Photo Extra!

Sunflower on the Mesa

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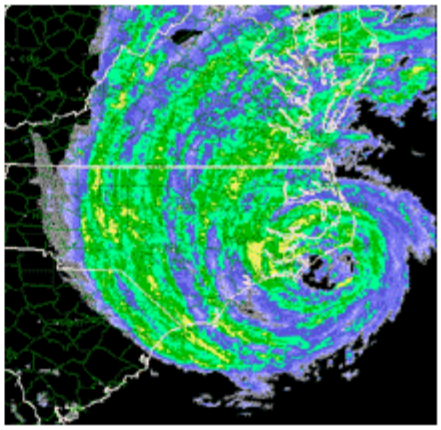
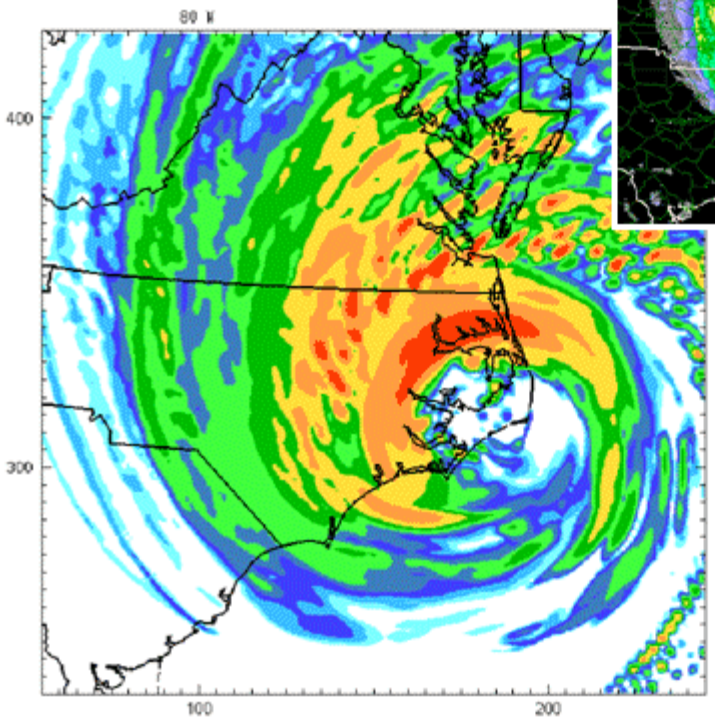
For the people of NCAR, UCAR, and UOP Vol.38 #9 • October 2003

WRF tags Isabel

WRF brought Hurricane Isabel's inner features into sharp focus, as shown in this model reflectivity forecast (below) and the actual radar image (right).





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Just One Look

Sunflowers bloomed in abundance on the mesa at the end of summer. Staff Notes Monthly photographer Carlye Calvin captured a cluster of them last month.

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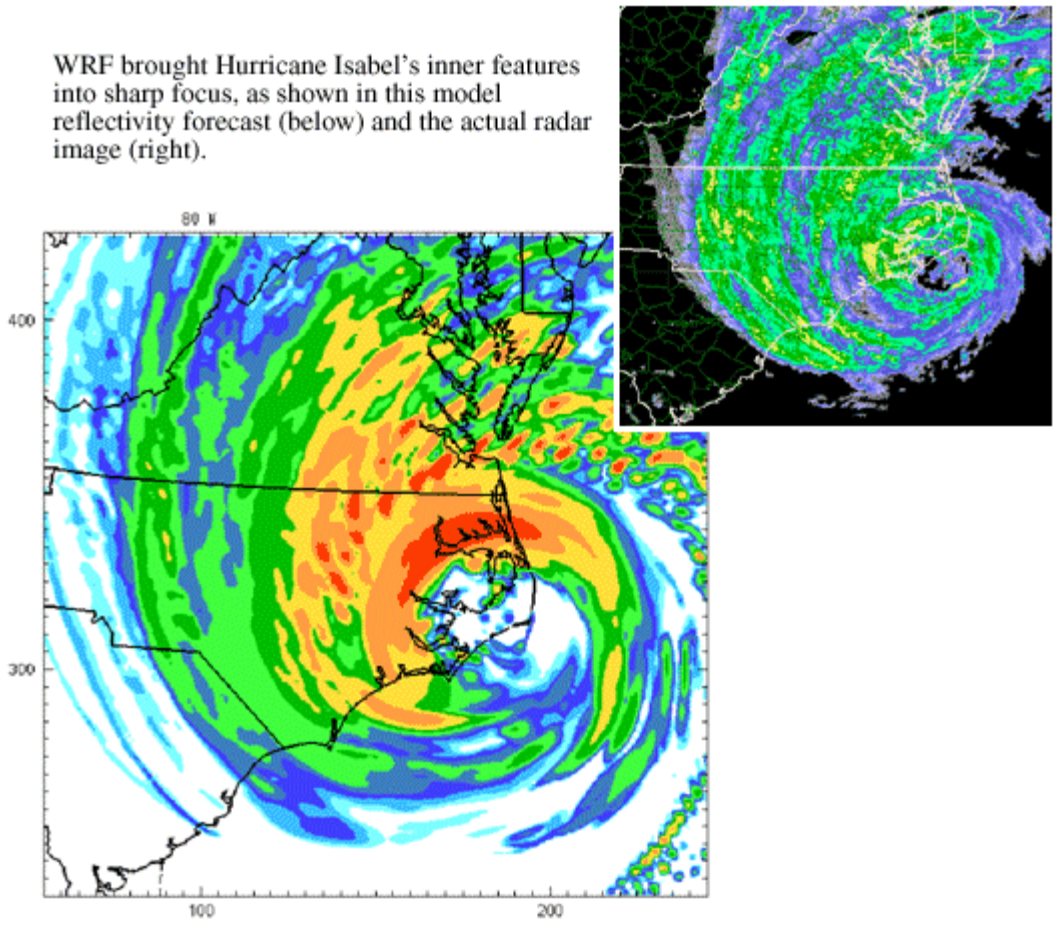
WRF tags Isabel

