



# Making Waves

Spring 2005



SSEC

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## Greetings from the Chair

Jonathan Martin



Greetings to all of you from the Department of Atmospheric and Oceanic Sciences here at the University of Wisconsin-Madison! It seems nearly impossible to believe that 11 years have passed since I interviewed for a position on the faculty of the newly renamed Department of Atmospheric and Oceanic Sciences at the University of Wisconsin-Madison. As I flew home to Seattle from that visit, I knew that I had to have this job. The prospect of coming to a department as illustrious as ours and having the opportunity to help rebuild an historic strength of the department (synoptic-dynamic meteorology and weather systems studies) in the modern era was nearly as exciting as a Red Sox World Championship! Rarely have I been so sure of something beforehand only to watch it turn out better than even my optimistic nature could imagine.

It may be nearly as long ago since some of you last heard from your alma mater. We are determined to end the silence and rededicate ourselves to frequent communication with you, our alumni. We have a lot to tell you all in this first installment of what we intend will become a semi-annual newsletter. This Department has always been at the epicenter of our broad, interdisciplinary field and continues to be so today. As you will see as you read through this letter, our department has undergone some substantial changes in the past few years; watching accomplished, older colleagues “retire” and welcoming newer ones with great expectations. Our current faculty is young and full of new energy and ideas – a group certain to continue the Wisconsin tradition of excellence. In this newsletter we will introduce you to these people, to the Department, and to each other. Through all the changes, the constant of Wisconsin excellence prevails and we are excited to share with you the recent successes, current challenges, and future dreams for this great department of ours. As a start, allow me to refer you to our Faculty Awards webpage (<http://www.aos.wisc.edu/people/content/FacultyAwards.html>) where you can view tangible evidence of the excellence that powers our department. While in the vicinity, why not check out the broad array of speakers that populate our weekly Colloquium Series (<http://www.aos.wisc.edu/calendar/content/colloquium.html>). This series, along with others that specifically involve research presentations by our own graduate students, have enhanced the intellectual culture of our department and promoted the development of a true community of scholars. We consider each of you to be members of this community and hope that you will accept our invitation to assist us in our continuing effort to foster excellence in teaching and research about the atmosphere and oceans of our fragile planet.





## Faculty News

### New Faculty Profiles

#### Galen McKinley



Galen is an ocean biogeochemist who uses global and regional models to understand the ocean carbon cycle and global carbon cycle. Her specific focus is on the interactions of physical and biogeochemical processes in the ocean. Galen's current projects are (1) a study of year-to-year variability in North Atlantic air-sea CO<sub>2</sub> exchange, (2) a model intercomparison of carbon flux variability in the North Pacific, and (3) an effort to use inert gases such as argon to improve both the understanding of gas exchange and deep mixing and the representation of these processes in ocean models.

Galen received her PhD in Climate Physics and Chemistry from MIT in 2002, studying under John Marshall. Following her degree, she left academia to investigate the world of environmental policy. Galen worked as a consultant to the Mexican Instituto Nacional de Ecología (National Institute of Ecology) on an analysis of opportunities for the joint control of air pollutants and greenhouse gas emissions in Mexico City from 2002-2003. From 2003-2004, she returned to the academy and studies of the oceans as a post-doc at Princeton University with Jorge Sarmiento and Michael Bender. Galen joined the AOS faculty in summer 2004.

#### Arne Winguth



Assistant Professor of Atmospheric and Oceanic Sciences, IES Center for Climatic Research, and Limnology and Marine Science Program. Joined the faculty in 1999. Ph.D., University of Hamburg, 1997 (Oceanography). Arne's interests are in Earth's climate change and the marine carbon cycle during past, recent and future times. The current research is focused on causes of mass extinctions, prediction of ecosystem changes by combining remote sensing data and computer simulations, and prediction of recent and future climate changes.

Causes of the Permian-Triassic (P-Tr) mass extinction and the associated reorganization of the marine carbon cycle (251 million years ago) are still controversial. His interest is in how the marine food web may have changed during that time and how these changes could have affected the oxygen concentration in the deep Permian ocean named Panthalassa.

