

2016

Department of Earth & **Environmental Sciences**

A message from the Department Chair



Department Chair, Dr. Martin O'Connell

Hello Students, Alumni, and Friends of EES: I'll start on a positive note by proudly noting that our EES graduate student team won the 2016 Gulf Coast Regional Imperial Barrel Award (IBA) in Houston, Texas. This is the second year in a row that a team from EES has won this award for UNO in a competition that included other regional universities such as Tulane, Auburn, and Texas A&M. More than one IBA official mentioned to me that such back-to-back victories are 'unprecedented' in the history of the competition. These officials also stated that the two successive wins reflected well on the quality of our UNO graduate program. In fact, a petroleum industry recruiter who was recently in town for a professional meeting requested a visit to EES. Having seen both the 2015 and 2016 competitions, the recruiter wanted to learn more about this small department that produced such excellent teams. Congratulations to both teams for their wins and you can read more about the 2016 competition elsewhere in this newslet-

Unfortunately, Dr. Royhan Gani, the faculty advisor who led both IBA teams over the last two years has left UNO to take a faculty positon at Western Kentucky University. Without Royhan's efforts over the years, our winning IBA teams would have never been formed. During these years of hard financial times for UNO, Royhan provided needed spirit and information to fight for our rights as faculty. As the Administration repeatedly refused to replace EES faculty lines as faculty retired or left for other positions, Royhan developed a Power Point presentation based on data he collected to argue for our need to retain faculty lines. Royhan's presentation showed that while EES has more students now than we had before Hurricane Katrina, we have far fewer faculty (in 2015 the Department had 14 faculty members, we now have 4.5). We hope to continue to use Royhan's presentation in the future as we battle to add more faculty and we thank him for his efforts and hard work during all his years here in EES.

In August the Department experienced another significant personnel loss with the retirement of Linda Miller. Since the summer for 2008, Linda has run our front office with a level of effectiveness and professionalism that I have never experienced in any other UNO units. As a result of her accomplishments, Linda was recognized as UNO's Employee of the Month for September 2014. Much of our academic success over the last eight years can be attributed to Linda's concern for our students, her willingness to fight for what is right, and her dedication to her job. Linda made sure we were fed at faculty meetings, edited our newsletter, helped the student organizations, and in general made sure the Department stayed afloat in these perilous times. We will all miss her deeply and wish her well in her highly-deserved retirement.

The list of departures continues with news that this will be Dr. Michael Fitzgerald's last semester teaching for us. Since spring 2014, Dr. Fitzgerald has graciously taught courses and helped with the IBA teams pro bono. His volunteering to help EES over the last two years was a tremendous benefit for us, especially as we continue to lose people who could actually teach courses for our students (see above). I thank Dr. Fitzgerald wholeheartedly for his time working with us and wish him well for

Thankfully, other volunteers continue to

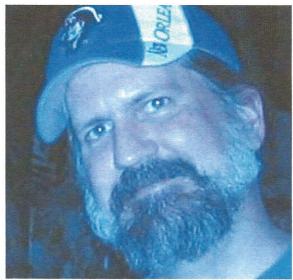
help EES. Toby Roesler played a significant role in the success of both IBA teams. His vast experience in the petroleum industry proved vital in helping to coach the student team members. Recently Toby pledged to help future EES-IBA teams with the goal of continuing to win for UNO. For this, I am grateful for his past and future support. I would also like to thank a new volunteer, Brad Robison, who is teaching courses and helping with the formation of a possible 2017 IBA team. Brad also comes to us with years of experience in the petroleum industry and I am already hearing positive feedback from students about his teaching ability. We have benefitted greatly over the years from the work of volunteers like Toby and Brad and we hope to bring more experts into the Department in the future to provide more education opportunities for our EES students.

As with our volunteers, I am also grateful for the many people who continue to donate to support our students (see names on back page of newsletter). These funds provide our students with scholarships that they greatly appreciate especially in these times of rising costs in tuition and fees. Thank you for caring about EES.

As I begun, I will now end on a positive note. For the first time in its illustrious 42year history, our Annual Mineral Auction which be held off-campus at Second Line Brewing in Mid-City on November 11th at 7:00 pm. At a recent NOGS meeting, an announcement was made about this year's Auction. When it was explained that the Auction would be held at a brew pub, a wave of positive murmurs pulsed through the assembled membership. From the next table I heard a millennial say, "Ooh... craft beer!" Please come out and support our student organizations and enjoy a few beverages while you bid on cool minerals and other items.