NCAR's new model gets high marks for predicting the course and timing of the historic hurricane.

The most powerful weather model of its kind met the most powerful Atlantic storm of the young century last month—with memorable results.

As Hurricane Isabel bore down on the East Coast, NCAR researchers broke out the newly developed Weather Research and Forecasting Model (WRF, pronounced "worf") to simulate the storm. As early as 15 September, the model generated high-resolution forecasts showing the storm would strike North Carolina's Outer Banks in the middle of the day on 18 September. That forecast proved to be remarkably prescient: the storm tracked exactly as expected and made landfall within the predicted time frame.



WRF brought Hurricane Isabel's inner features into sharp focus, as shown in this model reflectivity forecast (below) and the actual radar image (right).

"I think WRF did great," says Jordan Powers, a Mesoscale and Microscale Meteorology (MMM) Division scientist who manages WRF operations.

WRF, which was conceived by researchers and forecasters in the late 1990s, is now in the testing stage. NCAR scientists used it during the late spring and summer this year to capture massive midwestern thunderstorms during the Bow Echo and MCV (Mesoscale Convective Vortex) Experiment, better known as BAMEX. The model performed remarkably well, enabling researchers to anticipate the development of thunderstorm complexes up to 36 hours in advance.

Last month, scientists began using WRF to predict tropical storms. But nothing could challenge the new model like Isabel, a storm of historic proportions that achieved category 5 strength—the strongest possible rating for a hurricane on the Saffir-Simpson scale—while still well out over the Atlantic Ocean.

"We thought it was a good opportunity to apply the model to a situation that was attracting a lot of interest as the storm approached the mainland," Jordan says. "We had run WRF in real time for BAMEX, which was over land and in the center of the country. Now we wanted to see how WFR behaved at very high resolution with a storm like a hurricane over the ocean."

Hurricane and Blue Sky

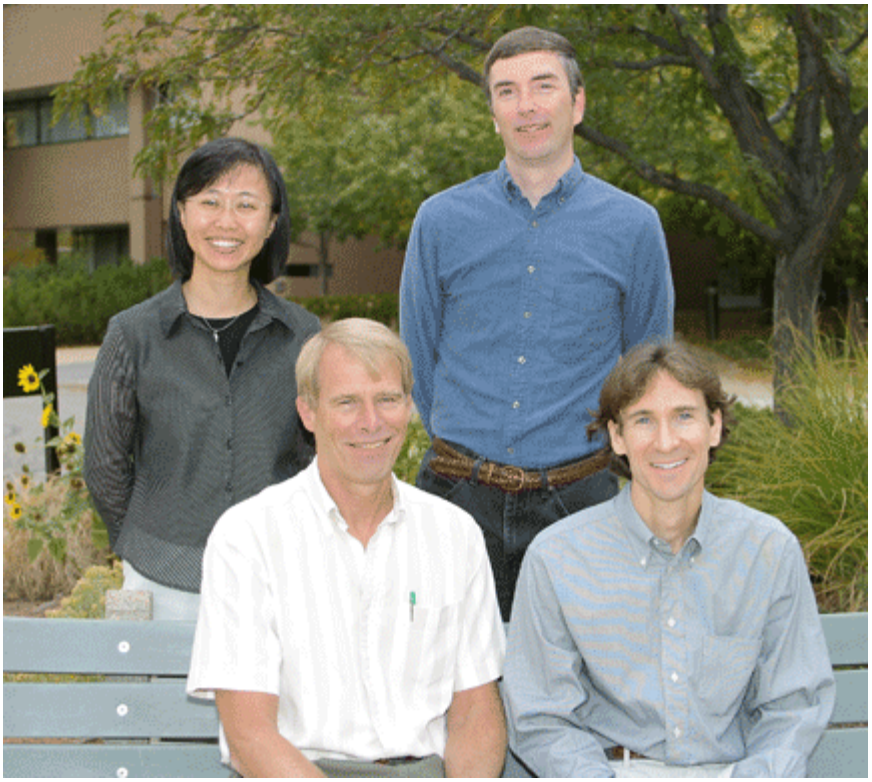
On 12 September, MMM's Joe Klemp, Bob Gall, Wei Wang, and Jordan made the decision to run five-day forecasts of Isabel, instead of the 36-hour forecasts that had been run for tropical storms and for Isabel in its early stages. They also decided to create exceptionally high-resolution simulations as the storm approached land. WRF

would operate on a model grid with data points as close as just 4 kilometers (2.5 miles), bringing into focus Isabel's internal structure, including the eyewall and rain bands. In contrast, existing hurricane models generally operate on a much coarser grid of at least 18 kilometers (11.3 miles).

