LectureTools, the new interactive educational technology system developed by Professor Samson, to facilitate a more engaging and active learning space for his own 190-student class, Extreme Weather, is available as a stand-alone service to teachers. For interested U-M faculty members, LectureTools can now be integrated into their U-M CTools site.

“LectureTools integrates, lecture notes, and student response systems,” Samson said. “Students learn better by being actively engaged in the lecture, offering their own feedback and discussing with their peers, as LectureTools allows them to do.”

In this new tool, students’ laptops serve as the clickers of a student response system. Laptops enable a wider suite of question types than typical clickers that essentially let students answer a poll question and post the results in real time.

Students using LectureTools can also take notes and make drawings directly on lecture slides, a unique feature. They can anonymously ask the instructor’s aide a question through a chat window during class. They can rate their own understanding of each slide, giving the professor valuable feedback. If available, they can also watch a video podcast of the whole lecture after it’s over.

“We’re utilizing all the students’ propensities and abilities to multitask,” Samson said.

“I completely forgot that I was in a large lecture. I felt like everyone interacted with each other and I could see what others were thinking through LectureTools.”

read more student comments on Page 7
First Outstanding AOSS Staff Award

Congratulations to Linda Chadwick, the inaugural winner of the Outstanding AOSS Staff Award. Linda ideally represents the effort, willingness and mind-set this award was established to recognize, as evidenced by comments from the nominating letters:

“She has demonstrated time and again her willingness to go above and beyond the normal expectations of her job and make the extra effort that has resulted in tasks being extremely well executed.”

“She devoted a great deal of time, thought, and energy to the enhancement of the main entrance to the Space Research Building and the establishment of a new conference room for SPRL. She successfully led the effort to turn both areas into showcases for the Department’s research and laboratory’s technology.”

“She presently holds a 60% appointment as Research Administrator (SPC) and a 40% appointment as Assistant to the SPRL Director. Linda has worked diligently in both roles to bring quality and professionalism to her position resulting in outstanding service to the Department.”

“Linda believes in giving her all to each project she’s assigned and does an outstanding job (whatever it takes) to ensure the outcome lives up to her highest expectation. It is my pleasure to work with Linda and she is most deserving of this honor.”

In addition to coordinating the lobby and conference room renovations, Linda also led and coordinated the exceptional SPRL at 60 Symposium, preparation of the 2008 SPRL Annual Report and the major infrastructure upgrade to the SPRL labs and office space. It is fitting that Linda was selected as the first recipient of the AOSS Staff Award.

Zurbuchen named Associate Dean

AOSS Professor Thomas Zurbuchen has been named Associate Dean for Entrepreneurial Programs for the College of Engineering. While the Center for Entrepreneurship will continue to report to him, he will also be engaged in activities related to industry interaction and economic development, continuing education, publicity, and fund raising. In addition, he has been appointed one of three new MESSENGER Co-Investigators by NASA Science Mission Directorate Associate Administrator Edward Weiler.
CoE Excellence in Staff Awardee

SPRL Technical Services Supervisor Frank Lee was selected as a CoE Excellence in Staff Service Awardee. Frank first joined SPRL in 1963 and, after a 10-year break, returned in 1984 and has continued as the lead technician and technical services supervisor since then. More than 15 successful Earth and planetary investigations have carried electronics built by Frank; many while working under pressure to recover from delays and deliver hardware on time. As SPRL Assistant Director Charles Edmonson so aptly stated in Frank’s nomination letter, “Frank’s skills, dedication, and attention to detail have significantly bolstered SPRL’s reputation for space instrument development. I am very proud to be associated with Frank.”

Sillman research featured

AOSS Research Professor Sanford (Sandy) Sillman’s research on the impacts of climate change on the environmental cycle of mercury through ecosystems and the atmosphere was noted in The Quarterly Planet from the EPA STAR Program. He is studying the impacts of climate change and global increases on mercury emissions and ozone formation. Based on early results, Sillman says the modeling tool he has been working on can successfully predict the effect of future temperature changes on ozone formation. His future research will focus on emissions on a global scale to predict to what extent emissions from external sources affect US air quality.

More details about Sandy’s project and more can be found at: http://es.epa.gov/ncer/science/globalclimate/research.html
Faculty Promotions

Michael Liemohn has been promoted to Associate Professor with Tenure. Professor Liemohn received his B.S. in physics and math from Rose-Hulman Institute of Technology, and his M.S. and Ph.D. in atmospheric and space science from the University of Michigan. He then went to the Marshall Space Flight Center where he worked on computer programs to simulate plasma transport in near-Earth space. He returned to the U-M as an AOSS Assistant Research Scientist. Professor Liemohn has received the Leroy Mason Award, RHIT outstanding sophomore physics major; the AGU Space Physics and Aeronomy Section Outstanding Student Paper; and the U-M Research Scientist Recognition Award. His research deals with gaining a better understanding of the natural world, particularly the space environment around Earth and other solar system bodies using computer models of charged-particle motion through space in conjunction with data analysis. Professor Liemohn is chair of the AOSS Graduate Admissions Committee.

