

Structure and depositional processes of terrestrial tsunami deposits; an example from southwestern Thailand

Shigehiro Fujino[1]; Hajime Naruse[2]; Dan Matsumoto[1]; Kazuhiko Fujita[3]; Masafumi MURAYAMA[4]

[1] Earth and Planetary Sci., Kyoto Univ; [2] Dept. Geol. and Mineral., Grad. Sci., Kyoto Univ.; [3] none; [4] Marine Core, Kochi Univ.

The deposit of the 26 December 2004 Indian Ocean Tsunami was investigated in its structure, microfossil content, thickness and grain-size distribution in Khao Lak area, Phra Thong Island and Ban Nam Kem, southwestern Thailand. The sedimentary processes of the tsunami were reconstructed from field observation, microfossil and grain-size analyses.

The study areas are broad coastal plain, and the beaches in these areas are intensely eroded by the tsunami. The coastal deposits continuously cover the lowlands. It is inferred from abundant shallow marine benthic foraminifers that the sediments were supplied from beaches and shallow sea bottoms. The sediment is composed of silt- to granule-sized sediments and marine materials such as shell fragments and foraminifers. Although it was also affected by local factors, grain size of the deposit shows landward fining trend, resulting from preferential deposition of coarser suspended sediments.

Most of the deposits are graded or massive, however, near shoreline, they show multiple grading units bounded by erosion surfaces that were formed by repetition of run-up and backwash of tsunami. The backwash units are finer and thinner than those made by run-up current and commonly eroded out by the next run-up current. These differences between run-up and backwash units result from difference of the mode of sediment supply. In run-up stage, tsunami erodes beaches and sea bottoms supplying large amount of sediment on coastal area. On the other hand, backwash currents contain little sediment because it has no efficient sediment resource.