

Survey of Holocene beach ridges and tsunami deposits in the Ishinomaki Plain

Masanobu Shishikura[1]; Yuki Sawai[1]; Yukinobu Okamura[1]; Takanobu Kamataki[2]; Osamu Fujiwara[1]; Yushiro Fujii[1]; Than Tin Aung[1]

[1] Active Fault Research Center, AIST, GSJ; [2] AFRC, GSJ/AIST

Holocene beach ridges are developed between present shoreline and 8 km inland in the Ishinomaki Plain. To reveal the progress process of beach ridges, and to detect tsunami deposits, we surveyed the surface deposits up to 1.0-1.5 m depth in over 20 sites using the Handy Geo-Slicer. All cores show that foreshore or backshore sand is covered by humic or peaty soil of 0.3-0.9 m thick. In further inland 1.5 km from shoreline, thin white volcanic ash layer which can be correlated to To-a tephra (AD915) based on the index of volcanic glass is intercalated to the soil. Radiocarbon samples of seeds or charcoal in the bottom of soils at 5 km and 4 km inland from shoreline are dated to be 3060-2850 and 2740-2360 cal yBP respectively. Matsumoto (1984) also reported the ¹⁴C age of 2490-1880 cal yBP from the lower part of soil at 3 km inland.

From the above result, it is inferred that the shoreline position has gradually migrated at the uniform velocity of 1.5-2.0m/year from 5 km inland since 3000 years ago. Height distributions of emerged inter-tidal deposit are almost same level as the present inter-tidal zone. This suggests that net crustal movement in past 3000 years is mostly stable in the Ishinomaki Plain, although recent tide gauge data at Ayukawa shows gradual subsidence at a rate of 4.7mm/year. This discrepancy between the geodesy and geomorphology has to be discussed by more detailed field data.

No tsunami deposit associated with the Jogan Tsunami (AD869) that is well-observed in the Sendai Plain can be detected in this area. But another event deposit is intercalated to the soil in the area between 5 km and 3 km inland from shoreline. We will judge whether this deposit is tsunami origin by analyzing micro fossil.