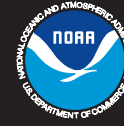


NSSL Briefings



A newsletter about the people and activities of the National Severe Storms Laboratory and Cooperative Institute for Mesoscale Meteorological Studies collaborative researchers



10th Anniversary Edition:

This Fall 2005 issue represents the 10th year of the publication of *NSSL Briefings*. Desktop publishing has changed a lot, thankfully, since we first came up with the idea to share NSSL's work with the rest of the world. 27 newsletters later I want to thank the NSSL staff for their continued support in helping make *NSSL Briefings* a success.

- Susan Cobb, Editor

Cutting edge research streamlined into NWS

Over the next ten years, NSSL-developed multi-sensor technology to improve severe weather warning decision-making will be available to meteorologists in the National Weather Service (NWS). As part of an effort to streamline the movement of research into operations, NSSL and the NWS developed a collaborative partnership through the addition of Meteorological Development Laboratory (MDL) scientist, Greg Stumpf, located at NSSL. Greg's role will be to infuse NSSL's cutting-edge severe weather warning applications and decision support system development into NWS warning operations. The result will be improved NWS warning services for the public, increased detection accuracy, longer lead times, and fewer false alarms for tornadoes, flash floods, and other forms of severe convective weather.

Some of the new tasks to be carried out include:

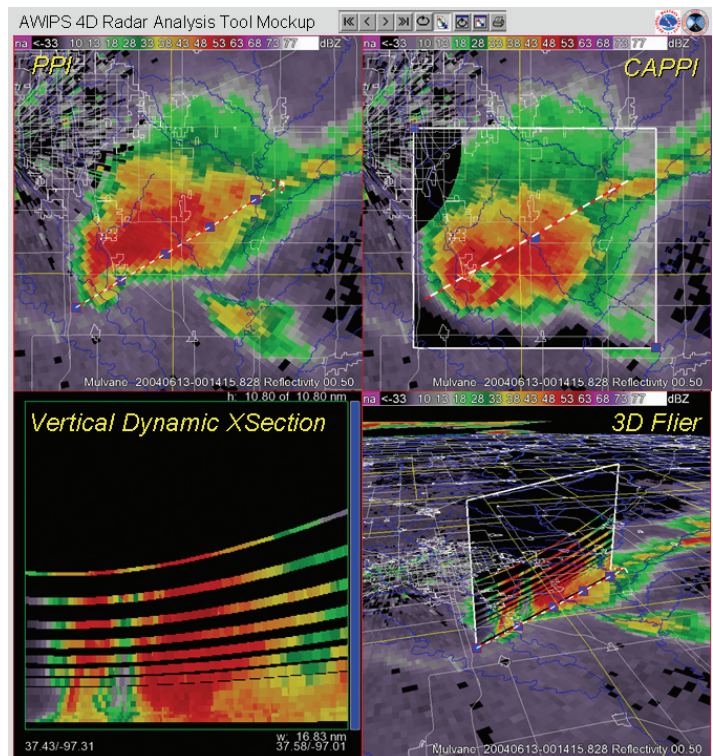
- Collaboration with NSSL scientists to establish a development testbed in order to prototype new multi-sensor applications to be used in short-fuse (0-1 hour) severe weather warning operations and short-range prediction for NWS Weather Forecast Offices (WFO).

- New research and software development for Advanced Weather Interactive Processing System (AWIPS) decision assistance tools, including multiple-sensor severe weather warning decision-making applications (detection, diagnosis, and prediction algorithms).

- Development of a new multiple-sensor hail diagnosis application and a multiple-sensor cloud-to-ground lightning prediction algorithm.

- Development of the Four-dimensional Stormcell Investigator (FSI), a novel 4D base radar data analysis tool based on the successful NSSL Warning Decision Support System - Integrated Information (WDSS-II) display. The FSI plots native-resolution (spherical coordinate, or "8-bit") WSR-88D base data in 3D space, on a 3D representation of the Earth. Users can interact with the data using a variety of tools (e.g., dynamic vertical and horizontal cross sections, 3D pan-zoom-pitch-yaw controls).

Researching and prototyping new applications that exploit and integrate multiple-sensor observations for the benefit of NWS operations is crucial for NOAA. The strategic placement of Greg as an MDL scientist will enhance NSSL's long-time relationship with the NWS in the development of new science and technology to support the NWS operational severe weather and flash flood warning capabilities. ♦



Four-dimensional Stormcell Investigator (FSI) 4-panel display mock-up using radar data from June 13, 2004, Mulvane, OK.



