

## Cruising with Dr. Ron Kiene

By Mary-Allison Lancaster  
Communication Major



Dr. David Kieber in the northern Ross Sea on board the RV Nathaniel B. Palmer.

Global warming, acid rain and the ozone hole are just a few of the factors affecting our atmosphere. Dr. Ron Kiene, of the College of Arts and Sciences maintains an internationally-recognized research program that studies how organisms in the oceans affect the Earth's atmosphere and climate system.

Dr. Kiene is a professor in the Department of Marine Sciences at the University of South Alabama, and a Senior Marine Scientist at the Dauphin Island Sea Lab. He recently received three National Science Foundation grants and one Alabama Center for Estuarine Science grant to fund his work on the production and cycling of chemicals that play a key roles in the global carbon and sulfur cycles.

"He has an incredible knowledge and background in various fields such as oceanography, microbial ecology, chemistry, microbiology, biogeochemistry and more," said Doris Slezak, a postdoctoral research assistant. "I've enjoyed working with him very much." Dr. Kiene specializes in the field of biogeochemistry. Biogeochemistry

### Once sulfur gets into the atmosphere it has an important role in atmospheric, chemistry and also, potentially, climate.

is a discipline that studies how biological and chemical processes interact to influence our environment. Dr. Kiene considers himself a microbial geochemist because he deals mostly with microbes. "Microbes are the main players in biogeochemistry because

they are so abundant and versatile. They are everywhere, shaping the world in which we live", said Kiene.

"There is little doubt that Dr. Kiene's research is on the cutting edge of one of the most burning questions yet to be answered," said Dr. George Crozier, Executive Director of Dauphin Island Sea Lab.

A major focus of his research is the biogeochemical cycling of dimethylsulfide (DMS) and its precursor dimethylsulfoniopropionate (DMSP) in marine waters. Dr. Kiene carries out his research in local waters of the Gulf of Mexico and on oceanographic cruises all over the world. Through extensive research in his laboratory, new and important roles for DMSP and its degradation products like DMS have been discovered in the marine ecosystem.

DMS is a sulfur gas compound that is produced from DMSP. Once DMS is produced in the ocean a number of things can happen, including its exchange with the atmosphere. This process moves sulfur from the ocean into the atmosphere. Once sulfur gets into the atmosphere it has an important role in atmospheric, chemistry and also, potentially, climate.

There is interest in how DMS is playing a role in the climate. Big questions in the work Dr. Kiene is doing are whether DMS is going to respond to major changes like global warming, and whether ecosystems are going to shift to produce more or less DMS. "The fundamental work that we do contributes to answering those questions" stated Dr. Kiene. DMS from the oceans can influence

climate because it is converted into sulfate salt aerosols in the atmosphere by a process of oxidation. Aerosols are tiny particles that scatter sunlight. The numbers of aerosol particles and their sizes affect cloud formation.

What happens is that water vapor condenses on the tiny sulfate aerosols to make a water droplet. Without those little particles of salt, water vapor would remain a gas, and droplets would not form to make clouds. DMS is the precursor of some of the aerosol particles which water droplets condense on.

DMS can play an important role in the climate system because clouds are a big part of the global heat budget. The DMS impact is on the stratus clouds, which are very white and reflective. At the top of the cloud looking from space down to the earth, sunlight beams through the cloud. Because the cloud is white, some of the sunlight is reflected back to space and this represents heat energy that the Earth does not absorb.

"There is an enormous amount of uncertainty concerning cloud formation and its relationship to ocean-based transformation of sulfur compounds," said Dr. Crozier.

"DMS is natural, so it's part of the system. In a sense DMS is good. It is playing a role in the overall picture of the earth's system. Through our research, we are trying to understand exactly what the ocean's role in that picture is," said Dr. Kiene.

Dr. Kiene's research primarily focuses in the sea water, trying to understand what controls the production of DMS and DMSP, how DMS is produced and what happens to DMS once it is produced. Not

### Cruising with Dr. Ron Kiene continued

only can DMS go into the atmosphere, but it can be eaten by the bacteria in the water. The bacteria will remove a significant amount of DMS in the water, preventing it from reaching the atmosphere.

