UNIVERSITY OF ARKANSAS GEOSCIENCES

GeoHog Times

Newsletter of the Department of Geosciences

Fall 2016

The Department of Geosciences hosts a field course in Montana every summer. The students are seniors studying geology, and come from our own department as well as from other universities across the United States. The required projects include outcrop mapping in the field and at mines, as well as hydrogeology modules. Shown: group picture from summer 2016.

From the Chair

Dr. Christopher Liner

Greetings!

The Department of Geosciences welcomes **Dr. Edward Holland**, who joined the department in August 2016. He is a fantastic addition based on his impressive research productivity since achieving his PhD in 2012. He currently has 16 articles or book chapters published or in press and has an established track record of extramural funding with several high-profile granting agencies. During his interview Dr. Holland spoke eloquently about his research in Central Asia and Russia, areas in which the department has significant teaching needs, and he indicated his willingness to interface with the International Studies and European and Russian Studies programs in Fulbright College. His research will contribute to the department's regional expertise and connect to faculty across the college who need a collaborator with expert knowledge in Russia, Central Asia and the Caucasus.

Dr. Ralph Davis assumed a new roll as Associate Vice Provost for Research and Economic Development, and formally stepped out of the roll of department chair effective 30 June 2016. The department thanks him for eight years of excellent leadership.

Dr. Christopher Liner assumed the duties as Chair of the Department of Geosciences 1 July 2016. The third edition of his book *Elements of 3D Seismology* will be published by SEG this fall.

Dr. Tom Graff has retired. He joined the department in 1973 and is now Emeritus. He served as Chair of Geography in the College of Arts and Sciences from 1988-1992 and as Chair of Geosciences from 1999-2004. Through his many years of teaching he interacted with and influenced the lives of an astounding number of students, estimated at over 14,000.

Dr. Margaret Guccione has retired. She joined us in 1979 and is now Emeritus. She enjoyed a 37-year active career of teaching, conducting geomorphology research, providing leadership and instruction to the geologic community through public service.

Dr. Doy Zachry has retired. He joined the department in 1968 and is now Emeritus. He served as Chair of the Geology Department from 1991-1997, enjoyed an impressive career including extensive research on the geology of Arkansas with emphasis on the Arkoma Basin. He also directed Geology Field Camp in Montana for over 30 years.

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Dr. Steve Boss has stepped down as Director of the Environmental Dynamics (ENDY) program and co-Director of the Sustainability program. He returns to his faculty appointment after a Off Campus Duty Assignment in fall 2016.

Dr. Fiona Davidson has been appointed as Vice-Chair of the Department of Geosciences.

Dr. Jack Cothren has been elected to the Editorial Board for the *Earth Imaging Journal*, and was appointed by Arkansas Governor Asa Hutchison to the Arkansas State GIS Board.

Dr. Dave Stahle has been named a Fellow of the American Association of Advancement of Science (AAAS) and is a member of the advisory board for the International Tree-Ring Data Bank, National Geophysical Data Center in Boulder, Colorado.

Dr. Song Feng had numerous articles published or accepted for publication in refereed journals during 2015. At least four of these were in top-ranked journals, including the *Journal of Climate*, *Atmospheric Chemistry and Physics*, and the *Journal of Applied Meteorology and Climatology*.

Dr. Dave Stahle and **Dr. Song Feng** received funding from the National Science Foundation (NSF) to investigate Amazonian tree-ring chronologies for climate and streamflow reconstruction. This furthers their continuous funding support, and expands international research in Brazil. As NSF indicated in 2012, Dr. Stahle is the "Lord of the Rings" and is recognized as a worldwide expert on tree-ring chronologies and global climate change.

Dr. Henry Turner continues to develop and teach the online version of General Geology. Both the lecture and the lab have been very well received by students.

Dr. Thomas Paradise served as a lead researcher and on-screen presenter for the NOVA special, Petra*: Lost City of Stone.* It aired on national television on 5 February 2016.

There is now a **Geospatial Technology Certification** for Master's level students as well as undergraduates that targets people already in the work force. The suite of online courses will expand the knowledge and skill set needed for jobs that span environmental management, energy development, agribusiness, marketing and store location, logistics, local, county, state and federal governments. The certificate can be earned through 12 to 18 credit hours of geospatial/geoinformatics course work.

The MA in **Geography** has been converted to an MS with the addition of requirements for more math, statistics, and technical courses. This enhances the Geography MS program making UA a better destination for highly competitive international and domestic graduate students.

