

## Paleo-tsunami records in Tonankai area and future issues of paleoseismological studies along the Nankai Trough

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It became widely understood after the 2011 Tohoku Earthquake that geological records of thousands of years are needed to know possible largest magnitude of earthquakes and tsunamis in a region. Though the Nankai Trough has been the focus of many paleoseismological studies, it becomes more important to understand diversity of earthquake magnitude and recurrence intervals within longer time scales.

To reveal tsunami history of thousands of years, we conducted hand coring and drilling survey at 27 study points. These coring exposed at least 9 paleo-tsunami layers in the sedimentary succession deposited between 4500 yrBP and 500 yrBP. All of the paleo-tsunami layers contain bioclasts of marine and brackish water organisms such as gastropod, bivalve, calcareous algae and foraminifera. In most cases, these layers are few centimeters thick and have sharp basal contacts. Soft x-ray imaging shows that some of the sand layers includes rip-up clasts and are composed of two or more sub-layers of paired sand and silt. Radiocarbon ages of selected materials indicate that the younger three layers were deposited by the historical tsunamis in AD 684, 1096 and 1498 respectively. These layers were deposited by past tsunamis which provably occurred in the Tonankai and/or Tokai areas. Historical documents tell that the 1854 Ansei Tokai Earthquake Tsunami inundated the study site and left sands on ground surface. On the other hand, wave heights of the AD 1946 Showa-Nankai earthquake tsunami occurred in the Nankai area and the AD 1960 Chilean tsunami were 1.0 m and 1.5 m respectively, and lower than the barrier spit that separates the study site from the sea.

There is no historical documents of the AD 684 earthquake tsunami in Tonankai area, but our result supports archaeological studies, which suggest that the rupture of the earthquake extended to the Tonankai area. We do not see traces of the AD 887 and 1361 earthquake tsunamis that are thought to have occurred in the Nankai area.

Interregional correlations of geological records based on detailed dating results will become increasingly important to know the lateral extent of past rupture zones. In addition, examinations of uplift/subsidence occurred simultaneously with tsunami sand deposition by paleontological and geochemical analysis will provide more precise information about diversity of vertical crustal deformation along the Nankai Trough.

Keywords: tsunami deposit, Nankai Trough, Tonankai area