Funding from the NSF Office of Polar Programs is allowing Dr. Kiene to make two trips to the Ross Sea in Antarctica. The first trip occurred last November. The purpose of the cruise was to investigate the biogeochemical cycling of DMSP and DMS in the cold, but productive polar sea. Accompanying Dr. Kiene to the Ross Sea was post doctoral assistant Doris Slezak, and graduate students Boon Harada and Daniela del Valle.

The cruise began in New Zealand and the ship's destination was the Ross Sea, 2200 miles further south. Beginning in the austral spring and extending into the austral summer, the Ross Sea experiences a huge bloom of single celled marine plants called phytoplankton. These phytoplankton are the base of the food web that feeds the spectacular abundance of penguins, seals and whales that live in Antarctica. The bloom is composed mainly of *Phaeocystis antarctica*, a type of algae that produces large amounts of DMSP. The oceanographic cruise was supposed to last 48 days. Unfortunately, the cruise lasted only 23 days because two of the four engines on the ship broke down 500 miles short of the target station. The breakdown forced the ship to return to New Zealand and Kiene's research team were able to accomplish only a small fraction of the research they had planned.

"It was extremely disappointing because we had put a huge effort into getting ready for the cruise. We took almost our entire laboratory down there. The equipment was shipped to New Zealand where we had to get it set up, and working properly on the ship in just a few days," explained Dr. Kiene. "In addition to moving the research equipment, there was a tremendous amount of logistics and paperwork, e-mails, and meetings associated with this major expedition"

On the bright side, the NSF grant provides funding for two cruises to the Ross Sea. The second planned cruise will take place in December 2004 to January 2005. Dr. Kiene has attempted to reschedule a make-up trip for the first failed trip, but the make-up cruise will probably not be scheduled until November 2005.

A separate cruise to the Sargasso Sea near Bermuda, funded by the NSF Biocomplexity in the Environment Program, is scheduled for July 2004. The purpose of the cruise is to examine the biocomplexity of the global DMS cycle. The biogeochemical cycle of DMS in the ocean involves many different types of organisms interacting in a complex web of ecological processes.

"There is a station out there that has been sampled every two weeks for about 10-15 years now," said Dr. Kiene. "That's called a time series station where data is being collected very routinely...there's a very good record now of what the conditions are and how they've changed from year to year."

The Biocomplexity project that Kiene is involved in, has a number of modelers as co-investigators. A climate modeler is somebody who is trying to predict how the climate will change if you perturb one aspect of the climate system. Dr. Kiene's colleagues are going to try to incorporate information from the ocean DMS study into the climate models. The oceans have a huge impact on the overall climate system. The climate models are trying to predict the temperature and distribution of the temperature on the earth.

One of the things that came out of previous work near Bermuda was that the DMS concentrations get quite high in the summer. It is a paradox because phytoplankton are very low in the summer time, yet the DMS concentrations get pretty high. The month-long cruise is going to try and figure out why that is.

Dr. Kiene and his graduate students are also involved with a few other ongoing projects. With funding from the NSF Biological Oceanography program, Kiene and his students are testing the hypothesis that DMSP and DMS are produced in response to oxidative stress in marine phytoplankton. With separate funding from the Environmental Protection Agency (EPA), Dr. Kiene is also examining the oxidative stress physiology of marsh grass *Spartina alterniflora*, which is another DMSP producer.

"I certainly learned a lot for my future research," said Slezak. "I gained a tremendous amount of knowledge in the field we are working in, but I also learned to how perform



Dr. Ron Kiene, Professor, USA Marine Sciences.

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continued

research, write papers, work on proposals and conduct research...by watching and working with someone like Dr. Kiene you will certainly get the clue."

