



The Dryline

The Official Newsletter of the National Weather Service in Amarillo

The Dryline - Summer 2011

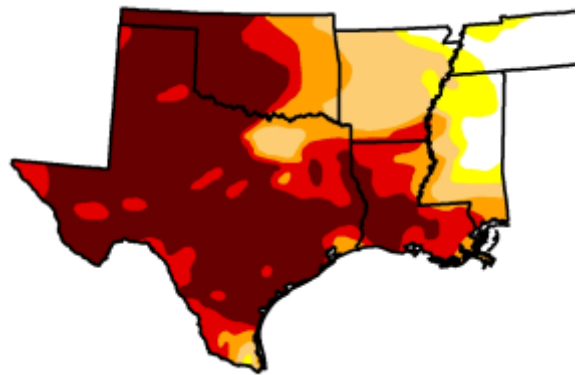
Exceptional Drought Takes Hold Over the Texas and Oklahoma Panhandles

By Steve Bilodeau, Hydrometeorological Technician

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Searing heat, sparse rainfall, and windy conditions have wreaked havoc across the Panhandles this year. The lack of rainfall has turned rangeland brown with many wildfires across the Panhandles. Farmers are irrigating 24 hours a day when possible. Many 4th of July fireworks displays were canceled due to the extremely dry conditions. There have also been some report of wells running dry. If you're wondering why, you can look to La Niña. During La Niña, the Jet Stream in the Pacific Ocean is forced northward in the Northwest U. S. and then dives south over the Midwest, missing the Panhandles.



Indeed, it has been abnormally hot across the Panhandles as there have been more than 30 days since the end of May when high temperatures soared to and above 100 degrees in Amarillo.

This ended up setting the all-time record for recording the greatest number of days where the high temperature reached at least 100 degrees. The previous record was 26 days in 1953. During this abnormally hot period, Amarillo twice set a record for the highest temperature ever recorded in the city! On June 26th, the temperature reached 111 degrees, which is now the all time highest temperature ever recorded in Amarillo. Just two days prior, on June 24th, the temperature reached 109 degrees. This was the first time when the all-time highest temperature ever recorded in Amarillo was broken. The previous record was 108 set in 1953, 1990, and 1998.

U.S Drought Monitor as of July 26, 2011. Notice most of the area as well as the state of Texas is classified as experiencing exceptional drought conditions.

...Exceptional Drought continued on page 2...



Exceptional Drought (continued)

This heat wave that continues to hold a firm grip on the Panhandles this summer (June through August) reared its head in the spring (March through May) as there were 11 days where temperatures reached at least 100 degrees in Amarillo. This tied with the spring of 1953 for the most 100 degree temperatures ever during this season.

***Amarillo, Borger,
Dalhart, and
Guymon have all
had at least 26
days so far this
year where the
high
temperature
reached 100
degrees or more!***

Besides the searing heat, the lack of beneficial rainfall during the wettest time of the year has been noteworthy this year. In Amarillo, there has only been 2.11 inches of precipitation so far this year (from January 1st through July 27) and this goes down in the record books for being the least amount of rain for this period of record. The previous record was 4.15 inches set in 1933. The 2.11 inches of precipitation is a little over 18 percent of normal rainfall.

Besides Amarillo, the exceptional drought conditions and abnormally hot conditions have taken their toll across the remainder of the Panhandles. As of July 27, there have been 32 days where the high temperature climbed to at least 100 degrees in Borger. The record for the greatest number of days with a high temperature of at least 100 degrees was set in 1980 with 36 days. There has only been 3.63 inches of precipitation so far this year in Borger. This also breaks an all time lowest precipitation record for the city for this period of record. The previous record was 4.83 inches set in 2006. This 3.63 inches of precipitation at Borger is 27% of normal. In Dalhart, so far this year, there have been 26 days with high temperatures of at least 100 degrees. Like Amarillo and Borger, this breaks the record for the greatest number of days with a high temperature of at least 100 degrees. The previous record is 20 days, which was set back in 1980. There has only been 1.11 inches of precipitation recorded so far this year at Dalhart. This 1.11 inches breaks the record at Dalhart for the all time lowest precipitation for this period. The previous record was 3.46 inches set in 2002. In addition, Dalhart has only received about 10 percent of its normal rainfall. Lastly, in Guymon, there have been 38 days where the high temperature reached at least 100 degrees. Records are not available at Guymon since the period of record at this location is too short but there has only been 2.42 inches of precipitation so far this year. This is just over 22 percent of normal for Guymon.

