Palaeoclimatic reconstructions around Tahiti in the Last Glacial based on element analysis of fossil coral from IODP #310

Mariko Harada[1]; Yusuke Yokoyama[1]; Mayuri Inoue[2]; Atsushi Suzuki[3]; Tsuyoshi Ishikawa[4]; hodaka kawahata[5]; Hiroyuki Matsuzaki[6]

[1] Dept. Earth & Planet. Sci., Univ. Tokyo; [2] ORI; [3] GSJ/AIST; [4] Kochi Inst. Core Sample Res., JAMSTEC; [5] GFS and ORI, U of Tokyo; [6] MALT, Univ.Tokyo

Integrated Ocean Drilling Program (IODP)Expedition 310 was conducted on Tahiti, South Pacific, November and December in 2005, mainly for purpose of examining global sea-level change since the Last Glacial Maximum (LGM). Fossil *Porites* corals, which were recovered as parts of the drilled cores, are recognized excellent archives of past sea surface temperatures (SSTs) and seasonal variabilities of the ocean climate from the LGM to the Holocene. Oxygen isotope ratio and Sr/Ca ratio of coral skeleton have been used as climate proxies of the SST and sea surface salinity. Trace elements in coral skeleton such as Ba, Mn, and Cd have been examined as indicators of sea surface conditions including upwelling and terrestrial influences, and especially their relationship to El Nino/ Southern Oscillation (ENSO) events. In this study, we explore application of skeletal trace elements in Tahiti corals for reconstructing palaeo-oceanographic conditions during the glacial and post-glacial periods. First of all, we checked diagenetic alteration of fossil coral specimens by X-ray diffraction analyses and selected pristine samples for further chemical analyses. Dating of fossil corals were performed using 14C method by accelerator mass spectrometry (AMS). The fossil corals were cut into slabs, each approximately 7 mm thick, which were then X-rayed. We identified the coral's axis of maximum growth on the soft X-ray image, and then selected an area showing good continuity of growth for microsampling. Microsamples were taken at 0.4 mm intervals along the direction of the growth axis, following the microsampling method of Gagan et al.[1996] and Suzuki et al. [2001]. A powdered sample of 0.05 to 0.1mg was used for trace elemental measurements by ICP-MS. Results of fossil corals of 14 ka and 11 ka will be discussed.