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# A stalagmite from Corchia cave (Italy) - an archive of palaeoclimate information on three Terminations during the Middle Pleistocene Transition

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During the Middle Pleistocene Transition the period of glacial-interglacial cycles shifted from 40,000 to 100,000 years. Determining the orbital parameter(s) most responsible for this transition is one of the most challenging questions amongst the palaeoclimate community. Although the majority of information about this shift is retrieved from deep sea and ice core records, the inability to radiometrically date these records hampers the production of an absolutely dated palaeoclimate time-series which could be used to test existing orbital theories.

Speleothems (secondary precipitated cave deposits) could possibly be used for this purpose. Their geochemical proxies capture information about palaeoclimate changes and their ability to be radiometrically dated makes them exceptional palaeoclimate recorders. Although the vast majority of speleothem-based studies so far have been centred on the late Quaternary (mostly the last 100,000 years), development and improvement of U-Pb dating methods has opened up exciting new opportunities to use speleothems to address palaeoclimate questions that pertain to the period pre-dating the limit of U-Th dating ($\sim$500,000 yr).

Here we present results of detailed palaeoclimate investigations on a stalagmite (CC8) from Corchia Cave in Italy. Speleothems from this cave have already yielded useful palaeoclimate information for the latter part of the Quaternary. Their characteristics, such as high concentrations of uranium, low concentrations of common lead and thorium, and relatively well-constrained initial uranium-series disequilibria make them ideal candidates for successful U-Pb dating.

U-Pb dating results showed that speleothem CC8 grew during part of the Middle Pleistocene Transition (0.81 to 0.99 Ma). By comparing our stable isotope time series ($\delta$18O and $\delta$13C) with the LR04 stack we recognize Terminations X, XI and XII. High-resolution trace element and fluorescence analyses have also been performed through parts of the speleothem where Terminations X and XII begin. Interpretations of the palaeoclimate changes through these intervals, and the relationship of our time series to orbital parameters during this period, are discussed.