## TAIWAN

## Coral Sr/Ca as a High Precision High Time-Resolution Paleo-Thermometer for Sea Surface Temperature: Looking for ENSO Effects in Kuroshio near Taiwan

Applying the newly developed coral Sr/ Ca paleo-thermometry to core samples from southern Taiwan, we have detected a 1-2°C warming in the sea surface temperature (SST) for the winter of 1982-83. Our tentative interpretation is that the strong ENSO of 1982-83 caused the warming through an enhanced Kuroshio Current or a reduced northeast winter monsooon. However, detailed comparison between the proxy SST record from coral and the SST in the Comprehensive Ocean-Atmosphere Data Set (COADS) revealed several discrepancies of similar size implying that further study is required to establish such a possible teleconnection.

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Our coral samples were drill cores from large Porites heads in Kenting and Lutao. These corals have been growing continuously from about 200 years ago. Kenting is where we calibrated the Sr/Ca vs. Sea Surface Temperature (SST) relationship. It faces the Bashi strait which is the only deep opening of the South China Sea to the Pacific. Lutao is in the Kuroshio Current and our sampling site there (marked by star) is directly exposed to the winter monsoon from the north east.



The 1981-90 SST inferred from Sr/Ca of Lutao coral assuming Lutao seawater has the same Sr/Ca as Kenting, the calibration site. The winter SST was warmer than usual by  $1-2 \,^{\circ}$  for 1982-83 and 1987-88, both of which coincide with ENSO events. Note that the absolute SST scale for Lutao is still uncertain because the measurement of Lutao seawater Sr/Ca is still in progress and we have assumed there that it is the same as Kenting (probably not quite correct). However, a change in seawater Sr/Ca does not affect the relative difference between SST of one winter to that of other winters for the same site. We suspect that this warming was the result of the decrease in cooling caused by a particularly weak NE monsoon since the analysis of COADS wind data revealed an unusually weak NE monsoon for the winter of 1982-83 (Chao et al. 1996, Prog. Oceanography, submitted).