

Geological Sciences

“Budget Crunch!”

It is probably of no surprise that the budget situation continues to affect us. Our operating budget for the past year was 37% smaller than in recent years. Cuts during the year took another 7% and, as I write, I hear that another reversion is in the works. We will get through the year but the next academic year looks even less rosy. The problem is that no one really knows what the cuts will be and we won't find out until mid-summer when the state budget becomes clear. We hear that the cuts might be 8 to 20%!

No matter what, Geological Sciences continues and will continue to be a vibrant department. Our graduate program continues to receive applications from very good students and our graduate assistantship budget was increased last year, thus allowing us greater opportunity to lure excellent students to ECU. The number of our undergraduate majors now approaches 50, almost double the number from four or five years ago. Research productivity continues to increase as the new faculty members we hired two years ago settle into the swing of things.

Let me pick out two very exciting things that occurred during the year. Last summer, the RV Stanley R. Riggs, a custom-built coastal research vessel was delivered to ECU. Stan had no idea that the boat was to be named in his honor. He and Ann were very pleasantly surprised at a naming ceremony hosted by the ECU Chancellor, Steve Ballard, and the Vice Chancellor for Research and Graduate Studies, Deirdre Mageean, who supported the building of such a vessel since the idea was first proposed three or four years ago (see inside the Newsletter for images).

A second highlight of the year was the approval and initiation of a multidisciplinary Coastal Water Resources Center within the Institute for Coastal Science and Policy. The founding Director for the Center, which is designed to solve real-life water resources problems in the coastal plain, is Richard Spruill. His wealth of hydrological experience brings an instant legitimacy to this new research/service endeavor. Faculty members from several departments are involved, including several from Geological Sciences.

A sad note from our perspective is that Dr. Ryan Mulligan, a coastal physical oceanographer who joined us from the Bedford Institute for Oceanography, Nova Scotia, two years ago, is leaving ECU. It is a happy note for Ryan, however. He has taken a faculty position at his alma mater, Queen's University in Canada. He will be close to family and so we wish him well as he starts what is for him the perfect job. Ryan has been appointed an Adjunct Professor in Geological Sciences and will continue to work with us on coastal issues.

Another year has sped by. I hope to see many of you at the pig-picking in late April!

My very best regards,

Steve Culver

B.S. Graduates

Spring 2010

Diana Baran
Elizabeth Clayton
Kurt Wagner

Summer 2010

Guy Iverson

Fall 2010

Brian Burgess
Christopher Earls
Alisha Ellis
Cory Nobles
W. Allen Rouse

M.S. Graduates

Spring 2010

Kelly Best

Fall 2010

Joseph Davis
Dimitri Quafisi

Geology Foundation Accounts F/Y 2009-2010

Contributions

Richard "Cris" Capps
James Franklin Coble
Charles Edwin Woodul
John David Simpson
Lucy M. Mauger
Stanley Scott Lewis
Rick and Adrienne Koehler
Patricia C. Beaver
Exxon Mobil
Douglas Yeates
Daniel Pearson
Mark Williams
Robert Ross Allen
Charles L. ("Chee") Saunders III
Miriam L. Hart
GeoSolutions Ltd
General Electric
Patrick Mallette
Joseph Mattheis

Expenditures

Eduardo Leorri	partial moving expenses
Adriana Heimann	partial moving expenses
Ryan Mulligan	partial moving expenses
Steve Culver	research travel (Distinguished Professor award housed in Geology Foundation)
Margot Mansfield	partial travel support for recruitment visit
East Coast Trophies	outstanding senior plaque-university no longer provides due to budget cuts
East Coast Trophies	desk name plate
Steve Culver	entertain visiting speaker
Wendy's Flowers	flowers for Walsh baby
University Printing & Graphics	copy last year's newsletter
Steve Culver	travel to GSA (from Distinguished Professor award)
Richard Spruill	pig pickin' expenses
Steve Culver	Welcome Back departmental luncheon
Adriana Heimann	coffee urn for weekly departmental coffee/tea time
Sid Mitra	entertain visiting speaker
Wendy's Flowers	flowers for Manda baby
Wendy's Flowers	flowers for Heimann baby
Wendy's Flowers	plant for Mauger hospitalization

THE EVOLUTION OF GEOLOGY'S BOATS

Stanley R. Riggs

When ECU became a University in 1967, Chancellor Dr. Leo Jenkins hired Dr. Charlie Brown to establish a new Geology Department to beef up the science programs. At the same time, the University was given an unused school building in Manteo for development of a marine science program in Dare County. Charlie hired me to establish that marine science program. This off-campus program, locally referred to as **ECU by the SEA** began in Manteo in 1968 for senior majors in geology and biology.

To do marine science one needs a boat. With a grant containing \$1,000 for a boat, my colleague Mike O'Connor, two students, and I headed up to the Chesapeake Bay area and began the search. We found one up the York River, a 36-foot, dead-rise, Chesapeake Bay oyster boat—one of the last boats built on Tangier Island in the 1930s. Its owner, hospitalized with a broken back, was anxious to see his boat back in use and offered it for \$900. We hastened back to Greenville to pick up the check only to find we were in a standoff with the entire ECU senior administration. A 36-foot boat for \$900—not possible! The administration knew little about scientific research and less about geological field work and marine science. Fortunately, the young man in charge of the newly established office of sponsored programs believed in us and told the administration there was no basis to deny this purchase order and he would write the check.

