

Climate variations in northern Japan as reconstructed from tree ring cellulose $\delta^{18}\text{O}$

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Tree-ring cellulose $\delta^{18}\text{O}$ is known to be a promising proxy for reconstructing hydroclimate variations in monsoon Asia because the $\delta^{18}\text{O}$ is not controlled by ecological factors but by two climatic parameters (i.e., relative humidity and $\delta^{18}\text{O}$ of precipitation). In this study, two tree-ring $\delta^{18}\text{O}$ series were developed by measuring two individual trees (*Cryptomeria japonica*) growing in Miyagi, northern Japan. Climatic response analyses reveal that the relationship between tree-ring $\delta^{18}\text{O}$ and relative humidity is not temporally stable. Also, the tree-ring $\delta^{18}\text{O}$ from Miyagi shows complex correlations with other tree-ring $\delta^{18}\text{O}$ from Japan, indicating that tree-ring $\delta^{18}\text{O}$ in northern Japan is not simply controlled by local hydroclimate. Continued effort toward the development of a dense tree-ring network will shed more light on variability of climate in Japan.

Keywords: Tree-ring cellulose $\delta^{18}\text{O}$, Japan