University of Wisconsin-Madison • Department of Atmospheric & Oceanic Sciences

Making Waves

Fall 2005

SSEC

Features

THE UNIVERSITY of WISCONSIN MADISON

Greetings from the Chair

Jonathan Martin

The autumn in Madison is perhaps its most attractive season; cool evenings followed by warm, breezy afternoons with air so crisp and dry you would surely hear it crackle were there less cacophonous competition from the crunch of the dead and desiccated leaves at your feet. In a town like this, a surge of energy accompanies the shorter days of late summer and early fall as thousands of students descend again upon us, most of them eager for the intellectual challenges that await in the new semester. But the weather is not so benign everywhere in the fall.

As the Gulf Coast slowly begins to recover from the recent disastrous blows dealt to it by Hurricanes Katrina and Rita, we are reminded that centers of learning such as ours have contributed mightily to accurate and timely forecasting of such storms – efforts that have most likely saved countless lives. Study of the Earth's environment; from investigation of storms themselves, to their predictability, to the specter of climate change and investigation of its impacts on regional patterns of sensible weather, will almost certainly enjoy renewed attention in the wake of these natural disasters. In all of these important areas of inquiry, the education and research activity at the Department of Atmospheric and Oceanic Sciences is at the forefront. Those of us in residence here, both faculty and students, are aware of the enormous contributions that have been made, and are still being made, by our numerous illustrious graduates. We are therefore entitled, all of us, to a measure of pride in our joint enterprise.

In this installment of our semi-annual newsletter you will find a tribute to our recently deceased Professor Emeritus Heinz Lettau, an announcement of a celebration of the career of Professor Emeritus David Houghton, reflections on more than a half-century of Wisconsin Meteorology by the inimitable Prof. Reid Bryson, narratives of close encounters with Katrina and Rita by two of our faculty and a collection of brave graduate students, as well as other news items of interest.

You should know that we are currently conducting a search for a new Assistant Professor to join us in extending our tradition of excellence. This is always an exciting endeavor as we are given the chance to invigorate our academic culture with fresh ideas, perspectives, and creative energies. Thus, we find ourselves, as always, looking forward to an exciting future from the perspective of an illustrious past. We are pleased to include you in that future as we stay updated with you; our Past, our Future, our Alumni.

Faculty News

Close Encounter with Hurricane Rita

Professor Greg Tripoli kicked off his fall sabbatical by taking two flights into hurricane Rita aboard the NOAA P3 operated by HRD out of Miami. Tripoli, despite his work modeling tropical cyclones and other convective systems for over 30 years, had never experienced a hurricane first hand. During the 2004 hurricane season, Tripoli accompanied by students Holly Hassenzahl and Joe Hoch and Italian visitor Carlo Medaglia flew to Cocoa Beach, Florida to experience the landfall of hurricane Frances, which was forecast to be a major hurricane. Unfortunately they were disappointed when the storm stalled and weakened before making landfall. The 2005 sabbatical provided an opportunity for Tripoli to make flexible plans with HRD to take a flight into a storm.

On the Saturday night prior to Rita, Tripoli was watching his favorite hurricane prognosis provided by the GFDL hurricane model and was alerted to a new developing wave southeast of Miami that was forecast to become a major hurricane as it approached the Gulf. Within the span of 12 hours, Tripoli was on a plane to Miami to meet Jason Dunion and Frank Marks who arranged to get Tripoli on a flight into the storm. The unexpected development of tropical wave 18 forced HRD to recall its only operating P3 from St. Croix where they had planned to fly a RAINEX mission into the new developing storm that became Phillipe and fly into tropical depression 18 which was a direct threat to the US mainland. By Tuesday morning, Dunion and Marks arranged to place Tripoli aboard the tasking mission into what was already tropical storm Rita. While the P3 was flying through the storm, sufficient winds were measured to reclassify Rita as a category 1 hurricane for the first time and Tripoli received his first look at a developing hurricane eye from 3 km above the water surface (Fig. 1).

Figure 1: View from P3 at 2:14 pm as it banked a turn through the eye of now hurricane Rita.

For the next day Rita intensified rapidly. Tripoli was given the opportunity to take a second flight into the storm aboard the NOAA P3 on a RAINEX mission in tandem with the NAVY P3 and under the direction of Bob Houze and Shui Chen in Miami. As they entered the eye of the storm for the first time at noon on Tuesday, September 21, Rita had already intensified to category 4 status at 935 hPa. When the P3 burst through extreme turbulence to enter the eye for the last time at 3:35 pm the storm had attained strong category 5 status and the sea level extrapolated pressure had fallen to at least 900 hPa. An Air Force reconnaissance plane, in the storm with the P3, measured 897 hPa at the same time. Tripoli was 4 km above the Gulf in the middle of the "stadium of God" (Fig. 2). Rita had become the most powerful Gulf storm ever recorded!

