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# State of the Climate National Overview September 2011

## National Oceanic and Atmospheric Administration National Climatic Data Center

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#### U.S. Percentage Areas

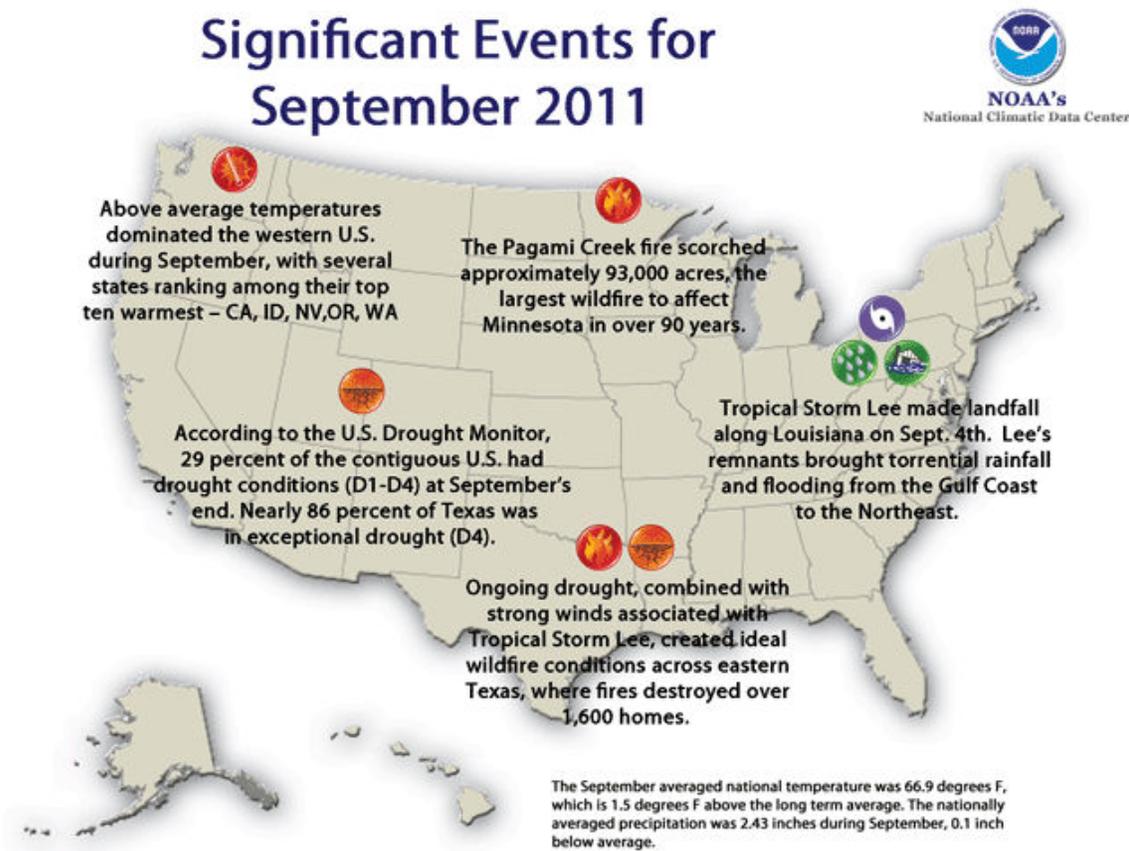
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### National Overview:



### Climate Highlights — September

- During September, a persistent upper-level weather pattern brought above-average temperatures to the western third of the country, below-average temperatures to the central United States, and above-normal temperatures to the Northeast. The remnants of Tropical Storm Lee brought significant rainfall from the Gulf Coast into the Northeast, causing above-normal precipitation for most of the eastern United States, and alleviating drought across parts of the Gulf Coast. Dry conditions prevailed across the Plains and into the Northwest, with the national precipitation average near normal.
- The [average U.S. temperature](#) in September was 66.9 degrees F (19.4 degrees C), which is 1.5 degrees F (0.8 degrees C) above the long-term (1901-2000) average. [Precipitation](#), averaged across the nation, was 2.43 inches (61.7 2 mm). This was 0.10 inch (1.15 mm) below the long-term average, with large [variability between regions](#). This monthly analysis is based on records dating back to 1895.
- [Above-normal temperatures](#) dominated the western United States, with five states — [California](#), [Idaho](#), [Nevada](#), [Oregon](#), and [Washington](#) — having one of their ten warmest Septembers on record.
- A persistent upper-level low pressure system was associated with 14 states having [below-normal September temperatures](#) across the central United States. [Mississippi](#) tied its ninth coolest September on record.
- Eight states in the Northeast had [September temperatures](#) among their ten warmest — [Connecticut](#), [New Hampshire](#), [New Jersey](#), [New York](#), [Maine](#), [Massachusetts](#), [Rhode Island](#), and [Vermont](#)

