

East Carolina University
Department of

GEOLOGICAL SCIENCES

Dear alumni and friends,

Greetings from the Department of Geological Sciences! As the large text to the left indicates, in 2006, after much discussion, the faculty voted to change the departmental name. We did that to better reflect the activities and interests of the faculty and the breadth of the earth sciences, both pure and applied, that we deal with in our department. We certainly hope that this renaming will help us recruit undergraduate students into the department. As in most things geological, time will tell.

We are currently in the search mode. I am very excited about the opportunity to hire two additional Geological Sciences faculty members. One position is for a tenured faculty member at the Associate or Full Professor level who will be Program Head for Estuarine and Coastal Sciences at the University of North Carolina Coastal Studies Institute (CSI) in Manteo. This person will be located in Manteo but will be a fully functioning member of the department. We are looking for a person in the fields of estuarine and coastal processes, sea level or paleoclimate. The new facility in Manteo, which will be a huge boost to our research at the coast, will include offices, labs, dorms, a kitchen, apartments and boat storage. If all goes to plan,

the complex, located just across the road from the Aquarium in Manteo, will be ready for occupancy in late 2009.

We are also looking for an Assistant to Associate Professor to join the faculty here in Greenville. The possible areas of specialization are the same as for the post in Manteo. We hope that this overlapping of research and teaching interests will help encourage close collaboration with the personnel at CSI Manteo.

With all of this growth, it is a good feeling to be able to report that in September we welcomed a new lab mechanic, John Woods, to the department. We are very happy to have such a skilled person join us but, as you can imagine, no one is happier than Jim Watson!

To conclude, I would like to invite you all to our ECU Centennial/Geological Sciences 40th Anniversary Symposium that will take place in Greenville on Friday 13th April. More details are given inside this Newsletter. It will be an exciting day and will be a great opportunity to get together with old friends and colleagues from your days at ECU. As you can probably imagine, I'm looking forward to the evening get-together as well! My very best regards to all of our alumni.

Steve Culver

Spring 2007

**Pig Pickin' and
Spring Graduate Recognition
1 pm Friday May 4
at
Richard Spruill's country estate.
Plan to attend.**

**Call the Department office if you need directions.
252-328-6360**

See you there.

B.S. Graduates

Spring 2006

Gavin McIntyre

Summer 2006

Ralph "Tripp" Amos

Steven Drew

Justin Gibbs

Margaret Harrison

Robert Howard

Brad Panneton

Fall 2006

Chris Therrien

M.S. Graduates

Spring 2006

Michael Dail

Candace Grand Pre

Jason Jomp

Summer 2006

Erin Must

Fall 2006

Michael Buckner

Jeb Rosenberger

Curtis Smith

David Twamley

Catherine Rigsby's Brazilian Fulbright Experience

The Amazon Basin is the largest river in the world. It occupies a basin that covers over 2.5 million square miles and is the home to 17 million people. It provides ~20% of the fresh water to the ocean. It contains more species of fish than any other freshwater system. It occupies the largest remaining tract of rainforest on the planet, with the most diverse ecosystems on Earth. And now I've begun to study it! Aided by a Fulbright Scholarship, I spent the Fall semester (2006) living near the mouth of the Amazon – in Belem, Brazil – teaching a graduate-level sedimentology course at the Universidade Federal do Pará (UFPA) and setting up the collaborations necessary to begin studying the Quaternary history of Amazon climate and landscape change. It was a challenging and exciting experience!

The Fulbright Program, now in its 55th year, is sponsored by the United States Department of State, Bureau of Educational and Cultural Affairs. It was the brainchild of J. William Fulbright (Senator from Arkansas) who believed that international exchange is “the most significant [way] to continue the process of humanizing mankind to the point, we would hope, that nations can learn to live in peace.” I was privileged to be chosen as a US Fulbright Scholar. And for me, as for many others, being a Fulbright was a voyage of discovery: self-discovery, as well as discovery of others, other cultures, and other environments.

Belem (1°27'S, 48°30'W) was an amazing place to live. Located near the mouth of the Amazon estuary – on a headland where the Rio Guamá flows into the Guajará Bay – it has, as the guidebooks say, two seasons: hot, humid, and rainy (December to May) and hot, humid, and less rainy (June to November). But, for someone accustomed to the climate of eastern North Carolina, this presented no problem at all. Actually, the temperature rarely exceeds about 92°F and, because Belem is situated right in the ITCZ, there is almost always a breeze, making the climate rather pleasant. We (yes, Paul was there too; he also had a Fulbright) lived in the main part of the city, across the street from the Praça da República. Although Belem is a dangerous city, it is also a beautiful and vibrant one with warmly social people, lively music, and remarkable cuisine (fish like nowhere else in the world and the most amazing flavors of ice cream you'll ever find!).

Our class at UFPA was small and our students were enthusiastic. They all knew that English is, for better or worse, the language of science and were as eager to practice their English skills as they were to learn about sedimentary systems. We read English-language journal articles and discussed many aspects of depositional environments, focusing mainly on coastal and estuarine environments. The semester culminated with written and oral student presentations (in English!) and a field trip to Marajo Island – a freshwater island the size of Switzerland that sits at the mouth of the Amazon, is occupied by water-buffalo ranches, experiences periodic flooding, has 3+ meter tides, and is surrounded by tidal flats and some of the most amazing freshwater beaches around. With our students (see the photo, below) we visited a steep, wave-dominated beach and a beautiful, intricately barred and rippled tidal flat complex. There are quite a few field trip pictures online



Rigsby in class at
Universidade Federal do
Pará

(<http://core.ecu.edu/geology/Rigsbyc/images/Brasil2006/ClassFieldTrip/index.html>) for those who are interested, as well as a few photos of the UFPA campus (<http://core.ecu.edu/geology/Rigsbyc/images/Brasil2006/UFPA/index.html>).

