The Southern Plains Cyclone

A weather newsletter from your Norman Forecast Office for the residents of western and central Oklahoma and western north Texas

We Make the Difference When it Matters Most!

Volume 6 | Spring/Summer 2008 | Special Double Issue! (2&3)

Meet Your Weatherman Doug Speheger

It was a dark and stormy night - when I was a child - that likely got me into meteorology. A large tornado outbreak affected Indiana where I lived. That night began an interest in severe weather and tornadoes that led me into the field. I received my Bachelor's Degree in Atmospheric Science from Purdue University, and then came to the University of Oklahoma where I received my Master's Degree in Meteorology. While at the University of Oklahoma, I served as a researcher on the University's tornado research team with Dr. Howie Bluestein. Our research team was very successful in the early 1990s; Using a portable Doppler radar we acquired wind speed measurements in 5 tornadoes, including wind speeds above 280 mph near Ceres and Red Rock Oklahoma on 26 April, 1991. At the time, this was the highest tornadic wind speed ever measured.

While finishing my Master's Degree, I began working at the National Weather Service in Norman, where I currently serve as a meteorologist. Although my primary interest remains in severe weather and tornadoes, working and forecasting for Oklahoma and Texas has allowed me to become interested in, and learn about, many aspects of weather, including fire weather and hydrology. Besides forecasting weather, I also serve as the office focal point for the Advanced Weather Interactive Processing System (AWIPS). This is the computer system we use for the majority of our forecast and warning operations. I help program and maintain the system, particularly that portion of the software we use to issue warnings for severe

See **Speg** on page 5

May 24th Tornadoes

By Mike Branick, Senior Forecaster

On Saturday, 24 May 2008, a single supercell thunderstorm produced at least 10 tornadoes in north central Oklahoma. Live footage of several of the tornadoes was aired by local media, and was seen by many people throughout the country and the world as footage was broadcast live by national news networks. The tornadoes inflicted up to EF2 damage in parts of Kingfisher, Garfield, and Noble Counties. Fortunately, there were no human deaths or serious injuries.

On 24 May, 2008, the Norman National Weather Service's Web page turned red, and forecasters highlighted threatening weather as tornadoes touched down.

From our perspective as forecasters, this was an interesting case in which we began early in the morning with a lot of uncertainties regarding severe weather potential. But with time, key weather features allowed us to focus on a small area of greatly-enhanced tornado potential – well before the first tornado formed. What follows

See **Garfield County** on page 4

Special Report: Tornado Season 2008

By Doug Speheger, General Forecaster

Despite the first half of 2008 having been a very active tornado season across the central and southeastern United States, the area of north Texas and Oklahoma served by the Norman National Weather Service office saw fewer tornadoes than normal. We were also spared the significant tornadoes and casualties that afflicted some other areas. In the

See **Season** on page 5

Tornado near Fort Supply in Northwest Oklahoma 23 May, 2008. Photo by Angelyn Kolodziej.

Experimental Warning Program

By David Andra, Science and Operations Officer

The location of the Norman Forecast Office within the National Weather Center offers many opportunities for our forecasters to collaborate with other meteorologists and scientists from the local area and around the world. One of the most important venues for such collaboration is the Hazardous Weather Testbed or HWT. The HWT is equipped with a number of computer workstations, an extensive video presentation system, and access to high speed networks for moving large meteorological data sets. This setting is ideal for testing new techniques and new technologies using both real-time and archived weather events. The underlying goal is to simulate severe weather operations to see if changes in the process will enhance our ability to provide timely and accurate warnings to the public. During the spring of 2008, over 50 scientists and weather forecasters, from across the United States and a handful of foreign countries, gathered to conduct a variety of experiments. Topics under investigation ranged from an evaluation of detailed computer model forecasts to evaluations of emerging radar technologies.

Meteorologists from Norman sat with visiting scientists from around the United States and some from other nations during the spring of 2008.

The HWT is situated between the quarters for the Norman Forecast Office and the Storm Prediction Center. These agencies, along with the National Severe Storms Laboratory (NSSL), manage testbed activities. Experiments within the joint facility are organized under two primary overlapping programs. The Experimental Forecast Program (EFP) is focused on predicting hazardous weather events, like thunderstorms, on time scales ranging from a few hours to a week in advance, and over areas ranging in size from several counties (e.g. southwest Oklahoma) to the continental U.S (e.g. predicting changes in the jet stream).

The Experimental *Warning* Program (EWP) is concerned with detecting and predicting even smaller weather hazards, like tornadoes, on time scales of minutes to a few hours in advance, and over areas ranging in size from several counties down to the city level. In 2008, four meteorologists from the Norman Forecast Office participated in the Experimental Warning Program. They gained hands-on experience with NSSL's experimental phased array weather radar. The phased array radar offers promise for providing quicker detection of severe weather since it is capable of scanning an entire thunderstorm in seconds instead of a few minutes as most radars do today. Forecasters also evaluated how information from a network of short-range radars could be used to gain a better understanding of weather and storms very near the ground – something hard to do at far distances from radars in the current operational network. Finally, the meteorologists of the Norman Forecast Office participated in the early stages of research needed to develop more sophisticated and detailed forecasts of severe storm hazards like hail and tornadoes. When storms were not occurring in Oklahoma or north Texas, the group was able to pull in data from around the country to simulate warning operations in other forecast offices.

Situation monitors in the Hazardous Weather Testbed show live radar imagery and television images of a wall cloud near Norman in April of 2008.

