The Southern Plains Cyclone

A Weather Newsletter for the Residents of western and central Oklahoma and western north Texas

Volume 1 | Fall 2003 | Issue 4

Meet Your Weatherman John Pike

Hi! My name is John Pike, and I work as a meteorologist intern at the National Weather Service in Norman, Oklahoma.

I was born in central Missouri and grew up in the small town of Washington, about 50 miles west of St. Louis. My interest in weather began early in my youth, although I would not actually pursue that goal until much later in life.

After graduating from high school in the mid-1980s, I enlisted in the United States Navy. Unfortunately, the demand for weather related positions in the Navy was somewhat low, and as a result, I ended up in a position completely unrelated to weather, a shipboard mechanic. After six months of training just north of Chicago, I spent the next six and a half years stationed on the west coast. For the first three and a half years, I was stationed at a shore maintenance facility at the naval station in sunny San Diego. My last three years were spent on three different naval ships that ported in the foggy and often windy San Francisco Bay area. One thing I noticed during my time at sea is that the weather is quite interesting and unique when compared with coastal weather. I remember quite

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Watonga Cooperative Observer Reaches 50-Year Milestone

By Forrest Mitchell, Hydrometeorological Technician

National Weather Service cooperative weather observers are a vital link in the ongoing collection of weather data. We recognize observers' efforts by presenting length-of-service awards to individuals and institutions that have completed 10 years of service. Additional awards are presented every five years thereafter. Numerous observers have completed 30 years of service, but the number drops significantly beyond that length of time.

A truly elite status is achieved when a cooperative observer serves for 50 years. Because of the significance of such a milestone, the National Weather Service created the Edward H. Stoll Award in 1975 to honor observers who reach 50 years of service. Mr. Stoll was an observer in Elwood, Nebraska. He ultimately took weather observations for

Forrest Mitchell presents Mr. Clemon Clewell the prestigious Stoll Award, as Karen Trammell and Mrs. Rita Clewell look on.

76 years and was the first to receive the prestigious award bearing his name. Until July of this year, only six cooperative observers had achieved at least 50 years

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How Many Severe Weather Seasons Are There?

By David Andra, Science and Operations Officer

Everyone knows that the spring brings an increased risk for tornadoes, hail, and damaging winds to the southern Plains, but did you know there is a secondary severe weather season?

Every September, October, and November, several rounds of severe weather, including tornadoes, often roll through Oklahoma and western north Texas. While the episodes are generally less frequent and less intense than those during the spring, the fall storms pack a punch nonetheless. The tornadoes that struck southwest Oklahoma, including the town of Cordell, on October 9, 2001, and the October 4, 1998, central Oklahoma outbreak are notable recent examples.

What causes the secondary peak in severe weather activity during the fall, and why is it less active than the peak in the springtime? The answer has to do with temperature.

First, let's consider the springtime. As the northern hemisphere moves into spring, temperatures near the ground warm rapidly, while temperatures in higher levels of the atmosphere warm more slowly after the cold winter. This vertical difference in temperature, called the lapse rate by meteorologists, is often greatest in the spring. The physics of the

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vividly one particular leg of a deployment between Japan and Guam in the western Pacific Ocean. A typhoon was moving through the area, and we nearly sailed through it! We had safety cables threaded out from the front to the back of the ship and could only leave the inside of the ship if we strapped on a safety harness and secured it to one of the cables. After surviving two days of the ship pitching, rocking, and yawing, as well as bouts of seasickness from several shipmates, we finally emerged from the spiral banded clouds and into clear, blue skies.

Following my years with the Navy and after receiving my second honorable discharge, I returned home to Missouri to pursue my goal of becoming a federal meteorologist. I began by taking my basics at a small liberal arts college near my hometown and earning my Associate of Science degree. To complete my education, I subsequently moved back to my birthplace, Columbia, Missouri and enrolled in the meteorology program in the School of Natural Resources at the University of Missouri. I received my Bachelor of Science degree in Atmospheric Science from Missouri in May 2001.

Six months after graduation, I was given an offer that I could not refuse — an entry-level meteorologist intern position with the Norman National Weather Service Forecast Office, with a goal of moving into a forecaster position in the near future. Since coming to Norman, I have performed many duties as an intern, most of which are related to public service. In addition to my regular public service duties, such as issuing daily climate products and preparing the weather balloons, I have also had the opportunity to shadow forecasters and receive other forecast-related training, provide assistance during severe weather, and work with the cooperative observer program.

