

P03-P02

#Presenting author
*Corresponding author

Scrutinizing changes in precipitation over tropical South America during Heinrich Stadial 1

#*Yancheng Zhang[1]; Cristiano Mazur Chiessi[2]; Stefan Mulitza[1]; Matthias Prange[1]; Xiao Zhang[1]; Matthias Zabel[1]; Andre Oliveira Sawakuchi[3]; Francisco William Cruz Junior[3]; Aline Govin[1]; Gerold Wefer[1]

[1] MARUM - Center for Marine Environmental Sci., Univ. Bremen, Germany; [2] School of Arts, Sciences and Humanities, Univ. Sao Paulo, Brazil; [3] Institute of Geosciences, Dept. of Sedimentary and Environmental Geology, Univ. Sao Paulo, Brazil

Here we carried out a detailed investigation on precipitation variations over tropical South America during the Heinrich Stadial 1 (HS1, 18-15 cal ka BP), the most prominent abrupt millennial-scale climate event of the last deglaciation. Based on major element end-member unmixing model and radiogenic isotopic data from a marine sediment core raised off French Guiana, we show a significant increase of the Andean-sourced terrigenous material to the equatorial Atlantic during HS1. In agreement with this pattern, the compilation of available paleoclimate proxies from tropical South America presents increased precipitation over the Andes during HS1. To further elucidate the physical mechanism behind this scenario, we used a freshwater-hosing experiment performed with CCSM3.0. The model run indicates marked changes in the seasonality of precipitation over South America during HS1 relative to the Last Glacial Maximum (23-19 cal ka BP). We suggest that the weakened South America monsoon circulation (SAMC) during HS1 led to enhanced precipitation over northeastern Brazil (occurred in austral summer). In contrast, the enhanced precipitation over the Andes during HS1 (occurred in austral winter) probably resulted from an intensified convection at this high altitude region due in part to atmosphere-ocean oscillations over the tropical Pacific [Liu et al., 2014, Nature 515, 550-553].