



Speleothem stable isotope records from Eastern Europe & Turkey

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The region of Eastern Europe & Turkey contributed to the SISAL (Speleothem Isotopes Synthesis and AnaLysis) global database with stable carbon- and oxygen isotope time-series from 18 entities from 14 cave systems. The currently available oldest record from this region is the ABA-2 flowstone record (Abaliget Cave; Hungary) reaching back to MIS 6 (160.6 ka). The temporal distribution of the compiled 18 entities points out a ~20-kyr-long period, centering around 100 ka, lacking speleothem stable isotope record in the region. The regional subset of SISAL_v1 records displays a continuous coverage for the past ~90 kyr for both $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$, with an average temporal resolution of ~12 yr for the Holocene, and >50 yr for the pre-Holocene period. The highest temporal resolution both for the Holocene and the pre-Holocene was achieved in the So-1 record (Sofular Cave; Turkey). Assessing the data, an important split was found regarding the climatic interpretation of speleothem $\delta^{18}\text{O}$. While the oxygen isotope composition of more continental formations is thought to reflect mainly temperature variations and changes in moisture transport trajectories, it may strongly reflect fluctuations of precipitation amount in the southern part of the region. Variations of $\delta^{13}\text{C}$ primarily interpreted as humidity changes reflecting dry/wet periods across the region. Elevation gradients from three non-overlapping time periods from the region - for the last 5kyr - indicated systematically prevailing elevational gradients around -0.26‰ per 100m in $\delta^{18}\text{O}$. The regional comparison of SISAL_v1 speleothem $\delta^{18}\text{O}$ and the temporal distribution of coarsely crystalline cryogenic cave carbonate occurrences back to 45ka does not appear to confirm the finding that occurrence of the latter coincides with the warming from stadial to interstadial conditions.