Thanks,

Martin O'Connell

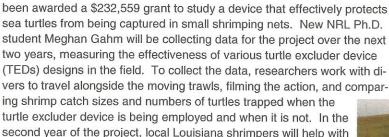


Dr. Martin O'Connell, Department Chair, Associate Professor, and Director of the Nekton Research Laboratory

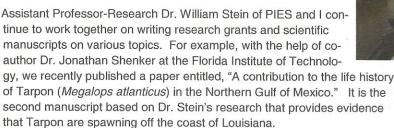
Nekton Research Laboratory

The scientists and graduate students who work in my lab, the Nekton Research Laboratory (NRL), have

been pursuing various interesting research projects over the last year. Senior Biologist and Database Manager Meg Uzee O'Connell of the Pontchartrain Institute for Environmental Sciences (PIES) and have



second year of the project, local Louisiana shrimpers will help with testing the effectiveness of the different TED designs by allowing researchers to collect data from their commercial vessels.



Geoff Udoff (M.Sc. student) successfully defended his thesis research in May. Geoff's project was funded by NOAA and involved comparing the effectiveness of a newly invented wing trawl system with standard trawling practices in regard to reducing bycatch. Soon after graduation, Geoff obtained a job with Louisiana Department of Wildlife and Fisheries. Arnaud Kerisit (M.Sc. student) has finished his analyses on how larval invertebrates use the natural and artificial passes that enter Lake Pontchartrain. He is now writing his thesis and plans on defending his thesis sometime soon. Jeff Gearhart (Ph.D. student) continues to lead our TED research efforts. Part of his efforts involves coordinating the testing of different TEDs and TED methods in cooperation with local Vietnamese-American and Cambodian-American fishermen. New graduate student Damon

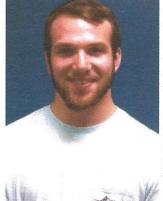
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Dr. Ioannis Y. Georgiou, Associate Professor, Graduate Coordinator and Director of the **Pontchartrain Institute for Environmental** Sciences (PIES)

Greetings to all students, faculty, alumni and friends. We are excited to provide some updates from our group and hopefully everyone reading this is doing well. It is Halloween (almost), end of October, and cold fronts started to pass through coastal Louisiana frequently. We continue to perform research centered in coastal Louisiana, and other places in the country when the opportunity presents itself. My group

conducts basic and applied research in coastal geomorphology and governing surface processes, leading to morphodynamics of the fluvial marine transition, the coastal ocean, barrier islands, deltas and interior wetland systems. We try to

understand these systems through both field observations and modeling.



Pricilla Souza

Kevin Hanegan

Installation of a Doppler

current profiler in Joppa

Our research on the lowermost Mississippi River and Delta Plain (MRDP) is coming to conclusion highlighting the importance of relative sea level rise in producing changes in flow distribution within the distributary channels in the modern delta, and altering saltwedge propagation patterns within the lower river - we are finalizing reporting and are preparing manuscripts for this research as we speak. Our tidal point-bar research (Pricilla Souza, PhD student and collaborators) is continuing with some exciting results on the sedimentological differences and internal architecture between these systems compared to their fluvial counterparts. Pricilla defended her prospectus earlier this semester, and with her general exams nearly complete is continuing with analysis and interpretation of seismic data for these systems. Our research on testing the runaway transgression hypothesis in response to rela-

Tara Yocum, MS student and Mike Brown, PIES, in Plum Island Wildlife Refuge, MA

tive sea level rise continues, with Kevin Hanegan (PhD candidate) and collaborators (Duncan FitzGerald; Christopher Hein, and Zoe Hughes) with information from the field collected at Plum Island, MA, and by use of morphodynamic modeling.

