

Modes of ENSO and solar influence on central American rainfall during the past millennium from bi-monthly speleothem isotopic data

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In addition to its importance for the study of cultural evolution, the Central American tropics play an important role in global climate dynamics. Annual rainfall there is controlled by the seasonal meridional migration of the inter-tropical convergence zone in the background of both and periodic climate modulators of varying frequencies, originating on both the Atlantic (NAO) and Pacific Ocean sides (ENSO and solar). Here, we present one thousand years near bi-monthly $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ time-series from precisely uranium-series dated stalagmite (YOK-G) from Yok Balum Cave, Belize, to examine the persistence and modes of ENSO and solar influence on tropical Central American rainfall. Spectral and wavelet analysis show significant ($> 95\%$ CI) periodicities associated with solar and ENSO spectral peaks that don't fit in the Medieval Climate Anomaly (MCA) and Little Ice Age (LIA) framework. The driest period within the last 1000 years was associated with strong ENSO during MCA to LIA transition (ca.1200-1400 CE). The results suggest coherence between ENSO and solar variability that may be causal. Detailed results will be presented.