

# Weather Capital, U.S.A.





More than just a magnificent building,  
the new **National Weather Center**,  
with its visionary scientists and futuristic equipment, is the engine  
powering OU's Cy and Lissa Wagner University Research Campus.



The saga of the National Weather Center building on the University of Oklahoma's Research Campus spans more than six decades. The story is one of perseverance, tenacity and patience, certainly; but mostly it is a story of great vision.

The vision of George Lynn Cross, OU's longest-serving president, who secured much of the land known locally as South Base from the U.S. Navy after World War II.

The vision of Ron McPherson, a key figure at the National Oceanic and Atmospheric Administration, who in the closing decade of the 20<sup>th</sup> century saw the unlimited potential of close physical proximity between his agency and the University's world-renowned School of Meteorology.

The vision of John Snow, dean of OU's College of Atmospheric and Geographic Sciences, and Doug Forsyth, NOAA's National Weather Center program manager and National Severe Storms Laboratory executive director of facilities and strategic planning, who developed the joint project and have been its constant stewards.

And the vision of OU President David L. Boren, who for the past dozen years has driven the monumental—and sometimes seemingly impossible—effort to fund and build a multi-functional facility worthy of being called *the* National Weather Center.



### Building the Partnership

By 1990, OU's weather programs had been consolidated in the new Sarkeys Energy Center. Explosive growth of funded research soon led to a severe space crunch. At the same time, NOAA's Norman-based weather research and operational units had run out of room in the 20-year-old building on OU's north campus that the National Severe Storms Laboratory leased from the University. While OU and federal weather units had been fostering collaborative projects from separate locations, both recognized the obvious benefits of co-locating.

BY DEBRA LEVY MARTINELLI

Photos by Robert Taylor

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No one is more excited that the new National Weather Center on the University of Oklahoma's Research Campus is finally a reality than the three men who have been the guiding forces behind its creation: from left, NOAA and National Severe Storms Laboratory official Doug Forsyth, OU President David L. Boren and College of Atmospheric and Geographic Sciences Dean John Snow.



When Boren assumed the OU presidency in late 1994, he immediately endorsed the concept of a joint location. Four years later the University and NOAA agreed to partner in the construction of a major facility that would become the anchor for OU's new Research Campus. That location would be on the prime piece of real estate Cross had secured for the University nearly 50 years earlier.

Boren set about raising the necessary construction funds from federal and state sources. It was tough going.

Then, on May 3, 1999, multiple catastrophic tornadoes ripped through Oklahoma, delivering death, destruction and an irrefutable argument for a weather center in the heart of Oklahoma that could provide vastly improved weather technology and forecasting.

"As we were planning the National Weather Center concept, the region was devastated by what at the time was the worst outbreak of tornadoes in Oklahoma history," Boren recalls. "President Clinton came to tour the area. I had convinced Governor [Frank] Keating that this was an opportunity for Oklahoma to be a leader in the nation in a very important field that would help build the research base and intellectual property base of the state's economy. The weather center could be the poster child for change in the state's economy and be an anchor for University research for the future."

Boren and Keating agreed that the time was right to pitch the weather center to Clinton. "Before he left Tinker Air Force Base, President Clinton announced that Oklahoma—unfortunately and tragically—was an ideal laboratory for weather and that he endorsed the idea for the National Weather Center to be built here," Boren says. "I followed that up with conversations with the president, and we got the first \$3 million for the weather center in the budget he submitted to Congress for 2000."

Over the next three years, Boren spent hundreds of hours piecing together what he calls the most complex funding for any state or federal project he has seen in his 40 years in politics.

"The federal appropriation was contingent on matching funds from the state. Oklahoma came up with \$26 million, which meant we were roughly \$7 million short," Boren remembers. "That's when we came up with the idea of selling excess land on North Base [also postwar Navy land] to the OU Foundation. The Foundation paid close to \$12 million, which

also funded some infrastructure for the research campus."

All told, the project totaled \$69 million. The \$25 million for the building came from three federal sources, with an additional \$11 million in bonds to be paid back by the federal government over 20 years, and another \$33 million plus the land from the state and the University. Construction began in August 2003 and was completed this past summer.