Dr. Kiene grew up in Brooklyn, New York and received his undergraduate degree at St. John's University in Queens, New York where he majored in biology and minored in chemistry. He later received his Ph.D. in 1986 at The State University of New York at Stony Brook. From Stony Brook he moved to the University of Miami in Florida where he spent fifteen conducting post doctoral studies. Dr. Kiene then moved from Florida to the University of Georgia where he spent five years at the Marine Institute on Sapelo Island.

"It was a really interesting living on a barrier island that is very remote. I got a lot of work done in the five years that I spent on Sapelo and I was able to establish my career" said Dr. Kiene. "Sapelo Island was a great place to live and work but after five years, it was time to move on."

Finishing his work on Sapelo Island, Dr. Kiene arrived at the University of South Alabama in early January 1993. In the 11 years since joining the Department of Marine Sciences he has established himself as one of the leading researchers in his field, authoring or co-authoring 46 research articles and generating over 2.7 million dollars in research funding.

## Development Corner

The Alabama Deep Sea Fishing Derby and the Jaycees contributed over \$10,000 to the support of marine sciences research and student scholarship.

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From left to right: Gary Ganey (JC, Pres), Tom Emmons (JC), Dr. Bob Shipp (Marine Sciences), Michael Lacey (JC), Andy Cook (JC), Chris Mayhall (JC), and Ricky Barnes (JC).

## USA Senior Stephanie Nemeth wins Fulbright to Germany

By Jennifer Zoghby, Public Relations

University of South Alabama senior Stephanie Nemeth has won a Fulbright Award to attend classes and conduct research at the Technical University of Berlin in Germany.

Nemeth, 22, will graduate from USA May 8 with a chemistry major and a German minor. Her grade point average is 3.91.

She will arrive in Germany in August for an orientation, intensive language school and a four-week stint with a German family. In mid-October, she will begin classes in environmental chemistry as well as research work with professors in Berlin.

The courses, which run through mid-July, will include study of techniques of environmental chemistry as well as properties of soil pollutants.

"This is really exciting," said Nemeth. "It's an experience of a lifetime."

Nemeth said she was motivated to focus on environmental chemistry because of a long-held interest in the subject, including volunteer work through USA student environmental groups.

She began the Fulbright application process in summer 2003, after returning from a four-week language course in Northern Germany.

As part of the application, Nemeth needed to find a professor who would be willing to direct her studies. She contacted Dr. Wolfgang D. Rotard, who chairs the Technical University of Berlin's environmental chemistry department. He agreed to work with her and even sent a letter recommending her for the grant.

Nemeth plans to begin a Ph.D. program in the United States or Canada upon her return. Her long-term career goals focus on environmental chemistry research for the Environmental Protection Agency or another governmental group.

Nemeth said she was encouraged to apply for the Fulbright by faculty mentors at USA. Dr. Heide Lomangino, an assistant professor of foreign languages and literature, told Nemeth she might include her German studies in her Fulbright aspirations. Nemeth also credited Dr. Naomi Campbell, an assistant professor in chemistry, with inspiring her studies in that field.

Dr. Lois Wims, Associate Dean of the College of Arts & Sciences, said,

"We're really proud of the way Stephanie has balanced her science and language studies, and we're proud of the mentors she found in Dr. Campbell and Dr. Lomangino."

Dr. Lomangino described Nemeth as an intelligent, discerning student.

"She sees the big picture," Dr. Lomangino said. "She watches out that she does not harm the environment. She does practice what she believes in."

Dr. Lomangino, a native of Germany, received a Fulbright award after her undergraduate degree to study in Mississippi. Based on this experience and Nemeth's exceptional language skills, Dr. Lomangino encouraged Nemeth to apply for the Fulbright.

Dr. Campbell praised Nemeth's dedication to chemistry research. Dr. Campbell said Nemeth comes to the lab on her own time to work on a research project, which they hope to have published in an academic journal.



Stephanie Nemeth  
04 Chemistry Major/German Minor  
Fulbright Award Recipient

"She's such a great student," Dr. Campbell said. "And she's a very nice person, too."