I plan to return to Belem in November (2007) to participate in a meeting of the *Brazilian Quaternary Association* and have already started collaborative research with colleagues in Brazil and Argentina. One important goal of our research is to understand the basin-wide history of Quaternary fluvial development (sediment deposition, terrace formation, and down-cutting) in the Amazon basin and how this landscape evolution articulates with our reconstructed history of climatic change in the adjacent highlands (the Altiplano) and with paleoclimate and sea level records from Brazilian coastal regions and the oceans. This work may well be a main focus of my research for some time to come.



UFPA Class Field Trip to Majaro Island, Brazil (December 2006)



ECU GEOLOGY ALUMNI SOCIETY

The ECU Geology Alumni Society (better known as ECU GAS) is an informal group of geology graduates and former students of geology whose purpose is to continue the traditions of fellowship and camaraderie which are such an important element of the ECU experience. Over the past few years we have gathered for leisurely field trips, and plan to continue hosting annual outings of interest to all. We are also dedicated to supporting the geology department through fund-raising assistance and helping graduates find employment by networking within the alumni organization. There are no fees or membership cards, we just request members to contribute a few bucks as needed to cover expenses for our gatherings and other endeavors.

Our goal this year is to develop an ECU GAS website, which will serve as a forum, archive, and resource for our alumni. We anticipate the website will also serve as a clearinghouse to update the contact information of ECU Geology graduates. Ever thought “I wonder whatever happened to.....”? Hopefully the website will facilitate finding and communicating with our fellow alums. A link to this website will be posted on the ECU Geological Sciences Department homepage, so keep an eye out for this newest addition.

I'm sure each of you will find the planned ECU Centennial/Geological Sciences 40th Anniversary symposium of great interest, and I hope to see you there. You will be impressed with not only the new department facilities, but also with the incredible quality and quantity of research they are conducting. It makes you doubly proud to be a graduate of such an impressive educational institution.

I also encourage you to attend the May 4 pig-picking, which has traditionally been a great opportunity for alumni to renew old friendships, reflect on the "Good Old Days" and to meet the newest generation of ECU geology professionals. Please make plans now, as the GAS wishes to get as many alumni together as possible for a Centennial group picture (for posterity's sake), and to better organize our ranks. If you would like to get on the GAS email list, or would like to actively participate in the management of the GAS, please forward your information to Ron Crowson (rcrowson@nc.rr.com) or call him at 919-233-5858.

As chairman of the GAS fundraising committee, I personally ask you to demonstrate your Pirate pride by sending a financial contribution to the ECU Geological Sciences Department. With this being ECU's 100th year, we hope you will be sure to contribute to the ECU Geology Alumni Century Fund. Our goal is to reach at least \$250,000. This fund is unique, as it will allow the department to allocate spending the funds on whatever it deems necessary, without interference from administrative restrictions. Donations and pledges of \$1000 or more will automatically gain you the distinction of becoming a "Centurion" by the GAS.

We look forward to seeing you in Greenville!

Scott Hartness,
Chairman, GAS Fundraising Committee (shartness@suddenlink.net)

Contributors to Geology Alumni Century Fund, Geological Sciences Department Fund and C.Q. Brown Scholarship Fund for 2005-06

Ed Yopp	Ron Crowsen	John Hinnant	C.Q. Brown	Scott Snyder
James Coble	Scott Hartness	Mark Katrosh	Wells Barker	Cris Capps
Holly Land	Mark Williams	Jack Moody	Jack E. Beverly	James Harrison
Newmont Mining Corp.	Sigma Gamma Epsilon	Robert Ross Allen	Steve Richard and Sue Gurley	Geo Solutions Limited Inc.

Expenditures from Foundation Accounts 2005-06

Amanda Martin (CQB Scholarship recipient)	\$500.00
City Hotel (lodging for invited speaker)	\$137.80
Stanley Riggs (Graduate Advancement Council reception)	\$272.68
Univ. Printing & Graphics (newsletter)	\$222.00
Clay McCoy & Michael Dail (travel)	\$831.31
Kolt Johnson (travel-SEGSA)	\$ 71.50
Curtis Smith (travel-SEGSA)	\$439.50
Jennifer Foley (travel-SEGSA)	\$133.00
Jeb Rosenberger (travel-SEGSA)	\$319.33
David Twamley (travel-SEGSA)	\$118.00
Erin Must (travel-SEGSA)	\$321.63
Michael O'Driscoll (entertain invited speakers)	\$ 34.00
City Hotel (lodging for invited speakers)	\$250.16
Michael O'Driscoll (entertain invited speaker)	\$ 13.14
Delaware Hospice (memorial contribution)	\$100.00
Michael O'Driscoll (entertain invited speakers)	\$ 14.70
Michael O'Driscoll (entertain invited speakers)	\$ 10.68
Stephen Culver (Fall Graduation reception & Dept. Christmas party)	\$612.36
Erin Hemric (travel national GSA)	\$623.40
Michael Buckner (travel AAPG)	\$1000.00
First United Methodist Church (memorial contribution)	\$100.00
Michael O'Driscoll (entertain invited speaker)	\$ 16.03
Stephen Culver (Dept. "Welcome Back" luncheon)	\$128.96
American Geological Inst. (Academic Associate Member)	\$150.00

DEPARTMENT NEWS



Steve Culver

During the past year, four of the graduate students whom I advise or coadvise have graduated. This is what being a professor is all about! It's a great feeling seeing students mature as geologists during their time at ECU. Three of them have joined environmental consulting companies and one is going on to do a PhD. Right now I'm working with another six MS

students and two PhD students and so I can't retire yet.

