

# The Dryline

The Official Newsletter of the National Weather Service in Amarillo

Summer 2009

## FIRST TORNADOES OF 2009

By Chris Nuttall, Meteorologist Intern

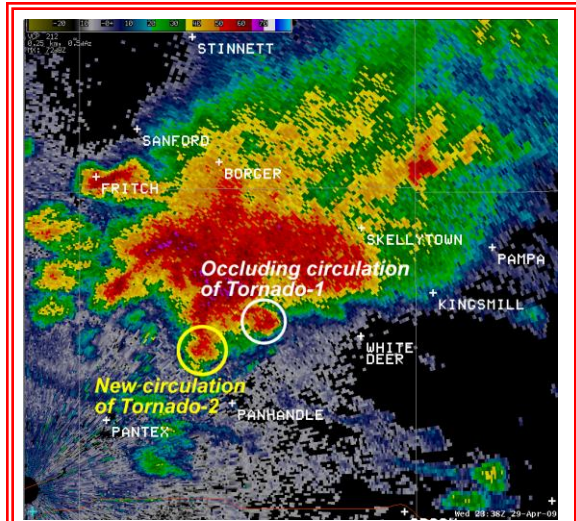
During the afternoon of April 29, an isolated supercell formed over the central Texas Panhandle producing the first two tornadoes of 2009 in the Panhandles. A storm developed along a dryline across the western and central Texas Panhandle by 4:00 PM CDT. This storm first became severe 10 miles south of Dumas and tracked east. As the storm crossed Lake Meredith around 4:45 PM CDT, it strengthened rapidly. Rotation in the middle to upper levels of the storm became stronger and more organized. This is usually a sign that a storm has the potential to produce large hail and tornadoes. In fact, golf ball-sized hail was reported covering the ground in Fritch.

The storm made a right turn and began moving towards Panhandle in Carson County. It continued to intensify, and the first reported tornado (Tornado-1) occurred at 6:30 PM CDT. The tornado crossed Highway 207 seven miles north of Panhandle and moved east-southeast snapping 11 power poles. A damage survey team from the National Weather Service in Amarillo rated this tornado an EF1, with winds estimated near 100 mph.

A second tornado (Tornado-2) touched down briefly near County Road 14, two miles north-northwest of Panhandle at 6:36pm CDT. Tornado-2 was reported to have lasted for about 30 seconds, moving southeast. The damage survey team from the NWS rated this tornado an EF0 with winds estimated near 80 mph.

Strong supercells often experience several life cycles. These "cyclic supercells" generally have a slight weakening stage where one mesocyclone undergoes an occlusion process and dissipates while a new circulation develops behind it. This storm was a very good example of a cyclic supercell.

A reflectivity image from the Doppler radar at NWS-Amarillo (image above) clearly shows this process in action. The area of rotation to the east, associated with Tornado-1, is occluding. To the southwest, a new circulation is developing that produces Tornado-2.



Radar image showing a cyclic supercell near Panhandle, TX on April 29, 2009.

These were the only two confirmed tornadoes produced by this storm. However, severe hail continued along the storm's path as it tracked southeast all the way into Collingsworth County.

### In This Issue...

	Page
Day in the Life of the NWS.....	3
Vortex 2.....	4
NWS Chat.....	5
Weather Review / Outlook .....	6
In YOUR Community.....	7

## Severe storm strikes Gray County

By Mike Johnson, General Forecaster

On the evening of May 15, 2009, a severe thunderstorm moved across Gray County, producing widespread damage from Pampa to Lefors. The storm originally developed over eastern Hutchinson County near the intersection of a cold front and dryline. Wind shear was very weak for organized severe thunderstorms across the Panhandles, but due to the unique location of the storm near the intersecting boundaries, this storm was able to take on supercell characteristics.

The storm intensified as it moved into Roberts County and then became a “right mover”. That is, it turned to the right of the steering flow. A severe thunderstorm warning was already in effect for much of Roberts County due to the hail and straight line wind threat. NWS meteorologists and storm spotters also detected organized rotation, so a tornado warning was issued for southern Roberts and northern Gray Counties. Shortly thereafter, spotters reported a brief tornado in south central Roberts County. As the storm moved south in



**Most of the roof was blown off of a home near Pampa, Texas by a tornado on May 15, 2009.**

Gray County, the rotation became more impressive. A second tornado warning was issued for Gray County, including the city of Pampa. Additional brief tornado touchdowns were reported just to the northeast and east of Pampa. As the storm passed Pampa, the city of Lefors fell in the crosshairs. Lefors took a direct hit from the storm with yet another tornado reported by spotters.

