



Department of Geological Sciences

2015 NEWSLETTER

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The "Geology Rock" situated on the north side of the Graham Building. Photo was taken during a Feb. 2015 snow.

Notes from the Chair



Dr. Culver speaking at the official opening of a geology lab located in Graham Building, Rm 106.

Resources Management PhD program, Mike O'Driscoll is Director of the Coastal Water Resources Center, and J.P. Walsh and Reide Corbett continue as Joint Program Heads at the Coastal Studies Institute. We have a great group of graduate students and a very strong pool of applicants for next year's cohort. It feels great to report such excellent contributions to the continued success of Geological Sciences at East Carolina University.

I hope to see you at the Pig-Picking on May 2nd at the Spruills' place.

My very best regards,

Steve Culver

Dear friends,

Our Newsletter is a little different this year. Our student honor society, Sigma Gamma Epsilon, is organizing and compiling the spring 2015 Newsletter. We hope this brings some new vitality to the Newsletter as none of the faculty members are getting any younger! Student involvement in this Newsletter is part of the new leadership initiative, the brainchild of Stan Riggs and funded by the Stan and Ann Riggs Fund. If you want to help us grow the next generation of leaders, please consider contributing to the Riggs Fund. Details of how to support this initiative, the C.Q Brown and John and Nancy Bray scholarships, and the department in general, are given later in the Newsletter.

Our department has had a great year. Numbers of undergraduate majors have equaled our all-time high. Our several Master's graduates have become gainfully employed. Edu Leorri was tenured last year – congratulations to him! Our faculty members have several important roles on campus. Edu Leorri is an Associate Dean, Sid Mitra is Director of the Coastal

Annual Pig Picking

Come enjoy a day filled with great food and comradery!

The annual Pig Picking on Spruill's back 40

Noon, Saturday, May 2, 2015.

Please contact the office for directions at:

Phone: 252-328-6360

Email: westk@ecu.edu



"I had a pleasant surprise this semester when a family member of one our students sent me an embroidered, geological, pig picking pig. Here s/he is! I wonder what our porcine friend's name should be!" - Steve Culver

A Message From The Coast - Stan Riggs

During this past year I have helped develop and implement a new visionary program for the future of our coast called “North Carolina’s Land of Water” (NC LOW) and worked on the “new” sea-level change report as a Science Panel member for the state of NC. You may remember the 2010 NC Sea-Level Rise report that Stephen Colbert made internationally famous in his comedy segment “Sink or Swim” (still available on Youtube—check it out) when NC tried to pass a bill to outlaw sea-level rise? We have now written the 2015 report that the politicians decided should be limited to the next 30 years so we don’t scare away development. OK, more new data and guess what—sea level is still rising!

Is long-term sea-level rise of 0.5 to 3 feet in 30 to 100 years, respectively, critical for NC’s coastal system? Yes, it is if you are going to build a 50-year bridge and road system on a moving pile of barrier island sand, buying waterfront property on an eroding ocean or estuarine shoreline, or building a housing development adjacent to a riverine floodplain. However, the more immediate concern for NC’s coastal system is the impact and consequences of short-term, sea-level changes resulting from the vast array of annual storms with sea-level changes up to 5 to 20 feet (called storm surge) that dominate our coastal system, much of which is at or close to sea level. The coastal economy, built over the past decades, has been developed on the assumption that the barrier island-estuarine-riverine system is stable and fixed in place. However, the ongoing processes of long-term sea-level rise, working in concert with the short-term storm dynamics, continue to demonstrate that change is the only constant in our coastal system.

What is the evidence?

We have been building and rebuilding 10- to 20-foot high dune dikes along the developed ocean front for decades. When the dune-dike fails and ocean-front houses are in the surf zone, we resort to great walls of sandbags to hold back the ocean. When the sandbags fail we start pumping sand desperately trying to re-establish a beach to ensure a viable summer beach economy.

A few decades ago, 10 to 20 miles of beaches were regularly renourished; today there are about 125 miles of ocean communities that want (need) beach nourishment sand right now. About 25 miles of the Outer Banks highway 12 frequently are buried in sand, flooded, or collapsed in response to abnormally high spring tides, heavy rainfalls, or a storm; portions of highway 12 have now become year-round construction zones. Why have many hundreds of miles of bulkheads, rock revetments, and jetties been built to encase our estuarine shorelines? And why is it that many down-east villages and farms are being diked, houses being relocated and elevated onto high cinder-block piles, and lowland roads being rebuilt and raised? The natural coastal system is very resilient to change, but how resilient is the human component situated at this dynamic land-sea-air interface?

There will always be a coastal system with ocean and estuarine shorelines, but the coast is a dynamic, moving system and we must adapt to this. Trying to maintain the status quo through engineering fixed structures and ignoring the natural limits to growth will ultimately cause the collapse of both the economy and the natural resources on which the economy is based. North Carolina’s Land of Water is a world-class coastal system that forms the basis of a new paradigm (NC LOW) that builds on the natural resources, human history, and culture by developing an overarching and integrated umbrella program for a sustainable, water-based economy. The twenty-first century is an exciting time with tremendous opportunity for NC’s coastal system. Determining new ways of living in concert with a dynamic and changing coastal system of shifting sand, high-energy storms, and rising sea-level is a challenge we must embrace.



Stan Riggs lecturing in front of one of his favorite examples of poor coastal development.

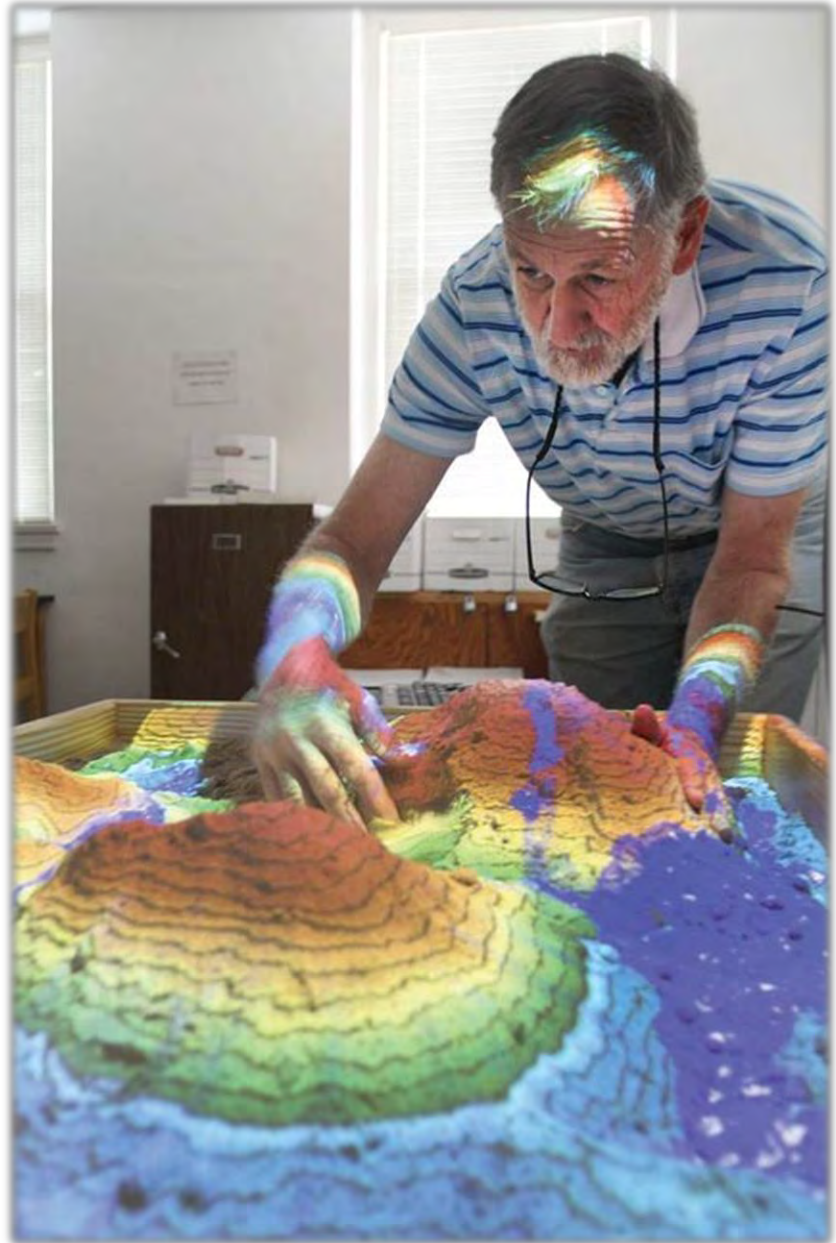
The Sand Box – John Woods

My job (Laboratory Mechanic II, whatever that is) is usually pretty entertaining, but last year I was asked to build two augmented reality sandboxes for the department. The idea of combining a 3D camera with a sandbox to demonstrate terrain map features, water flow information, wave patterns, lava flows, and impermeable surface simulations, seemed a bit unusual even for this job.