Figure 2: The "stadium of God," 4 km above sea level in the eye of Rita at its most intense stage.

Chasing Katrina

As a category 1 hurricane (Katrina) made landfall over the southern tip of Florida, we (Nick Bassill, Ross Lazear, and Prof. Michael Morgan) began considering a trip to the Gulf coast to experience a hurricane firsthand. A number of forecast models suggested Katrina would intensify dramatically before it made landfall near the mouth of the Mississippi River. After conferring with Greg Postel (Ph.D. 2000), who was in Kansas City, we collectively decided to embark on a hurricane chase. We rented a car from the airport and left Madison the evening of Friday, August 26. We traveled throughout the night and stopped in Jackson, MS the next day for bottled water, extra gasoline, and non-perishable food.

We met up with Greg upon arriving at our hotel in Slidell, LA (approximately 20 miles northeast of New Orleans), and were given a notice to evacuate the hotel by the next morning, although Katrina was only a category 2 hurricane at that time. After a quick meal and a much needed rest, we travelled to Pascagoula, MS to witness the event. By the time we arrived, Katrina had intensified to a category 5 hurricane, with top sus-

tained winds of 175 mph. After checking in at our hotel and picking up food from a crowded convenience store, we drove to the beach. Katrina's outer rain bands had just reached Pascagoula, but the waves weren't very high thanks to the protection of the Mississippi barrier islands. After wading in the warm waters of the Gulf, we headed back to our hotel to continue to watch the rain bands come in.

At 3:30 AM Monday morning, when we awoke after a short nap, the winds began to pick up just as the power went out. While we were watching the winds increase from our rental car, Greg notified us that the roof of the hotel's carport had fallen down on his car (see Fig. 3). After pulling wet sheetrock off of Greg's car, we continued to watch the winds increase to hurricane intensity while mingling with the locals. Eventually, the winds begin to bring down large pine trees and tear shingles off of a nearby church. As we walked upstairs to get a better view, we noticed that the adjacent parking lot was flooding. At this point, we realized that we needed to consider leaving the hotel for our own safety.

After some deliberation, Michael and Greg moved their vehicles to safety while we (Nick and Ross) began furiously packing. Amazingly, in this short span of time (several minutes) the flood waters had risen at least three feet. Once the cars were on higher ground, we grabbed our luggage and left the hotel. On the way to the car, we had to wade in waist-deep water while being pelted by rain driven by hurricane force winds. Michael lost his glasses, Nick lost his cell phone, and Greg lost his shoes while trying to reach safety. Eventually, we decided it was best to escape eastward toward Mobile, AL. It was an adventurous trip on the interstate during a major hurricane: strong winds buffeted the car, and debris such as trees, signs and sheet metal littered the highway. Finally, we made it to Birmingham, where we decided to get a hotel for the night.

Figure 3: Collapsed sheetrock on Greg Postel's car in Mississippi (note the anemometer protruding through the sheetrock on top of his car).

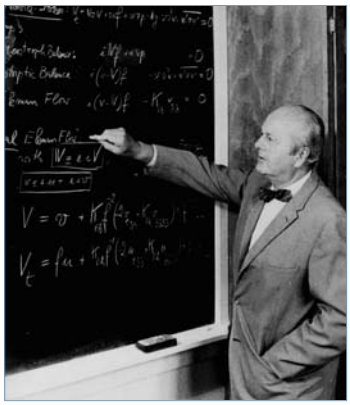
All things considered, the experience was very enlightening. During our stay, we were able to interview people from all walks of life. Some were fascinated by the events going on around them, while others were terrified. The experience was truly exhilarating! Pictures and videos from our chase can be found at: *http://aurora.aos.wisc.edu/~bassill/katrina.html*.

Faculty Promotions

Full Professor: Michael Morgan (2005)

In Memoriam

Professor Heinz Lettau (1909-2005)



Heinz H. Lettau, a distinguished faculty member in our department for 23 years, died on August 4, 2005 in Charleston, S.C at age 95. Born in Germany, for five decades he was internationally known for his innovative work in boundary layer meteorology and mentoring of 52 Wisconsin graduate students. Our University bestowed the Lapham Named Professorship upon him in 1971, and the American Meteorological Society awarded him the Rossby Medal in 1974.

