**Steve Burns receives NOAA research grant for studies of High Resolution Speleothem records of the South American Monsoon over the last 2000 years**

The South American Summer Monsoon is the principal source of precipitation for a vast area in South America. Excesses and deficits in monsoon rainfall result in flooding or droughts in areas as disparate as the Nordeste in northern Brazil, the Amazon Basin, the Altiplano region of the Andes and the La Plata basin in southern Brazil, Paraguay and northern Argentina. In this new research project, Burns and colleagues will investigate the nature and causes of South American Summer Monsoon variability over the past 2000 years at high resolution, using speleothems (stalagmites) from a north-south transect of cave sites in eastern Brazil.

Many features of monsoon variability are reflected in the isotopic composition of rainfall, which are, in most cases, faithfully recorded in speleothem calcite at up to annual resolution. Time series of isotopic analyses will provide information on regional variability in precipitation and monsoon intensity. Furthermore, these records and spectral analyses of them will allow us to investigate the causes of decadal and century-scale climate changes during the Late Holocene by comparing our records to other high-resolution climate records. In particular we will be able to directly compare our records to a number of possible mechanisms that might influence SASM strength and precipitation, including: North Atlantic sea surface temperatures, the North Atlantic Oscillation, solar variability, Pacific sea surface temperatures and El Niños.

This research will be carried out in collaboration with Dr. Francisco W. Cruz Jr. (a former Post-Doctoral Research Associate at the University of Massachusetts) and Prof. Ivo Karmann of the University of Sao Paolo, Brazil.