

Department of Geology
East Carolina University

Newsletter

Spring 2004

Dear Alumni,

There is nothing so constant as change and we demonstrated this again in the Geology Department over the past year. We have been busy recruiting two new, additional faculty and trying to manage the inevitable space reallocations as efficiently as possible.

I would like to welcome J. P. Walsh to the department. J. P. is a geological oceanographer with a PhD from the University of Washington and post-doctoral experience at Scripps Institution of Oceanography. He has a shared position (similar to Reide Corbett's) with CRM and so he will be heavily involved with advising PhD students in that program. J. P. joined us on January 8th, after a cross-continent drive, and he left us on January 9th for a two-month research cruise off Papua! I think this indicates that J. P. is a busy man.

As I write this message, we are about to start sifting through the applicants for another new position, in surface water hydrology. We hope to start that new professor in August. These two new positions give us a full complement of professors who will continue the department's commitment of providing a solid, broad, undergraduate education in geology whilst allowing emphasis of two areas that relate to our location on North Carolina's coastal plain, hydrology/environmental geology and coastal geology.

The refurbishment of Flanagan is on schedule and we should begin the move from the basement of the Old Cafeteria Building next January. As part of the redevelopment of Flanagan, Jim Watson has been working with several alumni to acquire several large rocks that will be hoisted by crane into the Flanagan courtyard to become the centerpiece of the new landscaping and the subject of Dave Lawrence's on-campus structural geology field trip.

The past year saw the founding the Geology Alumni Society, the first meeting of the Geology Alumni Council, and the establishment of the Century Fund. These are discussed more fully within the

newsletter but suffice to say, their intent is to broaden the interaction between alumni and their department.

In closing, I am saddened to report the passing of Dr. Jean Lowry who served the department well during its early years. We will miss Jean but her memory will live on by virtue to her bequest to the department. Scott Snyder and Jim Watson describe this generous gift within this newsletter. I would just like to say, "Thank you, Dr. Lowry, for helping build the department and for remembering us in such a traditional geologic manner."

Stephen J. Culver

J.P. Walsh
Joins Geology Department

Born in a New Jersey suburb of New York City, I developed an interest in geology and marine science from trips to the beach and mountains with my family. My engaging professors at Colgate University inspired me to obtain an undergraduate degree in geology, and a semester program with Sea Education Association strengthened my interest in oceanographic research. After college in 1995, I immediately began graduate school at the State University of New York, Stony Brook. My Masters research focused on the transport of sediment off the continental shelf in northern California. I moved with my MS advisor, Chuck Nittrouer, to the University of Washington in Seattle, WA where I completed my Ph.D. My doctoral research examined river-sediment accumulation in Papua New Guinea. I married my lovely wife, Denise Walsh, in October 2002. For the past two and a half years, I had a post-doctoral position at Scripps Institution of Oceanography working with Neal Driscoll in the Geosciences Research Division. This position gave me experience working with seismic-reflection and other geophysical equipment and data. This January, I became an Assistant Professor at East Carolina University. I am appointed jointly with the Department of Geology and Coastal Resources Management Program, and it is exciting to be a part of a talented team of faculty.

Generally, I am interested in how materials from land are dispersed and accumulate in the ocean. I use sediment characteristics, environmental measurements (including oceanographic, meteorological, and hydrologic data), and geophysical methods like seismic reflection to understand processes influencing the sedimentary record of continental margins. This research is important to examining the fate of pollutants and runoff, assessing carbon sinks for climate studies, quantifying natural resources like sand for beach nourishment, evaluating biological habitats, identifying and extracting petroleum, and protecting our nation's coastlines.

More specifically, here are some projects in which I am actively involved:

- 1) **Evolution of the Fly River subaqueous delta clinoform.** This research is using CHIRP seismic reflection, Jumbo Piston Coring, and modeling to understand the growth of a large sedimentary deposit on the continental shelf, i.e., a subaqueous delta clinoform, seaward of the Fly River. This research is based largely upon observations made by my doctoral research. It is funded by the Margins programs of the National Science Foundation and is in collaboration with Neal Driscoll, John Milliman, Rudy Slingerland, and others. A research cruise occurred this January through March. My wife and I spearheaded the development of a web site for the cruise and project (www.scripps.ucsd.edu/png). Please visit the site to learn about the work.
- 2) **Distribution, development, and preservation of channels on continental shelves.** This project examines the architecture and fill of channels on continental shelves. Although much of the focus is on data from the U.S. East Coast, the objective of the research is to ground truth models that will be globally applicable. The work is being conducted in collaboration with Neal Driscoll, James Syvitski, Scott Peckham, and Alan Howard and is funded by the Office of Naval Research.
- 3) **Terrestrial sediment accumulation on coral reefs.** The flux of sediment from land into the ocean has likely increased at many locations in the last few decades due to coastal development. This coupled with other stresses may have significant consequences for coral reefs. This project is quantifying the accumulation of land-derived materials at reefs near La Parguera, Puerto Rico. This work is being conducted in collaboration with Amos Winter, Richard Appledorn, and others and is part of the NOAA Coral Reef Ecosystem Studies - Caribbean program.