Our **geology summer field course**, GEOS 4686, taught in 2016 by **Dr. Adriana Potra**, **Dr. Celina Suarez**, and **Dr. Phil Hays**, continues to be an excellent capstone course. We have a national reputation as a top-ranked field geology experience. The six weeks in western Montana synthesizes the knowledge that our geology undergraduates have acquired over their degree program. The structure has been modified, involving more faculty and exposing students to a broader perspective. In 2016 we had 33 participants including 10 from outside the university.

An Exciting Update from the GEOS External Advisory Board

I have great news to share with you! We've reached a significant fundraising milestone that will have a positive, transformational impact on our alma mater for decades to come. But before we look to the future, I'd like to note that throughout its history, the University of Arkansas Department of Geosciences has touched the lives of its students and helped many of them achieve great success in their fields. This was achieved not only through the strength of the program's academic education, but through the personal commitment of many of the faculty to truly see their students succeed. It is with this in mind that the Geosciences External Advisory Board was formed in 2006 with the mission:

• To conduct development activities including acting as proponents for financial and other support via identification and shepherding of potential contributors.

• To create and cultivate relationships with faculty, students and alumni in an effort to stay connected and help bring alumni back to the department.

• To provide support to the Department of Geosciences and suggestions on curricular components to keep the department current with employee needs.

In coordination with and through the support of our alumni, students, faculty and administration significant accomplishments have been made over the last 10 years including, but not limited to:

the creation of an Endowed Chair of Petroleum Geology; fellowships for increased graduate stipends; scholarships honoring Dr. Harrold MacDonald, Dr. Kern C. Jackson, Dr. Walter Manger, Dr. Doy Zachry, Dr. Van Brahana and Dr. Malcom Cleveland; and the establishment of a Geosciences Ph.D. program. Great new faculty hires have helped to further strengthen the program and it is exciting to see the quality and breadth of the research being conducted.

Recently, we have added a number of new and active geography members to the board who are working to engage and collaborate with faculty and students to make sure all facets of the program's needs are being addressed. All of these actions and accomplishments have helped to keep the Department of Geosciences a strong and vibrant program with a bright future.

That brings us to our exciting milestone fundraising news! We recently met the $500K Walton Match for Geoscience Ph.D. Fellowships. With this achievement more than $3.2M in monetary gifts and pledges to the Department of Geosciences, and over $12M of in-kind software, equipment and data gifts, will have been raised since the External Advisory Board was formed a decade ago. We, as members of the External Advisory Board, would like to thank the Walton Foundation, Maurice Storm, Dr. Pam Jansma, Dr. Ralph Davis, Dina Wood, Ashlie Hilbun, Dean Todd Shields and everyone who has helped make the Department of Geosciences what is today. You have truly made all of our degrees even more valuable!

The current External Advisory Board would also like thank all who have given their time and energy to serve on the Board over the last 10 years, with special recognition to our founding members who still serve today: John Williams, Edith Wilson, William Willis, Tom Freeman and Gerry Lundy.

Please join the External Advisory Board in our efforts over the next 10 years to continue to help make the University of Arkansas Department of Geosciences the very best it can be. If you would like to become involved and engaged in this effort join us for one of our GeoHog events or contact me directly at yarrid@gmail.com. Go Hogs Go!

Sincerely,

Clayton Yarri Davis, Advisory Board Chair, on behalf of the Board

Available from SGE:

$5	Bottle Coozie
$6	Coffee Mug
$6	Pint Glass
$1	Sticker
$20	T-shirt (shown)
$15	"Geologist Crossing" t-shirt

Prices are a suggested donation.
For how-to-order information, contact the department:
call 479-575-3355 or
Email: lmilliga@uark.edu

Media Outreach

Tom Paradise has conducted on-air interviews with **CNN, MSNBC, Good Morning America, PBS, the Smithsonian, and the Discovery Channels**. In addition, he has been asked to confer with the US State Department, and Department of Defense on matters regarding university-level study abroad and area studies. Upon an invitation by the US State Department, Paradise spoke in Washington DC (June 2016) on the 'Changing World of Middle East Studies in the 21st Century'.

UNESCO – Tom Paradise continues to act as a consultant to UNESCO on its two subcommittees (ICAHM, ICOMOS) on World Heritage Sites and Architectural Heritage and Deterioration. His work on Wadi Rum, Jordan was instrumental in UNESCO's decision to make it the first Cultural *and* Physical World Heritage Site in 2014-2015: the first of its kind on earth. He presented his findings at the UNESCO Counselors' Meeting in Wadi Rum in 2014.

