

An initial analysis of stalagmite cores covering the past 90,000 years from Minami-daito Island, Japan

*Yuta Arimura¹, Ryu Uemura¹, Osamu Abe¹, Ryuji Asami², Shufang Yuan³, Hahjung Chin³, Xianfeng Wang³

1. Nagoya University, 2. Tohoku University, 3. Nanyang Technological University

Stalagmites are used to reconstruct climate change by accurate U-Th dating, combining with climate proxies. In particular, the oxygen stable isotope ratio ($\delta^{18}\text{O}$) of stalagmites carbonate is commonly used as a proxy for precipitation and/or temperature. However, obtaining continuous long-term $\delta^{18}\text{O}$ data requires collecting many stalagmites, which presents challenges in terms of transportation and landscape preservation. In this study, we analyzed two stalagmite cores obtained by boring the central part of giant stalagmites in Yamashita Cave on Minami-daito Island, Okinawa, Japan. We measured $\delta^{18}\text{O}$ (and $\delta^{13}\text{C}$) of carbonate along with the central growth axis and U-Th ages for 17 layers. Dating results indicate that the stalagmite formed from 91.1 kyr to 12.5 kyr BP. Furthermore, the $\delta^{18}\text{O}$ variations in two stalagmite cores are consistent within the mutual age error range during the overlap period, 42–85 kyr BP.

Keywords: Speleothem, Isotope, Stalagmite