In Fond Memory of Jean Lowry

Dr. Elizabeth Jean Lowry passed away on November 16, 2003. She was a fixture in the Geology Department from its inception in 1967 until (and even after) her retirement in 1983. Jean came to ECU in 1957 as a member of the Geography Department. With a PhD in geology from Yale, it was only natural that she should come over from Geography as the first faculty member in the newly formed Geology Department being assembled by Dr. C. Q. Brown. In addition to her academic credentials, Jean was an avid spelunker. A little research reveals that many of the caves in Virginia were discovered and documented by J. Lowry.

Those of you who were fortunate enough to know Jean understand that she was that rarest of people - a genuine eccentric. I use the term "eccentric" in the most positive sense. It was always fun to have Jean along on any geological excursion, both because she could bring so much knowledge and because she always brought her unique perspectives and good sense of humor.

I would wager that everyone associated with the department from 1967 through 1983 has at least one great Jean Lowry story. Most of us have a long list of them! While many are humorous, some are quite touching. I remember Jean talking of her days as a graduate student in an academic discipline where, at the time she was enrolled, there simply were no women. She dealt with examples of gender bias that most of us would not have imagined to exist in academe into the mid 20th century. In her formal graduate-level lecture courses at Yale, the room was separated into two distinct segments by a portable divider. Jean sat on one side and all of the male students (the remainder of the class) sat on the other side. Attaining a PhD is hard enough under the best of circumstances. Imagine working toward your doctorate under the conditions that she endured!

Perhaps as an outgrowth of her own experiences, Jean often went out of her way to help students, particularly those whom she perceived to face cultural obstacles of any sort. Steve Harper recently shared with us an e-mail from a colleague, Dr. Yoshio Hara of Taisho University in Japan. Professor Hara was a geography student in the early 1980s who took Jean's geomorphology course. He writes: "It was my first semester in American Universities and she took care of me very kindly. She took us on a field trip to the Great lakes region and we attended the Binghamton Symposium together. Furthermore, she gave me a special flight to see the Carolina Bays as a Christmas gift. She was a great person. By my Japanese sense, I want to visit her grave when I come to Greenville next time." Jean obviously had a talent for touching student lives in the most profound ways.

However, the vast majority of recollections and stories about Jean are ones that bring a smile. One of my favorites has to do with Speedwell cave in Virginia. Speedwell is a two-level cave, and access from one level to the other is through the so-called funnel room. Aptly named, this room narrows progressively to a small opening through which one must wriggle to move from the upper to the lower level. The opening is small and, as most of you remember, Jean was a large woman. One group of students had a tape recorder as they explored Speedwell as part of a departmental field trip. As they worked through the funnel, the background chatter suddenly subsided and one student was clearly heard to say, "There's no "blinking" way Dr. Lowry ever got through this opening!" Alum Larry Coates has been through Speedwell with Jean, and he says that this student's viewpoint would at first seem logical. However, he says that Jean did make it through simply by keeping everything moving and slowly working down through the funnel that would seemingly deny access to one with her dimensions. Larry, who always had great affection for Jean, says fondly that this sight was truly amazing.

Jean's persona was such that she amazed us all at times. After her passing, we discovered that she had left a substantial sum to the department. Her gift will earn interest from which the department can fund student scholarships. However, in true Jean fashion, there was one stipulation in her bequest that astounded the people in Institutional Advancement (the group which handles the logistics of such gifts to the university). But it came to as no surprise to those of us in geology. Jean formally stipulates as a condition of her gift that the very first expenditure each year will be the purchase of a keg of beer for the annual geology department get-together.

So raise your glass to Jean Lowry, recall memorable moments that she gave to all of us, and pause for a moment to appreciate the wonderful gift she gave to us during life - the privilege of knowing such a genuine and unique person.

Scott Snyder

ECU GEOLOGY ALUMNI SOCIETY

The inaugural meeting of the ECU Geology Alumni Society (ECU GAS) was held October 11-12, 2003 at the Historic Vance Hotel in Statesville, NC. Approximately 25 alumni and faculty enjoyed a fun family-oriented weekend together, highlighted by a field trip to the North American Emerald mine in Hiddenite (photo at right). Needless to say, fine spirits and provender were consumed as well. If you did not receive an announcement, you were not alone. Apparently, the ECU Alumni Foundation had a very outdated mailing list, and most of our alumni never received the announcement. Our apologies, but we now have a mailing list that should assure that you receive future announcements. Those of us who were present had such a good time that we decided to hold this event annually on the first weekend of October. You will receive a mailer in advance so you can attend the next meeting!!

