

Millennium-scale changes recorded in oxygen isotopes of two stalagmites from central Japan

*Taiki Mori², Akihiro Kano¹, Kenji Kashiwagi³

1. Graduate School of Science, The University of Tokyo, 2. Graduate School of Integrated Sciences for Global Society, Kyushu University, 3. Graduate School of Science and Engineering for Research, University of Toyama

Stalagmite records from Japanese caves based on U-Th dating have demonstrate latest Pleistocen-Holocene change in East Asian summer and winter monsoons. Here, we present a new oxygen isotope record of well dated two stalagmites; KA03 collected from Kiriana cave in central Mie Prefecture and OT02 collected from Otaki cave in central Gifu Prefecture. Results of dating show that the stalagmite has been growing during the last 80 kyr almost continuously.

The oxygen isotopic profile of KA03 generally follows the records from the Chinese caves and Greenland ice-sheets in terms of 1) drastic decrease at the B/A warming, and 2) high isotopic intervals corresponding to the Heinrich events. However, KA03 lacks the millennium changes of Dansgaard-Oeschger cycles, which have been reported in a stalagmite from Gifu Prefecture. A distinct feature of KA03 oxygen isotope is a linear increase from 37 ka to the Last Glacial Maximum (LGM). Oxygen isotope of meteoric water collected near the cave shows a seasonal pattern (lower in summer) and an amount effect. Because the locality is generally dry in winter season, we can assume that the stalagmite oxygen isotope is a proxy of humidity in summer. The amount of rainfall had been decreasing gradually from 37 ka to LGM, and then sharply increased at the onset of B/A warming. During the Heinrich events, summer in central Mie Prefecture was relatively dry. The stalagmite KA03 is a novel and significant record of the East Asian summer monsoon.

Keywords: Stalagmite, Last glacial, Oxygen isotopes