Other research with the Shell Team and collaborators focusing on tidal bedding formation and governing controls for systems with and without fluvial influence is currently underway (Joshua Flathers, MS student) where we are conducting morphodynamic experiments to simulate the effects of tidal range, fluvial discharge, channel geometry and initial morphology on the resulting stratigraphic deposit - Joshua is getting close to a defense. The Mississippi River Delta Front project is on its third year with collaborators (Prof. Sam J. Bentley and Kevin Xu, Louisiana State University and Dr. Mike Miner, Bureau of Ocean Energy Management - BOEM) evaluating geophysical processes driving delta front instabilities; synthesis reports, papers and presentations of this work

started to appear in the literature. We enjoyed working on this project with our LSU colleagues and look forward to the second phase. Our collaborations with Prof. FitzGerald (Boston University), Chris Hein (Virginia Institute of Marine Sciences), and Zoe Hughes (Boston University and University of Houston) in Plum Island Sound and the Merrimack River, Massa-

chusetts, continues where we explore the hydrodynamics and sediment transport pathways to better understand the Great Marsh sustainability in response to future projections of sea level rise. Our field results provided key insight into accretion processes throughout the marsh, and provided key data for use in process based models.

Our collaborations with resource economists from LSU (Rex Caffey) and Mississippi State (Daniel Petrolia) continue, a project that Brittany Kime and Ben Beasley (MS students) are involved. This BOEM funded project will investigate the economic and geomorphic viability of utilizing outer continental shelf (OCS) sand versus nearshore sand sources for coastal restoration projects in Louisiana, to determine project initial cost and outcome as a function of both sand quality, strategic placement, and project performance (both in terms of physical response - morphody-

namic evolution, and associated economics). BICM (joint project with Dr. Mark Kulp - Barrier Island Comprehensive Monitoring Program) sediment sampling (with USGS and the Costal Protection and Restoration Authority - CPRA) continues on the Chenier Plain, and as usual, the project is a great success bringing researchers, graduate students and undergraduate researchers in the field.

Flatts, near the Merrimack Graduate Students and Research Associates: First, we welcome Ben Beasley to the group. Ben, a UNO River, in Massachusetts. Dr. undergraduate received the Coastal Science Assistantship Program (CSAP) award from LA Seagrant, Georgiou (left) and TJ funded by CPRA, and will work on shoreface-barrier island dynamics using field data and process based Malgieri (BU, PhD Student) modeling. Dr. Ahmed Gaweesh continues his appointment as a post-doctoral scholar in PIES, working

closely with students and participating in both new and existing research in coastal Louisiana and in Plum Island Sound, MA. Joshua Flathers and Tara Yocum are nearing completion of their thesis, and Kevin Hanegan and Pricilla Souza have started submitting their first papers for publication. Tim Nelson, Brittany Kime, and Joshua Alarcon have either presented their prospectus or are

very close in doing do, but overall progressing nicely with their research.











(Continued on Page 7)



Dr. Mark Kulp, Associate Professor

Greetings everyone, I hope this newsletter finds you all in good health, happy and one year wiser! It has been a good year for me personally and I continue to be busy with projects, fieldwork and lots of travels.

In recent years I have taken an interest in the role of geomorphology in oil spill response efforts and as a result was involved this past June in a workshop and field trip devoted to understanding the long-term persistence of oil on shorelines. In particular this trip took me to the Atlantic side of Nova Scotia near to where the *SS Arrow* went aground in 1970 and spilled more than 3,000,000 gallons of Bunker C oil. Not all of the stranded oil could be easily removed because of the high energy, boulder-cobble shorelines that are common to the area. As result numerous <1-m scale patches of asphalt pavement now locally mark the location of some of the oil that stranded in 1970, light molecules having long ago disappeared. It was a great opportunity to see a high-energy, macrotidal shoreline and also hear from some of the worlds' leading experts on oil degradation and spill

response efforts.

Shortly thereafter a real oil spill took place in Saskatchewan, Canada and I was invited to provide some guidance on the distribution of oiling and required treatment efforts of heavy oil that entered the Northern Saskatchewan River. That effort ended up being a very rewarding experience and a great opportunity to see some riverine shoreline in a detail that I would have never otherwise had the

chance to see firsthand.

By midsummer 2016 field work efforts were fully underway with another round of the Barrier Island Comprehensive Monitoring (BICM) sediment sampling effort administered by the State of Louisiana. By the way Mike Brown did a great job spearheading this logistically challenging, west Louisiana

Field trip to Talladega National Forest.

effort but certainly not without the help of Andrew Courtois, Joe Frank, Tim Nelson and several new students. Ioannis Georgiou and I have now led two solid years of this component of the BICM and it appears that UNO's involvement in coastal efforts of this nature will continue.