ECU GAS has two primary functions: to provide an opportunity for fellow alumni to gather annually for fellowship; and to support the ECU Geology Department by providing critically needed financial support. Those of us present at the October meeting decided to raise funds for a \$250,000 endowment for the department, called the "Geology Alumni Century Fund". This endowment will enable the department chairman to designate the use of the proceeds, as opposed to being a part of the department's "General Fund". Since ECU is approaching its centennial (hence, "Century Fund"), we thought it appropriate that each alumni gift at least \$100 per year until we reach our goal. Of course, you may donate whatever amount you please. The ECU Foundation, Inc. will charge a nominal fee to administer the investment. This endowment will solve multiple financial problems for the department. We must raise at least \$5000 the first year in order to meet the requirements of the East Carolina University Foundation. If less is raised then the account will be closed and the monies raised will revert to the department's "General Fund". Obviously, we do not want that to happen. Once we raise \$25,000, the Department Chair can recommend that it be used to create the endowment. So, what is our goal for this year?? We need at least \$5000, but should really shoot for \$25,000 to get the endowment started. So, please rush to your checkbook and write your check!! To reach our goal, the participation of each alumnus is critical. BE TRUE TO YOUR SCHOOL!!

Please send a check made out to the "Geology Alumni Century Fund" to: Department of Geology, East Carolina University, Greenville, NC 27858-4353

GEOLOGY ADVANCEMENT COUNCIL

The first meeting of this august group took place in early May 2003. We had a great and full day with a career workshop, a graduation and awards luncheon, followed by the Council's business meeting.

The career workshop played to a packed house of faculty, graduate and undergraduate students. The five talks were excellent and

their titles illustrate the breadth of experience that was passed on to our students.

Ron Crowson, "What is the difference between a geologist and a vacuum cleaner salesman?"

Mike Amsbaugh, "Spring source exploration, development, and utilization to support national spring water bottling operations."

Jerry Dominey, "Worldwide oil and gas exploration success: examples from the last 20 years."

Scott Hartness, "Plate tectonics to blue plate economics: your plan for personal success."

Pat Mallette, "Going for the gold-role of the geologist in the gold mining industry."

The workshop was such a success that we plan to hold another in May 2004.

The Council's business meeting approved the *Geology Advancement Council Charter* and then engaged in a free-wheeling discussion on how the Council could use their "influence and affluence" to further the cause of the Geology Department and its programs. Not surprisingly we came up with a "to-do" list whose major thrust was to attract new funds to support our students' scientific activities.

To this end we investigated the way in which alumni can fund graduate students to do research of interest to their companies. If any of you are interested in getting some work done for a reasonable price and one of our students getting a Masters degree in the process, then please contact me (culvers@mail.ecu.edu) and we can discuss how this can be arranged.

We also set up a new account called the *Century Fund*, whose title reflects the scale of annual donation we are looking for and also the upcoming Centennial of ECU in 2007. The accompanying article by Scott Hartness says a little more about this fund.

Scott and Ron Crowson were the leading lights in initiating a *Geology Alumni Society (GAS)*. This should not be confused with the *Geology Advancement Council (GAC)*. The former is strictly a for-fun organization and that was certainly the case with the Society's first event, a weekend field trip and social in the Piedmont during October 2003. Again, Scott Hartness describes the Society and its activities in an accompanying article.

The Advancement Council has gotten off to a good start. My thanks to Mike Amsbaugh, C.Q. Brown, Ron Crowson, Jerry Dominey, Scott Hartness, Pat Mallette and Scott Snyder for their efforts. And welcome to Steve Benton and Brent Chambers who joined the Council in the fall. If you are interested in joining the *GAC* or nominating someone for membership, please contact us.

C Q Brown Fund

Deposits

SGE

Sara Matyiko Ricci

Glaxo Smith Kline Matching Gift for Sara Ricci

Expenditures

Jason Jomp

Alumni Account

Deposits

Wells Barker

Scott Snyder

Chris and Lisa Corbett

Alan Pinnix and Lynn Sutton

Kevin Lincicum

Keil Schmidt

Daniel Pearson

Exxon Matching Gift for Daniel Pearson

Jamie Kirkpatrick

Robert Ross Allen

Ron Croson

Royalties, Dowdy Student Store

Chris Bergren

Charles Woodul III

Edward Yopp

Mark Williams

Harold Lynwood Dail

Douglas and Minda Whiteside

Neumont Mining Matching Gift for Pat Mallette

NCSU, reimbursement

Expenditures

Aramark	Workshop Lunch and Break	312.74
Renee Farabaugh	Denver GSA	606.00
Amy Caulder-Church	Denver GSA	606.05
S. Culver	Departmental Luncheon	134.82
Postage		30.00
S. Culver	Fall Graduation Reception	26.56
D. Merritt	Fall Graduation Reception	10.01
S. Culver	Departmental Christmas Party	370.00
AGI	Academic Associates for 2003	150.00
Postage		30.00
R. Corbett	Lunch with Visiting Speaker	11.77
James Frank	Benthic Habitats Symposium	376.52
D. Mallinson	Reception for candidate	90.95
D. Merritt	Spring Graduation Reception	17.42
S. Culver	Spring Graduation Reception	150.50
R. Corbett	Reception for candidate	163.25
R. Corbett	Lunch with visiting speaker	14.98
Weiqi Lin	Additional travel reimbursement	50.97
D. Lawrence	Reception for Candidate	79.64
Postage		111.00
Printing & Graphics	Copying Newsletter	136.50

Jason Jomp was selected to receive the C.Q. Brown Award for 2003. Jason entered the Geology program with most of his other courses completed and pursued three or four geology courses each semester. He graduated in Summer 2003 with a 3.933 GPA. Jason subsequently began work on a M.S. in Geology while working as a technician with the U.S.G.S. research program.