My research has jumped around both in geography and subdiscipline of geology over the past year. Most of my research time, as usual, has been spent on my joint research with many colleagues on coastal North Carolina. I had a very enjoyable week at the Outer Banks last May, dodging mosquitos and snakes in the back barrier marshes, and several very illuminating meetings at the NCGS in Raleigh where Riggs and Mallinson and I get to work on and argue over coastal plain cores with colleagues from the survey. My work with colleagues at the Smithsonian on diversity patterns in foraminifera dealt with the Gulf of Mexico, the Atlantic shelf from Newfoundland to Florida, and the Atlantic deep ocean from the equator to Antarctica. And I even had an opportunity to remember my geology from 25 years ago when I worked with colleagues in Houston and Australia on Archean to late Precambrian geology of Senegal, Guinea, Sierra Leone and Liberia.

This variety really keeps me interested in what I do. Add to that teaching undergraduate courses and managing the department, and I never have a dull moment. I'm looking forward to next year already!



Terri Woods

This past year saw virtually all my research time go towards finishing the pre-construction reports for the proposed Reverse Osmosis Water-Treatment Plants to be completed in Pasquotank and Currituck Counties by spring, 2009. Nutrient analysis of the water chemistry for the 18 sites sampled bi-weekly from July, 2005 to June, 2006 is finished, but we still have some major element

analyses to be completed for some samples collected in Spring, 2006. However, the results we have so far suggest that it might not be necessary to analyze all these to establish the pre-construction conditions at the proposed sites. Roger Rulifson, his Ph.D. student and I have completed the final pre-construction reports for the counties and presented the results to various constituencies involved in the permitting process. Our results suggest that the impact of effluent on local water quality and biota at the proposed sites should not be widespread or significant so it is likely that the permits will be granted.

In terms of science education in the public schools, I am continuing my involvement in Science Olympiad by organizing 5 teams of graduate students to design and administer 5 events at the Regional Tournament held here at ECU in early March. This year, however, Geology will also use the regional tournament as a significant recruiting opportunity for our undergrad program. Besides serving as event leaders we will also give tours of our facilities in Flanagan and Graham and have a "Plate Tectonics" discovery activity for all the student competitors to participate in. We'll enclose lists of latitudes/longitudes for both a major earthquake and volcano for each member of each middle- and high-school team in their registration packets. We'll also enclose an explanation of the activity and an invitation to each of them to stop by our world map and place "sticky dots" at the location of their own personal volcano and earthquake. This big map of the world will be posted in the General Classroom Building where most of the tournament events are held. By the end of the day we should have lots of colored dots indicating the "Pacific Ring of Fire", mid-ocean ridge system, and other plate boundaries. This way they'll get to see "Science In Action" and gain an understanding of how geologists first determined the locations of plate boundaries. I'll have Geology students monitoring this map all day passing out dots and helping competitors locate their features. We'll also give away pencils engraved with our department name and web address to anyone who shows up to plot a feature (as well as anyone else who stops by). When they stop by to plot their features we'll also sign them up to get tours of our facilities.

Finally, this was my first year as a member of the Advisory Board for the Student Science Enrichment Grant Program funded by the Burroughs Wellcome Fund. I thoroughly enjoyed the experience. The Board reviewed proposals from educators to enhance science education in the NC public schools and awarded more than \$2,000,000 worth of grants for some very exciting projects



Terri Woods and Brad Panneton collecting samples.

Last, but not least - my teaching activities. I have completed getting my lecture notes for Physical Geology and Oceanography up on my website and have been working on preparing Powerpoint presentations that include the figures for these lectures. If you ever need a quick review of basic topics in geology and oceanography, you can check these out.



Mike O'Driscoll

This summer we had a big surprise, twins that arrived two months early! They are doing well and their favorite hobbies are eating and sleeping. In between feedings, my efforts have been focused on several new research projects, advising students, and teaching Environmental Geology and Drainage Basin Hydrology courses. We are also

working on developing a new Environmental Geology Certificate Program. This summer we purchased a truck-mounted Geoprobe and OhmMapper electrical resistivity mapper and have been using both in a wide variety of Coastal Plain and barrier island settings to collect sediment cores and image subsurface electrical properties up to approximately 50 feet deep. Currently, I am involved in several research projects focused on how Coastal Plain and Appalachian Mountain rivers and shallow groundwater systems interact and respond to land-use changes. These projects include:

- Ground penetrating radar to characterize the sediments underlying the Tar River
- Integrated LiDAR and geoelectrical mapping of the surficial aquifer
- Urban land-use effects on the hydrology of Coastal Plain watersheds
- Septic system effects on Coastal Plain groundwater
- Stormwater runoff effects on nitrogen transport to the Tar River
- Quantifying stormwater runoff along Coastal Plain rivers using stable isotopes
- Nitrogen flux and transformations from Appalachian Mountain springs

Hope all is well and you have a great year!



Jim Watson

Hi Folks! Well, I'm now in my second year in the Flanagan building, and, believe it or not, I actually like it better than Terrania. We've had the good fortune to acquire an excellent facility just at a time when growth in the department has required it. We've also had the good fortune to get a second tech position, and have hired John Woods, a guy that I've been going to for years for advice on how to do things. John is top-notch, truly versatile guy, and his contributions are being felt in many areas, from marine and land-based field work to computers and instrumentation.

We had an eventful year of field work, including a week of Outer Banks work in May, involving vibracoring, GPR and peat sampling. Then in June, Mike O'Driscoll and I went to Salina, Kansas to pick the department's new Geoprobe. We were able to mount the unit on one of our existing pickup trucks, and it has greatly expanded our coring abilities on land. Its use has surpassed our expectations. We thought we would be taking it off the truck for the winter, but Pete Parham is forging ahead with his plan unravel the mysteries of the Pleistocene, so, along with projects of Dr. O'Driscoll and Dr. Corbett, we're putting this new asset to good and extensive use.

