

# Winter sea surface temperature variations based on coral oxygen isotope record from Ishigaki Island, the Ryukyus, Japan and transition of its dominant climate factor with 1988/1989 climate regime shift

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We conducted oxygen isotope analysis of the last 30 years portion of 272 cm long core of annually banded coral, *Porites* sp. from Ishigaki Island, the Ryukyus, Japan. The  $\delta^{18}\text{O}$  showed distinct correlation with sea surface temperature (SST) and annual cycle. Especially high correlation between winter extreme  $\delta^{18}\text{O}$  and lowest SST was recognized, and it means the possibility of precise reconstruction of winter climate. Till 1988, winter SST and the  $\delta^{18}\text{O}$  had significant correlation with Monsoon Index (MOI), but after 1989, they showed correlation not with MOI, but with Southern Oscillation Index (SOI) of half year ago. In 1988/1989, a climate regime shift at middle latitude Pacific was detected. This suggests that the dominant factor of the winter climate of Ishigaki Island had transitioned from winter Asian monsoon to El Niño. Further past reconstruction of winter SST at Ishigaki Island with this coral core will make it possible to reconstruct regime shifts and mutation of winter Asian monsoon and El Niño in the past without record of sonde.

