Present situation and future prospects of the oxygen isotope ratio dendrochronology in the northeastern Japan

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Oxygen isotope ratio ($\delta^{18}O$) dendrochronology has the potential to be conveniently and accurately dating a variety of tree species of old wood material (old building materials, woody remains and natural buried woods). For this reason, $\delta^{18}O$ dendrochronology has been attracting attention as a new dating method in various fields of history, archaeology and geology (Nakatsuka & Sano 2014). Building of tree-ring $\delta^{18}O$ master chronology mainly has progressed in the central and western Japan, reaching already 4300 years ago in some areas (Kimura et al. 2014). On the other hand, it has been delayed in northeastern Japan. Therefore, in this region, the major part of the historical era remained blank data. Because of tree-ring $\delta^{18}O$ is defined in the precipitation and relative humidity of the growing environment, dating is difficult in between the master chronology and old wood material of different rainfall pattern area. Since northeastern Japan is affected by the northeast wind that coming from Okhotsk high in the summer, it is desirable to build independent master chronology (Nakatsuka 2015).
In view of this situation, we has been working on the tree-ring $\delta^{18}O$ analysis of the woody remains and natural buried woods from Aomori Prefecture to Niigata Prefecture. As a result, it succeeded to get in nearly consecutive tree-ring $\delta^{18}O$ data over 1200 years of 5-16 century.
As a result of comparing this data with the existing central Japan $\delta^{18}O$ standard annual ring curve, we found common components on these. Now, we are concidering the reconstruction of the climate field from the spatial pattern of tree-ring $\delta^{18}O$. In this report, we describes an overview of these surveys and analysis, the future prospects.

Keywords: Tree-rings, Oxygen isotope ratio, Climate reconstruction

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