In October, we got back into vibracoring on Pamlico Sound, after a lengthy hiatus from marine vibracoring, hot on the trail of some very interesting Holocene record. Sadly, the venerable R/V Nitro had been taken out of commission by our new campus boat pool, and sold off to the division of Marine Fisheries. However, this same boat pool has come up with a brand new 30 foot aluminum barge, which we were able to rig as our new vibracoring vessel. It has proven ably up to the task.

Later that month, I attended GSA in Philadelphia. A few weeks after that, Dr. Woods and I, along with Stan Riggs and Dorothea Ames, attended the North Carolina Science Teachers Association annual meeting in Greensboro, where we set up a booth to promote ECU Geological Sciences to our state's science teachers. The effort was well received, and we look forward to following up in several ways. If you are currently working in the teaching profession, or know someone who is, I would encourage you to send me an email at watsonj@ecu.edu, and we'll incorporate you into our teacher outreach program. And if you have any students who might be interested in majoring in Geology, encourage them to check out ECU. We'll be glad to show them around the department during their campus visit.

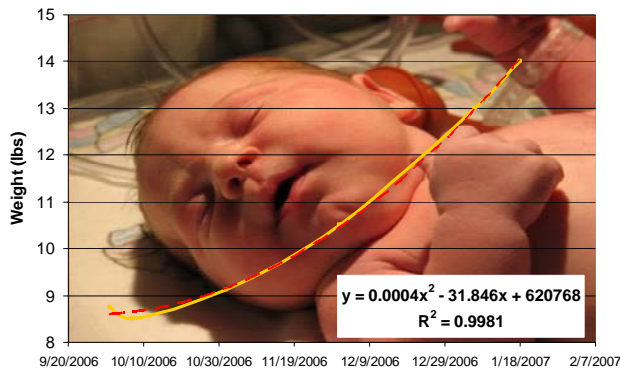
I've really enjoyed working with our present group of graduate students and faculty, and am looking forward to another interesting year. If you're in the area, come look me up, and I'll show you our new facilities.



J.P. Walsh

It is hard to believe another year has passed at ECU. It has been an exciting year on both professional and personal fronts. Professionally, there has been a lot of activity in field, lab, and office. I am advising or co-advising a number of MS students who are involved in a diversity of projects in different field areas; this has been challenging and exciting. Ben Sumners and Reanna

Camp are working on an NSF project examining sedimentation on the continental slope of New Zealand. This research is part of a bigger effort to understand solute and sediment transport from mountain top to ocean floor in dispersal systems. Sophie Dillard, Kat Marciniak, Arianna Perkins, and Lisa Cowart are each examining different aspects of coastal dynamics in North Carolina as part of the USGS Co-Operative Project and a NOAA-funded project focused on the impacts of sea-level rise. Katie Ryan is investigating sedimentation in a coral reef environment of southwestern Puerto Rico. Additionally, I am just starting research interaction with two CRM Ph.D. students, Jack Collins and Dave VanDeVelde. Finally, Reide Corbett, Dave Mallinson and I are trying to get publications completed on sediment dynamics of the Mississippi continental margin associated with recent hurricane activity. Papers have recently come out in EOS and the Sedimentary Record. I taught Sedimentology again this fall to a nice group and am teaching Land-Sea Interaction this spring. I must admit I never realized how difficult it is to be a good teacher; I'm still working at it. Personally, my wife, Denise, and I were proud to announce the birth of our healthy baby girl, Emma, on October 1, 2006. She entered the world at 8 lbs 12 oz and is growing fast. In fact, her growth rate is clearly non-linear (Fig. 1), and this is a little scary for her new father!





Reide Corbett

Happy 2007! This is my first academic year as a tenured associate professor. I can honestly tell you, "It doesn't feel too much different!" Wasn't I suppose to just sit back and relax...yeah right. However, I do feel a little weight off my shoulders, but I am just as motivated to continue a very active research program and teaching whoever will listen! This year has certainly not been different than

any of the previous. I had two research cruises, one off of North Carolina and the other the north island of New Zealand. Both of them had some fairly rough weather, but nothing beats 30 foot seas for three days in the South Pacific! What a ride...just ask some of the students that couldn't hold there meals down! My research over the last year has focused on sediment dynamics in estuarine systems and groundwater discharge on the continental shelf. Our cruise off of North Carolina was collecting some preliminary data on the role of paleo-channels in enhancing groundwater/surface water interactions. This is a work in progress and I hope to seek additional funds. We have continued our work in the estuaries of North Carolina and the continental shelf of Louisiana. I am always excited to talk about our work, so if you are interested don't hesitate asking. Personally, I have enjoyed spending time with my family and watching my boys grow like weeds. We recently purchased an older (1975) Cape Dory sailboat. I grew up sailing the waters of NC and look forward to doing the same with my family and friends. Have a great year and hope to see you at the spring Pig Pickin'.



Eco Geology faculty and students following GW paleochannel cruise, March 2006.



David Lawrence

During last summer I took my dream geology vacation – Sally and I stayed in the traffic-free village of Gimmelwald in the Berner Oberland of Switzerland, directly across the Lauterbrunnen valley from the Jungfrau, the Monch, and the Eiger, with Helvetic nappes exposed in the cliff faces (along with the sadly melting glaciers). The Swiss of course do not put plastic flamingos in their

gardens, but they do artfully place numerous plastic and pottery gnomes all over. Thus I think of the vacation as the nappes and gnomes trip. As well as sampling Rosti in the local restaurant, I also just had to order the James Bond breakfast in the revolving restaurant at the top of the Schilthorn.