During the next three weeks, living under the Yorktown Bridge, bathing in York River jellyfish, and living on our last \$100, we totally rebuilt the old rusted out Ford car engine. Finally we limped away from the Yorktown Bridge and headed for Roanoke Island, only to find ourselves in the middle of a naval fleet bound for the Norfolk Harbor. Surviving that encounter, as well as the foreboding black waters of the Dismal Swamp Canal, we secured the boat in her new home at Wanchese Harbor. We started our research program and used her extensively with the students in the **ECU by the SEA** program. The boat was christened **SWEET AGONA** after the character Agona in the outdoor drama *The Lost Colony*, played so humorously by Cora Mae Basnight, mother of the future Senator Mark Basnight. Agona represented agony to her counterpart character Old Tom in *The Lost Colony*. Likewise, **SWEET AGONA** represented a sweet agony for the young scientists who worked arduously to keep her running.

Another grant with \$1,000 allotted for a new engine to replace the old Ford engine brought on another show down with the ECU Administration. Forbidden to look for our own engine, the Purchasing Department went on the search only to declare that this was an impossible order by a group of young and naïve scientists. Finally, they gave us permission to “waste our time”. We returned in a few days with a purchase order for \$600 to acquire a brand new Chrysler Marine 210 engine (with an original price tag of \$2,500) from bankrupt Grady-White Boats. Our only mistake was not buying all 5 of the engines in their warehouse.

We spent the next month at the broken down docks of Park Boat Co in Runyon Creek in Washington. We installed the new engine, rebuilt the drive shaft and its wooden housing, repaired the 2-inch thick pine planking along the skeg, and corked the entire boat. When done, she was the jewel of North Carolina coastal waters and our research prospered.



Eventually we needed a working barge from which we could do subsurface vibracoring. Another grant supplied the resources to buy the scrap aluminum needed to build a 25-foot platform barge from the salvage yard in Greenville. Four aluminum airplane tanks, I-beams, and angle irons were to form the framework of the barge, but normal welding would not work. We found an arc welder, John Henry in the ECU heating plant, who had the equipment and was excited about undertaking this task. The barge, with its little wooden cabin, aluminum tripod, and 50 hp outboard was named **BEGGAR TOM** to be **SWEET AGONA**'s partner. With this workhorse barge, we proceeded to drill hundreds of holes in the bottom of North Carolina's estuaries and marshes, so many that occasionally we were accused of increasing land subsidence within the coastal region.





By 1975, the increasing amount and character of marine science work at ECU required a larger boat that could work in the inlets and near-shore ocean waters. With more grant money, we ventured into the Norfolk shipyards and found a 36-foot fiberglass personnel carrier that had survived the Viet Nam War. This stripped shell, with **NITRO** painted on her stern, was trucked to Wanchese where we built a fore-cabin, rigged a rudder and steering system, and installed a used Detroit Diesel. We added davits and winches and finally went to sea in another grunt-built member of the growing East Carolina University fleet. Along with our colleagues in Biology, and with time and more grants, we added more outboards and flat-bottomed boats for work in the lakes and rivers of the southeast.





ECU's marine program was built with the blood, sweat, and tears of many dedicated students and faculty. It makes me happy today to watch this effort grow into a world class, truly interdisciplinary program. The ECU administration now plays a critical role in recognizing and supporting the multiple departments and their incredibly high quality scientists and students.

The challenge now is for each of you young faculty to put your blood, sweat, and tears into making this fancy new boat (**R/V STANLEY R. RIGGS**) work for you, your departments, and the state of NC. It is an awesome boat!



I think that this quote from *THE WIND IN THE WILLOWS* by Kenneth Grahame summarizes our humble beginnings. Rat says to Mole **“Believe me, my young friend, there is NOTHING—ABSOLUTELY NOTHING—half so much worth doing as simply messing about in boats.”**



At the christening of the R/V Stanley R. Riggs: Stan, Ann, C.Q Brown, Chancellor Ballard, John Rummel, Vice Chancellor Mageean

Steve Culver

I won't say much about the administrative side of my job because that probably isn't too interesting to alumni. So, in this context, suffice to say that I do it and I thank Dare Merritt, Michele Taing, Jim Watson, John Woods, and the faculty, for their strong support.

In addition to teaching Paleontology I spend a lot of time advising or coadvising graduate students. Drew Dietsche nears the end of his project on the Holocene history of Core Sound. Cindy Crane has already given me her first draft on microvertebrates from late Cretaceous strata from the Cape Fear River region. Katrina Rabien is progressing well on her project on the foraminifera of recent hurricane deposits off the Mississippi delta. Three new students joined the team during the year. Ray Tichenor is working on a late Holocene record of Gulf of Mexico storms using foraminifera, Kelli Moran is investigating the geological development of Currituck Sound during the late Holocene, and Alisha Ellis, who joined us at the beginning of the year, will be working on the environmental effects of fish farms in Malaysia using foraminifera as indicators of pollution.

New research collaborations are being initiated with the faculty who joined us two years ago. Infusion of new blood is important as new ideas and experiences are energizing. I feel mentally energized although I seem to be falling apart physically as increasing age is reflected in increasingly creaky joints! Too many mountains climbed and too many mountains descended!

Looking forward to seeing you at the pig-picking!

My very best regards,

Steve

Mike O'Driscoll

Greetings from Greenville! I hope you are having a good year. This past year has been an eventful one at ECU. Here are a few highlights from my year:

In June 2010, I headed out west to join Steve Harper to teach the hydro component of Field Camp in the Taos, New Mexico area. We had 30 students wading down the Rio Grande del Rancho (a tributary to the Rio Grande). The field area is spectacular and we received lots of positive feedback from our students; they really enjoyed getting their feet wet and learning more about the vital water resources of this arid region. This past year we have been revamping our undergraduate program and I have chipped in by advising 14 of our undergraduates, helping teach Field Camp, and preparing a new undergraduate course called "Hydrogeology and the Environment" to be offered this coming fall. At the graduate level, I have been teaching, advising 7 students, and directing the new Hydrogeology and Environmental Geology Certificate Program. We have had healthy enrollment (14 students) in the Certificate Program this fall and hope to attract more students in the future. This winter, the Coastal Water Research Center (CWRC) was initiated at ECU. It will be directed by Dr. Spruill and the future growth of the CWRC will provide great opportunities to improve our understanding of North Carolina's hydrogeology and broaden our impact on regional water resources management.