The HWT provides a unique environment where theoretical science and technology can be evaluated and tested in a real-world operational setting. Those ideas and technologies that prove their worth can then be better positioned for deployment to help meteorologists provide better forecasts and warnings of dangerous weather. The list of programs conducted in the HWT will likely grow to include other hazardous weather research, including flash flooding and winter storms, in the years to come.

Learn more at http://www.nssl.noaa.gov/hwt or http://ewp.nssl.noaa.gov/

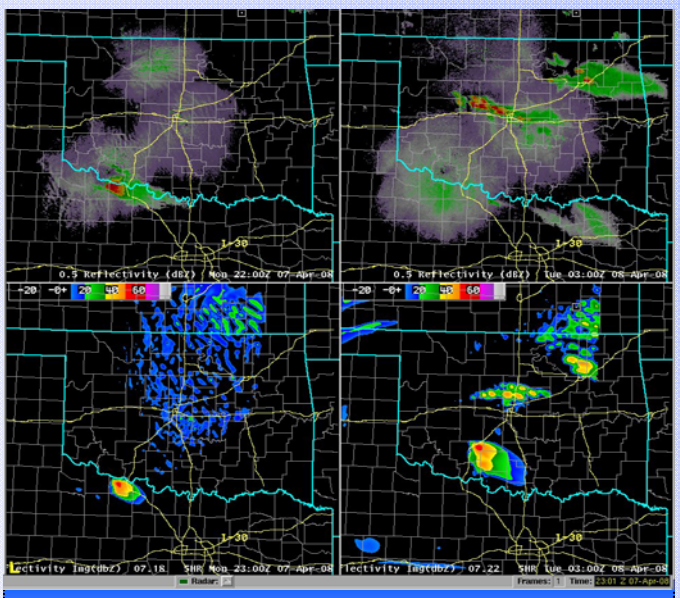
High Resolution Modeling at WFO Norman

By Kenneth James, Former General Forecaster and Modeling Focal Point

Behind the scenes at the Norman Weather Forecast Office, meteorologists are constantly interpreting weather information to make predictions that are useful to the public. Some weather information is observed, such as radar and satellite imagery, surface reports, and balloon data. Other information is generated by numerical weather prediction models. In fact, predicting the weather more than a couple hours ahead of time would be much more difficult, if it were not for the speed and processing capability of forecast models.

Numerical weather prediction models are sophisticated computer programs that solve complex mathematical equations which relate atmospheric motion to basic physical laws, such as gravity, conservation of energy, and earth's rotation. These models are capable of solving equations more consistently and faster than a human being, affording the meteorologist more time to analyze the observed weather and interpret the computer forecasts. Most of the models used by the National Weather Service run on powerful computers at the agency's National Centers for Environmental Prediction (NCEP) in Maryland. The computer generated forecasts are distributed to individual forecast offices via satellite.

There are many models to serve different purposes. Some models run on global scales and produce forecasts for decades or more into the future. Other models run on hemispheric scales and produce forecasts for a few days to a couple of weeks. Meteorologists use the hemispheric models for most of their forecasts, because they provide a blend of improved spatial resolution, which increases model accuracy, with long-range prediction. One of the meteorologists' greatest challenges is determining which model is producing the most accurate forecast under the given conditions. Once this is decided, meteorologists will then blending the model solution with real observations and forecaster intuition to create the best forecast possible. Each model is unique and provides a slightly different forecast. Thus, understanding the models, along with their strengths and weaknesses, is necessary to successful forecasting.



WRF_OUN forecasts of precipitation (bottom panels), and radar imagery from the time for which the forecasts were made (top panels) on 7 April 2008.

To help meet the demand for more accurate forecasts on smaller scales, the Weather Forecast Office in Norman recently implemented a locally run model, called the Weather Research and Forecasting model (WRF_OUN). The model runs on 3 dual-processor machines using a high resolution analysis of the latest regional observations, and produces a 6-hour forecast. The model is rerun, and a new forecast produced, every two hours. WRF_OUN uses a sophisticated initialization concept, called a "hot start", which allows the model to begin its forecast with more accurate initial conditions of the atmosphere. Other models, including hemispheric models, use a "cold-start" initialization, and their solutions often lag the actual state of the atmosphere, a phenomenon referred to as "spin-up error". A direct benefit of using a "hot start" is that WRF_OUN can, in theory, better predict the weather within the next several hours. This type of model guidance can allow forecasters to better anticipate rapidly changing situations which may directly impact the public.

WRF_OUN may also produce more realistic forecasts of thunderstorms, which are a common weather hazard in Oklahoma and north Texas. The model ingests real-time satellite data to derive an important land characteristic, called the vegetation fraction, which is the percentage of green, actively-transpiring vegetation in place over the region. Vegetation is important because it influences the distribution of heat and moisture near the surface, which can directly affect thunderstorm development. Other models use an old climatology of vegetation fraction that is obsolete. The high resolution of the WRF_OUN also allows it to resolve updrafts and downdrafts of individual thunderstorms, thus allowing the model to predict them directly; hemispheric models cannot do this.

WRF_OUN has been running for about one year with initial reviews very favorable. Future plans are to expand the modeling area to include more of the Southern Plains and to improve the model's resolution to forecast even smaller weather phenomena. Eventually, the vegetation fractions will be applied to other forecast challenges such as fire weather. Many other such applications will likely emerge as this unique modeling effort matures at the Weather Forecast Office in Norman.

