

Daitom fossil assemblages of a Tsunami deposit found at the Ota-gawa lowland, western Shizuoka Pref., central Japan

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Holocene outcrop including a tsunami deposit was found at the Ota-gwa lowland ~3.5 km inland from the present coastline (Fujiwara *et al.*, this meeting). We performed fossil diatom analyses on a part of deposits including the sand layer and discuss environmental changes around the study area. Fossil diatom assemblages are different between the above and beneath the tsunami deposit and indicate that environmental changes occurred associated with the earthquake.

Geology of this outcrop consist of peat layer, mud layer, sand layer (Tsunami deposit) and silt layer in ascending order. Their thicknesses are approximately 10 cm, 10 cm, 70 cm and more than 60 cm respectively. The sand layer was recognized over 150 m in N-S direction horizontally. The sand layer includes several sandy layers showing fining upward. It indicates that tsunami waves attacked this area repeatedly. Aoshima *et al.* (this meeting) reports that gravel components, roundness and mineral composition of this layer are resemble those of sediments around the Tenryu river and the Enshu-nada coast. Radiocarbon ages from this layer suggest that this layer was formed at 4th to 7th century (Fujiwara *et al.*, this meeting).

As the results of the analyses, fossil diatom assemblages show harmonic changes with the core stratigraphy. The peat layer shows dominance of fresh water species, for example *Pinnularia* spp., *Eunotia* spp. and *Cymbella* spp. making up 10-30 % respectively. They indicates that the peat layer was formed at the fresh water marsh. In contrast, main component species of the mud layer are brackish to marine species such as *Cocconeis scutellum*, *Tryblionella granulate* and *Tryblionella lanceolata*. This feature indicates that mud layer deposited at a tidal flat. The sand layer is characterized by the mixture of fresh, fresh-brackish and brackish-marine species. Especially, *Achnanthes hauckiana*, *Rhopalodia gibberula*, and *Cocconeis placentula* increased than the underlying sediments. The silt layer covered the tsunami deposit shows the abundance of fresh and fresh-brackish species such as *Rhoicosphenia abbreviata* indicating the middle to lower part of river. The upper of the silt layer is characterized by the dominance of *Pseudopodosira kosugii* indicating the marine limit during the Holocene (Sato *et al.*, 1996).

The environmental change from fresh marsh to tidal flat between the peat layer and the mud layer indicates a relative sea-level rising. After deposition of the tsunami deposit, an environmental change from the tidal flat to the riverine estuary occurred rapidly. Radiocarbon ages suggest that this environmental change was triggered by geomorphological change due to the tsunami flows, for example mass transportation. The characteristics of the fossil diatom assemblages of the tsunami deposit indicate exotic water and sediments were transported from inland by tsunami currents flowing seaward.

Reference

Aoshima *et al.*, this meeting, Rock type and mineral compositions of the tsunami deposit from the Otagawa lowland, western Shizuoka Prefecture

Fujiwara *et al.*, this meeting, Two historical tsunami deposits from the Ota-gawa lowland, western Shizuoka Prefecture, Pacific coast of central Japan

Kosugi, M., 1993. Diatom. In A Handbook of Quaternary Research, vol. 2 (Japan Association of Quaternary Research, Eds.), 245-252. Tokyo. University of Tokyo Press. (in Japanese).

Sato, H. *et al.*, 1996. A Characteristic Form of Daitom *Melosira* as an Indicator of Marine Limit during the Holocene in Japan. The Quaternary Research (Daiyouki Kenkyu), 35, 99-107.

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