Since working at the Norman forecast office, my most memorable experience has been the Oklahoma City tornado events of May 8th and 9th of this year. I was working on May 8th, but it was not until a few days after the events that I saw the destruction created by the tornado that moved through Moore and south Oklahoma City. It brought back memories of a few earthquakes that I experienced when living on the west coast.

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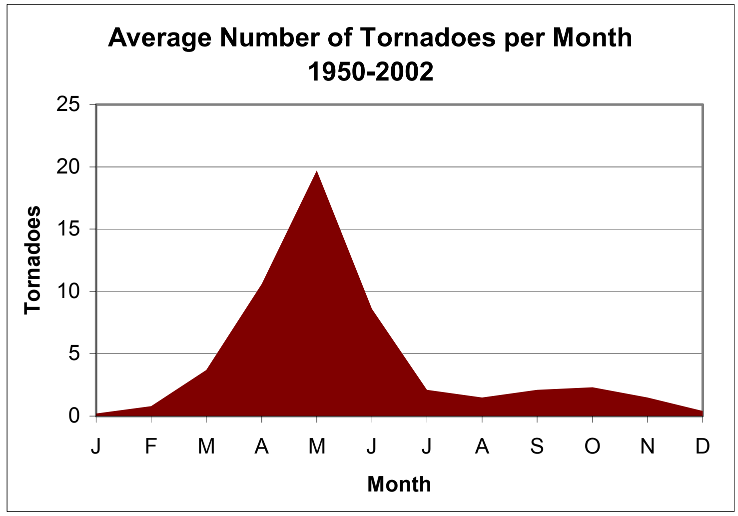

atmosphere are such that when warm, moist air is present beneath air that cools rapidly with height, conditions favor thunderstorms with very strong updrafts. These strong updrafts are more likely to produce hail and other forms of severe weather.

A second factor involves the difference in temperature from north to south across the hemisphere. The very cold arctic regions of the hemisphere are a stark contrast to the relatively warm tropics leading into the spring. Although the sun begins warming higher latitudes, it takes considerable time before the temperatures warm greatly. The greater the difference in temperature from north to south, the stronger the jet stream winds aloft become. The jet stream affects wind shear and the strength and path of larger scale low pressure systems and fronts. These systems in turn help support and initiate thunderstorm development. The jet stream also shifts from its often low latitude position in winter to a position closer to the central and southern Plains. This causes warm, moist air from the Gulf of Mexico to move farther north. These factors are maximized in the spring and diminish over the summer, as the entire hemisphere warms and temperature differences lessen both horizontally and vertically.

This leads to a few obvious questions. Why does this pattern not repeat exactly in reverse during the fall? Why are there fewer storms? Why are they less intense, on average?

Just as the temperatures aloft warm more slowly in the spring, they also cool more slowly in the fall than do the temperatures near the ground. This results in an atmospheric temperature structure that is typically more stable and less supportive of intense thunderstorm updrafts than during the spring.

The warming of summer also ensures that the difference in temperature from the North Pole to the equator is less entering the fall season, which translates into a somewhat weaker jet stream than is observed during the spring. By the time winter rolls around, the temperatures aloft are certainly cold and the jet stream winds are strong. However, by that time, the days are short and much colder due to frequent intrusions of cold air from Canada, which tends to limit the northward movement of warm, moist air from the tropics.

While fall brings a second peak in severe storm activity, as fronts and storm systems associated with the westerly jet stream winds return, the intensity and frequency is reduced to a large degree because of the way temperature varies in the atmosphere.

Spotter Training

It's that time of year again. Although winter has not even yet arrived, NOW is the time to begin planning for the 2004 spotter training classes. As in the past, National Weather Service meteorologists will be conducting severe thunderstorm spotter training sessions for interested communities from late January through the end of March. These classes should be organized through the local emergency manager, preferably with the coordination of the county emergency manager.

To reserve a date on the calendar, contact Rick Smith by phone at 405-360-5928, or by e-mail at Richard.Smith@noaa.gov.

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of service in the Norman forecast area, only one of which is still active.