I have my article on the Gold Hill shear zone still in review, but after the latest re-write I am positive it will be published, so it is finally almost “in press.” I am continuing my work in the Great Falls, SC area, where I am carefully following the Gayden’s Creek fault, which seems to have both normal and dextral displacement, with the Carolina terrane volcanics down to the north relative to Charlotte terrane metamorphic rocks to the south in the foot wall. This is a pretty different relationship from that usually reported for the terrane boundary. To add interest to the area, a company has just opened one of the largest atv parks in the country, near the Big Wateree Creek. There are lots of people on atv’s and dirt bikes getting very muddy; maybe they will make some new outcrops by vehicle erosion.

During the year I taught Dynamic Earth and Structural Geology in the fall, and Geophysics and Field Methods in the spring. I also will probably teach in the Gunnison part of Field Camp this summer.



Dare Merritt

I wanted to say hello to everyone and let you know I’m still here working away. I don’t have any exciting research to share but I do have a husband of 31 years, a married son living in Las Vegas (don’t ask-it stays in Vegas), a daughter that went back to school this year to make a career change and a 90 year-old father that keep life very interesting outside the department.



Richard Mauger

For the academic year 2006-2007, I will have taught Oceanography, Dynamic Earth, Manuscripts, and the Geologic Component of Environmental Science, an advanced course in environmental geology.

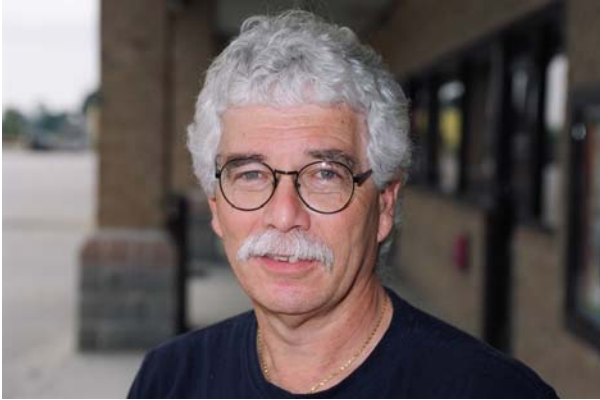
I gave a poster presentation on my Chihuahua field mapping project at GSA in Philadelphia and one at Southeastern GSA in Knoxville on the rare mineral thaumasite that I positively identified in my Chihuahua samples. This mineral is fairly rare in a geologic context, but is of great interest in the cement/concrete industry because thaumasite, a product of sulfate attack on concretes, greatly weakens the concrete. The Chihuahua thaumasite is one of many relatively rare calcium silicate hydrates and calcium aluminum silicate hydrates that formed from a block of limestone that got carried up into a volcanic vent zone and underwent thermal decarbonation at elevated temperatures followed by hydration at low temperatures.

I've been working on another unusual mineral, one I believe to be a ferric thomsonite, from this same rock mass. Normal thomsonite is an aluminous zeolite in which Si and Al occupy roughly equal numbers of tetrahedral sites in the zeolite framework structure. In this material, up to about five percent of the tetrahedral sites are occupied by ferric iron (Fe^{3+}), imparting a pale to deep yellow or orange-yellow color to the mineral in thin section. I accumulated enough sample for needed analyses after endless days of separating little white grains from the little yellow-orange ones by handpicking. An X-ray powder diffraction pattern confirmed the thomsonite identification, electron microprobe analyses confirmed that the chemical composition was consistent with the mineral being a ferric zeolite, and a Mossbauer analysis confirmed that the iron is present as ferric ion. Synthetic zeolites with very small ferric iron contents have been synthesized in the lab, but to my knowledge, this is the first known occurrence of a natural ferric zeolite.

I've also been working hard on my Hunters Hill-Italian Mountain, Colorado project and have the geologic map, data tables, and two manuscripts ready for review by two geologists in the U. S. Geological Survey with extensive knowledge of these areas.

Last August, I spent four days in the field to clear up some contradictory relationships in the Star Mine Basin along the easternmost portion of the area covered by my mapping. Older literature for this area includes references to an upside-down lower limb of a recumbent syncline, extensive overturning, and to inverted stratigraphy. These descriptions all have some elements of truth. Along a specific ridge, one can observe early Proterozoic granite above the Cambrian Sawatch Sandstone with a quartz pebble conglomerate just "below" the nonconformity. The remainder of the ridge consists of Paleozoic strata up to and including the Pennsylvanian Belden Formation in their correct

order but all overturned with younger beds dipping (45° to 55°) toward older beds. This observation has helped to resurrect the "roller bearing concept" in tectonics that Dr. Lawrence had considered as a possible explanation for similar overturned blocks of crystalline basement rocks, the basal Cambrian nonconformity, and "underlying" Paleozoic strata that he had seen in nearby areas.



Stephen B. Harper

On the teaching front, my typical teaching semester still includes 2 sections of Dynamic Earth (Geology 1500) and 1 section of Environmental Geology (Geology 1700) or vice-versa. As has been the case since I first arrived in the Geology Department in 1992, part of my teaching duties still include training and mentoring our Graduate Teaching Assistants to teach Geology

1501 labs. Our departmental curriculum still has me teaching Geomorphology (Geology 5000-5001) every 2 years including this spring semester.

I am still the Director of the North Carolina Summer Geology Field Course. I will be in the teaching rotation for the Geology Field Course in New Mexico and Colorado in May and June 2007 for the 9th straight year and will be teaching at the Abiquiu, San Ysidro, and Taos-Sipapu, NM sites and then travel with the students up to Gunnison, CO where Dr. Lawrence will lead the Upper Spring Creek Mapping Exercise. We are incorporating a new mapping exercise this year at San Ysidro, NM. as well as taking an initial 2-day excursion to Carlsbad Caverns and the Guadalupe Mountains in southeast NM before we start our first exercise at Abiquiu, NM. For the 2007 field course, our enrollment in the Geology Field Course looks to be in the 12 to 18 student range. Currently, these students hail from ECU, App State, UT-Chattanooga, JMU, Clemson, and perhaps UNC-W, NCSU, and UNC-CH. This will be the 43rd year of the North Carolina Summer Geology Field Course.