A storm survey the following day determined that 5 individual tornadoes touched down from rural southern Roberts County, to just east of Pampa, to Lefors. Three of these tornadoes were given a rating of EF0 (winds less than 85 mph) since they were only observed over open country and produced no damage. Several structures were damaged in Lefors, resulting in an EF1 rating (winds near 100 mph). The strongest tornado was surveyed along Highway 60 just to the east of Pampa, where one home suffered major damage and several other smaller structures were destroyed. This tornado received an EF2 rating (winds near 125 mph).

Other structures near Pampa received damage from straight line winds estimated at around 80 mph. In addition, baseball sized hail impacted the northern and eastern part of the city. Several homes suffered significant roof damage and broken windows. Only one injury was reported with this storm.

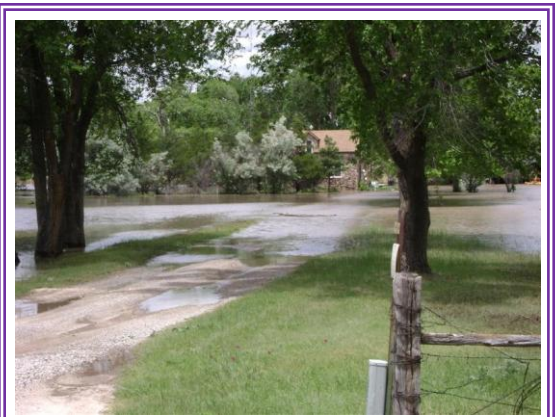
## A Day in the Life...Of A NWS Forecaster – Hydrology on the Plains

By Christine Krause, General Forecaster, and Roland Nuñez, Senior Forecaster

In the previous issue of the Dryline, this series of articles illustrated how severe weather operations are conducted at the National Weather Service (NWS) in Amarillo. While tornadoes tend to grab the attention of the media, weather enthusiasts, and the general public, there is an underrated and often times more deadly component of severe weather: flooding. Flooding causes more damage in the United States than any other severe weather related event, an average of \$5 billion a year, and contributes to nearly 100 deaths a year. This places flooding as the second deadliest (second only to extreme heat) of all weather related hazards in the United States.

Flooding can be further subdivided as general flooding or flash flooding. A flood typically occurs when prolonged heavy rainfall causes a river or stream to overflow and flood the surrounding area. During the summer and fall, remnants of tropical storms and hurricanes have been known to bring intense rainfall, resulting in large areas being inundated by flood waters. Also, excessive debris can restrict normal drainage, leading to rivers or streams flowing over their banks. Flash flooding is more synonymous to severe weather in that flash floods occur within six hours of a heavy rain event, after a dam failure, or following a sudden release of water held by a debris jam. Due to the rapid rise of water in a short period of time, flash floods can catch people unprepared.

A trained NWS forecaster with a thorough knowledge in hydrology will often visit flood and flash flood prone areas to determine how susceptible the area is to flooding, and what impacts would be felt if flooding were to occur. Existing river gages are also inspected. To assist in monitoring and forecasting, NWS Amarillo can recommend new gages to be added to the USGS stream gage network. River stages are available for viewing on our website at: <http://www.srh.noaa.gov/ama/?n=hydrology>



**Flooding along the Wolf Creek in Lipscomb, TX in May 2007.**

Similar to severe weather operations, forecasters at the NWS Amarillo monitor radar trends, satellite, and model data to glean where the target areas are for thunderstorm development. Once storms move into the Panhandles, forecasters can display the amount of accumulated rainfall estimated by the NWS Doppler radars. This allows the forecaster to assess the flooding potential from the ongoing storms. Occasionally, there are situations where a series of storms track across the same area, or when storms move slowly over an area, which would heighten the flooding potential. If the situation becomes dire, forecasters may issue a flood warning, an urban and small stream flood advisory, or flash flood warning for the affected area. At this point, forecasters obtain reports from trained storm spotters, government officials, and the public on how severe the flooding is and where it is occurring. To monitor river trends, forecasters use software that displays the current river level and if it is below, near, or above flood stage.

