

NEW FACES



Melodie French
Faculty

Melodie studies the material and hydrologic properties of fault rocks using techniques from experimental rock deformation and structural geology. After half a year of planning and renovations, she now has a fully operational laboratory, where she focuses on simulating the fracture properties of rocks and sediments.



Ben Nguyen
IT Specialist

Ben is originally from Vietnam and has been in the US for more than 15 years. He has a bachelors degree in Computer Information Systems and a MBA. His hobbies are traveling, going to the gym, and practicing martial arts. He's been in the IT field 10 years and in different industries from telecom, transportation, to oil and gas, and healthcare. Working at Rice University his first job in the academic environment and he is proud to be part of our prestigious institution.



Linda Welzenbach
Science Writer

Linda comes from the Smithsonian Institution with a background in planetary science, meteorite curation, and museum outreach. She brings a variety of science communication experiences that she will utilize to create publically accessible research products, facilitate DEEPS outreach, and to help students with science communication. She enjoys photography, orchids and collects everything geologic.

FAREWELL



Clinton Heider

Clinton left DEEPS in May to go work for the Rice OIT Center for Research Computing as a Research Computing Facilitator. This new role focuses on outreach, user education and helping researchers find the best resources for their computing needs. Heider was at Earth Science for over 3 years, during which he redesigned and updated the departmental data storage and research computing network, and trained graduate students and postdocs on how to use the scientific computer systems.

IN MEMORIUM

On 18 November 2016, it was with deep sorrow that the department lost the dear and beloved Dr. Hans Avé Lallemand. Hans was a pioneer in the rheology of the mantle and the structural evolution of mountain belts all over the world. His field work took him to all corners of the world, from Alaska to southeast Asia to the Caribbean.

Many of us got our first experience in the field from Hans' classes. He taught structural geology and field mapping at Rice from 1970 when he arrived as an assistant professor. He will be missed by all.

Hans impact on everyone he worked with and mentored is reflected in one of the many letters of remembrance of tribute sent to us.

Hans was a great scientist, a fine person, of his shirt, in case the group might really knew about the rocks! I especially appreciate his good counsel based upon

Harlow's eclectic group of ladrones gustatory reinforcement. vulgares—after all, Hans was the guy who appreciated his good counsel based upon personality. In 2002, I happened wide expertise as a structural geologist, to run into him soon after an AGU especially of serpentinites and his patient conference hotel gave me 2 sets of attempts to educate a "field geochemist" complimentary dinner and drink concerning about the serpentinites and tickets to apologize for problems with eclogites of Guatemala and Venezuela. my room. At an appropriate time, we met at their very nice restaurant.

In the field, as well as at workshops and conferences Hans' gentlemanly nature prevented hotter heads from prevailing. were cleared, Hans was still chatting He educated and outcrop-tutored many away about serpentinites with great colleagues, to the great advantage of knowledge and enthusiasm. (The food jade-and-subduction research. He was was good, too.)

a valued member of a collaboration carried out for nearly 15 years among an ever-increasing group of scientists. Now, we will have to seek our friend

Hans didn't look at outcrops, he absorbed them. During his field work, outcrop that received his critical he also absorbed a lot of incendiary chili attention we can conjure from our peppers. His youth in the Dutch East Indies had evidently addicted him to memories.

incredibly spicy food. In Guatemala, Hans carried a bottle of the hottest chili sauce he could find in the breast pocket

Sorena Sorensen, Smithsonian Institution



Hans Avé Lallemand at bat in 2006

photos: Colin Zelt

HANS G. AVÉ LALLEMANT 1938 –2016

Virginia B. Sisson⁽¹⁾, Albert W. Bally and Cin-Ty Lee,⁽²⁾ Mark Gordon

Hans Avé Lallemand, professor of structural geology at Rice University 1970 – 2006 and emeritus faculty from 2006, passed away on 14 November 2016. He was born on 2 May 1938 in Benkulu, Indonesia to Max and Marga Avé Lallemand where his father was a doctor. During World War 2, the English sent his father in India as they mistakenly thought he was German. Meanwhile, the Japanese interned his family in Brastagi, Indonesia. His family was reunited in 1947. During this childhood, he developed a liking for spicy peppers. Later in life, he always had to buy a bottle of hot sauce especially during fieldwork. His experiences in the jungles of Indonesia served him well as a field geologist as he learned how to find outcrops almost anywhere and didn't mind bothersome insects. He moved with his family to The Hague, Netherlands in 1949.