Garfield County… from Page 1

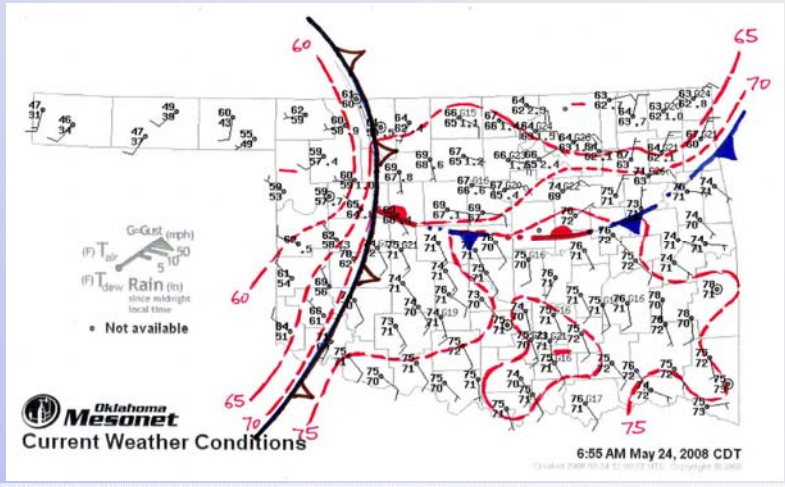


Figure 1: A hand-analyzed map of surface weather observations from the Oklahoma Mesonet, drawn by the author and Senior Forecaster, Mike Branick, and valid at 6:55 AM on 24 May 2008. Temperature is contoured (dashed red), revealing cooler dry air to the west of a Dryline or Pacific Cold Front in western Oklahoma, and rain-cooler moist air to the north of a thunderstorm outflow boundary located in central and northeast Oklahoma. Wind barbs indicate east winds of 10 to 15 knots in north central Oklahoma, acting to

is an account of the forecast process during the hours leading up to the tornado outbreak.

The scenario at sunrise was typical of late May in Oklahoma – but with one very notable exception. As shown in Figure 1 (an actual hand analysis I drew at 7 AM that morning; data courtesy of the Oklahoma Mesonet), a dry line was lying across western Oklahoma, from near Alva to Altus. Warm and humid air was moving northward to the east of the dry line. That air would become very unstable by afternoon as it warmed. The notable exception to the morning setup was an outflow boundary, generated by overnight thunderstorms in Kansas. The boundary had moved southward to near Interstate 40 and Oklahoma City. In the "warm sector," east of the dry line and south of the outflow boundary, winds changed with height from southerly at the surface to stronger southwesterly aloft. This vertical wind shear would favor organized and intense thunderstorms, including supercells, if it persisted – and if mature thunderstorms were able to develop. North of the outflow boundary, in north central Oklahoma, surface winds had shifted to an easterly direction. While these winds further increased the amount of vertical wind shear near the ground, the air also was cooler and its potential instability much less than the air farther south. It already was becoming apparent that a zone of enhanced risk of severe storms, including tornadoes, would exist within a narrow zone near and just north of the surface outflow boundary - where strong instability and strong low-level wind shear would overlap.

The questions of the day were 1] would convergence along the surface

boundaries be sufficient to initiate thunderstorms, and 2] if so, where would the boundaries be in the afternoon? The dry line was unlikely to move much (maybe a little farther east), but the evolution of an outflow boundary is harder to anticipate. Sometimes these boundaries lift back north, sometimes they keep drifting south, sometimes they just stop, and sometimes they dissipate or "wash out" as the cooler air to the north is heated by the sun. But wherever the boundary would be, if it persisted, an area of special interest to us would be the point where the two boundaries intersected. This "triple point" (where dry, moist, and rain-cooled air masses meet at the surface) would be a region of enhanced wind convergence, and thus a favored location for storm initiation.

Hourly analysis of surface data through the rest of morning revealed that the outflow boundary began to lift north, but then stalled in roughly an east-west orientation across northern Kingfisher and Logan Counties, fairly close to Highway 51 between Okeene and Mulhall. The dry line moved only slightly farther east, setting up a triple point in eastern Major County, southwest of Enid.

The setup at midday is depicted in Figure 2 (see pg. 5). As expected, the air heated up and became very unstable south of the boundary. Farther north it was not as unstable, but surface winds remained "backed" from the east, and low-level wind shear was very strong. It was at this point that we identified a narrow corridor of potential tornado risk, where the strong shear and very unstable air overlapped. If a thunderstorm formed and moved into this zone, it would have a much greater risk of producing tornadoes. Furthermore, any storm that formed near the triple point (white circle) would do just that.

The first radar echo appeared near the triple point in eastern Major County, west of Enid, around 12:30 pm. At 1:05 PM, a tornado watch was issued for all of north central Oklahoma. At 1:15 PM, we issued a Warning Decision Update that read, in part: "NEARLY STATIONARY SURFACE BOUNDARY FROM NEAR OKEENE… HENNESSEY… CRESCENT… CHANDLER. TORNADO POTENTIAL LIKELY TO BE MAXIMIZED NEAR AND IMMEDIATELY NORTH OF THIS BOUNDARY – INCLUDING GARFIELD COUNTY AND SURROUNDING COUNTIES NEXT COUPLE HOURS."

