



A continuous oxygen and carbon isotopic record from 6-80ka in a speleothem from NE Turkey

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A continuous radiometrically-dated oxygen and carbon isotopic record from 6-80ka in a speleothem from NE Turkey is presented. The record shows clear MIS 5-1 variations with shifts of 4 per mil or more in $\delta^{18}\text{O}$ over the time period, allowing assessment of the pacing of past climatic changes i.e. timing of the Last Glacial Period-Holocene transition. One likely source of moisture to the cave is the Mediterranean Sea, with the $\delta^{18}\text{O}$ signal in the speleothem representing shifts in sea surface water isotopic composition. The 4 per mil shift in $\delta^{18}\text{O}$ from enriched values during MIS 2 to depleted values in the Holocene compares well with a similar shift in the Mediterranean Sea surface water signal derived from ocean sediment cores. Other isotopic excursions in the record may represent smaller scale climatic changes affecting the Mediterranean Sea, such as changes in strength of the African monsoon and/or enhanced rainfall in the region, which have been linked to Sapropel Events. An alternative moisture source is to the north of Turkey, in this case the $\delta^{18}\text{O}$ signal in the speleothem representing changes in $\delta^{18}\text{O}$ of the Black Sea. The large shifts toward lighter values may be associated with meltwater from disintegrating Eurasian ice sheets entering an isolated Black Sea. A Black Sea source would provide a mechanism for possible Dansgaard-Oeschger/Heinrich Event influence on the speleothem record during the Last Glacial Period. The record allows a test for contrasting models of climatic conditions during the Last Glacial Maximum suggesting possible increased seasonality (enhanced winter precipitation) linked to changes in the position of the Atlantic westerly jet stream.