

## **$\delta^{234}\text{U}_0$ in stalagmites as a proxy of paleohydrological conditions, a LA-MC-ICP-MS study**

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The  $\delta^{234}\text{U}$  composition of stalagmites is usually a “by-product” of U-Th dating, and its variability is rarely interpreted. However, it has long been suggested that the  $\delta^{234}\text{U}$  composition reflects water-rock interactions and weathering, and thus, can be used as a potential proxy of past hydrological conditions, e.g. in karst systems. However, only few reports have used  $\delta^{234}\text{U}_0$  for this purpose.

Here, high-resolution records of  $\delta^{234}\text{U}_0$  in stalagmites obtained using LA-MC-ICP-MS from three different locations and environments (tropical, subtropical and alpine) are used to assess the robustness of this potential paleohydrological proxy. These records are compared to trace-element,  $\delta^{18}\text{O}$  and  $\delta^{13}\text{C}$  records from the same stalagmites that provide some constraints on the controls of the  $\delta^{234}\text{U}$ .

The  $\delta^{234}\text{U}$  values in these samples appear to reflect the weathering rate of the limestone hosting the cave. Locally, . In general, the records reflect the overall climate evolution, and locally seasonal  $\delta^{234}\text{U}_0$  cycles were also detected.. Because the results presented here have been obtained from significantly different environments (tropical, subtropical and alpine), we suggest that  $\delta^{234}\text{U}_0$  in stalagmites has the potential to become a proxy of past hydrological conditions.