Running such long-range and high-resolution forecasts threatened to use up much of MMM's reserved computing time at the Scientific Computing Division. But because Isabel was such a high priority, NCAR director Tim Killeen granted a special allocation that boosted MMM's computer allotment. SCD staff expedited WRF's Isabel forecasts.

Beginning 13 September, the IBM Blue Sky supercomputer in the Mesa Lab hummed with calculations as WRF's five-day forecasts were updated twice daily. On 15 September, WRF began to zoom in on Isabel to create high-resolution, 48-hour forecasts. MMM's Jim Bresch posted plots on the Web.

The results impressed even scientists who work with WRF on a daily basis. Wei recalls that the initial conditions entered into the model set up a fairly weak storm. But WRF respondedby strengthening Isabel into a major hurricane.



MMM reseachers (left to right): Wei Wang, Joe Klemp, Jim Bresch, and Jordan Powers.

"The model was able to take the initial condition and spin up quite well," Wei says. "That was very exciting to see. I hadn't been sure what to expect."

WRF's early 10-kilometer runs indicated that Isabel would veer farther to the north and strike the New Jersey shore. In the following days, however, WRF corrected the track. Researchers also were able to view full-color forecasts that resembled radar images and showed areas of intense rain and wind gusts within the large storm. "They were very realistic images," Wei says.

Wei hasn't done a full-scale analysis comparing the forecasts to the nuances of the actual storm. She suspects, however, that WRF slightly overestimated the storm's strength at landfall, in part because the model does not entirely capture interactions between the ocean and the atmosphere.

WRF was not the only model that won kudos for tracking Isabel. Thanks to the ever-increasing power of computers and more data about the atmosphere, forecasting models in general shone in the days leading up to the hurricane's landfall. The National Hurricane Center, using models with coarser resolution than WRF, predicted the storm's track with a high degree of accuracy—although the storm's intensity proved more difficult to forecast.

WRF builds upon the capabilities of current models, such as the MM5 (a mesoscale model developed by NCAR and Pennsylvania State University)and Eta (developed by the National Weather Service's National Centers for Environmental Prediction). It is designed to meet the needs of both researchers and forecasters. The model uses a state-of-art computer code, developed by an interdisciplinary team led by MMM's John Michalakes, that can be run on a wide range of computer platforms ranging from a desktop workstation to the Earth Simulator supercomputer.

"Research advances will have a direct path to operations, thereby providing society with better forecasts," explains MMM director Bob Gall. "This link between research and operations makes WRF unique in the history of numerical weather prediction in the United States."

Using the experience of Isabel and other storms, researchers will continue to tweak WRF. The National Centers for Environmental Prediction plans to begin using it for high-resolution forecasts in September 2004, and other agencies, including some branches of the military, subsequently will use WRF for their specialized operational needs. NCAR will maintain the model to facilitate wide use in research, particularly in the university community.

In the next few months, MMM plans to release a more sophisticated research version that will enable scientists to nest a high-resolution grid within a larger grid of coarser resolution. That way, scientists can focus in on areas of concern while using computer time as efficiently as possible. In time, WRF may also be coupled with ocean and/or wave models for even better forecasts of hurricanes.

"There will be a progression of development with WRF," Jordan explains. "We'll add capabilities over time." •*David Hosansky*

Up close with Isabel

Hurricane Isabel meant evacuations for many residents, but ATD's Joshua Wurman saw a research opportunity that was too good to ignore. He and a team of researchers, including ATD engineer Jon Lutz, drove three "Doppler on Wheels" (DOWs) mobile radars toward the coast. They set them up on several sites, including a bridge by the town of Atlantic, North Carolina, to capture high-resolution data as the eye of the storm moved directly overhead.

A DOW mobile radar in an earlier storm. (Photo courtesy Joshua Wurman.)

The newest of the radar systems, called the Rapid-DOW, sent out six radar beams simultaneously, thereby creating three-dimensional images of such phenomena as boundary layer rolls—which contain a hurricane's highest winds. The resulting data can lead to a better understanding of a hurricane's structure, including areas of high-intensity and lower-intensity winds and the vertical transport of energy within the storm.

"We had all three radars in the eye," Joshua says, "and we got some unprecedented high-resolution data."

Isabel was the sixth hurricane that the DOWs have recorded. The research trucks easily withstood the storm gusts of up to 100 mph (161 kmph), although the rising waters temporarily turned the bridge into a 200-yard-long island. Rabbits, snakes, and other animals sought sanctuary on the causeway. "It was like Noah's Ark," Joshua recalls.

WRF forecasts

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An online overhaul

An interdisciplinary team of staffers from across the organization is forging ahead with an eye-catching Web redesign. Its goal: produce a single umbrella site for UCAR, NCAR, and UOP that engages the public while making information more readily available to scientific and academic users.

“UCAR, NCAR, and UOP offer world-class facilities and world-class science,” explains Catherine Shea of the NCAR director’s office, who is serving as co-chair of the Web Outreach, Redesign and Development (WORD) team. “It’s important that our Web presence reflects that. We want Web users to gain a sense of the breadth of our work when they first arrive at the home page.”

One of NCAR’s strategic initiatives is bolstering “cyber-infrastructure,” and NCAR director Tim Killeen has put a high priority on the Web redesign. The UCAR President’s Council endorsed the redesign project last month amid high expectations for raising the profile of the organization’s research.