By 1:30 pm, a second storm developed south of the first one, east of Okeene and again near the triple point. While trained storm spotters, chasers, and media storm trackers were moving toward the more northern storm, it was apparent that this second storm would move into the heart of the zone with enhanced tornado potential. A second Warning Decision Update was issued at 144 PM, which read in part: "TORNADO POTENTIAL IN KINGFISHER AND GARFIELD COUNTIES. NEW STORM INTENSIFYING IN NE BLAINE COUNTY WILL RIDE NEAR AND N OF STATIONARY BOUNDARY VERY CLOSE TO HWY 51 IN NORTHERN KINGFISHER COUNTY… ESPECIALLY IF IT TURNS RIGHT. THIS STORM WILL BE IN LOCALLY-OPTIMAL LOW-LEVEL SHEAR ENVIRONMENT… AND MAY HAVE GREATER TORNADIC POTENTIAL THAN THE STORM COMPLEX W THROUGH N OF ENID."

The first severe thunderstorm warning for the southern storm was issued

See **Garfield County** on page 5

Garfield County... from Page 4

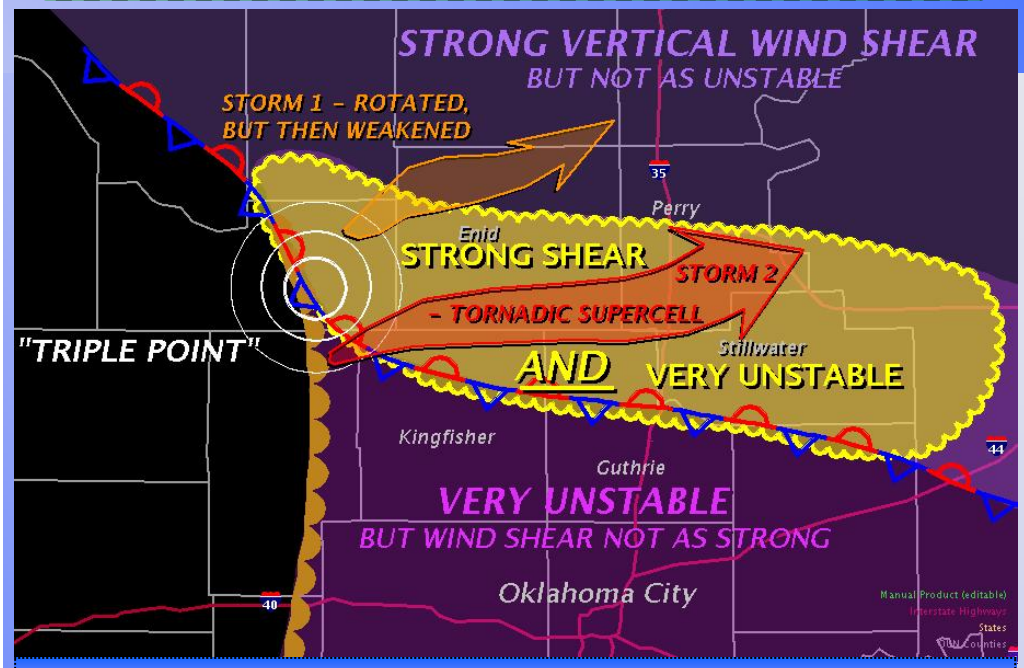


Figure 2: A graphical depiction of the surface boundaries, variations in severe weather parameters, and storm tracks for the 24 May 2008, tornado outbreak in north central Oklahoma.

at 2:21 pm. This was upgraded to a tornado warning at 2:26 pm. The first tornado, based on extensive live local TV coverage, began near Lacey, in northern Kingfisher County, at 2:27 pm. We continued tornado warnings on this slow moving supercell for the next several hours. The storm continued to produce tornadoes, some of which were described visually as large and multiple-vortex, in Garfield and Noble Counties, until just after 5 pm. The tornadoes stayed over open country for the most part, which helped to limit damage and probably prevented some of the tornadoes from earning a higher EF-scale rating.

Early recognition of the enhanced tornado potential, along with frequent surface analysis, enabled us to focus on a very specific threat area in our forecasts and warnings. Reports and video from trained storm spotters, chasers, and the media then helped us track the tornadic storm and provide detailed information to the public. And the lack of serious injuries likely speaks to the fact that those people in the path received warning and practiced the tornado safety lessons that we strive to promote each and every spring. Like so many other memorable events, the tornadoes of 24 May, 2008, show how we can all work together to stay safe during severe weather.

Speg... from page 1

thunderstorms, tornadoes, and flash floods. I am also very involved in surveying and documenting tornadoes, investigating and working with the history of tornadoes in the state, training storm spotters, and continuing to research various aspects of severe weather.

Away from work, I enjoy traveling and hiking, especially in the mountains or the desert landscapes of the western United States, and volunteer both at my church and the United Way of Central Oklahoma.

Doug Speheger sits in front of an AWIPS workstation drawing practice tornado warnings using pieces of software he helps to develop.

Season... from page 1

NWS Norman County Warning Area (CWA) through the end of July tornadoes had occurred on nine days, with a total of 28 confirmed tornadoes. Twenty-three of these tornadoes were weak, but five were strong (four rated EF2 and one rated EF3).

The first tornado occurred on March 2nd when a supercell thunderstorm produced a short-lived tornado near Eagle City in Blaine County. On the evening of March 30th, a long-lived supercell produced two tornadoes in Caddo County near Albert and Cogar, respectively. Then as this and other storms moved into central Oklahoma during the early morning hours of March 31st, two additional tornadoes developed in northwest Oklahoma City. The final tornado from this group of thunderstorms touched down in Noble County of north central Oklahoma later that morning. Although there was some damage to homes, these tornadoes were all relatively weak.

