



Geological Society of Nevada

Southern Nevada Chapter

Newsletter

November 2003

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Tropical Paleoclimatology: What Cave Deposits Tell Us About Monsoon Rainfall, El Niño, and Land Use Change

DATE: Thursday, November 20, 2003

SPEAKER: Dr. Matthew S. Lachniet

LOCATION: Room 102 Lilly Fong Geoscience Bldg.

TIME: 5:30 p.m. Social Hour
6:30 p.m. Presentation

MEMBERSHIP NEWS:

Want to become a GSN member or need to renew your membership? Pick up an application at the monthly meeting or go to the main GSN website – www.gsnv.org - to download an application. Remember that the GSN membership calendar year is

October 1 to September 30 so if you haven't renewed or become a member yet now is the perfect time. Remember to check off the box to become a member of our southern Nevada chapter!

Currently our membership count is extremely low but hopefully we can change that soon. The additional money you pay to become a member of the southern Nevada Chapter pays for the wonderful food we have available at each monthly meeting and although everyone is invited to attend these talks, it would be extremely beneficial for those who routinely attend these meetings and partake in the refreshments to help out the chapter and become a member!

Please keep us updated with your current email address so that you can receive this newsletter each month. If you know of someone that wants to receive the newsletter but is not currently on the email list please send an email to me at robynhowley@yahoo.com and I will add them.

ON THE WEB:

The main GSN web page is at www.gsnv.org but our chapter also has a website at <http://geoscience.unlv.edu/GSN/gsnsc.htm>. If you check out this site please be aware that it is outdated and we are currently working on updating all information. Any suggestions or additions should be forwarded to robynhowley@yahoo.com.

Also on the web is UNLV professor Steve Rowland's Frenchman Mountain Great Unconformity website <http://geoscience.unlv.edu/pub/rowland/Virtual/virtualfm.html>. By viewing this site you can get the history of the Frenchman Mountain area and geologic history as well as take a virtual hike through the interpretative site.

SPEAKERS, SPONSORS, & ADVERTISEMENTS:

If you would like to talk at a future meeting or know of anyone who might want to talk, please contact Amy Brock at alb@unlv.nevada.edu.

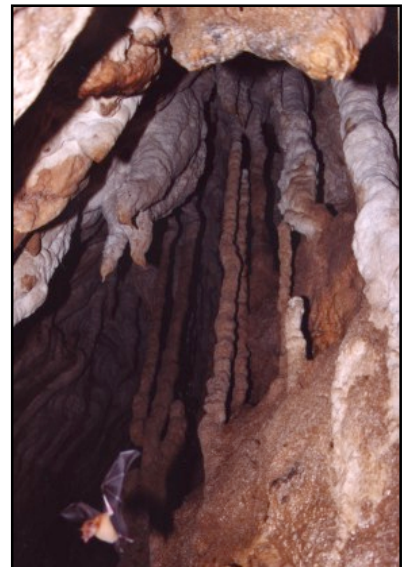
If your business would like to sponsor a GSN southern Nevada chapter meeting or place a paid advertisement in this newsletter please contact Jim O'Donnell at jim_odonnell@cox.net.

Tropical Paleoclimatology: What Cave Deposits Tell Us About Monsoon Rainfall, El Niño, and Land Use Change

Matthew S. Lachniet

ABSTRACT:

Caves are ubiquitous features in Central America, in which cave calcites (speleothems) are actively forming. Such speleothems record past rainfall variations, as well as document pre-Colombian land use change over the Holocene Period, and are archives of paleoenvironmental information. The El Niño/Southern Oscillation is the main source of climate variability in the region presently, with El Niño events resulting in dry conditions and a weaker monsoon. Proxy records of past rainfall from oxygen- and carbon-isotope values of a U/Th-dated stalagmite from the Isthmus of Panama show evidence for rapid monsoon rainfall variation and changing land use over an ~1500 yr period from 180 B.C to 1310 A.D. Rainfall decreased and was more variable after 550 A.D. Carbon-isotopes document vegetation change from rainforest to pre-Colombian agriculture at ~200 A.D. Oxygen isotope values display statistical variance in the El Niño/Southern Oscillation band and correspond with El Niño alluviation events recorded in Ecuadorian lake deposits. We conclude that ENSO sea surface temperature anomalies have forced isthmian rainfall variations over this time period.



Broomstick stalagmites up to 3 m tall, with bat. Cueva Nibida.

BIOGRAPHY: Matthew S. Lachniet

I received my M.S. from Michigan State University in 1997 and Ph.D. from Syracuse University in 2001. My dissertation was on the Quaternary Geology and Paleoclimatology of Costa Rica, which I studied between 1996 and 2000, and while a Fulbright Fellow to Costa Rica in 1998-1999. After completing my Ph.D., I was a postdoctoral fellow with the Smithsonian Tropical Research Institute in Panama City, Panamá, where I continued my research into tropical paleoclimate by exploration and survey of unmapped cave and karst systems in Panama, and isotopic analysis of cave calcite deposits. I later was adjunct faculty at the University of Massachusetts, Amherst, before coming to UNLV in the fall of 2003.

Please visit Matt's website at: http://geoscience.unlv.edu/Faculty_Staff/lachniet.html