Sahra Rahili and other field camp students gauging stream flow along the Rio Grande del Rancho, New Mexico, June 2010.

Our hydrogeological research efforts continue to grow in the Coastal Plain and this past year we were awarded funding for four new studies by: the Centers for Disease Control and Prevention; NC Department of Environment and Natural Resources; Office of the Attorney General for the State of North Carolina; and ECU Research and Graduate Studies. This recent research has mainly focused on characterizing wastewater migration in the subsurface and the effects of urbanization on hydrology in eastern North Carolina.

Finally, I received the good news this February that I will be tenured and promoted to Associate Professor. This outcome is due, in part, to being surrounded by great people at ECU. I am thankful to all of my past and present graduate and undergraduate students who spent countless hours doing lab and field work, rain or shine, to complete their research projects. I also owe many thanks to our dedicated staff: Jim Watson; John Woods; Dare Merritt; and Michele Taing. They have cheerfully helped me out with many outlandish requests over the years

(ask Jim if driving to Kansas is in his job description) and we are lucky to have them. In addition, I owe a great deal of gratitude to the late Dr. Mark Brinson. He was a great mentor and colleague. Mark was the king of wetland science and he always had time for my students and me. He will be greatly missed. While at ECU, I have been fortunate to have many great faculty colleagues and a Department Chair who always provided honest guidance and support throughout the tenure process. For someone interested in water, eastern North Carolina is a great place to be and I am grateful for the opportunity to continue my work as a tenured faculty member here at ECU.

Enough about me. I hope your 2011 is off to a great start and that we will cross paths this year. Take care,

Eduardo Leorri

Another year is gone! This actually happened so fast that it is good to stop now and look back to see how (well) we did. Over last year, I had the chance to work with some excellent students from our undergraduate program; some results will be coming out soon from that research. I also had the opportunity to work with many people here at ECU, not only in Geology but also in Biology. I won't mention names (the list is too long), but I have to thank many people for their help and support during this year, Faculty and Staff (or the other way around).

Before coming to ECU, I was involved in a plethora of projects, both in Spain and Portugal; some are still ongoing. During last year the results started to come out after an intense summer of field work. This is really exciting. The idea now is to expand the same research to areas nearby ECU. Explaining what we do in the field is much easier if you can actually see it. So we taped it and you can see it at the following links:

Large size: <http://winmedia.ecu.edu/cas/leorrie/coring.mp4>

Small size: <http://winmedia.ecu.edu/cas/leorrie/coring-sm.mp4>



As you can see in the picture, it requires some effort to get the data back to the laboratory, where we expend most of the time actually. This field work is aimed to understand sea-level changes and its implications regarding the climate change.

In order to do that, we analyze different proxies. A proxy is an indirect indicator of environmental parameters that allows us to reconstruct former environmental conditions when instrumental data are not available. One of the most interesting tools is micropaleontology, but other proxies are being investigated such as organic compounds. Let's see what 2011 brings us in that new direction.

On the other hand, teaching is a great experience. The language barrier seems to be fading out and classes are getting even more exciting than before. I have to recognize that in most cases nobody laughs at my jokes; but I am not 100% sure that the issue is the English. At this point, I am really looking forward to starting to teach our undergraduates next semester.

Eric Horsman

It has been an eventful, busy first full year for me here at ECU. Shortly after classes ended last spring I travelled to the Henry Mountains in Utah to help M.S. student Nate Gwyn get started on the fieldwork for his thesis project. Nate is studying the growth history of a major laccolith. Nate's work will improve our understanding of how shallow crustal intrusions (like those below volcanoes) grow and evolve as they are constructed from multiple pulses of intruding magma.

In early June I again headed out into the field, this time to the Adirondack Mountains in upstate New York, where M.S. student Emmett Keeler was starting his thesis fieldwork. Emmett is studying a great example of an ancient major mid-crustal shear zone that has received too little attention so far. Emmett is describing the architecture of the shear zone using a variety of different techniques, including thin section analysis, XRF geochemistry, and rock magnetic techniques. This shear zone provides a rare opportunity to study the deep crustal expression of a major fault system, and I suspect some really interesting results will come out of the work.

In September of 2010 I co-chaired a meeting of about 40 geoscientists interested in studying sills, laccoliths, and other shallow crustal igneous intrusions – check out the meeting website (<http://lasi.lmtg.obs-mip.fr/LASI4/Home.html>). About seventy percent of the participants were from other continents. We spent two days just outside Moab, Utah, discussing many aspects of igneous intrusion processes through a series of talks and posters. My colleagues and I then led the large group to the nearby Henry Mountains (again) for another two days of field trips and discussion. It was a huge amount of work for me and my co-conveners, but it ended up being a great meeting. This group of scientists will have another meeting in 2013 in South Africa.

In teaching-related news, I'm very glad to inform you that I led students in the Structural Geology course on a two and a half day trip across the Appalachian Mountains in November. We stayed in the Boone region but looked at rocks all the way from Raleigh through North Carolina and Tennessee, and on into western Virginia. I think it's fair to say a good time was had by all. A long weekend field trip will become a part of every Structural Geology class from now on. I plan to start including an additional day trip or two as well.

