

Signature of summer monsoon rainfall from $\delta^{18}\text{O}$ records of coral from Lakshadweep, India

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Stable oxygen isotope of coral skeleton is one of the most commonly explored geochemical proxy for paleoclimatology purpose. Studies have shown that Lakshadweep corals record the decrease in sea surface temperature (SST) during summer monsoon in their skeletal isotopic composition. However, these studies did not observe any relationship between rainfall and $\delta^{18}\text{O}$ values of Lakshadweep corals. Here we present a study on stable oxygen isotope data of Lakshadweep corals and its comparison with sea surface temperature and summer monsoon rainfall. The coral $\delta^{18}\text{O}$ values show minima and maxima corresponding to May (warmest SST) and August (coolest SST) month respectively. There is an average enrichment of about 0.6 ‰ in coral $\delta^{18}\text{O}$ values due to decrease in SST during summer monsoon period. To understand the influence of rainfall on coral oxygen isotope, rainfall values were compared with coral $\delta^{18}\text{O}$ values. It was found that the coral $\delta^{18}\text{O}$ of monsoon season show a negative correlation with summer monsoon rainfall over the region. This suggests that relatively warmer SST condition during monsoon relates to higher rainfall over the region. The study shows that the $\delta^{18}\text{O}$ record from Lakshadweep corals can record the summer rainfall signatures along with sea surface temperature changes in their skeletal isotopic composition.