Spotlight on: Harold Brooks

Harold Brooks is a third-generation St. Louis Cardinals fan. And while most kindergartners in St. Louis, Missouri, might have been aware that the Cardinals were in the 1964 World Series, Harold was doing long division to keep track of their batting averages. He still loves baseball--and he continues to study it by answering his own questions: How does the performance of the players in September compare to the rest

of the season? (Cal Ripken was terrible in September). Is this typical of guys that play each day--that they are bad in September? (Infielders, yes, outfielders, no). Harold has made a hobby out of baseball research.

But what does baseball have to do with his job in weather research? Nothing! From baseball to physics (his undergraduate major) to atmospheric science and the media, Harold just likes to ask questions and is driven to answer them. "I stumbled into this--I am not one of those people who likes going up on the roof to watch thunderstorms." From physics he "stumbled" into climate and planetary research at the Goddard Institute for Space Studies, and was invited to graduate school at Columbia University in New York City. After earning his M.S. in atmospheric science, Harold wanted to get back to the Midwest and arrived at the University of Illinois at Urbana-Champaign during the infancy of its supercomputer center. After earning his Ph.D. in 1990, he came to NSSL.

Harold is head of the Mesoscale Applications Group at NSSL and continues to ask questions in his job: "How can we get value out of research for forecasters?" Recently, his biggest success was answering the question: "Where and when is severe weather likely to occur at any point in the country?" You can see the interactive maps he developed at: <http://www.nssl.noaa.gov/hazard/>. Harold's curiosity has already propelled him to the next question: "What is the distribution of severe weather around the world?" To answer this, he considered data from seven years of soundings taken four times per day over regions covering most of the contiguous United States, Europe, and Australia. Harold was awarded a DOC Silver Medal for his work.

International outreach and traveling are a big part of Harold's job. Besides hosting visitors to NSSL, he is frequently invited to speak and work abroad. He even had a rewarding role in the formation of the European Severe Storms Laboratory: "NSSL has clearly had an impact on how science is done in Europe." Luckily, his dislike of flying is outweighed by his enjoyment of eating in different countries. (His favorite restaurant is in Montreal where patrons are served seven-course gourmet meals).

Unique experiences as a radio host (sports and music) while an undergraduate at William Jewell College, and as a bartender in England enhanced Harold's ability to filter information. He likes to identify what's important and explain concepts in a useful way, which makes him a media favorite. He was the media liaison for VORTEX in 1995, had interaction with the Twister movie team, and was a point person for the May 3, 1999 tornado outbreak.

Harold's wife, Katherine, two kids - Sarah (13) and Christopher (10), their dog Amba and a gecko (living in Sarah's room but not seen lately) don't share Harold's passion for baseball, but recently Le Tour de France had their attention. Christopher noted that Thor Hushovd should do well on Thursday (competing for the green jersey), since Thor was named for the day. In Christopher's "Thursday" updates they saw Thor move into second, then into first place for the remainder of the tour. ♦

Research Experience for Undergraduates

NSSL hosted six undergraduate students from May 30 through August 6, 2005, for the annual Research Experience for Undergraduates (REU) program coordinated by Daphne Zaras. During the ten weeks, students were mentored by scientists as they worked on different projects. Each project was presented in a symposium at the end of the program. REU participants include:

(continued on the next page)

News briefs

Comings and goings

NSSL welcomes **Ming Fang**, a new CIMMS employee who is finishing his Ph.D. in meteorology at the University of Oklahoma (OU). Ming will work to develop advanced radar applications as part of WISH.

Allison Silveira joined NSSL to work on thunderstorm electrification modeling. She just finished her M.S. degree at OU and is beginning her Ph.D.

Jack Kain, formerly CIMMS, has accepted a federal Meteorologist position in the Forecast Research and Development Division. Jack specializes in numerical modeling research, moving the results of research into operations, and Storm Prediction Center interactions.

Hongping Yang is visiting for eight months from the Institute of Heavy Rain in Wuhan, Hubei province, China to work with Jian Zhang on radar applications.

Lulin Song, a programmer on the WDSS-II project, moved to New York City to join her family.

Daphne Zaras has resigned as NSSL's Outreach Coordinator. She will continue to work part-time running REU and maintaining the CIMMS external web pages. This will also give her more time to finish her Ph.D. in Adult and Higher Education at OU!

Hurricane Relief

NSEA, the NSSL/CIMMS and SPC employee association, voted to donate \$1000 of its funds to the local chapter of the American Red Cross, designated for Hurricane Katrina evacuees. In a spontaneous fund-raising effort, NSEA also collected \$495 in donated cash used to purchase bath towels, cases of canned corn and peas, and commercial size cans of pork-n-beans and pinto beans used by the Salvation Army for evacuees in Norman.

OAR Outstanding Scientific Paper

The 2004 Outstanding Scientific Papers were announced in August, 2005 by NOAA's Office of Atmospheric Research (OAR). One of the papers receiving this honor was authored by CIMMS scientists **Igor R. Ivic** and **Sebastian Torres** and NSSL's **Dusan Zrnica**. The paper, "Whitening in Range to Improve Weather Radar Spectral Moments Estimates. Part II: Experimental Evaluation," was published in the "Journal of Atmospheric and Oceanic Technology."

