
[JJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-IS Intersection

[M-IS10]Paleoclimatology and paleoceanography

convener:Yusuke Okazaki(Department of Earth and Planetary Sciences, Graduate School of Science, Kyushu University), Atsuhiko Isobe(Research Institute for Applied Mechanics, Kyushu University), Akihisa Kitamura(静岡大学理学部地球科学教室, 共同), Masaki Sano(Faculty of Human Sciences, Waseda University)

Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Past environmental changes and events at multi-decadal to tectonic timescale toward an understanding of Earth climate system by an integration of terrestrial and marine proxy studies and numerical modeling will be discussed. We welcome a variety of paleo-environmental studies from a wide range of background. In particular, a series of presentations relating to the Anthropocene will be planned. This is a merged session of A-OS31 "Linkage between oceanography and paleoceanography in marginal, shelf and coastal oceans" and M-IS23 "Paleoclimatology and paleoceanography" sessions at JPGU 2017. We hope that this session will provide an opportunity to promote communication between participants from multidisciplinary field.

[MIS10-P17]Holocene climate records in stalagmites from the Ryukyu Islands, Japan

*Ryuji Asami¹, Yuji Akamine², Ryu Uemura², Yasufumi Iryu¹, Chuan-Chou Shen³ (1.Graduate School of Science, Tohoku University, 2.Faculty of Science, University of the Ryukyus, 3.National Taiwan University)

Keywords:stalagmite, paleoclimate, oxygen isotope composition, carbon isotope composition, Holocene, Ryukyu Islands

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 (e.g., Shen et al., 2002). Stable oxygen isotope signatures in stalagmites have been used as a paleoclimate proxy (e.g., McDermott, 2004) because the isotopic values can be controlled by those of the drip water and the cave temperature (e.g., Hendy, 1971). Since 2000, stalagmite-derived oxygen isotope time series have been widely used to reconstruct hydroclimate variations in East Asian monsoon regions during the Quaternary (e.g., Wang et al., 2001).

Here, we present oxygen and carbon isotope time series of 20 stalagmites collected at 5 caves in the Ryukyu Islands, Japan. The Hendy Test performed in this study suggests that the stable isotope profiles along the center of stalagmite growth appear to be primarily of environmental origin with little effects of kinetic fractionation. Since 2009, we have observed cave environments using loggers and collected water samples to establish relationship between oxygen isotope composition of drip waters and stalagmites. We generate a well-dated time series of the oxygen and carbon isotope ratios in stalagmites using a high-precision U-Th dating method to reconstruct hydroclimate changes around the Ryukyus during the Holocene. Coupled with previously published stalagmite records from China (e.g., Wang et al., 2001) and Japan (Shen et al., 2010; Sone et al., 2013; Uemura et al., 2016), our study can allow a better understanding of past spatial climate changes associated with the East Asian Monsoon variability.

Hendy et al. (1971) Geochim. Cosmochim. Acta, 35, 801-824.

McDermott (2004) Quat. Sci. Rev., 23, 901-918.

Shen et al. (2002) Chem. Geol., 185, 165-178.

Shen et al. (2010) Quat. Sci. Rev., 29, 3327-3335.

Sone et al. (2013) Quat. Sci. Rev., 75, 150-160.

Uemura et al. (2016) Geochim. Cosmochim. Acta, 172, 159-176.

Wang et al. (2001) Science, 294, 2345-2348.