On the afternoon of April 7th, a slow-moving supercell in north Texas produced two tornadoes near the Wichita-Wilbarger county line. One tornado blew a car into the path of a pickup on Highway 287. The driver of the car received minor injuries and was taken to an Electra hospital for treatment. Fortunately, the storm weakened before moving into the city of Wichita Falls. These were the only tornadoes confirmed in the Norman Office CWA during April.

May was considerably more active, at least on a few days. May 1st brought a dryline into central Oklahoma, touching off a group of quick-moving supercells that evening. While the storms may be most remembered for producing hail greater than baseball size in Midwest City, there were also brief tornadoes at Choctaw and Glencoe. These storms went on to produce more significant tornadoes in eastern Oklahoma, outside of the Norman Office CWA. A week later, on May 7th, four tornadoes occurred in central and south central Oklahoma. The first struck near Paoli in Garvin County, moving a mobile home off its foundation, and causing one injury. Another complex of storms affected the western and northwestern sides of Oklahoma City. A

See **Season** on page 7

NWS Teamwork: The Hydrometeorological Prediction Center

By Patrick Burke, General Forecaster

In the National Weather Service (NWS), monitoring and predicting changes in our environment is truly a team effort. The earth and its atmosphere are so vast that weather information must be organized and coordinated across many agencies for our operation to succeed. Through reading the Southern Plains Cyclone, we hope you have gained insight to the people and processes at work for you here at the local National Weather Service Forecast Office in Norman. But there are many other team members who help us deliver the best our science has to offer.

At the national level, forecast operations are guided by the National Centers for Environmental Prediction (NCEP). The NCEP consists of nine distinct offices, each specializing in certain weather-related hazards or activities. You are probably familiar with a few of these offices such as the Storm Prediction Center (SPC), Tropical Prediction Center (including the National Hurricane Center), and the Climate Prediction Center (which provides drought information and long range forecasts). Other members of the NCEP include the NCEP Central Operations, Aviation Weather Center, Ocean Prediction Center, Space Weather Prediction Center, Environmental Modeling Center, and Hydrometeorological Prediction Center (HPC). While the Norman Forecast Office may collaborate with several of these offices throughout any given year, we work most intimately with the SPC and the HPC. In this, the first in a series of articles, let us take a closer look at the HPC.

The mission of the HPC is to "provide forecast, guidance, and analysis products and services to support the daily public forecasting activities of the NWS and its customers, and to provide tailored support to other government agencies in emergency and special situations." HPC forecasters specialize in predicting large scale weather patterns governed by the jet stream and prominent terrain features such as the Rocky Mountains, Great lakes, and Gulf Stream waters to name just a few. They develop expertise in diagnosing the strengths and weaknesses of numerical forecast models, and provide guidance to NWS forecasters when model predictions diverge from one another. After taking in the "big picture," meteorologists at the HPC produce detailed discussions and gridded forecasts pertaining to most major weather elements (e.g. high temperatures, probability of precipitation, etc.). For some users, these "big picture" forecasts may be the desired end product. For those needing more detail, however, it is the role of the NWS Forecast Offices, such as yours in Norman, using local expertise, to tailor this information to the county and city level.

With interests varying from hurricane tracks in the next 24 hours to heavy snow potential 6 days in the future, forecast operations at the HPC are divided into different disciplines or "desks." A Short Range Desk prepares forecasts, including surface pressure patterns, fronts, and the character of precipitation, for the time period of 6 through 60 hours. A Medium Range Desk prepares forecasts for days 3 through 7 into the future. Medium range products include surface pressure patterns, fronts, daily maximum and minimum temperatures, and probability of precipitation in 12 hour increments. The products provide an overview to the expected weather patterns, and Norman forecasters will frequently consult these products when composing the 7-day forecast package we issue each morning and afternoon.

Other HPC desks, and those which are perhaps most important to our local efforts, focus on hazardous weather. The Quantitative Precipitation Forecast (QPF) Desk prepares and issues forecasts of accumulating (quantitative) precipitation including heavy rain and/or snow, and highlights areas

See **NWS Teamwork** on page 7

Norman Forecaster Promoted

In May of this year, Norman forecaster, Kenny James ("Meet Your Weatherman" Fall 2006), transferred to the National Weather Service's Hydrometeorological Prediction Center (HPC). Located in Camp Springs, Maryland, the HPC is a national center which collaborates with and provides tools and guidance for local forecast offices such as ours in Norman. In his new role as a General Forecaster at the HPC, Kenny will take on some exciting challenges, learning to forecast for different parts of the United States, including Alaska. We look forward to collaborating with Kenny and his new colleagues to provide you the best weather information here at home, and we wish him all the best!

See tornado summaries at http://www.srh.noaa.gov/oun/tornadodata/

tornado tracked 7.5 miles from Yukon to Bethany and northwest Oklahoma City, producing EF1 damage, all during evening rush hour traffic. Fortunately, there were no reports of serious injuries. A separate tornado produced a three mile damage path in northwest Oklahoma City, and yet another storm produced a tornado just south of Norman from near Goldsby to Noble.

A few days later, on May 10th, a significant tornado outbreak struck the central United States, producing large and deadly tornadoes in northeast Oklahoma and southwest Missouri. This outbreak included an EF4 tornado that struck the communities of Picher and Quapaw in extreme northeast Oklahoma. Only one tornado struck within the Norman NWS area of responsibility where an EF2 tornado touched down near Daisy in northeast Atoka County. The storm damaged three homes and snapped numerous trees before moving quickly east into Pushmataha County.