Just a few weeks ago I received word that we are being awarded a two year grant that will focus on educating citizens about coastal processes and shoreline response efforts when natural and human-

induced oiling does occur along south-central Louisiana and Dauphin Island, AL. The project is a 2-yr effort to create citizen scientist groups that continuously collect beach profile and background oiling data in both locations during the project period, with the hope of additional funding thereafter to continue the effort. The goal is to educate and always have available the background geomorphology and oiling conditions

















release of contaminants
take place. This type of
information provides a pad
from which to initiate spill
response efforts and create a citizen base that
understands and can support the challenges of such
efforts.

Trey Kramer, Rachelle Thomason, Joe Frank, Rachael Gaspard, Bryan Carter, Celeste Woock, Jarret Levesh, and Julie Torres (No photo available for Frances Crawford.)

Students of the laboratory continue to excel and Trey Kramer and Rachelle Thomason both completed MS theses within the past 6 months and are on to bigger things. Joe Frank and Bryan Carter are nearing completion rapidly and I expect they will produce two really solid theses during the spring 2017 semester. Some of Joe's work on shallow and deep-seated faulting has led to several presentations and a GSA poster already and Bryan recently found some interesting relationships between tide-water volumes and the channel dimensions within interior marsh platforms. Celeste Woock also continues to move toward her goal of more thoroughly documenting subsidence patterns across the south-central coast and is expecting a spring 2018 graduation after completion of her fellowship. Rachel Gaspard now has an industry seismic dataset and is starting to map deep-seated faults and examine whether modern surface features provide any indication of fault motion at depth. This type of project continues to be a product of the phenomenal effort by NOGS to bring industry-level data to academia and answer some fundamentally important applied science questions.

This past year 3 additional MS candidates started in the laboratory: Jarret Levesh (Juniata College), of my alma mater, will be working on structural relationships across the delta. Julie Torres (UNO) will likely be working on Grand Isle dynamics, and Frances Crawford (LSU) may

UNO Imperial Barrel Team Wins Regional Competition for second Straight Year



UNO's Gulf Coast Regional Imperial Barrel-winning team of (from left) Ryan Jones, Zexuan Wang, faculty adviser Royhan Gani, Will Morrison, Josiah Hulsey and Celeste Woock.

A team of University of New Orleans graduate students won the 2016 Gulf Coast Regional Imperial Barrel Award in Houston, Texas for the second straight year and will advance to the international finals in June. It's the first time that a team has claimed back-to-back Gulf Coast titles in the nine-year history of the event. The Imperial Barrel program, which is organized by the American Association of Petroleum Geologists, pits geosciences teams from universities around the world against each other in a competition to analyze an oil and gas reservoir.

UNO's team beat out 11 regional competitors during the April 15 event from universities including Texas A&M, Rice, the University of Houston, Tulane, the University of Alabama and the University of Louisiana at Lafayette.

The team members are Ryan Jones, Zexuan Wang, Will Morrison, team leader Josiah Hulsey and Celeste Woock. The faculty adviser is Royhan Gani, associate professor of earth and environmental sciences, and the team is assisted by industry mentors Toby Roesler of Stone Energy and Benjamin Kirkland of Nexen Petroleum. The \$3,000 prize will go toward scholarships in the Department of Earth and Environmental Sciences.

"We continue to prove that our geosciences students are among the finest in the region," Gani said. "We are excited to make history by winning the regional title in back-to-back years, which is a testament to the hard work of our students and the outstanding support they receive from their industry mentors. It's exciting that UNO's team will once again be representing the Gulf Coast on an international stage."

In the regional, teams analyze a dataset in the eight weeks prior to the competition and deliver their results in a 25-minute presentation to a panel of industry experts. The judges select a winner based on technical quality, clarity and originality of presentation as well as team's ability to answer questions.

(Kulp continued) be looking at marsh dynamics in the St. Bernard. We have not quite finalized all aspects of their projects yet so if I have not met with them by the time this is published they are possibly quite surprised right now while reading this!

