

North American Monsoon response to Heinrich events

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The North American Monsoon (NAM) is the atmospheric phenomenon responsible for rainfall regime during summer, over most of Mexico and southwestern USA. Despite of importance, it is one of the least understood monsoonal systems. Here, we present a hydroclimate reconstruction of NAM based on the oxygen isotope stalagmite record collected from the NAM core zone area in Colima México. This sample spans a period from 11 to 62 kyrs that was determined through U-Th dating. Long-term cave and rainfall monitoring indicate that the $\delta^{18}\text{O}$ variability in the stalagmite can be attributed to changes in the isotopic composition of rainfall, and the latter is mostly modulated by rainfall amount. Results suggested that, the NAM was weakened during most of Heinrich Stadial events (2-6). Particularly, during Heinrich Stadial 1 a two-fold structure which coincides with other records in the northern [1] and southern [2] hemispheres, show two events of decreased precipitation and an event between of an active monsoon. The location of Heinrich Stadial events, coincides in time and length with other records, in the northern hemisphere [3, 4], which supports the link between North Atlantic sea surface temperature and summer rainfall in the west of Mexico, representing the first absolute-dated record showing the response of NAM during Heinrich Stadials.

[1] Hodell *et al.* (2008) *Quat. Sci. Rev* **27**, 1152-1165. [2] Strikis *et al.* (2015) *Geophys. Res. Lett* **42**, 5477-5484. [3] Escobar *et al.* (2012) *Quat. Sci. Rev* **37**, 92-104. [4] Wang *et al.* (2001) *Science* **294**, 2345-2348.