Although flooding is not as commonplace as strong winds and large hail when storms roll through the Panhandles, citizens must keep abreast of the weather situation and be prepared to move to higher ground when flooding is imminent or occurring. As stated earlier, the impacts from flooding can be devastating to those in its path.

## What is VORTEX2?

By Mike Johnson, General Forecaster

Maybe you have heard of Vortex2 over the past few months, or maybe you saw this large group of storm chasing vehicles passing through the Panhandles this spring. Well, what exactly is Vortex2? The Verification of the Origins of Rotation in Tornadoes Experiment 2 (VORTEX2) is the largest collaborative effort in history to study the formation of one of nature's least understood phenomena: the tornado. This project includes more than 100 scientists from organizations all over the world. These scientists have at their disposal a fleet of 10 mobile radars, 10 mobile weather stations, unmanned aircraft, and weather balloons, as well as additional weather instrumentation.

The original VORTEX project, completed in 1995, was very successful in providing meteorologists with new information regarding the life cycle of tornadoes, helping National Weather Service forecasters increase tornado warning efficiency and lead time. VORTEX2 hopes to build upon the earlier project to increase lead time further and provide scientists with the answers to many questions regarding tornadoes.

The VORTEX2 scientists spent 5 weeks from early May through mid June this year roaming the Great Plains in search of tornadic storms and plan to spend an additional 6 weeks on the road during the spring of 2010. For additional information on VORTEX2, please visit: <http://www.vortex2.org/>.



**Vortex2 mobile radars scan the skies this summer.**  
Photo by Jim Reed

## NWS Amarillo Welcomes New Staff

By Jose Garcia, Meteorologist In Charge

WFO Amarillo is pleased to announce the selection of Mr. Paul Schaafsma as the new Electronics Systems Analyst (ESA). Mr. Schaafsma was the ESA at WFO Key West, Florida where he had served since 1998. He has also served as an ESA at WFO Houston and as an Electronics Technician at various National Weather Service offices. His experience makes him familiar with much of our electronics equipment. He brings a wealth of leadership and supervisory experience. Paul arrived with his wife Jacki in Amarillo in early April and has already experienced our interesting panhandle weather firsthand. He arrived during one of our major spring duststorms, and was driving along Interstate 40 near McLean during the May 15 tornadic outbreak!

The NWS also welcomes our new SCEP (Student Career Experience Program) employee Matthew Day. Matthew has completed his freshman year at the University of Oklahoma in pursuit of a Bachelor's Degree in Meteorology. Matthew will be helping the NWS out this summer and gaining real life weather experience in the process.

## Recapping the 2009 Spotter Training Season

By J.J. Brost, General Forecaster

Each year, the National Weather Service in Amarillo conducts Spotter Training classes for residents within the Texas and Oklahoma Panhandles. These classes consist of a basic meteorology lesson, weather safety information, and thunderstorm spotting techniques. The participants in each class not only learn how to become more weather savvy, but they also gain a better understanding of our atmosphere.

This year, meteorologists from the NWS in Amarillo traveled to 22 of the 23 counties within the Texas and Oklahoma Panhandles and provided over 40 spotter training classes. From late February through April, 1,165 individuals attended these classes to become certified National Weather Service storm spotters. Of course, this number does not include the storm spotters who attended trainings from previous years.

The National Weather Service would like to thank all of our dedicated spotters who continue to provide timely and accurate weather information. If you are interested in attending a spotter training session, please visit our web page at [www.srh.noaa.gov/ama/?n=spottertalks](http://www.srh.noaa.gov/ama/?n=spottertalks) to find information on the classes. We will begin posting the dates and locations of next year's spotter training classes in January 2010.

## NWS Chat Connects NWS to Partners

By Chris Kimble, NWS Chat Program Leader

In 2007 a new tool was introduced to connect the NWS with partners in the emergency management and media communities. An internet chat room was set up to allow the NWS to communicate and coordinate with these partners. Information on warning decisions and severe weather concerns are conveyed to many decision makers simultaneously. Storm reports and ground truth spotter information is also conveyed in real time. This service has greatly improved the ability of the NWS Amarillo to communicate quickly and effectively with many customers at once. In late 2008, the NWS nationally took ownership of the chat program, and now almost every NWS office makes use of this program.