Darren McKague has been promoted to Assistant Research Scientist. Dr. McKague received his B.S. in physics from Wayne State University, and his M.S. and Ph.D. in astrophysical, planetary and atmospheric sciences from the University of Colorado at Boulder. He joined AOSS as a Research Investigator and Lecturer in December of 2007. Dr. McKague has received the ATOC Exceptional Service Award for outstanding contributions to the PAOS department, the Vanden W. Miles Award for outstanding scholastic achievement, and multiple outstanding achievement awards for system engineering at Ball Aerospace & Technologies Corp. His current research activities include the development of calibration hardware and techniques for passive microwave remote sensing, geophysical remote sensing and radiative transfer. Dr. McKague has also worked extensively with the students of AOSS/AERO 582-583 developing several exciting and challenging projects, including IMAGINE Africa, an endeavor that has managed to get the internet into the hands of people in rural Africa.

Aaron Ridley has been promoted to Associate Professor with Tenure. Professor Ridley received his B.S. in physics from Eastern Michigan University and his M.S. and Ph.D. in atmospheric and space sciences from the University of Michigan, before taking a position as Research Scientist at the Southwest Research Institute in San Antonio, Texas. He returned to the U-M as an Assistant Research Scientist in 2000, and has worked his way up from there. Professor Ridley created a Global Ionosphere Thermosphere Model (GITM) and a model of the ionospheric electrodynamics. His main research interests are in magnetosphere-solar wind coupling and magnetosphere-ionosphere coupling. He has comprehensively shown how different features in the ionospheric conductance (i.e., day-night gradients, regions of constant conductance, the Hall conductance, the auroral conductance, etc.) control the magnetospheric state. In 2004, Professor Ridley received the U-M College of Engineering Outstanding Research Scientist Award.
New AOSS Faculty

Jeremy Bassis
Assistant Professor
PhD, Geophysics (Earth Sciences), Scripps Institute of Oceanography, University of California, San Diego
BS, Physics, Pennsylvania State University

Mark Flanner
Assistant Professor
PhD, Earth Systems Science, University of California, Irvine
BS, Biomedical Engineering, University of Wisconsin, Madison

Mark Moldwin
Professor
PhD, M. A., Astronomy (Space Physics), Boston University
BA, Physics, University of Alaska - Fairbanks

Professor Bassis has just completed a postdoctoral fellowship at the University of Chicago, Department of Geophysical Sciences. Before that he was a postdoctoral fellow at the Scripps Institute of Oceanography of the University of California, San Diego. Professor Bassis is the first AOSS hire of the Cryosphere and Sea-Level Impacts Research Cluster, funded by the Provost. His research focuses on understanding the physical mechanisms by which ice sheets respond to climate change. Professor Bassis has already brought his knowledge and enthusiasm to AOSS by teaching AOSS 480/NRE 480 and ably communicating the fundamental issues of ice-sheet dynamics and sea level rise in a meaningful, qualitative manner. He is a member of the American Geophysical Union and received the AGU Outstanding Student Paper Award in 2005.

Professor Flanner comes to us from the University of California, Irvine where he has just completed a postdoctoral fellowship in the Advanced Study Program at the National Center for Atmospheric Research at Boulder, Colorado. He is known for taking an integrated approach to Earth System research, and will bring that valuable skill to the AOSS/GS Cryospheric Science Cluster. Professor Flanner has also demonstrated his teaching skills and the ability to communicate the fundamental issues of ice-sheet dynamics and sea level rise in a meaningful, qualitative manner. He is the author and maintainer of the Snow, Ice, and Aerosol Radiative (SNICAR) model, and he has received the Outstanding Presentation Award from the UCI Inst. for Geophysics and Planetary Physics and the Outstanding Student Presentation Award from the AGU.

