



Making Waves

Fall 2012



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Greetings from the Chair

Jonathan Martin



The notoriously tempestuous month of November was ushered in this year with the devastation accompanying Hurricane Sandy. As is often the case, amidst the tales of tragedy surrounding the storm, the nation's spirits have been buoyed by countless examples of heroic rescue and relief as well as unmistakable signs of heroic advance in understanding and predicting extreme weather. These latter efforts, though certainly not uniquely a Wisconsin achievement, are part of an enterprise that has been significantly driven by the collective industry of generations of educators and researchers here at UW-Madison. This high profile example of the clear benefit that proceeds from our cherished Wisconsin Idea arrives at a time when the very justification for the UW is met with a significant challenge from our state government.

As you may be aware, a movement is afoot that aims to measure the University's value based narrowly upon the employment success of its graduates rather than on its comprehensive ability to deliver practical societal benefit derived from its traditional excellence in teaching, research and service. This new direction raises concerns about the UW's ability to maintain its national prominence as a center for research and scholarship. It also bodes ill for small, energetic departments, such as ours, striving to maintain a separate but vibrantly collaborative relationship with the rest of campus and our broader scientific community.

If you find yourself similarly concerned about the future health of the UW and your home department, we encourage you to take the time to write a letter to our Governor and the Board of Regents testifying to the role that your experiences in AOS, and at UW more broadly, have played in the development of your success. Those of us who have had the privilege to work here, whether as students, staff, or faculty, know how special this department has always been. It has been a high honor to serve it as Chair over these last nine years.

We are thrilled to share with you all, in this newsletter, recent news from AOS that provides fresh evidence of the enduring success we all recognize as a hallmark of this wonderful department.



Faculty News

An Active Year



Professor Steve Ackerman was named Associate Dean for the Physical Sciences in the UW-Madison Graduate School near the end of the summer. This permanent appointment follows on the heels of an interim appointment that Steve began on January 13. Steve has been Director of the Cooperative Institute for Meteorological Satellite Studies (CIMSS) since 1999 and is an award winning teacher.

Graduate School Dean Martin Cadwallader noted Steve's extensive administrative background as well as his academic accomplishments in announcing the appointment; "Steve brings a wealth of experience and a complete understanding of the university environment to this role. His scholarly achievements are outstanding and over many years he has proven to be an outstanding citizen of the university community. We're delighted that he has agreed to serve in this role." Congratulations, Steve!



It has been a busy year for *Professor Tracey Holloway* (affiliate with AOS). Tracey was the recipient of the first-ever C3E award for education and mentorship in clean energy. Sponsored by the Massachusetts Institute of Technology Energy Initiative, the award is a key component of the U.S. Department of Energy's implementation of the Clean Energy Education and Empowerment Initiative or C3E, a unique

program designed to help increase the number of women engaged in clean energy disciplines, from science and academia, to industry, to policy, to advocacy. Tracey was recognized for her contributions to clean energy and for serving as an inspiration to young women and men considering a career in the field. The \$10,000 award was presented at the Women in Clean Energy Symposium at MIT in September.

Through her excellence as a role model for productive and transformative student-faculty mentoring relationships and for maintaining a sustained and innovative approach to the enterprise of undergraduate research, Tracey was also recognized as the 2012 Geosciences Undergraduate Research Mentor by the Geosciences Division of the Council on Undergraduate Research (CUR). Tracey's nomination package, assembled by former students and current colleagues, speaks of unrelenting support and mentoring of both her current research group and former students long after they have moved on. She received the award at the Geological Society of America Meeting in Charlotte, N.C. in November. A recent example of a portion of these efforts was Tracey's hosting, in June of a national professional development workshop for the Earth Sciences Women's Network attended by 70 women from across the country, at various stages in their respective careers.



Professor Grant Petty was elected to a three-year term on the University Committee (UC) with his service beginning this past summer. The University Committee is the Executive Committee of the Faculty Senate and is therefore instrumental to the protection of Faculty Governance on campus. The Committee consists of six faculty members, no more than three of whom can be from a single school or college, each serving three-year terms. Among the issues currently being debated in the Faculty Senate are the Human Resource Design project which seeks to revise employment categories and metrics for the entire University system. Of course, the UC will also be involved in the Chancellor Search and Screen. Service on this committee requires attendance at long Monday afternoon meetings, sub-committee work on a variety of issues, and lots of homework. Grant's experience on the committee increases the department's knowledge of a variety of campus level issues that will certainly have an impact on department activities. Congratulations to Grant!



