

CAVE SCIENCE NEWS

WORLD'S DEEPEST KARST HYDROLOGIC SYSTEM EXTENDED

A U.S. team led by Bill Stone extended the proven relief of the world's deepest known karst hydrologic system to 2540 m in January 1997. Using standard scuba equipment, the team reached 33 m below the Agua Fria surface level in the Santo Domingo Canyon. Agua Fria is the proven resurgence of Sistema Cheve. The highest entrance to the system is Cueva Escondida at 2798 m msl. The deepest point reached by the divers was 258 m msl. Stone reports that the submerged passage extended at least 8 m deeper but was not explored in order to avoid decompression and, hence, additional use of precious compressed air supplies in the remote region of Oaxaca, Mexico.

Presently, the explored portion of the upper Cheve system is 25.5 km long and -1386 m deep. The physically unconnected but proven lower extension of the hydrologic system, Cueva del Mano, has a surveyed length of 9.5 km and relief of about 120 m. Agua Fria is the resurgence spring physically connected to Cueva del Mano.

SCIENTISTS ESTABLISH AGE OF CARLSBAD CAVERN

For the first time, scientists have established the age of Carlsbad Cavern, a spectacular natural limestone cave that is a national park in eastern New Mexico.

The cave is 3.9 to 4 million years old and was carved out of ancient limestone by the slow drip of water enriched with sulfuric acid, geologist Victor Polyak said. A report on the study was published in the journal *Science*. Polyak said he and his colleagues were able to establish when the Carlsbad Caverns were carved by age-dating alunite, a clay mineral formed as acidic water cuts its way through the limestone.

Formation of Carlsbad and other nearby limestone caves occurred as the Guadalupe Mountains, a spur of the Rocky Mountains in New Mexico and far western Texas, were lifted up. Starting about 12 million years ago, said Polyak, the water table dropped in the limestone formation, possibly due to the mountains rising. The retreating water dissolved away the soluble rock and formed the underground cavities, some of which stretch for miles.

Hydrocarbons, such as oil and gas, probably provided the chemistry needed to dissolve the limestone and make the caves, said Polyak. The oil and gas, he said, migrated from deep beneath the Earth and collected under a cap of stone. Bacteria invaded the reservoir and fed on the oil and gas, he added. A byproduct from this was hydrogen sulfide gas which was chemically changed into sulfuric acid dissolved in the groundwater. As this acid mixture trickled through the limestone, it cut away cavities that grew and grew over millions of years, Polyak said.

ENTRY-LEVEL POSITION FOR A KARST SPECIALIST

The Oak Ridge, Tennessee office of P.E. LaMoreaux & Associates, Inc. (PELA) is seeking a geologist to fill an ENTRY-LEVEL POSITION. PELA's Oak Ridge office specializes in environmental and geotechnical consulting in karst areas. Applicants should have a B.S. in geology or a related subject. The ideal applicant will combine a solid background in karst geology and hydrology, geophysics, caving, and general FIELD WORK with excellent com-

puter and writing skills. Extensive periods of travel will be required, including occasional weekend work. The position will involve field work ranging from physically strenuous labor to the performance of mundane tasks. Office work will consist of computer-based data analysis and assistance with report and proposal preparation. The applicant should be a "team player" with the ability to work independently.

Correspondence should be directed to: Dr. Barry F. Beck, Chief of Operations; P.E. LaMoreaux & Associates, Inc.; 106 Administration Road; Oak Ridge, TN 37830; (423) 483-7483; (423) 483-7639 (fax); pelaor@usit.net.

PELA is an equal-opportunity employer.

SEVENTH MULTIDISCIPLINARY CONFERENCE ON SINKHOLES AND THE ENGINEERING AND ENVIRONMENTAL IMPACTS OF KARST with an INTRODUCTORY COURSE ON THE PRACTICAL ASPECTS OF KARST HYDROGEOLOGY

Announcement and Call for Papers

Harrisburg, Pennsylvania, April 10-14, 1999

Abstracts Due: August 21, 1998

Papers Due: December 11, 1998

Keynote Speech by Dr. William B. White

Short Course on Saturday - April 10, 1999

Field Trip on Sunday - April 11, 1999

Technical Sessions on Monday through Wednesday - April 12-14, 1999.

Papers on all practical aspects of karst geology, hydrogeology and engineering geology are solicited.

For further information contact:

Ms. Gayle Herring, P.E. LaMoreaux and Associates, Inc., 106 Administration Rd., Oak Ridge, Tennessee 37830

T: 423-483-7483 F: 423-483-7639

E-mail: pelaor@usit.net

or see the conference website at:

<http://www.uakron.edu/geology/karstwaters/7th.html>

Sponsors and Cosponsors for coffee breaks and other events are solicited.