Faculty News

Richard Mauger

I continue to direct the geology field course and taught the Gunnison-Area, CO, projects last summer and will do so again this coming summer. I have made progress in research projects in Colorado and Mexico. In my Italian Mt-Hunter's Hill project, CO, scapolite from the contact metasomatic zone next to an Oligocene intrusive shows a Cl/Br wt ratio of 2 to 3 times seawater, showing that the metasomatizing brine was formed by dissolution of halite which is conveniently present in nearby Pennsylvanian-age evaporites. The mineral gehlenite has been identified as a major component of the volcanic vent-zone calcsilicate rock from Chihuahua, Mexico. This rock contains, among other minerals, a Zr-bearing garnet (kimzeyite) and an iron-bearing zeolite, ferric thomsonite.

In late March, I presented a poster session at the combined NE-SE GSA in Tysons Corner with the title DIVERSE MINERAL CLUMPS IN LATE PALEOZOIC MINETTE DIKES, CHARLOTTE AREA, NC; A LEGACY OF EXPLOSIVE, STEPWISE ASCENT FROM THE UPPER MANTLE.

Stanley R. Riggs

It has been four years since I taught my last undergraduate class, but I don't feel like I have ever left teaching. I still have a passel of graduate students that I work closely with on their thesis research as part of the ECU/USGS/NCGS North Carolina Coastal Geology Cooperative Program. This major research program deals with the origin and evolutionary development of the NE NC coastal system during the Quaternary glacial and interglacial episodes. This multiyear program involves about 20-25 ECU geology faculty, staff, and students, along with about 6 USGS and 3 NCGS personnel, and several faculty from the U of Delaware and Virginia Institute of Marine Science. We are now in our fourth year and have received funding and support from the US Geological Survey, US National Park Service, US Fish and Wildlife Service, US Army Corps of Engineers, NC Division of Coastal Management, NC Dept. of Transportation, NC Division of State Parks, and NC Sea Grant. The program continues to be very productive: 1) Eight papers concerning the results of this research will be presented at the SE/NE GSA meeting in Washington DC at the end of March; 2) The research program is sponsoring the annual Assateague Shore and Shelf Workshop at Manteo and Nags Head during the first weekend in April with ten presentations and a field trip through a portion of the Outer Banks; 3) One PhD and 6 MS theses have been completed to date on this project; 4) Two PhD and 6 MS theses are ongoing; 5) One book and 4 manuscripts have been published, with another 7 manuscripts presently in review; and 6) Given numerous workshops and lectures to the NC Dept. of Transportation, NC Division of Coastal Management, Cape Hatteras National Seashore, and Cape Lookout National Seashore. Last March we drilled 6 more deep core holes--we now have 14 between Kitty Hawk and Hatteras, with another 6 to 8 holes to be drilled during the first two weeks of March of 2004. These cores are being drilled on sites defined in the seismic and ground-penetrating radar data. Last summer's field program took us through southern Pamlico Sound and down the barrier islands from Oregon Inlet to Hatteras Inlet. This summer's field program will finish the work on the Hatteras Flats, then move into Core Sound and including the barriers islands from Ocracoke, south to Core Banks and Cape Lookout. This should keep our 19 person crew busy with many new challenges. The summer field crew will include 6 geology faculty and staff, 7 of our graduate students, 4 senior personnel from the USGS--Woods Hole, and a senior researcher and student from England. In addition, I have been giving an untold number (I don't have to keep count any more!) of public lectures, workshops, and programs for government agencies, professional organizations, and public groups--this is all pretty much fun because these people really do want to learn something.

Last fall we (Ann and I) decided that it had been too long since we lived in west and it was time to renew our geologic relationship with the western US. So we headed to Montana for our grand tour that started by following the trail of the Glacial Lake Missoula Floods. We sat on the old shoreline terraces on Mt. Sentinel where we used to watch the U of M football games; we found the old lake clay deposit outcrops where Ann used to collect material for the Ravalli slip glazes she used in her pottery business; we traveled across the Camas Prairie where gravel/bolder mega ripples are 30 foot high with 300 foot wavelengths; and then traveled west into the channeled scablands of E Washington where the flood outflow carved massive coulees into the Columbia basalt flows--pretty awesome! Then we headed south through the Bitterroot and Teton Mts, up the Flaming Gorge and Uinta Mts, across the Book Cliffs and down the awesome Uniweep Canyon that slashes through the Uncompahgre Plateau. As Hurricane Isabel churned through the Atlantic Ocean, I was in daily contact with specific NC personnel. However, I was informed by various FEMA personnel that I should not get on a plane and head back because The Department of Homeland Security, who took over control of the NC Coast, would not renew our emergency access badges and had locked up the coastal system--I was told that they DID NOT need any geological help, all decisions were

political decisions and were being made in Raleigh and Washington. So I might as well stay in the mountains since it would be over a week before anyone would be allowed to go to the coast! Consequently, on September 18, as Hurricane Isabel slammed ashore between Core Banks and Ocracoke Island of NC's Outer Banks, we drank a bottle of wine at 10,500 ft on Lizard Head Pass, and then continued our journey through the canyonlands of the Colorado River.