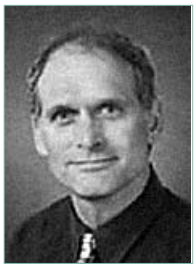
Lettau arrived on campus in 1957 and quickly added his intellect to the strengths of the small Meteorology Department housed in Science Hall. His long-held interests in micrometeorology and surface winds resulted in the "bushel basket" obstacle experiments on frozen Lake Mendota, near Eagle Heights. The addition of castoff Christmas trees brought public fame to the program, which helped to support graduate students, including eventual faculty colleagues John Kutzbach and Chuck Stearns. Lettau's interests were broad, and included theoretical explanations of turbulence, sand dune dynamics, surface climate, dynamical boundary layer systems for sea breezes (see 1967 photo) and katabatic winds on Antarctica. His last major contribution was the major IES report on the Peruvian desert "Exploring the World's Driest Climate" in 1978.

Heinz Lettau was thoroughly at home in the "small science world", where he believed understanding was best achieved. His philosophical approaches made him a "father figure" in the classroom and halls of the department. Fifteen of his 22 doctoral students went into academia, five in countries outside the U.S. His influence and memory live on in Madison, and far outside its borders. He is survived by Katharina, his wife and science associate of 70 years. *– John Young*

"Global Consequences of Landuse"

Professor Jonathan Foley and colleagues recently published an article "Global Consequences of Landuse" in the July 22, 2005 issue of Science. The article synthesizes and reflects on decades of research on human impacts on the environment, including changes in atmospheric composition, land cover, the hydrologic cycle and biological diversity. A UW press release regarding this work can be viewed at http://www.news.wisc.edu/11357.html . Jon also reports the creation of a new distinguished speakers series this year, which might be of interest to our alumni and friends. It's called the "Roy F. Weston Distinguished Global Sustainability Lectures" and includes people like Rita Colwell (former director of the NSF), etc. You can read more about that at *http://www.sage.wisc.edu/news.html*

Wisconsin Weather Stories



The American Folklore Society has awarded the 2005 Dorothy Howard Folklore and Education Prize to Wisconsin Weather Stories, a UW-Madison project that explores weather concepts through personal narratives.

Wisconsin Weather Stories springs from the idea that narratives are an excellent way to approach the science of weather and weather prediction, explain how weather affects our lives, and uncover cultural beliefs and traditional practices related to Wisconsin weather.

Partners in the project include UW-Madison's Cooperative Institute for Meteorological Satellite Studies (CIMSS), the Wisconsin Arts Board and the UW-Madison folklore program. Undergraduate students collaborated with professors and professional teachers to develop weather story lessons and help translate complex ideas into usable K-12 materials.

Steven Ackerman, director of CIMSS and professor in the Department of Atmospheric and Oceanic Sciences, says that science and folklore are often set up in society as oppositional forces. "One project goal was to model a new kind of interaction between folklore and science, showing that both are based on careful observation of one's environment."

Emeritus Faculty News

Fifty-Seven Years Of Wisconsin Meteorology?

Okay, it is now called "ATMOSPHERIC AND OCEANIC SCIENCES" but to me it is still Meteorology. That is the name it was given at birth in the spring of 1948. I was it. Two weeks after the formal birth, on July 1, the 100th anniversary of the state and the university, I hired Suomi and drove to Chicago to pick him up. We have had a lot of fun since.

Some people are of the mistaken opinion that the initiation of the Department was part of a grand plan. Nuts. It was because I got fired from Geography, by its chairman (he was not a "Chair"), for being too interested in climate. I went to wise old Dean Ingraham (guess he wasn't so old then) and said I thought we needed a Meteorology department. He grinned and said "Okay. You are it." (Stubborn, aren't I?)

I thought it was a first for the University, but actually there had been a department for a few years just before World War I. Ever hear of Eric Miller? He was a Professor of Meteorology here before World War II.

By the 1960s we were producing a third of all MS and PhD graduates in Meteorology in the country. That has particular meaning for me because a former President of the University told me that looking at the records (Presidents have access to odd ones) he could see that my PhD (under Rossby) was the 30th in the history of American Education. I think the other 29 are dead.

Now I have been retired 20 years. Still on the payroll at zero dollars. So I figure that working two decades free was a research contribution to the University equal in value to all I was paid by Wisconsin taxpayers, so that now we are even and my net cost was zero.

