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Resolving Global-Scale Climate Changes in Stalagmites from Eastern North America: A Focus on MIS 5 through 3

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Stable isotopic and trace metal (Sr/Ca) results from a Th-230-dated stalagmite whose growth spanned MIS 5e to the MIS 3/2 boundary reveal strong linkages with the isotopic records from Greenland and the Asian Monsoon region, and geochemical/color proxies from the tropics (Cariaco Basin).
While the stalagmite oxygen isotope record largely reflects precession-driven shifts in the seasonality of precipitation, the carbon isotope and Sr/Ca curves are better characterized as records of gradual change from wet to dry, punctuated by abrupt spells of aridity. The timings of the shifts in the moisture balance proxies largely coincide with well-documented shifts observed in the Greenland, Asian Monsoon, and Cariaco records—especially the timing of the DO events. This suggests that the climate of eastern North America is responsive to well-defined shifts in the amount of precipitation that are intimately linked with global-scale shifts in tropical variability, monsoonal moisture and polar instability.