Ten days after Hurricane Isabel came ashore, we finally got permission to access the Outer Banks. Our USGS annual report for 2003 has a summary of the geologic consequences of the storm upon the NC coastal system. To keep up with the ECU-USGS-NCGS research program, as well as the hurricane impacts, visit both the ECU geology and the USGS websites—our second and third year progress reports are now on the ECU website (www.ecu.edu/geology/coastal.html; <http://woodshole.er.usgs.gov/roject-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!

Cheers, Stan Riggs

David Mallinson

It's been another busy year for me, both in the office and on the home front. There's yet another little Mallinson (that makes 3) in the world. The addition of our new little boy (David Alexander) last July was our big event of the year. His two big sisters are crazy about him, and can't keep their hands off of him. The same goes for Mom and Dad. In the meantime, I'm working hard to keep the money coming in and the data cranking out.

I had two good first-authored publications come out last year: one on the carbonate banks surrounding the Dry Tortugas in Florida (*Marine Geology* 199, 45-63), and one on paleoclimate changes in south Australia during the early Oligocene (*Global and Planetary Change* 39, 257-269). I have another manuscript in review on the seismic framework of the eastern Albemarle Sound area, a product of all the work we've been doing out there with the USGS-Woods Hole and the North Carolina Coastal Geology Cooperative (NCCGC). We have a tremendous amount of seismic, sonar and ground-penetrating radar data from the sounds, the Outer Banks, and portions of the mainland (e.g. Currituck Peninsula and Roanoke Island). These data, along with core data, are occupying the bulk of my time and the time of a number of graduate students here (who are doing a great job, I might add). But in addition, I was able to do some gpr surveys around Lake Waccamaw in southern N.C., and I was awarded a contract to collect seismic data for the Dept. of Transportation along the corridor for the new 17 mile Oregon Inlet Bridge that's going to be built soon. Also, I've been awarded funding to participate in a seafloor mapping project on some relict reefs in the Gulf of Mexico next October. One more project in the works is a geological investigation of Merchant's Mill Pond in northeast North Carolina. So, as you can see, there's lots to do and never a dull moment.

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). 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 other spring semester, which includes the spring semester of 2005. Also, I will be in the teaching rotation for the UNC System-wide *Geology* Field School in New Mexico and Colorado in May 2003 for the sixth straight year and will be teaching at the Abiquiu and Taos, NM sites and then carry the students over to Cuba, NM. For the 2004 field course, we look to have 35 to 40 students enrolled in the summer geology field course from 6 universities in North Carolina (ECU, UNC-CH, NCSU, and UNC-W) and 3 universities in Virginia (JMU, GMU and VPI). With the help of my old JMU connections we will have at least 12 students from JMU at the 2004 edition of our Summer *Geology* Field Course. This will be the 40th year of the UNC System-wide Summer *Geology* Field Course from its original beginnings as strictly a UNC-CH endeavor in 1965 located out of Fort Burgwin Research Center at Rancho de Taos, NM. In honor of our 40th anniversary, Dr. Geoff Feiss, now Provost of the College of William and Mary, who along with Dr. Richard Spruill, guided the field course in its transition from the original UNC-CH field course to the system-wide field course, will spend 2 days with us at Sipapu Lodge in Vadito, NM. There is a lot of history in the 40 years with important contributions from Dr. Spruill and Dr. Mauger here at ECU!

My primary research interest now is evaluating the role of mass wasting and surface and sub-surface dissolution in the evolution of tower karst in coastal areas of Krabi and Phang Nga Provinces along the southwest coast of

Thailand. I am also looking for approaches to date high sea level stands along the western coast of Thailand indicated by notches 3-5 meters higher than modern notches. My focus on the high notches is on the "exterior" tufa stalactites that have grown down from the visor of the high notches. All of this is what I consider summer vacation, self-funded research! Lastly, I will present a tower karst abstract at the 32nd International Geological Congress in Florence, Italy in late August 2004. Hope to attend some one day field trips during the Congress and also a 2-day field trip to the study of the geology of the terroir of the Chianti wine growing region of Italy. Ah yes, and of course taste some of the wine there too!