Ancient Cross Timbers Consortium – Dave Stahle has worked with public and private organizations and individuals to promote research, education, and conservation. You can read about some of it at our web site: www.uark.edu/xtimber We were instrumental in the establishment of the Keystone Ancient Forest Preserve west of Tulsa and other projects. We are trying to start the same thing in the Southeast with the Ancient Bald Cypress Consortium.

Remote sensing training – CAST now offers valuable online geospatial training. According to the Department of Labor's Employment and Training Administration (ETA), while overall the geospatial technology (including remote sensing) market is growing very rapidly, there is a deficit of skills and training, and there are misconceptions about what skills are required. Many students in Arkansas benefit from online stackable certificates because they cannot relocate to a major university campus. There has been a steady stream of applicants to the first "proficiency" certificate.

National Association of Black Geoscientists – Geosciences/ENDY has been in a relationship with the NABG for 10+ years. We not only recruit at this conference but Steve Boss has NSF funding that helps fund students attending this meeting since 2009 when we hosted the meeting on campus.

Third Biennial Field Conference of the AAPG Midcontinent Section

Hosted by the Ft. Smith Geological Society
and the University of Arkansas Geosciences Department
http://aapgmcs.org/field-conferences/2016

Join us in Fayetteville, AR
September 30th - October 2nd!

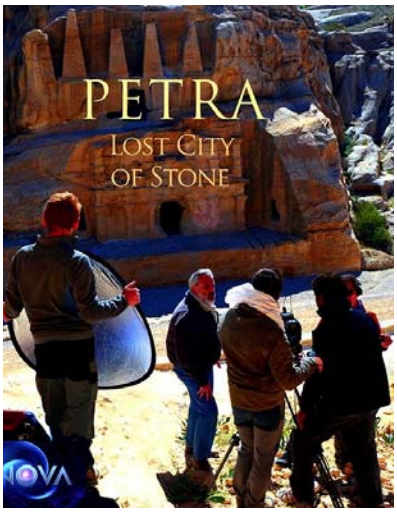
We invite you to join us at the Third Biennial Field Conference of the AAPG Mid-Continent Section. The conference headquarters will be the Chancellor Hotel located on the historic Fayetteville town square. Nestled in the Ozarks of Northwest Arkansas, Fayetteville is part of a metropolitan area of about 420,000 people that retains its small, college-town atmosphere. While you're here, make time to visit the nationally renowned Crystal Bridges Museum of American Art in nearby Bentonville and see *Guest/Spouse Suggested Activities* for additional area attractions.

Fayetteville is conveniently located such that we are able to offer two separate field trip opportunities within the Carboniferous succession. This will allow for smaller groups in the field (20 - 40 participants each) providing a more intimate experience with both the outcrops and field leaders. **Field Trip 1** will feature the lower, carbonate dominated Mississippian section providing an overview of the carbonate platform to ramp evolution. While **Field Trip 2** will examine the upper, clastic dominated Pennsylvanian succession that records the transition from the stable platform into the evolving Arkoma Foreland Basin. Please see *The Field Experience* for a detailed description of both trips.

Guests are Welcome! Guest registration will include the Ice Breaker/Poster Session on Friday evening and Saturday night dinner featuring guest speaker Dr. Tom Paradise. All listeners will most certainly be entertained by Dr. Paradise and his research in Petra, Jordan, which can be previewed on the PBS-aired special *Petra: Lost City of Stone*.

Please join us for an extraordinary fall weekend in the Ozarks that is sure not to disappoint!

Jamie Woolsey **General Chair**	Ft. Smith Geological Society jwoolsey@pqgeoconsulting.com
Christopher Liner **Co-Chair**	University of Arkansas liner@uark.edu



***Dr. Tom Paradise** was a featured expert in the NOVA special, "The Lost City of Stone" which first aired on national television in February 2016.*

Celina Suarez Awarded Inaugural Deep Carbon Observatory Diversity Grant—Newswire May 27, 2016

Department of Geosciences **Celina Suarez** is one of seven researchers in the nation receiving a Deep Carbon Observatory Diversity Grant from the American Geosciences Institute, which established these grants to support geoscience researchers with funds for national and international conferences to present Deep Carbon Observatory-affiliated research and attend DCO-related workshops, conferences and events. The funds also support lab or fieldwork that advances DCO-aligned research, or instrumentation time at DCO-affiliated facilities.

