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U-series dating and stable isotope records of speleothem records from the Scladina Cave (Belgium)

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The Scladina cave, situated in the village of Sclayn (Ardennes, Belgium) at the southern bank of the Meuse, is famous for its Neanderthal fossils and artefacts. The infilling of the cave consists of a succession of flowstone layers interbedded with reworked loess sediment from outside the cave. The younger flowstone layers correspond to interglacials MIS 5 and the Holocene, while the reworked loess sediments represent cooler conditions. By careful diagenetic screening, well-preserved speleothem material was selected for U-series dating and stable isotope analysis of calcite and fluid inclusions. The results provide important new constraints on the age of Neanderthal fossils and artefacts, and bracket the time periods with a hydroclimate favorable for speleothem growth. The combination of fluid inclusion and calcite isotope analysis documents climate variability in the interglacials at high temporal resolution.