

The study of reconstructing methods of temperature variation using tree-ring oxygen isotope

*Akane Tsushima¹, Masaki Sano², Zhen LI¹, Takeshi Nakatsuka¹, Koh Yasue³, Koji Fujita⁴

1. Research Institute for Humanity and Nature, 2. Waseda University, 3. Shinshu Univ., 4. Graduate School of Environmental Studies, Nagoya University

The tree-ring $\delta^{18}\text{O}$ is known to be an important proxy for reconstructing hydro-climate changes in monsoon Asia because the tree-ring $\delta^{18}\text{O}$ is not controlled by ecological factors and is decided by 2 factors, one is $\delta^{18}\text{O}$ in soil water and another is relative humidity. The $\delta^{18}\text{O}$ in soil water reflect that in precipitation, but the precipitation $\delta^{18}\text{O}$ is affected by some climate factors i.e., temperature, precipitation amount and atmospheric circulation pattern. Consequently, tree-ring $\delta^{18}\text{O}$ changes influenced by not only soil water $\delta^{18}\text{O}$ and relative humidity but also other climate factors. Therefore, we think that we can reconstruct not only precipitation variation but also temperature variation from tree-ring $\delta^{18}\text{O}$. In this study, we discussed reconstruction method of temperature variation from tree-ring $\delta^{18}\text{O}$.

Keywords: Tree ring oxygen isotope, Temperature variation, Japan