Almost two weeks later, on May 23rd, another outbreak of more than 60 tornadoes occurred across the Plains. Many of the tornadoes impacted western Kansas, but three tornadoes touched down within northwest Oklahoma. This included, in Harper County, an EF3 tornado, the strongest to occur in the NWS Norman forecast area during spring of 2008. The Harper County tornado produced a 5 mile damage path to the south-southwest of Selman and north of Fort Supply. Another EF2 tornado developed in far northwestern Woods County before moving into Kansas, and an EF0 tornado developed north of Buffalo and moved into Kansas.

The very next day saw the largest and one of the most publicized local tornado events of the spring, when a large supercell tracked through a rural part of northern Oklahoma just outside of Enid. With heavy rain at times shrouding the storm, it was difficult to determine exactly how many tornadoes occurred. But at least ten separate tornadoes were confirmed, and many were shown live on local and national television. Two of the tornadoes were rated EF2 and two others were rated EF1. Some of the tornadoes may have been rated higher had they moved over more populated areas. Mike Branick's article ("May 24th Tornadoes" - pg. 1) in this newsletter describes the meteorology of the event.

Although the tornadoes that affected the Norman Office CWA were not as intense as those which affected some surrounding regions, each and every tornado can be significant for the people in its path. It is important to be prepared, even after the traditional spring tornado season has ended. After all, past tornadoes have been observed in Oklahoma and north Texas during each month of the year.

Season...
from page 5

NWS Teamwork...
from page 6

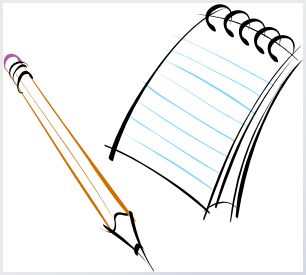
with the potential for flash flooding. The basic QPF products are primarily directed toward internal use at NWS forecast offices, but are also available to the public online. The Norman Forecast Office often uses HPC forecasts of rainfall amounts as a basis for our gridded QPF forecasts, and may use the HPC's Excessive Rainfall Discussions as guidance when issuing a flash flood watch.

A Winter Weather Desk at the HPC conducts their operations between 15 September and 15 May. This desk outlines the probability of heavy snow and ice out to 72 hours. These forecasts represent the probability that freezing rain or combined snow/sleet accumulations will meet specific criteria to cause life-threatening conditions or widespread impacts to commerce and property. Prior to a strong winter storm, local forecast offices, including Norman, may collaborate with each other and with the Winter Weather Desk, to arrive at a consensus for the expected track and intensity of the heaviest precipitation and greatest weather-related impacts. Further underscoring the importance of accurate winter weather forecasts, text discussions issued by the HPC are used by other clients such as the Department of Homeland Security, FEMA, the White House, private sector meteorologists, and the media.

Finally, The HPC's Tropical Desk is the official back-up to the National Hurricane Center (NHC). If, for any reason, the NHC is unable to perform its duties, the HPC becomes responsible for issuing all tropical cyclone products, including discussions, graphics and watches and warnings for any tropical system in the Atlantic or eastern Pacific Oceans. During the tropical weather season which runs from 15 May-30 November, the HPC routinely provides track forecast guidance, based on numerical model simulations, to the NHC. And with a focus on quantitative precipitation forecasts, the HPC tropical desk provides rainfall statements for tropical cyclones that are expected to make landfall. The HPC tropical desk also takes over for the NHC when a tropical cyclone has made final landfall, and is no longer a tropical storm, but is still capable of producing flooding rain. We saw this just one year ago, when tropical cyclone Erin ravaged parts of central Oklahoma.

The range of products and duties at the HPC speaks to the diversity of the National Weather Service, its people and its mission. Whether it is a December ice storm, summer flood, or a sunny and mild forecast, we are always working together to anticipate your needs and keep you ahead of the weather.

Learn more at http://www.hpc.ncep.noaa.gov/

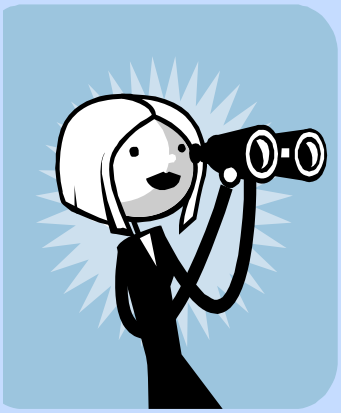


Norman Office Forecast Notebook - A Complete Look at Events and Happenings

Spotter Training 2008-2009

Storm spotters play an important role when severe storms threaten your community. They are the eyes and ears of the people whose job it is to try to keep you safe – your local emergency management officials, and your National Weather Service.

This past winter and early spring, National Weather Service Norman meteorologists hit the road to provide storm spotter training. This training, which is usually open to the public, and an annual event in many communities, is designed to give spotters the information they need to help them safely identify and report dangerous weather.



For 2008, attendance numbers were down from previous years, but we still trained over 2000 people (2012 to be exact). We held 39 training sessions, traveling from Durant to Woodward, from Ponca City to Chillicothe, and many places in between. Not counting the training at the National Severe Weather Workshop (where about 225 people attended) the largest classes were at Stillwater (160) and Woodward (121).

It won't be long before we begin scheduling spotter training sessions for the 2009 season. Emergency managers will be notified by an e-mail message when that time is here, and everyone can see a calendar of upcoming classes on our website, likely sometime after Thanksgiving. As always, the National Weather Service appreciates the hard work and dedication of the storm spotters and observers who help us, the media, and emergency management to keep you safe when storms approach.

