

Tsunami depositional model in shallow bay and recurrence interval of great tsunami on the southern Kanto region

Osamu Fujiwara[1]; Takanobu Kamataki[2]

[1] JNC; [2] AFRC, GSJ/AIST

Tsunami deposits are telling evidence of long-term, great submarine earthquakes that cannot be decoded from historical records. Tsunami deposits in various ages of sediments, from Cambrian to recent, have been reported from various areas of the world. However, most tsunami deposits in the geological record have been difficult to discriminate from other events such as storm deposits, owing to the lack of data on sedimentological structures, grain-size distribution and fossil assemblages. This discrimination is important for accurate recurrence- interval analyses and the prediction of great tsunamis generated by plate-boundary earthquakes.

Fujiwara et al. (2003) proposed a tsunami depositional sequence model which identifies the tsunami deposit for a Holocene buried valley on the southwestern Boso Peninsula, based on depositional structures, high-resolution grain- size analyses and the taphonomy of molluscan shells.

The model links the sedimentological and paleontological structures in the tsunami deposits to the physical properties of tsunami waves, wave period and time-series of wave-height.

Source areas of the tsunami formed the tsunami deposits reported by Fujiwara et al. (2003) were inferred from correlation with tsunami propagation routes. Great plate boundary earthquakes around the northeastern margin of the Philippine Sea Plate are a probable source of these tsunamis, considering the shield effects of Boso Peninsula to tsunami propagation. Based on a trial calculation of great tsunami potential around the sea area using the tsunami deposits, the recurrence rate of great tsunami is estimated as one every 100-300 years.

Reference: Fujiwara, O., Kamataki, T. and Tamura, T. (2003) Grain-size distribution of tsunami deposits reflecting the tsunami waveform -an example from the Holocene drowned valley on the southern Boso Peninsula, east Japan-. *The Quaternary Research*, 42, 67-81.