LATE GLACIAL STAGE-HOLOCENE TRANSITION RECORDED IN A NORTHERN VENEZUELA STALAGMITE
La transición de la Etapa Glacial Tardía al Holoceno según preservada en una estalagmita del norte de Venezuela

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Northern South America and the southern Caribbean have experienced major climatic and environmental changes during the Late Glacial through the Holocene. Existing palaeoclimatic records from the Caribbean such as those from Lake Mirogojne in Haiti (e.g., Hodell et al., Nature 352, 790, 1991), Lake Valencia in Venezuela (e.g., Curtis et al., The Holocene 9, 609, 1999), and the Cariaco Basin off the coast of Venezuela (e.g., Hughes, et al., Science 290, 1951, 2000), suggest that during the Late Glacial the Intertropical Convergence Zone (ITCZ) extended further north into the Caribbean and overall dryer conditions prevailed changing to warmer and wetter conditions during the Holocene. These changes are attributed to insolation forced migration of the mean position of the Intertropical ITCZ (Haug et al., Science 293, 1304, 2001; Seltzer et al. Geology 28, 35, 2000). Furthermore, δ18O values and Mg/Ca ratios of foraminifera from the Cariaco Basin indicate that a major temperature change of ~4°C occurred from the Late Glacial to Holocene (Lea et al., Science 301, 1361, 2003; Lin et al., Paleocenography 12, 415, 1997). Currently the average northernmost summer position of the ITCZ over South America lies over northern Venezuela. Thus, northernmost Venezuelan palaeoclimatic proxies archive crucial information needed to understand climatic changes from Late Glacial to Present.

Here we present preliminary δ13C and δ18O data and chronology from a stalagmite collected from Cueva Zarraga located west of Caracas, Venezuela.

The decreases in δ13C and δ18O over this period indicate a change to warmer and wetter conditions in northernmost South America from the Late Glacial to the early Holocene. The isotopic shifts preserved in the Cueva Zarraga stalagmite indicate a rapid change in conditions from Late Glacial to Holocene. Interestingly, VCZ-1 δ13C record seems to have a strong response to climatic events that result in reduced moisture and perhaps colder temperature. The 8200 yr BP cooling event is recorded by Lake Valencia sediments as a significant moisture decrease and is recorded by VCZ-1 as a significant increase in δ13C most likely a response of the soil ecosystem to moisture decreases.

CONCLUSION: Venezuela stalagmites δ13C and δ18O are clearly responding to the climatic changes affecting northern South America and the Caribbean. Further detailed studies of Cueva Zaraga and other stalagmites from Venezuela and Colombia will provide us with a high-resolution record of the terrestrial system response to Late Glacial to Holocene climatic change. Sampling has been carried out in Venezuela and work in Colombia will be carried out in the summer of 2005.

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