

Paleoenvironmental changes and tectonic movements reconstructed from diatoms in Tokushima, during the last 4000 years

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The average recurrence interval of the interplate earthquakes along the Nankai Trough is estimated from many historical records and archaeological data (Sangawa 2008). However, the studies of tectonic movement related to Nankai earthquakes is still limited (Maemoku 1989, Shishikura et al. 2008).

Yuki city, Tokushima prefecture, which located in north part of the Nankai Trough, has been subsided and many tsunamis attacked along the coast of the Shikoku islands accompanied by the previous Nankai earthquakes. Therefore, some historical documents and memorial monuments written about the past Nankai earthquakes and tsunamis remain in this city.

In order to obtain the geological evidences of tectonic movements and tsunami deposits, we conducted a 7m long core drilling at a small marsh behind a barrier spit in Tainohama of Minami city nearly Yuki city. The core includes more than 12 sand layers in organic-rich muddy sedimentary succession up to 5 m depth in this core. And we analyzed fossil diatoms from the core.

The diatom assemblages included in the peat and peaty mud deposits were predominated by fresh and brackish water species, especially *Pseudostaurosira brevistriata*, *Pseudostaurosira subsalina*, *Staurosirella pinnata*, *Tabellaria fenestrata*. *Pinnularia* spp. and *Eunotia* spp. are also dominated. In contrast to the above mentioned sand layers, brackish water and marine species, especially *Diploneis smithii*, *Mastogloia recta* were increased. The diatom assemblages from the organic rich muddy sediments and radiocarbon ages indicates that freshwater marsh or saltmarsh formed in this region during at least the past 4000 years. On the other hand, the diatoms from the sandy layers indicates that salinity of environments when the layers were formed was higher than freshwater or salt marsh. The diatom assemblage suggest that the sand layers were transported from seaside by past tsunamis. On the other hand, changes of diatom assemblages in the muddy sediments show increase or a decrease of freshwater species, suggesting a paleo coastal environment changes due to past earthquakes along the Nankai Trough.

Keywords: Nankai trough, Tsunami deposit, Tectonic movement, Pleo coastal environment, Diatom