The current Web site design is several years old, a considerable period of time in the fast-changing environment of the World Wide Web. The home page directs users to divisions and programs within each of the three organizations, but users may not know where to find information about specific types of research.

The new site will invert that design, emphasizing research initiatives and various fields of atmospheric science rather than organizational structure. “We’re moving from three sites that are focused on how we are organized to one site focused on the compelling research and work going on here,” says Markus Stobbs, co-chair of the WORD group.

Markus Stobbs

The home page, which is still under construction, will likely link to a variety of appropriate topics for diverse audiences. A prototype home page currently features an article about solar variation, a profile of a staff scientist, overviews of the Climate and Global Dynamics Division and the Joint Office for Science Support, recent news about the organization, and a sample “fast fact” (how ozone is created). Once the Web site is launched, these topics will be rotated every month to keep the site fresh.

Viewers will have the ability to navigate to pages designed for their specific needs. The Web site will incorporate specialized pages for six distinct audiences: the science-literate public, the research community, students and educators, news media, UCAR member universities, and internal staff.

Individual divisions and offices will have the option of retaining their current Web designs or modifying their pages based on the redesign. “While the scope of our work ends with those top-level pages,” Catherine says, “several people have already approached the WORD group to find out when the new design will be available so they can incorporate it in their own designs.”

The WORD team expects to get feedback from user groups this fall, and to create an interactive prototype as early as January for the American Meteorological Society conference. If all goes well, UCAR, NCAR, and UOP will have a new top-level Web site in the first part of next year.
•David Hosansky

Word Team

Catherine Shea, Director's Office

Lynda Lester, SCD

(co-chair)	
Markus Stobbs, SCD (co-chair)	Greg McArthur, SCD
Wendy Abshire, COMET	Susan Montgomery-Hodge, President's Office
Kathleen Barney, ACD	Mark Mulholland, COMET
Kristin Conrad, MMM	Terry Murray, Library
Michelle Flores, Corporate Affairs	Jennifer Oxelson, ESIG/ATD
Susan Friberg, Corporate Affairs	Sandra Petrie, Director's Office
Julie Gerleman, ATD	Leonard Sitongia, SCD
Bob Henson, Communications	Kathy Strand, UOP Director's Office
Scott Kehoe, Unidata	Dennis Ward, EO
Debbi Lake	Lucy Warner, Communications

Proposed drafts of a new home page

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WRF testbed gets its first director

A new hat for Bob Gall

One of NCAR's longest-serving division directors is moving on, but he won't be leaving Foothills Lab. Bob Gall, who took the helm of the Mesoscale and Microscale Meteorology (MMM) Division in 1991, will be relocating down the hall to head up the new Developmental Testbed Center (DTC) for the Weather Research and Forecasting (WRF) model.

Bob came to MMM from the University of Arizona in Tucson, where he researched tornadoes, fronts, tropical and extratropical cyclones, planetary waves, and the Arizona monsoon.

During the past few years, he has intermingled his MMM duties with several other big tasks. He took almost a year off from his director's duties in 1999 when he became lead scientist for the U.S. Weather Research Program (USWRP), a role that continues today. (Rich Rotunno stepped in as MMM's interim director.) Bob also spent seven months on the mesa as NCAR deputy director from late 2001 to early 2002.

Bob says the USWRP still has a place in his future. "I've been lead scientist for a long time, and I'd like to keep doing that for a while." He'll officially step down from his MMM post as soon as a replacement is found, perhaps before the end of 2003.

"I have accepted [Bob's] resignation from the MMM directorship," wrote NCAR director Tim Killeen in an announcement on 19 August, "with an

understanding of his desire for new challenges and a deep appreciation for his many contributions in this role over the past 12 years."

New center

A joint effort of NCAR and NOAA, the DTC opens this autumn in the FL3 space being vacated by a group from NOAA's National Severe Storms Laboratory. The center will allow scientists to put what will soon be the nation's flagship model for weather prediction and research through some cutting-edge paces.

"The idea of the DTC is simple," says Bob. "It's a place where you can go and try out new ideas in numerical weather prediction without interfering with forecast operations."

Though located at NCAR, the center will be an autonomous entity, with much of the computing done by scientists from a distance. Bob and colleague Steve Koch (NOAA's Forecast System Laboratory) spent the past year drumming up support for the center, as well as for a parallel operational testbed to be housed at the National Weather Service's National Centers for Environmental Prediction.

The ultimate goal for the DTC is about a dozen full-time staff and a strong visitor program, with an annual budget on the order of $5 million.

The DTC will allow researchers to test a wide range of new methods and model components that may eventually be used operationally. The center will also maintain the code for WRF's various permutations and keep an archive of each day's forecasts, totalling 200 to 300 terabytes of data per year. Finally, researchers can use the DTC to explore the best means of verifying an experimental model's performance, especially in predicting individual thunderstorms and other features that are omitted or more crudely predicted in working models.

"I think the DTC will provide a very quick way to get ideas from the research world into the operational models," says Bob. "If something starts to look promising, I guarantee you it will move quickly into operations."
•*Bob Henson*

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From plumbing to hardware:

Shuttle service provides transportation—and conversation

Ask ACD's Chris Halvorson what he likes best about taking the shuttle to and from work, and the veteran rider responds, "I've always enjoyed good conversations with the shuttle drivers." Then he jokes, "But really it's all those detours we take to the Walnut Brewery."