Fortunately for me, UC Davis had an NSF- funded project to create an augmented reality sandbox. They provided links, software hacks, and the information needed for the rest of us to build one. The problems to overcome included keeping the budget down, figuring out the calibration techniques, and getting the software to play nicely with the very nonstandard equipment we could afford. With help from Rob Howard (who also donated one of the Kinect 3D cameras), Michael Woods (who did all of the Linux work on one long Saturday), and the Department (for the money needed) it seems to have worked out pretty well.

To make a long story shorter, we came up with a couple of computers, had a donation or two, found some close-out sales, and bought some wood. Figuring out the dimensions, distances required by the short throw projectors we could afford, and some minimal estimates for how tough the thing needed to be, took a little time. Assembling the project and implementing the software took a little more time plus patience. Then the hard part of turning it on and trying to find out why nothing at all would work, took even more time. The really fun part for me was the first time we got the beast to work and it suddenly just came on with all the colors and elevation lines kind of sparkling at us.

A live demonstration is much better, but if you can't come to the department to play with them, watch some videos of our boxes on the almost endless video on the East Carolinian Website:



John Woods demonstrating the ARS Sand Box. Photo obtained from The East Carolinian news center.

http://www.theeastcarolinian.com/news/article_a129e7a6-693e-11e4-aa2f-037e70e78792.html

The AR Sandboxes are currently being used for some of the topo mapping part of Geol 1501 lab. One of our Geology/Computer Science majors, Ryan Chartier, is working on turning the water into lava and a project for Dr. Bean in engineering to develop some impermeable surface simulations. Mark Akland, one of our very promising grad students, is developing some exercises to use in various classes to illustrate and or demonstrate geological concepts. Science Olympiad will be using one for an exhibit with some of our grad students to demonstrate. The sandboxes will also be used to attract students to geology on high school STEM day.

NC Geology Field Course 2014: Becoming A Geologist

Justin Alford (B.S. Geology, Spring 2015)

In his Min\Pet courses, Dr. Spruill always told us that field course is where you become a geologist. Having completed field course, I can certainly attest to Dr. Spruill's statement. Learning geology in the classroom and applying that knowledge in the field are two completely different styles of learning. We are taught basic geology concepts in class, but I realized that actually applying those concepts is challenging. ECU geology undergraduate students are required to take Introduction to Field Methods and Structural Geology. Both of these courses take field trips (e.g., Hot Springs, NC, and Grandfather Mountain, NC) that allow students to practice their field methods needed for the six week long summer field course taught in Colorado and New Mexico.

Field course further develops the skills learned in Field Methods and Structural Geology. Approaching an unknown outcrop and mapping it with confidence is a huge turning point for a geology student. The team work it takes and the camaraderie that is built plays no small part in field course. Working in teams is an important skill to have, and I can say that field course certainly gave everyone that experience, good or bad. Part of the field camp experience and becoming a geologist is being paired with someone with whom it is difficult to work with. My experiences at field camp were some of the best moments in my life, and that is in part because of the people and the professors who were involved, but mostly because I knew I had become a better geologist.



A roadside outcrop of the Hermosa Formation monocline within the San Juan Mountains, Durango, CO

NCGFC 2014 students had the pleasure of working with faculty from different institutions and companies. These institutions were: (1) ECU's Department of Geological Sciences faculty (Dr. Stephen Harper, Dr. Eric Horsman, and Dr. Michael O'Driscoll), (2) UNC-C (Dr. John Diemer), (3) Ground Water Management Associates, Inc. (Dr. Steven Campbell and Jay Holley); and the companies were: (1) Noble Energy (Evan Howell), and (2) SMK Geoscience consulting (Sabina Kraushaar). Strengthening our skills from a wide diversity of geologist was surely an experience that will stay with us for many years.

At field camp we were constantly on the move from one "home" to another, which kept things interesting. These different places included (1) camping in New Mexico at Abiquiu, (2) dusty Cochiti-San Ysidro, (3) staying at a lodge in Sipapu-Taos, NM, and (4) living in condos that sleep 8-10 people each in Cascade Village- outside of Durango, CO. The lifestyle and changing environments throughout field course was refreshing. We looked forward to 17:00 on compilation day (or any time after your final map and lithologic descriptions were turned in), as well as visiting the National Parks (Great Sand Dunes and Tent Rocks) and cities (Taos-NM, Creede-, Silverton-, and Durango-CO). Traveling across country to visit spectacular geologic regions, such as the Jemez Volcanic Field, NM and the San Juan Volcanic Field, CO was a phenomenal experience that cannot be taught in a classroom.

We enjoyed roaming different cities and experiencing the culture. One of our favorite pastimes was playing hacky sack as a group, which sometimes included Dr. Eric Horsman and Jay Holley (good sports!). Some of the most interesting encounters occurred in Taos, NM with the local tourist-friendly shop owners. Camping during a few cold nights prompted nearly every student to buy a Baja hoodie. The seller's stands at the Rio Grande Gorge Bridge had a vast selection of minerals, rocks, fossils, and artwork found and made locally, which seemed to be a favorite for souvenir collecting. During field course, I learned that working on my final map, lithologic descriptions, cross-sections, and stratigraphic column a little bit each night was the best way to ensure that I could turn them in early on compilation day. Not only did finishing early take a huge weight off of my shoulders, but it also gave me time to play some disc golf on the course at Sipapu Ski Lodge, NM.

As you reminisce about your experiences in field course, think about how they made you better as a geologist. What crucial moment in your education did you feel that you could be a geologist, you were truly ready, and this is what you wanted to do as a career? For me, and for most of my peers, it was after undergoing field course. Field camp gave me the skills to "fly through the fog." I look forward to and encourage others to participate in the instruction of NCGFC.

SGE: Epsilon Phi – 2014-15 Executive Leadership

Joseph Perry, President; Cameron Whitley, V.P.; Liz Maurer, Secretary; Erik Anderson, Treasurer

The Epsilon Phi Chapter of Sigma Gamma Epsilon at East Carolina University (ECU) has been busy over the past couple years. Several of our alumni have stayed at ECU to pursue their graduate degrees, allowing the chapter to maintain numbers and provide undergraduate members advice on chapter traditions. Each year we hold a fall and spring initiation, and since the fall semester of 2012, 15 new members have joined. Currently, we have 29 active members.



In recent years members of our chapter have become increasingly active in volunteer and leadership roles throughout ECU. The two most prominent volunteer opportunities are Science Olympiad and tutoring. Science Olympiad is a middle- and high-school academic tournament that helps students gain a deep understanding of the sciences. Each year about 15 chapter members have volunteered to help with the tournament. The volunteers take on several different roles in the tournament, including coaching teams from schools in Pitt County, and creating and administering tests for events such as “Dynamic Earth”, “Geologic Mapping”, and “Road Scholar”. Many members of SGE also volunteer to tutor students enrolled in introductory geology classes, most commonly Oceanography and Dynamic Earth.