Members of the local media, law enforcement, and emergency managers are encouraged to take part in this new NWSChat program. Please visit [www.nwschat.weather.gov](http://www.nwschat.weather.gov) for information on this service or to create a user account. If you need assistance or have further questions you may also call the NWS in Amarillo.

(6/13/2009 11:41:47 PM) NWS Amarillo Short Term Term Desk: We are now concerned about some strong straight line winds south of Knowles. Radar signature shows a rear inflow notch and a bowing segment. South of Knowles and north of Slapout could get some strong winds

(6/13/2009 11:44:21 PM) NWS Amarillo Short Term Term Desk: This storm could be producing huge hail south of Knowles. We are adjusting our SVS to talk about Baseballs.

Font + Insert ☺ Smile!

**NWS Chat allows NWS Forecasters to coordinate instantly with local officials and the media.**

# Weather Review and Outlook

By Chris Kimble, Climate Program Leader

## REVIEW OF SPRING 2009

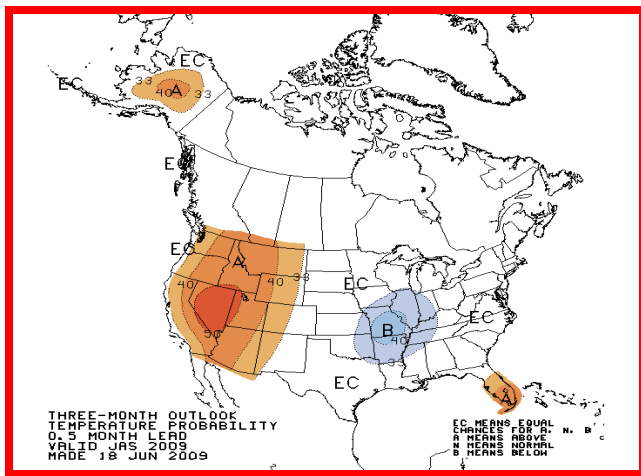
Late spring weather in the Panhandles this year continued to be active. Several storm systems impacted the area on average once per week beginning with a few snowstorms in March and continuing with occasional showers and thunderstorms in April. Temperatures remained unseasonably cool through the middle of April, but the last widespread freezing temperatures occurred on April 7, a week or two earlier than normal for most locations. May continued the cool trend with isolated, and sometimes severe, thunderstorms forming across the area many days. Most of these storms managed to miss the Amarillo airport, leading to the 7<sup>th</sup> driest May on record. The sporadic thunderstorms became even more numerous in June with temperatures warming to above normal especially later in the month. With the isolated nature of many of the thunderstorms this spring, some areas have returned to drought conditions, while others have benefited from above normal precipitation.

	AVG HIGH	AVG LOW	AVG TEMP	PRECIP	90 + DAYS
APR	70.6 (+0.0)	41.3 (-0.4)	56.0 (-0.2)	1.84 (+0.51)	0 (-0.7)
MAY	77.0 (-1.6)	50.7 (-1.0)	63.9 (-1.3)	0.43 (-2.07)	3 (-1.0)
JUN	89.3 (+1.9)	61.7 (+0.6)	75.5 (+1.2)	2.79 (-0.49)	17 (+4.2)