Combining satellite data with computer models helps us to identify major processes in the marine ecosystem to predict future carbon uptake by the oceans. This was the subject of a recent Master Thesis (Jerry Tjiputra). Another important process is the transfer of carbon from the surface into the deep sea. Simulations with a state-of-the-art carbon cycle model have been carried out to investigate the sensitivity of carbon distribution to various parameterizations in the particle flux of organic carbon (Master Thesis, Matthew Howard).

Future climate change simulations, in collaboration with the Max-Planck-Institute for Meteorology in Germany, have been conducted by using a sophisticated earth system computer model. The predictions show that the uptake of carbon is significantly reduced by a slowdown of the deep ocean circulation

due to a freshening of the North Atlantic and an overall warming of the earth temperature by up to 3 degrees Celsius and more over the next two hundred years. A significant reduction of the Greenland ice sheet is associated with this global warming.

#### Ralf Bennartz



Ralf joined the Department in fall 2002. He studied at the Max-Planck-Institute for Meteorology in Hamburg, Germany, where he received a diploma (equivalent to Master's) and at the Free University of Berlin, where he received his PhD in 1997. Ralf's initial interest in the atmospheric sciences was triggered by his pastime as a glider pilot. His main research interests are satellite remote sensing, radiative transfer, and assimilation of satellite data into numerical weather prediction models. Ralf's work covers a wide variety of distinct meteorological subfields - for example, the one- and three-dimensional numerical modeling of radiative transfer in both a scattering and an absorbing atmosphere in the visible as well as in the microwave spectral range; surface scattering and absorption; the development, application, and verification of retrieval algorithms for water vapor, cloud liquid water, and precipitation from satellite-based observations; the synoptic-scale and microphysical structure of precipitating and non-precipitating clouds; large-eddy simulation studies of stratocumulus clouds; radiation studies using Global Circulation Models (GCM); and combined radar and passive microwave observations of precipitation systems. Ralf's research is currently funded via, NOAA, NASA, and the European Space Agency (ESA).

#### Grant Petty



Grant got his first exposure to meteorology as a shipboard and aviation weather observer with the U.S. Navy. He became intrigued by atmospheric processes and pursued a B.S. degree in Applied Physics with an emphasis in Atmospheric Physics from the University of California at Davis, followed by a Ph.D. in Atmospheric Science (1990) from the University Washington. At that time, he accepted a faculty position at Purdue University, where he taught for ten years before joining the AOS faculty at the University of Wisconsin-Madison in 2000.

His research specialization is in the area of radiative transfer modeling and passive microwave remote sensing of atmospheric moisture, especially precipitation. He has been involved in a number of NASA-funded programs and projects related to satellite measurement of global precipitation, including the Tropical Rainfall Measuring Mission (TRMM) and the Advanced Microwave Scanning Radiometer (AMSR) on board the Aqua satellite. In 2004, he published *A First Course in Atmospheric Radiation*, a new introductory textbook designed for undergraduate and first-year graduate meteorology students.

#### Dan Vimont



Dan Vimont developed an interest in climate variability while growing up outside Seattle, WA. He began research in mesoscale modeling while completing a degree in Physics at Gonzaga University (B.S., 1996). He moved on to the University of Washington where his research interests shifted toward coupled ocean-atmosphere interactions. Despite changing schools, he remains loyal to the Gonzaga Bulldogs' and UW Badgers' basketball teams (in that order). Dan received his MS from the University of Washington in 2000, and his PhD in early 2002. He continued

work on two post-doctoral appointments through the Joint Institute for the Study of the Atmosphere and Ocean (JISAO) and through the Earth Institute at Columbia University before joining the faculty at UW-Madison in July, 2003.