Professor Galen McKinley took her first sabbatical in the 2011-2012 academic year. The year began with a 9-week stay at the Woods Hole Oceanographic Institution in Woods Hole, MA which Galen reports was a wonderful chance to experience the breadth and depth of current oceanographic research, and to establish new connections with a few specific colleagues. One focus of the scientific conversations that arose during this time was the need for synthesis of observations and global-scale modeling of the export of organic carbon from the surface ocean to the deep ocean. This is an important question with respect to the potential for climate-driven change in the long-term carbon sink in the ocean.

After the extended visit to Woods Hole, Galen returned to Madison and worked mostly from her home office on research projects and development of a new course entitled "Global Warming: Science and Impacts" that she will teach for non-major undergraduates for the first time in Spring 2013.

Galen writes, "My sabbatical was a great opportunity to reconnect with my colleagues in the broader oceanographic community, to flesh out new ideas for teaching and research, and to complete several publications. I sincerely thank the State of Wisconsin, the University of Wisconsin – Madison and my AOS colleagues for their support in this endeavor."



AOS Department Chair and Professor Jonathan Martin was awarded the Vilas – Hamel Distinguished Achievement Professorship in March 2012. The award recognizes professors whose distinguished scholarship has advanced the boundaries of knowledge, and who have demonstrated excellence in teaching and/or service. He will carry the title of Vilas-Hamel Distinguished Achievement Professor for the duration of his career at UW-Madison.

In April, Prof. Martin was one of four UW-Madison faculty members listed as among the country's top 300 teachers by The Princeton Review and RateMyProfessors.com. The Princeton Review, which helps students prepare for college admissions, compiled the list based on reviews by thousands of students and reviews on www.ratemyprofessors.com, a web site that allows students to rate their professors' performances. Also making the list was AOS Alum, Prof John Knox (Ph.D. 1996) an Assistant Professor in the Department of Geography at the University of Georgia.



Alumni News



Ari Salasari visits Madison

Mr. Ari Salasari (B. S. 2006) visited briefly in the first week of October while attending the NWA conference at the Monona Terrace. Ari is an on-air meteorologist at WAAY in Huntsville, AL and can currently be seen delivering the forecast at 9 PM.



News from Los Angeles

Mr. Neil Berg (B.S. 2009) has begun his fourth year of graduate studies at UCLA. In recent correspondence with one of our faculty colleagues, Neil wrote "Finally, as I approach year four of graduate life, I have concluded the AOS program at UW prepared me more than any other incoming graduate student. There was very little new material in the core classes that I took in the first two years. The

dynamics sequence at UW was more mathematically intensive than my graduate dynamics course! Even the basic linux and scientific programming skills were beyond what most incoming students had. I was able to finish my courses and exams fairly quickly, which lead me to researching and finishing a Climate Dynamics paper earlier in the year. In sum, I'm continually thankful for the preparation you and the other professors gave me. It has paid off in spades. Thank you!"



Department Events

Weber selected for search committee

Our Department Administrator, *Ms. Debbie Weber*, was picked to serve as one of two Classified Staff members on the 25 member search and screen committee to help identify a successor to UW-Madison interim Chancellor, David Ward. Following a national search and intensive screening process, the committee is expected to recommend five candidates as finalists for consideration by President Reilly and

a special Board of Regents committee, chaired by Regent Charles Pruitt of Milwaukee. Debbie's selection to serve on the committee underscores her vast experience and recognized excellence on campus issues. We are very proud of our outstanding administrator. *Congratulations, Debbie!*



Fourth Annual Robock Lecture Discusses Climate Change Detection in Variable Background State

