

## Changes in sedimentary environment during the Holocene in a wetland in Chanai area on Konsen plateau, eastern Hokkaido

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Widespread peatland and wetland distribution is common in eastern Hokkaido, Japan. However, few studies of paleoenvironmental transition history in small alluvial lowland marsh groups located on the Konsen plateau have been reported. A major obstacle is the reconstruction of a robust age model. Peat radiocarbon dating must be employed with caution due to the reservoir effect, since peat and wetland sediments contain not only plant remains at the time of sedimentation but also various organic materials such as roots that are mixed from the layer above after sedimentation (Shinozaki, 2013). If known tephra are identified in strata, accuracy of stratigraphically constrained ages increases. However, accurate ages from radiocarbon dating on macrofossils and marker tephra cannot always be found from wetland sediments.

In this study, we measured radiocarbon from pollen fossils contained in the sediments in a wetland of Chanai area in southern part of Konsen Plateau. This study marks the first use of large pollen on radiocarbon measurements using flow cytometry devices. To reconstruct paleoenvironments, we conducted high resolution elemental analysis on sediments to interpret the origin of the wetland sediments, in particular interpreting the origin of organic matter and its decomposition rate.

Tephra stratigraphy of the core sample indicate that the transition to a wetland setting at the study site occurred between about 7.5~2.5 ka. Results from elemental analysis showed that Total Organic Carbon (TOC) fluctuated between 20 and 40 % at depths of -90 to -60 cm, and between 40 and 50 % at -40 to -5 cm, with a peak of 53 % at -36 cm. Total Sulfur (TS) gradually rose from the bottom to the top, with 0.3~0.4 % at the base and 0.5~0.8 % at the top of the core. The resulted carbon and nitrogen (C/N) ratio was about 14~20 between -90 and -40 cm, and was about 25 in the upper 40 cm of the core, with a sharp rise around -40 cm. This suggests the changes in sedimentary preservation status occurred at around -40 cm, since the C/N ratio decreases with the decomposition of peat (Kondo et al., 1997).

From the C/N ratio, the degree of peat decomposition was highest at the core bottom and lower at the core top, suggesting a change in the decomposition rate or organic material depositional rate. We will further examine the transition of sedimentary environment in the wetland together with the results of radiocarbon dating.

Keywords: wetland, peat, radiocarbon dating, elemental analysis, wetland sedimentary environment, Chanai area on Konsen plateau