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## Meteorology: Open Skies, Hurricane Eyes, and Adventure as Part of the Process

By Deanna Burkett  
English Graduate Student

In Hollywood movies, the violent winds of a tornado are not always a dangerous place. Within these celluloid cyclones, mean old ladies pedal their bikes around in midair, and jersey cows spiral slowly through the debris like poorly-made paper airplanes. As absurd as these images may seem, however, people and objects, even airplanes, actually do fly around unharmed within the eyes of powerful hurricanes.

According to Dr. Bill Williams, Director of the Coastal Weather Research Center and Coordinator of the University of South Alabama's Meteorology Program, Dr. Hugh Willoughby, one of the foremost hurricane researchers in the nation, has flown into hurricanes more than 400 times and was even flying around in the eye of Hurricane Frederick when it made landfall on Mobile.

Dr. Willoughby, of the International Hurricane Research Center at Florida International University, was the keynote speaker at the first Southeastern Coastal and Atmospheric Processes Symposium (SeCAPS) presented by The University of South Alabama Chapter of the American Meteorological Society, the Department of Earth Sciences, and the Coastal Weather Research Center. Dr. Willoughby was one of several speakers who addressed the topic of hurricanes, their presentations covering aspects such as "hurricane hype," early warning, economic impact, and current research.

SeCAPS was not just about hurricanes; however. It was designed to deal with meteorology, geology and geography. "We're interested in the coastal atmospheric process as one big system," Dr. Williams explained, as he outlined the diversity of topics covered by the symposium's speakers. "We had a lot on hurricanes," a focus, he said, which will remain important in next year's symposium as well, "but we also had topics such as the impact of the causeway on the flow of water in Mobile Bay and another wonderful presentation on Southern Louisiana and how the land there has been sinking at a rate faster than ever anticipated."

Dr. Williams expressed his immense satisfaction not only with the work of the symposium speakers, but also with the work of Mr. Ryan Wade, Instructor in Meteorology, who coordinated the symposium, and the many meteorology majors who helped organize it, forming committees for scheduling, making badges, inviting speakers, and making announcements. Next year Dr. Williams and Mr. Wade plan to involve freshmen in the process, something that he hopes will give them a close tie to the program early on, a situation which normally doesn't happen.

This kind of consideration for student involvement and community could be one of the reasons that the meteorology program has soared

up the national ranks of undergraduate meteorology programs to its current position as the ninth largest of more than sixty in the country. In 1991, when meteorology was first offered as a concentration in geography, the program had only one major. As of this fall, enrollment is 101, tying it with North Carolina State University, a very old program.

The history of the University of South Alabama's meteorology program has its roots in the Coastal Weather Research Center, the only full-service weather forecasting operation in the country located on a university campus. Proposed and developed by Dr. Williams, the CWRC officially began operation on January 1, 1988. Designed as an archive and research center for business and industry, it provides weather information to over fifty companies in a three-state area, some of which include hotels, utilities, ship builders, and even the Coast Guard.

In 1990 the Air Force ROTC approached the CWRC about developing an undergraduate meteorology program. The resulting curriculum was designed to meet the requirements of the Air Force and the National Weather Service. From 1991 until 1999 the meteorology program built its strength and reputation as a concentration in geography while waiting for a good time to approach the state for the approval of a new program. On National Weatherman's Day, February 5, 1999, the program was approved by the Alabama Commission on Higher Education in Montgomery 8-0, but by then it had already been graduating for four years. "We had been meeting all the requirements of the American Meteorological Society," Dr. Williams explained, "so officially graduates were meteorologists."

Before approval of the new program, graduates received a geology/meteorology degree.

Now the program's Bachelor of Science in Meteorology is attracting aspiring young academics from all over the country. Besides the medical program, it boasts the largest number of honor students in the university, a pool of talent that the program's challenging hands-on curriculum is molding into diversified and marketable meteorologists.