National Weather Festival

Mark your calendars now for the 2009 National Weather Festival. It's scheduled for Saturday November 8th at the National Weather Center in Norman. This event gives you an opportunity to visit the NWS and the other weather partners in the National Weather Center, and to enjoy lots of fun weather-related activities. The best part is – it's all free!

Watch our website for more details as we get closer to the festival. To see what you missed last year, visit this website:

http://www.norman.noaa.gov/nwf07//

National Severe Weather Workshop

And while you have you calendar out, be sure to mark the dates for next year's National Severe Weather Workshop. It is planned for March 5-7, 2009, and promises to be the best yet. The workshop is still in its early planning stages, but you will see details on our website as the event gets closer.

You can find information about the 2008 workshop - including many of the presentations - at this website:

http://www.norman.noaa.gov/nsww2008/

Image/Video Request

NWS Norman is always looking for video and images from significant weather events across the area. Of course, we do not want you to do anything dangerous to get the pictures! But, if you've captured something on video or an image that you'd like to share, we'd love to see it! And it doesn't necessarily have to be a tornado to be valuable. We often learn more from the images that fall into the "what in the world is that??" category!

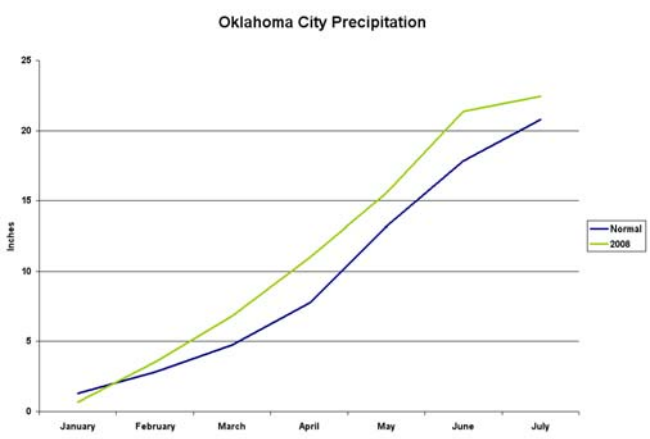
Your contribution might be used to help document or study a significant storm (like a tornado, for example), or to help educate storm spotters or others about weather and safety. You might even see it appear on our website. We will, of course, give you credit by including your name.

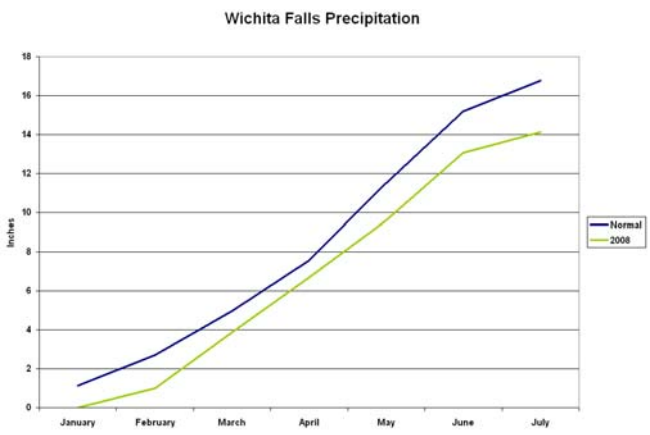
So, if you have something you think we'd like to see, send it our way, either by email or post at:

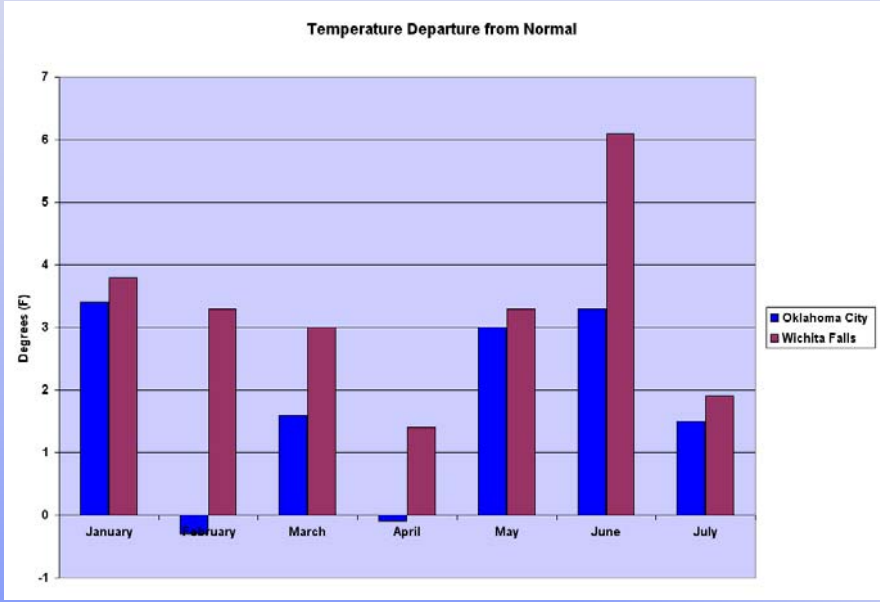
email: sr-oun.spotter@noaa.gov

Mail: 120 David L. Boren Blvd, Suite 2400
Norman, OK 73072

By the Numbers







During the first six months of the year precipitation was on an even keel, with Oklahoma City a little above normal and Wichita Falls a little below. These graphs will look more interesting when we add August, which had already seen record setting rains at both locations by mid month.

