Temperature change in northern Japan during the last 6,700 years and the related human activity

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Marine coastal sediments provide a big advantage to have continuous record of both marine and terrestrial environments in their sedimentary sequence. In addition, high correlation between atmospheric and sea surface temperature in bays present very unique opportunity to reconstruct terrestrial temperature quantitatively. In this study we therefore collected one core from semi-closed bay in southern Hokkaido. We measured organic material of alkenone and analyzed pollen assemblage to estimate temperature. Our goal was to reconstruct with high time resolution of temperature in marine and adjacent terrestrial environments, to evaluate the process behind long and short term trend of temperature for the last 6000 years, and to understand the relationship between climatic changes and the human activity including the rise/fall of the human population at the Sannai-Maruyama site. This time Core St. 5 was collected rat a distance of only 7.8 km from the coast and at a water depth of 65 m of Site 5 in Uchiura Bay during the research program by Geological Survey of Hokkaido in 2010. Then we analyzed alkenone SST. It showed a variation of 8.7 °C (maximum and minimum of 14.5 °C to 23.2 °C, respectively). The mean SST was 14.5 °C. The SSTs gradually increased during the last 7000 years. The SST peaked in 4529 BC, 2546 BC, 759 AD and 1782 AD. Smaller peaked in 4057 BC, 3585BC, 3018BC, 1885BC, 1508 BC, 1035 BC, 469 BC, 122AD, 381AD, 1164 AD. Large temperature falls occurred in 4500-4000 BC, 2550-2000 BC and 760-1080AD.

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