As for my travels for the summer of 2004, I plan to fly to Hong Kong as an entry point into southwest China in late June or July. From Hong Kong I will fly to Kunming in Yunnan Province in southwest China. Major parts of Yunnan lie in the eastern extension of the Himalayas and it borders Tibet to west, Burma to the southwest, and Laos and Vietnam to the south. While in Yunnan I will definitely check out the Pinnacle Karst in the Stone Forest (Shilin) just east of Kunming and then head south overland to Xishuangbanna (12 rice paddies) on the Lao-Burma border to check out the ethnic Hill Tribes there, who are cousins to the Thai and Lao people and other ethnic groups found in northern Thailand and Laos. Will then return to Kunming and head west from there to Dali, Lijiang, and Tiger Leaping Gorge in northwestern Yunnan. This is the area in China where the gorges of 4 rivers (Yangtze, Mekong, Thanlwin, and Irrawaddy) are very closely spaced before they take very different paths to different seas. It is also the home of the ancient Naxi culture, which is closely related to Tibetan culture.

I also plan to travel to Luang Prabang, Laos, the ancient capital of Laos on the Mekong, for about 7-10 days where I will explore some surface karst and caves. From Luang Prabang, Laos will return to Bangkok to catch a flight to Hanoi, Vietnam. From Hanoi will then travel overland to Ha Long Bay again to see more tower karst there that I did not get to see in 2002. If I have time, I may try to go to Hue in central Vietnam but that may be getting too ambitious! Will return to Bangkok from Hanoi. Then will head to south Thailand to my beloved coastal karst areas at Krabi and Phang Nga and plan to push 100 km south along the coast to Trang to check even more coastal tower karst. All of these plans are made assuming **The Bird Flu** has not killed all the chickens in southern China and SE Asia by June and July!?

Terri Woods

This year I continued to analyze the thousands of concentrations for chemical constituents in groundwater that my students and I have accumulated over the past 10 years. I've even learned how to make my own Piper Diagrams with the program from Rockware. Some of the results of the groundwater/coastal ocean interaction project from down around Wilmington, NC were published in *Limnology and Oceanography* - mainly relating to carbon isotopes. I'm working on data for strontium, oxygen, and hydrogen isotopes. Delynda Tolen-Mehlhop, Don Neal and I have submitted a version of Delynda's thesis to *Southeastern Geology* for publication. Erin Crawley-Stewart completed her work on the water chemistry of Meeting House Branch and Green's Mill Run here in Pitt County and graduated last spring.

I didn't make any major changes to my teaching this past year, but the department has changed the Mineralogy/Petrology sequence for next year. Up until now I have been teaching Mineralogy in the Fall and Richard has been teaching Petrology in the Spring.

The reasons for the new course are three-fold. First, Richard and I believe that the material can be presented more effectively in the new format. With the old format students were given both basic and advanced mineralogy in the fall semester followed by basic and advanced petrology in the spring course. Experience has suggested that presenting basic mineralogy and petrology in the fall course followed by advanced mineralogy and petrology in the spring would be a better way to approach the subjects. Secondly, we will soon be implementing a new BA degree in Geology and the single Mineralogy and Petrology I course will replace the former two-course Mineralogy and Petrology sequence. This will give our BA students the needed exposure to minerals and rocks in a single course. At the same time it will not require us to add a course to our faculty's load, because our BS students will all have to take Mineralogy and Petrology I and Mineralogy and Petrology II. Our third reason for the change is that quite a few students in other departments (i.e., Geography, Education, Anthropology, etc.) take Mineralogy and/or Petrology. These courses, as presently taught, devote almost half the semester to topics that do not best serve the needs of these other students. They will be much better served by the first of the new courses in which they will get good basic coverage of both minerals and rocks at once and will be spared the advanced complexities of these topics that are required for geologists pursuing a B.S. degree.

Finally, I finished my work for the "Hydrosphere" chapter for the new North Carolina, high-school, earth-science textbook. However, some of the authors did not finish their sections, so the book will not be ready for the present adoption cycle beginning in June. Presumably, it will be ready for adoption next year.

Steve Culver

My research continues with Riggs, Corbett and Mallinson on the geologic evolution of coastal North Carolina. Four manuscripts were submitted and, hopefully, this work will see the light of day next year. The work that I did publish this year was on slightly older (Cenozoic) foraminifera from the coastal plain of Virginia and North Carolina. It describes community change through time and provides a good backdrop for my continuing studies on Quaternary foraminiferal communities from North Carolina.

Teaching continues to be fun. Last year I had 12 students in my undergraduate, writing intensive, paleontology class. The marking of papers was tough but the end product was worth it. One of these students is already in our graduate program and I hope another two or three will also join us. At the graduate level I have had the pleasurable job of reading multiple drafts of multiple theses. This resulted in my first student, Pete Parham, (coadvised with Stan Riggs), successfully defending his Masters thesis in December. Three more, Dave Vance, Chris Smith and Irene Abbene will be defending before the academic year is done. Without a doubt, such events are the highlights of any professor's year. My thanks to Parham, Smith, Vance and Abbene for being such good people to work with.

Reide Corbett

What a great year this has been both personally and professionally! Our kids are growing quicker than we would like, but very exciting to watch. Noah, now 1, looks up to his older brother and follows him around everywhere, even into trouble.