The downtown Walnut Brewery is, regrettably, not a shuttle stop. This doesn't seem to discourage people from boarding the shuttle, however. On an average day, the drivers transport about 150 staffers and visitors between the Mesa Lab, Foothills Lab, and Center Green campuses, with stops between. They also manage NCAR's "black bag" service and keep the fleet of five vans, one of which runs on natural gas, clean and maintained.

The shuttle system started back in 1989 with NCAR's proposal to expand the Mesa Lab. When residents at the bottom of the hill objected to the idea of more employees driving cars through their neighborhood each day, a shuttle system seemed like the perfect solution. As it turned out, NCAR obtained the Foothills facilities instead of expanding on the mesa. With campuses on both ends of town, a shuttle system looked even more attractive. As a Transportation Alternatives Program (TAP) newsletter asked in the early 1990s, "Have you ever found yourself driving to a midday meeting at another NCAR site? Perhaps even grumbling to yourself that 'there must be a better way?'"

A decade later, that "better way" remains the TAP-sponsored shuttle system administered under Safety and Site Services, in which drivers Peter Friend, Carri Kawahara, Roger Schaefer, Jaime Shuey, and Ziggie Swan negotiate Boulder's congestion and construction. They might even engage riders in conversation that ranges from the weather forecast (gee, really?) to mutual funds.

Enjoying the passengers

The five drivers are unanimous that the highlight of shuttle driving is their passengers. "I like the people best," says Carri. "My riders have helped me

immensely with everything from plumbing to trouble-shooting hardware. Though I have yet to find someone who can explain game theory to me in a way I can understand."

Carri used to drive special transit in Iowa City. She wears three hats around here, also covering the front desk at Foothills Lab and taking care of recycling. She says she likes driving so much that, if she won the lottery and didn't have to work anymore, she'd take road trips all the time. When she drives, she listens to music that runs the gamut from Edith Piaf to flamenco to the Pointer Sisters. On one shift, thinking the van was empty, Carri cranked the volume up to unprecedented levels on Dvorak's New World Symphony. "When I pulled into Foothills Lab, I heard something behind me," she says. "There was a guy behind me in the shuttle. It was so embarrassing."

Another driver, Ziggie Swan, also had driving experience before coming to NCAR. Ziggie was one of the first female Regional Transportation District drivers in Denver back in the 1970s. She says she likes any kind of movement —cars, motorcycles, bicycles. Like Carri, she also says her passengers are one of the best parts of her job. "I really like our people," she says. "Most of them tend to be very concerned about our ecology and economy. It's been rare, except when I'm in Boulder, that people are concerned about the planet they live on."

Ziggie Swan

Jaime Shuey has been driving the NCAR shuttle for five years. She was a full-time artist who found herself suffering from what she describes as "people deprivation" when she saw an ad for a driver in the paper. "I decided it was time to get out of the house," she says. Jaime continues to work as an artist, selling stained glass through the Middle Fish gallery in Boulder. She also takes tourists on driving tours of Boulder.

One month after he retired from a management career in the insurance industry, Roger Schaefer decided he couldn't just sit around. Driving the NCAR shuttle part-time is his dream job, he says. Even the traffic doesn't bother him too much. "I came here from Dallas, and people who complain about traffic in Boulder don't know what it could be like," he says. Like the other drivers,

Roger appreciates the variety of his passengers, particularly those from overseas. He likes to talk politics with his riders, even though it can be challenging sometimes. “I’m a political junkie, and there’s some people I share politics with,” he says. “But the vast majority of NCAR people are on the left, while I’m on the right.”

Rookie Peter Friend started driving the shuttle as a temp and became permanent two years ago. He likes the fact that driving the shuttle gives him a great amount of autonomy. “You’re not stuck in one place, except the van, obviously,” he says. While stuck in the van, his main source of amusement, in addition to jazz and classical music, is his passengers. “You’ve got a lot of smart, astute people getting on and they talk about different things,” he says. “We talk about more than just the issues ofthe day.”

Peter Friend

Traffic and weather

The drivers say the hardest part of their job is confronting other people’s bad driving habits as they make the rounds from the Foothills Lab to the Mesa Lab.

“You see a lot of stuff that isn’t very laudable,” Peter says. “People being reckless, or just bad drivers.”

Of course, there’s also the weather, which can make traffic grind to a halt on the ride home from work. Carri recalls a particularly memorable snowstorm two years ago. “We were sitting outside Wendy’s for so long we figured we could go in and have dinner and the van would be in the same spot,” she says.

When one of the drivers can’t make it to work, back-up drivers Kathleen Freebern, Bob Ford, and Kathy Zinge takethe wheel. “Without them we would never have time off,” Ziggie says. The three normally deliver black bags between Foothills and Center Green.