Dan's research interests are in coupled ocean-atmosphere interactions, climate variability and change, and climate impacts. A major focus of his research involves exploring how the mid-latitude atmosphere can impact tropical climate variability (e.g., ENSO) through coupled interactions in the subtropics. This work has identified mid-latitude atmospheric variability as an important precursor to ENSO events. These interactions between the mid-latitudes and tropics appear to impact the predictability and long-term variability of ENSO. Dan has recently started working with a group of economists to identify how ENSO impacts agricultural productivity and risk in Indonesia. Dan enjoys teaching graduate classes in Statistical Analysis and Large-scale Ocean-Atmosphere Interactions, as well as the undergraduate Weather and Climate survey course.

#### Eric De Weaver



Eric DeWeaver became interested in climate and atmospheric circulation while studying applied mathematics at the University of Maryland. He soon transferred to the Department of Meteorology, from which he got his PhD in 1999. He spent the following two years at the Joint Institute for the Study of the Atmosphere and Ocean (JISAO) at the University of Washington in Seattle, and joined the faculty at UW-Madison in 2001.

The primary goal of Eric's research has been to identify the dynamical mechanisms which cause fluctuations in climate from year to year and decade to decade. He is particularly interested in the dynamics of climate variations associated El Nino, the North Atlantic Oscillation, and annular modes. Recently, he has begun work on a project looking at surface winds in the Arctic and their representation in models used to study global warming. Arctic surface winds are crucial for understanding and simulating Arctic sea ice, a major source of uncertainty in global warming studies. Eric brings his enthusiasm for climate and circulation dynamics to the classroom when he teaches general circulation, geophysical fluid dynamics, and tropical meteorology.

### Faculty Sabbaticals

Three of our colleagues are enjoying sabbatical leaves over the next couple of years. Prof. John Young has been at the Institut de Ciències del Mar CMIMA-CSIC in Barcelona, Spain since August 2004 and will be there until August 2005. He is collaborating with Dr. Jose Pelegrí who visited AOS in the preceding year. Together they will be studying the oceanic and atmospheric boundary layers with an emphasis on boundary layer jet dynamics.

Prof. Greg Tripoli will attempt what many before him have considered impossible, taking a sabbatical leave while remaining in Madison! Specifically, Greg will be taking leave in the Fall 2005 term in order to rewrite his internationally recognized numerical modeling system, the University of Wisconsin Non-hydrostatic Modeling System (UW-NMS) in order that it can take advantage of the newest generation of powerful computers. Rewriting the model to include sophisticated data assimilation capabilities, to allow it to be run efficiently on the most powerful computers, and to produce probabilistic operational output represent major tasks that can be accomplished only with a period of intense focus and minimal distraction.

Prof. Matthew Hitchman will be taking a sabbatical leave during Spring 2006 in the United Kingdom to accomplish both educational and research tasks. First, he intends to enhance the instructional materials for his course AOS/IES 171, Global Change: Atmospheric Issues and Problems. Matt has taught AOS 171, taken by approximately 100 students each spring term, since 1992 and is ready to distill his years of course notes into an introductory textbook detailing the atmospheric science and human impacts issues associated with global climate change. Such a textbook does not currently exist and will be a welcome and long overdue addition to the field. The research he intends to pursue, at Reading and Cambridge Universities, will involve collaboration with a number of European scientists involved with the AURA satellite, designed to investigate ozone transport across the tropopause. Such research will have a broader impact on society through contributing to an enhanced understanding of the transport and mixing of trace gas species which protect the biosphere from ultraviolet radiation and help regulate the climate of Earth.

### Faculty Promotions

**Full Professor:** Steve Ackerman (2001), Zhengyu Liu (2002), Grant Petty (2003), Jon Foley (2004), Jon Martin (2004)

**Associate Professor:** Michael Morgan (2001)

### Faculty Retirements

As we welcome our new faculty we are also forced to accept the official retirements of a number of older colleagues whose individual and collective efforts have shaped not only our department but the very complexion of the field itself over the last three decades or more. In December 1998, Prof. William Smith, internationally renowned satellite meteorologist, retired from our faculty in order to pursue an opportunity at NASA's Langley Research Laboratory. The summer of 1999 saw the retirements of two additional faculty. In June, Prof. Charles Stearns, who for nearly three decades managed the Antarctic Meteorological Research Center here at UW-Madison, retired from the faculty. Chuck was among the most colorful characters in the department and his occasional appearance in our halls continues to spark interesting scientific conversation. In July 1999, Prof. Stefan Hastenrath, a giant in the field of tropical climate diagnosis and climate variability, retired after a nearly thirty year career in our department. Prof. Hastenrath provides a model of precise and concise logical thinking and, gratefully, is still working in his office nearly every day when not traveling to some tropical location, speaking the native language, and investigating the nature of tropical climate variability. He was awarded the Sverdrup Gold Medal by the AMS in 2001.

