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A high-resolution paleoclimate record for east-central North America from a speleothem spanning the LGM and Younger Dryas

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A speleothem from Culverson Creek Cave (CCC), West Virginia, grew from 6497±225 to 26761±85 years BP. The chronology is well-supported by 37 Th-230 age dates that constrain the stable isotope carbon and oxygen and high-resolution trace element (Sr) results. The timing, duration, and magnitude of climatic events from the CCC record will be compared to other δ18O records such as GRIP and GISP-2, and continental paleoclimate records from various locations in order to understand the differing responses and lag-times of climate regimes to large-scale climate events.

The CCC record of the Younger Dryas (YD) event is particularly well-constrained, as it is supported by 6 Th-230 age dates between 11,003±36 and 13,080±43 years BP which allows for a highly accurate chronology of the east-central North American climatic response to this rapid cooling event centralized in the North Atlantic Ocean. Understanding when and how the YD event impacted the regional climate is important for developing a deeper perspective on the impacts of large-scale climate shifts on continental climate regimes. The lack of high-resolution paleoclimate records for this region during this dynamic period underscores the importance of the CCC record in the understanding of how the North American climate has changed over time.