

## **Stalagmite-based climate variability reconstruction of the subtropical northwest Pacific region from Gyokusen Cave in Okinawa-jima, the Ryukyu Islands, Japan**

RYUJI ASAMI<sup>1\*</sup>, RYU UEMURA<sup>1</sup>, HARUYOSHI MIYATA<sup>1</sup>, CHEN JIN-PING<sup>2</sup>, CHUNG-CHE WU<sup>2</sup>, CHUAN-CHOU SHEN<sup>2</sup>

<sup>1</sup>University of the Ryukyus (\* asami@sci.u-ryukyu.ac.jp)

<sup>2</sup>HISPEC, National Taiwan University

Stalagmites can have continuous deposition of calcium carbonate over long periods of time and well-selected stalagmites are accurately datable with high-precision U-Th dating methods. Since 2000, stalagmite-derived oxygen isotope time series have been widely used to reconstruct hydroclimate variations in East Asian monsoon regions during the Quaternary. Here, we present oxygen and carbon isotope time series of stalagmites in Gyokusen Cave, located at the southern Okinawa-jima, the Ryukyu Islands, Japan. The Hendy Test performed in this study suggests that the isotope profiles are primarily of environmental origin without effects of kinetic fractionation. Since December of 2009, we have observed cave environments using loggers and collected water samples. Using the established relationship between oxygen isotope compositions of drip water and precipitation and U-Th dating results of >40 samples, we generated a well-dated high-resolution time series of the oxygen and carbon isotope ratios showing a stalagmite-based reconstruction of hydroclimate changes around the Ryukyus for the Last Glacial Maximum, the last deglaciation (with a hiatus for the Younger Dryas period), and Holocene during the Quaternary. Coupled with previously published stalagmite records from China and Japan, our study can allow a better understanding of past spatial climate changes associated with the East Asian Monsoon.