



Why was there increased moisture in the eastern Caribbean when Europe was cold? Evidence from Speleothems

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We present evidence for the last 10,000 years from speleothems collected from the eastern Caribbean showing that this region was anomalously moist at the same time that Europe and the north Atlantic were unusually cold. The most noticeable period for this association was during the 8.2ka event when Greenland ice cores (GISP2) show that northern Europe and the north Atlantic were cooler by 3 - 6 deg C. The trigger for the 8.2ka event is thought to be pulsed melt water discharges from a multi-event drainage of proglacial lakes associated with the decaying Laurentide Ice Sheet margin. The melt water apparently slowed the thermohaline circulation decreasing warmth to northern Europe. At the same time moisture transfer to the northern latitudes may have slowed resulting in the observed lower latitude precipitation patterns. The eastern Caribbean seems to be especially sensitive to the changes in the strength of the Atlantic meridional overturning circulation (AMOC). Higher precipitation values may also have increased lowland flooding along the coastal areas of north eastern South America, already affected by early Holocene sea-level change, and are linked to social territory reshuffling which stimulated the earliest migrations into the Caribbean Archipelago shortly afterwards. Our age models based on precise MC ICPMS $^{230}\text{Th}/\text{U}$ dating indicate that the eastern Caribbean stalagmites all grew at about the same rate of 15 cm through the 8.2ka event, much faster than during any other growth period, except today when they are also growing at an accelerated rate.