On November 8 over 70 people attended the Department's 4th Annual Robock Lecture, this year presented by eminent atmospheric scientist, *Prof. Mike Wallace* of the University of Washington. Prof. Wallace has been at the forefront of the field of diagnosing climate variability and his influence in our field is well known, including his nearly universally known and loved graduate student introductory atmospheric science textbook. For his Robock Lecture, Prof. Wallace presented an overview of work on detection and attribution of climate change with a talk titled, "Attribution of Climate Change in the Presence of Natural Variability." He discussed recent large-number ensemble climate model experiments used to diagnose forced and unforced variability in 50-year climate projections. Prof. Wallace also presented a technical talk earlier in the day as part of the Climate, People, and Environment Program seminar series on "A Global Climatology of Lightning", where global lightning detection network data were compiled to present diurnal and seasonal patterns in global convection, especially at land-ocean boundaries. Mike was generous with his time in visiting with a large number of faculty and students during his 2-plus day stay in Madison.



Tom Skilling visits AOS

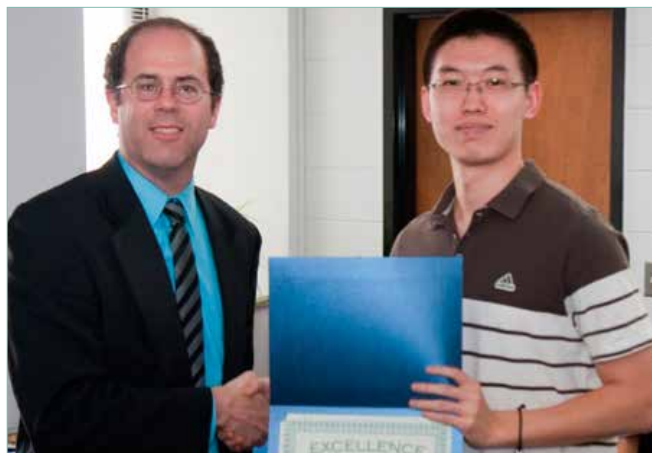
On Monday October 8, the UW Student Chapter of the AMS sponsored a visit to the department by Mr. Tom Skilling, Chief Meteorologist at WGN in Chicago. Mr. Skilling is perhaps one of the most well known broadcast meteorologists in the country and he gave a comprehensive overview of his long and distinguished career, describing his perspective on the many changes that have occurred over the last 4 or 5 decades – both in terms of the science of meteorology and the nature in which meteorological information is conveyed to the public. Tom had an affiliation with UW many years ago and was an undergraduate here when AMS President Louis Uccellini was a graduate student. Tom testified to the way the undergrads then looked up to the graduate students, especially Louis! Some things never change. Tom's talk was well attended by current students and certainly left them with a deeper appreciation of the great legacy they have inherited in this department.

Department Awards Day

The Annual Department Awards Day was held on April 25. We gathered to honor excellence in both our undergraduate and graduate student's scholarship.



Mr. Andre Perkins accepts the Lettau-Wahl Award for excellence in overall performance as an undergraduate.



Mr. Feiyu Lu accepts the Schwerdtfeger Award for excellent performance in first year graduate studies.



Mr. Nicholas Ofstun accepts the Horn Award for excellence in overall performance as an undergraduate.



Mr. John Sears accepts the Lettau Award for Outstanding Master's Thesis - Investigating the Role of the Upper-Levels in Tropical Cyclogenesis – mentored by Chris Velden and Prof. Steve Ackerman.



Mr. Kyle Meier accepts the Sunkel Award for exceptional scholarly potential.



Mr. Alex Kubicek accepts the Wahl Award for outstanding performance as a Teaching Assistant.



Ms. Nicole Colasacco-Thumm accepts the Colloquium Student Service Award for creative dedication to the intellectual life of the Department.

Welcome to New Staff Members

We have welcomed two new office staff members in the past year. First, our new Student Status Examiner, Ms. Jan Holmes, started in early July and is gearing up for her first graduate student recruitment exercise in AOS. Jan replaces Ms. Angel Skram whose dedication to our students and the department over the past few years is greatly appreciated. Second, our new Financial Specialist is Ms. Alice Halfen who started in October. Both Alice and Jan have had previous experience as department administrators so we have assembled a formidable office staff. Welcome to both Jan and Alice!