- [Precipitation averaged across the Nation](#) during September was near normal, with most of the rainfall during the month coming from Tropical Storm Lee. Lee made landfall along the Louisiana coast on September 4<sup>th</sup>, and moved along a frontal boundary into the Ohio Valley and eventually into the Northeast. Rainfall totals over 10 inches (254 mm) were widespread along the track of the storm.
- A string of [eleven adjacent states](#) from Louisiana to New York had a top ten wet September, partially attributable to Tropical Storm Lee. Across [Pennsylvania](#), 9.71 inches (246.63 mm) of rain fell during the month, 6.25 inches (158.64 mm) above average, marking the wettest September on record for the state. The [Northeast climate region](#) had its second wettest September on record, with 6.70 inches (170.18 mm). This total is shy of the record of 8.04 inches (204.22 mm) from 1999 when Hurricane Floyd impacted the region.
- [Dry conditions](#) prevailed across the Plains states. [Kansas](#), [Minnesota](#), [Montana](#), [South Dakota](#), and [Texas](#) had precipitation totals during September rank among their ten driest since 1895. [Nine other states](#) from the Plains to the Northwest also had below-normal precipitation totals during the month.
- Record breaking drought, combined with strong winds, created ideal wildfire conditions across eastern Texas the first half of the month. Three large wildfires burned approximately 94,000 acres (38,040 hectares) and destroyed over 1,600 homes during September.
- At the end of September, about a tenth of the United States remained in the worst category of drought, called [D4 or exceptional drought](#), which has remained fairly constant since early summer 2011. Nearly all (97%) of Texas was in [extreme to exceptional \(D3-D4\) drought](#), which is a record, and nearly four-fifths (79%) of Oklahoma was in [extreme to exceptional drought](#).
- Two areas of the southern U.S. experienced the most severe drought in the 1900-present record, according to the Palmer Hydrological Drought Index (PHDI). The two regions having the most severe PHDI on record are eastern New Mexico into western Texas and southwest Oklahoma, and northwestern Louisiana into adjacent eastern Texas. These two regions account for 4.2 percent of the area of the contiguous U.S.
- [A list of select September temperature and precipitation records can be found here.](#)

### Climate Highlights — July-September (3-month period) and Year-to-Date period

- During the [July-September period](#), the United States as a whole experienced much above normal temperatures. The nationally averaged temperature of 73.4 degrees F (23.0 degrees C) ranks as the second warmest July-September on record.
- [New Mexico](#) and [Texas](#) had record warm temperatures during the three month period, with temperatures of 3.5 degrees F (2.0 degrees C) and 4.2 degrees F (2.3 degrees C) above average, respectively. [Twenty-two additional states](#) had three-month average temperatures in the top third of their historical record. Six states across the central and southeastern United States had [near-normal temperatures](#) during the period, while no state had below-normal temperatures.

- [July-September precipitation](#) for the United States was 0.72 inch (18.40 mm) below normal, but with significant regional variability. [Below-normal precipitation](#) was widespread across the central and northwestern United States while [wetter-than-normal conditions](#) were prevalent across the Northeast. [Vermont](#), [New Jersey](#), and [Maryland](#) had a record wet July-September. The [Northeast climate region](#) was also record wet during the period, with 17.62 inches (447.55 mm) of precipitation.
- For the first nine months of 2011, the [U.S. average temperature](#) was 1.0 degree F (0.6 degrees C) above average. [Above-normal temperatures](#) were anchored across the Southern Plains and along the Eastern Seaboard, while parts of the Northern Plains and Northwest were cooler than average. The [Texas](#) statewide average temperature for January-September tied as record warm at 70.8 degrees F (21.6 degrees C), 2.9 degrees F (1.6 degrees C) above average.
- Precipitation totals were mixed for January-September 2011, and the nationally averaged value was 0.54 inch (13.76 mm) below average. [Above-normal precipitation](#) was widespread across the northern tier of the country, particularly the Northeast, while [below-normal precipitation](#) was reported across the southern tier.
- [New Mexico](#) and [Texas](#), as well as the [South climate region](#), all experienced record dry conditions during January-September. Conversely, [Vermont](#), [New York](#), [New Jersey](#), [Pennsylvania](#), [Ohio](#), and the [Northeast climate region](#) were record wet during the nine-month period.
- The [Regional Climate Extremes Index](#), which is sensitive to extremes in temperature, rainfall, dry streaks, drought, and tropical cyclones, indicated that for the Northeast climate region an area nearly three times the average value was affected by extreme climate conditions for the year-to-date period. For the South climate region, the Regional Climate Extremes Index was over twice the average value. The values both represented the second highest values for the January-September period. For the Northeast, contributing factors included a large area of warm minimum temperatures, wet PDSI, 1-day precipitation totals, and days with precipitation. For the South, contributing factors included a large area experiencing warm minimum and maximum temperatures, dry PDSI, and days without precipitation.
- The warm season (April-September) 2011 [Residential Energy Demand Temperature Index \(REDTI\)](#) is 100.0, which is the highest warm season value in 117 years. (The period of record mean is 52.0). The REDTI model indicates that the national residential energy consumption was 10.3 percent above the mean for the period of record. The correlation between energy usage and the REDIT is 0.51.
- [Updated information on the U.S. Billion Dollar Weather/Climate Disasters during 2011.](#)