In November I received a \$4000 travel grant from the Asian Studies to Program to travel to Asia in the summer of 2007. Hence, after I close the 2007 Field Course, I will be traveling to Southeast Asia and China. The travel grant is to support my efforts to incorporate specific case studies on geo-hazards and geo-resource problems in Asian countries into my Environmental Geology Course in the Fall Semester of 2007.

Although I am still studying my Lonely Planets to plan my excursion, I plan to make stops in Thailand, Burma, Vietnam, Cambodia, Laos, Singapore, China, and Hong Kong. I hope to focus specifically on environmental problems in the Mekong River Basin in southwest China, Laos, Thailand, and Vietnam. Also, I will be carrying a couple Nikon

FM3A's with a bevy of lenses and large supply of film to capture a lot of Asian landscapes to show in my classes at ECU.

Because I did not get to travel to Asia last summer, I will also visit my beloved tower karst landscapes in Krabi and Phang Nga Provinces in Thailand and Halong Bay, Vietnam.



Richard Spruill

Greetings from the Spruill Family! Things are going well down on the Spruill Farm. Lisa, Alex, and Anna are as busy as ever, and school is the major “consumer”. Alex graduates this year, and Anna will be a sophomore at D H Conley High School. Lisa continues to volunteer her time to worthy causes like the Safe Communities Coalition and the Conley Parent Teacher Association.

I am consumed by my involvement in Hydrogeology! Each year I continue to be amazed at how many interesting and challenging projects are unfolding in the Coastal Plain of North Carolina, and beyond. My most enjoyable project has been the evaluation of the resource potential of the aquifers beneath Hilton Head Island, SC.

For the past few years, I have been teaching Introductory Geology, Mineralogy/Petrology, and Groundwater Hydrogeology. Teaching still fascinates me, and I find it pleasurable even after all the years in the classroom. I am in my third year as a member of the North Carolina Board for Licensing of Geologists, and this year I assumed the Chairmanship of the Board. Board membership is a lot of work. My fellow Board members are great people, and they clearly have the best interest of the Geologic professions at heart. I hope that you are a licensed Geologist in NC, or your home state, and that you will continue to value the licensure process. Along with my Board membership, I have immersed myself in the National Association of State Boards for Licensing of Geologists (ASBOG), and my efforts have been focused on the ASBOG Exam. My emphasis has been on evaluation of the exam in terms of its applicability to the educational and practice aspects of the profession. I would love to hear from any of you with respect to your thoughts and concerns regarding the exam and the licensing process.

Still collecting and restoring antique John Deere and International tractors!!! We hope to see you at the annual Pig Pick'n at our place this Spring – find details in this Newsletter.

I would love to hear from you about what you and your families are doing. My e-mail address is rkspuill@earthlink.net, and home phone is 252-758-4275.



Stanley R. Riggs

As I complete my 40th year in the ECU Geology Department, I look around me and smile—things are great and life is good! I take great pleasure in still being a part of the best little program within the University. The Department is very healthy, has excellent leadership, awesome new young faculty, great students, and even an administration that is in tune with the Department and very

responsive and supportive of our program. All of you alumni can be extremely proud of your alma mater.

I am still actively involved in the ECU/USGS/NCGS North Carolina Coastal Geology Cooperative Program as we wind down our 7th year with this exciting research program. This program dealt with the origin and evolutionary development of the NE NC coastal system during the Quaternary glacial and interglacial episodes. Since this is the last year, our research crew has spent a lot of time this past year writing the new proposal for Phase II. Consequently, Steve Culver and I have spent many trips to Raleigh, Washington DC, and Asheville to lay the groundwork for funding this new program. We succeeded and were doing great up until Nov. 7th when “our man in DC” who was carrying the torch for us, was soundly defeated in the election—our funding crashed and burned! However, the sun did come up the next day and Steve and I are back on the road starting all over again—I sure get tired of having to play this \$ game! But I guess it is worth it in the end. The Phase II program is titled Coastal Hazards: Implications of Climate Change, Sea-Level Rise, and Storms and will include researchers from the departments of Biology, Economics, Sociology, Coastal Resource Management, Center for Natural Hazard Research, and Recreation and Leisure Studies. This research program continues to be very exciting and scientifically productive. Wish us some good luck during the coming months as we tangle with Congress.

The NC State Legislature Commission on Climate Change, of which I am a member, has been meeting for a year now. What an incredible change in a year's time. The public has gone from a so what attitude to front burner. The Commission has been a real learning experience for me as we try to educate the legislators about our earth, its resources, and dynamic processes. NC might just get their act together and become a leader in the SE, if not nationally. Of course, all of our coastal research here at ECU is extremely relevant and makes ECU one of the main leaders in the state concerning global climate change, sea-level rise, and storm dynamics, and water resources. This is not only a case of being in the right place at the right time, but being there with the backup science that we have been developing for many decades now. And many of you, our former undergraduate and graduate students were extremely important parts in helping the Dept of Geology, ECU, and the State of NC to get where we are. Those of you who have done theses on our coastal system produced major pieces of the puzzle that we continue to build upon—each of you can feel good about your contributions. The Commission is now to the point

where we will begin to develop critical legislation to help the State and its citizens 1) better manage the human activities that are apparently impacting global climate change; 2) deal with the potential consequences of global climate change on the citizens, natural resources, and economy of the State; and 3) take advantage of economic opportunities that may result from global climate change and the emerging carbon market.

