

PAGES-LOTRED-SA 3rd Symposium, Climate change and human impact in Central and South America over the last 2000 years: Observations and models, Jul 2014, Medellin, Colombia

ABRUPT CLIMATIC EVENTS IN NORTHEAST BRAZIL DETECTED IN BAT GUANO AND SPELEOTHEMS RECORDS OVER THE LAST 2,000 YEARS

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Suitable paleoenvironmental records in semi-arid areas are rare due to the paucity of water systems, such a lake or swamps. This is particularly true in the northeastern Brazil (NEB), where extremely low annual precipitations are mostly governed by the seasonal migration of the Intertropical Convergence Zone (ITCZ). In this ongoing study, we will present an original approach based on the comparison of two sections (1 and 1,5m long) of bat guano accumulation from the Urubu cave (5°34'S, 37°39'W), and a 19cm long speleothem collected at Furna Nova cave (5°05'S, 37°36'W), in Rio Grande do Norte State, NEB. The guano deposit has been dated from 25 ²¹⁰Pb and 6 ¹⁴C ages, while 9 U/Th analyses have been performed to date the speleothem. To reconstruct past regional precipitations, we use the compound specific hydrogen isotopic composition (δD) of *n*-fatty acids in the guano and the oxygen isotopes ($\delta^{18}O$) of the speleothem. To scrutinize the response of local ecosystems to climate variability, we use the guano sedimentation accumulation rate, the carbon and nitrogen isotopes ($\delta^{13}C$ and $\delta^{15}N$) of bulk organic matter as well as the abundance of some selected organic compounds (e.g. *n*-fatty acids, *n*-alkanes) present in the guano related to plant and insect production. All these results will be presented at the LOTRED conference. Our preliminary results show that the onset of bat guano accumulation occurred 1,7 kyrs BP ago and stepwise increased towards the present. However, this increasing trend was punctuated by one hiatus (0,3-0,8 kyrs BP) corresponding to higher $\delta^{18}O$ values ($\geq -2.5\%$) in the speleothem record, which suggest a pronounced and abrupt

dry episode during the Little Ice Age (LIA). In contrast, high guano accumulation rates, especially between 1,0 and 1,2 kyrs BP during the Medieval Climate Anomaly (MCA) and over the last 300 yrs BP, were linked to wetter conditions as illustrated by lower $\delta^{18}\text{O}$ values . The wet (dry) conditions are likely associated to a northward (southward) ITCZ migration, on which is probably superimposed the effects of strong La Niña (El Niño) events. The alternance of dry and wet episodes in the NEB during the last 2,0 kyrs BP strongly impacted regional ecosystems by limiting vegetation and insects, thus locally reducing population of bats and/or promoting their migration towards more hospitable (wetter) regions.

Keywords: Late Holocene climate, guano, speleothem