Asked what they would change about their job, the drivers’ suggestions run from practical to fanciful. Jaime would like less construction in Boulder, while

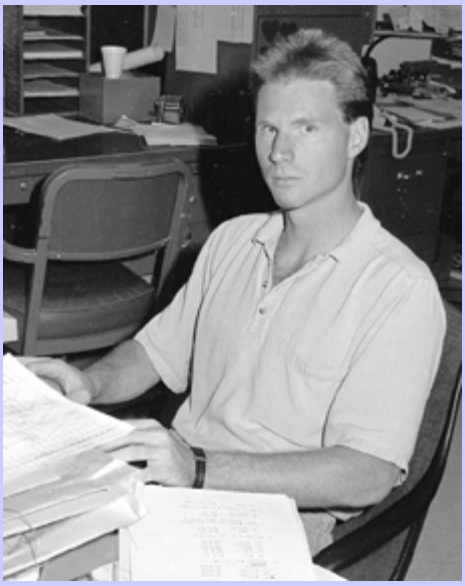
Carri requests a traffic light at Center Green and Valmont.

“I’d like a uniform, with epaulets, and to drive a Lincoln town car,” Peter says. “I could be dedicated to the executive in an elite division of NCAR shuttle drivers. Home, James!”

Ziggie adds, “It would be nice if once a month or so we could take people to Vail or Breckenridge.”•*Nicole Gordon*

A look back

Ten years ago this month, the Transportation Alternatives Program won national recognition. Here are excerpts from the 14 October 1993 issue of Staff Notes:



Out of 1,600 entries, the UCAR/NCAR Transportation Alternatives Program (TAP) has been chosen as one of 20 models of environmental excellence by Renew America, a nationwide group devoted to finding and recognizing community-based environmental solutions. The National Environmental Achievement Awards are chosen by a council composed of high-level staff from 30 well-known environmental groups …

The awards were announced last night at an all-star Environmental Awards Ball in Washington, D.C., hosted by actor Ed Begley, Jr. Vice President Albert Gore delivered theevent’s keynote address.

Dean Lindstrom, Traffic Services manager, accepted the Renew America honor as chair of TAP …

TAP evolved in 1990 from a grass-roots employee effort to address traffic concerns in and near the NCAR mesa. Its education and promotion campaigns encourage staff to use alternate transportation modes—bicycling, walking, carpooling, and Regional Transportation District (RTD) buses. The program includes free RTD passes for all employees, a free emergency-ride-home provision, passenger shuttles that connect to RTD’s system, bike racks on the shuttles, and interactive touch-screen computers at the Mesa and Foothills Labs that display carpool and bus schedule information.

“It is so gratifying for TAP to be the recipient of such a prestigious award. It belongs to many people who contributedin as many different ways, and I am honored to accept it on their behalf,” Dean says. •*Bob Henson*

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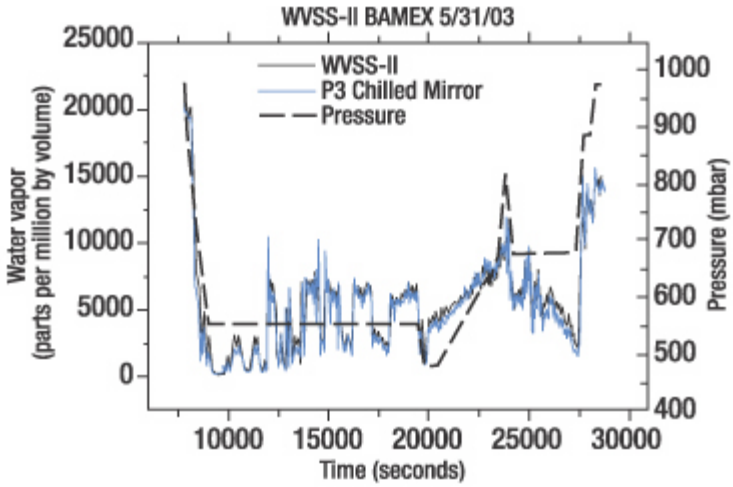
An overview of projects throughout the organization

United Parcel Service (UPS) aircraft will soon carry something very special for UCAR—and it's not packages. Instead, it's an instrument to measure atmospheric water vapor. **Rex Fleming** (JOSS) has been working on the second-generation Water Vapor Sensing System (WVSS-II), an air sampler and laser measurement system that provides highly accurate data and is currently used on NOAA research aircraft. In August, UPS agreed to carry the instrument on 30 of its B-757 aircraft as part of a demonstration study and final certification test funded by the FAA and the National Weather Service.



The second-generation Water Vapor Sensing System accurately measured atmosphericwater vapor during this year's BAMEX experiment.

The air sampler is mounted on the skin of commercial jet aircraft. It brings air into a small measurement cell inside the plane, where a laser then determines water vapor measurements.

Because commercial planes take off and land many times a day, they have the potential to provide detailed profiles of wind, temperature, and water vapor across space and time. These measurements are more accurate than conventional balloon-borne radiosondes that are launched twice a day around

the world.

The WVSS-II was tested this year, both during the Bow Echo and MCV (Mesoscale Convective Vortex) Experiment (better known as BAMEX) and on scientific flights that collected data on Hurricane Isabel. After final certification, it will become part of a national commercial aircraft system.

The Digital Library for Earth System Education (DLESE) has released version 2.0 of its online library. The updated version has three important new features. In addition to searching for information appropriate to different grade levels, users (including teachers and other faculty members) can now search for information and lesson plans that support national science and geography education standards. They can also search within discreet collections from institutions like NASA and UCAR's COMET program. And a new peer review system on the site lets users post comments about particular resources.

The DLESE team, headed by **Mary Marlino**, will continue to screen the abundance of Earth System resources on the Web to bring users only high-quality, useful information, along with teaching and learning tools. In a few years, staffers expect to release a third version that allows for geospatial searching.