BUT, what changes in those years! Suomi, Wahl, Lettau, Schwerdtfeger, Horn, (all deceased). Ragotzkie, Stearns, Weinman, Houghton, and others retired. The Department has a new look. When the Department was started, there were about 14,000 students, and 400 faculty in the university. The students have increased 4-fold, the faculty 5-fold and the administrative "bean-counters" about 20-fold. Our faculty is much stronger in theory but there seems to be little "get-your-hands-dirty" field work. Remember we used to have three airplanes, five boats, a truck, snowshoes, camping gear etc.? Don't give much credence to the idea that the satellites are the proper observational platform. It is like sex by movie. No substitute to flying into the eye of a typhoon at 8,000 feet or into the Canadian Arctic in a float plane, or around the world in an instrumented P3V. For a change we have a department that might really believe in having women on the faculty. Good.

Personally, I have used the 20 years since my retirement to develop an entirely new approach to climatic modeling. It is site-specific, high-resolution, and I challenge any modeler in the world to produce better reconstructions of Holocene climates. No federal or state funds involved. I had a patron.

Okay, fellows and gals, come back and see a really dynamic department like there has not been before. Nice people, too.

Prof. Reid A. Bryson PhD, DSc, DEngr.
Global 500 Laureate, Senior Scientist, Emer. Prof. of Meteorology, of Geography, and of Environmental Studies, Center for Climatic Research

Faculty Sabbatical

John Young's Sabbatical in Spain

Professor John Young spent last academic year on a sabbatical at the marine studies research center (ICM: Institut de Ciencies del Mar) in the vibrant environment of Barcelona, Spain. This refreshing experience followed fours years as department Chair. It gave him an opportunity to reflect on new science ideas, meet new colleagues, and initiate some collaborations. The Mediterranean Sea across the street from ICM enriched his perspective on our department's atmosphere-ocean view of the climate.

Young's stay at ICM was hosted by his friend Dr. Jose Pelegri, who was a visitor to UW two years earlier. Interactions with a dozen other oceanographers revolved around weekly seminars and luncheons. A joint paper on detection of internal ocean waves by geostationary satellite was one result. In addition, regular meetings with professors at the University of Barcelona and Majorca concentrated on coupled climate modeling diagnosis and the atmospheric boundary layer. Finally, the feeling of being a "European scientist" was made more complete with talks and meetings in Madrid, Paris and Vienna. John Young is now "back in the saddle", eagerly starting his 40th year at UW.

Department Events

David D. Houghton Symposium

The Department of Atmospheric and Oceanic Sciences invites you to attend a one and one-half day Symposium to celebrate professor emeritus,

Dr. David D. Houghton's career and contributions to the field of atmospheric science. The Symposium is scheduled for March 31 and April 1, 2006 in Madison, Wisconsin. Presentations covering Dr. Houghton's areas of interest including historical perspectives and recent advances in modeling, climate, and education are planned for Friday afternoon and all day Saturday at the Pyle Center on the University of Wisconsin-Madison campus. The Symposium will end with a banquet at the University Club on Saturday evening. A block of rooms for participants has been reserved at Lowell Hall, just down the street from the Pyle Center.

Information concerning the program, room reservations, and directions to campus will be posted to the Symposium web site (*http://aurora.aos.wisc.edu/houghton_symposium*) as details are available. For questions regarding the symposium, please contact the department at 608-262-2828.

CIMSS Celebrated Silver Anniversary

In July 1980, UW–Madison and NOAA entered into an agreement to cooperate on research in satellite meteorology, founding the Cooperative Institute for Meteorological Satellite Studies (CIMSS) within Space Science and Engineering Center's (SSEC). Verner E. Suomi, acknowledged internationally as the father of weather satellites, had encouraged a group of federal researchers under the direction of Bill Smith to visit Madison and collaborate with researchers here. Arriving in 1977, it didn't take long for the organizations and people involved to realize that the effort was producing good research and should be made permanent. Fast forward to 2005 and a well-established organization continues to produce innovative and useful research.

Since 1980, over 100 AOS graduate students have conducted research in partnership with CIMSS scientists. Many of these students have contributed to research projects that have developed into products that are used in routine weather forecasting, including users such as the National Weather Service and the Joint Typhoon Warning Center.

The CIMSS celebrated its silver anniversary on 14 July 2005 with a three-day symposium on Satellite Meteorology: Past, Present and Future. This science symposium featured looks back and forward as well as appraisals of the present, both of CIMSS and satellite meteorology on the broader scale. A host of prominent invited speakers and a poster session addressed these issues, from both national and international perspectives. Slides and movies from presenters are available on the symposium Web site (*http://cimss.ssec.wisc.edu/cimss25th*).