In May 2001 the department took another double hit with the simultaneous retirements of Prof. Francis Bretherton and Prof. David Houghton. Francis has had a say in nearly every significant issue in our broad field for nearly forty years – and his say has been extended by the formidable group of graduate students who studied under him including Brian Hoskins and Michael McIntyre. While at UW-Madison, Francis was a central figure in the emergence of Earth Systems Science as head of SSEC. Prof. Houghton spent nearly forty years as a member of our department and was involved in all manner of research questions ranging from the meso- to large-scale in dynamics and from the short to seasonal and longer time scales. David also made extraordinary contributions in terms of teaching and service while on the active faculty, acting as AMS President in 1995. He is currently, like nearly all the rest of his "retired" colleagues, active in a number of endeavors. Chief among these is his dedication to outreach through a series of public lectures on the science and public policy surrounding global climate change.

Finally, in June 2002 Prof. John Kutzbach, director of the Center for Climatic Research for nearly 30 years, "retired" after nearly 40 years on the faculty. John's research career transformed the study of paleoclimate and past climate change into a rigorous scientific discipline and brought him many accolades over the years. Most recently, he was awarded the Milankovitch Medal by the European Geophysical Union in April 2001. John was also recognized as one of the most popular instructors in the department over the years with his course on Past Climates and Climate Change being particularly popular.

We can never say enough about the tireless efforts these colleagues have made to create the department that so many of you remember fondly and so many of us are lucky enough to inherit. Such departures would engender only despair were it not for the promise of a bright future made so obvious by the newest additions to our faculty whom we introduce on pages 2 and 3.



## Department Events

### 2004 Events

#### Predictability Workshop

On 24 to 26 March 2004, the Department held a workshop on medium to extended range (3 days to 2 weeks) predictability. Organized by David Houghton, Linda Keller, and Michael Morgan, the workshop brought together over 50 operational and research meteorologists as well as forecast users from the public and private sectors to discuss: 1) current research relevant to the predictability of low frequency atmospheric phenomenon, 2) methods of conveying forecast uncertainty to users of medium-to-extended range forecasts, and 3) the societal and economic value of such forecasts. The workshop focused primarily on phenomena affecting the North Pacific and regions downstream over North America during the fall and winter. Specific workshop concerns included, but were not limited to:

- 1) Assessing our current understanding of weather regimes and our ability to forecast their onset.
- 2) Identifying the needs of the public and private sectors in terms of medium-to-extended range forecasts.
- 3) Identifying the value placed on medium-to-extended range forecasts by private and public sector users of such forecasts.
- 4) Evaluating and potentially improving the means by which forecast uncertainty is conveyed to the media and ultimately to public and private users by the National Weather Service and private sector forecast providers.



A detailed summary of the workshop, copies of the workshop presentations, as well as a list of the participants may be found at:

<http://helios.aos.wisc.edu/workshop>

#### Climate Diagnostics Workshop

In his last year as departmental Chair, Prof. John Young took on the job of host coordinator for the 29th Climate Diagnostics and Prediction Workshop. The national meeting of 160 scientists took place in October 2004, within the beautiful lakeshore setting of the Monona Terrace Convention Center, near the state capitol.



