Inter-annual variations of skeletal geochemistry reflect monsoon variability in a 450 year long coral record from the South China Sea

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The Asian monsoon system provides critical natural services, primarily through heat and water transport. However, our relatively short instrumental records in Asia (30-50 years) limit our understanding of natural climate variability both regionally and globally. A 450-year-old coral from Hon Tre Island, Vietnam, in the center of monsoon driven upwelling, provides annual to decadal scale records of monsoon variability since the Little Ice Age (LIA). Towards the end of the LIA, ^{14}C more closely follows atmospheric variability suggesting a weaker monsoon (upwelling). SST (Sr/Ca) and $\delta^{18}O$ in the LIA share similar interannual trends up until the 1900's suggesting some external drivers of climate. The $\delta^{18}O$ show an increase towards the present suggesting a shift in the monsoon system and/or increased precipitation compared to the LIA. We discuss these seasonal and inter-annual proxies in the context of tropical Pacific climate change.