Also in teaching news, I learned in January that I was awarded an ECU teaching grant to improve spatial thinking skills for undergraduate students in the Field Methods and Structural Geology courses I teach each year. The funds I was awarded will be used to buy materials for construction of visualization aids that will hopefully help students develop the 3-d thinking skills that are so important for really understanding geoscience concepts. Over the coming summer I will be constructing several sets of visualization aids, including cubes made of whiteboard material, cubes made of clear plastic, and hemispheres made of clear plastic (truly 3-d stereonet – I'm excited). Starting this fall, students will get to put all these aids to work.

Alex Manda

Qiézi! That is just one of the many words I learned while I was in China for three weeks last summer with a group of young professionals from the US and China that were interested in water resources. Although mentioned a few times around the dinner table, qiézi (pronounced ‘tsieza’) was mostly heard when someone was being photographed. You see, qiézi, which means eggplant, is what the Chinese say when they take a picture of someone, like when we say ‘cheese’. I became accustomed to saying qiézi because everywhere we went, there was almost always someone who wanted to take a photo with me!

I was in China as a Water Here & There International Fellow (WA&TIF), a program sponsored by the US Department of State and the Bureau of Educational and Cultural Affairs of China. The purpose of the program was to provide young professionals from both countries with the unique opportunity of working together to address global environmental issues involving water resources.

While in China, we visited various projects related to water resources in the cities of Beijing, Yinchuan, Chongqing and Shanghai. These visits highlighted the water crisis that China is facing: northern China faces water quantity problems whereas southern China suffers from water quality issues. These problems are bound to grow as China’s economy and population continue to grow.

The WH&T IF program was definitely an eye opener, as it emphasized the challenges we might face if we do not effectively manage our vital water resources in the face of economic development. In the US, we take it for granted that we can draw potable water from the faucet. In China, no one drinks water from the tap! People rely on bottled water for drinking purposes because the water that comes out of the faucet is of such poor quality. The group from the US that went to China comprised 12 young professionals from different sectors of society. These young professionals were interested in different issues related to water resources in both the United States and China. Our team consisted of professors, engineers, biologists, interns, graduate students and professionals from non-profit organizations. Our engagement with young professionals from China has led to the development of professional networks that have resulted in collaborative research projects in water resources. These research projects in China will be in addition to current research projects focusing on the hydrology of the Buckridge Coastal Reserve, Emerald Isle, the Castle Hayne Aquifer system and fractured rock systems in Massachusetts and North Carolina.

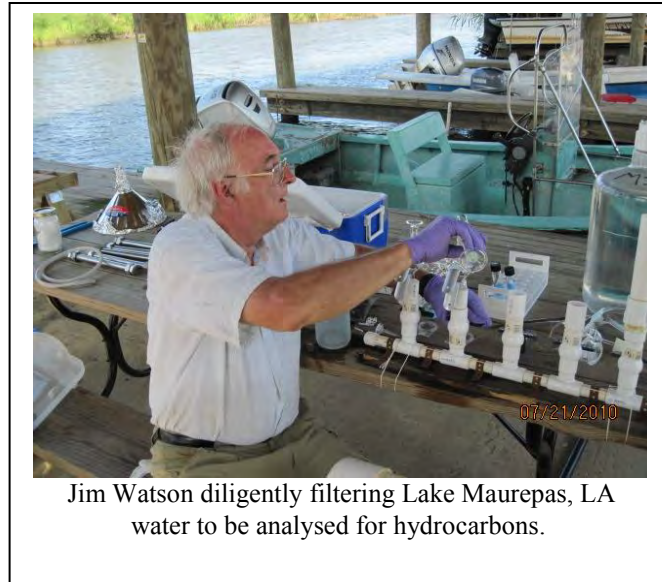
Other than visiting numerous water projects, rivers, and environmental projects, we took time to visit some of China’s landmarks: The Great Wall of China, the Forbidden City, Tiananmen Square, etc. It was at these places that my colleagues on the US team wondered whether I was truly a hydrogeologist or a celebrity hiding my identity because so many people were asking me to take photos with them. After assuring the US team that I had indeed been truthful with them, I looked straight into the camera pointing at me, smiled and said, “Qiézi!”



Qiézi! Dr Manda and a Chinese gentleman on the Great Wall of China.

Sid Mitra

Greetings Everyone! Since the posting of the last newsletter, much of life has been filled with two major activities: oil and water. First, there was that incident of that trifling **oil** release in the Gulf of Mexico (you know...the one that got in the way of the relaxed life of BP CEO Tony Hayward). Although the incident was quite tragic, many scientific questions of a basic and applied nature will be addressed as a result of it. Our lab was fortunate enough to get two National Science Foundation grants addressing some of those important scientific questions related to the incident. One of the grants allowed me to go out in the field sampling air and water throughout the Gulf Coast states, accompanied by none other than Jim Watson. Until this trip, Jim and I were under the impression that summer hot weather is the same everywhere in



Jim Watson diligently filtering Lake Maurepas, LA water to be analysed for hydrocarbons.

the south. Well, as a result of the trip, we learned a few things. First, while in Louisiana we learned the definition of the phrase “swamp-ass”. In conjunction with that, Jim learned that if someone asks you to come to Louisiana in the summertime for field work, you should probably say “no”. I also learned why I spend much of my time in an air-conditioned lab or office. Jim and I did our best to not pass out from heat exhaustion during our 10 day sojourn through the Gulf Coast states in July (see picture). As a bonus, some filmmakers from National Geographic followed us along in our adventures. You can see a video clip of our field work at:

<http://news.nationalgeographic.com/news/2010/06/100630-science-environment-nation-hurricane-alex-gulf-mexico-oil-spill/>

To add to the excitement, while we were in the field, my wife’s water broke! Our third son, Surya Nolan Mitra was born as we were finishing up field work in Mississippi. I’m sorry to say that I missed the delivery. Surya seems like he has forgiven me for

that egregious act but I don’t trust him. He has a smile on his face all the time that is a bit unnerving – maybe it’s my guilty conscience – I dunno.