"Dr. Suarez's work is on the forefront of ecology and climate research," said Ralph Davis, professor in the Department of Geosciences, and associate vice provost for Research and Economic Development at the University of Arkansas. "Though she's won many previous awards including an NSF fellowship, this latest accomplishment serves to further validate the importance of her research on a global scale and to support her continued successful track record of discovery."

Suarez's research has already taken her to the Cretaceous Cedar Mountain Formation of Utah, the Xinminpu Group of Gansu Province in China, the Prince Creek Formation off the North Slope of Alaska, and the Triassic-Jurassic Moenave Formation of southern Utah. She primarily focuses on using trace element and stable isotope geochemistry of fossil vertebrates and invertebrates to understand paleoecology, paleoclimatology, and taphonomy of ancient terrestrial ecosystems and is particularly interested in past greenhouse climates and major climate shifts such as the mid-Cretaceous thermal maximum and the end Triassic extinction. She also uses carbon isotope chemostratigraphy to identify major global C-cycle shifts in Earth's deep-time history.

"My research aims to characterize the occurrence of large scale fluxes of carbon into the atmosphere by identifying the hallmark of rift eruptions, a large negative carbon isotope excursion in the rock and fossil record and associating it with the occurrence of extinction on land," said Suarez. "This study to some extent is an experiment that tests what can happen given large-scale carbon flux into the atmosphere."

Suarez has published multiple peer-reviewed articles and presented at numerous conferences. In 2004 she and her twin sister, Marina, had a new dinosaur from the Cedar Mountain Formation of Utah named after them: the Geminiraptor suarezarum.

2015-2016 Student Organizations

Association of American Petroleum Geologists (AAPG): President Riley Dickson, VP Fatimah Al-Asadi, Treasurer Sean Kincade, Secretary Julie Cains, Multimedia Holly Young, and Undergraduate Liaison Margaret Tinsley, Advisor: Christopher Liner.

Society of Exploration Geophysicsts (SEG): President Lanre Aboaba, VP Josh Stokes, Treasurer William Denham, Secretary Forrest McFarlin, Undergrad Liaison Margaret Tinsley, Multimedia Tyler Gruenbacher, Advisor: Christopher Liner.

Sigma Gamma Epsilon (SGE): President Julie Cains, VP Kaitlyn Hurlbut, Treasurer Emily Fletcher, Secretary Grayson Lamb, Rock Bag Chair Margaret Tinsley, Advisor: Phil Hays.

Gamma Theta Upsilon (GTU): President Chris Cowan, VP Christina Martinez, Treasurer Jason McCollum, Student Affairs rep Courtney Brooks, Membership Coordinator Jamie Nix, Events Coordinator Jessica Garross, Advisors: Fiona Davidson and Tom Paradise.

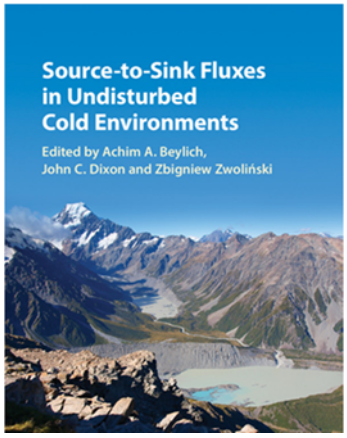
National Association of Black Geoscientists (NABG): President Mark Agana and Treasurer Lanre Aboaba, Advisor: Stephen Boss.

Association of Women Geoscientists (AWG): President Kelly Sokolosky, Advisor: Celina Suarez

Dr. John C. Dixon spent the spring semester on an Off-Campus Duty Assignment (OCDA) at the University of Oxford as a visiting research scientist in the Department of Geography and the Environment, hosted by Professor Heather Viles. He participated in the Weathering and Stone Deterioration Research Group, presenting lectures on his research in Swedish Lapland. From Oxford he made numerous trips to sites of historical geologic and geographic significance, including the World Heritage Site of the chalk-dominated Dorset coast, the home of Mary Anning's Lyme Regis, discoverer of the ichthyosaurus, the English lake district, Snowdonia, John Muir's Dunbar home, and James Hutton's Edinburgh.