Professor Moldwin comes to us from the University of California, Los Angeles, Department of Earth and Space Sciences. He is an active and highly recognized member of the space science community, and probably the best educator in space science. His recent textbook, entitled *Introduction to Space Weather*, from Cambridge University Press, is destined to become the standard textbook for space science service courses. He was not only among the “ten top Professors at UCLA” (as rated by the UCLA Student Association), but he also ran one of the best K-12 outreach programs in physical sciences. Professor Moldwin was the Research Corporation Cotrell Scholar in 1996 and received the NSF CAREER Award in 1997. He is a member of the American Geophysical Union and the International Space Physics Educational Consortium.
AOSS Research Professor Stephen Bougher, due to his outstanding research into the chemistry, energetics and dynamics of the upper atmospheres of Venus and Mars, as well as his many other contributions to science and the University of Michigan, has been recognized with the prestigious Collegiate Research Professorship Award. Professor Bougher will hold the title of Andrew F. Nagy Collegiate Research Professorship.

Steve is an internationally recognized expert on planetary atmospheres. His Mars Thermospheric General Circulation Model has provided a benchmark for upper atmosphere modelers.

As NASA pushes to extend our presence to Mars, both robotically and in the flesh, Steve’s TGCM will no doubt play a major role in keeping our missions functioning to perfection and the knowledge rolling back to mother Earth.

Though Mars is not Professor Bougher’s only area of interest. Picking up a thread from his early career, he is also participating in the European Space Agency’s Venus Express mission. While at the same time he keeps at least one eye on the data coming in from the Cassini mission to Saturn and Titan, and the other on modifying his TGCM model to Jupiter. The AOSS Awards Committee stated that “Overall, Steve’s upper atmosphere research on several planets is contributing significantly to comparative planetology studies of these atmospheres.” It no doubt will also contribute to our understanding of another planetary atmosphere, the at-least-presently blue and green planet third from the Sun known as Earth.

This award adds another star to an already well lit firmament of honors and awards for Professor Bougher’s accomplishments, including the 1999 NASA Group Achievement Award for the Mars Global Surveyor Solar Array Anomaly Recovery and Aerobraking Team, the 2004 OVPR Outstanding Research Achievement Award, and the 2007 College of Engineering Outstanding Research Scientist Award.

The Alumni Association has created a Web page with resources for alumni that are particularly valuable in this economic climate. The site includes job postings, career counseling, career-focused podcasts, short-term health benefits, and other savings and discounts. In addition, there is a section highlighting ways that employed alumni can help others in the Michigan network by volunteering as career mentors and posting jobs at their companies.

AGU 2009 Fall Meeting
You’re Invited ...

To the annual AOSS-Geological Sciences Alumni/Friends Reception at the AGU Fall Meeting, Wednesday, December 16, 6:00 — 8:00 PM in the Westin St. Francis Hotel’s Tower Salon. Please forward the invitation to AOSS alumni and friends. Stop and visit the AOSS booth, in the Academic Showcase – in Moscone Center South again between the exhibitors and the posters – look for the Michigan flag.
Perry Samson awarded Teaching Innovation Prize

Congratulations to Perry Samson, Arthur Thurnau Professor of Atmospheric Science, for his selection as one of the first winners of the new U-M Teaching Innovation Prize. Prof. Samson was recognized both for his two innovative web application systems for enabling learning with technology – LectureTools and online textbooks. Both use the Internet to bring new and innovative learning to the classroom.

Of course, we all know that Perry believes that science should be a “contact sport”, thus bringing Extreme Weather to the classroom and the classroom to extreme weather in Greenland and Tornado Alley. His philosophy has been that the joy and madness of science is most effectively transmitted to students through experiences rather than textbooks and classrooms. To date, we haven’t lost a student or Perry to his enthusiastic teaching.

Offered for the first time in 2009 by the Office of the Provost, CRLT, and the University Library, the TIP award is designed to recognize faculty who have developed innovative approaches to teaching that incorporate creative pedagogies, new ways to engage students in the learning process, and new approaches to student collaboration.

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Student Comments About LectureTools:

“I completely forgot that I was in a large lecture. I felt like everyone interacted with each other and I could see what others were thinking through LectureTools.”

“I rarely encounter a student who completes all of their assigned reading. However, in Professor Samson’s class, students do.”

“Each of us finds ourselves wishing we had LectureTools and Xam PREP in other courses. We would love to be able to jot notes next to the images our Art History professor flies through or read our 500 page chemistry books on our laptops, instead of killing trees and our backs.”

On the Web

Hear Professor Samson talk about LectureTools and view a demonstration at:

http://blip.tv/?file_type=flv;sort=date;date=;id=2463522;s=file
AOSS students part of massive tornado field study

by Nicole Casal Moore University of Michigan News Service

Close to 100 scientists in 40 vehicles traversed tornado alley this summer in the largest joint effort ever to study twisters and supercell thunderstorms. Six AOSS meteorology and geoscience students took part in this effort, called VORTEX2.