The meeting is an annual week-long event involving NOAA and academic climate researchers. For AOS, it became a chance to honor its long history of climate research leadership and to introduce its new generation of climate professors to the community. In addition, a special session on satellite applications to climate was conducted, emphasizing another traditional strength of the department. AOS and the UW Graduate School made it possible for free student participation: graduate students contributed papers and posters, and some AOS classes were brought to the meeting. You may find the website for the meeting, links to presentations, and a photo gallery by visiting:

<http://www.cpc.ncep.noaa.gov/products/outreach/meetings.shtml>

The meeting had historical meanings as well. It was held on the 25th anniversary of the last such meeting at UW. AOS professors who were involved at both events were Reid Bryson, Stefan Hastenrath, David Houghton, John Kutzbach, and John Young. In addition, a special session celebrated the 25th anniversary of NOAA's Climate Prediction Center, and its former directors were feted at the mid-week banquet.

#### Kutzbach Symposium and Banquet

A three-day Symposium and Banquet honoring Prof. John Kutzbach were held on the UW-Madison campus on 21-23 May 2004. The Symposium and Banquet were held on campus at the J. F. Friedrich Center, along the shore of Lake Mendota. About 100 people attended. John Young (AOS) and Zhengyu Liu (AOS and CCR) opened the symposium.

The symposium covered eight themes related to Kutzbach's research and that of his students and colleagues: (1) recent climate variability and trends, (2) past climates forced by tectonics of continental drift and mountain uplift, (3) past climates forced by orbital changes, including glacial/interglacial cycles, (4) decade/century variability of climate and abrupt climate change, (5) ocean/atmosphere feedback and vegetation feedback, (6) interdisciplinary



aspects of climate, people and environment, (7) recent and future climate change associated with human activities such as greenhouse gas increases, and (8) international aspects of research cooperation and organization.

The symposium featured more than twenty talks, along with discussion periods and panels. Participants, in addition to UW-Madison colleagues, students and friends, included many of Kutzbach's PhD students and many of his colleagues from other USA universities, and from NCAR, AGU, Canada, China, Denmark, England, and Germany, as well as members of John's family, including Gisela, and children Katrina (and husband Dana and son Aaron) and Mark.

#### April, 2004 Student Awards Day

Awards presented to recipients by Chair, John Young



##### **Erica McGrath**

Horn Award for excellence in overall performance as an undergraduate.



##### **Zhenglong Li and Feng He**

Schwerdtfeger Award for excellent performance in first year graduate studies (Feng He not pictured).



##### **Jason Otkin and Daryl Kleist**

Lettau Award for outstanding MS Thesis (Darryl Kleist not pictured).



##### **Amanda Adams**

Wahl Award for outstanding performance as a Teaching Assistant.



##### **Will Lewis and Justin McLay**

Colloquium Student Service Award for creative dedication to the department's intellectual life.



#### Upcoming Event

#### Retirement Celebration for David Houghton

In honor of his many years of service to our University, our Department, our students and our science, the Department of Atmospheric and Oceanic Sciences is planning a Retirement Celebration for David Houghton to take place in the first or second week of September 2005 on campus. Details concerning the event will follow in a separate mailing but we hope many of you can travel back to Madison to celebrate David's career and contribution to our Department.



#### Graduate Program Report

Our graduate program today has over fifty M.S. and Ph.D. students in residence, and we continue to attract over 120 applications per year from highly qualified students around the world. We typically make research assistantship and fellowship offers to approximately twenty of the best of these applicants, and an average of fifteen accept admission and join the department the following Fall. We attribute our recruiting success to the longstanding reputation of the department in traditional areas of climate science and meteorology as well as its close association with CIMSS, arguably the most visible academic center for atmospheric remote sensing research in the world.

Clearly, our graduate students are among the elite of those going into the fields of atmospheric and oceanic sciences. They demonstrate their motivation and aptitude for science through their tireless involvement in federally funded research projects in AOS, CIMSS (Cooperative Institute for Meteorological Satellite Studies), CCR (Center for Climate Research), and SAGE (Center for Sustainability and the Global Environment), as well as by way of their participation in conferences and their co-authorship of peer-reviewed journal articles. Our dedicated and knowledgeable teaching assistants also play a crucial

role in the academic mission of the department; without their help, we could not offer many of our large undergraduate lecture and lab courses.

