-oki, 1983 Nihonkai-chubu earthquakes, and at the Rishiri Trough and Sada Ridge. However, it needs more discussions on spatial difference of the recurrence intervals and the relationship between depositional patterns of each turbidite and the activation of the source active fault. Turbidites occur commonly along the Nankai Trough and in the Sagami Bay, the Pacific side of Japan. Turbidites in some slope basins indicated their recurrence intervals of 100-150 years during the last 3000 years, which is concordant with recurrence intervals of large earthquakes along the Trough, although the turbidite records were not complete. To understand more detail history of earthquakes, it needs the correlation between the cores in a basin and also in the different basins by high resolution age determinations and non-destructive analysis, and the enough understanding of the sedimentary processes around the studied areas.