



P3-039

New Mediterranean speleothem records for glacial Terminations IV and III

Torner J.¹, Cacho I.¹, Stoll H.², Moreno A.³, Cheng H.⁴, Edwards R. L.⁵

¹University of Barcelona, Dinàmica de la Terra i de l'Oceà, Barcelona, Spain, ²ETH Zurich, Department of Earth Sciences, Zurich, Switzerland, ³Instituto Pirenaico de Ecología, CSIC, Departamento de Procesos Geoambientales y Cambio Global, Zaragoza, Spain, ⁴Xian Jiaotong University, Institute of Global Environmental Change, Xian, China, ⁵University of Minnesota, Department of Earth Sciences, Minnesota, United States. j.torner@ub.edu

Speleothem archives spanning the glacial terminations IV and III (TIV and TIII) are particularly scarce in the western Mediterranean region. This study presents unprecedented geochemical records measured on a speleothem from Minorca Island that grew continuously through the period from Marine Isotope Stage 11 to 7. Its U/Th chronological model provides an accurate and excellent chronology for both terminations which are recognized as intervals with slow growth rates. Hence revealing the difficulty of the speleothem to grow during these periods of rapid melting, suggesting major distortions in the hydrological conditions associated to glacial terminations. The Mg/Ca and $\delta^{13}\text{C}$ records indicate that deglaciations were characterized by rapid transitions towards more humid conditions. However, the $\delta^{18}\text{O}$ results shows a deglacial freshening that led in time the hydrological signal, with a remarkably larger time-lag at the TIV. These earlier depletions of the $\delta^{18}\text{O}$ are interpreted to mark the onset of the glacial melting, a freshening signal that propagated through the surface ocean and transferred from the rain source into the stalagmite. The co-existence of comparable deglacial $\delta^{18}\text{O}$ depleted episodes within the marine records, brings the possibility to review the marine chronologies, independently of the orbital tuning. An exercise that indicates a significant bias in the timing of the melting onset associated to TIV.