Fundraising is an important aspect of the chapter, as money raised is used to host several events for the department, and to donate to the C.Q. Brown scholarship. Epsilon Phi's most successful fundraiser is the annual three day rock sale held during the fall semester. Over the last two years, the chapter has raised approximately \$3600 selling rocks and minerals collected by students or donated by alumni and faculty, and items made by chapter members including rock bookends and picture frames.

Another popular fundraising event is the Valentine's Day chili cook-off. While we weren't able to hold one in the spring of 2014, we brought it back in 2015. Students and faculty from the department were able to enter their chili, and the winner was awarded a small prize. The money raised from chili purchases was put towards events that are hosted by the chapter. In addition, the Epsilon Phi chapter sells t-shirts each year. Members of the chapter submit geology-related designs for the t-shirt and, after a vote, the most popular design is used. The t-shirts are sold to anyone interested and the funds raised are put towards events hosted by the chapter.

The thing we are most proud of donating to is the C.Q. Brown Scholarship. The scholarship recognizes outstanding rising seniors, and is awarded to the recipient at the end of the spring semester of their junior year. The scholarship is applied directly to their tuition, and the possibility of receiving the award gives students motivation to strive for excellence in their academics and service. Following the fall 2013 rock sale Epsilon Phi was able to donate \$982.00 to the scholarship awarded in the spring of 2014, and after the fall 2014 sale \$775.00 was donated for the spring 2015 award.

Epsilon Phi is also proud to have been able to partially fund the travel of 10 graduate students to the 2014 Annual Geological Society of America meeting in Vancouver, Canada. All students that were funded presented research; nine presented posters and one gave a talk. Research topics presented include paleoclimate reconstruction on the Sunda Shelf in the South China Sea; short and long term marsh shoreline change, as well as the Ocracoke Inlet flood-tide delta, in Pamlico Sound, North Carolina; reservoir quality of the Marcellus Shale in West Virginia; and emplacement mechanisms of an intrusive body in the Henry Mountains, Utah. Funds were also provided to several students who presented research at the 2013 and 2014 GSA Southeastern Section Annual Meeting.

Each year Epsilon Phi hosts a departmental cookout (the pig picking) that serves as an awards and graduation ceremony. It is at this ceremony that the C.Q. Brown scholarship is awarded. The chapter uses money raised during fundraising events to buy supplies for the cookout. Several alumni join the students and faculty of the department in attending this event, giving everyone time to communicate outside of the classroom.

In the future we hope to continue with many of these traditions, as well as take on new responsibilities. One new tradition the chapter will take on is the editing of the departmental newsletter (the one you're currently reading). In the past, faculty were the only contributors to the newsletter; now there will be a greater student influence. Articles in the newsletter will be focused on the research students are conducting and their experiences in the department. In addition, we are beginning to plan for our department's 50 year anniversary in 2017. As we proceed into the future, continued growth, active fundraising, and volunteering remain important to the chapter.

The Student's Perspective

Erik Anderson – B.S. Geology, Spring 2015

As a senior undergraduate geology major, I wanted to begin getting experience applying my knowledge of the geological sciences to a potential career path. Ultimately, I know that I want to become a professor and conduct research at a university. At ECU, the opportunity to conduct research with faculty members is easily accessible. With my interests in geochemistry and mineralogy, I decided to approach Dr. Adriana Heimann to see if there were any research projects available for me to join. She suggested that I lead my own project under her supervision. Adriana encouraged me to apply for two grants: The NC Space Grant and a grant offered through the Sigma Xi Grants in Aid of Research program. I was able to acquire funding from both agencies and gained valuable experience writing grant proposals in the process. Thus began my project in studying the genesis of banded iron formations, specifically the Valentine's Iron Formation in Uruguay.

I began studying the mineralogy and geochemistry of these rocks by learning to utilize many data-collecting instruments that were foreign to me. Dr. Heimann helped me learn to operate and understand the theory behind a reflected/transmitted light-polarizing microscope as well as a scanning electron microscope housed in ECU's Biology Department. These instruments are vital for any research geologist to know how to operate. On top of using these instruments, I was taught how to operate a rock saw for partitioning cores into slabs to send off for whole-rock chemical analyses and thin section preparation. I am currently finishing acquiring the data needed to begin writing my paper and hope to finish my project by the end of the summer. I got the opportunity to present the data that I have collected so far at the 2014 State of North Carolina Undergraduate Creativity and Research Symposium held in Raleigh back in November of 2014. This provided me with experience in creating scientific posters and presentations. ECU gave me the opportunity to pursue my academic interests and has encouraged me to take my education to the next level in graduate school.

Isaac Bukoski – B.S. Geology, Summer 2015



The Sarlacc Pit! It was actually an emergency reservoir for the dam, but the resemblance was too much to ignore.

I hope this letter finds everyone doing well. This past year has gone by with intimidating speed. As a senior in this department, I am both glad and sad to be close to finishing my degree. Glad, for I know I have been taught and provided with a set of skills from the best of our geology community. However, I am sad, as I know that I will eventually have to get a "big-boy-job" and give up the freedom and free time that come with college life (time that I have seemingly taken for granted at times). Nonetheless, this past last year has been quite the journey for myself and our department.

Dr. Horsman's spring 2014 structure field trip to the Appalachians was an experience, to say the least. Amongst being captivated by the geologic fabric of the mountains, specifically around Grandfather Mtn., we touched a fault located next to a Sarlacc pit (Starwars reference – see picture left) and endured an overnight blizzard with winds over 75 mph. Well, some of us endured the intensity of a blizzard. On the Saturday evening before we left the next morning, a few brave-hearted classmates and I held ground as more than half of our class packed up and drove back to Greenville fleeing the storm. Getting out of bed on that snowy, Sunday morning in the dark, howling wind was rather difficult; but that is what being in the field is all about--process, right?



Olympus BX51 reflected/transmitted light microscope



Field Trip to Shackleford Banks, NC with Dr. Rigsby's Sedimentology class. Fall 2014

beaches and associated oceanic processes. Dr. Culvers' Paleontology class will travel later this semester to the Smithsonian Museum of Natural History with behind-the-scenes access: where the best stuff is kept. Additionally, myself and many others are going to fortify (or lithify) our knowledge of the geologic sciences by attending the 2015 GFC this summer. I can speak confidently that we are all looking forward to this time out in the wilderness of the West. And lastly, I look forward to expanding my knowledge as a professional geologist in the future, utilizing my acquired skills from this department, as well as becoming an official alumni newsletter recipient.

Samuel Martin & Haley Hindes – M.S. Candidates

This past summer we had the privilege of visiting the exotic country of Malaysia with Dr. Stephen Culver to continue previous research pertaining to paleoceanography. Through collaboration with the University of Malaysia Terengganu, we used their vessel, *Discovery II*, to collect three gravity cores and multiple surface samples from the Sunda Shelf. Haley will be using the gravity cores to reconstruct Holocene paleoclimate events, which will supplement previous work done in 2013 by second-year graduate student Devon Reed. Samuel will analyze the collected surface samples to identify modern foraminiferal assemblages and, therefore, provide a model for interpreting environmental changes preserved in the sedimentary record.

While in Malaysia, not only did we complete our fieldwork, but we also had the opportunity to see several different cities including Kuala Terengganu, Kuala Lumpur, and Kuching on the island of Borneo. Some of the sites included beautiful national parks, bizarre animal life, and several diverse religious venues. Additionally, we had the privilege of making many new friends and meeting Dr. Peter Parham, an ECU alum. We will never forget the people we met and the cities we enjoyed, it was the trip of a lifetime!

Dr. Neal led an optional field trip to Valley & Ridge Province in Virginia for his stratigraphy class at the end of the spring semester. Although only a collective six of us traveled with him, the field excursion was a blast. We saw a plethora of sedimentary rocks, collected and burned authentic W. Virginian bituminous coal and stayed up late around a fire talking about lost loved ones and rocks.