My first student Nidhi Patel will be defending on March 1st. She worked hard and did a great job on her thesis. As a bonus, she recently passed the 1st part of the ASBOG licensure exam. She’s of course looking for gainful employment so if any alumni reading this has use for industrious alum, drop me a line and I will put you in touch with her. My new student Kim Scalise has taking over as senior ranking lab member and is working on the samples from the Gulf of Mexico. We just got some funding from NC Sea Grant to expand that work a bit and get some baseline information about hydrocarbons in coastal NC, should NC go the way of the Gulf Coast states and decide to “drill baby drill”. I wish you all well for the upcoming year and look forward to seeing many of you at the 2011 annual Pig Pickin.

Terri Woods

The proposed Reverse-Osmosis Water Treatment Plants have been completed (Currituck Co.) or are nearing completion (Pasquotank Co.) and the Currituck Plant is online. However, the counties have convinced the State that they should not have to do the post-construction studies originally planned, so it doesn’t appear I will be doing any water-quality studies on Albemarle Sound anytime soon. However, with our increased number of faculty and lots of grant activity being Graduate Program Director is keeping me quite busy. It seems that the upper administration is making more and more demands for data on our program and with the SACS accreditation and our Geology Graduate Program Review coming up this year I’m putting together lots of student, applicant and stipend data. We were just granted an increase in our assistantship budget so the stipend we pay TA’s has increased.

I continue to spend considerable time on science outreach for the public schools. Unfortunately, the grant I wrote for a portion of the Obama Stimulus Package Education Money (~\$3.5 million) was not one of the 49 grants out of 1698 submitted that was funded. Also, my grant to the Department of Public Instruction for Math/science Partnership Funds (~\$465K) was rejected. These were very time-consuming to write, so I plan to

use these documents as a starting point for preparing new proposals to enhance inquiry-based, hands-on science education in NC. ECU-Geological Sciences had a strong showing at the regional competition for Science Olympiad in February 12th with 5 teams of geology students designing and administering events. I again served as a member of the Advisory Board for the Student Science Enrichment Grant Program supported by the Burroughs Wellcome Fund. I thoroughly enjoy this experience and continue to be excited about the great projects these grants support.

Finally, I've adapted my online course in Physical Geology to use most of my materials in my face-to-face class. This saves the students the ~\$100 cost of a text book because they have my Blackboard reading assignments. I tell them to go online and buy a used text for supplemental reading (~\$10 at Amazon). In addition I've taken my Powerpoints off my website (ECU was getting more concerned about copyright issues for figures from textbooks) and put them on Blackboard. I have also done this for oceanography although I don't have Reading Assignments for that course like the ones I developed for Physical Geology, so students still have to buy a text. I'm presently investigating the possibility of adapting my Physical Geology materials to be used as an online textbook for high-school earth-science classes. With the current budget crunch in NC, this could save the schools some money.

Rick Miller

“And now for something completely different.....” This Monty Python phrase has constantly echoed in my ear as I experienced many changes and milestones in both my professional and personal life since my last newsletter entry. The first major change was my departure from the UNC Coastal Studies Institute in mid-May 2010. This one change served as the catalyst for many, many other changes. As you may recall, I joined ECU in August 2008 with a joint appointment in our Department and the Coastal Studies Institute. Now, as with several of my colleagues, I have a joint appointment with Geological Sciences and the Institute for Coastal Science and Policy (ICSP). Although the decision to part ways with the Coastal Studies Institute was clearly the right decision, it caused a series of dominoes to fall - such as moving my lab with a lot of equipment from Manteo to ECU, securing a real office on campus and becoming a visible member of the ECU community. Fortunately, I was warmly welcomed by Dr. Rummel, the ICSP director, staff and colleagues and soon found a home in Flanagan. The change has been great for me professionally as I now have more opportunities to interact with my colleagues and students. My research is progressing nicely (more on that below) but speaking of homes - my wife and I finally sold our house in Slidell, LA in late January.

So, now for something completely different: we moved the remaining large amount of our furniture and “stuff” to North Carolina. We now have a house in Kill Devil Hills and an apartment in Greenville with furniture! What a concept. This formally closes the chapter on life in Louisiana.

“And now for something completely different.....” My transition to full time at ECU also increased my teaching requirements. So, during fall semester 2010 I taught GEOL 1550 (Introduction to Oceanography). Wow, what an education I received. Although I had taught several courses while I was at NASA and have taught GEOL 6950 (Data Analysis) the last two spring semesters, GEOL 1550 was the first large (100+ students) undergraduate course I have taught (or some may say attempted to teach).

Needless to say I spent a lot of time developing lectures for a new course and trying to motivate, educate, and yes, sometimes tolerate a class of largely freshman students - I'm sure that I shall never be the same again. I now truly admire the skill and capabilities of good, effective teachers.

As I mentioned above, my research is progressing although it is certainly difficult to secure funding during these difficult economic times. Nevertheless, I continue my crusade to establish ECU as a leader in the use of remotely sensed data for examining Earth system processes, particularly coastal processes using any and all resources that I can garner. I am very pleased to announce that our remote sensing capabilities are now well

established and I'm starting to become more involved in collaborative projects with my colleagues and students in Geological Sciences and ICSP. One exciting new area of research is the use of high-resolution (8 m) multispectral data from the FORMOSAT-2 remote sensing instrument (RSI). The FORMOSAT-2 RSI is a Taiwan instrument that can provide daily images. We are examining the use of FORMOSAT-2 data for analyzing suspended sediment dynamics in the coastal waters of North Carolina.