All the activity around the department this year has kept everyone busy. As you probably know, the department is expanding which means new opportunities. In fact, J.P., Dave Mallinson, and I have already put together a large equipment proposal to update some of our current instrumentation and expand on much of what we have already, including seismic and geochemical instruments. This would provide the opportunity for students to work with some more state-of-the-art equipment and help further develop our research program.

My research group has had a fairly active year. We are still doing work on the Mississippi Delta, evaluating the potential submarine groundwater discharge to the coastal system using natural radioactive tracers. We were also recently funded to look at the short-term deposition/remobilization of sediments associated with the Mississippi River plume. We had 3 research cruises last fall and have an additional three cruises this spring. So many students in the department have had the opportunity to experience science at sea.

Last fall, Hurricane Isabel gave us the opportunity to look at sediment dynamics associated with major storms. We have a time-series of short cores we have collected before and after this storm event that is providing insights into the complicated processes of estuarine sediment movement in North Carolina. I will be presenting much of this data at the NE-SE GSA meeting in March, 2004. Several students in our group have also been working on other aspects of this research, primarily funded by the USGS, including sediment sources to Pamlico Sound, barrier island hydrology and foraminiferal distributions in Albemarle and Pamlico Sounds, to name a few.

We have recently started a study to evaluate groundwater/surface water interactions along the upper Neuse River (Goldboro → Kinston), funded by the USDA. This project involves measurement and analysis of the groundwater input for a 10-20 km reach of the Neuse River. Results will answer basic questions about rates and controls for groundwater-based nitrogen inputs to a section of the Neuse River, and provide the key information needed for future investigation (beyond the proposed project) of these inputs at larger spatial scales (e.g., the roughly 150 km along-river in the agricultural eastern half of the watershed). Groundwater ages, in conjunction with geochemical data and historical information on land use and nitrogen release will be used to assess whether current groundwater-based nitrogen input to the Neuse is being affected by biogeochemical processes, and whether it is consistent with the history of nitrogen input to groundwater and the groundwater subsurface residence time. This approach should provide additional information on future groundwater nitrogen loads to the river as a function of historic, present, and projected land use change. This is an exciting project that should get "cranked-up" this summer.

I hope I have given you some idea of the fun we have been having this year and what to expect in the up-coming year. I always try to keep my web site up to date, including pictures of recent field events. I am a bit behind, but I hope you will take a few minutes to take a look. Have a great year!

David Lawrence

I continued South Carolina Piedmont research in the summer and winter of 2003. I collected enough gravity data southeast of Spartanburg to start serious modeling of plutons within the Cross Anchor thrust sheet of the Charlotte terrane. And did you know that you can get your dog groomed while you get your skin waxed in Pacolet, SC? Not having a dog, I did not take advantage of this amazing offer. And beware: NO DUMPING OF DEER CARCASSES in the woods near Baton Rouge, SC. Anyway, what I am trying to do is produce gravity models of plutons that have been truncated at depth by the buried Cross Anchor thrust. Both the Bald Rock and Pacolet plutons are remarkably thin and de-rooted, and the Lowrys is almost as thin. When I have collected more rock samples for density determinations, I can refine the models, and end up with a rough structure contour map of the Cross Anchor thrust. (My first version of this was a poster at GSA-Tyson's Corner this spring)

I had fun teaching *Structural Geology* in the fall of 2003, and *Tectonics Seminar (Return to the Great Kavir)* in the spring of 2004. The Hot Springs field trip was April 15-18 this year, and as I write this I am hoping for sunny weather. Each year we have more little families looking at the birds and wildflowers in Runion; it is hardly the deserted spot it used to be.

Last summer I got to see some fascinating fractures in Pleistocene glacial deposits of the northern Olympic peninsula. I'm going back this summer, to see if I can figure them out. I've never looked at neotectonic structures before. Neat stuff.

Don Neal

Another year has come and gone and it is newsletter time again. I never know what to include in this write-up that might be of interest to you. It seems that a lot of effort is expended day-to-day just like you do the mundane chores that never seem to get done before a new list presents itself. Outside of the usual there were a few high points that make it all seem worthwhile. Late last spring I was elected/selected a Fellow of the *Geological Society of America*. It is curious how perceptions of worth and accomplishment are different with an external audience as compared to one's colleagues. In August I presented a paper on the *Geology of the Mississippian Carbonates in the Greendale Syncline of Spouthwestern Virginia* at the *International Congress on Carboniferous and Permian Geology* held in Utrecht, The Netherlands. It was a very good meeting although most of the fieldtrips were cancelled due to under-registration. Many of the usual suspects did not attend the meeting this year. Finances are tight worldwide.

Last Fall Dave Mallinson and I again took a group of students to the Florida Keys to look at carbonate environments and, as usual, everyone had a great time and saw some great geology. We snorkeled on Looe Key on a sunny calm day and it brought back memories of an earlier trip when Pennekamp was as pristine. The reefs in the Upper Keys have suffered from ecotourism over the last twenty years. Where will future geologists go to see good reefs?