This last fall semester involved rigorous academia revolving around sedimentology with Dr. Rigsby. We took an all-day field trip to Shackleford Banks and another all-day trip canoeing down the Tar River. Although the course load was significantly overwhelming, seeing the end results of our tediously edited reports was extremely rewarding (that and seeing Mr. Mark Akland fall out of his canoe was an added bonus).

Throughout the past few months, I have been wet sieving and rotaping (is rotaping a verb yet?) in the basement of Flanagan for Caroline Smith. Her thesis project is focused on the Holocene geologic evolution of the Ocracoke Inlet flood-tide delta, North Carolina. This experience working for a graduate student and observing what they do has been rewarding and intimidating (the amount of work, that is), but ultimately has encouraged me to pursue further education.

Looking back just one year within this department shows a wide variety of adventures, but the future certainly holds more to come. Our current advanced oceanography course with Dr. Walsh plans to spend a weekend on the Outer Banks, while exploring



Crew of the Discovery II in Malaysia after a long day of fieldwork in the Summer of 2014

Erik Thornton – M.S. Candidate

During the last five years studying geology at East Carolina University, I have experienced some of the most rewarding moments of my life: meeting new friends, learning from wonderful professors, and discovering hidden passions have been just a few of the remarkable occurrences. As I complete my Master's thesis (studying the construction of an intrusive sheet complex on the southern flank of Mount Hillers, Utah), I think back on all the fond memories of both undergraduate and graduate study:

1. Falling in, and completely submerging myself, in less than a foot of water on the Structural Geology field trip at Linville Gorge
2. Falling down the mountain at Sipapu Lodge during Geologic Field Course 2012, and then completing Copper Hill field mapping on crutches
3. Popping unknown quantities of tires, losing a tire (with rim) at 65 mph on the highway, and getting a van stuck in the mud for 3 days during my first season of graduate field work in Utah
4. Meeting the love of my life

"Who knows what the future will bring? Onward to adulthood!" - Erik



Having some "field difficulties" in the middle of nowhere, Utah.

Caroline Smith – M.S. Candidate

Hello everyone from Stanleyville jail (currently located in Graham 306)! It is inspiring to read the updates from so many of our alums and realize the large footprint that our small department continues to make in the world of geology. It has been a wonderful year as a second year graduate student working on my thesis project, Holocene Processes and Development of the Ocracoke Inlet Flood-Tide Delta (OFTD). It all started during the summer of 2014 when seismic data were collected, which were analyzed to aid in choosing potential vibracore drilling coordinates. Data analysis, for me, occurs in Stanleyville Jail where the coffee pot is always brewing, sandwiches are cooking on the George Foreman, and graduate students with varying attitudes can be seen roaming the hallways of Graham. With all of these wonderful things going on around me, at the time, I did not understand why the office is called Stanleyville Jail, but now I am beginning to realize. When the day arrived to collect vibracores after reviewing seismic data, making figures etc., the crew headed out to the OFTD daily on the Stanley R. Riggs R/V for a total of three days. It was a great crew including Drs. Mallinson, Culver, Jim Watson, John Woods, two divers, and about six other geology students. The OFTD is already a tricky, shallow area to navigate in a boat, and it doesn't aid the captain or the crew with my sixth vibracore location being in an area that only has six inches of water. Before we knew it, we began to skid the bottom of the seafloor, and we eventually figured out the starboard engine malfunctioned.



After supper Dr. Culver enjoys the ride into port during the summer of 2014.

It usually takes two hours to get home, but this time it took approximately 10 hours at four knots per hour. People were ready to get home. However, because everyone shared food items, drinks, stories, etc. with everyone, we were all one big happy family putting home. On the bright side, we did come back with some vibracores! They are all great cores, and the data derived from them has really helped geologists expand knowledge regarding the geologic and geomorphic evolution of the dynamic coastal system in the Outer Banks, NC.

During my research, I faced certain challenges with technical problems, interpreting data, and time constraints all of which required flexibility and attitude adjustments in Stanleyville Jail, the laboratory, and at home. As I am reaching the end of my thesis work, I have found it extremely rewarding to participate in active field research, and to work with supportive and motivating faculty and graduate students. As I look to the future, I can see how students benefit from the professional applied work experience that we receive in the Department of Geological Sciences.

Jessi Strand - M.S. Candidate

My thesis project is a study of sediment accretion and marsh dynamics in two marsh systems in northeastern, NC. I started at ECU in August 2013 and agreed to a project that involved quite a bit of marsh field work.



Jessica Strand working in the Field on a cold morning in January, 2015.

My project focuses on short-term sediment deposition relative to decadal-scale accumulation and looks at a possible source for that material. A combination of methods were used, including tile placement inside the marsh (short-term deposition), core collection (decadal scale accumulation), and RTK-GPS shoreline mapping (monitor shoreline erosion). Prior to this project I had never spent time in a marsh, I knew that marshes were wet, sticky, and smelly, but had no idea of the dangers that lurked within. For examples, did you know that marsh grass can give you a bloody nose if you fall at just the right angle, wasps live in marshes and are very territorial, snakes are not hard to find, and black widow spiders like to hang out in PVC site markers? I learned mud that appears solid can actually swallow your leg, your diving reflexes really kick in when a RTK-GPS is headed into the sound, and canoeing in 3-foot waves is terrifying, but possible.

My experiences in the marsh, no matter how interesting, have only strengthened me as a scientist. This semester I am writing my thesis and finishing up my laboratory analysis, which includes loss on ignition, ^{210}Pb dating, ^{137}Cs dating, shoreline change analysis (via AMBUR), $^{13}\text{C}/^{15}\text{N}$ isotope analysis, and tile deposition calculations. I hope to defend my thesis in May.

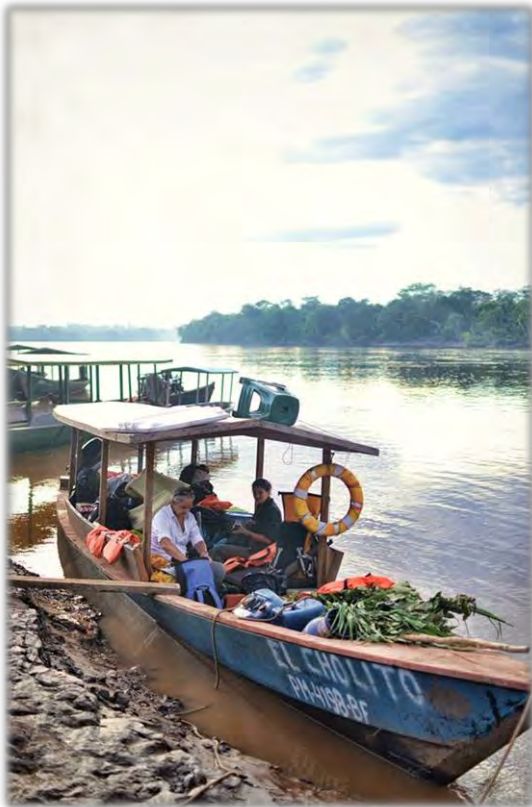
David W. Hawkins - M.S. Candidate

My time here at ECU has allowed me to grow professionally as a student thanks to the hardworking and dedicated faculty. Even before moving to Greenville and beginning graduate school, I was offered the opportunity of a lifetime. In December of 2012, I left on the *RV Laurence M. Gould* from Punta Arenas, Chile to head to Palmer Station, Antarctica to assist in geochemical research under the direction of Dr. Reide Corbett examining cross-shelf mixing and submarine groundwater discharge along the Western Antarctic Peninsula. Having never been a part of a research project of this scale, I was challenged academically and personally, but in the best way possible. I could not have asked for a better introduction to the research capabilities of ECU and greatly appreciated the opportunity.