VORTEX2, short for Verification of the Origin of Rotation in Tornadoes Experiment, explored how and why tornadoes form and why some are longer and more intense than others. One of its main goals is to improve the accuracy and lead time of predictions. Today, the average warning time for a tornado is 13 minutes, and 70 percent of the time, those are false alarms.

The students are part of the AOSS annual tornado camp, organized by Professor Perry Samson. The camp allows 5-10 students to follow and study storms for several weeks. This year, it coincides with VORTEX2 and the students assisted a team from Texas Tech University from May 10 to June 13.

Students on the trip were: Alex Montgomery, a senior Earth System Science and Engineering (ESSE) major in the Department of Geological Sciences, from Grand Haven, Mich.; Adam Davis, a senior ESSE major in AOSS from Canton, Mich.; Erin Kashawlic, a senior ESSE major in AOSS, from Bloomfield, Mich.; Michael Texter, a senior ESSE major in AOSS from Middleville, Mich.; and Brad Charboneau, a 2009 graduate in ESSE from AOSS. He will attend Texas Tech for a master's degree in the fall. Joe Merchant, an AOSS alumnus and storm chasing enthusiast is accompanying the students, and Professor Samson were also part of the team.

The Texas Tech team used special radar equipment and sensors to gather data about the storms’ boundaries, as well as wind speed, temperature, moisture, and pressure in high wind environments up to 140 mph. The Michigan crew documented the storms with video cameras and GPS software, and students scouted locations for the radar devices. They were nomads traveling the Central Plains, trying to anticipate where severe weather would strike next. They slept in hotels and spend many of their days on the road. They did a lot of waiting, parking themselves in places where conditions for a storm are right.

“Despite … recent advancements in understanding tornadoes, our understanding of them is still incredibly vague,” wrote VORTEX2 participant Brad Charboneau on the U-M blog. “If all goes well, the information gathered from VORTEX2 will constitute another major leap forward in our understanding and prediction of tornadoes.”

VORTEX2 is an international team from universities, government agencies and private industry, sponsored by the National Science Foundation and the National Oceanic, Atmospheric Administration. Weather Underground is sponsoring the Michigan students’ blog.

I want to thank you all for blogging! I’ve enjoyed reading your accounts and seeing all the great photos you’ve posted. I hope to see some of you again next year for year 2 of Vortex2!

Jeff Masters
AOSS Alumni
Weather Underground

To Read the AOSS Tornado Camp blog, go to: http://www.wunderground.com/blog/Vortex2/show.html
Michigan tops OSU in bomb-detection competition

by Kevin Brown University of Michigan News Service

Suicide bombers carrying improvised explosive devices (IEDs) scatter through a crowded town square. Using technology and engineering principles, you must determine where they are hidden.

That was the problem posed to undergraduate engineering students competing June 2-3 against counterparts from The Ohio State University in the inaugural Scarlet and Blue Design Challenge 2009. The competition was sponsored by the Air Force Research Laboratory and presented at Wright-Patterson Air Force Base near Dayton, Ohio.

In a 100-by-100-foot simulated square, roughly 50 people milled about, and six carried or wore simulated IEDs. The U-M team was declared the winner for its solution to place sensors in traffic cones throughout the square to detect the explosive devices.

The Air Force wants to talk further with the students about their research, says Ashwin Lalendran, one of four students in AOSS Professor Nilton Renno’s Engineering 450 class, Multidisciplinary Engineering Design, which was part of the seven-member U-M team.

Renno says it felt good to win. “The Air Force said they were creative and the solution was very flexible, very adaptable to any type of environment and technology. It’s scalable – you can increase the number of sensors in the network and you can include any kind of sensor,” he says. The OSU team presented a solution combining radar and metal sensing.

Renno’s Engineering 450 class teams students from AOSS and other engineering departments to work together on project design and prototype fabrication. Industry experts mentor the design teams and give guest lectures. The value to students is practical experience. “The students work on real-life problems,” Renno says.

“The class covers systems and engineering principles and working on difficult and ill-defined problems using multiple engineering disciplines – electrical engineers; computer science engineers; aerospace; and atmospheric, oceanic and space science,” Lalendran says. “We had representatives from five different majors on our team.”

To the four students recruited from his class, Renno added three team members from outside the class to build hardware and software applications.

“The basis of our solution was orthogonal sensing – using multiple sensors to localize the suspect,” Lalendran says. “The core of our solution was metal detection, with sensors deployed in the top of traffic cones that communicated wirelessly to our command center.”