On July 24, 1953, Mr. Clemon Clewell of Watonga began taking daily temperature and precipitation observations, as well as periodic river stage readings from the North Canadian River near town. On July 24th of this year, Mr. Clewell took weather observation number 18,262 and became only the seventh person in the Norman forecast area to achieve 50 years of service as a cooperative observer. NWS representatives Forrest Mitchell and Karen Trammell presented the Stoll Award to Mr. Clewell on July 29th.

Prior to receiving the Stoll Award, Mr. Clewell was recognized with two national cooperative observer awards. In 1988, he was presented the John Campanius Holm Award, which is given annually to as many as 25 observers nationwide. This award honors observers for outstanding accomplishments in the field of meteorological observations. In 2001, Mr. Clewell received the Thomas Jefferson Award, which is presented to only five observers each year nationwide. This is the highest award the National Weather Service presents to cooperative observers, recognizing unusual and outstanding achievements in the field of meteorological observations.

When asked if any single weather event in his 50 years of service significantly stood out, Mr. Clewell recalled the 2002 ice storm that crippled much of northern Oklahoma.

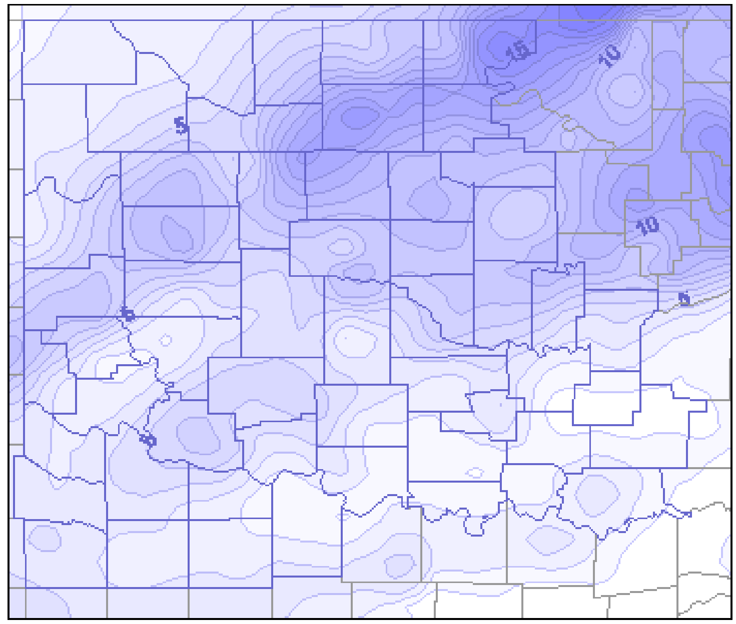
In addition to Mr. Clewell, the other "Dean" of cooperative observers in this area is Mr. Cecil Labude of Chattanooga in southwest Oklahoma. Like Mr. Clewell, Mr. Labude began taking daily observations of temperature and precipitation on January 17, 1951, and is now in his 53rd year of service.

Did You Know?

Fort Supply was the first location in the area to record freezing temperatures this season, dropping to 30 degrees on September 19th and 31 degrees on September 20th.

In Weather History: The Floods of September and October 1986

By Karen Trammell, Student Meteorologist



Cumulative amount of precipitation that fell across Oklahoma and parts of Kansas and Texas from the morning of September 26th to the morning of October 4th, 1986. The contour interval is 1 inch. Courtesy of Maureen Breitbach.

During the last week of September and the first week of October 1986, parts of Oklahoma experienced one of the worst flooding events of recent memory. As much as 20 inches of rain fell during the 9-day period between September 26th and October 4th, resulting in widespread flooding. In northeast Kay County, Hardy, reporting 21.79 inches of rain, received the highest rainfall total during the event.

Runoff from the excess rainfall caused river flooding on most of the major rivers and creeks across the state, including the Arkansas, Caney, Canadian, South Canadian, Cimarron, Washita, Salt Fork, and the North Fork of the Red. Record crests from this event still remain for four locations, the Cimarron River near Dover, Guthrie, and Perkins, and the North Canadian River near Watonga.

The tremendous flooding resulted in several towns being evacuated to minimize casualties. About 30,000 people, most of them in eastern Oklahoma, were evacuated during the event from cities such as Bartlesville, Jenks, and Bixby.