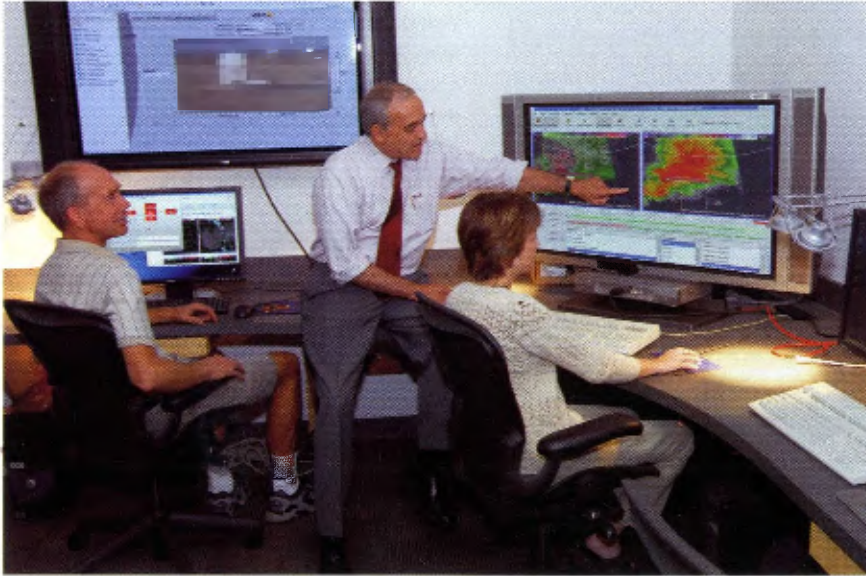
The road was long and arduous, Boren says, but the result is absolutely worth it.

### Centerpiece of the Research Campus

Located on 22 acres just north and east of the intersection of Highway 9 and Jenkins Avenue, the National Weather Center is one of the largest facilities of its kind in the world and the crown jewel of OU's blossoming Research Campus. The building fronts David L. Boren Boulevard, the Research Campus' main east-west thoroughfare. The contemporary design combines the University's trademark exterior of red brick trimmed in white stone with modern metal panels. Within the walls is the sleek steel, glass and maple interior for which other Research Campus facilities—notably the Stephenson Research and Technology Center across the street as well as the multi-tenant One Partners Place and soon-to-be-completed Two Partners Place just to the east—are fast becoming known.

The grand, six-plus story National Weather Center structure provides 244,000 square feet of highly specialized space for education, training, operations and research for more than 550 students, faculty members, researchers, operational meteorologists and climatologists, engineers and technicians. Tailored to foster interaction and promote synergy among its inhabitants,





Jeff Kimpel, center, director of NOAA's National Severe Storms Laboratory, confers with radar software engineer Dave Priegnitz and Cooperative Institute for Mesoscale Meteorological Studies (CIMMS) research scientist Pam Heinselman in the J.C. Watts Jr. Radar Development Lab at the National Weather Center. The three are looking over one of several long-lived supercell storms that developed southwest of the Phased Array Radar during the afternoon of April 24, 2006.

the center promotes technology transfer as basic researchers, application developers and application users work side by side to quickly move new research discoveries into development and on to operational practice.

"This building is what Doug Forsyth and I refer to as an integrated structure," explains Snow. "It is a multi-faceted building intended to support an entire chain of activities from theory to applied research and development to outreach. It is designed to bring people together, to provide venues where they can meet and talk."

Forsyth cites many examples. "We have radar folks from the University next to radar folks from the NSSL. We have modeling folks from the University sitting across the hall from the NOAA modeling folks. We can test concepts and run experiments involving operational components. We have development labs where folks can see what's going on and what ideas are being developed. We have nice open spaces and lots of nooks and crannies where people can sit and talk."

That, of course, includes students.

"Students will be in a state-of-the-art, first-class educational facility where they have the opportunity to interact with leading theoreticians, applied researchers and forecast practitioners," Snow says. "There are numerous niches for students to fit into so their whole educational experience becomes enriched. I can't imagine a better environment for a young person interested in a career in this field."

And what an environment it is.

### From Bottom to Top

Gazing skyward from the spacious floor of the central atrium, the building's dramatic juxtaposition of sharp angles and graceful curves comes into focus. The steel and granite "monumental staircase" climbs skyward through open space, connecting one floor with the next through the structure's core. The modernistic silhouette of the flights of steps is softened by the rounded walls and dappled natural light that filters in through walls of glass. Recessed wall up-lights further add to the artistic yet

## National Weather Center Programs

### OU Academic Partners

- \*College of Atmospheric and Geographic Sciences
  - Department of Geography
  - School of Meteorology
- College of Engineering
  - School of Civil Engineering and Environmental Science
  - School of Computer Science
  - School of Electrical and Computer Engineering
  - School of Industrial Engineering

### NOAA Weather Partners

- \*National Severe Storms Laboratory
- \*National Weather Service Forecast Office – Norman
- \*Radar Operations Center (Radar Applications Branch)
- \*Storm Prediction Center
- \*Warning Decision Training Branch