Submitting manuscripts for publication has also been a major focus this year. I'm a co-author on two manuscripts describing research conducted during Southern Ocean GasEX III that were submitted to JGR titled "An assessment of optical properties and primary production derived from remote sensing in the Southern Ocean (SO GasEx)" (ZhongPing Lee, first author) and "Horizontal and Vertical Distributions of Colored Dissolved Organic Matter During the Southern Ocean Gas Exchange Experiment" (Carlos Del Castillo, first author). I recently submitted a manuscript that describes the use of FORMOSAT-2, Landsat ETM+ and MODIS data for analyzing the dynamics of Total Suspended Matter (TSM) in the Albemarle-Pamlico Estuarine System. Stay tuned for more soon.

I also traveled a bit this year when I presented research results at the Ocean Sciences meeting in Portland Oregon, The Coastal Society's 22nd International Conference in Wilmington, NC, and the PORSEC (Pan Ocean Remote Sensing Conference) in Keelung, Taiwan. I also gave a 2-day tutorial at PORSEC on the use of bio-optical instrumentation to support remote sensing applications of coastal environments. Over 30 students from 17 countries attended. Their interest and enthusiasm was very infectious, so I had a great time.

It's been a very hectic, crazy, busy year but at the same time, rewarding. And I think that I'm finally getting accustomed to life at a university.... wait, I hear a faint "And now for something....."

Till next time, Rick

False-color FORMOSAT-2 8m image (10 December 2010) of lower Pamlico Sound showing high-resolution detail in suspended sediment and island morphology.



Adriana Heimann

Hello everybody! This has been a great year. As I mentioned in my first newsletter, this year was going to bring some exciting news to my life. Manuel, my husband, and I welcomed our first baby to this world in May of 2010. Nicolas really changed our lives and in particular my life. I can say that this has been the busiest time of my life, yet, I have not accomplished as much as I wanted to in my professional life. I write this newsletter item on a Saturday at 10 pm, when I can finally work at home for a few hours. Growing a human being and really caring for him is worth the effort! Nicolas is now 9 months old and is amazing to us already. Manuel has been teaching Physics and Astronomy at Pitt Community College since we arrived in Greenville and enjoying this very much.

In the research front, I have been working on the USGS rare-metal pegmatite project with my first graduate student, Josh Bitner. Josh has been working on the geochemistry of some pegmatites from Brazil that we hope to visit in the near future. Undergraduate student Scott Elkins has been doing research with me for a year now. Scott is now working on the mineralogy and mineral chemistry of garnet- and gahnite-rich rocks from near Broken Hill, Australia, and this will be part of his Honors thesis. If we are lucky enough Scott will stay on to do his Masters thesis here at ECU. However, he is very good and will likely venture to new lands. This summer I will be able to return to the field (without the Nicolas belly) to visit some pegmatite localities and collect samples. In February of last year I still took my Mineralogy/Petrology II students to a granite quarry near Gold Rock, NC. For obvious reasons this was my only field trip of the year. This semester I am teaching Mineralogy/Petrology II and Economic Geology (yes, both!) and I will take the students to the Gold Rock granite quarry and to the Aurora phosphate mine. The only meeting I went to was the combined NE/SE GSA meeting in Baltimore, where I presented my research on the origin of Archean/Proterozoic banded iron formations from South Africa and co-chaired a session on igneous and metamorphic petrology and geochemistry. Still with my belly, I visited the Smithsonian Institution in Washington, D.C., to collect pegmatite samples, and gave a talk at the University of North Carolina at Chapel Hill. Later on, I managed to write two proposals and pre-proposals to request a multi collector-ICP-MS for Fe isotope analysis. Sadly, I still have to seek funding for this expensive (~\$ 700,000) toy. In addition to this, I am now a member of the new NASA North Carolina Space Grant Consortium at ECU. This opens new opportunities for funding that are very welcome in my investigations of the early Earth. This is all for this year. I wish you all well!

J.P. Walsh

Another fun-filled but hectic year has passed. Because of an ongoing NSF-project and the Deepwater Horizon oil spill, this year was characterized by lots of travel and time at sea. Since January 2010, I have been to New Zealand five times (4 cruises) and the Gulf of Mexico once (1 cruise). Being away from the family has been difficult, particularly because Molly, our second child, was born in December 2009. But, it has been an exciting year for field work and new experiences. For example, it was interesting to help sample the seabed of the Gulf of Mexico in effort to assess the impact of the Deepwater Horizon oil spill (Fig. 1). Also, I really enjoyed trying some new methods to examine estuarine shoreline change in a project supported by the Albemarle-Pamlico National Estuarine Program (Fig. 2). Of course, it was fascinating to work off the New Zealand coast, particularly with such a great, hard-working team of scientists including Reide Corbett and Joey Kiker (ECU Geological Sciences MS Student) (Fig. 3). I was not away all year, however. Last fall I taught to a new doctoral-level course called Coastal Geosciences with Ryan Mulligan. A highlight of the year was officially becoming tenured on August 23rd. To celebrate, my wife and I hosted a Tiki party at our house to celebrate with friends, students and faculty. The other major highlight was spending ~two months in New Zealand as a Visiting Scientist at the National Institute for Water and Atmospheric (NIWA) Research. My family joined me for this trip which included visits to Auckland, Christchurch and Wellington to give presentations. Now, I am happy to be home for a while!



Fig. 1: J.P. cuts a core while onboard the NOAA Pisces in the Gulf of Mexico. In the background, lights are visible from the relief-well drilling platforms at the Deepwater Horizon site.