Past CIMSS directors William L. Smith, Sr.; W. Paul Menzel; and Donald R. Johnson put past achievements in unique personal historical perspectives, while current director Steven Ackerman told how CIMSS is doing now. Moderator of the opening session John Roberts peppered his introductions with stories of each director, all the more vivid for his personal experience with them. Roberts is the SSEC executive director for administration; SSEC is the CIMSS parent organization within the University of Wisconsin–Madison.

In ending the conference Professor Ackerman reflected on the elements that contribute to continued success of CIMSS and its productive environment. He suggests that CIMSS is a research community that brings people together for shared learning, discovery, and the generation of knowledge. Collaborative research activities where participants share responsibility for the learning and research that takes place are important to the success and development of CIMSS. The Department is proud to be a partner in the success of CIMSS!

Student Awards Day – April, 2005

Daniel Chavas – Horn Award for excellence in overall performance as an undergraduate (top left).

Amanda Adams and Will Lewis – Colloquium Student Service Award for creative dedication to the department's intellectual life (top right, Will Lewis not pictured).

Mark Kulie – Schwerdtfeger Award for excellent performance in first year graduate studies (bottom left).

Holly Hassenzahl and Everest Ong – Wahl Award for outstanding performance as a Teaching Assistant (bottom right, Holly Hassenzahl not pictured).

Blaine Thomas – Lettau Award for outstanding MS Thesis (not pictured).

Graduate Program Report

I'm happy to report that, because of an unusually large number of open research assistant (RA) positions and applications by highly qualified students, we are enjoying the largest class of incoming graduate stu-

dents in many years. Nineteen students joined the graduate program last summer and fall. The majority are from elsewhere in the Midwest and the East Coast, but some come from as far as China and Spain. All of us in the department – faculty, staff and current students – welcome those students and look forward to getting to know them, both in and out of class.

Several of our students completed their degrees since the last newsletter. All of us in AOS extend our congratulations and best wishes to the following:

Masters Degrees

Hubbard, Shane A., "The Explanation for Cloud Top Temperatures Using Three Midlatitude Cases from a 3-D Model Simulation," May 2005. (Wang)

Wu, Qingfang, (Nonthesis Master's), May 2005. (DeWeaver)

Zhong, Yafang, (Nonthesis Master's), May 2005. (Liu)

Evan, Amato T., "Dust Detection with the AVHRR and Application to Wintertime Saharan Dust Conditions," August 2005. (Ackerman)

Uhlenbrock, Nathan L., "The Use of MODIS Water Vapor Imagery, Model Output, and Pilot Reports to Diagnose Turbulent Mountain Waves," August 2005. (Ackerman)

Wang, Fang, "Trade Studies of the Hyperspectral Environmental Suite (HES) on the Geostationary Operational Environmental Satellite (GOES)-R," August 2005. (Ackerman)

Wile, Kristopher L., "Differences in the Frequency and Distribution of Intense Extratropical Cyclone Events in a Model-Simulated Doubled CO2 Environment," August 2005. (Martin)

PhD Degrees

Adams, Amanda S., "The Relationship Between Topography and the Ross Ice Shelf Air Stream," May 2005. (Tripoli)

Wacker, Robert S., "Correcting for Precipitation Effects in Satellite-Based Passive Microwave Tropical Cyclone Intensity Estimates," August 2005. (Petty)

Student Awards

Brett T. Hoover has been awarded the AMS 21st Century Campaign Fellowship. Brett graduated with a B.S. in our department and will continue here to pursue an M.S. He will focus on the dynamics of tropical and extratropical weather systems studied with respect to their potential vorticity structure and evolution. Particular attention will be given to the genesis, steering, and extratropical transition of tropical cyclones.

Andrew L. Hulme has been awarded the National Science Foundation Division of Atmospheric Science Fellowship. Andrew is pursuing a Ph.D in our department. He is focusing his research on analysis of the life cycles of midlatitude or subtropical cyclones; and other similar weather systems using a variety of different tools including, but not limited to, theoretical dynamics and numerical models.

Shelley L. Knuth is the recipient of a $3,000 scholarship from the Sigma Delta Epsilon-Graduate Women in Science Ruth Dickie Scholarship and Grant-in-Aid Program.