On the home front things continue to march right along. Jonah just turned 6 and I am amazed daily by the things he says and his observations of the world around him. Mary continues to excel at St. Martin's and is currently enjoying her move away from administrative duties and a renewed focus on classroom education.

Yeah, lots going on. Be sure to stop in if you are nearby, we all enjoy the random alum popping in to say hi. All the best.



Fall 2016 has been busy for The Society for Earth and Environmental Sciences (SEES). We started the school year off with a donation drive for the flood victims in Baton Rouge and surrounding areas. Shortly after we participated in UNO's Fresh Fest/ Privateer Plunge where we promoted SEED and recruited new members. Members from SEES also volunteered for the Lake Pontchartrain Basin Foundation's annual beach sweep. All three EES student organizations participated in Swampball 2016, which was a blast and a great way to represent the department. Some SEES members spent their fall break volunteering for the Annual New Orleans Gem, Mineral, Fossil and Jewelry show and met some amazing geologists while doing so. As the year moves on

SEES has been prepping for our largest fundraiser of the year, the 42nd Annual Mineral Auction which be held on Novem-



ber 11th at 7:00 pm. Please note that for the first time in its long history the mineral auction will be held off-campus at Second Line Brewing (please contact us for details). The mineral auction proceeds go towards three areas of student interests: 1. keeping membership dues affordable for students; 2. supporting an annual group field excursion; and 3. funding the annual scholarships that go to the top performing SEES members. Scholarships can cover student tuition, support attending field camp fees, or provide for internship expenses. Looking forward to seeing everyone at the mineral auction!

The 2016-17 officers are: Sara Stewart, President; Cade Fernandez, Vice President; Morgan Crawford, Secretary and Sarah Roberson, Treasurer.

Association of Petroleum Geology-AAPG

The American Association of Petroleum Geologists is the world's premier professional association for geologists in the oil and gas industry. The association boasts 40,000 members worldwide, including 8,000 student members. The goal of the UNO AAPG student chapter is to expose students to fundamental topics, scientific research, events, realities, and opportunities in the oil and gas industry. Last year we hosted Charlotte Batson. She presented on the current challenges we face with \$50 bbl. oil and what students can do to be competitive. She is a renowned voice in the oil and gas industry, having appeared on CNBC for her technical opinion. We also hosted a talk by Malleswar Yenugu, a well accomplished geophysicist working with Ikon Science Americas in Houston. We enjoyed a talk on gas hydrates by Art Johnson, president at HEI. The students also benefited from former ExxonMobil researcher Fred Schroeder's very informative short course on Seismic Stratigraphy.

As you may have heard, the UNO team won the 2016 AAPG Imperial Barrel Award (IBA) Gulf Coast Region competition for the second year in a row! UNO is the first team to do so in the history of the competition. As a result, the UNO team went on to compete internationally in Calgary Canada and participate in the AAPG International ACE conference, where a member Zexuan Wang presented a poster. Many members also attended the AAPG student expo in Houston, where Celeste Woock and Joe Frank presented posters regarding their research (please look for these hanging on the department walls). Students also participated in technical talks at the Deepwater Technical Symposium.

Our chapter is very grateful for the service provided by the New Orleans Geological Society (NOGS). Their monthly luncheons and events provide our students with vital learning and networking opportunities. We would also like to thank Toby Roesler at Stone Energy for his valued contribution, dedication and expertise as our IBA team's industrial advisor. Additionally, we are very grateful to have Dr. Mike Fitzgerald volunteer his time teaching courses at UNO. He is always willing to offer support and advice to all students. Our chapter also benefits greatly from the experience of former Shell researcher Brad Robinson, who voluntarily teaches Petroleum Geology. Lastly, we would like to thank the department's alumni for their financial support of the annual Mineral Auction, as this is instrumental to our chapter.

