



## **Dating a thick Neogene flowstone (Conturines cave, Dolomites, Italy): a multi-method approach**

Gabriella Koltai (1), Robert Scholger (2), Maria Knipping (3), Andrea Borsato (4), Hai Cheng (5), Jon Woodhead (6), and Christoph Spötl (1)

(1) Institute of Geology, University of Innsbruck, Innsbruck, Austria (gabriella.koltai@uibk.ac.at, christoph.spoetl@uibk.ac.at), (2) Department of Applied Geological Sciences and Geophysics, Montanuniversität Leoben, Leoben, Austria (robert.scholger@unileoben.ac.at), (3) Institute of Botany, University of Hohenheim, Stuttgart, Germany (maria.knipping@uni-hohenheim.de), (4) School of Environmental and Life Sciences, The University of Newcastle, Callaghan, Australia (andrea.borsato@newcastle.edu.au), (5) Institute of Global Environmental Change, Xi'an Jiaotong University, Xi'an, China (cheng021@mail.xjtu.edu.cn), (6) School of Earth Sciences, The University of Melbourne, Melbourne, Australia (jdwood@unimelb.edu.au)

Conturines cave opens at the base of a cirque wall at 2775 m a.s.l. in the Dolomites (Northern Italy). Large parts of the cave floor are covered by an extensive and unusually thick (up to 3.4 m) flowstone. This and other speleothems are inactive, corroded and cut by fractures. Eight drill cores covering the entire stratigraphy of the basal flowstone were obtained along the course of the gallery. Four methods were applied to establish a chronological framework of this unique long-term paleoenvironmental archive.

<sup>230</sup>Th ages on several cores demonstrate that calcite deposition had terminated before 650 ka BP. U-Pb dating was attempted but yielded unfavourably low U/Pb ratios.

Polarity determinations of demagnetised samples were carried out on the full length of four cores. Most cores show already reverse magnetisation in their top parts. Two long cores drilled in the proximal part of the speleothem show replicated evidence of several polarity changes, providing a strong indication that the flowstone reaches back at least to the Pliocene.

Finally, pollen was extracted from flowstone samples in order to establish independent palynostratigraphic constraints. The pollen density is low, but the presence of *Nyssa* indicates an Early Pleistocene or Pliocene age.