

10th SSAGI

South American Symposium
on Isotope Geology

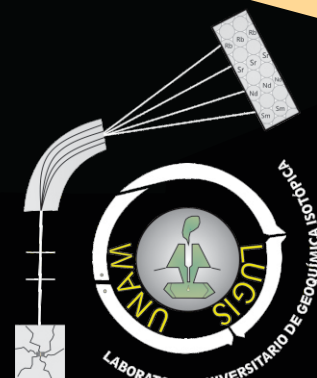
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PROGRAM AND ABSTRACTS



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A SPELEOTHEM RECORD FOR THE LAST 15000 YEARS FROM COLOMBIA, RELATIONSHIP OF ITCZ SHIFT AND PALEORAINFALL.

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We present the first high resolution, approximately 5 years sample spacing, precipitation record from Santander (Colombia) covering the last 15.5 kyrs from ^{230}Th -dated stalagmites oxygen isotope records. Our record shows shift in the mean latitude of the Intertropical Convergence Zone (ITCZ), including the periods corresponding to the Bølling-Allerød and Younger Dryas (YD) events, in addition to the Bond events during the Holocene. Four stalagmites were collected Caracos cave in central-eastern Colombia; the samples were collected at ~300 m distance from the entrance in the lower chamber in the more restricted cave ventilation. The speleothems were dated by the U-Th method, 38 in total with errors (2σ) $<1\%$. The Caracos record spans from present to 15.5 kyr; the early and middle Holocene is represented by stalagmite CAR7, while stalagmites CAR1, CAR 2 and CAR3 represent the middle to late Holocene. The isotope profile is composed of 2500 $\delta^{18}\text{O}$ samples, yielding a temporal resolution between 1 and 10 yr (5 yr on average) and exhibiting a large range of $\sim 3.5\%$ throughout the Holocene and Late Pleistocene. Model experiments suggest that on seasonal to interannual timescales the $\delta^{18}\text{O}$ in precipitation is primarily controlled by the “amount effect” and “source effect” over north South America, where precipitation is fundamentally the result of shift of ITCZ and moisture from the Pacific. The $\delta^{18}\text{O}$ isotope profiles obtained from the Colombian stalagmites were compared with records from Cariaco (Venezuela), Guayaquil (Ecuador) and Shatuca (Peru), observing a latitudinal displacements in the northern part of South America. These comparisons give evidence for variations in the position of the ITCZ mainly during the Bølling-Allerød with wet conditions and decreasing rainfall during the Younger Dryas. Similarly, a southern shift of the ITCZ during the Holocene Bond events is observed generating dry conditions on Colombia.