

### **Reconstructing the Late Pleistocene Climate of the Middle Atlas in Morocco Using Speleothem Records**

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The Middle Atlas mountain range of Morocco is located at the crucial triple point of the N Atlantic, Saharan/Monsoonal and the SW Mediterranean climate realms (Gasse, F. 2000). Stalagmites of late quaternary age have been sampled from the Middle Atlas in Morocco in order to obtain an improved and well-dated continental climate record. Previous work is limited to the published record from the La Mine cave in Tunisia to the east (Genty et al. 2006).

One of the caves sampled is referred to as Bab Mafraq cave. Data reported here are obtained from stalagmite BM-3. The Bab Mafraq cave is located at an altitude of 1530 meter, yearly average precipitation is about 930 mm, and the yearly average temperature is about 13°C. The stalagmite has been dated using the U/Th dating method (MC-ICP-MS). Data obtained so far reveal two growth stages coinciding with the last interglacial (MIS 5) and the Holocene (MIS 1). Mesoscopically two types of speleothem facies can be identified: type 1 is dark grey coloured with brown layers, type 2 is milky white with occasional brown layers. In the portion of the speleothem representing MIS 5 a small hiatus is present characterized by a change from facies type 1 to facies type 2 crystal growth. The MIS 5 to MIS 1 transition is marked by a considerable hiatus of about 100 kyr (MIS 2 - 4).

The characteristic lamination of stalagmite BM-3 is investigated under a light microscope. Hendy tests show that kinetic effects during CaCO<sub>3</sub> precipitation are insignificant. In addition,  $\delta^{18}\text{O}$  and  $\delta^{13}\text{C}$  and trace elemental analysis sampled along the growth axis is under way. The hiatal phase coinciding with MIS 2 - 4 might suggest either a change in the water flow path in the karst system or drier conditions for the Middle Atlas in Morocco, causing a temporary halt in stalagmite growth.

Gasse, F. 2000: Hydrological changes in the African tropics since the Last Glacial Maximum. *Quaternary Science Reviews*, vol. 19: 189-211.

Genty, D., Blamart, D., Ghaleb, B., Plagnes, V., Causse, C., Bakalowicz, M. J., Zouari, K., Chikr, N., Hellstrom, J., Wainer, K. & Bourges, F. 2006: Timing and dynamics of the last deglaciation from European and North African delta C-13 stalagmite profiles - comparison with Chinese and South Hemisphere stalagmites. *Quaternary Science Reviews*, vol. 25: 2118-2142.