



## **A first Last Glacial Maximum to Younger Dryas stalagmite record from southern Portugal**

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A newly launched research program permitted the sampling of speleothem deposit in the Algarve area (Southern Portugal) with the primary objective of constraining the ages of past humid intervals in the area from U-series measurements. A first 180 mm-long stalagmite has been analyzed. It yielded very small amounts of U ( $\sim 20$  ppb). Adding to the presence of a detrital "contaminating" fraction labelled by  $^{232}\text{Th}$  contents around 10 ppb, the subsequent lack of precision on  $^{230}\text{Th}$  measurements resulted in relatively large uncertainties for the calculation of the accretion chronology of this stalagmite.  $^{14}\text{C}$ -data however provide some complementary information. With some caveat about impacts of climatic changes on the U- vs  $^{232}\text{Th}$ -series systematics of the contaminating fraction, ages ranging  $\sim 20$  to  $\sim 10$  ka are estimated from the base to the top of the stalagmite. The set of ages indicate deposition from the Last Glacial Maximum (LGM) until the end of the YD, but for a precipitation gap matching possibly the Bølling-Allerød interval. Information about paleoclimate conditions during the two precipitation intervals was investigated using stable isotope measurements, following satisfying Hendy tests performed at three levels in the stalagmite. Accordingly, the deglacial sequence may be interpreted in relation with paleoclimate/paleovegetation conditions in the overlying environment. Carbon isotope values range from  $-9$  to  $-7$  ‰ (vs VPDB), and suggest a recharge with a soil  $\text{CO}_2$  composition intermediate between those of C4 and C3 plant covers. Oxygen isotope delta values range from  $-2$  ‰ (vs VPDB), at the bottom, to  $-3$  ‰ near the top of the stalagmite. From this preliminary study, we conclude that if more humid conditions during the LGM and cold deglacial stages indeed led to carbonate deposition in caves, they were not necessarily accompanied with drastically lower temperatures than at present.