Of the 77 counties in Oklahoma, 52 suffered some degree of flood damage. In all, the flooding caused about 350 million dollars in damage, with 175 million dollars to agricultural losses, 100 million dollars worth to roads and bridges, and 75 million dollars in damage to homes and businesses. Across Oklahoma, 509 residences were destroyed, and 3,957 suffered damage. In addition, several roads and bridges were washed out, including two bridges on Interstate 35.

What caused such catastrophic flooding across this large of an area? Several factors combined to increase the severity of this event. First, across Oklahoma, the last two weeks of September were very wet for this region. The volume of rainfall during this time saturated the soil over a large area, making it difficult for additional rainfall to soak into the ground. Second, a front, stretching from the Texas Panhandle to central Missouri, moved into northern Oklahoma at the end of September and became stationary. This boundary ultimately became the focus for enhanced rainfall amounts across the area, as evidenced by the location of the largest rainfall totals in the map. Lastly, on October 2nd and 3rd, the remnants of Hurricane Paine in the Pacific moved northeastward along the front, bringing tropical moisture to the area. The tropical system and stationary front combined to produce large amounts of rainfall, and runoff from this precipitation was accentuated by the saturated soil conditions.

An extraordinary sequence of events combined to produce one of the worst episodes of flooding in this area. Luckily, these conditions rarely happen here.

Forecaster Forum: The NWS Norman River Forecast Process

By Steve Kruckenberg, Service Hydrologist

The primary goal of the National Weather Service is to mitigate the loss of life and property, and this goal is accomplished in part through the NWS hydrologic program. One of the main components of the hydrologic program is the river forecast process, and a discussion of this process follows.

Hydrologic Responsibilities. The NWS is responsible for issuing river and flood forecasts and warnings. This responsibility is divided between the local Weather Forecast Offices (WFOs) and the River Forecast Centers (RFCs). In general, the WFO is responsible for hydrometeorological data collection, public issuances of flood warnings and other river forecast products, and coordination with emergency management officials, media sources, the public, and other end users. The RFC is accountable for gathering hydrometeorological data from the local WFOs, radars, automated observation systems, and other data sources. The RFC is charged with running hydrological models on a routine basis in order to prepare and issue river forecasts and other guidance products to the WFOs.

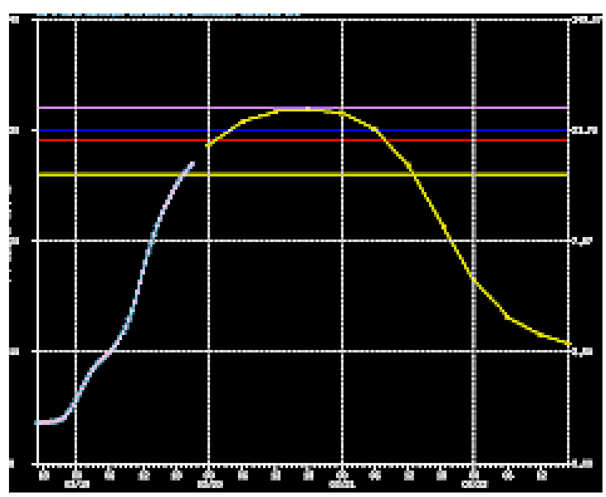
River Forecast Process. The routine daily forecast cycle is based on data collected at 7 am each day from precipitation gages, river gaging stations, and reservoir sites. The WFO collects the data from NWS cooperative observers and automated data collection sites, checks it for accuracy, and disseminates any needed corrections. The data from the WFOs and other sources are collected by the RFC and combined with radar derived precipitation estimates to create hourly precipitation mosaics for the RFC forecast area. Future forecasts of precipitation, called quantitative precipitation forecasts (QPFs), are also created by the RFC staff for use in the river forecast process. These QPFs usually extend to 12 hours into the future.

The RFC forecasters execute hydrologic models to convert the precipitation mosaics and QPFs into runoff for specific drainage basins (runoff zones) along rivers and creeks in the region. These runoff zones are usually defined based on the location of a river gage at the discharge point of the basin. The river gage is used to collect river levels (stages) at specific times, and the data are relayed to the WFO and RFC by automated platforms or human river observers. The hydrologic models calculate the amount of runoff that flows past the river gage site at specific time intervals, usually 6 hours. The river models also use rating curves, which define a relationship of river stage, in feet, to flow, in cubic feet per second, to convert the model runoff to river stage values. Real-time river stage data are compared to model stage data, and adjustments can be made to the river model as needed. This process is repeated for each runoff zone along a particular creek or river, with the river forecaster usually working from upstream to downstream, until the river model has been "balanced".

