

Multi-decadal climate variabilities during mid-Holocene inferred from a stalagmite in Okinawa

*Ryu Uemura¹, Kanako Omine¹, Kosuke Masaka¹, Ryuji Asami², Mahjoor Ahmad Lone³, Yu-Chen Chou³, Chuan-Chou Shen³

1. University of the Ryukyus, 2. Tohoku University, 3. National Taiwan University

Holocene Asian summer monsoon was influenced by solar activity in Middle East and mainland China. However, this relationship is still unclear in the maritime margin of East Asian monsoon territory. In this study, to evaluate the multi-decadal variability of temperature and regional monsoon intensity in the western Pacific region, we measured carbonate oxygen isotope ratios and H/O isotopic compositions of fluid-inclusion water from Holocene stalagmite, HSN1, collected in Minami daito island, Okinawa, Japan. Although oxygen isotope ratio of carbonate has been used as a proxy for monsoon intensity in Asian region, it is difficult to separate two influencing factors; rain-water isotope ratio and calcite formation temperature. Isotopic analysis of fluid inclusion allows us to separate these factors and provides quantitative estimate for temperature. A robust age model was established with precise U-Th ages from 6 to 7.5 thousand years ago. This sample allow us to evaluate multi-decadal variability during mid-Holocene because of the high-growth rate of 180 $\mu\text{m}/\text{yr}$. In the presentation, we will compare our stalagmite proxy records with other marine, terrestrial, and also high-latitude paleoclimate records to clarify different forcings and teleconnections.

Keywords: Holocene, stalagmite, stable isotope, fluid inclusion