Over the past two years, my thesis project has brought me to the Outer Banks region of North Carolina where I have refined my skills as a researcher by focusing on shoreline change and historical sediment accumulation surrounding Roanoke Island. As part of this research, I have implemented several geochemical and geophysical tools to evaluate this changing system over long- and short-term time-scales. Shorelines and estuarine sediments in this dynamic region are impacted by long-term geologic processes and short, drastic changes brought about by severe storm events. Dynamic forces shape our shorelines, and over the past ~ 100 years, significant morphological change has occurred in this region, not only along the shoreline, but also within the estuarine sediments. This semester I am finishing up analyzing and interpreting my data, as well as writing my thesis, with the intent to defend this May. I could not have come this far without the help of my lab research group and many other graduate students in the department.



David Hawkins and others celebrating their research accomplishments at Palmer Station in Antarctica.



Typical research vessel used to maneuver about the mighty Amazon River.

Four years later, I applied to graduate school and planned the next few steps of my life. It's hard to believe how I am so interested, and altogether entertained by Geology. Whether it was my first Introduction to Geology class, field camp across the mid-west with my peers, or the weekend cave field trip, I became what many do not understand – a geologist.

Currently, I am wrapping up my first semester of graduate school, and am thrilled to be continuing my education at ECU. I recently started my thesis research focused on the Holocene paleoclimatic evolution of the East Asian Monsoon (EAM) within the inner Sunda Shelf, Malaysia. The purpose of my research is to understand the climate control on this coastal system and the productivity within. This research will have great implications in areas, such as South East Asia, where the majority of the population lives on or near the coast, and the people rely on agriculture and fisheries as major economic resources. Understanding the long term evolution of the EAM and its control on the diverse climatic forces and patterns experienced within (e.g., precipitation, wind patterns, continental runoff, nutrient transport, and sea circulation) is essential for predicting potential impacts these climatic processes might have on the economy of this region.

The purpose of this research is to compare carbon and oxygen isotope data, using both benthic and planktonic foraminifera, derived from five cores collected on opposite sides of the Sunda Shelf in attempt to reconstruct Holocene paleoclimatic events. Magnetic susceptibility of bulk sediment (BMS) will be analyzed from the sediment in these cores and will be compared to previous research conducted in 2014 by Devon Reed and Haley Hindes. Comparing the two sets of BMS data will reflect the differences in detrital input on opposite sides of the Sunda Shelf, and these data will be used to infer changes in the depositional environment throughout time. Data from both foraminifera and BMS will provide a better understanding of the EAM during the last ca. 9000 yr BP.

Sage Wagner – M.S. Candidate

Never in a million years (12 million to be exact) had I ever envisioned the opportunity to embark on a journey to the tropical rainforest of South America. I was well acquainted with the Amazon, but felt very far from any river or rainforest.

A summer-job in between academic semesters, I worked in a warehouse for Amazon.com stocking shelves and taking orders. Sixty-hour work weeks, sore-limbs and mindless monotony, further proved that my academics were of the utmost importance. Following graduation at Indiana University of Pennsylvania and acceptance to ECU's graduate program, an opportunity of a lifetime was in my ahead of me.

Amazonia, a vast region whose geology is so difficult to access and whose biota are so diverse, it is no wonder that the region's Cenozoic history has not been fully described. For well over a hundred years, the origin of the great biodiversity observed in tropical South America has led many world-renowned scientists, Darwin and Wallace to name a few, to journey to this region with aims to clarify the biogeographic foundations of modern Amazonia's biodiversity.

As a major step toward this understanding, Dr. Rigsby and I propose to investigate the Cenozoic stratigraphy of the Central Brazilian Amazon, as recorded in newly acquired (and first-ever) high-resolution multi-channel seismic reflection data collected from the Amazon River region. The simple, yet completely fresh, approach proposed here will provide the stratigraphical framework necessary for a complete understanding of Amazonian geological history.

Cameron Whitley – M.S. Candidate

Going into college, I never would have imagined the educational path I came across during my four years of undergraduate studies at East Carolina University (ECU). Starting as a Science Education major with every intention of fulfilling my dreams of becoming a teacher, my life quickly changed when I stumbled into my first Geology class.

The Professor's Highlights

Steve Culver

My highlights of the year were all about research in the South China Sea. Anna Lee Woodson finished her thesis on Holocene climate change on the eastern Sunda Shelf and graduated in December. Earlier in the year I spent a month in Malaysia with new Master's students Haley Hindes and Sam Martin. We collected cores on the western Sunda Shelf for Haley to build upon the work of Master's student Devon Reed who collected cores in the same region the previous year. Sam is working on the distribution of foraminifera in modern sediments on the western Sunda Shelf to build the basis for interpretation of down-core samples. We needed a little R&R half way through the trip and so we flew to Borneo and spent three amazing days visiting several national parks – truly memorable. C.J. Whitley joined this team of Master's students in August 2014 and will be comparing climate patterns on both sides of the Sunda Shelf. Edu Leorri, Dave Mallinson and I are all involved in the management of this team. I plan to go to Malaysia again in summer 2015 with another new graduate student to collect yet more cores through close collaboration with colleagues at the Universiti Malaysia Terengganu.



Sam Martin and Haley Hindes "swimming with the fish" in Terengganu, Malaysia, June 2014.

Reide Corbett

Another year has passed and a lot has happened. . . I think I always say that! The last I wrote, I was on a ship just off Antarctica. That was another incredible journey, one I won't soon forget. I am actively working on proposals that might take me back down to that part of the world again. It is truly a last frontier, but a region at the forefront of climate change! We are wrapping up our analyses and working on manuscripts focused on our work. . . evaluating the amount and source of freshwater discharge to the coastal ocean. Stay tuned. . .

But there was so much more going on. . . Devon Eulie wrapped up her PhD in the spring and continues to do well as an Assistant Professor at UNCW. Walsh and I led the 2nd Summer at the Coast in May and June. We had 11 undergraduate students eager to learn about the coast. It was another successful summer field program at the UNC Coastal Studies Institute. Walsh and I continue to work closely together on coastal processes. . . from developing estuarine observing systems, measuring the influence of storms, to evaluating geomorphic change in coastal systems and the influence on sediment dynamics. We have several great students actively working on their degrees (Ian Conery, CJ Cornette, Jared Crenshaw, David Hawkins, Luke Stevens, Jessi Strand) and a new technician in the lab (Keith Garmire). . . so we are staying busy!

In addition to all this work stuff, there is always time for personal growth! I was lucky enough to find love. . . I married Sandy Hull this past October, in a small but beautiful ceremony in downtown Manteo. The Corbett's are doing well in all respects. Boys are getting older, doing fairly well in school, and are responsible some of the time! Sounds a lot like me growing up. . .

Have a great year!



Walsh and I put some instruments in the sound to measure waves and water levels just ahead of Hurricane Arthur (July 3-4, 2014).

Richard Miller

CRM PhD student Christopher Buonassissi (right) and ICSP research associate Dr. Ramon Lopez (left) prepare the Miller Lab's bio-optical profiling system.

I hope that this finds everyone doing well. It's that time yet again to provide a brief overview of the happenings in the Miller lab during the last year. Generally, we've been busy preparing for and conducting the research defined by our existing projects. In particular, we are gearing up for two major field campaigns off of the Mississippi River Delta in late spring and summer of 2015 as part of our NASA funded project that is examining the export of organic carbon by large rivers. I'm also excited that the international effort to refine/update the procedures for the spectral absorption of colored dissolved organic matter, also funded by NASA, is wrapping things up and we hope soon to have a new protocols document published for the community.

I've also had a lot of fun working on local project with Dr. Dave Kimmel in Biology. The project titled "Colored Dissolved Organic Matter (CDOM) as a Control of Primary and Secondary Production in the Neuse River Estuary: A New Paradigm" is funded by ECU to help spawn collaborative research between departments. To date, we've conducted 3 cruises aboard the R/V Riggs in the Tar/Pamlico River Estuary with an additional 3 more cruises planned for this spring.