NWS Amarillo is on Facebook!



You can now follow the Amarillo National Weather Service office on Facebook as another means to obtain weather information or to interact with the office. Whether you are a Facebook user or not, you can view this page anytime day or night. Just go to the following link:

<http://www.facebook.com/US.NationalWeatherService.Amarillo.gov>

The New 30 Year Normals

By Rich Wynne, Science and Operations Officer

Every ten years, the Census Bureau recalculates all types of statistics on the population of the United States determining distributions, trends, and increases/decreases. These statistics are then used to watch short term changes in the population. Climatologists and meteorologists use established statistical information to forecast short term climate and weather trends.

Just like the census, changes in the climate warrant recalculation of the thirty year normals every ten years. The thirty year normals are used as the standard comparison for our daily/monthly/yearly tabulations to check how our short term weather is trending. During the past decade, we used the normal calculated for the 1971-2000 thirty year period. The staff at the National Climatic Data Center (NCDC) has just completed the 1981-2010 30-year normals. The new normals were released on July 1st and can be accessed at the NCDC website at the following link:

<http://www.ncdc.noaa.gov/oa/climate/normals/usnormals.html>

The National Weather Service will use the new information to calculate departures from normal starting on August 1st. The folks at NCDC say that we will see some changes when the updated normals are applied. For one, the cool 1970's decade is being replaced by the warmer 2001-2010 period. As a result, departures or differences between observed and normal values may suddenly shift. The feeling is that the new calculation of normals will be more realistic this time. Much more daily data is used directly. In the past, statistical methods were used on monthly data to determine daily data, particularly daily rainfall averages.

The main parameters recalculated are 1) temperature (maximum, minimum, mean), 2) heating and cooling degree days, 3) precipitation, and 4) snowfall. The normals are generated on a daily, monthly, seasonal, and annual basis.

In YOUR Community

It is the time of year when the National Weather Service in Amarillo participates in numerous out-reach events, and this year is no exception.

Just in time for the start of the school, the National Weather Service will participate in America's Promise "Kids Fest". This free event will take place on Saturday August 6th from 8 AM until noon. Come visit us at the Civic Center in Amarillo where you can obtain various weather related goodies. Then come join us at the Center City Block Party on Saturday August 20th! This event will be held in downtown Amarillo from 5 PM until midnight.

September is not only time for back to school, but it's also time for the Amarillo Chamber of Commerce Barbeque Cook Off and the Tri-State Fair! The Chamber of Commerce Barbeque is on September 7-8th, where over 100 cooking teams, including staff from the office, are competing for top honors in various categories. We will also be participating in the parade at the Tri-State Fair which will be held on Saturday September 17th from 10 to 11 AM.

Staff Changes at NWS Amarillo

With the loss of two of our Meteorologist Interns earlier this year, we were finally able to select two new employees. Both of these individuals participated in the Student Career Experience Program (SCEP) at other National Weather Service offices while they were completing their undergraduate degrees. We would like to extend a warm welcome to our new Interns, Mr. Andrew Moulton and Mr. Nicholas Fenner.

Mr. Fenner served as a SCEP at the New Orleans, LA forecast office. He earned his degree in Atmospheric Sciences from the University of Louisiana at Monroe. He has earned his upper air certification and is knowledgeable with data acquisition and forecast office operations. He participated in weather briefings and decision support for the Deepwater Horizon event.