### OU R&D and Outreach Partners

- \*Center for Analysis and Prediction of Storms
- \*Center for Spatial Analysis
- \*Cooperative Institute for Mesoscale Meteorological Studies
  - Environmental Verification and Analysis Center
- \*Center for Natural Hazard and Disaster Research
- \*Oklahoma Climatological Survey

### OU R&D and Outreach Associates

- OU Supercomputing Center for Education and Research

*\*Occupants of the National Weather Center building*





LEFT: From left, Patrick Marsh, Pat Hyland, David John Gagne, Vivek Mahale and Kathleen Dougherty enjoy the amenities of the NWC student lounge, complete with kitchenette, flatscreen television, overstuffed chairs and work area. BELOW: Students in William Beasley's graduate-level Atmospheric Electrodynamics class take advantage of the rooftop outdoor classroom for a firsthand look at Beasley's early lightning detection equipment.



unmistakably high-tech ambiance. The structure's ground floor houses offices for the dean of the College of Atmospheric and Geographic Sciences, an indoor/outdoor conference room, Oklahoma Climatological Survey Calibration Laboratory,

a food court (for which a naming contest will be held this fall), research vehicle and equipment bay, and a loading dock and storage facility. With direct high-speed computer connections between researchers' offices and the vehicle/equipment bay, where the latest in mobile weather radars will be housed, newly collected storm observations can be accessed immediately upon return of the vehicle from the field.

Accessible from the first floor but built underground to double as severe weather refuges are two auditorium-style classrooms, one with a 250-plus capacity and one that holds 75.

The building's second level is home to several high-profile NOAA programs, including the National Severe Storms Laboratory; Storm Prediction Center; National Weather Service Norman Forecast Office; Warning Decision Training Branch; and the NOAA/OU joint institute, the Cooperative Institute for Mesoscale Meteorological Studies. Because of the public's keen interest in seeing meteorology in action, a special hallway meanders through glassed-encased operations areas, affording visitors touring the facility an opportunity to observe the process without disrupting it. NOAA will conduct tours in conjunction with the University.

"People can see what's going on, but not be in the way in a critical situation," Snow says.

The Hazardous Weather Testbed, a space supported by the Storm Prediction Center, NWS Forecast Office and NSSL, also is located on the second level. There, research scientists from around the world will collaborate to develop and test new forecast tools to improve the timeliness and specificity of weather forecasts.

Nearby, a media room strategically sits between the Storm Prediction Center and Weather Forecast Office, providing a central location for experts to explain weather as it happens to reporters from around the globe. "We had the help of Ray Ban, executive vice president in charge of operations for The Weather Channel and a member of the College of Atmospheric and





The NOAA/OU meteorology library dominates the fourth level of the new building where Hamish Ramsey, foreground, and Kevin Goebbert, seated to his left, are shown researching study topics, while Yusif Nava, standing left, and Alex Fierro carry on a lively discussion. A coffee bar is located just outside the library.

Geographic Sciences Board of Visitors, in designing the media room,” says Snow. “It is flexible space where broadcasters can conduct an interview and have one of the operations areas as a backdrop. It is much like their own studios.”

The NOAA Radar Operations Center’s Applications Branch is located on the third floor, along with the Oklahoma Climatological Survey’s distance learning laboratory and conference room and the building’s computer operations.

On the fourth level, the NOAA/OU meteorology library takes center stage. A coffee bar, where building dwellers and visitors can grab an afternoon cup or a quick snack, is just outside the library entrance.

The fourth floor also is home to one of the many locations throughout the structure designed with professional interaction in mind. In this one, radar experts from the National Severe Storms Laboratory and the OU School of Meteorology work side by side, developing and applying the latest in radar discoveries. OU’s Center for the Analysis and Prediction of Storms also is located there, along with the Warning Decision Training Branch’s instructional classroom and the weather radar engineering lab.

“NOAA and OU are a weather family. We have always worked well together. The National Weather Center is an opportunity to bring us closer together, under one roof,” says Forsyth. “We will have our differences—we *are* scientists—but healthy discussions lead to better science.”

The fifth floor boasts an addition to the School of Meteorology eagerly anticipated by its students—an undergraduate student center that includes individual study carrels, glass-encased computer stations and offices for the student chapter of the

## Satisfied Customers

Meteorologically speaking, it was a perfect day.

Lightning blazed, thunder roared and rain pounded outside on a Saturday morning in late spring as students toured the new National Weather Center for the first time.

They were home, in every sense of the word.

Throughout the day, small groups of meteorology majors followed as John Snow, dean of the College of Atmospheric and Geographic Sciences, and members of his staff guided them from the first-floor atrium to the top-level observatory and, floor by floor, back down again.