1999 CONFERENCE ON THE HYDROLOGY OF THE BLACK HILLS

Announcement and Call for Papers

Rapid City, South Dakota, September 15-16, 1999

Abstracts Due: March 1, 1999

Papers Due: July 15, 1999

The Conference on the Hydrology of the Black Hills will be held in Rapid City, South Dakota; gateway to the Black Hills. The Black Hills area includes Wind Cave National Park, Jewel Cave National Monument, Badlands National Park, Devils Tower National Monument, and Mt. Rushmore National Memorial.

The conference will focus on topics related to the hydrology of the Black Hills area. The Black Hills are an important source of recharge to major regional aquifers, including the Madison,

Minnelusa, and Inyan Kara aquifers. Mining is an important component of the local economy, and large mines, including the Homestake Gold Mine, are located on the Precambrian core of the Black Hills. The majority of the Black Hills are National Forest, and forestry practices affect the Black Hills hydrology. Flooding, such as the 1972 flood which destroyed parts of Rapid City, strongly affects the location and distribution of population growth in the Black Hills. Projected population growth over the next 20 years for the Black Hills, especially in the Rapid City and Spearfish areas, may place significant stresses on water resources. A proceedings will be published and presented to all participants. Persons with accepted abstracts will supply a 10-page (maximum) paper, including figures, by July 15, 1999.

The conference focus is on the Black Hills region, but papers of a general knowledge on related issues, such as karst hydrology, GIS and digital issues, and mining effects on water quality, are welcome.

The conference will cover the topics:

- Abandoned mines, current mines, and water quality
- Forestry related to water quality
- Aquifer vulnerability and contaminants

- Black Hills Hydrology Study (long-term USGS study)
- GIS and digital issues
- Geomorphology and surficial processes
- Coupling of surface water and atmospheric sciences: groundwater and evapotranspiration.
- Streamflow and groundwater recharge to aquifers
- Hydrogeology
- Water supply, resources, and management
- Modeling of groundwater and surface water hazards (flooding, subsidence, slope stability)
- Karst hydrology
- Geochemistry

Conference Organizational Chairs:

Dr. Arden Davis, South Dakota School of Mines and Technology; Mr. J. Foster Sawyer, South Dakota Department of Environment and Natural Resources; Dr. Michael Strobel, U.S. Geological Survey, Water Resources Division

Please send abstracts to Dr. Michael Strobel, USGS, 1608 Mountain View Road, Rapid City, SD 57702

Darrell Armentrout works in shipboard seismic exploration in the Gulf of Mexico and is an avid recreational caver. In his "spare time," Darrell is writing his MS thesis at Mississippi State University.

Dan-Luca Danielopol is a research assistant at the Institute of Limnology, Austrian Academy of Sciences and a professor teaching zoology and groundwater ecology at the University of Vienna, where he also received his PhD in 1976. He worked with the Speleological Institute "E.G. Racovitza, in Romania, and the Laboratoire Souterrain du C.N.R.S. in France. With J. Gibert and J. Stanford, he edited the 1994 book, *Groundwater Ecology* (Academic Press).



Edward Frank is currently a PhD candidate at the University of Minnesota, Department of Geology and Geophysics. He earned his MS in geology at Mississippi State University in 1993. He has worked in the coal mining industry and as a member of the research faculty at the University of Central Florida's Sinkhole Research Institute.

Myrna Martinez holds a Bachelors degree in Environmental Sciences from the University of Puerto Rico and a Masters Degree in Hydrogeology from Ohio University. Her research on Isla de Mona was for her PhD dissertation at the Pennsylvania State University and was in collaboration with the U.S. Geological Survey.



Donald A. McFarlane is an Associate Professor of Biology at Scripps College, California, and a Research Associate in the Department of Mammalogy, American Museum of Natural History. He has been caving since 1973. For the past 11 years his research has focused on extinct mammals preserved in the caves of the West Indies.



Dr. John Mylroie is Professor of Geology at Mississippi State University. John's primary research interests lie in cave and karst investigations in a variety of geological settings. Additionally, he studies carbonate island geology. Dr. Mylroie has led annual winter field trips to San Salvador Island, Bahamas for some 20 years.



Bruce Panuska is an Associate Professor at Mississippi State University and a geologist specializing in paleomagnetism. His original work was related to tectonic problems in southern Alaska terranes. More recently, he has been using paleomagnetism to investigate stratigraphic problems of Bahamian paleosols and reversal chronology of caves.