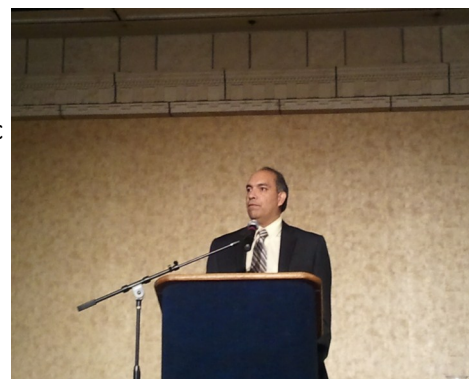


Mr. Moulton served as a SCEP at the Midland, TX forecast office. He earned his degree in Meteorology from Texas A&M University. He has earned his upper air certification and is knowledgeable with data acquisition and forecast office operations.

We are pleased to welcome both of these individuals to the Amarillo team!

Amarillo Participates in the Regional Emergency Preparedness Conference

On June 9-10, Jose Garcia, Meteorologist-In-Charge (MIC), Krissy Scotten, Warning Coordination Meteorologist (WCM), and Michael Scotten, Senior Forecaster, participated in the Panhandle Regional Emergency Preparedness Conference that was held in the Amarillo Civic Center. This event is designed to bring the area's emergency management system stakeholders together for discussion, networking, and training. Jose was the keynote speaker for this event where he spoke about the NWS's dedication to providing decision support services. This conference was a full two days with a packed agenda that included ICS (Incident Command System) training and advanced level courses, training sessions that touched upon different types of emergency situations, and a FEMA/State Public Assistance Workshop.



MIC Jose Garcia giving his keynote speech during lunch at the Panhandle Regional Emergency Preparedness Conference

Aviation Notes

By Sarah Johnson, General Forecaster and Aviation Program Leader



Are you interested in the aviation weather services that your local National Weather Service Office provides? Are you not sure where to find aviation weather information? Then check out our local aviation weather services brochure, available on the web at:

http://www.srh.noaa.gov/images/ama/aviation/aviation_brochure_AMA.pdf

The Southwest Aviation Weather Safety workshop (SAWS IV) is coming to Albuquerque this October! This free workshop will take place October 25th and 26th at the Marriott Hotel in Albuquerque. Join us as we bring together the aviation and weather forecasting communities to promote aviation safety and productivity through improved weather awareness and forecasting services. You can even earn WINGS Pilot Proficiency Program Credit by attending the sessions on October 25. For more information and to register for the workshop please visit:

<http://www.wrh.noaa.gov/psr/SAWS4/index.php>

This past spring, your NWS office here in Amarillo was presented the outstanding aviation office award among the 41 offices in the Southern Region for the first quarter of 2011. The award is given based on achievements in many areas including verification of Terminal Aerodrome Forecasts (TAFs), verification in aviation weather warnings, and outreach with the local aviation community. We would like to thank all of our aviation partners that have met and worked with us, especially through the recent renewal of the Aviation Weather Warning agreement. This award would not have been possible without your help and input. Thank you!

The Amarillo National Weather Service office participated in the annual Business Connection held at the Amarillo Civic Center on May 12th. Numerous local businesses in the Panhandles participate in this event every year where they get a chance to connect with the public. The National Weather Service is no exception and always staffs a booth at this event. We also hold a drawing where a lucky attendee wins a rain gauge.



MIC Jose Garcia and ESA Paul Schaafsma staff a booth at the Business Connection at the Amarillo Civic Center.



Damage Surveys

By Justyn Jackson, General Forecaster

Highly publicized damaging and historic tornado outbreaks in April through June of this year have led to a substantial increase in public interest in National Weather Service storm surveys. When tornadoes occur, National Weather Service meteorologists are assigned the task of completing a thorough damage survey. A survey team's mission is to gather data in order to reconstruct a tornado's life cycle, including where it occurred, when and where it initially touched down and lifted (path length), its width, and its magnitude. It should also be mentioned that survey teams are occasionally tasked with determining whether damage may have been caused by straight line winds or a tornado and assessing the magnitude of straight line winds. With respect to tornado damage surveys, one of the most difficult tasks is assigning a rating to a tornado.