In addition, I continue to be involved in numerous State and Federal programs. For example, I have been helping with the writing of a national policy for global climate change with the U.S. Geological Survey, Environmental Protection Agency, and National Oceanographic and Atmospheric Administration. I am on the Outer Banks Task Force's Science Panel working with the NC Dept. of Transportation, Cape Hatteras National Seashore, Pea Island National Wildlife Refuge, and local communities concerning the future of NC Highway 12 and the Oregon Inlet Bridge, which is in the process of slow-motion collapse. In addition, the work on the Science Panel for the Division of Coastal Management has generated a set of sediment criteria for beach nourishment sands—no more rock and mud on our beaches! As well as totally redefining the inlet hazard zone. We are now getting ready to tackle the hardening of estuarine shorelines which is totally out of control, particularly in light of our new data on rates of sea-level rise in coastal NC.

My research associate, Dorothea Ames, and I now have finished the fifth book in our series. The ones that are done include the following. Several others are in various stages of completion—hopefully they will be done by next year's newsletter.

1. Riggs and Ames. 2003. Drowning the North Carolina Coast: Sea-Level Rise and Estuarine Dynamics. NC Sea Grant College Program, Raleigh, NC, Pub. No. UNC-SG-03-04, 152 p.
2. Riggs and Ames. In press. Effect of Storms on Barrier Island Dynamics, 1960-2001, Core Banks, Cape Lookout National Seashore, North Carolina. U.S. Geological Survey Scientific Investigations Report 2006-XXXX, 120 p.
3. Riggs and Ames. In review. Geologic Evolution of the Lower Roanoke River and Albemarle Sound Drainage System in Response to Climate Change and Sea-Level Rise. U.S. Geological Survey Scientific Investigations Report 2006-XXXX, 169 p.
4. Riggs and Ames. In review. Part I: Barrier island model utilized for the geomorphic mapping of the North Carolina Outer Banks. U.S. Geological Survey Scientific Investigations Report 2007-XXXX.
5. Ames and Riggs. In review. Part II: Geomorphic mapping of the North Carolina Outer Banks. U.S. Geological Survey Scientific Investigations Report 2007-XXXX.

To keep up with the ECU-USGS-NCGS research program, visit both the ECU geology and the USGS websites—some of our progress reports are now on the ECU website (www.ecu.edu/geology/coastal.html; <http://woodshole.er.usgs.gov/project-pages/northcarolina/>). We always look forward to hearing from each of you, or better yet, come out in the field with us—get your feet muddy and your gills wet before they permanently dry out!

Keep your eyes tuned to UNC-TV (the NC Public Broadcasting Service) for an upcoming program on Global Climate Change in NC that will be shown sometime in mid-March (I think). It will be on the series called “Exploring North Carolina” with Tom Earnhardt. This particular program features yours truly and Bill Schleisinger (Duke Univ) and builds a lot on the geologic evidence for climate and sea level change in NC. The show is initially shown Thursday evening, and again on Friday and Sunday evenings.

Cheers.



Don Neal

Teaching historical geology and stratigraphy, I deal a lot with time. The year since the last newsletter seems to have passed in record time and here we are again with another installment of the continuing saga of “No Time, No Money, But Having a Ball.” It has been 20 years since I published the “Oil and Gas Report on Lincoln, Logan and Mingo Counties” with the West Virginia

Geological and Economic Survey. Well, I am working on another oil and gas report for them on McDowell, Wyoming and Raleigh counties. In the process I am slowly learning how to manipulate ArcGIS to create maps and a little about coalbed methane, a new twist in the fuels industry and a hot new player in the three counties on which I am reporting. It is always good to learn new stuff even if you go into it kicking and screaming. Erin Must finished her M.S. last summer with a thesis on the characteristics of the Berea Sandstone from an old oil field in southern West Virginia. She was a pleasure to work with and is now gainfully employed with an environmental firm in Raleigh.

I have been teaching a lot of lower level courses...Dynamic Earth and Earth and Life Through Time...otherwise known as physical and historical geology. My stratigraphy class this semester has a good bunch of students although it is just getting started. I offered carbonate petrology last semester but didn't have enough students to make it go. Students aren't interested in rocks anymore...go figure.

Service is still a high priority of mine. I continue to advise undergraduate majors and a few students who came in thinking they want to major in geology. Some make it and others fall by the wayside. Some things never change. I am still editing *The Compass* of Sigma Gamma Epsilon and still looking for manuscripts. Also, I continue in my role as Secretary-Treasurer of the Southeastern Section of GSA. We have a large section meeting coming up in late March in Savannah and a lot of the department will be in attendance. Join us if you can spare the time.

Four years ago I helped my sister the pastry chef open up a coffee shop here in Greenville. This past summer we moved locations and shifted emphasis from a bake shop to more of a retail shop specializing in tea, coffee and chocolate. It has been an experience. I help out whenever I can. If you are in town drop by LaLee's Epicurean Delights near the Harris Teeter on Charles and 14th.

All the best.



Catherine Rigsby

It's been two years since I had any news in this newsletter! Even though 2005-2006 was almost entirely consumed by my duties as Chair of the Faculty, I did managed to teach a graduate course and do bit of research. In the summer (2005) Erin Hemric and I traveled to the western Amazon basin. We did field work in the Madre de Dios River (eastern Peru) that led to Erin's M.S. thesis (she should officially graduate this semester). It was an exciting time! We spent two weeks traveling up and down the river in a long wooden boat (check out the photo, below), camping out on point bars, and studying the sedimentology and geomorphology of the Quaternary fluvial deposits and terraces exposed along the river banks. It was a good project and I am currently working with colleagues from South America to use the data Erin and I gathered to build a larger-scale research project to study Quaternary climate and landscape evolution in the Amazon basin. We are interested in knowing how the record of climate and landscape evolution in the Amazon basin articulates with that of the adjacent highlands to the east (the Altiplano) and the Atlantic basin to the west.

In the Fall (2005), I taught Quaternary Environments and Global Change. It was a fun class and I'm pretty sure the students took the prize for "most creative PowerPoint

presentations in a graduate seminar.” One presentation even included a music video! Yes, it was actually (in a warped kind of way) related to the topic at hand.