Since 1999, AOS has enjoyed an unusual influx of new faculty: Profs. Ralf Bennartz, Eric DeWeaver, Galen McKinley, Grant Petty, Dan Vimont, and Arne Winguth. These individuals have not only helped broaden the array of research topics available to our graduate students but they have introduced a number of new graduate-level elective courses in advanced radiative transfer, remote sensing, chemical transport modeling, climatological analysis, atmospheric dynamics, and physical oceanography.

Looking down the road, we have made it a priority to further strengthen our graduate program. Among other things, we believe this requires us to find ways to substantially increase the number of RA and fellowship offers that can be made to the best new students. To this end, we are planning to establish a fellowship endowment, funded in part by donations from alumni and other supporters of the department. Details will be forthcoming at a later date, but we hope you will begin thinking now about how you might support this initiative.

## Awards Honor Graduate Students

**Gijs de Boer:** Received a travel grant from the International Laser Radar Conference/NASA to attend the 22nd ILRC in Matera, Italy, summer, 2004.

**Shelley Knuth:** National Collegiate Weather Forecasting Contest. National Plaque Winner (All Divisions) Period #3 – Barrow, AK, Oct. 2001.

**Steven Decker:** Received two plaques from the National Collegiate Weather Forecasting Contest – 2001-02 first place overall for the Boise period; 2003-04 first place in the graduate student division for Burns.

## Master's Degrees (2000 – 2004)

**May 2000** (JoAnne J. Kruepke, Erik R. Olson, Christopher C. Schmidt, Fengying Sun, Suzanne W. Wetzel); **August 2000** (Jeremy D. Herbst, Cynthia L. Mackenzie, Jason P. Samenow); **December 2000** (Amihan S. Huesmann); **May 2001** (Justin G. McLay, Derek J. Posselt, Hong Zhang); **August 2001** (Nathan D. Marsili); **December 2001** (Monica K. Harkey, Ralph E. Kuehn, James P. Riffel); **May 2002** (Gregory M. Gallina, Robert E. Holz, Brian W. Kabat, Gail E. McGovern, Jeffrey A. Michalski, Michael J. Pavolonis); **August 2002** (Kristopher M. Bedka, Howard I. Berger); **December 2002** (Amanda S. Adams, James E. Olson, Sarah M. Thomas); **May 2003** (Brian J. Good, Jason A. Otkin, Jane E. Fairchild); **August 2003** (Tania G. Casal, Steven G. Decker, James A. Hawkinson, Daryl T. Kleist, William E. Lewis); **December 2003** (Mark A. Gray, Katherine M. LaCasse, David J. Westberg); **May 2004** (Ryan B. Aschbrenner, Tarisa K. Zimet, Andrew J. Leanna); **August 2004** (Gregory R. McGarragh, Marek J. Rogal, Blaine C. Thomas, Jerry F. Tjiputra, Lihua Wang); **December 2004** (Jason C. Brunner, Gijs De Boer, Michael J. Fries, Jr., Matthew T. Howard, Michael V. Mores)

## PhD Degrees (2000 – 2004)

**May 2000** (Robert N. Gifford, Boyin Huang, Nicholas R. Nalli); **December 2000** (Hsin-mu Lin); **May 2001** (Paolo Antonelli, Kurt F. Brueske); **August 2001** (Chieko Kittaka, Shane D. Mayor); **December 2001** (V. Lynn Harvey); **May 2002** (Eric J. Bayler, Sing-Ik Shin); **August 2002** (Edwin J. Mierkiewicz); **December 2002** (Simon D. Donner, Hyun Mee Kim); **May 2003** (David D. Turner); **December 2003** (Xuanji Wang); **May 2004** (Marcus L. Buker, Giulia Panegrossi, Peter K. Snyder, Tracy E. Twine); **August 2004** (Justin G. McLay); **December 2004** (Shaima L. Nasiri, Eric D. Rappin)



## Undergraduate Program Report

Our undergraduate program continues to thrive. David Houghton had been the longtime Chair for Undergraduate Affairs until 1997 when Jon Martin took over that position. This fall, with Martin becoming the Department Chair, Prof. Michael Morgan has taken over as Chair for Undergraduate Affairs. In his first Fall in the post, Michael witnessed what we hope is the start of a trend – an incoming junior class of 35 students! Many of you may know that this compares to a 10-year average of a little more than 20. Thus, the undergraduate major is growing in popularity – perhaps too quickly!