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## Alaska Temperature and Precipitation:

- [Alaska](#) had its 24<sup>th</sup> warmest September on record, with a temperature 1.3°F (0.76°C) above the 1971–2000 average.
- [Alaska](#) had its 47<sup>th</sup> warmest July-September on record, with a temperature 0.3°F (0.17°C) below the 1971–2000 average.
- [Alaska](#) had its 38<sup>th</sup> warmest year-to-date period on record, with a temperature near

the 1971–2000 average.

- [Alaska](#) had its 26<sup>th</sup> driest September since records began in 1918, with an anomaly that was 19.0 percent below the 1971–2000 average.
- [Alaska](#) had its 29<sup>th</sup> wettest July–September on record, with an anomaly that was 10.8 percent above the 1971–2000 average.
- [Alaska](#) had its 37<sup>th</sup> driest year-to-date period on record, with an anomaly that was 0.8 percent above the 1971–2000 average.

For additional details about recent temperatures and precipitation across the U.S., see the [Regional Highlights](#) section below and visit the [Climate Summary page](#). For information on local temperature and precipitation records during the month, please visit NCDC's [Records page](#). For details and graphics on weather events across the U.S. and the globe please visit [NCDC's Global Hazards page](#).

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## Regional Highlights:

*These regional summaries were provided by the six [Regional Climate Centers](#) and reflect conditions in their respective regions. These six regions differ spatially from the [nine climatic regions of the National Climatic Data Center](#).*

[Northeast](#) | [Midwest](#) | [Southeast](#) | [High Plains](#) | [Southern](#) | [Western](#)

### **Northeast Region:** *(Information provided by the [Northeast Regional Climate Center](#))*

- September was the sixth consecutive month with above normal temperatures in the Northeast. The mean of 63.7 degrees F (17.6 degrees C) was 2.9 degrees F (1.6 degrees C) above normal. It was the Northeast's 11th warmest September since 1895. Each of the states had means that were above normal for the third month in a row, with departures in the north a few degrees greater than in the southern states. Vermont's average of 62.0 degrees F (16.7 degrees C) was 4.8 degrees F (2.7 degrees C) warmer than normal, while West Virginia's average of 65.1 degrees F (18.4 degrees C) was only 1.1 degrees F (0.6 degrees C) above normal. It was the 2nd warmest September since 1895 in Connecticut, the 3rd warmest in New Hampshire and Vermont, and the 4th warmest in Massachusetts.
- September was a wet month in the Northeast, with measurable rain falling somewhere in the region on all but a few days. Overall, the Northeast averaged 6.66 inches (169 mm), which was 170 percent of normal. It was the 2nd wettest September in the Northeast since record keeping began in 1895. Eleven states had totals that were above normal. Pennsylvania's total of 9.71 inches (247 mm) was 239 percent of normal and Maryland's total of 9.55 inches (243 mm) was 232 percent of normal. It was the wettest September in 117 years in Pennsylvania and the 2nd wettest in Maryland. Maine, at 88 percent, was the only state with below normal rainfall. September was one of six months with above normal precipitation in 2011; three of those months, April, August and September, placed 2nd wettest since 1895. When totals from August and September were combined, Maryland, New Jersey, New York, Pennsylvania, Vermont, and the Northeast saw their wettest August–September in 117 years. When January through September precipitation totals were combined, it was the wettest period on record in the Northeast, New Jersey, New York, Pennsylvania, and Vermont. Many new precipitation records were established, including the August

through September total of 29.58 inches (75.1 cm) at Philadelphia. Their previous record for the same period was 18.49 inches (47.0 cm) in 1882. January through September totals at Binghamton, NY (52.70 inches, 133.9 cm) and Harrisburg, PA (61.82 inches, 157.0 cm) have already topped their all-time yearly totals.