Users can access DLESE at www.dlese.org.

CGD researchers are beginning to incorporate a dynamic vegetation model into the Community Climate System Model. This will enable them to peer back thousands of years, exploring how climate affected land cover and, in turn, how land cover influenced climate.

In a trial run, CGD's **Sam Levis** simulated conditions in north Africa 6,000 years ago, when the now-arid region was comparatively fertile because of intense monsoons. He found that a greener north Africa, which had darker and more loamy soils than the sands of today's Sahara Desert, helped fuel the monsoons for two reasons. The vegetation and darker soil absorbed sunlight (increasing ambient heat and providing more energy for the storms), and the soil collected a considerable amount of moisture (leading to local evaporation and providing potential storms with water vapor). These results suggest the importance of simulatingsoil characteristics, in addition to simulating vegetation.

Researchers next may look farther into the past, studying such issues as the extent of tundra during glaciated periods and the amount of sunlight it reflected back into the atmosphere. Although the dynamic vegetation model can also operate under present or future scenarios, its main use for the time being may be to research eras before humans affectedland cover.

Qian Wu (HAO) traveled to Resolute Bay in the Canadian high Arctic this summer, where he deployed a new Fabry-Perot interferometer at a polar cap observatory. His trip was part of a project that will address questions in mesospheric and thermospheric physics in support of the Coupling, Energetics and Dynamics of Atmospheric Regions (CEDAR) program.

Kim Streander, **Greg Card**, **Ron Lull**, **Alice Lecinski**, **David Elmore**, and **Clarke Chambellan** in the HAO Instrument Group developed the interferometer, with contributions from colleagues **Stan Solomon** and **Dan**

Gablehouse and collaborators at Scientific Solutions, Inc. Specifically designed for routine observations of thermospheric and mesospheric winds and temperatures, Fabry-Perot interferometers consist of two parallel glass plates. The inner surfaces of the plates have a reflective coating and form a cavity in which light is reflected back and forth. The interference between these multiple reflections creates a pattern that scientists can ultimately use to measure windsand temperatures.

Along with other instruments already in placeat the polar observatory, the interferometer will contribute to our knowledge of the upper atmosphere. Data from the project will be available to the atmospheric science community through theCEDAR database.

A team of HAO scientists is building a prototype of a new instrument, called a coronal multichannel polarimeter, to learn more about the Sun's coronal loops. The loops, a product of the Sun's magnetic fields, are arch-shaped structures in the corona that constrain solar plasma. Motions of the underlying turbulent plasma can affect magnetic fields in the corona, causing the loops to come under stress and ultimately break apart. That causes a coronal mass ejection—a dramatic emission of charged solar particles that can buffet Earth's upper atmosphere and affect orbiting satellites and communication systems.

Scientists previously have observed the underlying plasma, but the multichannel polarimeter would enable them for the first time to examine magnetic fields in the actual corona. This would provide insights into the forces that cause the loops to break down. The instrument includes a tunable filter (to filter out nonessential wavelengths) and an infrared camera.The instrument will focus on light emitted by atoms of Fe XIII (iron that has been ionized 12 times), which is a common and easily visible solar element.

The team, which includes **Steve Tomczyk**, **Joan Burkepile**, **Greg Card**, **Roberto Casini**, **Tony Darnell**, **David Elmore**, and **Phil Judge**, hopes to set up the prototype at a coronagraph at the National Solar Observatory in New Mexico as early as this month to gather preliminary data about coronal loops. If the research is successful, the scientists may pursue a grant to build a permanent instrument that can be mounted at HAO's Mauna Loa Solar Observatory in Hawaii.

A coronal mass ejection in 1986. This composite view uses images from ground-based telescopes at HAO's Mauna Loa Solar Observatory in Hawaii and from a coronagraph aboard NASA's orbiting Solar Maximum Mission satellite.

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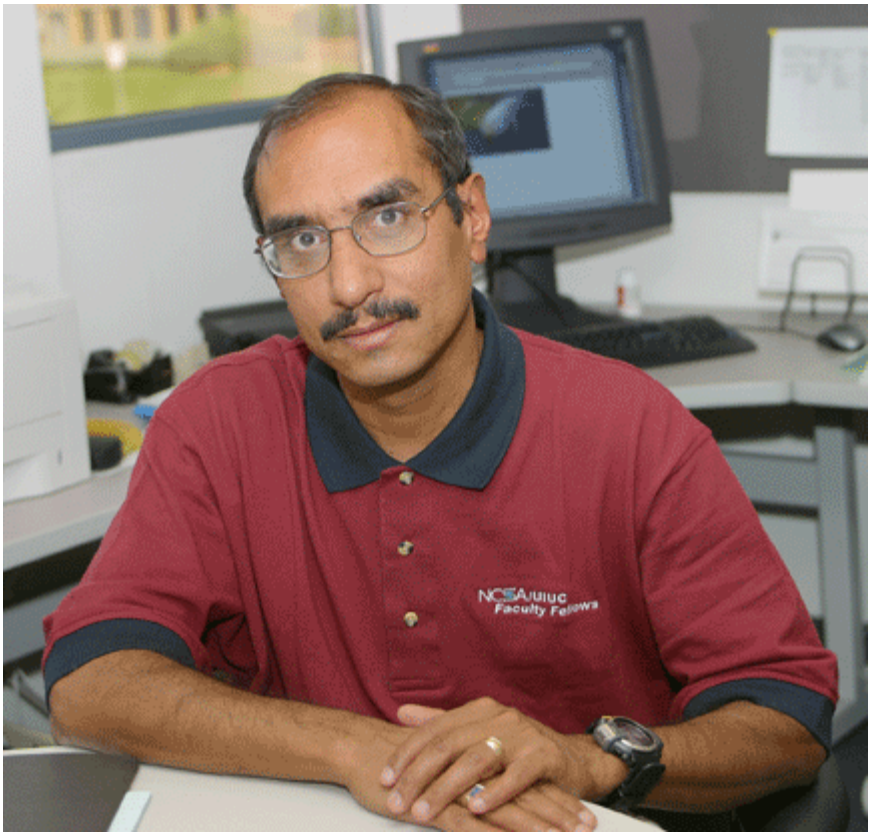
Unidata wins NSF funding for new weather forecasting tools