Before February 2007, tornado strength was rated based on the Fujita Scale. However, there were some flaws with the original Fujita Scale. For instance, it did not account for the quality of building construction. Beginning in 2001, it was determined that the Fujita Scale needed to be modified, and a committee of meteorologists, engineers, and academia was formed to begin developing a new scale. In February 2007, the new Enhanced Fujita Scale (Table 1) became operational and is still the scale used to rate the magnitude of tornadoes.

EF Number	3-Second Wind Gust (mph)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200

Table 1. Enhanced Fujita Scale for rating tornado magnitude.

Before a survey team is deployed, they will be equipped with a variety of technology to complete the survey. Typically, a damage survey kit will contain a GPS unit, a cell phone, a laptop with damage survey software, a digital camera, an atlas or gazetteer, and a notebook. After a survey team is assigned and the survey kit is prepared, the team then drives to the reported tornado damage location(s).

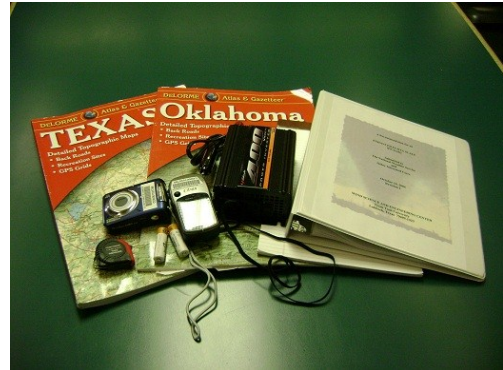
...Damage Surveys continued on page 7...

Damage Surveys continued...

Most commonly, a survey team will conduct a full ground survey in order to assess tornado damage, but occasionally, a team may also conduct an aerial survey if the spatial extent of the damage is large enough.

Depending on the survey team, the starting and ending point of the tornado may be determined first followed by the width of the tornado. The time of the tornado's life cycle may be confirmed through eyewitness accounts and/or radar data. To determine the magnitude of the tornado, the survey team will attempt to find the worst damage since this is how the tornado will ultimately be rated. Once the worst damage is identified, the survey team will assign a damage indicator to the structure or object. There are 28 damage indicators, including one- or two-family residences, manufactured homes, motels, warehouses, schools, small retail buildings (e.g. fast food restaurants), and even trees. Each one of the damage indicators has a description of the typical construction for that category of indicator. For example, typical construction for one- and two-family residences includes asphalt shingles, tile, slate or metal roofing, attached single car garage, and brick veneer, wood panels, stucco, vinyl or metal siding.

Once the structure or object has been assigned a damage indicator, the team will begin a thorough analysis of the building structure and construction. The survey team will then assign a degree of damage to the structure or object. The degree of damage has several different categories and each category has an expected wind speed and a lower and upper bound wind speed. For one- and two-family residences, if a tornado breaks glass in windows and doors, the expected wind speed is 96 mph, the lower bound wind speed is 79 mph, and the upper bound wind speed is 114 mph. If a tornado produces damage that results in the collapse of all interior and exterior walls, the expected wind speed is 170 mph, the lower bound wind speed is 142 mph, and the upper bound wind speed is 198 mph. This is where the job becomes difficult for the survey team because the team must know some basics about construction. If the quality of construction meets strict building code, the survey team will likely assign an expected wind speed to the damage. If the construction fails to meet code, a lower bound wind speed may be assigned, but if the construction exceeds code and/or is well-engineered, it may be assigned an upper bound wind speed. Once the expected, lower bound, or upper bound wind speed is determined, it is applied to the EF Scale to assign a rating.



An example of a damage survey kit used at the National Weather Service in Amarillo, TX.