Hans was educated at University of Leiden (The Netherlands) with his B.A. in Geology (1960) followed by his M.A. mapping in Galicia, Spain (1964) with his Ph.D. in Geology (1967) mapping in the type locality for Iherzolite, Étang de Lers. He rode a motor scooter from the Netherlands to Spain and France to do his graduate school fieldwork. At one point, villagers who assumed his bleached blonde hair with red mustache and nascent beard was the sign of a vampire threatened his life with pitchforks and machetes. Part of the problem was that even though he spoke many languages, he didn't know Galician and no one in this village spoke any other language. He then moved to Yale University for a post-doctoral position with Dr. Neville Carter for three years.

At Yale and in the period of 1970-78 as a young geology professor at Rice University, Hans was a rock mechanist or "rock squeezer" who used high-pressure rock presses to simulate in the lab mantle conditions of pressure, temperature and strain rates. Hans's two most cited papers both published in 1970 is based on his joint laboratory work as a post-doc at Yale: "High Temperature Flow of Dunite and Peridotite" and "Syntectonic recrystallization of olivine and modes of flow in the upper mantle". Even during this time, Hans knew that he had to tie his experimental work to field-based studies that began with a NSF proposal to survey the world's known ophiolites; this led to research in Oregon, California and Greece. He was never able to complete his survey as the number of ophiolites grew faster than he could do his detailed evaluation of their mantle structures. One of his last efforts was to return to this Ph.D. thesis area in the French Pyrenees to the type locality for Iherzolite with Martin Drury to evaluate mantle flow using modern approaches. This set initial NSF proposal led Hans to selecting his field areas based on understanding a particular process and he was not tied to working in just one area but consider the entire globe as his natural workshop. He also did not have special reverence for specific tools except for his eyes and compass. He was happy making outcrop scale observations as well as spent many hours doing microscopic work. He looked at oblique subduction using inactive structures in deep crustal rocks in the margins of the Caribbean to oblique subduction in an active setting using GPS data along the Aleutian Islands. He also scrupulously looked at earthquake fault plane solutions for any event related to oblique convergence to see if he could find evidence for synchronous compressional and extensional events. It made his day to find both types of beach balls to support his notions of oblique convergence. In addition, he invited collaborations with many different geologists including other structural geologists, geochronologists, geochemists and petrologists to assist in refining the deformation history.

He said that part of the problem he had continuing with his laboratory work was NSF funding: apparently the rock physics work was reserved for a few leading labs, so, it was harder to carry out at a place like Rice. So that was one reason to focus on field studies. He was able to accomplish this transition; few geologists undergo major changes in their specialty or field areas but he was an exception to that.

Hans was a pioneer in the rheology of the mantle and structural evolution of mountain belts around the world. He was one of the first to calibrate a rheological law for ductile deformation of mantle rocks. His field work took him to many exotic as well as mundane places from field trips he led for students in the Texas Hill Country, Big Bend, Alps, Cuba, and Hawaii to research work in Myanmar, Guatemala, Venezuelan Leeward Antilles, several areas in Venezuela (including the Cordillera de la Costa belt, Isla de Margarita, Serrania del Interior and Villa de Cura belt), Brooks Range, Yukon, Aleutian Islands, Pyrenees, Oregon, Greece, California, and more. He often said that working in a variety of areas made fieldwork easier as he would remember the cold of the Alaska when working in the heat of Venezuela or visa versa. He championed the significance of transpression and transtension in mountain belts, particularly their role in the exhumation of subduction related assemblages.

He was particularly interested in areas where plate convergence was or still is strongly oblique to subparallel to the plate boundary zone. In such cases of oblique convergence, displacement partitioning occurs. The (sub)normal component of the convergence vector causes orogen- or arc-(sub)normal shortening (folds, thrust faults); the orogen- or arc-parallel component causes simple-shear deformation and plate-boundary-parallel migration of the forearc and often of the arc region. If the arc is arcuate (the general case), arc-parallel extension might occur (arc-perpendicular normal faults). He was a classic geologist using a U-stage and his battered volume of Tröger to determine small-scale kinematics of both ductile and brittle features. He had an eye for details that few could surpass. Others would go to where he worked and have a difficult time seeing all of these details but they always agreed with his observations.