This diversification is being accomplished in part through four tracks within the meteorology program: basic, industrial, environmental, and broadcast, with the basic track being the most popular, preparing students to go on to graduate school, work for the National Weather Service, or the military. The industrial track represents a new trend in the field in which private weather forecasting companies sell weather information to business and industry. Students who follow the environmental track often find employment in the fields of air pollution research and water resource management, and a few of those who have

## Meteorology: Open Skies, Hurricane Eyes, and Adventure as Part of the Process continued

focused on broadcasting are now working in radio and television.

Storm Chasing, a course being taught this summer by Mr. Ryan Wade, will provide students with an opportunity for further diversification in terms of their first-hand experience with severe weather. As if the variety of severe weather offered by the Alabama Gulf Coast were not enough, this course will expose students to weather conditions of yet a different kind. Dr. Williams expressed his excitement that several

students from the department will be "heading out to the Great Plains for the first University of South Alabama Tornado Storm Chase." This

will be an annual event, and in the future the program hopes to get its own vehicle which it can outfit with scientific equipment that will enable it to conduct research as well as storm chasing in the Great Plains area and along the Gulf Coast.

## Faculty and Student News

**Dr. Scott Carter** (Mathematics and Statistics) and co authors Seiichi Kamada and Masahico Saito have had their new book published as part of the Springer Series: Encyclopaedia of Mathematical Sciences, Low Dimensional Topology Volume II. The book is entitled "Surfaces in 4-Space" and is a work on four dimensional knot theory. This is Dr. Carter's fourth book.

**Dr. Donald Wright** (Communication) has been inducted as the 2004 President of the International Public Relations Association (IPRA.) He is the first full-time university professor ever to hold the office and was recognized recently during induction ceremonies in New York.

**Dr. Curtis Blakely** (Political Science and Criminal Justice) has had his article "An Analysis of Civil Suits Filed Against Private and Public Prisons: A Comparison of Title 42: Section 1983 Litigation" accepted for publication by Criminal Justice Policy Review.

The Vernacular Architecture Newsletter, Winter 2003, has been published by the Vernacular Architecture Forum. **Dr. Phillippe Oszuscik** (Visual Art) serves as editor of the publication.

**Dr. Annmarie Guzy** (English) recently completed her book "Honors Composition: Historical Perspectives and Contemporary Practices" published by the National Collegiate Honors Council.

The fourth annual University Voice Symposium, under the leadership of **Dr. Kathryn-Barnes-Burroughs** (Music), was held on April 3, 2004. Speakers included **Dr. Robert Holm** (Music.)

Professor Quoted in the London Independent **Dr. Steve Picou**, Chair of the Department of Sociology and Anthropology, is quoted in a front page story of the London Independent on March 25. The article is entitled Betrayed by an oil giant: 15 years after the Exxon Valdez disaster, the coast remains polluted and compensation is unpaid. Previously, Dr. Picou's fifteen years of research into the effects of the Exxon Valdez spill had been the subject of Ashley Shelby's article in The Nation, entitled Whatever it takes: Exxon has used the legal system to avoid paying damages for the Valdez spill.

**Dr. Phil Carr**, (Sociology) President of the Alabama Archaeological Society (SAA) and member of the Southwest Chapter, along with co-authors Andrew Bradbury and Amy Young, presented a paper entitled Stimulating Oldowan Tool Use at the 69th annual meeting of the Society for American Archaeology conference this spring in Montreal, Canada.

USA's Coastal Weather Research Center was featured on "County Road 5," at 10 p.m., Sunday, March 14 on WKRG-TV5. The program highlighted the work done by the Center and feature interviews of students and the Center's

director, **Dr. Bill Williams**. The Center was also featured in the March/April 2004 issue of Weatherwise magazine, a national publication.

**Benjamin J. Shanback**, Assistant Professor in the Visual Arts Department was selected for the 2004 Tri-State National Annual Juried Exhibition in Beaumont, Texas. His paintings Glasses on Yellow Tomatoes and Glasses on Yellow were accepted in the national survey of all media artwork in the exhibition on view this week at the Beaumont Art League's Brown and Scurlock galleries.