This year, I was off campus during the Fall semester (2006). I spent most of the semester in Belem, Brazil, as a Fulbright Scholar (see the story about that elsewhere in this newsletter). And, I spent September in NE Tibet, doing field work for on my NSF-funded project in the Lake Qinghai basin. Some photos from that field work are on-line (<http://core.ecu.edu/geology/Rigsbyc/images/LakeQinghaiBasin2006/index.html>).

After spending September in Tibet, I went back to Brazil to continue my Fulbright. I just returned to NC and ECU in January and, as of this writing, I’m not yet quite acclimated back into life in Greenville. But, its good to be back and I look forward getting back into the classroom in the Fall and continuing to expand my research program both here and abroad. I hope everyone is doing well. Keep sending news!



M.S. student Erin Hemric on the banks of the Madre de Dios River in the Peruvian Amazon – June 2005



David Mallison

All of you ECU geology alumni out there should really see this department now. I'm absolutely amazed, and you would be too, at how this department has grown in size, facilities, and recognition in recent years. Great things are happening here! New labs, new equipment, new research endeavors! It's a great time to be a Pirate Geologist.

As for myself, I'm trying to do my part. During the previous year I collaborated with quite a few folks here in the department and in other departments and universities and agencies. These investigations range from ground penetrating radar (GPR) surveys on the Outer Banks, and on various paleoshoreline features in North Carolina and Florida, to multibeam sonar surveys in various locations. The research into the Quaternary stratigraphy of eastern NC still continues (it's a daunting challenge), but several of us are putting the final touches on the litho-bio-chrono-seismic-stratigraphic framework, and planning for future proposals. Our understanding of the barrier islands continues to expand with recent work to define the location, characteristics, and ages of ancient (undocumented) inlets, which we initially discovered with the GPR. We've been expanding our ability to date many of these sediments using a remarkable chronometric technique called optically stimulated luminescence. It's really pushing back the frontiers of our research. Our graduate students, you understand, are doing much of the work, and are really learning cutting-edge research techniques. During the fall semester, I teamed up with researchers from McMaster University in an investigation of paleoshoreline features in Florida, including around Cape Canaveral, in an effort to put more points on the Plio-Pleistocene sea-level curve. Not only did we collect some great data in some beautiful Florida backcountry, but we saw the night shuttle launch up close! That was unforgettable.

As far as teaching goes, I was kept busy with Coastal Processes last semester, in which we took a chilly field trip to the Outer Banks, along with a class from VIMS. This semester, I'm enjoying teaching Dynamic Earth, as well as a new course initiated by Dr. Bob Morrison, a Distinguished Research Professor from Chemistry. Dr. Morrison decided to initiate an Honors Seminar covering the broad spectrum of climate change (past and present). Somehow, I ended up taking the lead on this course, along with Scott Curtis of Geography. Between the three of us, we assembled what I think is an excellent course, with a great line-up of speakers, that will really enable students to understand the processes, controversies, and realities of climate change. This course is dubbed the Global Warming and Climate Change Honors Seminar and features lecturers from our own campus (including two distinguished Research Professors, our own Stan Riggs, and Bob Morrison), covering the multiple facets of environmental and societal impacts of climate change. In addition two very distinguished researchers will be giving lectures to the class, as well as open seminars to a general university audience. These include Bill Schlesinger from Duke's Nicholas School, and Kevin Trenberth, one of the leading

climate modelers from NC AR (National Center for Atmospheric Research) in Boulder, CO.



Scott Snyder

Scott continues in his role as Senior Associate Dean of Harriot College of Arts and Sciences. He now focuses on promoting research and the pursuit of external funding in support of research.

Dorothea Ames



John Woods





Hurricane Floyd, Associate Press, J. Scott Applewhite

Storms, Seafaring and Strata: A Symposium on the Natural and Human History of Eastern North Carolina

To celebrate the ECU Centennial and Geological Sciences 40th Anniversary

FREE and OPEN TO THE PUBLIC

Friday April 13th 10 AM - 5 PM

a reception at Ham's will follow from 5:30-7:30 PM

Multipurpose Room, Mendenhall Student Center (1st floor)

Synopsis: The symposium will be a series of presentations by several ECU faculty with time allowed for questions and discussion. Topics to be covered include (but not limited to): the history of the Atlantic Ocean, sea-level change, local geology, Native American and post-contact archeology, maritime history and Hurricane Floyd.

Parking: Spaces will be available at Parking & Transportation Services on 10th St. near Wendy's, a pass **MUST** be shown. A free pass can be obtained in advance from Dare Merritt, (Dept. of Geological Sciences, 101 Graham Building, ECU, 252-328-6360, merrittd@ecu.edu) or from Parking & Transportation Services for \$4.

Questions: Can be addressed to J.P. Walsh, (252) 328-5431, walshj@ecu.edu.



The White - de Bry map of 1590



Bill Heim ©1997

Carcharodon megalodon - Lee Creek — Yorktown Formation

44232

East Carolina University Foundation, Inc.
Thomas Harriot College of Arts and Sciences
Department of Geological Sciences

Yes, I would like to support the Geological Sciences!

Please use my gift for the following:

\$ _____ Geology Alumni Century Fund

\$ _____ Geological Sciences Fund

\$ _____ C.Q. Brown Scholarship

___ Check Enclosed (Payable to the ECU Foundation, Inc.)

___ Please charge my credit card

___ Mastercard

___ Visa

___ American Express

Card Number: _____

Expiration Date: _____

Name: _____

Address: _____

City: _____ St: _____ Zip: _____

Phone: _____

Email: _____

Cut out and mail to:
ECU Foundation, Inc.
2200 S. Charles Boulevard
Greenville, NC 27858