## Pacific Coral Oxygen Isotope and the Tropospheric Temperature Gradient over Asian Monsoon Region: A Tool to Reconstruct Past Indian Summer Monsoon Rainfall

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Having recognized that it is the tropospheric temperature (TT) gradient rather than the land-ocean surface temperature gradient that drives the Indian monsoon, a new mechanism of ENSO-monsoon teleconnection has been unveiled in which ENSO influences the Indian monsoon by modifying the TT gradient over the region. Here, we show that the equatorial Pacific coralline oxygen isotopes reflect TT gradient variability over Indian monsoon region and are strongly correlated to monsoon precipitation as well as to the length of rainy season. Using these relationships we have been able to reconstruct past Indian monsoon rainfall variability of the first half of the twentieth century in agreement with the instrumental record. Additionally a fossil coral oxygen isotope record has been used to reconstruct seasonally resolved summer monsoon rainfall variability of the latter half of the seventeenth century indicating that the average annual rainfall during this period was similar to that during the twentieth century.