Once the river model runs are complete, which usually takes place about 930 am, the RFC river forecaster then prepares and issues 6-hour river stage forecasts for the next five days for specific forecast points. A forecast point is usually associated with a particular river gage location and represents a specific reach along a river or creek. Other river gage sites that are used in the hydrologic model, but are not used in river forecasts, are known as data points.

These daily river forecasts are not the only products issued by the RFC. When flooding is imminent or occurring, the RFC will issue new river forecasts on an as needed basis, usually every 6 hours. These forecasts are issued if observed conditions or model data indicate that the river stage has risen or will rise above action stage. The action stage is defined by the local WFO for each forecast point and is usually set about one to two feet below the flood stage, which is the level where flood damage begins to occur. These forecasts are based on forecast cycle times ending at 7 am, 1 pm, 7 pm, or 1 am, and are usually available two to three hours after the data have been collected. The RFC continually monitors the hydrometeorological situation and will update forecasts at any time if river stage trends invalidate the current forecasts or observed rainfall amounts differ greatly from the QPF amounts. The RFC discontinues river forecasting at a particular forecast point once the observed river data indicate that the river or creek has fallen below action stage.

Product Dissemination Process. The WFO receives the RFC products over the NWS communications system. The data are processed by the WFO Hydrologic Forecast System (WHFS). Using computer workstations, the WFO Norman staff view graphical and text displays of the latest stage forecasts and river stage data, and then prepare and issue flood warnings, flood statements, and river statements via the WHFS software. The information contained in these products includes the crest stage and time and may include details of the expected impact upon local communities and associated highways and roads. This information is then disseminated through various media sources and coordinated with local emergency managers. In addition to the warnings and statements issued by the WFO, hydrographs, plots of river stage versus time, are now available in graphical and tabular formats through our Advanced Hydrologic Prediction Services (AHPS) web site at *www.srh.noaa.gov/oun/ahps.*



Example of a hydrograph. The light blue trace shows the observed river gage data, while the yellow trace shows the forecasted data. The yellow, red, blue, and purple lines delineate the different critical stage levels for river flooding forecasting, which are action stage, minor flooding, moderate flooding, and major flooding, respectively.

Weather in Review: The 2003 Labor Day Weekend Heavy Rain and Flooding Event

By Ty Judd, Meteorologist Intern

Very hot temperatures and isolated showers and thunderstorms were common across Oklahoma and western north Texas heading into the Labor Day holiday weekend. Temperatures across the region on August 28th were over 100 degrees. It is not uncommon for these conditions to persist through the first few weeks of September, but this year would be different. The combination of several outflow boundaries, a slow-moving cold front, the remnants of Tropical Storm Grace, weak winds above 10,000 feet, and a relatively uncapped atmosphere would allow for much of the region to see appreciable amounts of rainfall. Due to large predicted rainfall totals, forecasters feared flooding would be a concern, something that would no doubt disrupt football games and vacations on area lakes.

On the days leading up to the event, southerly low-level winds allowed warm, moist, and unstable air to push through Texas and into Oklahoma. A cold front moved south through parts of Kansas, with showers and thunderstorms along and ahead of it. Also, a weak tropical disturbance was located in western portions of the Gulf of Mexico. Forecasts predicted the disturbance would strengthen slightly before making landfall and moving north a few days later.

Conditions were becoming increasingly more favorable for a flooding event across much of the region. As a result, forecasters at the National Weather Service in Norman issued a Flood Watch for locations north and west of Interstate 44. This watch was later expanded to include all of the county warning area.

Pinpointing exactly where the heaviest rain would fall became a challenge for forecasters due to the presence of several outflow boundaries. These boundaries were focusing mechanisms for the heaviest rainfall. By Saturday afternoon, rainfall amounts had already reached two to four inches in central and northern Oklahoma, with lesser amounts received elsewhere.

By Saturday evening, heavy rain was again falling across southwest and central Oklahoma. Thunderstorms formed over southwest Oklahoma and moved to the northeast. Finally, the cold front pushed into northwest Oklahoma, eliminating the heavy rain threat in this area, and the Flood Watch was canceled for west central and northwest Oklahoma.