I continue to spend a lot of my time on reviewing manuscripts and serving on committees. Once again I am serving on the NASA Senior Review Science Panel established to advise NASA on whether current missions should be continued. This panel is an incredible amount of work but the information and interaction with the mission teams is exhilarating. As always, I encourage you to visit my personal web site at ECU to see the list of recent publications and presentations.

Until next newsletter.

Mike O'Driscoll

Greetings from Greenville! I hope you are having a great year. I am excited that I have been granted the opportunity to serve as the Director of the Coastal Water Resources Center (CWRC) for another two-year term. I hope we can continue to find ways to grow and sustain our water resources efforts and develop new partnerships in the future. Overall, I am pleased that this past year has been a productive one. We have been fortunate to get funding on six new water resources projects across the Coastal Plain and Piedmont, from the White Oak River to Falls Lake. I started this past summer out with a bang with a trip to New Mexico for the field camp hydro-exercise; we had 43 students from all over the U.S. Back east, later in the summer we developed and installed a geophysical test pit (see the photos below – we buried everything we could find, including a kitchen sink!) and a series of piezometers on West Research campus to provide opportunities for students to hone their hydro and geophysical surveying skills. We are currently juggling several new projects with the City of Greenville dealing with storm-water issues and stream restoration efforts. These efforts led to our development of a new real-time stream monitoring station on Greens Mill Run adjacent to campus that provides educational opportunities and will help ECU and the City better understand, monitor, and react to flood events (<http://150.216.56.38/cr200/index.html>). In addition, we are beginning a baseline watershed study of Town Creek in downtown Greenville, in preparation for a multi-million dollar stream restoration effort. The restoration will improve water quality and reduce flood risk in uptown (or downtown - depending on who you ask) Greenville. We are excited about our partnership with the City and I am convinced our students learn a lot and gain valuable real-world experience working on these watershed projects. Thanks to all the hard-working graduate and undergraduate students and their countless surface water and groundwater sampling trips over the years, our research on quantifying nutrient inputs to Coastal Plain aquifers and surface waters is beginning to bear fruit. As a result of our research efforts, I was asked to serve on the US EPA Chesapeake Bay Nutrient Attenuation Expert Panel and our contributions will help improve understanding and management of nutrient inputs to the Bay. Closer to home, I was selected for the North Carolina Nutrient Criteria Development Plan-Scientific Advisory Council. We are tasked with assisting the state to develop science-based nutrient criteria for North Carolina surface waters. For me, it is interesting to see how we can use science to improve water resources management efforts in our coastal watersheds and I try to include these experiences in my teaching endeavors. Speaking of teaching, I am developing and teaching a new course for the Honors College this semester focused on coastal water resources. OK, that is probably enough about my year. I hope your 2015 is off to a great start. Keep in touch and take care.



Graduate student, Guy Iverson showing the underground storage tank who is the boss.



South Nags Head visit during Outer Banks field trip. Students including Ian Conery (hat on left) discuss coastal management challenges with Nags Head Public Information Officer Roberta Thuman.

J.P. Walsh

Last year was active on all fronts! In addition to teaching and service, a variety of research projects and proposals has kept me on my toes. Field work focused on marsh and estuarine sedimentation in NC, SC and GA. Some of this effort was with MS students Dave Hawkins and Jessi Strand who are making the push to graduate this spring. Luke Stevens, C.J. Cornette and Nick Kelly are just getting started on their MS research. Ian Conery completed his MS thesis last spring focused on Ocracoke Island sedimentation and is now pursuing his Ph.D. in the Coastal Resource Management Program. His doctoral research will explore sand dynamics and related issues in NC as part of a BOEM project. Marygrace Knight, a NCSU undergrad student, worked with us last year on a Nature Conservancy project evaluating wave mitigation by oyster reefs. It has also been great to have a new technician, Keith Garmire, who has been involved in many activities, including seafloor analysis of the East Coast, real-time environmental monitoring and GIS studies. Over the year, I have really enjoyed research collaborations with Reide Corbett, Dave Mallinson, Steve Culver,

Tom Allen and others. Teaching last year included Oceanography (Spring 2014), the Summer at the Coast classes (Summer 2014), Coastal Geosciences (Fall 2014), and I am currently teaching Advanced Oceanography for the first time. This class has provided a nice opportunity to expose undergraduates to current research and controversial ocean issues, e.g., ocean acidification.

I did a lot of traveling in the Southeast and elsewhere for projects and other purposes this year. Highlight trips include one last summer to La Rochelle, France to present on storm surge events and sedimentary records and another to Rimouski, Canada in the fall to give a talk at the University of Quebec, Rimouski. Of course, my favorite trip was to Disney with the family this January!

Stephen Harper

On the teaching front, my typical teaching duties still include 2 sections of Geology 1500, Physical Geology/Dynamic Earth and 1 section of Geology 1700, Environmental Geology, each semester and Geology 3250/51, Introduction to Geomorphology every other year. I also still coordinate the Graduate Students, who teach Geology 1501 labs. I plan to attend National GSA Meeting in Baltimore, MD later this year so hope to run into some of you there.

I am now in my 4th year Director of Undergraduate Studies/Advising since January 01, 2012. We now have ~70 Geology majors. I directly advise about 60 of our majors and get some help from Dr. Neal with the remaining ten.

I am still the Director of the North Carolina Summer Geology Field Course. I will be teaching the Geology Field Course in New Mexico and Colorado in May and June 2015 for the 17th straight year. This is the 51st edition of this course going back to 1965. For the 2015 field course, our enrollment in the Geology Field Course will be 43-44 students. Twenty-three of these students will be from our own program here at ECU, indicative of the recent growth in number of Geology Majors in our current program. Currently, the visiting students from other universities hail from UNC-Chapel Hill, UNC-Charlotte, Guilford College, University of Pittsburgh, PA, Temple University, PA, James Madison University, VA, and Central Michigan University, MI. This year after ~2 weeks in Abiquiu and Cochiti, NM, we will head north to Sipapu-Taos, NM where we stay for 13 days. After completing the long enduring Copper Hill/Rattlesnake Gulch mapping exercise, we will do the Slope Stability exercise in the Rio Grande Gorge. We will take a 2-day field trip to Great Sand Dunes National Park with 2 nights in South Fork, CO. On the second day we will visit Creede, CO to tour the Silver Mine there and also take in the Slumgullion Landslide west of Creede. From Creede, CO, we will head over to Durango, CO for the last 12 days of the 2015 Geology Field Course, where we will be doing two mapping exercises as well as side trips to Silverton, CO and perhaps Mesa Verde, CO. Eric Horsman from the ECU Department of Geological Sciences will be helping out with the GFC instruction this year as well as faculty from Groundwater Management Associates (Steve Campbell and Jay Holley), SMK Geoscience (Sabina Kraushaar), UNC-C (John Diemer), NC Geologic Survey (Rick Wooten), and perhaps Noble Energy (Evan Howell). In addition, Stephen Culver, our department chair, and Bill Downs, our new Dean of the College of Arts and Sciences, will visit us during our stay at Sipapu, NM and go into the Copper Hill field area with us.