In the spring Dr. Dixon conducted fieldwork related to the relationship between topography and calcrete formation in the valleys fills in the "Spanish Desert" of SE Spain and the Betic Mountain chain, formed by the Plio-Pleistocene collision of Iberia and Africa. Then he headed north to the Baltics to visit the glaciated landscapes of Latvia, Lithuania, and Estonia where the depositional landscapes of the Fennoscandian ice sheet are exposed largely intact as a result of the lack of destruction by large-scale agriculture. Then back to Oxford via the Scandinavian capital cities. He returns refreshed to teach his regular schedule of classes this fall.

Dr. Dixon, and colleagues Achim Beylich (Geological Survey of Norway) and Zbigniew Zwolinski (Adam Mickiewica University, Poland) have had their edited book "Source-to-Sink Fluxes in Undisturbed Cold Climates" published by Cambridge University Press. The collected papers report on the research of the working group on sediment budgets in cold climates of the International Association of Geomorphologists, on the variability of cold climate sediment and solute fluxes and their responses to climatic warming in these sensitive environments.



Effects of Floods on the Wax Wing Delta

By Dr. John B. Shaw

Here are a few photos from this summer's field campaign. An ADCP (Acoustic Doppler Current Profiler) is housed in the yellow boat, allowing us to measure flow velocities through the water column. I was accompanied on this trip by MS students Amanda Whaling and Sean Parry and undergrad Kate Hurlbut. We were out there collecting bathymetry (bed elevation data) flow patterns and grab samples to determine the effects of the large 2016 flood on the Wax Lake Delta in coastal Louisiana. This work can help geologists predict the processes and geometries of ancient delta strata and test predictive models of coastal response to rising sea levels. This work is funded by the Department of Energy Early Career Award.

Here is a link to one of our streaming experiments:

https://www.youtube.com/watch?v=4C85dd1cH9U

We can now better understand island formation on river deltas for both geological and coastal sustainability applications. These experiments were performed with students from my Dynamics of Sediment Transport Course (GEOS 560V). The work is an outgrowth from my NSF Post-doctoral fellowship.

Tullis selected for IPCC meeting

by Chris Branam, research communications writer/editor
University Relations , 479-575-4737, cwbranam@uark.edu

FAYETTEVILLE, Ark. – A geospatial science expert at the University of Arkansas will help refine international guidelines for greenhouse gas inventories that will be considered for adoption by the Intergovernmental Panel on Climate Change (IPCC). This was created to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation.

Jason Tullis, an associate professor of geosciences in the J. William Fulbright College of Arts and Sciences, is an expert in analyzing satellite imagery and other geospatial data to evaluate a country's land base and detecting land use conversions, such as from forest to farmland. He will travel next month with ten other U.S. scientists to participate in an IPCC "scoping meeting" in Minsk, Belarus. The meeting will start and accelerate the formal process of updating the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

"The scientific consensus is that human activities are influencing climate change through a greenhouse effect, and that reducing emissions is well worth the effort," Tullis said. "Rapidly advancing geospatial science, including remote sensing and geographic information systems, is an essential component in national inventories and will be an important factor in the refinement of the guidelines."

A Bit of History of the Geography Department

by Dr. Tom Graff

For a long time in the UA only a few Geography courses were taught. In 1946 the first geographer, O.O. Maxfield, was hired as a faculty member in the Geology Department. Maxfield was very young and had only a Master's degree.

In 1948 Geography was separated from Geology to form its own department, and Irene Moke, PhD from Nebraska was hired as the first Geography chair. The department expanded slowly: in the early 1950s it awarded its first MA degree, By 1973 it had six tenure-track faculty members.

Moke quit as chair in 1964 and was replace by Dr. Tom Scott; he quickly stepped down and was replaced by Maxfield in 1966. Maxfield finally got his PhD in the early 1960's.

In 1978 Maxfield was overthrown and replaced by Dr. John Hehr as chair. In about 1987 Hehr became an Associate Dean for the college, and Dr. John C. Dixon became chair. In 1989 Dr. Thomas O. Graff replaced Dixon as chair, and he stepped down in 1993 and Dixon resumed the chair position until 1998.

CAST was established in 1991 (Graff headed this for a semester in 1992). In 1998 Graff assumed the role as chair for a semester, and then in January Geology and Geography were merged. Graff accepted the position as chair. He stayed in that position for about five years. When the merger took place, geography had six tenure-track positions. With the addition of Cothren, Tullis, Limp, Hehr (his return from the Dean's office), the number of tenure track Geography positions expanded to double digits.