The temperature graph is more striking, as it shows significantly warmer conditions compared to the 30-year average that we define as "normal," and which is represented by the zero line. On this graph, a normal month would have zero departure from normal. Taking the average temperature during an entire month tends to smooth out daily variations, so while being 3 or even 6 degrees (Wichita Falls in June) above normal on one day may not seem like much, this chart indicates we were consistently well above normal for long stretches of time.

Norman Office Notebook - continued...

New Forecaster: Andrew Taylor

Early this summer, Norman meteorologist Andrew Taylor was promoted from Meteorologist Intern to General Forecaster. Andy came to us just last year from the University of Oklahoma, where he is working to complete a Doctoral Degree in Meteorology. He brings a passion for forecasting, and experience in the design and application of numerical weather models. Andy will one day, no doubt, be featured in our "Meet Your Weatherman" column. Until then, let's welcome Andy to his new role in the National Weather Service Norman Forecast team!

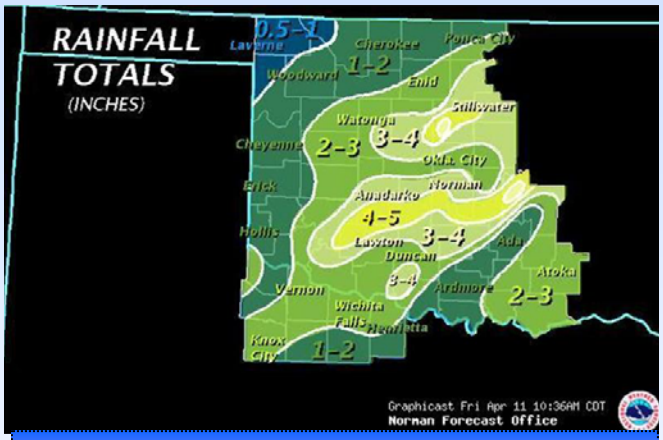
Editor's Note

I hope you enjoy this special, double-edition of the Southern Plains Cyclone! Although the spring weather impacts were not terribly costly for most of our forecast area, we did see an active weather pattern that kept us on guard against severe weather from late March through the end of June. This put the Spring newsletter behind schedule, and we eventually chose to combine it with the Summer edition. We will make every effort to get back on track with the Fall newsletter, publishing by early November. If you are interested in receiving notice of newsletter publications by email, feel free to send a request to patrick.burke@noaa.gov.

Cooperative Observer Notes

Heavy Rain April 9-10

One of the more significant rain events of the spring took place on April ninth, continuing until early on the tenth. With the exception of northwest Oklahoma, nearly all of Oklahoma and western north Texas recorded between 1 and 5 inches of rain. The heaviest fell in southwest to northeast oriented bands of thunderstorms which trained across the same locations for several hours. The precipitation map (Fig. X) shows the bands of higher totals running through central



A graphicast published on the NWS Norman web page April 11, 2008, showing measured rainfall for the period of April 9-10.

and southern Oklahoma. Cooperative observer,

Jim Coffey of Konawa, OK,

recorded the highest total of the event with **5.46 inches.** Observers at Daisy and Pauls Valley, OK, also reported more than 4 inches of rain.

Some of the thunderstorms also produced severe hail and winds. Peak gusts of 60 to 80 mph caused scattered damage across southern Oklahoma. Later on the tenth, intense low pressure tracked across the region, bringing widespread sustained winds of 40 to 50 mph. Dust lofted from the ground in west Texas and eastern New Mexico turned the sky brown in the same areas that had so recently seen heavy rain.

NWS Norman has more StormReady communities than just about any other office in the country (only the Boise, Idaho office has more!). Our StormReady family continues to grow as new communities are officially recognized for their efforts in preparing to deal with hazardous weather.

This past April, the **Wichita Falls Independent School District** (Wichita Falls ISD) became the first school *district* in the United States to be officially recognized as StormReady. A strong partnership between the school district, the city of Wichita Falls and Wichita County gives the students, faculty, and staff a definite advantage when it comes to dealing with dangerous weather. StormReady recognizes the district's ability to receive warnings, to share that information with all their schools, and to educate the students about ways to stay safe. Congratulations to the Wichita Falls ISD!

A collection of photographs taken during an April 2008, celebration in which the Wichita Falls Independent School District was recognized as the first StormReady school *district* in the United States. NWS Norman's Warning Coordination Meteorologist, Rick Smith, presented a certificate to Wanda Jackson, the Principal at Hirschi High School.

The Norman NWS Cooperative Observer Program Team:

Forrest Mitchell **Daryl Williams** **John Pike** **Ty Judd**

In This Issue:

National Weather Service
Forecast Office
Norman, OK

Phone Number:
405-325-3816

Web Page:
weather.gov/norman

Meteorologist-in-Charge:
Mike Foster

Warning Coordination Meteorologist:
Rick Smith

Science and Operations Officer:
David Andra

Editor:
Patrick Burke

National Weather Service Forecast Office
120 David L. Boren Blvd. Suite 2400
Norman, OK 73072

Check out our graphical and text-based forecasts for your community at *weather.gov/norman*.

If you would like to visit our office and learn more about what goes on at the National Weather Center, go to http://nwc.ou.edu/visitor_center.php for more details on scheduling your visit. We'd love to see you!

Please share this with friends, relatives, and colleagues. Comments and suggestions are always appreciated, by phone at 405-325-3816 or by e-mail at Patrick.Burke@noaa.gov.