- The ground was already saturated from abundant rainfall in August when the remnants of Tropical Storm Lee merged with a stalled front on September 5th. The front stretched from New England to the Gulf Coast and had produced heavy rain before the tropical influence. As the storm moved along the front from the 5th to the 8th, rainfall totals of 6-9 inches (152-229 mm) fell throughout the Susquehanna and Delaware River Basins. A narrow band from central Pennsylvania to the southern tier of New York saw up to, and, in a few locations, over 12 inches (305 mm) from this event. The ensuing flooding along the Susquehanna River and its tributaries reached historic proportions. Floodwaters in Binghamton, and Owego, NY, and Waverly and Wilkes-Barre, PA crested above the record levels set in June 2006. The Swatara Creek at Hershey, PA crested at 26.8 feet (8.2 m), topping the previous record by more than 10 feet (3.0 m). In anticipation of the flooding, over 100,000 Northeast residents were evacuated in Binghamton, Wilkes-Barre and other affected communities, including 1,000 Maryland residents near the Conowingo Dam. Operators there opened its spill gates to lessen the pressure on the dam. Cities, towns, suburbs, roads and fields were under water. At the height of the event, major highways and minor roads, eroded by rushing water or blocked by mudslides, were closed; one hundred roads and 30 bridges in Pennsylvania remained closed at the end of the month. While the main impact from this event was felt in Pennsylvania and New York, parts of New Jersey and Connecticut that were flooded during Irene's visit in August saw flooding once again from Lee's rainfall. Fifteen counties in New York and 42 counties in Pennsylvania were declared disaster areas, making them eligible for federal aid. On September 17th, New York's governor announced additional assistance for flood victims, including \$2.4 million to farms affected by Irene and Lee and up to \$16 million for a program to provide temporary work to unemployed New Yorkers to assist in rebuilding and reconstruction efforts. The total cost of the damage caused by the flooding has not been determined, but one initial estimate, from Dauphin County, PA, home to Harrisburg, was \$151 million. In that county, 294 homes or businesses were destroyed, more than 1000 homes/businesses had major damage, and more than 1200 buildings suffered minor damage. In Anne Arundel County, MD, road damage alone was estimated at \$1.5 million.

For more information, please go to the [Northeast Regional Climate Center Home Page](#).

**Midwest Region:** *(Information provided by the [Midwest Regional Climate Center](#))*

- September 2011 started off where summer left off - hot. A heat wave the first three days of the month set record maximum temperatures across the region, with a number of locations reaching maximums in excess of 100 degrees F (38 degrees C). Temperatures the first three days of September were well above normal across the entire Midwest, with departures from 9 degrees F to 14 degrees F (5 degrees C to 7.8 degrees C) above normal from Missouri east-northeast to Ohio. However, that was the last of the unseasonably warm weather for most of the region. Temperatures the remainder of September were 4 degrees F to 5 degrees F (2.2 degrees C to 2.8 degrees C) below normal across the central Midwest, dropping to near normal on the periphery of the region from northern Minnesota around to eastern Ohio. This same

pattern was reflected at the end of the month, with average daily temperatures for September ranging from 2 degrees F to 4 degrees F (1.1 degrees C to 2.2 degrees C) below normal in the central Midwest, and near normal across most of Minnesota, northern Wisconsin, Michigan, and Ohio.

