



Among President Boren's crowning achievements was the establishment of the \$69 million National Weather Center, which houses more than 500 researchers and meteorologists and led to OU becoming a national epicenter of weather research.

OU Research Campus at Epicenter of State's Weather Technology Boom

BY CHIP MINTY

More than 80 miles off the Louisiana coast, a driller on the floor of a deepwater rig watches distant lightning flash across the western horizon. It's 3 a.m., and the sight adds a whole new list of questions and worries to a myriad of other concerns that are inherent when operating in 5,000 feet of water.

He's in charge of a half-billion-dollar rig, held over the well by a sophisticated system of sensors and engines that keep it from drifting more than a few meters in any direction. In normal winds and calm water, the innovation stands among the energy industry's great advancements, but all that achievement diminishes in the face of a severe Gulf Coast storm.

As he keeps an eye on the lightning, he receives notification from a small team of meteorologists who are also watching weather radar images and proprietary forecasting models from their office on the University of Oklahoma Research Campus in Norman.

The warning says a line of storms packing high winds and heavy waves will likely reach the rig's location within two hours, enough advance notice for the driller and his crew to disconnect from their well and take precautions against environmental damage and loss of life.

While this is a hypothetical scenario, it illustrates how and why Weather Decision Technologies (WDT) has become the No. 1 hazardous weather information resource for oil and natural gas producers operating in the Gulf of Mexico.

The company serves a long list of clients ranging from multinational shipping companies and cruise lines to the energy industry, agriculture and even weekend warriors, assessing weather conditions on local lakes.

WDT President and CEO Michael Eilts earned two meteorology degrees and an MBA from OU and worked for the National Severe Storms Laboratory in Norman for 18 years. Seeking ways to enhance the forecasting effectiveness of weather radar in the 1990s, Eilts and his team have worked with OU researchers to develop analytical tools for identifying tornadoes, hail, storm movements and a range of other forecasting capabilities still in use today.

He did not know it at the time, but Eilts would eventually transform those analytical tools into products he and his WDT co-founders would use to launch a multimillion-dollar success story.

Eilts says WDT employs more than 90 meteorologists, software engineers and other professionals on OU's burgeon-

ing Research Campus. Founded 18 years ago, WDT was the first industry to be established under technology licensing partnerships formed with OU through a set of transformational state questions passed by Oklahoma voters in 1998.

State Questions 680 and 681 laid the groundwork for universities, researchers and entrepreneurs to develop technological discoveries into economic drivers. As a result, thousands of jobs and hundreds of millions in new wealth have been created for Oklahoma during the past 20 years.

At the epicenter of that activity is 280 acres of university property formerly occupied by a naval flight training center during World War II. Upon that land south of OU's main campus, the research park has grown into a locomotive of technological development in weather forecasting with an advancing tide of research and a storm of commercial activity.

Eilts opened his company in private office space in 2000, but moved to the Research Campus in 2008. The campus is a good fit for WDT because of the collegial environment, Eilts says.

"It's about being in an area where there is a lot of stuff going on," he says. "We go over to the National Weather Center for lunch just to run into people. There are opportunities for collaboration and knowledge transfer, and for all these things to happen naturally."

The Research Campus was first established in 2003 with construction of the Stephenson Research and Technology Center, built to house some of OU's premier research enterprises. Soon after, OU joined the state and federal governments to build the National Weather Center, a massive \$69 million facility, housing more than 500 meteorologists and researchers. Since the weather center's construction, the Research Campus has become nationally renowned for its work in severe weather, climate science, weather radar technology and weather forecasting techniques.

More than 2,000 people work on the campus, and 800 of them are from the private sector, while more than 70 state, federal and commercial entities are intermingled among a growing nest of multi-story buildings, all constructed since 2003. The list is broad and varied, ranging from academic departments to commercial enterprises like WDT.