CIMMS Outstanding Paper Award

Dave Schultz (CIMMS) and **Jeff Trapp** (formerly CIMMS) were the recipients of the first annual CIMMS Outstanding Paper Award for their paper "Nonclassical cold-frontal structure caused by dry subcloud air in northern Utah during the Intermountain Precipitation Experiment (IPEX)," The paper was published in Monthly Weather Review in 2003. This new CIMMS award was created to recognize outstanding scholarship by CIMMS scientists.

NSSL's Web site is at: <http://www.nssl.noaa.gov>

Since 1995, NSSL Briefings has been published from the National Severe Storms Laboratory to provide federal managers, staff, and other colleagues in the meteorological community with timely information on our activities. This newsletter also contains information about NSSL's scientific collaborations with the OU Cooperative Institute for Mesoscale Meteorological Studies (CIMMS). If you would like to be added to the NSSL Briefings mailing list, or have a change in your address, please send requests to Kelly Lynn, NSSL, 1313 Halley Circle, Norman OK, 73069; by phone: (405) 366-0429 or by email: kelly.lynn@noaa.gov.

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 Public Affairs.....Keli Tarp

NEWSLETTER

Writer/Editor.....Susan Cobb

- Ariel Cohen, Ohio State University (Mike Coniglio, NSSL), "Discrimination Among Non-Severe, Severe, and Derecho Mesoscale Convective System Environments"
- Kate Hogan, North Carolina State University (Dave Schultz, Bob Johns, CIMMS), "A Five-Year Climatology of Elevated Severe Convective Storms in the United States East of the Rocky Mountains"
- Rebekah LaBar, Central Washington University (Mike Douglas, NSSL), "The Llanos Low-Level jet and its association with Venezuelan Convective Precipitation"
- Angela Fritz, Valparaiso University (V. Lakshmanan, Eddie Forren, Travis Smith, CIMMS), "A Validation of Radar Reflectivity Quality Control Methods"
- Michelle Harrold, Valparaiso University (Greg Stumpf, NWS-MDL/CIMMS), "Hail Warning Decision Guidance"
- Elise Johnson, Iowa State University, (Ted Mansell, CIMMS), "Three-dimensional lightning mapping of the central Oklahoma supercell on 26 May 2004." ♦

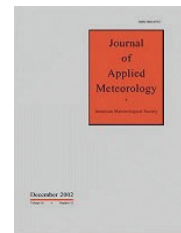
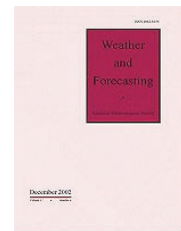
Peer review

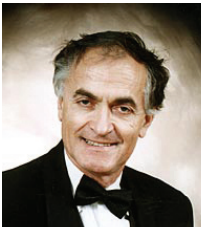
It's completely voluntary, there is no extra pay and no extra time built into their schedule to devote to the responsibility. They do it to give something back to the meteorological science community. They do it to influence the quality of the scientific publications. They do it as a labor of love for their profession. And they see, all together, thousands of papers and shepherd them through the rigorous process of peer review.

One of the primary ways scientists share their ideas and knowledge with each other is through scientific journals, and the American Meteorological Society (AMS) publishes ten. NSSL has a history of supporting AMS journals through participation of its scientists as reviewers, associate editors, regular editors and chief editors. Currently, three scientists at NSSL are chief editors: Dave Jorgensen is co-chief editor of "Monthly Weather Review," and Harold Brooks and Dave Stensrud are co-chief editors of "Weather and Forecasting." Dave Schultz is an editor of "Monthly Weather Review," and there are a number of associate editors as well: Mike Baldwin, Jack Kain, and Lou Wicker for "Monthly Weather Review," Kim Elmore for "Weather and Forecasting," and Alexander Ryzkov for the "Journal of Applied Meteorology."

"Peer review is one of the foundations of the scientific enterprise," says Dave Stensrud. "An editor is a person who has a good amount of experience in the scientific publishing process (both as author and reviewer), and who knows a lot of people in the scientific community." "Editing's a great opportunity to see the rest of the publication process," adds Harold Brooks, "as an author and reviewer, you only see part of it." A result of this broader view is that editors are working to "improve the time from submission to publication," according to Dave Schultz. Dave Jorgensen is on the AMS committee to reinvent the publications process to become totally paperless. He says, "From manuscript submission to reviews, to copy and technical editing and layout, through galleys, everything (except for the transfer of copyright form) will be done electronically." He hopes this will drastically reduce the cost of publishing color figures and get the page charges down to acceptable levels as well as decrease the time between submission and publication. Dave and his MWR editors and associate editors have already made great strides in decreasing the time from manuscript submission to initial decision in the "Monthly Weather Review." His goal is to shorten the time needed to make an initial editorial decision to about 5-6 weeks and the time from acceptance to publication to less than 20 weeks.