The tropical disturbance, having strengthened into a minimal tropical storm, made landfall late Saturday evening. As Tropical Storm Grace moved into east Texas and eastern Oklahoma, ample tropical moisture, combined with the slow-moving cold front, allowed for additional heavy rainfall across southern Oklahoma. To this point, southeast Oklahoma had been spared any heavy rainfall, but one to four inches fell during the next 24 hours.

Rainfall totals across Oklahoma and western north Texas for the entire event were quite impressive. Isolated areas in Grant, Jefferson, and Seminole counties received in excess of eight inches. Numerous other locations received three to five inches of rain. Most of west central Oklahoma received less than an inch of rain.

Despite the large rainfall totals, flooding across Oklahoma and western north Texas was minimal. Year-to-date precipitation totals across much of the region were well below average, some by as much as five to ten inches. River levels were running low, pond and lake levels were shrinking, and creek beds were dry. This moisture deficiency allowed much of the rainfall to seep into the ground rather than runoff.

Despite this, a few locations did see some flooding. Flash Flood warnings were issued for Archer, Grant, and Murray counties during the three-day event. Near Medford, almost two feet of flood water crossed U.S. Highway 81, causing the highway to close. In the same vicinity, additional street flooding was reported in Jefferson. In Murray County, Turner Falls State Park was closed early Sunday morning as a result of extensive flooding. South of Davis, U. S. Highway 77 was closed, also. Minor flooding was reported in several other locations across the region, although none of these reports was significant.

Drier and much cooler air made its way into the region Sunday and into Monday, as the cold front pushed into Texas and the remnants of Grace moved to the northeast. This ended the heavy rainfall threat across Oklahoma and western north Texas.

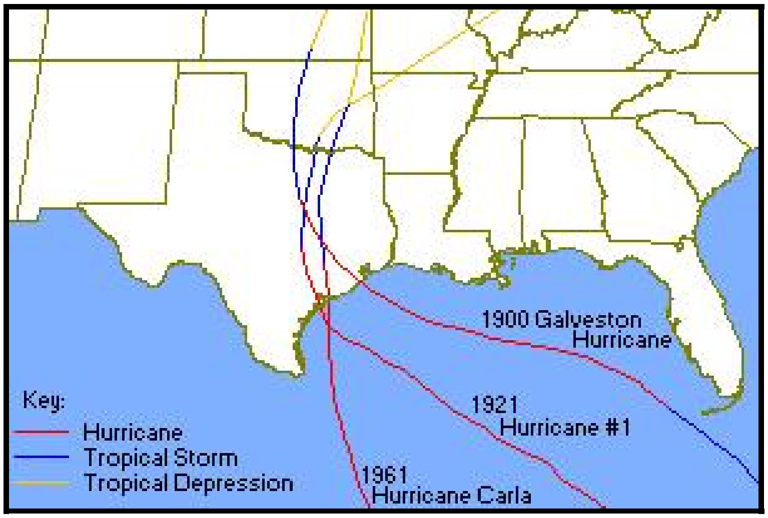
The heavy rainfall and flooding event during the Labor Day holiday provided abundant and much needed rainfall to Oklahoma and western north Texas. Although a few residents and visitors were upset by the soggy holiday weekend, most residents were pleased with the rainfall. Yearly rainfall deficits were not made up by this one event, although significant ground was gained.

Selected Rainfall Totals

Courtney	8.98	Henrietta	3.26
Bowlegs	8.88	Enid	3.13
Medford	8.55	Walters	3.00
May Ranch	6.09	Hardy	2.90
Cement	5.45	Quanah	2.79
Norman	5.22	Retrop	2.63
Lindsay	5.22	Ripley	2.62
Buffalo	4.86	Leedey	2.62
Velma	4.76	Mulhall	2.57
Benjamin	4.62	Martha	2.53
Shawnee	4.59	Freedom	2.52
Archer City	4.50	Centrahoma	2.45
Washington	4.30	Hollis	2.23
Cheyenne	3.98	Atoka	2.17
Wetumka	3.96	El Reno	2.06
Healdton	3.88	Piedmont	1.18
Sulphur	3.82	Arnett	1.98
Ada	3.77	Wichita Falls	1.91
Norge	3.70	Tishomingo	1.84
Prague	3.69	Hobart	1.84
Sterling	3.62	Willow	1.78
Spencer	3.61	Frederick	1.77
Elk City	3.59	Durant	1.77
Kingfisher	3.45	Marietta	1.48
Lahoma	3.43	Carmen	1.41
Foss	3.34	Lake Kemp	0.99

Hurricanes in Oklahoma and North Texas?