Academic tenants include OU's College of Atmospheric & Geographic Sciences housed in the National Weather Center and the Department of Chemistry and Biochemistry in the Stephenson Life Sciences Research Center. Several others, including the School of Electrical and Computer Engineering and the School of Aerospace and Mechanical Engineering, have lab and classroom space on the campus. A creative maker space called the Innovation Hub provides equipment from 3-D printers to power tools and is open to all OU students and faculty.

There are also many weather research organizations, including the National Severe Storms Laboratory and the National Oceanic and Atmospheric Administration (NOAA). The campus is home to the Oklahoma Climatological Survey and GeoCarb, a \$160 million, NASA-funded satellite mission to study atmospheric carbon in the Western Hemisphere.

A world-renowned hub of weather radar technology, the Research Campus hosts NOAA's Radar Research and Development Division and OU's Advanced Radar Research Center housed in the new Radar Innovations Laboratory. The campus also includes the Radar Operations Center, which is shared by the National Weather Service, the U.S. Air Force, the U.S. Navy and the Federal Aviation Administration.

Several commercial entities also are involved, such as Weathernews, a Japanese forecasting company, and Nanowave, a Canadian radio frequency electronics company. The list also includes Vieux & Associates Inc., an engineering technology firm specializing in water information software for weather radar development.

While weather and climate are major focal points, there are other research activities as well. The Natural Products Discovery Group, a biomedical laboratory searching for new medicines derived from fungi, is on the campus, as is the Institute for Environmental Genomics.

Since 2003, more than \$300 million has been invested in new construction and 1 million square feet of office and laboratory space has been built, says Kelvin Droegemeier, OU vice president for research. So far, there are 18 commercial enterprises in the campus' aptly named "Partners Place" office buildings, built to allow companies and OU disciplines proximity to each other. All five of the buildings are fully occupied, and OU is now considering a sixth Partners Place building to keep up with the campus' growing momentum as an economic driver and powerful magnet for new research funding.

During the past decade, research activities on the campus have attracted more than \$250 million in new funding, Droegemeier says. And, in 2013, the campus was named

Outstanding Research Park of the Year by the Association of University Research Parks.

"We are beginning to see a snowball effect. People are coming here and saying, 'Wow! I want to be part of this,'" Droegemeier says. "They see the radar facilities and they see these other buildings, and they say, 'You guys really have something going here.'"

Companies that manufacture weather radar systems have expressed interest in the Research Campus as a site for their operations. Radar manufacturing will begin on the campus this year, and that will mark the achievement of a key objective for the campus, he says.

Those new connections are examples of the synergy OU President David L. Boren and others had envisioned when the Research Campus was first being planned.

"I remember when we dedicated the National Weather Center," Boren recalls. "I said then, 'We now see vacant land all around us, but my prediction is that we will see this land fill up with office buildings, research buildings and partnerships with the private sector.'"

Over time, that's exactly what has happened.

Weather Decision Technologies may have been one of the companies Boren was thinking about that day. WDT has become one of the high-paying job creators the OU president so often talks about. The company brings millions of dollars into Oklahoma annually. Only 5 percent of the

company's income is generated from clients in Oklahoma, while 15 percent comes from international clients and 80 percent comes from other states.

Droegemeier says the success of WDT and its collaborators owe much to the social dynamic that was part of the university's vision for the campus. All the organizations have relationships with the university and, often, with each other. Another benefit for start-up companies is proximity to a highly trained workforce. OU meteorology students interact with researchers from the National Weather Center and NOAA on a daily basis.

Through those partnerships and others like them, Droegemeier says the Research Campus is living up to President Boren's vision of diversifying and growing the state economy through higher education.

Says Droegemeier, "It's creating opportunities and concepts that didn't exist before."



When Weather Decision Technologies President and CEO Michael Eilts co-founded the company 18 years ago, he helped form the first business to be established under technology-licensing partnerships with OU.

Chip Minty is a Norman-based writer and principal of Minty Communications, LLC.