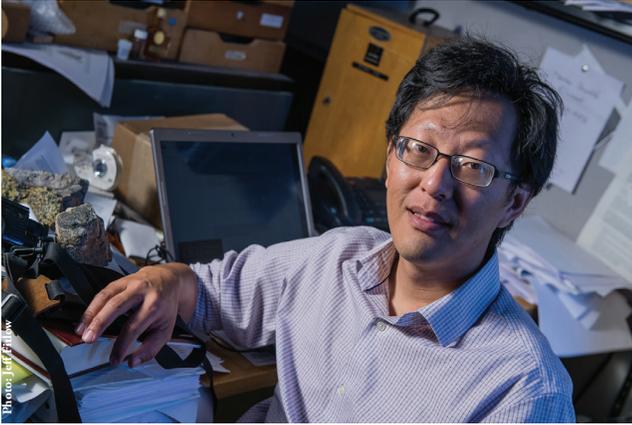
He taught structural geology and field methods at Rice University from 1970 until he retired in 2006. He took sabbaticals at SUNY Stony Brook in 1976-1977, Université de Paris (6) in 1984-1985 and Utrecht University in 2001. He served as department vice chair from 1980-1983 and chair from 1986-1989. He also served the geologic community in many ways including GSA South-Central Management board, member of NSF panels, GSA Penrose Medal Committee, convener of several sessions at GSA annual meetings as well as serving on the editorial board of Tectonophysics from 1980-1998. He was constantly mentoring students serving as principle advisor to 10 Ph.D. and 13 M.S. students. These students have/had successful careers in the petroleum industry, geoenvironment and academia. He was a stickler for getting everything correct from using italics for labeling oceanic features to stereonet with every type of structural data observed. This attention to detail is seen in both his publications and those of his students.

During his career, he got several awards including Basic Research Award (1981) from U.S. National Committee for Rock Mechanics (National Academy of Science, National Research Council, National Academy of Engineering). He was elected Corresponding Member, Royal Netherlands Academy of Arts and Science as well as Fellow of the Geological Society of America and Sigma Xi.

He is survived by his wife, Winifred Marjolijn (Marjo) Avé Lallemand, two children (Allison and Alexander) and four grandchildren Elliot, Lucas, Nathan and Dominic.

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GUGGENHEIM FELLOWSHIP



Cin-Ty Lee has won a prestigious *Guggenheim Fellowship* to investigate how and when continents emerged from the oceans and the effect of their emergence on the evolution of whole-Earth cycling of life-giving nutrients.

Lee is one of 173 scholars, artists and scientists — and the only Earth scientist — chosen as 2017 Guggenheim Fellows. The fellows represent 49 disciplines and 64 academic institutions and were chosen from nearly 3,000 applicants. Funded by the John Simon Guggenheim Memorial Foundation, the fellowships are awarded on the basis of achievements and exceptional promise to allow scholars to pursue their work with creative freedom.

GEOLOGICAL SOCIETY OF AMERICA FELLOW



Caroline Masiello was made a *Geological Society of America Fellow* in April 2017. Masiello has made outstanding contributions into understanding the role of organic carbon in soils, which impacts a wide range of geoscience and other fields, such as agriculture and climate change. Society Fellowship is an honor bestowed on the best of our profession through exceptional scientific scholarship, leadership and community service.



The *Houston Geological Society Undergraduate Scholarship Foundation* chose Sarah Gerenday to receive a scholarship for the 2016-2017 academic year. The scholarship goal is to provide financial support for applicants in their endeavor towards a career in geoscience.

John Cornthwaite and Lacey Pyle received *The Houston Geological Society Calvert award* which assists academically qualified geological students to pursue graduate studies in some branch of Economic Geology.

David Blank received an *AAPG Foundation Classen Family Grant* given to academically qualified graduate students.



Audrey Odwuor's academic prowess, service and career goals have earned her the 2017 Dr. Mae C. Jemison Award for *Academic Achievement and Public Service*. Each year, Rice University honors a graduating senior who exemplifies the values and ideals of the commencement speaker. This year's speaker was Mae Jemison, the first African-American woman in space. www.earth-science.rice.edu/2017/05/15/audrey-odwuor

Nur Schuba was one of 22 students awarded the *Anadarko/SEG (Society of Exploration Geophysicists) scholarship*, among more than 800 scholarship applications.



James Eguchi received the *Lodieska Stockbridge Vaughn Fellowship*, which provides a fellowship for a graduate student whose record at Rice shows evidence of outstanding achievement and promise. This is the first for a DEEPS graduate student.

Pankaj Khanna won the 1st Place Poster award at the AAPG Student Expo, Houston 2016 for his poster 'Uppermost Pleistocene corallgal Reefs and Upper Cambrian microbial bioherms: Morphologies and sea-level induced evolution'.

Jacob Proctor won an *Honorable Mention Graduate Student Oral Presentation* at the 51st GSA Annual Meeting.