By Doug Speheger, Forecaster



Tracks of the three landfalling hurricanes that remained at Tropical Storm strength while moving into north Texas and Oklahoma.

When you think of hurricanes and tropical storms, thoughts of high winds, storm surge, and flooding along the Gulf and Atlantic coasts most often come to mind. During the summer and fall months, it is not uncommon for the remains of Gulf Coast tropical systems to move through the Southern Plains, although generally by this time, the system has morphed into an extratropical cyclone. However, you may be surprised to find out that weather history shows that this region may not be completely immune from the effects of hurricanes and tropical storms.

See if you can answer this trivia question: Since 1900, how many hurricanes have hit Oklahoma or north Texas (north of Interstate 20)? This is not a trick question, as the answer is zero. By the time hurricanes have struck the Texas gulf coast and moved inland as far north as Interstate 20, they have always weakened to below the minimum 74 mile per hour sustained wind speed threshold for a hurricane.

Here is another trivia question that is not so obvious: How many tropical storms have moved into north Texas or Oklahoma since 1900? Would you be surprised if there had been at least one landfalling hurricane that still maintained tropical storm strength as it moved past Interstate 20 into north Texas and Oklahoma? You will have to wait for the final answer to this question.

However, it is important to know that landfalling hurricanes or tropical storms do not have to maintain tropical storm strength this far north to cause problems. Even after the storm has weakened, residents of the area still may have to deal with the remnants of these tropical systems, usually in the form of heavy rain. Back in 1995, Tropical Storm Dean moved on shore near Freeport, Texas, and then moved northwest and stalled near Abilene, Texas. Over 14 inches of rain fell in Vernon, and flooding killed one person near Chillicothe in Hardeman County. Some areas of Oklahoma received 12 to 16 inches of rain as the tropical moisture interacted with a cold front stretched across the state.

Even tropical systems moving into the Southern Plains from the Pacific Ocean can create flooding rains. In 1983, Hurricane Tico came ashore on the Pacific Mexican coast, and the remnants of this storm moved over the Southern Plains, producing up to 17 inches of rain in central and southwest Oklahoma and western north Texas. The Red River rose to its highest recorded stage in the past 40 to 60 years at Burkburnett and Terral. East Cache Creek at Walters and Cottonwood Creek at Guthrie also reached record crests. The remnants of Pacific Hurricane Paine produced as much as 20 inches of rain in north central Oklahoma in October 1986, producing record flooding of the Cimarron River at Dover, Guthrie, and Perkins. In 1981, the remnants of Pacific Hurricane Norma brought storm total rainfall of up to 26.2 inches in Marshall County, Oklahoma, including 16 inches of rain in 16 hours!

Now, for the moment you have all been waiting for: the answer to the second trivia question. How many Tropical Storms have moved into north Texas or Oklahoma since 1900? Three. In 1900, the deadliest United States hurricane moved onto the Texas gulf coast near Galveston, killing an estimated 6,000 people. According to data from the National Hurricane Center, this remained at Tropical Storm strength as it moved into north Texas to the west of Fort Worth, through Oklahoma, passing near Oklahoma City, to the Oklahoma and Kansas border. Although the Galveston storm lost its tropical characteristics as it moved into Iowa, it remained strong enough to be classified as an "Extratropical Storm" as it moved south of Milwaukee, across Michigan, near Montreal, Canada, over Newfoundland, and into the north Atlantic approaching Iceland!

In 1921, Hurricane #1 (hurricanes were not named until 1950) struck the Texas gulf coast as a Category 1 hurricane near Port O'Conner and was still categorized as a Tropical Storm as it moved northward through Dallas and to near Atoka before finally weakening to a Tropical Depression near Eufaula.

In 1961, Hurricane Carla moved onshore near Port O'Conner as a Category 4 hurricane and remained a Tropical Storm as it moved near Austin, through Fort Worth, and into Cooke County, Texas. Carla weakened to an Extratropical Depression as it moved into Oklahoma in the Ardmore and Madill area.