Adrianna Heimann

This year has been the busiest of all in all fronts. In terms of teaching, in the fall of 2013 I taught graduate level Economic Geology Lecture and Lab while for the spring of 2014 I have been teaching Dynamic Earth. Grading in Min-Pet II is always very time consuming because I do it all. In addition to this, I have been directing four graduate student theses, and directing the research and proposal writing of two undergraduate students. My students are working on smaller portions of two big endeavors that focus on: the mineral chemistry of minerals as indicators of magma evolution and rare metal mineralization in granitic pegmatites; and the geochemistry of Archean-Proterozoic banded iron formations (BIFs) as reflection of the biochemical evolution of the ancient oceans in the early Earth. In the first project we are investigating pegmatites from worldwide localities, and for the second one we are currently working on the unstudied ~2.5 Ga Valentines Iron Formation from Uruguay and ~1.7 Ga BIFs spatially associated with the giant Pb-Zn-Ag Broken Hill deposit in Australia. The pegmatite project was funded by the USGS and the Australia BIF project was recently funded by a NASA North Carolina Space Grant New Investigator Award. For these projects I am the sole PI but I count with collaboration of excellent colleagues from Argentina, Brazil, and the US. This allows my students to meet many top scientists and work in their labs, for example, at the Smithsonian Institution in DC to do electron microprobe analysis, the USGS laser ablation ICP-MS lab in Denver, the pegmatite collection at the University of Oklahoma, and the Fe isotope geochemistry lab at the University of Wisconsin-Madison.

As always, I encourage my students to submit research proposals to various opportunities. I find this very important as it improves their writing skills, and is very rewarding, even though it requires lots of dedication. As a result, three of my four graduate students received Sigma Xi research awards, two of them Society of Economic Geologists research awards, two undergraduate students received ECU undergraduate research and creative activity awards, and one of them received a NASA North Carolina Space Grant undergraduate research award. Some of these awards are only for research expenses or a combination of research expenses and stipends, while the NC Space Grant funds are for the students. One of my graduate students and one undergraduate student submitted NASA NC Space Grant research proposals. In January of 2014 two of my students and I submitted abstracts for the regional GSA meeting in Virginia. Again, getting all those proposals and abstracts ready for submission implied some crazy long hours of work week and weekend days. Trying to obtain research funds had me writing an NSF proposal during the winter "break", which is now pending and hope to get funded. I have also been busy writing revisions of a review paper on BIFs as well as a couple of other papers, and reviewing lots of papers for *Geology*, the *Journal of Geochemical Exploration*, *Earth and Planetary Science Letters*, *Geochimica et Cosmochimica Acta*, and *Mineralogy and Petrology*, among others.

Regarding trips, in the summer of 2013 two of my graduate students and I attended the International Symposium on Granitic Pegmatites in New Hampshire where we presented our results. In July we went to the USGS in Denver to do LA-ICP-MS analyses, where my students stayed for almost two weeks and were also able to see the city. In the summer and fall of 2013 my students and I visited the Smithsonian Institution and Fayetteville State University probe labs. As usual, I also took my Mineralogy and Petrology II students and my graduate students to the Gold Rock quarry field trip to observe igneous as well as sedimentary rocks.

Also as always I have been extremely busy in the personal side with Nicolas, who is 3 years and 9 months old. This year during the winter "break", due to my crazy fall semester and proposals and grant reports, as well as my PAD for reappointment, due in December and January, my parents and oldest brother came all the way from Uruguay to help out and spend some time together while Manuel traveled to Colombia to see his parents. Nicolas was able to enjoy time with his grandparents and uncle, something we all greatly enjoyed (even though I wish I had had more time to be with them). So, this is the life of a tenure-track assistant professor and mom: exciting but very busy.

This is all for this year. I hope you will all have a splendid year and enjoy life! Best wishes.

Eduardo Leorri

When I wrote my piece for last year's newsletter we had plenty of snow, nothing like that this year, but we got some as well. I guess I need to get used to it. This year has been pretty intense in terms of graduations. Two of the students I co-advised with Dave Mallinson, Caitlin Lauback and Nick Zaremba, graduated this year, but also Jeff Minnehan, Ian Conery, Juan Calvo and Anna Lee Woodson graduated this year and I was fortunate to be part of their committees. Best wishes to all of them on their future endeavors. Two new projects, led by Alejandro Cearreta and Javier Lario, were funded by the Spanish government which should keep me busy over the next few years and open new opportunities for eager graduate students. For the work we are doing in Malaysia with Haley Hinds, Devon Reed, C.J. Whitley, Sam Martin, which expands on Anna Lee's work, I will refer to Dr Culver's piece.

Alex Manda

Another eventful year has come and gone! My graduate student, David Szynal, graduated and found a job with an environmental firm in Greenville, South Carolina. I wish him well as he embarks on a new career. I recently received a grant from the North Carolina Sea Grant and North Carolina Water Resources Research Institute to support a citizen science project on Bogue Banks. One of my new graduate students, James Owers, is being supported by the grant to monitor the water table on the island and model the groundwater system. Together with Richard Spruill, I am also advising Jonathan Prevatte, who will be using downhole geophysics to characterize the Castle Hayne aquifer in Beaufort County. So, if you see a bunch of folks using a 'geoprobe' to punch holes in the ground or you come across some people with a covered trailer lowering some cylindrical objects in groundwater wells in the Coastal Plain, it is probably the crew from the Department of Geological Sciences and the ECU Coastal Water Resources Center doing some really exciting groundwater work! Stop by and say hello!

Don Neal

This has been a busy year; teaching a lot and researching just a little bit and the service is never ending. I am working on the Alexander Siltstone, a gas producer, just east of where Katie Cummings did her thesis research. It is a little different system being slope fan turbidites rather than basin floor deposits. Katie finished up and is working for the NC Geological Survey. Brian Klipp continues to work on structural diagenesis of the Oriskany Sandstone in the Smoke Hole region of WV and Mallory Stevenson continues to search out the Marcellus Shale in southern WV around the erosional limit of the formation. Two new graduate students started this fall who decided to work with me. Scott Brinkley was fortunate in coming up with data on the Utica Shale and Point Pleasant Formation, both of which are gas producers. Emily Adams is also working on the Marcellus Shale in WV. Age and longevity bring no rewards, just more work. I guess someone has to do it. All the best.

Christian Poppeliers

It's been a busy few months since arriving at ECU last July! In addition to getting settled into a new house and town, I've actually been able to get some research done. I've finished up a few papers that describe the results from an NSF-funded seismic array. This was a pretty cool experiment, where we were able to do three things! First, we developed a new way to estimate uncertainty for a new method called seismic gradiometry. Second, we quantified the effects of near-surface geology on the estimation of seismic scattering in the crust. Finally, I'm in the process of looking at the data from this array in the attempt to detect rotational seismic phases. All of these projects are interesting from a scientific standpoint, but also have applications in seismic hazard analysis as well as detecting nuclear explosions as part of the Comprehensive Test Ban Treaty. Given these applications, I plan to pursue funding to continue these efforts.

Currently, I'm in the process of looking at seismic data as a method to estimate near-shore processes. We collected some seismic data at Ft. Fisher as part of a preliminary study and we hope to be able to develop a new method of estimating wave energy and longshore current strength. We hypothesize that the direction and energy content of breaking waves can be seismically quantified and related to near-shore processes. Finally, I'm hoping to continue work on a long-standing interest in applying geophysical methods to delineate intrusive bodies.

Terri Woods

I am moving forward with a couple of students on their thesis projects. Eunice Gates is heavily into reading about hydroxy-copper minerals (sulfates, chlorides, carbonates, etc.) and interpreting her data in terms of what others have found in the past 20 years. Mark Akland is working on the source and fate of iron in the Castle Hayne and overlying aquifers. He now has lots of XRD, XRF, petrologic, and water- and soil- chemistry data to sort out. Dr. Heimann and I, along with several undergraduates, are compiling and sorting through data on the chemistry of ilmenite in various rock types. We will soon begin plotting those compositions on triangular diagrams to see if specific ilmenite chemistries are typical of specific rock types – especially certain types of ore deposits. Science Olympiad and High-school STEM Day are fast approaching. It's always exciting to have public-school students interested in science coming on-campus. Along with Cindy Crane, Alex Manda and Tony Thompson (Math Education), I am working on a proposal to the Burroughs Welcome Fund to support summer science-camps at the Aurora Fossil Museum where Cindy is the Director. We are also working on other science outreach proposals.