Fig. 2: Devon Eulie (on land, CRM Ph.D. student), Reide Corbett (in water) and J.P. Walsh (on boat) use a new balloon-based aerial photography system to study estuarine shoreline change at Kitty Hawk Woods.



Fig. 3: Scientists and crew aboard the R/V Kaharoa prepare to recover the third seabed tripod from the seabed off the Waipaoa River, New Zealand. J.P. Walsh (center) was Chief Scientist on this expedition in May 2010.

Steve Harper

On the teaching front, my typical teaching duties still include 3 sections of Physical Geology and Environmental Geology each semester and Geomorphology every other year. I also still coordinate the Graduate Students, who teach Geology 1501 labs. I attended National GSA Meeting in Denver, CO and ran into several ECU alumni, who attended this meeting.

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 2011 for the 13th straight year. For the 2011 field course, our enrollment in the Geology Field Course will be ~30 students. Currently, these students hail from ECU, UNC-Charlotte, NCSU, Montclair State University, NJ, University of Pittsburgh, PA, Wayne State University in Detroit MI, Washington University in St. Louis, MO, and Sam Houston State University, TX. This year after ~2 weeks in Abiquiu and Jemez, NM, we will head north for 3 days to the Chaco Canyon National Historic Park and then camp near Durango, Colorado. From there we have a 2-day field trip to look at the oil and gas geology of the San Juan Basin led by a 1970's ECU Geology Alumnus, Jeff Brame. After the San Juan Basin Field Trip, we will cross the Brazos Mountains on the way to Sipapu-Taos for 23 days. After completing the Rio Grande Gorge Slope Stability Exercise and 2 mapping exercises in the Picuris Range, we will take a 2-day field trip to Great Sand Dunes National Park near Mosca, CO and then up to Creede, CO for the second day. After Creede, CO we will return to Sipapu-Taos, NM to complete a hydro-geology exercise in the Rio Grande del Rancho Drainage Basin. Michael O'Driscoll from the ECU Department of Geological Sciences will be the lead instructor for this exercise. Also, if current plans hold, Eric Horsman, our new Structural Geologist, will be in the teaching rotation for the Picuris Range mapping exercises. I will stay with the students in NM and CO for the entire field course but will have Steve Campbell (GMA), Crystal Wilson (App State), Rick Wooten (NC Geologic Survey), John Diemer (UNC-C) assisting me in addition to Michael O'Driscoll (ECU) and hopefully, Eric Horsman (ECU) too.

Because my summer schedule has become too cluttered to travel overseas, I spent 25 days in Asia during Christmas break in December 2010 and January 2011. Although I spent some time in my usual haunts, Bangkok, Singapore, and Hong Kong, I also spent 10 days in Kathmandu, NEPAL. This was my first trip back to NEPAL in 33 years and marked the 40th anniversary of my first trip to NEPAL as a Peace Corps Volunteer in 1970. Must be getting OLD! Yes, and of course, I brought back plenty of fine teas and flip flops from my recent Asia Trip!

Dave Mallinson

Another busy year has passed. Highlights of my year included travel to Brest, France and Tokyo in association with my role as Vice-Chair of the Integrated Ocean Drilling Program Site Survey Panel. Getting involved with the IODP was one of the best decisions I ever made. As I'm writing this I'm quite concerned about friends and colleagues in Japan who I interact with fairly regularly. Many of them are at JAMSTEC, the Japanese Marine Science and Technology Center near Tokyo. Naturally, it's at sea level, and I'm waiting to hear what the impacts of the tsunami were in that location.



The Coastal Processes class viewing the results of erosion and sand bags on the beach at South Nags Head.

As far as my research is going, I'm trying to get one of my students finished up, and another student started. The first (Andrew Dietsche) is finishing up a thesis on Core Sound, north of Cape Lookout. He's collected some interesting seismic data and cores, and worked up the Holocene evolution of this system. The other student (Kelli Moran) is doing a similar project in Currituck Sound. One of the new approaches we're using is modeling the hydrodynamic changes to the system using the geological data as an input to the hydrodynamic model Delft3D (this is Dr. Mulligan's specialty). Several of us have an NSF proposal pending to reconstruct the Holocene paleoenvironmental and paleoclimate changes in Pamlico Sound, and model the response of the system as far as changes to the tides, currents, sediment transport, etc. We're already coming up with some very interesting results, which don't bode well for the future of the Outer Banks. Other research I was involved with over the last year was work with Duke Energy to define the geologic framework in Pamlico Sound where they intended to place some wind turbine generators. Unfortunately, they pulled the plug on that (pun intended). Drs. Culver, Corbett, and I are still attempting to get more funding to continue our work in Malaysia, however a National Geographic proposal to fund that was just rejected. I guess the coastal impact of fish farming isn't sexy enough for them.

The classes I teach continue to be enjoyable, made so primarily by good students. In the fall I took my Coastal Processes class on their requisite field trip to the Outer Banks for a couple of days. We had a great time at the Duck USACE Field Research Facility, and in viewing all the various components of the islands and processes going on at Nags Head, Jockey's Ridge, Run Hill, South Nags Head, Salvo, Buxton, and right on down through Ocracoke. One highlight was listening to ECU stomp NCSU in football (Go Pirates!) while we waited in line for the ferry back to the mainland.

Another important event that's coming up is the southeast regional GSA meeting, which is being held in Wilmington, NC (March 23-25) this year, and hosted by our friends at UNC-W (Bill Harris). Dorothea Ames and I are chairing a session in honor of the career of Stan Riggs (Coastal Response to Sea-Level and Climate Changes: A Tribute to the Career of Stan Riggs). This should be a great session, and we're hoping to perhaps see some of you alumni there.