For more information on hurricanes and tropical storms, including track and intensity forecasts, visit the National Weather Service National Hurricane Center's website at *www.nhc.noaa.gov*.

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Cooperative Observer Notes

Fischer & Porter Rain Gage Upgrade Expected Soon

By Steve Smart, Hydrometeorological Technician

It used to be a traffic counter during the 1950s, but for the past few decades, it has been used by the National Weather Service to measure and automatically record rainfall. What is it? It is a Fischer & Porter/Belfort weighing rain gage.

In the NWS, it is simply called a Fischer Porter gage. On a stand, the gage is about five feet tall and looks like a small white missile ready for launch. Each gage consists of two main parts, a rain collecting pan that will hold a total of about 20 inches of rain and an automatic, yet intricate and delicate, weighing and recording mechanism. As rain is collected, the amount is measured to the nearest tenth of an inch using a weight to depth conversion factor. Every 15 minutes, a timer activates the recording mechanism and holes are punched into a strip tape indicating the cumulative amount of collected rainfall. At the beginning of each month, an observer is tasked with removing the tape and sending it to the local NWS office. There, it is examined and forwarded to the National Climatic Data Center (NCDC) for archiving and publication as official Hourly Precipitation Data. There are 35 Fischer Porter gages in the Norman county warning area.

Sound complicated? In many ways it is, but further still, it is an old system in dire need of an upgrade. The NWS is pursuing a modernization plan for this largely out-of-date rainfall recording system. Over the course of the next few years, these gages will be modified to eliminate the complicated and vulnerable weighing and recording mechanisms. The gages will be fitted with electronic data loggers and communications components. Rainfall will be recorded on a device that looks like and is about the size of a car key. A computer chip is located within this key. Each month, observers will simply remove the key and send it to the local NWS office. There, data will be checked with a key reader, downloaded to a computer, and electronically transmitted to NCDC.

Testing and evaluation of the system will commence soon. Four sites within the Norman county warning area are scheduled to have an upgraded unit installed for field testing. After the test sites pass all checks, deployment to the remaining stations will follow.

For the observers, recording and reporting rainfall will be as easy as starting and stopping the engine on a car. Repair and maintenance of the gages by NWS technicians will be decreased, and information can be sent electronically to NCDC, where it can be made available to the public in a matter of days instead of months. This modernization effort will not happen overnight, but ultimately, an updated, efficient, easy-to-use, accurate, and reliable rainfall recording and reporting system will be put in place. This will ensure the vital stream of rainfall information from the Fischer Porter gage network continues to be documented and incorporated into the nation's climate database for years to come.

The modernized Fischer Porter gage requires an extra compartment (right) to house the battery and other circuitry, in addition to the standard gage (left). The actual mounting of the additional compartment may not be as pictured. Photo courtesy of Mike Wyatt.

New Observers

The NWS staff would like to welcome Nancy Antosh, Troy Gipson, Morgan Harris, Bobby Spencer, and Sabra Todd to the NWS Norman cooperative observer program. We look forward to working with all these new observers for many years to come.

Award Recipients

The following observers have recently received Length of Service awards:

Clemon Clewell – 50 years
Seminole Fire Department – 50 years
Archie Thomas – 45 years
George Oller – 30 years
Cliff Buellesfeld – 30 years
Elaine Cunningham – 25 years
Jack and Louise Shaffer – 25 years
Jim Bradshaw – 20 years
Bill Lott – 15 years
Morene Adams – 10 years
Skip Wise – 10 years

Thank you for the hard work and valuable meteorological data you have collected. We look forward to working with all of you for many more years.

Observers Needed

Are you interested in weather? Do you live in Alva, Apache, Canton, Crowell, Hardy, Loco, Pauls Valley, Purcell, or Snyder? Call 405-360-5928 (7 am to 8 pm, 7 days a week) for more information about becoming an official NWS cooperative observer.

Remember to mail the previous month's cooperative observer forms and recording rain gage tapes by the 5th of the month!

South Central and Southeast Oklahoma
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Southwest Oklahoma and Western North Texas
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Check out our text-based and graphical forecasts for your county at *www.srh.noaa.gov/oun*.

Please share this with friends, relatives, and colleagues. Comments and suggestions are always appreciated, by phone at 405-360-5928 or by e-mail at Karen.Trammell@noaa.gov.