In addition to servicing a growing population of majors, our undergraduate instruction reaches nearly 1000 students each year through a large collection of 100-level introductory courses. This large number of undergraduates represents an enormous increase in our Department's campus-level visibility.

## AMS

The undergraduate school year started off with a bang when the American Meteorological Society- UW Chapter hosted a rooftop barbeque. The enthusiastic, motivated, and involved undergrads quickly got to know one another and a few of the graduate students and professors that stopped by for a bite to eat. The AMS- UW Chapter also came out of the gates running by becoming an officially registered student organization on the UW campus. This provided the group with outreach opportunities, a slew of new member inquiries, as well as a means to apply for grants to assist in travel expenses and other event costs. Four undergraduates took advantage of these grants and were able to make the trek to San Diego for the National AMS Conference. This provided them with a tremendous opportunity to meet with potential employers, graduate schools across the country, and, of course, to have a little fun. The AMS- UW Chapter also hosted its annual Solstice Party that was attended by nearly 100 undergrads, grads, professors, and friends of the department. The highlight of the evening was a live performance by The Sundogs, an amazing cover-band that features two professors from the department, and



special appearances by a few talented students who wanted to give the rocker life a try. The AMS- UW Chapter also hosts monthly meetings where speakers with diverse backgrounds in meteorology tell current students about their jobs, their education, and any research they are currently doing. The Chapter has been able to provide these activities through money raised from t-shirt sales, donut sales, and the minor dues that are required of student members each year.

Beyond the events organized by the AMS- UW Chapter, the undergrads are a very tight knit group. Whether it be midnight study sessions in the synoptic lab, lunch after an 11:00 class dismisses, or Weather Watch meetings on Friday afternoons, the friendships established by the undergrads stretch far beyond their common interest in the weather.

## Owen Daniels

Over the years I have mentioned to our hundreds of undergraduate majors that they are likely to toil in obscurity as Atmospheric and Oceanic Sciences majors since, though the major is a demanding and rigorous physical science, it is commonly perceived as a shortcut to a career in broadcasting. All of our undergraduate majors work hard balancing the demands of our curriculum and those of life outside AOS. One member of our Class of 2005, however, has had a particularly daunting set of challenges – navigating through the AOS major while being a high profile member of an NCAA Division I football program. That young man is Mr. Owen Daniels.



Owen hails from Naperville, Illinois where he was a highly recruited high school quarterback, considering offers from the University of Illinois, Northwestern, University of Colorado, and Arizona State University among others. He was NOT, however, considering UW-Madison but was coaxed into making a trip one weekend in September 1999. In the background during this whole recruiting exercise was a long standing interest in the weather, traceable back to the age of 6, at which time severe storms instilled fear and trembling in the young boy. Having decided sometime in middle school that he wanted to study the weather, a favorable meeting with the Wisconsin coaching staff along with a brief introduction to our undergraduate program, left Owen convinced that he would be a Badger by the end of that recruiting weekend.

The transition from high school to college was a formidable challenge both on and off the field. The football commitment is a minimum of 20 hours each week with a practice every day beginning with meetings from 2:30 – 4 PM, followed by practice from 4 – 6 PM. Supper and studying film comes next and finally, no earlier than 8 PM, time for hitting the books. Owen reports that success at the Division I level is largely a result of one's mental commitment to preparation for game day. The same discipline must be transferred to the academic arena where the single greatest predictor of success is dedication and hard work. In this way, Owen regards the requisite adjustments from high school to college athletics and academics as compatible and not competing.