The Air Force approached U-M with the idea for the competition in the fall, and Renno picked a team in January. The Air Force provided a $50,000 budget, which the team used to pay for hardware and some consultant work from the U-M Space Physics Research Laboratory, among other expenses.

“They had to make decisions and control the budget and they had to solve the problem,” Renno says.

“Every single one of the students got the experience of working on problems to come up with solutions that could make a difference,” Lalendran says.

“Undergraduates typically don’t get practical hands-on engineering experience. We had to be innovative, and I think we delivered, thanks to the resources at the University of Michigan,” he says, adding that the ROTC detachment at the university also contributed expertise.
Ultimately LectureTools will include the option of access to a new type of online textbook.

Samson believes laptops in class are the way of the future, despite the fact that some professors still ban them out of a belief that they are distracting. Preliminary findings based on student surveys show that laptops aren’t hindering learning in Samson’s class. Sixty-five percent of more than 140 students surveyed agreed that their attentiveness, engagement and learning in class increased because of laptop use with LectureTools.

“There’s no evidence that bringing laptops to class in the presence of a tool such as LectureTools is causing the students’ learning to suffer or attentiveness to wane, despite fears of some instructors,” Samson said. “Our findings are that LectureTools increased engagement significantly. However, laptops in class in the absence of tools that require student engagement may well lead to lower attentiveness.”

One of LectureTools’ newest features (produced by engineering undergraduate Matt Viscomi) allows students in the class to post profiles and identify where they are seated each day. This allows students to more easily find out who in the large class they live near, or share interests. They can subsequently create personal study groups, Samson says.

LectureTools is available online at: http://www.lecturetools.org
Alumni makes it 3—for—3

Recent AOSS graduate Dr. Alex Glocer is the LSA 2009 Ralph B. Baldwin Award in Astrophysics and Space Sciences recipient. Alex’s winning dissertation is entitled, *Modeling Radiation Belts and Ionospheric Outflows with the Space Weather Modeling Framework*. Alex is now at the Goddard Space Flight Center and will be returning October 8 to accept his award and to give the Baldwin Award Lecture. He now makes it three-for-three for AOSS nominated students, following K.C. Hansen and Yue Deng as a Baldwin Award recipient.

“Gabor Toth and I had the pleasure of co-chairing Alex’s doctoral committee and he is one of the most outstanding graduate students because of his great strengths in many areas,” says Tamas Gombosi. “He is a confident and knowledgeable space physicist, a creative applied mathematician and an exceptional computational scientist. He is also an enthusiastic teacher and mentor of junior graduate students, having assisted students taking the challenging “Space Environment” course and improving their understanding of the concepts. Alex is a great team player who has original ideas and can work on his own.”

Dr. Glocer will deliver his Ralph B. Baldwin Award Lecture Thursday, October 8 at 3:30 PM in the SRB Auditorium. His lecture will be followed by a reception in the second floor lounge.

Visit Journey to the Stars

A visual simulation of space weather created by AOSS Research Scientist Darren deZeeuw from CSEM modeled data is included in a new Space Show, Journey to the Stars, at the American Museum of History Hayden Planetarium in New York City. The show, narrated by Academy Award-winning actress Whoopi Goldberg, premiered on Saturday, July 4, 2009. The almost four minute clip follows the solar wind from the sun through the solar system, ending as it exits into the extremes of the Universe. The show also features images from telescopes on the ground and in space as well as the simulations.

On the Web

To see the CSEM video, visit the AOSS homepage:
http://aoss.engin.umich.edu

Visit the Hayden Planetarium’s web site at:
http://www.amnh.org/rose/spaceshow/journey
First direct evidence of lightning on Mars detected

by Nicole Casal Moore University of Michigan News Service

For the first time direct evidence of lightning has been detected on Mars, say university researchers who found signs of electrical discharges during dust storms on the Red Planet. The bolts were dry lightning, says Chris Ruf, professor in AOSS and Electrical Engineering and Computer Sciences and director of the Space Physics Research Laboratory (SPRL).

"What we saw on Mars was a series of huge and sudden electrical discharges caused by a large dust storm," Ruf says. "Clearly, there was no rain associated with the electrical discharges on Mars. However, the implied possibilities are exciting."

Electric activity in Martian dust storms has important implications for Mars science, the researchers say.

"It affects atmospheric chemistry, habitability and preparations for human exploration. It might even have implications for the origin of life, as suggested by experiments in the 1950s," says AOSS professor Nilton Renno.

The findings are based on observations made using an innovative microwave detector developed at the U-M Space Physics Research Laboratory. The kurtosis detector, which is capable of differentiating between thermal and non-thermal radiation, took measurements of microwave emissions from Mars for approximately five hours a day for 12 days between May 22 and June 16, 2006.