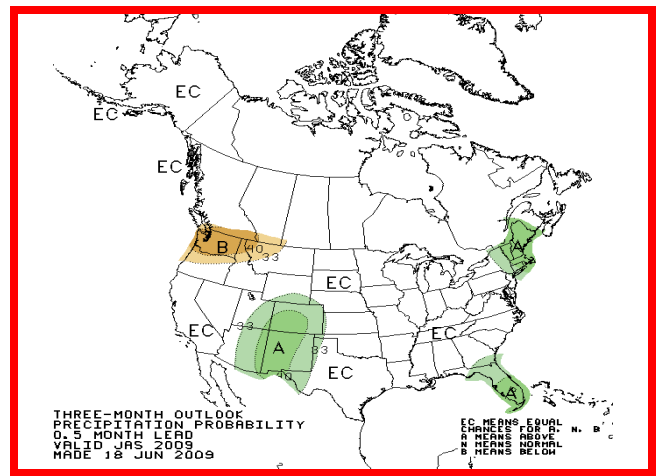
Spring 2009 statistics for Amarillo, TX

## OUTLOOK FOR SUMMER 2009

The three-month outlook for July, August, and September has been issued by the Climate Prediction Center. The temperature outlook shows roughly equal chances for above, below, and near normal temperatures for the Panhandles over the three month period. This means there are no major climate indicators pointing to an unusual temperature pattern. The precipitation outlook indicates a slightly enhanced chance for above normal precipitation especially for the western Panhandles. Normally, this is the warmest and wettest time of year for the Panhandles. El Niño conditions have been observed developing in the Eastern Pacific Ocean this summer. El Niño often leads to a more active weather pattern impacting the Panhandles, though its effects are much more pronounced in winter and spring.



JUL-AUG-SEP 2009 Temperature Outlook



JUL-AUG-SEP 2009 Precipitation Outlook

# *In YOUR Community*

The National Weather Service in Amarillo continues to participate in numerous outreach events. In addition to the events shown below, we have information from other events as well as dates of future events located on our website at:

<http://www.srh.noaa.gov/ama/?n=outreach>



**NWS Meteorologists Roland Nuñez and Christine Krause staff a booth at Business Connection.**



**NWS Electronics Technician Dave Wilburn releases a weather balloon at Weather Day at the Dilla Villa.**

We would love to participate at your next event! To schedule the NWS Amarillo in your next community event, please send an e-mail to Steve Drillette at [steve.drillette@noaa.gov](mailto:steve.drillette@noaa.gov), or call 806-335-1121.

## **Weather Event Simulator Provides Learning Experience**

By Mike Johnson, General Forecaster

The Weather Event Simulator (WES) is a powerful training and research tool used by National Weather Service meteorologists. The WES is a Linux based workstation that has many of the same capabilities as the AWIPS workstations that are used by NWS forecasters in daily operations. However, the WES displays archived weather data that is processed to appear as it would in real time.

This format gives the meteorologists the ability to issue practice forecasts and warnings as they would operationally, providing a safe and controlled environment in which to learn. Also, there is no chance of a practice warning being disseminated to the public since the WES is not connected to the outside world.

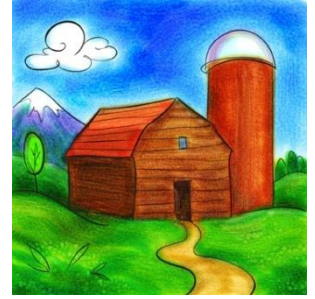
Another important feature of the WES is its role in weather research. Whenever the NWS forecasters come across a weather phenomena that they would like to study further, the archived data, including radar, satellite, models, and observations are uploaded to the WES. This gives the forecaster the ability to take a more in-depth look at data that may not be available to study in real time.

Not only can local weather events be recreated on the WES, but the simulator can be configured to display archived data from anywhere in the United States. This gives the meteorologists a glimpse of a wide range of weather scenarios. Training on the WES proves to be invaluable for new employees learning the art of meteorology as well as for more seasoned employees looking to further their understanding of the atmosphere.

# CALLING ALL FARMERS AND RANCHERS!



**The NWS needs your help!** The NWS Amarillo would like to learn more about how early and late season freezes impact your business. Anyone with agricultural interests in the Texas or Oklahoma Panhandles is encouraged to participate. Go to the following web address and answer a few short questions. Your help will allow us to better serve you! Thank you to all who participate!



<http://www.srh.noaa.gov/ama/?n=farmersurvey>

***The Dryline***..... 1900 English Road, Amarillo, TX 79108

[www.srh.noaa.gov/ama](http://www.srh.noaa.gov/ama) 806.335.1121

[SR-AMA.Dryline@noaa.gov](mailto:SR-AMA.Dryline@noaa.gov)

**Got a question for the Dryline editors? E-mail us at [SR-AMA.Dryline@noaa.gov](mailto:SR-AMA.Dryline@noaa.gov)**

• José Garcia—*Publisher and Meteorologist-In-Charge*

• Chris Kimble—*Editor-in-Chief*

• Richard Wynne—*Science and Operations Officer*

• Mike Johnson—*Editor*

• Christine Krause—*Editor*

• Steve Drillette—*Warning Coordination Meteorologist*