It's their reputation that gets them into this. Jorgensen says, "Reputations are made by publishing papers and getting to know folks. Reputations are also enhanced by being a good reviewer, which means not turning down too many offers to review papers and returning the review in a timely fashion." Jorgensen concludes, "There are plenty of talented folks willing to unselfishly contribute their time to this endeavor, which makes science work in this country." ♦





NSSL's Dusan Zrnec receives Presidential Rank Award

Dusan Zrnec, NSSL senior scientist, recently received the "Presidential Rank Award" for outstanding long-term accomplishments in radar research. The prestigious Presidential Rank Award is given to a select group of senior federal executives who have provided exceptional service to the American people over an extended period of time.

Dusan's work with meteorological Doppler radar signal processing theory and practice became benchmarks for conceptual designs of the national networks of Doppler weather radars. His work has contributed substantially to the recognition of radar signatures of hazardous weather phenomena such as tornadoes, mesocyclones, and fronts--which in turn help forecasters save property and lives through improved warnings. Dusan also contributed to early understanding of tornado wind speeds, and more recently to the study of measurements of precipitation with polarimetric radars which offer promise for greatly improved forecasts of precipitation type and amount. He was awarded a patent for devising a novel method to obtain polarimetric information more rapidly and in a way that is compatible with the existing NEXRAD requirements. The method is currently being implemented on the NOAA research and development radar for evaluation.

Dusan's influence goes beyond the laboratory. Besides mentoring many students to become effective independent investigators, he used his radar expertise to create advanced graduate and research courses in the area of Doppler and polarimetric weather radar. He also co-authored a book with Dick Doviak, Doppler Radar and Weather Observations, published in 1984, that is acknowledged worldwide as the standard reference in its field. The second revised edition, published in 1993, contains a one-of-a-kind section dealing with the polarimetric technique Dusan pioneered. "Zrnec's theoretical and practical contributions are truly landmarks in Doppler and polarimetric radar meteorology," said Jeff Kimpel, NSSL director. ♦



Kevin Kelleher (right), deputy director of NSSL, volunteered his free time to help finish the house of a local man suffering from cancer.

NSSL serves the public beyond the weather

Giving weather talks to children and donating weather radios to local schools are activities you would expect from NSSL/CIMMS staff, but recently employees found some different and creative ways to reach out to the community.

The NSSL/CIMMS and Storm Prediction Center's Employees Association (NSEA) raises money through annual dues, profits from the "General Store" (snacks, drinks, and other food available for employees), sales of NSSL clothing and severe weather photographs, and through recycling paper and metal products. The money provides a better working environment (e.g. a microwave and refrigerator for use by all employees), and creates opportunities for social interaction between employees such as "Gab at the Grill", Christmas Party, Halloween Party, Chili Cook-off, summer picnic, and a golf tournament. NSEA also used profits to construct a memorial in front of NSSL to honor

federal employees killed in the Murrah Building bombing in Oklahoma City, to plant trees around the property, and to donate to charitable organizations as needed.

NSSL/CIMMS employees are also resourceful when it comes to giving back to the community. Kevin Kelleher used his free time over the winter to organize volunteers to help a family complete construction of their home following the father's diagnosis of brain cancer. The local man, Tom Blevins, had been building the dream retirement home single-handedly over the past nine years. Late this winter doctors told Blevins he had only months to live. More than 35 volunteers came to help the first weekend, and as the project received media attention, more volunteers showed up and in eight weeks, more than 300 volunteers worked over 2500 hours. In early April, Blevins arrived by ambulance to tour his completed home on a stretcher surrounded by family, friends, and the volunteers.



Profits from a DVD produced by Greg Stumpf (CIMMS) and Jim LaDue

(NWS Warning Decision Training Branch) called "Storms of 2004" are being donated to the Central Oklahoma Chapter of the American Meteorological Society and the National Weather Association, and to the American Red Cross. The DVD highlights seven days of tornadic storms on the Great Plains last year. The DVD sells for \$25, and to date Stumpf and LaDue have donated \$3,155 to the Red Cross and \$1,051 to the local chapter of the AMS. More information can be found at www.towerofstorms.net/sls22. Jim and Greg are also developing a "Storms of 2005" DVD, to be released in November, 2005, with proceeds to benefit the 2005 hurricane relief effort. Details will be available at www.stormsof2005.org.

From strong participation in the United Way's National Day of Caring, to serving at local schools, arts councils, and other volunteer activities, NSSL reaches beyond weather to enrich the lives of others by being involved in the community. ♦