“This building is awesome,” says Michelle Schuldt, who became fascinated with weather as a fifth grader when her hometown of Woodward commemorated the 50<sup>th</sup> anniversary of the deadly tornado that struck the community in 1947. From that day, she knew she would come to OU to study meteorology and is thrilled that she will spend the second half of her academic career in the new facility. “My favorite parts are the magnificent views of all the trees and the observation deck. Whenever there’s severe weather, I can go there between classes and see what’s happening.”

Kristen Bartlett of Collinsville agrees. “From the top-floor observation deck, we can see weather developing from anywhere. It will be the perfect place for watching storms. Studying here will be really great because we can actually see the weather we’re learning about.”

From the moment transfer student Matt Elliott first visited the Norman campus, he was equally drawn by the academic programs and the National Weather Center facility. “This building is amazing. It’s so exciting to be here where some of our most severe weather happens,” says Elliott, who came to OU from a community college in the Washington, D.C., area.

Amarillo native David Haas is just as impressed as the others by the opportunities and advantages the facility offers. But he offers a different perspective as well. “We’re going to be pretty far from central campus, but these facilities will make it easier for us to make this our home,” he says.

—Debra Levy Martinelli





The glass-enclosed, all-weather observatory on the top floor of the National Weather Center, with its wall-mounted video screen displaying real-time data and broadcasts, is a favorite place for meteorology students, who cannot wait for the next storm front to bring them actual-life examples of the weather they are studying.

American Meteorological Society. An instrumentation lab and classroom, computer lab, conference room, spacious faculty offices and administrative offices complete the building's penultimate level.

"Even though we have a number of hard walls, we like to think we still laid things out and provided the building necessities in such a way as to get people together," Snow explains. "Certainly we have gone a long way to get rid of the monk-cell type approach to faculty offices."

And last, but assuredly not least, at the apex of the building are two of its most glorious features, both of which enhance the real-time study, analysis and prediction of weather and the development of life-saving technologies that grows from that research.

The first, a rounded, glass-enclosed, all-weather observatory, has a wall-mounted video screen that displays real-time data and broadcasts. Because it is what Snow calls "a standing and watching space," the observatory contains only a few carefully selected pieces of furniture.

The other feature is the rooftop outdoor classroom, complete with an array of antennae that communicates weather data to and from the center, where students can apply what they learn indoors. The rooftop floor is dotted with hook-shaped tie-downs for such mobile instruments as the laser Doppler ceilometer, which measures the height of the cloud ceiling, an important factor in tracking weather changes during the course of a day. The ceilometer is one of several instruments purchased with a gift from OU alumni Mark McCasland ('82 B.S. petroleum engineering) and Kandi Murphy-McCasland ('85 B.A. psychology) of Kansas City, Missouri, dedicated to enhancing both the outdoor classroom and the glassed-in observatory.

Befitting a state-of-the-art weather center, the views from the top are breathtaking. To the north, Sarkeys Energy Center and the Gaylord Family-Oklahoma Memorial Stadium rise above OU's central campus. To the south, trees and vegetation stretch as far as the eye can see. To the east and west are Norman's thriving residential neighborhoods and commercial centers.

While just about every view from the National Weather

Center building is exceptional, Boren has a favorite Research Campus panoramic perspective that he believes represents the vision for Oklahoma's future.

"We talk often about changing the state from one that is solely dependent on natural resources to one based on intellectual talent. I like to think that when you stand on or near our Research Campus, you are in a sense where Austin, Texas, was 30 years ago. Looking north, I see basic research buildings along Jenkins Avenue, and then I imagine a whole row of private sector partners that have spun off from University-based research," he reflects.

"Before now, the only place in the state where people could see academic research producing new companies was at Okla-

homa City's Presbyterian Research Park, which houses partners spun off from the OU Health Sciences Center. Here is [One Partners Place anchor tenant] Weathernews Inc. next to the National Weather Center. Through our supercomputing network, the two can share information in real time about weather around the world and advising ships at sea. That kind of partnership has a very dramatic impact because it helps our policymakers see the potential for the transformative nature of University-based research.

"Norman is becoming the weather capital of America, and we will see more federal and private sector partnerships with the

University as a result," Boren adds. "We will see other areas of research—genetics and bioengineering, for example—spin off of our research campus, along with what is continuing to develop in Oklahoma City, with the new cancer and diabetes centers and expansion of existing centers of excellence. I think Norman and Oklahoma City are the future of the state economically.

"OU is the largest engine for economic change in the state. I look at the National Weather Center as the catalyst for helping the University transform Oklahoma's economy."

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