UCAR and seven other institutions have won a prestigious NSF grant to create a series of powerful tools for weather forecasters and the public. The project, known as the Linked Environments for Atmospheric Discovery (LEAD), will set up a network of high-performance computers that incorporates newly developed software to enable scientists, educators, students, and anyone interested in weather to gain new insights into storms. UCAR's share of the grant is $1.8 million over five years.



Mohan Ramamurthy

"The goal is to provide on-demand computing for scientists and the public—anyone who needs more information about potentially hazardous weather systems," says

Mohan Ramamurthy, director of Unidata, which will develop many of the key technologies to enable users to access the LEAD environment. “This powerful tool will help researchers collaborate, and it will also provide forecasters with the newest technology to help them predict the path of a major storm.”

With LEAD, users will be able to share weather information across a supercomputer network on a real-time basis, and scientists at different sites will have the ability to work collaboratively over the phone on the same data files. A researcher who wants to simulate a particular storm will be able to build on data and models constructed by other colleagues, creating more accurate ensemble predictions.

Unidata will incorporate its integrated data viewer into the new system. This visualization tool will allow users to transform weather data that may be stored on remote and distributed computers into recognizable forecast maps.

Kelvin Droegemeier at the University of Oklahoma is the project director of LEAD. Oklahoma is a member institution of UCAR, as are four other universities participating in the project: University of Illinois at Urbana-Champaign; University of Alabama, Huntsville; Colorado State University; and Howard University. A sixth, Millersville University of Pennsylvania, is a UCAR academic affiliate. The final participating institution is Indiana University at Bloomington.

LEAD is one of eight projects this year funded by NSF’s Information Technology Research program. Beginning 1 October, LEAD willreceive $2.25 million a year for five years, for a total of $11.25 million. •*David Hosansky*

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Delphi Questions

First aid rooms, pay stubs

Delphi Question #504 (received 7 July): Are there, or will there be, first aid rooms at all UCAR sites? I am thinking that Mesa, Foothills, Jeffco, and now Center Green are "sites."

First Response (19 August): The issue of appropriate medical facilities is currently being evaluated. A final decision will be made around mid-September. We will provide a more in-depth response at that time.

—Steve Sadler, director
Safety and Site Services

Final Response (26 August): Thank you for your question. Plans are under way to include a first aid room at the Center Green site. The location will be designated and built during the CG1 expansion and remodel project. Upon completion, the CG first aid room will join the ranks of rooms in existence at the Mesa Lab, Foothills Labs, and Jeffco.

—Milenda Powers, manager
Health Environment and Safety Services

Delphi Question #505 (received 12 August): The new online pay stub system is not printer friendly. For many of us using Wintel machines, the pay stubs will not print on a single page in either portrait or landscape mode. (Yes, even today we sometimes need hardcopy pay stubs, for example when providing income verification information to mortgage companies, etc.)

The IT Help Desk, when contacted, told me in some detail about the many systems they had tested the new application on, but was otherwise unable to offer a solution. Would it be possible to make pay stubs available in a format that will actually print on a single page, perhaps as PDF files, for those who occasionally need a readable hardcopy?

Response (3 September): Thank you for your question. We realize that this is an important issue for many users of the time card system.

For most users, the instructions for printing the pay sub that are posted on the time card help page (https://www.fin.ucar.edu/timecard/timecard/tcmain.jsp) work without any problems. For others, the stub does not print or display correctly because of issues related to varied browser support for Cascading Style Sheets (CSS). Most newer browser versions support CSS, but older browsers may not support all of the features or may include bugs in their support for CSS.

We have had numerous requests for a more “printer-friendly” pay stub presentation. To address the many different browsers/versions that are currently supported in our organization, we agree that we should implement an Adobe PDF version of the pay stub. We plan to have the PDF version available inthe Time Card application by the endof November.

—Shawn Winkelman, director
Information Technology

Questions and suggestions from the staff to management may be submitted in confidence to the Delphi Coordinators. They should be submitted in written form, preferably via interoffice mail in a sealed envelope marked confidential. They must be signed. Detailed procedures for submitting questions are given in the UCAR Policies and Procedures Manual, section 4-1-2, and on the Delphi Web site, www.ucar.edu/delphi. Staff Notes Monthly publishes questions and answers of general interest to staff, and the Delphi Web site has a log of all questions submitted since 1995.

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