Banana Wars: Power, Production and History in the Americas edited by **Dr. Mark Mobers**, professor of Anthropology at USA and Steve Striffler, an associate professor at the University of Arkansas at Fayetteville, was featured in the January 30, 2004 issue of The Chronicle of Higher Education in its "Hot Type" column. "Hot Type" promotes recent intriguing research and scholarly texts. The College of Arts and Sciences congratulates Dr. Moberg.

Actors **Robert Wells**, **Margarette Joyner**, and scenic designer **Kenneth Kaludis** were recognized at the recent Irene Ryan Acting competition of the Kennedy Center/Mafrican College Theatre Regional Festival in Birmingham.

Please submit story ideas, news and suggestions to lwims@usouthal.edu

# College of Arts & Sciences

## Poet Laureate and Commencement Speaker Dr. Sue Walker

By Kenneth Norris  
Communication 2005



Dr. Sue Walker  
Chair  
Department of English  
Poet Laureate of Alabama

Alabama's Poet Laureate gave an exemplary performance to an enthralled audience at the University of South Alabama's main library on February 3. Fortunately, Alabama's Poet Laureate had to walk only about 200 yards to make her captivating appearance because she is USA's own Dr. Sue Walker.

Dr. Sue Walker, who chairs USA's English department, is the first Poet Laureate of Alabama from south of Montgomery. The honor is a creation of the state legislature, commissioned by the governor, and awarded by the Alabama Writer's Conclave. Dr. Walker

holds the elected position through 2006, and she intends to use every opportunity during her reign to promote poetry and creative thinking.

The day after her evening appearance at the USA main library, Dr. Walker performed at the Foley Civic Center. Foley, her hometown, celebrated "Sue Walker Day," and she spoke with students at Foley High School about poetry and conducted a workshop for fourth through sixth grades at Bayside Academy.

Joy is evident on her face as she recalls the students' imaginative verve. One of her favorite creative exercises is to begin a simple narrative and question the students about what they imagine happens next. Children respond well to this technique, according to Dr. Walker, and she suggests to parents that they should use it to occupy young minds while traveling by car.

She explains poetry as a reciprocal process forming between the performer and the listener. The poet evokes fervid emotions within the listener, and the listener bears his or her own experiences and understanding to the event. Consequently, each poetic occasion is unique and profoundly personal. Poetry is an eloquent theater of the human soul that vocalizes the veracious feeling flowing within the heart. An adept poet imbues each poetic word with inspired feeling, transmuting written words into instruments of palpable sensation. Ergo, a good poet is a theatrical performer moving others to a sublimely human experience.

An example of a sublimely human experience is Dr. Walker's performance of "We are alike, aren't we?", a work in progress inspired by her experience teaching the book, opera, and film,

Dead Man Walking. Written by Sister Helen Prejean, Dead Man Walking tells the story of a man's last days on death row. Dr. Walker, capturing the racing thoughts of a female death row inmate in the hours before execution, delivers an absorbing and compelling narrative from inside a woman's mind that savors its final reflections before fading into terminal evanescence.

All the names in her aforementioned poem are those of real persons whom she researched to understand the lives of women sitting on Alabama's death row. She researches subjects before writing about them, whether she is writing about history, science, or nature.

She is currently working with Dennis Holt, a photographer in Daphne, to create a coffee table book about regional outdoor beauty. The book, The Mobile Tensaw Delta, is published by New South Press in Montgomery and will be released later this year.

Besides authoring six poetry books and attending frequent social events, Dr. Walker still has time to inspire her students at USA. Dr. Coker, Chairman of the Philosophy department, frequently attends Dr. Walker's poetry classes and describes the supportive environment therein as "warm, affable, convivial, and enthusiastic." She has a "talent for gentle, incisive, constructive criticism" and offers individual attention to each student.

**Using Dr. Walker's words from her poem Teaching English 101, "walk the sharp edge of your life; fall off."**

# College of Arts & Sciences

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