Let's look at an example to help tie everything together. For an interactive demonstration, this link will be very helpful: <http://www.spc.noaa.gov/efscale/ef-scale.html>. A tornado strikes a house, causing the entire roof to be blown off, but all of the walls remain standing. The survey team will first assign a damage indicator of 2 since this is a one- or two-family residence. The description of the damage corresponds best to a degree of damage of 6 (<http://www.spc.noaa.gov/efscale/2.html>). After careful inspection of the construction quality, it is observed that the ceiling joust was fastened with rafter clips to exterior walls, which meets code. Therefore, the survey team assigns an expected wind speed of 122 mph. Based on this wind speed, the team assigns the tornado a rating of EF-2 with winds between 111-135 mph. For more information about the EF Scale, please visit <http://www.spc.noaa.gov/efscale>

Weather Review and Outlook

By Rich Wynne, Science & Operations Officer

REVIEW OF SPRING 2011

The La Niña pattern gradually ended through Spring 2011. Extremely dry and warm conditions, however, prevailed over the Texas and Oklahoma Panhandles. Amarillo normally receives almost 9.5 inches of rain by the end of June. By the end of June 2011, just 12% of the normal amount of rainfall (1.17") had been recorded. The number of days with temperatures of 100 F (~38 C) reached 11 by June 20th, which set a pre-summer season record.

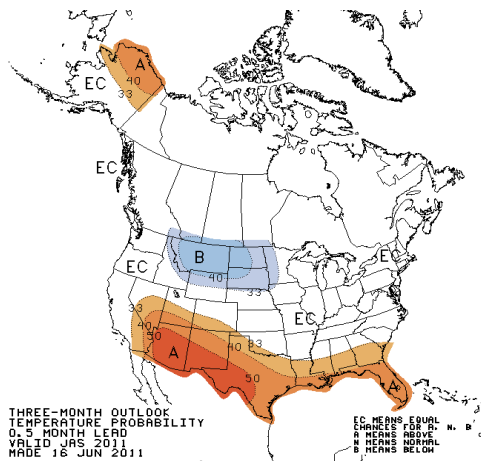
	AVG HIGH	AVG LOW	AVG TEMP	PRECIP
APR	77.7 (+7.1)	42.6 (+0.9)	60.1 (+3.9)	0.05 (-1.28)
MAY	84.1 (+5.5)	49.3 (-2.4)	66.7 (+1.5)	0.08 (-2.42)
JUN	98.5 (+11.1)	66.4 (+5.3)	82.4 (+8.1)	0.06 (-2.79)

Spring 2011 statistics for Amarillo, TX

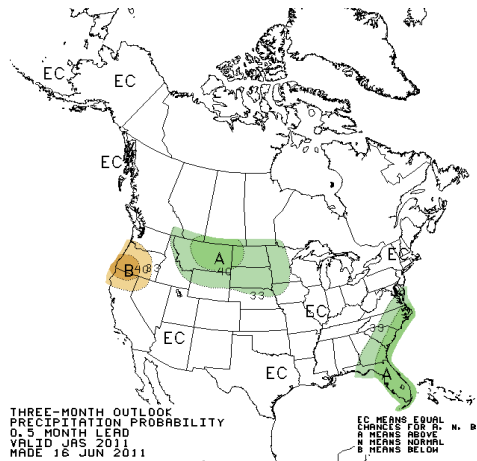
OUTLOOK FOR SUMMER 2011

Experts at the Climate Prediction Center (CPC) have determined that the La Niña episode has transitioned to ENSO-neutral. This pattern will continue through the rest of the summer. A shift from a La Niña pattern would tend to allow storms to track further south as they cross the U.S. and could increase their influence on the Panhandle weather. However, the change will be gradual.

The three-month outlook for Jul-Aug-Sep (JAS) slightly favors more above normal temperatures for the period. The outlook shows slightly higher chances for near or above normal temperatures, especially for the southern Texas Panhandle. The precipitation outlook does not show any strong trend for above normal or below normal amounts. This could reflect the shift from the La Niña pattern. Another factor that can affect rainfall this summer is the onset of moist flow from the Pacific. Forecasters will be watching this pattern feature as the summer continues.



JUL-AUG-SEP 2011 Temperature Outlook



JUL-AUG-SEP 2011 Precipitation Outlook



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