The 2016-2017 officers are: Ryan Jones, President; William Morrison, Vice President; Rachael Gaspard, Treasurer; and Celeste Woock, Secretary

-Ryan Jones

Student Scholarships and Awards 2015-2016

New Orleans Geological Society Memorial Foundation Graduate Scholarship Award: William Morrison

New Orleans Geological Society Memorial Foundation Graduate Scholarship Award: Celeste Woock

New Orleans Geological Society Memorial Foundation Senior Scholarship: Shara Gremillion

New Orleans Geological Society Memorial Foundation, Junior Scholarship Award: Brittany George

Olga Braunstein Scholarship for EES Undergraduates: Derek Breaux, Hallie Burnett, Lewis Jones, Jennifer Paz, and Adam Songy

Olga & Jules Braunstein Service Award Undergraduate: Scott Hudson and Camryn Martin

<u>Chevron Geology Graduate and Undergraduate Scholarship:</u> Graduates: David Cross, Josh Flathers, Trey Kramer, Pricilla Souza, and Zexuan Wang; Undergraduates: Austin Collins, Andrew Courtois, Ernesto Hernandez, Scott Hudson, Taylor Hux, Tisha St. Cyr

Shell Minority and Women in Science Award: Elizabeth Larroux and Sarah Roberson

EES Research Scholarship: Kevin Hanegan, Ryan Jones, Brittany Kime, and Timothy Nelson

William W. Craig Memorial Scholarship: Prabhat Neupane and Rachelle Thomason

Jennifer R. Miller Memorial Scholarship: Rachel Gaspard and Tara Yocum

Glenn Hebert Petroleum & Geology Scholarship: Graduate-Joseph Frank and Undergraduate-Joseph Hankerson

Glenn Hebert Coastal & Environmental Scholarship: Graduate-Geoff Udoff and Undergraduate-Benjamin Beasley

Society of Independent Professional Earth Scientists, New Orleans Chapter: Rachael Gaspard and Joseph Frank

SEES Scholarship: Shara Gremillion, Taylor Hux, Lewis Jones, and Rachel Thomason

SEES Field Camp Scholarship: Austin Collins



RV Mudlump is the upper Parker River, in Massachusetts. From left to right, Tara Yocum (MS student), Mike Brown (PIES Res. Associate), Dr. Fitz-Gerald, and Dr. Georgiou

(Continued from Page 3)

Undergraduate Students: This past spring, Camryn Martin (EES major, photo on right) joined our group after winning a Collee of Science Undergraduate Research Program studentship (COSURP);her research builds on tidal creek morphometrics, where she is studying, using both physical models and field observations, the effect of channel mobility (bank migration) on the development of lateral accommodation along a meander to support tidal bar formation.





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DONATIONS AND GIFTS TO EES

The Department of Earth and Environmental Sciences has thrived in large part because of the support of our alumni and friends. Monetary contributions have allowed teaching, research, and scholarship programs within the Department to flourish during periods when state support wavers. Permanent support to the Department has been established with the creation of endowed accounts from which the interest is used to support a specific purpose. These accounts are managed by the UNO Foundation and include:

William W. Craig Memorial Award (No. 80696): an award for students who display excellence in teaching earth science.

Jennifer R. Miller Memorial Award (No. 80711): an award for graduate students who display research excellence in environmental geology

Jules & Olga Braunstein Undergraduate Scholarship(No.80351): merit-based scholarships for undergraduate geology and geophysics majors

Geology and Geophysics Research Fund (No. 80633): a fund to support graduate student thesis research.

The Department maintains the Earth & Environmental Sciences Fund (No. 90243) which is used to support special projects, such as the purchase of vans, departmental seminars, special events and faculty and student travel.

Contribution to any of these funds is greatly appreciated. The preferred form of donations is a check that is payable to the **UNO**Foundation and sent to the Department Office. If you want to target a specific fund, please indicate the name or number of the fund on the check.

SPECIAL THANK YOU FOR YOUR GIFTS (2015-2016)

Susan Bathke

Donald E. Burch Jr.

Chevron Matching Employee Gift Program

J. Sybil Callaway

Clovelly Oil Company

J. David & Claudia Cope

W. James and Susan F. Deister Jr.

Debbie Edwards

Exxon Mobil Foundation

Mark and Deborah Gallagher

Gem & Mineral Society of LA, Inc.

Glenn Hebert

Douglas Hill

Art Johnson

New Orleans Geological Society Memorial Foundation, Inc. (NOGS)

James A Lloyd

Robert and Janice Marshall

Mrs. Lesley M Prochaska

Robert and Carol Rooney

The Rosewood Foundation.

Society fo Independent Professionals-Earth Scientists New Orleans Chapter (SIPES)

Stacy Smith

Candace Strahan

Marshall Vinet

Sirelious White