

## The composition of laminae in the sediment of Beppu-Bay and potential as annual laminations

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The sediment of Beppu Bay in Pref. Oita is consisted of hemipelagic mud and contains many eventually deposited layers (event layers). These layers are considered to be caused by the occurrence of flood, earthquake or eruption. To reveal the mechanism of deposition of minor event layers (less than 1cm thickness), we tried to correlate the sediment with the observational record based on high-resolution age model using sediment cores obtained from four sites in Beppu Bay.

Surface sediment cores were CT-scanned and analyzed by micro XRF scanner (ITRAX). Pb and Cs isotopes were also measured by 4cm intervals for age determination.

In the deepest part of Beppu Bay (more than 60m depth), clear lamination is seen in several cores. In the shallower part, lamination cannot be observed. Based on the result of ITRAX measurement and Soft-X images, it is revealed that lamination is caused by the change of the amount of detrital material. Amount and composition of detrital material also show several positive spikes. Some of them can be observed by naked eyes as light gray or reddish brown colored thin layers (minor event layers) suggesting that they were supplied from different provenance than usual.

The results of Pb and Cs measurements agree with the age of Ev-1a which is considered to be caused by Hyuga-Nada earthquake in 1968 (Kuwae et al., 2013). Counting of lamination also agrees with Pb and Cs based age model when unclear lamination is interpolated by the average thickness of laminations.

Therefore, it is strongly suggested that lamination in the bottom of Beppu Bay is annual lamination, varve. If the lamination is verified as a varve, high-resolution age model could be established and it enables detailed correlation of the sediment and observational record.

Keywords: Beppu Bay, annual lamination