On June 8, 2006, both an unusual pattern of non-thermal radiation and an intense Martian dust storm occurred, the only time that non-thermal radiation was detected. Non-thermal radiation would suggest the presence of lightning.

The researchers reviewed the data to determine the strength, duration and frequency of the non-thermal activity, as well as the possibility of other sources. But each test led to the conclusion that the dust storm likely caused dry lightning.

This work confirms soil measurements from the Viking landers 30 years ago, and it challenges 2006 experiments that suggested otherwise.

Data from the Viking landers raised the possibility that Martian dust storms might be electrically active like Earth’s thunderstorms and thus, might be a source of reactive chemistry. But the hypothesis was untestable. In 2006, using theoretical modeling, laboratory experiments and field studies on Earth, a group of planetary scientists suggested that there was no direct evidence that lightning occurred on Mars. This new research refutes those findings.

"Mars continues to amaze us. Every new look at the planet gives us new insights," says Michael Sanders, manager of the exploration systems and technology office at NASA’s Jet Propulsion Laboratory and a researcher involved in this study.

The new finding was published in the July 15, 2009 issue of Geophysical Research Letters (Vol. 26, Num. 13). "The Emission of Non-Thermal Microwave Radiation by a Martian Dust Storm." was co-authored by professors Ruf and Renno, recent PhD graduate Jasper Kok, and SPRL lead research engineer Steve Gross.
News from MESSENGER featured in Science

The April 30th issue of Science carries includes the article “MESSENGER Observations of Magnetic Reconnection in Mercury’s Magnetosphere” that includes AOSS Research Professor George Gloeckler and Professor Thomas Zurbuchen as co-authors.

**Article Abstract:**
Solar wind energy transfer to planetary magnetospheres and ionospheres is controlled by magnetic reconnection, a process that determines the degree of connectivity between the interplanetary magnetic field (IMF) and a planet’s magnetic field. During MESSENGER’s second flyby of Mercury, a steady southward IMF was observed and the magnetopause was threaded by a strong magnetic field, indicating a reconnection rate ~10 times that typical at Earth. Moreover, a large flux transfer event was observed in the magnetosheath, and a plasmoid and multiple traveling compression regions were observed in Mercury’s magnetotail, all products of reconnection. These observations indicate that Mercury’s magnetosphere is much more responsive to IMF direction and dominated by the effects of reconnection than that of Earth or the other magnetized planets.

Balloons and more Balloons

The 2008 Jackson, MI Hot Air Jubilee had the meteorological services of AOSS Research Scientist Frank Marsik and two AOSS students, Devon Vaughn and David Wright. Frank and the students were asked to help the organizations get a more accurate prediction of the winds and weather forecast. The picture of the “Balloon Glow” above was taken a little after dusk when the balloon handlers filled their balloons just enough to have the “glow” of the setting sun shine through.

How big of a **POP!** does a weather balloon and its payload make when it reaches 93,709 ft? Watch and see! Brought to you by S3FL students working with AOSS Professor Aaron Ridley.

http://www.youtube.com/watch?v=eiayccck9l8
AOSS students start their own weather forecasting web site

Thanks to AOSS Research Scientist Frank Marsik and AOSS students Brad Charboneau, Jennifer DeHart, Jon Rutz, Mike Texter, and David Wright, AOSS has a brand new weather page maintained and updated by AOSS students. The site is anchored by the “Local Forecast Discussion,” the student blog. It also includes “Climate Watch,” that will comment upon and add historical perspective to current weather trends. Of course, the site also includes Current Conditions, Selected Cities Forecast and a Daily Almanac.

“For many years, the students within AOSS used to hold ‘Weekly Weather Briefings’ for the faculty/staff each Friday afternoon,” said Marsik. “Prior to the Weather Channel era, these weekly briefings provided the faculty and staff with a look ahead at the upcoming weekend’s weather, while also providing the students with an opportunity to practice presenting meteorological information in a semi-technical format (that is, we had a lot of fun with it, too). The new student-driven UM-AOSS Weather Center web site has revived this tradition in many ways. This daily-updated site allows more students to participate, as well as allowing the students to reach alumni and potential future students.”

Please take some time, check it out and bookmark it on your browser. Your comments and suggestions can be sent directly to the student forecasters at aoss4casters@umich.edu.

On the Web
Support AOSS students, use the U-M Weather site to keep up on what’s happening in current weather and climate issues. Go to:
http://aoss-research.engin.umich.edu/weather
AOSS hosts LEAD Program Students

This past July, AOSS hosted six high schoolers from around the country as part of the Leadership, Education and Development (LEAD) Engineering Program. During their time on campus, the six students worked on a wind power project under the direction of AOSS Research Scientist Frank Marsik and AOSS students Devon Vaughn and David Wright. The students were part of a group of 27 students working on LEAD projects in the College.