Maxfield retired in 1990 and was replaced by Malcolm Cleaveland. Other faculty members who had tenure-track positions include Jay Vance, Tom Scott, Earl Neel, Les Clendennen, Tom Graff, John Hehr, Larry Handley, Jim Allen, John Dixon, Richard Smith, and David Stahle.

Congratulations to our 2016 IBA Team!

The AAPG Imperial Barrel Award competition was held on the campus of Chesapeake Energy in Oklahoma City on March 12, 2016.

Forest McFarlin, Holly Young, Tyler Gruenbacher, Fatimah Al-Asadi, and Bryan Bottoms.

Student Accomplishments

Calvin Johnson (GEOL MS) is a fellowship recipient from the National Science Foundation (NSF) and voted Best Presentation at the National Association of Black Geoscientists (NABG) annual meeting in Houston.

Bradley Wilson (GEOS PhD) is a fellowship recipient from the National Science Foundation (NSF).

Studying the Buffalo River Watershed

Submitted by Victor Roland, PhD Environmental Dynamics

Diverse conservation and environmental groups (Trout Unlimited, Audubon, Arkansas Canoeing Club, Ozark Society) have expressed concern about C&H Hog Farm and its potential for surface-water and groundwater contamination, which could impact Buffalo National River, Big Creek, and other popular waters frequented by many residents for recreation, and groundwater used for drinking water. Concentrated animal feeding operations (CAFO) are sources of copious amounts of nutrients (e.g. organic matter, nitrate and ammonia), metals, antibiotics, and dangerous bacteria. The impact of CAFO wastewater in karst terrain is not well understood. Impacts of CAFO waste ranges from major shifts in microbial communities to changes in biogeochemical processes, and potentially degraded water-quality.

Critical findings of this study were; (1) bacteria from groundwater collected near the CAFO displayed resistance to antibiotics and metals although antibiotics were not detected in water samples, (2) high concentrations of nutrients increase biological productivity in epikarst, and (3) metal exposure inhibits nitrate removal and causes changes in microbial communities within biomass selecting for resistant bacteria. The conclusions of the study imply that groundwater bacteria are capable of processing and removing nutrients derived from CAFO waste; however, metals and/or antibiotics in the CAFO waste results in changes in groundwater bacteria increasing the presence of antibiotic and metal resistant bacteria communities.

Master's Thesis Titles from 2016 graduates

Al-Asadi, Fatimah (Zachry) - *Initial structure as reflected in Morrowan and Atokan (Pennsylvanian) subsurface stratigraphy, Northern Arkoma Basin, North-Central Arkansas*

Blaylock, Matt (Zachry) - *Early and middle Atokan lithostratigraphy and reservoir development, Northern Arkoma Basin, northwestern Arkansas*

Chen, Yirong (Zachry) - *Stratigraphy and structure of a south-trending structural high, northern Arkoma Basin, Arkansas*

Duplantis, Andie (Paradise) - *Shared perspectives of divided space: perceptions of the urban environment among Jerusalemites*

Garmon, W. Travis (Potra) - *Isotopic identification of multiple contributors of metal ions in Mississippi valley-type ore deposits along the Cincinnati Arch in south-central Kentucky*

Brawner, Erik (Aly) - *Synthetic aperture radar interferometry analysis of ground deformation within the COSO geothermal site, California*

Labusch, Loren (Davis) - *Linear trend analysis: implications for a structural fracture system and applications of subsurface fluid migration, Northwest Arkansas and Eastern Oklahoma*

Keeling, Ryan (Liner) - *Stratigraphic interpretation and reservoir implications of the Arbuckle Group (Cambrian-Ordovician) using 3D seismic, Osage County, Oklahoma*

McCain, Gordon (Shaw) - *Influences of channel dredging on avulsion potential at the Atchafalaya River*

Meizler, Steven (Paradise) - *Baha'i sacred architecture and the devolution of astronomical significance: case studies from Israel and the US*

Moser, Daniel (Liner) - *3D seismic interpretation of paleokarst sinkholes, Boone Limestone, Lower Mississippian: subsurface eastern Arkoma Basin, Conway County, Arkansas*

Murch, Wes (Stahle) - *LiDAR-assisted extraction of old growth Baldcypress stands along the Black River of North Carolina*

Philbrick, John (Manger) - *A geochemical analysis of the Arkansas novaculite and comparison to the siliceous deposits of the Boone Formation*

