

## East Asian Monsoon variability reconstructed from coral and speleothem records: a review

# Atsushi Suzuki[1]

[1] GSJ/AIST

Recent progress on reconstructing Asian Monsoon variability using coral and speleothem records will be reviewed. The behavior of the East Asian Monsoon (EAM) has played an important role in the global climate system, as shown by its strong, complex linkage with millennial-scale trends in the North Atlantic, the west Pacific warm pool (WPWP), and orbitally induced Northern Hemisphere summer insolation. Especially, coral records from the East China Sea (ECS) and the South China Sea (SCS) will be discussed because the two seas are key areas for understanding the variability of Asia monsoon system.

The East China Sea (ECS) is a typical marginal sea of the western Pacific. The ECS has been an important site for paleohydrological and paleoceanographic studies because it is influenced by both coastal waters and the Kuroshio Current. The latter in particular transports a large amount of heat from the tropics to middle latitude and strongly influences the regional climate, including the EAM.

The South China Sea (SCS) is located between Pacific Ocean and Eurasian continent and hence the region is influenced from Asia Monsoon as well as El Niño Southern Oscillation (ENSO). SCS plays a key role as the source area of monsoon precipitation that influence the terrestrial climate in the Asia. High-resolution record of Sea Surface Temperature (SST) from SCS could therefore provide important archives to better understand the mechanism of monsoon and El Niño evolution.

According to the recent work (Tsunoda et al., 2008), a significant linear correlation was found between winter  $\delta^{18}O$  of coral and SST measured at Ishigaki Port, which suggests that the winter data from this coral sample is a good proxy for reconstructing past climate change. Furthermore, the winter instrumental SST shifted from being related to the East Asian Winter Monsoon to being dependent on the El Niño/Southern Oscillation in response to the 1988/1989 climate regime shift. Since this shift is also captured by the winter  $\delta^{18}O$  coral values, this 180-year coral core record may provide insight into past climate regime shifts that occurred before instrumental records.

Reference: East Asian Monsoon to El Niño/Southern Oscillation: a shift in the winter climate of Ishigaki Island accompanying the 1988/1989 regime shift, based on instrumental and coral records. Tsunoda, T., Kawahata, H., Suzuki, A., Minoshima, K., Shikazono, N. (2008) *Geophysical Research Letters*, 35, L13708, doi:10.1029/2008GL033539.