Using a “Resolution Supporting the Exploration of Renewable Energy in the Form of Wind Power for the State Of Michigan” issued by Michigan Governor Jennifer Granholm, the AOSS students formed “Dynamic Air” to explore the potential for wind energy in Michigan. “We had them create their own consulting firm that was being hired by the state of Michigan to first look at the potential for a wind turbine or wind farm in Washtenaw County and also explore other parts of the state for potential sites,” said Marsik.

The students found that while Washtenaw County was most likely not suitable for a wind farm due to slow wind speeds and higher population density, Emmet County in northwest Michigan, with additional research, may have potential to be home to a new wind farm. The Civil & Environmental Engineering LEAD team working independently on another aspect of wind power also reached this conclusion. The teams presented their findings during the program’s closing ceremony before an audience of CoE faculty, students and staff with the AOSS LEAD team taking home the award for Best Web Site.

To view the research and results, visit the DynamicAir web site at: http://aoss.webs.com
Successful Dissertation Defenses


**Alex Glocer**, PhD in Atmospheric and Space Sciences, *Modeling Radiation Belts and Ionospheric Outflows With the Space Weather Modeling Framework*, Tamas Gombosi and Gabor Toth Co-Chairs.


**Daniel Welling**, PhD in Atmospheric and Space Sciences, *Exploring Sources of Magnetospheric Plasma Using the Validated SWMF*, Tamas Gombosi and Aaron Ridley Co-Chairs.

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Master of Engineering

Dylan Robert Boone  
Aisha Ruth Bowe  
Wendy Constance Buckles  
Shikha Luthra Ganguly  
Catlin Charles Garcia  
Kartik Venkata Ghorakavi  
Drew Adam Heckathorn  
Eugene Sang Ho Hwang  
Andrew Thomas Klesh  
Eric Robert Kosmyna  
Michael Christopher Lindsay  
Nathaniel Noble Meredith  
Eric Michael Miller  
Kelly Ann Moran  
Karan Hiten Patel  
Richard Chandra Prasad  
Neal Anthony Rusche  
Patrick James Senatore  
Kara Elizabeth Vargo  
Bee Vue  
Paul Robert Wloszek  
William Edward Woelk  
James Anthony Wojcik  
Jung-Sik Yu

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Master of Science

Gregory M Bee  
Ryan Andrew Donald  
Daniel Gershman  
Jacob R Gruesbeck  
Yanshi Huang  
Kristen M Mihalika  
Catalina Monica Oaida  
Jessica Michelle Parker  
Kevin Adams Reed  
Ahmed Tawfik  
Paul Domenic Teini  
Brandon Michael Wills  
Shau-yuh (Judy) Yu  
Yiqun Yu  
Laura Janell Bell  
Bradley Ryan Charboneau  
Rachel Elaine FitzHugh  
Colene Michelle Haffke  
Lauren Sharal Hogg  
Rachael Ann Kroodsma  
James Robert McGrail  
Amanda Michelle Mims  
Evan Michael Oswald  
Stephanie Maria Praus  
Jonathan James Rutz  
Paul Andrew Schmidt  
William Turner IV  
David Morris Wright
AOSS Student Accolades

AOSS graduate students Tamara McDunn and Liang Zhao have received a NASA Earth and Space Science Fellowship. They are among the 98 recipients selected from more than 425 applicants to the competitive program. Tamara, whose advisor is AOSS Research Professor Steve Bougher, will be working on planetary science research on the Structure and Dynamics of the 60-120 km Region on Mars. Liang is one of only four selected in heliophysics research and will be working on the Analysis of the Current Unusual Solar Minimum. Her advisor is AOSS Professor Len Fisk.

The Geoscience and Remote Sensing Society awarded AOSS doctoral candidate Sidharth Misra the IGARSS Best Student Paper Award. The award, presented at their annual international symposium, was for the paper, Characterization of L-band Radio Frequency Interference across the Continental USA using a Kurtosis Detector, which was co-authored with his advisor, AOSS Professor Chris Ruf.

Congratulations to AOSS PhD student Catherine Walker for being selected as one of the first members of the NASA Student Ambassadors Virtual Community. Catherine, a second-year student of Mike Liemohn’s in Space and Planetary Physics, was selected from hundreds of current NASA interns and fellows as one of the approximately 80 students in the new program, which will “serve as an outreach vehicle to the nation’s students.” The Student Ambassadors will interact with NASA, share information, make professional connections, collaborate with peers, represent NASA in a variety of venues, and help NASA inspire and engage future interns.