Ply, Dustin (Dumond) - *Resolving paragneiss provenance at Grollier Lake in the Athabasca granulite terrane Western Canadian Shield*

Solomon, Dale (Boss) - *The mass flux of non-renewable energy for humanity*

Spencer, Kyle (Liner) - *Statistical analysis of fluvial channel belts*

Turner, Noel (Hays) - *Do limestone quarries act as "engineered sinkholes?" Analysis of exfiltration of groundwater from limestone quarries on the Boone Formation, Ozark physiographic province, Arkansas, USA*

Wang, Yuenyang (Zachry) - *Stratigraphy and depositional environment of the Middle Atoka Formation, Central Arkoma Basin, western Arkansas*

Wood, Victoria (Liner) - *Reservoir characterization and depositional system of the Atokan Grant Sand, Fort Worth Basin, Texas*

—New Course—
Geospatial Unmanned Aircraft Systems

GEOS 510V 014 - Fall 2016

Unmanned aircraft systems (UASs) are becoming key technologies for the acquisition of digital field data in a number of disciples – including engineering, geology, architecture, biology, forestry, agriculture, archaeology and others. This course will introduce the student to the safe and legal operation of these systems and will focus on the acquisition of aerial photography, multispectral, thermal and LiDAR data and the use of geodetic control and photogrammetric and computer vision processing to create accurate 2D and 3D digital information products. It will meet on Tuesdays from 10:45-1:45 in JBHT 231, and is being taught by Jason Tullis.

Geosciences Colloquium Schedule FALL 2016

3:05 pm in Gearhart Hall's auditorium, GEAR 26

http://fulbright.uark.edu/departments/geosciences/eventsandcolloquiumcalendar/

August 26, *Back-to-school Introductions*

September 2, **Dr. Mohamed Aly,** UA Department of Geosciences, *Future Volcanic Eruptions at Yellowstone*

September 9, **Dr. Amanda Keen-Zebert,** Desert Research Institute, NV, *Old as Dirt? Or Old as the Hills? New Findings on the Quaternary History of the Buffalo National River*

September 16, **Dr. Mac McGilvery,** UA Department of Geosciences, *The North Slope Alaska: What Does it Have in Common with the Ozark-Arkoma-Ouachita Region of Arkansas?*

September 23, TBA

September 30, **Dr. Fiona Davidson,** UA Department of Geosciences

October 7, **Dr. Greg Dumond**, UA Department of Geosciences

October 21, **Dr. Ben Runkle**, UA Department of Biological Engineering, *How Well Can Climate-Smart Irrigation Strategies Reduce Methane Emissions From Rice Fields?*

October 28, **Mr. Aaron Shew,** UA Environmental Dynamics, *A Geospatial, Socio-Environmental Model for Improved Agricultural Production in Coastal Bangladesh*

and **Mr. Bradley Wilson,** UA Department of Geosciences

November 4, **Mr. Kenny Schlag**, KS Consulting

November 11, **Mr. Daigo Yamamura,** UA Department of Geosciences, *The Late Cretaceous Graveyard: Paleontological Record and the Rocky Mountains Building in North America*

