# Cellulose oxygen isotopes in Sphagumun from the Bekanbeushi mire, eastern Hokkaido and its application to paleoclimate reconstruction during the last 2000 years

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The oxygen isotopic composition of rainfall water has climate signals such as temperature and precipitation. Therefore, we can use the $\delta^{18}O$ values of plant cellulose which preserves the $\delta^{18}O$ values of rainfall water for paleoclimate reconstruction. At the Hani peat mire in northeastern China, paleoclimate reconstruction was attempted using the $\delta^{18}O$ values of cellulose in the peat core, and the variation of the $\delta^{18}O$ values in bulk samples was interpreted that it reflects the variation of temperature (Hong et al., 2009). On the other hands, the analysis of $\delta^{18}O$ in different plant tissues in the same sample from the Rhishiri Minamihama high mire showed that the $\delta^{18}O$ values of *sphagnum* is lower than the other species (Yamamoto and Seki, unpublished data), suggesting that bulk cellulose $\delta^{18}O$ values may have reflected fractional variation in different tissues. In this study, we separated *sphagnum* and plant tissues and measured their cellulose $\delta^{18}O$ for peat core samples retrieved from the Bekanbeushi high mire. The $\delta^{18}O$ values of *sphagnum* were always lower than those of *Vaccinium oxycoccos* and *Calamagrostis neglecta var. aculeolata*. Temporal variation in the $\delta^{18}O$ of *sphagnum* indicated that the value was lower around 1500 years ago and higher around 1100 years ago, corresponding to Dark Age Cold Period and Medieval Warm Period, respectively. The difference of the $\delta^{18}O$ values between plant tisuues and *sphagnum* has a negative correlation with the $\delta^{18}O$ values of *sphagnum.* This suggests that relative humidity was higher in warmer periods, which is analogous to modern summer climate in Bekanbeushi area..

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