AOSS Red Zeppelin softball team wins!

For the first time in its six year history the AOSS co-ed softball team, RedZeppelin, has a winning record. The team went 3-1 during the regular season and ended 0-1 in the playoffs. This year's team manager was Matt Trantham, atmospheric and space science doctoral pre-candidate, and the assistant manager was Catherine Walker, space and planetary physics doctoral pre-candidate.

Team Members
John Puckett
Kevin Reed
Shintaro Taniguchi
Matt Trantham
Tami McDunn
Amanda Mims
Jacob Gruesbeck
Sidharth Misra
Daniel Gershman

team members and more online at:
http://sitemaker.umich.edu/redzeppelin1/home

Julie-Ann Felt
Catherine Walker
Rona Oran
Paul Ulrich
Soyee Sydney Chiu
Shannon Curry
Joseph Merchant
David Apilbaum
Everett Mayers
Jennifer
AOSS Family Album

The Daily Planet is launching a new page! The AOSS Family Album will share events in the lives of the AOSS family, both here and at home. If you have photos you would like to share, submit them to: aossnews@umich.edu along with the Who, What, When, Where, and Why.

We only get 1 First Birthday! Alex Winslow celebrated his Mexican style on April 4, 2009, at Nuevo Vallarta Mexican Restaurant in Grand Blanc, Michigan.

“You win the 1000+ Pitches, I’ll wear the chicken suit.” Guess what Thomas, five students won, including AOSS’s own Jason Gilbert. With such an incentive, how could they miss. Did you miss seeing Thomas Zurbruchen feather-clad at the Dean’s Holiday Party 2008?

Zofia (Walunas) Brzezniak’s first egg hunt. Bobbi tells us, “It wasn’t quite the White House lawn, but she was more interested in the contents than the paparazzi.”

Dan Welling’s Send-Off Party Jan 22, 2009 (and unidentified finger)

Ladies Thursday-night Ping Pong. Good exercise, great companions, a lot of laughs!
AOSS Happenings

Congratulations to Lindsay and Dave Pawlowski on the birth of their son Benjamin Daniel. Ben arrived on May 21, 2009 at 10:30 p.m., weighing 7 lbs, 10 oz.

We also send our congratulations to Tony and Tammy Visco who gave birth to son Robert on April 27th at 10:24 p.m. Robert weighted in at 7 lbs, 12 oz.

On Saturday, July 11, 2009, Laurie Miller, AOSS Grants & Contracts Accountant, wed Daryl Raven in Ypsilanti, MI.

Grandparent Gallery

Grandpapa Tamas Gombosi and new granddaughter Grace Julianna Gombosi. Grace was born May 2, 2009, at 6:45 PDT. She weighted 6.5 lb and was 19 inches “tall”.

Proud Grandma Moon presents Roman Christopher Moon, born June 7, 2009, to Nancy and Brett Moon. Roman came to us at 9 lbs, 1 oz, and 19 3/4 inches “tall”.

A Note from Dean Munson:

As you know, thanks to the generosity of thousands of alumni and friends, the College reached the goal of its Progress & Promise: 150th Anniversary Campaign. You played a key role in this milestone achievement, and we thank you. Following is a link to a short video that showcases just a few of the many ways the College has been transformed as a result.

http://www.engin.umich.edu/campaignthanks

Sincerely,

David Munson
Dean of Engineering

You can still make a Michigan Difference by using the form below

Your tax-deductible gift to AOSS will provide opportunities for students and keep our programs strong. AOSS strives to offer our students the best possible educational and research opportunities. Your gift to the Department will enable us to make awards to AOSS students who have financial need, are outstanding students or have exemplified exceptional leadership and character.

Thomas M. Donahue Memorial Student Fund

Enclosed is my gift of $__________ for the Thomas M. Donahue Memorial Student Fund.

Name(s) ______________________________________________________________________________________________

Address ______________________________________________________________________________________________

City __________________________________________ State ________________ Zip Code _________________________

Daytime Phone (      ) _________________________________ Email ____________________________________________

Please do not send acknowledgment note to the Thomas M. Donahue Family.
(The amount of your gift will remain confidential.)

Make check payable to: University of Michigan

Send your donations to:
Thomas M. Donahue Memorial Student Fund
Department of Atmospheric, Oceanic and Space Sciences
Room 1521C SRB
2455 Hayward Street
Ann Arbor, MI 48109-2143

Questions? Contact Mary Nehls-Frumkin at maryln@umich.edu

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