Erica L. McGrath has been awarded the DOE Atmospheric Radiation Measurement (ARM) Program Fellowship. Erica graduated with a B.S. in May from our department. She is pursuing a Ph.D in atmospheric science at Colorado State University.

Undergraduate Program Report

Alex Harrington RSGC Presentation

Alex Harrington, an undergraduate senior at the University of Wisconsin-Madison, recently attended the Midwest Regional Space Grant Consortium (RSGC) conference on September 15-17th in Chicago, IL where he presented a poster titled "Validating CRAS Forecasted Satellite Imagery using GOES." Alex's research validates forecasts (made using the CIMSS Regional Assimilation System (CRAS)), against actual satellite imagery from NASA Geostationary Operational Environmental Satellites (GOES). The conference included many undergraduate and graduate students from all areas of aerospace science across the Midwest. Alex was the only student from Wisconsin, and the only student to present meteorology-oriented research at the conference. By earning first place in a judged poster session, Alex was invited to give a special presentation of his research. He also received a $500 award, which will be matched by Wisconsin Space Grant Consortium (WSGC). Congratulations, Alex!

Kis Receives Hollings NOAA Fellowship

Amanda Kis, one of our junior undergraduate majors, has recently been awarded a prestigious Ernest J. Hollings NOAA Fellowship. Amanda was one of only 100 recipients of this award which will provide her up to $8,000 in academic assistance in both her junior and senior years, a 10-week full time (paid) summer internship at a NOAA or related facility, and a housing subsidy if the work site is away from home. In addition, travel money will be provided to Amanda so that she can attend the Hollings Scholarship Conference and present the results of her independent research at the end of her summer internship. The award is worth nearly $30K and competition was fierce to win it. Congratulations, Amanda, we are all very proud of your achievement!

Undergraduate Degrees (2000–2004)

May 2005

Michael W. Aherns, John R. Albers (Grad Student at UC-Davis), ***Nicholas P. Bassill*** (Grad Student at UW Madison), ***Katherine E. Childs*** (Grad Student at UW-Madison), ***Brett T. Hoover*** (Grad Student at UW-Madison), ***Dale W. Kloiber*** (Grad Student at UW-Madison), ***Wing Yee (Hester) Leung*** (Grad Student at UW-Madison), ***Erica L. McGrath*** (Grad Student at Colorado State), ***Scott M. McGuigan, Nathan E. Meyerson, Michael R. Mosnik, Eric C. Off***

August 2005

Ross A. Lazear (Grad Student at UW-Madison)

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Undergraduate Financial Support - Specific

❍ **Ettenheim Scholarship Fund**

❍ **Lyle Horn Scholarship Fund**

❍ **Professors Heinz Lettau and Eberhard Wahl Scholarship Fund**

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Barton J. Adrian, Donald W. Baker, James S. and Elizabeth A. Berman, Christopher T. and Lori W. Bovitz, David H. Bromwich, Dan G. and Bridget Daniels, Grant L. Darkow, Dan L. and Carol Davis, John A. and Elizabeth Dutton, Susan A. Elston, George P. Ettenheim, Jr., Geoffrey M. Flint, Jonathan C. Fox, John P. Geis, II, Ona Gieschen, Thomas J. Greenwald, Stefan Hastenrath, Floyd F. Hauth, Bruce R. and Joan P. Hentschel, Dale N. Hovland, Donald R. Johnson, Patrick F. Johnson, Anton F. Kapela, Gary K. Krueger, Nicholas S. and Nancy N. Kurten, Laurence G. Lee, Craig S. Long, Kenneth P. Mackay, Jr., Scott M. Mc Guigan, Mark G. Moede, Henry J. Niebauer, Peter N. and Kristin A. Nines, Byron A. Paulson, Barbara Provci-Cobb, James E. Ramer, Dale G. Raymakers, Perry J. Samson, David A. Santek, Douglas H. and Karen I. Sargeant, Christopher C. Schmidt, Timothy J. and Mary E. Schmit, Charles J. Seman, Philip and Joann Shideler, Eric D. and Nadine M. Skyllingstad, Phillip J. Smith, William L. and Marcia J. Smith, Edward B. and Hannelore M. Spence, Alfred J. and Mary V. Stamm, Kathleen E. Strebe, Norton D. Strommen, Gregory D. Taylor, Dennis W. Thomson, Robert J. Van Haaren, William E. B. Welsh, David J. Westberg, Traci R. Westfall, Victor and Elizabeth J. Wiggert, Jeffrey H. Zautner.

Thank You!

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