2014 GRADUATES OF THE DEPARTMENT OF GEOLOGICAL SCIENCES**Fall 2014**

Calloway, Samuel O.	BS-Geology
Kellum, Nielsen N.	BS-Geology
Broda, Robert J.	MS-Geology
Cummings, Katie L.	MS-Geology
Giuliano, Angela S.	MS-Geology
Lauback, Caitlin G.	MS-Geology
Szynal, David J.	MS-Geology
Ward, Mitchell T.	MS-Geology
Woodson, Anna L.	MS-Geology
Zaremba, Nicholas J.	MS-Geology

Summer 2014

Ashton, Kristopher A.	BS-Geology
Lang, Elizabeth R.	BS-Geology
Smith, Patrick K.	BS-Geology
Woods, Stephen J.	BS-Geology
Conery, Ian	MS-Geology
Minnehan, Jeffrey J.	MS-Geology
Yonts, Jason A.	MS-Geology
Young, David R.	MS-Geology

Spring 2014

Alvarez, John S.	BS-Geology
Dray, Dalton S.	BS-Geology
Hill, Joseph H.	BS-Geology
Hindes, Haley E.	BS-Geology
Preston, Karen R.	BS-Geology
Smith, Matthew J.	MS-Geology
Whitley, Cameron J.	BS-Geology
de Stefanis, Elizabeth A.	BS-Geology

Thoughts From the Editor – Joseph Perry (B.S. Geology, Summer 2015)

Dear Friends of ECU Geological Sciences,

It has been an honor to serve as editor for the inaugural issue of the student administered Geological Sciences Newsletter under the auspices of Stan Riggs, Ph.D., funded by the Stan & Ann Riggs Endowment. The Endowment promises students expanded learning experiences including this newsletter. This valuable involvement has enabled me to work with current and future colleagues to disseminate the news of the outstanding achievements in our department. The importance of information sharing in scientific achievement is well known. I am pleased to be part of Dr. Riggs' dedication to share this information with you. As you see, this newsletter is no small undertaking. It will require conscious commitment to the tenets of the Endowment to continue this endeavor that begins today. My best wishes to the Endowment Committee for its continued success.

This last year has brought on new leadership responsibilities. As president of Sigma Gamma Epsilon I'm thoroughly please to say that the association has continued to grow in its membership and student quality. Our members have actively contributed to the organization and implementation of the traditional SGA activities as well as discussion of new initiatives. Our commitment to our chosen profession is exemplary. The student enthusiasm, talent and dedication exemplifies the best in tomorrow's geologic scientists. I wish to thank the entirety of past presidents and my officers, Cameron Whitely, Liz Maurer, and Erik Anderson for making my job as president such a pleasure.

Personally, my four years in the Department of Geological sciences have been exciting. I am amazed how quickly I've transitioned from a neophyte freshman, clueless in the ways of academia, to a more seasoned student less overwhelmed by the plethora of course work. In the early days, I took for granted the amount of leisure time that accompanies college life. Now, I find myself calling the halls of the Graham building home and my apartment a place to produce copious amounts of coffee and occasionally sleep.

In the midst of the busy days with classes, labs and papers, I have had the valuable opportunity to work with a variety of ECU's geological research projects, (1) Nick Zaremba's Thesis - The Holocene Stratigraphy of Pamlico Sound, NC (2) Devon Reed's on-going paleoclimate reconstruction on the Sunda Shelf, South China Sea. This past summer, I assisted M.S. Candidates, Mark Akland, (studying the source and fate of iron in the Castle Hayne and overlying aquifers) and Caroline Smith (Holocene Processes and Development of the Ocracoke Inlet flood-tide delta) in the field aspects of their projects. I have learned that in the field, nothing goes as planned, so you have to prepare for it. My experiences within these projects have further broadened my technical skills as a scientist.

Towards the future, I look forward to participation in NCGF 2015, as a capstone experience to apply academic learning in the field. After that, I am to be turned loose on the world to seek my fortune and contribute to the world of geology. Eventually, I endeavor to attend graduate school to focus in the field of Stratigraphy. Many thanks to the faculty for their mentoring and unwavering support. I am grateful to East Carolina Geological Sciences for the educational opportunities and quality memories.

Sincerely,

Joseph L. Perry



Handing over the "bragging rights" for the 2015 Chili Cook-off. Myself (left) and former SGE president, M.S. Candidate, Mark Akland (right). Congratulations Mark.

EARTH VIEW

Stan and Ann Riggs Geology Endowment Fund

1. EARTHVIEW NEWSLETTER FOR ALUMNI

A. A program is being developed for production of an annual student-led newsletter to either stand alone or be incorporated with the annual faculty newsletter for geology alumni. The student component would feature their individual thesis research projects, field work, and major earth science issues and societal conflicts that represent the direct application of their course work to the real world.

B. This requires a student committee (through SGE) with strong student leadership and faculty advisors. The student-faculty committee would manage a small production budget with the students in charge of developing the topics, assigning specific articles, ensuring progress, and compiling the final document.

2. EARTHVIEW WORKSHOPS

A. The Endowment will fund annual or biannual workshops around specific global to local issues concerning the interaction of earth sciences and society. The workshops will be organized by a student-faculty committee that brings in one or more experts concerning a relevant, inter-disciplinary earth science issue of local to global-scale. The workshop will define the topic(s), invited speaker(s), and associated program, as well as manage the budget to cover the costs.

B. For example, the ECU Department of Geological Sciences will be celebrating its 50th anniversary in the fall of 2017. If there are adequate resources, the endowment can help support a major topical workshop as part of the anniversary shindig, which could then become an annual or bi-annual affair.

3. EARTH VIEW FIELD PROGRAM

A. An ultimate goal of the Riggs Geology Endowment Fund is to establish an annual, broad-based, regional program of field trips and associated natural laboratory experiences (called Earth View) that will incorporate and integrate five concepts.

- a. Time and Scale: geological, biological, and human aspects
- b. Energy and Water: drivers of process-response
- c. Earth Materials: the building blocks
- d. Tectonics: building mountains, coastal plains, and ocean basins
- e. Role of Humans and Civilization: resources and environmental impacts

B. For example, each year or semester this program would focus on one of the regional provinces (Appalachian, Piedmont, and Coastal Plain Provinces) and then rotate through the years to ensure maximum geologic exposure and integration. A mechanism will be set up to ensure active student involvement, in concert with the faculty advisor(s) to plan, organize, write the field trip guide book, and participate in the program. Each of the three programs would culminate in an extended field trip during fall or spring break or after semester finals to allow maximum participation. This program could have formal course credit through pre-existing 3-hour programs such as directed studies, seminar, or honors.

Donors to the Department of Geological Sciences 2014 Calendar Year

STAN AND ANN RIGGS ENDOWMENT FUND

PLATINUM CONTRIBUTORS (\$5,000 and up)

Jeffrey Brame
James Minelli

GOLD CONTRIBUTORS (\$500 to \$4,999)

Dorothea Ames
Don Lewis
David Reid
Keil Schmid
David Sieling
Douglas Yeates
Edward Yopp

SILVER CONTRIBUTORS (up to \$499)

Jack Beverly
James Coble
James Holley
John Maddry
Steven Mason
Sarah Roberts McKeever
Heidi Sydow McNeely
Daniel Pearson
Eric Randolph Powers
Charles Chee Saunders
Ronald Stallings
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Meg Overocker
Christopher Smith

C. Q. BROWN FUND

John Hinnant
Christopher Schiappa
Charles Chee Saunders

GEOLOGY ALUMNI FUND

Wells Barker
Patricia Beaver
Christopher & Lisa Corbitt
Brandon Foster
Daniel Pearson (Exxon Mobile Match)
John Simpson
Michael Sutton
Edward Yopp (Intrepid Potash Match)

During the academic year 2013-14, foundation funds were used for the following:

- Student scholarships
- Student travel to professional conferences
- Publication costs for 2014 newsletter
- Luncheon to celebrate start of the academic year
- Supplies for a pot-luck luncheon honoring fall semester graduates