GSA meetings in Seattle and Tysons Corner, VA, included presentations by several of my students. Clif Whitfield, John Cooper and Sarah Rice presented their thesis research and Kristen Frye presented an undergraduate research effort looking at the forams in some thin sections from the *Ste. Genevieve Formation*. Unfortunately, we could not identify any forams that would give a definitive age determination. John Cooper and Clif Whitfield have since defended their theses and are headed out the door. Sarah Rice isn't far behind.

Everyone seems to be busier than ever but the visible progress is less evident. I guess that is the nature of things. So, until next year...keep your nose to the grindstone but watch out for those little sand grains.

Catherine Riggsby

Another busy year is almost over. Amazing! The year was filled with my usual (and fun!) research activities, a few good classes, and more service activities than even I typically try to tackle. Even with the hyper-hectic schedule, it has been a productive year for both me and my present and former graduate students. Renee Farabaugh started

her Ph.D. studies Idaho State University in January. After she defended her M.S. thesis last Spring, Renee and I submitted a manuscript based on her thesis work to the Journal of Sedimentary Research. Look for the paper (with Renee as first author) in an upcoming JSR issue.

Amy Caulder-Church (M.S. 2003) started teaching high school Earth science full-time this year. From all accounts she is working very hard and enjoying herself too. We need as many good science teachers as we can get in NC. I'm glad Amy decided to be one of them.

Lisa King continues to pick and try to identify what may be the smallest forams anyone around here has ever worked with. Thanks to Scott Snyder and Steve Culver for helping her with this work. Once she gets enough specimens picked, we'll do some isotope work and see what they tell us about Holocene temperature variations in the east Pacific. She plans to be finished this summer and graduate in the Fall.

David Foster (B.S. 2004) finished a senior thesis project this year. He received an Honors assistantship for his work and presented a poster at the Honors Research Symposium in March. David looked in detail at the organic and inorganic carbon content and the grain-size characteristics of two sections of "paleolake Tauca" strata from cores in the Rio Desaguadero valley. His work provided additional support for some of our hypotheses about the lacustrine history of the basin. David plan to begin working on a structural M.S. project (with Dr. Lawrence) in the Fall.

My newest graduate student, Candace Grand Pre, and I are busy planning for our May-July field season in Peru. Candace will be studying the Rio Huancane valley (northern Lake Titicaca watershed, Peru). She was my sedimentology TA in the Fall (check out the 2003 field trip photos at <http://core.ecu.edu/geology/Rigsbyc/images/TarRiver2003/index.html> and <http://core.ecu.edu/geology/Rigsbyc/images/Shackleford2003/index.html>) and has been working hard this semester to get ready for the field work - learning equipment, laminating maps, writing a proposal, etc., etc. It should be a great season!

My planned trip to Tibet last summer was cancelled because of the SARS outbreak and had to be rescheduled as two separate trips. Last Fall I attended the ICDP Lake Qinghai (northeastern Tibet) drilling workshop, presenting the result from my (and MANY students') work in the Rio Desaguadero valley. An outgrowth of that workshop is an in-prep proposal to work in the river valleys around the lake. The workshop field trip gave me a glimpse of the lake and the tributary river valley - as well as an awesome nearby monastery (photos at <http://core.ecu.edu/geology/Rigsbyc/images/QinghaiProvince2003/index.html>). It's a great project, with many things in common with my work in Bolivia and Peru. I hope it gets funded!

The second trip to Tibet - to work with our archeology colleague Mark Aldenderfer (UCSB) was rescheduled for August 2004. Yes, it will be a busy, busy summer! If I'm lucky, I'll get a week of two to relax between the South America trip and the Tibet trip. A trip to the beach may be in order.

In addition to research endeavors, I taught sedimentology, Quaternary Environments, and *Geologic Manuscripts* again this year. And, I served as Vice Chair of the Faculty, spending most of my days running from meeting, to class, to meeting, to meeting, to meeting, to class, to meeting . . . I'm exhausted from all of the meetings, but I think it was worth it. And, I hope I made a positive contribution.

B.S. Graduates

Spring 2003

Lorin Gaines

Summer 2003

Jennifer Smith

Jason Jomp

John Simmons

Fall 2003

Miranda Fritchman

Charles Jones

David Twamley

M.S. Graduates

Spring 2003

Renee Farabaugh

J. Kevin Whitley

Summer 2003

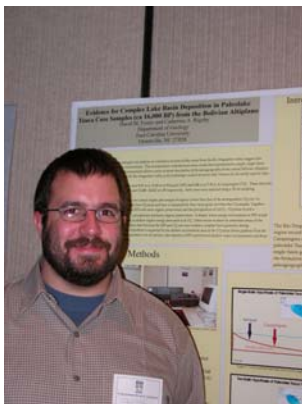
Erin Letrick

Erin Stewart

Fall 2003

Amy Caulder-Church

Peter Parham



David Foster with his Honors Project poster at the Undergraduate Student Research Symposium. David will graduate this spring with honors.

Everyone is invited to the annual
Geology Department
Pig Pickin'

Afternoon of May 1, 2004

Richard Spruill's Back 40

If you need directions, call the Department Office
at 252-328-6360.