AMS Annual Alumni Reception

The 5th annual UW-Madison reception was attended by over 100 people at the AMS Annual Meeting in New Orleans in January 2012. The next installment of this fabulous event will take place at the AMS Annual Meeting in Austin, TX on Tuesday January 8, 2013 from 6:00 – 9:00 PM in Salon D at the Hilton Austin. For those of you who have attended in the past, you know how much fun we have. For those who have not, please join us on January 8 and don't forget to pick up your Bucky Badger pin when you stop by for food, drinks, and reminiscing with old friends and current colleagues.



Graduate Program Report

AOS Graduate student Handlos wins AMS award

In April, *Mr. Zachary Handlos*, working with *Professor Larissa Back*, won the American Meteorological Society's Max Eaton prize for his work on "Estimating Vertical Motion Profile Shape within Tropical Weather States," presented at the 30th Conference on Hurricanes and Tropical Meteorology. In their study, the authors adopt a new approach towards estimation of the vertical distribution of latent heating profiles via estimation of vertical motion profiles using observed surface convergence and precipitation data. They showed that 1) omega-profile variability (analogous to latent heating profile variability) is not solely associated with stratiform rain fraction, but is also associated with the magnitude of surface convergence and 2) that each weather state is associated with its own unique mean state-profile. *Congratulations Zak!*

Jacola Roman Wins 1st Place on Paper Presentation at AMS

Ms. Jacola Roman, current AOS Graduate Student and former AOS Undergraduate, won first place on her student paper presentation at the AMS 18th Conference on Satellite Meteorology, Oceanography, and Climatology & AMS First Joint Asia Satellite Meteorology Conference in New Orleans, January 22-27, 2012. Her paper was titled *Using Satellite Atmospheric Infrared Sounder (AIRS) and a Ground-based Global Positioning Satellite (GPS) Network to Validate the Precipitable Water Vapor (PWV) in Global Climate Models (GCMs) and Numerical Weather Prediction (NWP) Regional Reanalysis. Congratulations Jacola!*

AOS Graduate Student, Shellie Rowe, Selected as L&S Teaching Fellow

This spring AOS graduate student, *Ms. Shellie Rowe*, was named an L&S Teaching Fellow after a selection process that includes competitive nomination within departments and then at the College level. AOS has had only two previous Teaching Fellows, Alan Czarnetzki (1991) and John Knox (1995). This is a significant honor and came with substantial responsibilities. At the beginning of the Fall Semester 2012, the College of Letters and Sciences held its 23rd annual training and orientation workshop for L&S teaching Assistants. Typically some 400 new and experienced L&S teaching assistants attend all or part of the day of workshops. At this workshop, Shellie gave two well-attended presentations and led discussions on the topic "Resolving Student Challenges" and "Questions: Models of Effective Communication in a Variety of Teaching Scenarios". *Congratulations, Shellie!*

PhD Recipients

Fall 2011 PhD Recipients

Smirnov, Dimitry, “Extratropical Forcing of Tropical Atlantic Variability.” (Vimont)

Bagley, Justin, “Impacts of Land Cover Change: Energy Regulation, Breadbasket Production, and Precipitation.” (Desai)

Spring 2012 PhD Recipients

Sharon Jaffe, “Diagnosing Inter-Model Variability of Northern Hemisphere Jet Stream Portrayal in 17 CMIP3 Global Climate Models.” (Vimont/Martin)

Matthew Sitkowski, “Investigation and Prediction of Hurricane Eyewall Replacement Cycles.” (Kossin)

Benjamin Sulman, “Peatland Carbon Cycle Responses to Hydrological Change at Time Scales From Years to Centuries: Impacts on Model Simulations and Regional Carbon Budgets.” (Desai)

MS Recipients

Fall 2011

Jordan Gerth, “Improving Cloud and Moisture Representation by Assimilating Goes Sounder Products into Numerical Weather Prediction Initial Conditions.” (Ackerman)

Kim Na-Young, Non-Thesis option. (Bennartz)

Spring 2012

Michael Hiley, “Triple Frequency Radar Reflectivity Signatures of Snow: Observations and Comparisons to Theoretical Ice Particle Scattering Models.” (Bennartz)

Erik Janzon, “Data Assimilation of a Network of Ground-Based Boundary Layer Profilers: Changing the Horizontal Density of the Observations.” (Turner)