November 18, **Mr. Khalid Soofi,** ConocoPhillips

December 2, TBA

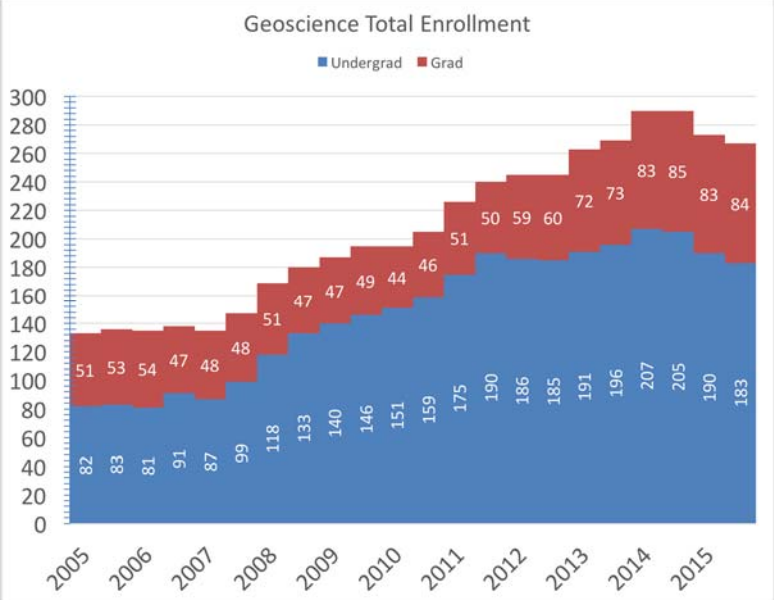
In Memoriam

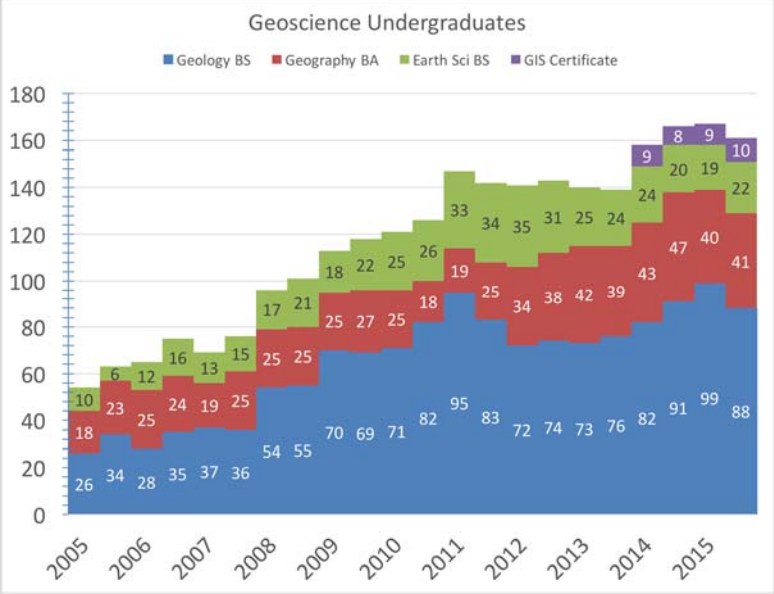
Harold C. "Mac" MacDonald, age 84, of Fayetteville, Arkansas, died Wednesday, May 13, 2015 in Fayetteville. He was born September 18, 1930 in Englishtown, Nova Scotia, the son of Neil and Lillian MacAulay MacDonald. He grew up in Oswego, New York. Prior to his college education, he served for six years with the U.S. Air Force as navigator during the Korean War.

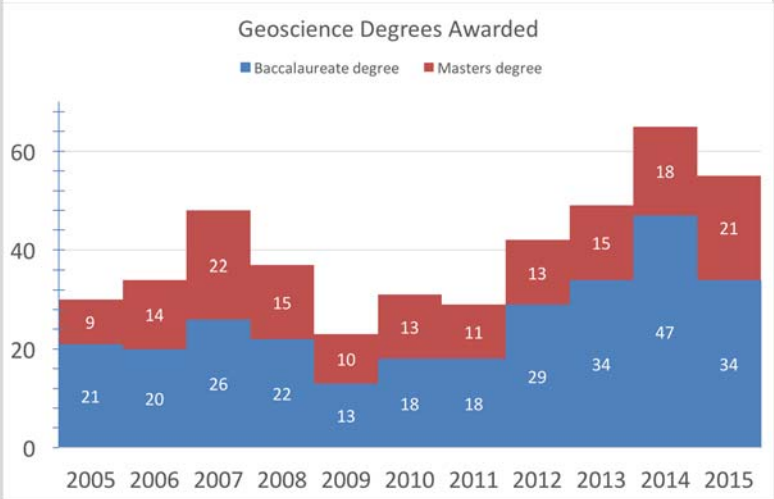
He received a B. A. degree in geology from SUNY at Binghamton, New York. He received both M. S. and Ph.D degrees in geology from the University of Kansas, Lawrence. He received the Erasmus Haworth Distinguished Alumni Award in geology from the University of Kansas in 1988.

He joined the Department as a Professor of Geology in 1971 specializing in remote sensing and petroleum geology. In 1979 he received the Outstanding Faculty Achievement Award for teaching and research. He served on the National Research Council Panel for Evaluation of NSF Graduate Fellowships and was a member of NASA's Space and Terrestrial Applications Advisory Committee for Geology and Geodesy. He received NASA's Outstanding Achievement Award for participation on the Shuttle Imaging Radar Development Team. In 1998 he retired with the faculty rank of Emeritus University Professor.

Geosciences by the Numbers







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Photos from the GEOS Research Conference on 7 November 2015 .

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