Among the most difficult decisions of his tenure at UW was the decision, motivated by a burning desire to get into the game, to change positions from QB to tight end. "That decision was even more difficult than deciding where to go to school!", according to Owen. Of course, to the delight of Badger fans everywhere, that choice has proven to be wonderfully successful as Owen has become a go-to-guy on a successful football team earning All Big Ten Honorable mention as a player this fall after having been Academic All Big Ten in 2002-03 and 2003-04. As all of you will agree, graduating in four years with a degree in AOS is no cakewalk and to do it while earning such distinction outside the classroom is something really special. After graduation, Owen hopes to play in the NFL, noting that the rosters of the two most recent Super Bowl teams have the highest percentage of college graduates in the league. We all hope that the mental rigor to which you have been subjected in AOS will contribute, in some way, to a successful pursuit of that dream, Owen!

## Undergraduate Degrees (2000 – 2004)

**May 2000** (Tony M. Buchanan, Timothy M. Corcoran, Gregory L. Daniels, Derek C. Heit, Haddie L. Heitkamp, Chad D. Little, Sarah K. Mussoni, Jeremy D. Nelson, Robert W. Norton, Ryan R. Rakow, James M. Rogers., Nengwei (Tom) Shih, Kirk R. Spencer, Christian C. Yerxa); **August 2000** (Andrea M. Cordie, Theodore J. Wegner); **December 2000** (James P. Sullivan, Karin M. Swanson); **May 2001** (Daniel L. Bayer, Jason D. Beilfus, Amy J. Breitenbucher, Carrie L. Byers, Tara L. Dudzik, Evan G. Fago, Katherine M. Goodstein, James A. Hawkinson, Daryl T. Kleist, Jeffrey T. Lackner, Nathan A. Larscheid, Maren A. Rose, Martha R. Stevens, Robin L. Tanamachi, Paul J. Trambley, Anthony G. Uzquiano); **December 2001** (Destiny A. Dube'); **May 2002** (Aaron H. Adler, John P. Alliet, Brian K. Boersma, Jason C. Brunner, Sarah E. Finn, Curtis L. Jacobsen, Bryan M. Krueger, Shelley L. Langfeldt, Kyle A. Larson, Kyle J. Leesman, Kimberly J. Mueller, Erika M. Pernitz, Michael R. Snow, Ryan D. Torn, Kristopher L. Wile, Timothy H. Woebeking); **December 2002** (Laura M. Balke, Frederick E. Brauer, Andrew E. Sudoff, Stephanie L. Szejna, Lance J. Wamsley); **May 2003** (Nicholas J. Biermann, Sarah E. Bowman, Rebecca L. DeWolf, Matthew P. Dobbel, Paul A. Fuentes, Julia R. Gabler, Allison M. Hoggarth, James R. Hughes, Julie A. Murphy, David A. Rahn, Craig D. Sazma, Justin M. Sieglaff, Daniel F. Steinhoff, Michael R. Stiller, Janie M. Wellnitz, Julie E. Whitcomb, Justin J. Zollitsch); **August 2003** (Thomas J. Wachs); **December 2003** (Evan M. Smith); **May 2004** (Kacie L. Bare, Holly C. DeRose, Enron W. Jones, Raymond J. Heyroth, Kristopher B. Karnauskas, Sarah A. Levinson, Katherine M. O'Brien, Jessica M. Peterson, Patrick M. Pollard, Keah C. Schuenemann, Jessica A. Staude, James M. Thompson); **August 2004** (Douglas S. Graham, Mark B. Hutchinson, Andrea A. Lopez); **December 2004** (Kevin R. Zakrzewski)

## Awards Honor Undergraduate Students

**Erica Mc Grath:** 2004-05 Hilldale Undergraduate Research Award, Advisor: Grant Petty.; **Kristopher Karnauskas:** 2003-04 Hilldale Undergraduate Research Award, Advisor: Jon Martin.; **Erica McGrath:** Represented UW-Madison, Department of Atmospheric and Oceanic Sciences at the Undergraduate Summer Leadership Workshop, June, 2004, Boulder, CO.

## ☆ Alumni Contributors ☆

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*Thank You!*



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