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The Last Interglacial recorded in a Remouchamps cave speleothem (Belgium) –Information on seasonal changes and on the chronology of first climate deteriorations.

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A ∼3m long stalagmite from the Remouchamps and ∼15cm long stalagmite from the Han-sur-Lesse caves (Belgium) grew from ∼124 to 100ka with growth rates going from 0.8mm/century to 30mm/century. Stable isotope (d18O and d13C) and growth-rate analyses suggest a rather stable climate from 122.0 to 115.8 ka. A clear climate deterioration is observed at ∼115.8 ka and lasts until 111.2ka (±0.5ka, 2s), which corresponds well with Greenland Stadial 26. Several short-term but clear changes are observed in the stable isotopic composition at ∼121.5, 119.5, 118.4, 117.6 (±0.5ka, 2s)) and are interpreted as climatic events of ∼several hundred years long. They correspond with changes in stalagmite diameter and growth rate. Depending on the combination of changes in the d18O, d13C, growth rate and stalagmite diameter, the events are interpreted as corresponding to changes in rainfall amount or temperature.

The RSM17 stalagmite exhibits visible seasonal layering during the entire 120-115ka period on which changes in Mg, Sr, Ba en P have been observed. This well pronounced lamination, likely annual as suggested by the U-Th data, demonstrates a strong seasonal character of the climate and/or vegetation activity during this period. We compare these MIS5 seasonality to the present day calcite layering observed in the cave.

Both stalagmites, with a growth-rate increase after 125ka globally corresponding to the so-called Eemian optimum, seem to start later than other southern stalagmites from France, Italy or Spain. This observation raises the question of a possible late onset of interglacial conditions in north-west Europe and a progressive S-N advance of warmer conditions between 130 and 125ka through Western Europe.