Nathaniel Miller, “Microwave Radiometer Observations of Surface Based Inversions Above the Greenland Ice Sheet.” (Turner)

Jesse Roberts, “The Impact on Modeled CFL Uptake in the North Atlantic Due to a Submesoscale Eddy Parameterized.” (McKinley)

Lisha Roubert, “Assimilation of GOES Infrared Brightness Temperatures with an Ensemble Kolman Filter: Track and Intensity Impacts for Hurricane Rita.” (Tripoli)

Matthew Ryzdik, “Relationship Between Snow Extent and Mid-Latitude Cyclone Centers From NARR Objectively Derived Storm Position and Snow Cover.” (Desai)

John Sears, “Investigating the Role of the Upper-Levels in Tropical Cyclogenesis.” (Ackerman)

Kelsey Watkins, “Modeling the Impact of African Dust on the Tropical Atlantic Sea Surface Temperature.” (Vimont)

Mark Webrenberg, “Interpreting Chinese cave & 180: A Study of the Effect of Monsoon Changes in an Isotope-Enabled GCM.” (Liu)

Undergraduate Degrees

Spring 2012, Bachelor of Science Degrees

Cory Clifcorn, Elise Garms, Erik Gould, Ryan Harp, Alexandra Karambelas, Andrew Lahr, Kyle Meier, David Mikolajczyk, Scott Trevorrow, Elena Willmot

☆ Alumni Contributors ☆

November 2011 – November 2012

Barton J. Adrian, Richard K. Albrecht, James F. Andrus, Thomas J. Balousek, John J. Bates, Dan A. and Stacy E. S. Baumgardt, Craig L. Berget, John M. Blank, Jerome B. and Amy G. Blechman, David H. Bromwich, Jim D. Brader, Melissa K. Carr, David B. Clarke, Alan C. Czarnetzki, Stephen G. and Lisa Dehner, John E. Dietrich, Claude E. Duchon, Gerald E. English, Geoffrey M. Flint, John P. and Pier E. Geis II, Donald A. Haines, Jean A. and Russell A. Hankins, Stefan Hastenrath, Floyd F. Hauth, Leon E. Heller, Martin P. Hoerling, Doris Hood, Dale N. Hovland, William J. Hurlin, Edward C. Johnston, Anton F. Kapela, James A. Kaplan, Marc B. Kavinsky, Gary S. Kirst, Richard W. Knight, Allen Kupfer and Blanche Frank, Gisela and John E. Kutzbach, Thomas H. Kyle, Dennis A. and Marilyn B. Lawler, Matthew A. Lazzara, Thomas J. and Anne M. LeBlanc, Laurence G. Lee, Cecil Sy-Sheu Lo, Craig S. Long, Lifeng Luo, Nathan L. and Katherine L. Mahr, Richard W. Maconi, Dennis P. McCormick, Mark G. Moede, Richard J. Naistat, Shaima L. Nasiri, Eric D. Nelson, Michael P. and Cynthia C. Nelson, Kristin A. and Peter N. Nines, Byron A. Paulson, Jeffrey S. Penner, Brian A. and Heide M. Petermann, Thomas J. Phillips, Terrance Robert Rahman, James E. Ramer, Ellis E. Remsberg, Stephen J. Rigney, Rutgers School of Environmental and Biological Sciences, Richard S. Ryrholm, Laura H. and Bill Salganik, Matthew Salganik, Savant Capital, Todd J. and Dawn Shea, Edward J. Shimon, Christopher C. and Karen L. Smallcomb, William J. and Marcia J. Smith, Marilyn A. Soulsburg, Alfred J. and Mary V. Stamm, Michael J. Staudenmaier Jr., William J. Steffen, Mark P. Steinberg, John E. Stout, Norton D. Strommen, Sun City Veterans Association, William E. and Ruth M. Togstad, John C. and Ruby M. Turner, Louis W. and Susan Uccellini, Stephen J. Vavrus and Susan K. Swanson, Rev Monique Gamache Venne, Bette M. Wade, Ryan W. Walbrun, Russell E. Welsh, George A. Weidner, Dean A. Wilson, Donald E. Wuerch, John A. Young, John W. Zillman

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Growing cumulonimbus over southern Wisconsin in May 2011. Photo by Grant W. Petty



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