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Interglacial speleothems from Trentino, Italy: Preliminary dating and stable isotope results.

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With the increasing sophistication of climate models for the prediction of global climate changes, extensive datasets are required to test these models. Since the Last Interglacial period has been proposed as an analogue for the modern period, it can provide the perfect control setting on which to test climate models without the influence of anthropogenic emissions, to study natural climate fluctuations. The aim of this research is to provide a number of new, interglacial speleothem proxy datasets from the Trentino region on the southern flank of the Alps.

Here, we present for the first time, preliminary U-Th dating and stable isotope data from interglacial Trentino speleothems (flowstones and stalagmites). The speleothems come from four cave sites; ranging from close to the valley floor (c. 370 m a.s.l.) to higher altitude (c. 1880 m a.s.l.). At the highest altitude site, flowstones CB25 and CB39 record growth for only a short period between 137-129 ka, roughly corresponding to the inception of MIS 5e. The stable isotopes of CB25 and CB39 over this period show a relatively stable climate situation, resembling peak interglacial conditions. Situated at a lower altitude, BG2 recorded a longer period of the last interglacial from 135-117 ka. The stable isotopes exhibit greater fluctuations which may be related with the numerous detrital layers that punctuate the BG2 flowstone, and likely indicate severe flooding events in the cave. Flowstone FS1 recorded a period that roughly encompasses MIS 6 and 7. The stable isotope record over this period exhibits several large fluctuations (c.2‰ for δ18O), indicating a period of intense climate changes.

The final sample, MO7, is a complex stalagmite: the preliminary age model indicates growth throughout interglacial phases (MIS 7 and 9) but is punctuated by numerous short hiatuses. These hiatuses likely indicate the coldest periods during glacial and stadial phases and are characterized by strong negative peaks in both carbon and oxygen isotopes that are possibly associated with periodical inundation of the cave by glacial meltwater.

The stable isotope data for the interglacial speleothems will be compared to modern conditions through cave monitoring studies and comparisons with published Holocene speleothem records in the region and nearby areas.