Richard Spruill

Greetings from Greenville and the Spruill 'crew'! We are well, and hope that things are going well with all of you. Here are some details about the family. Lisa has been working as a staff nurse with the Pitt County Health Department, and she has enjoyed getting back into nursing, especially community health nursing. Alex, 22, has just returned from California where he is planning to attend Santa Barbara Community College in the Fall. Anna, 19, is working two jobs in Greenville, and is pursuing her dream of working with young children in day care environments. I made it to age 60 in October, and I am slowing down a bit!!

Academic year 2010-2011 has been a busy one. After 6.5 years on the North Carolina Board for Licensing of Geologists, and three consecutive years as Chairman, I was finally replaced by an academic Geologist from UNC-Wilmington. The only way to exit the Board is to find your own replacement and offer up his/her name to the Governor! I very much enjoyed my time on the Board, and I encourage you to get involved in Geological Licensure in your current State. One significant consequence of my Licensure Board membership is my involvement in the National Association of State Boards of Geology, or ASBOG. Many of you will “fondly” remember your ASBOG Fundamental and Practice of Geology Examinations!!! This is my “Presidential Year”, having matriculated through the Executive Committee positions of Secretary, Treasurer, and President Elect. ASBOG is clearly the organization that I have enjoyed more than all others, because of the great sense of accomplishment that I gain from working on issues related not just to the exams, but to the profession as a whole. AND, I have been able to travel to some incredible places around the US and Canada!

Perhaps the most significant new development for me and the Department of Geosciences is the establishment of a new Coastal Water Resources Center. The Center is housed within the Institute for Coastal Science and Policy. I have agreed to be the Founding Director of the Center and have agreed to serve for at least two years to get the program established. The Center has a research and service orientation, and is designed to offer ECU faculty expertise to work on problems of water supply, water demand, distribution, and water quality. One of our initial initiatives will be a conference to be held in Greenville in October of 2011, wherein we will deal with aquifer management issues like saltwater intrusion, aquifer storage and recovery (ASR), and supply demand issues in the Mid-Atlantic States.

Speaking of ASR, I am very pleased to tell you that we are finally (after 12 years and almost \$2 million invested) injecting treated surface water into the State’s first ASR well here in Greenville. I was blonde, not grey, when this process began!!

Please make plans to attend the Department of Geosciences Annual Pig Pick’n on Saturday, April 30, 2011. The Spruill’s will host the party and we really hope that you and your families can attend. Call (252-531-0778) or write (spruillr@ecu.edu) for details. Finally, let us begin a dialog regarding the establishment of a functional Alumni “Group” that is designed to keep us connected and to support the ongoing activities at ECU! The Department of Geological Sciences is an outstanding department, staffed with an incredible group of young, talented, motivated, and hard-working people. Be proud, and stay involved, please! See you at the Pig Pick’n, Spruill

Don Neal

Seems the more you do the more you have to do! When you get rid of a few obligations there is always something to fill in the void. Last year I finished my obligations as a national officer of Sigma Gamma Epsilon and thought, “Now I can take some time to regroup.” Well, life isn’t like that. Last fall I taught the Dynamic Earth, Earth and Life Through Time and Carbonate Petrology. Overall, they were good classes but not enough time; no Keys field trip like we did in the good ol’ days. This spring I have Earth and Life and Stratigraphy. Again, good classes but not enough time to cover everything I want to cover. All we can do is to put it out there and hope for the best.

It appears I am back in the heyday of having grad students; not like the time when I had eight students in various states of disrepair but with a comfortable three. Megan Ganak is finishing up her thesis on the Blue Monday Sandstone, a gas producer in West Virginia. She should defend later this month and starts a job in June with Schlumberger in Houston as a Seismic Data Engineer. Craig Simms is working on the stratigraphy of the Castle Hayne Limestone in the Onslow Quarry near Richlands. This is in an area where the Castle Hayne is thinning and interbedded with marls. It should be interesting. Newest is Casey Smith who will be working on the Rhinestreet Shale, a shale gas reservoir in West Virginia, comparing it to the classic and stratigraphically younger Huron Shale. As you can see, my “free” time has disappeared.

I am still Secretary-Treasurer of the Southeastern Section of GSA which requires only periodic chunks of time with the section meeting and grant proposal review and travel proposal review and council meetings and... So, with all of this going on, I try to keep my head above water. I wish all of you the same satisfaction of having a very full and productive life.

Reide Corbett

Hard to come up with words to describe the year...overwhelming! I find it difficult to sit down and write about the year. As most of you know, my wife, Lisa, passed away in November of last year. She left a significant void in my heart, family, and our collective Geology unit. Lisa is truly missed! I appreciate all of the support you have given me and my family during this difficult time. Know that we are working our way through it, figuring it out as we move along.

Lisa was always supportive of my work, helping any way she could. She would be thrilled to know, and I hope you are as well, that I received word from the Chancellor recently that my promotion to Full Professor was approved, effective August 2011. I am excited about the promotion and intend to continue to have as active of a research program and engage as many undergraduate and graduate students in the geological sciences through my classes.

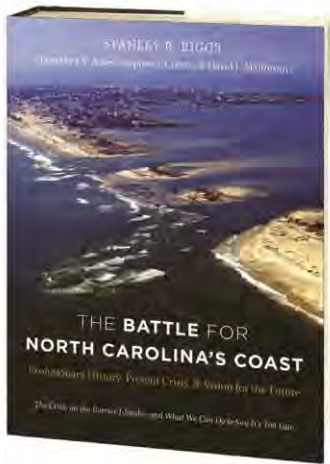
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