- For most of September it was dry across the Midwest, with the exception of along and south of the Ohio River. That changed the last ten days of the month, when an upper level low stalled over the southern Great Lakes and brought frequent and sometimes heavy rain to the eastern half of the region. Precipitation the last ten days of the month was 200 to more than 400 percent of normal from Wisconsin and Illinois eastward. West of the Mississippi River, however, rainfall was well below normal and existing areas of drought saw little relief. For the entire month, precipitation was normal to 300 percent of normal from eastern Wisconsin and Illinois east through Ohio and Kentucky. Most of Minnesota, Iowa, and northern Missouri received less than 50 percent of normal precipitation.
- Smoke from a wildfire in northern Minnesota was transported south into Wisconsin, Illinois, and Indiana on September 13th by strong northwest surface winds. The smoke reduced visibility in northern Illinois and was easily detected as far south as central Illinois and Indiana. The upper level low over the central U.S. at the end of the month generated some unusual weather. On September 24th there were numerous reports of waterspouts over Lake Michigan from Milwaukee south to Chicago. Thunderstorms produced a few weak tornadoes in Indiana, Kentucky, and Michigan during the week. On September 29th, a strong cold front swept through the Midwest and was followed by very windy, cool weather. Winds gusted to between 50 and 60 mph across the northern half of the region, and there were numerous power outages and reports tree damage from the winds. A wind gust of 68 mph was reported at a crib in southern Lake Michigan. The strong north-northwest winds combined with a 200 mile fetch over the lake to generate waves to 25 feet over southern Lake Michigan. In northwestern Iowa, firefighters had difficulty responding to the many field fires resulting from very dry conditions and the strong winds.
- At the end of September freezing temperatures had generally been recorded as far south as central Iowa, Wisconsin, and the northern half of Lower Michigan. There were scattered occurrences south through central Illinois, and through Indiana to the Ohio River. A hard freeze (28 degrees F (-2.2 degrees C)) had occurred in northeastern Minnesota, northern Wisconsin, and northern Lower Michigan.

For details on the weather and climate events of the Midwest, see the weekly summaries in the [MRCC Midwest Climate Watch page](#).

**Southeast Region:** *(Information provided by the [Southeast Regional Climate Center](#))*

- Mean temperatures in September ranged from 1-4 degrees F (0.5-2.2 degrees C) below average across Alabama, Georgia, and the Florida Panhandle to 1-3 degrees F (0.5-1.6 degrees C) above average across Virginia, the Carolinas, and the Florida Peninsula. Monthly temperatures were below average across Puerto Rico and the U.S. Virgin Islands. Miami, FL recorded its third warmest September in a record extending back to 1895. September 5th marked the end of an impressive streak of 109 consecutive days of 90 degrees F (32.2 degrees C) or higher temperatures at the station on the University of South Carolina campus in Columbia. This shattered the

previous record of 63 consecutive days set back in 1986. A stretch of unseasonably cool weather was observed from the 6th to the 10th of the month in the wake of Tropical Storm Lee. During this period over 150 daily minimum and 200 daily low maximum temperature records were either tied or broken across southern portions of Alabama and Georgia and across the Florida Panhandle. Another stretch of cool weather was observed more broadly across the region from the 16th to the 19th of the month following the passage of a cold front.

- As in August, monthly precipitation was generally below normal across the Southeast, except in areas affected by tropical cyclone activity. Tropical Storm Lee dropped between 8-13 inches (203.2-330.2 mm) of rain across central Alabama, northwest Georgia, western North Carolina, and much of Virginia from the 3rd to the 9th of the month. Major flooding was reported along several rivers and creeks across central and southern Alabama, forcing numerous high water rescues. Significant flash flooding was also reported in Birmingham, AL, which recorded its second wettest September on record with 12.14 inches (308.4 mm) of precipitation. Nearby Tuscaloosa recorded its wettest September on record and came within 0.01 inches of tying its all-time 24-hour rainfall total of 6.44 inches (163.6 mm) on the 5th of the month in a record extending back to 1948. The heavy rain from Lee coupled with the rainfall from Hurricane Irene last month contributed to an estimated \$10 million in damage to roads and bridges across northern Virginia. On the 12th and 13th of the month, Hurricane Maria dropped up to 10 inches (254.0 mm) of rain across Puerto Rico, triggering several landslides along the eastern slopes of the island. Cape Hatteras, NC recorded 14.23 inches (361.4 mm) of rain for the month, making it the fifth wettest September on record. Most of this rainfall was associated with thunderstorms in the middle of the month. On the 25th, nearly 3 inches (76.2 mm) of rain fell in just 30 minutes in downtown Columbia, SC, resulting in major urban flooding and property damage. The driest locations across the Southeast (less than 50 percent of normal) were found across eastern North Carolina, southern Georgia, and portions of northern Florida.
- There were 331 reports of severe weather across the Southeast in September, including 11 confirmed tornadoes. These tornadoes were weak (EF-0 to EF-1) and nearly all were associated with Tropical Storm Lee. Some notable events, all occurring on the 5th of the month, included an EF-1 that damaged more than 600 homes across Cherokee County, GA; an EF-1 in Wilkes County, NC that damaged several outbuildings in Stone Mountain State Park; and an EF-1 in Carroll County, VA that resulted in two injuries when several gas pumps blew into a local gas station. On the 29th of the month, a man was injured in Tyrell County, NC when an EF-1 tornado lifted his mobile home off its foundation. Storm surge and high winds from Tropical Storm Lee also caused structural damage along the Alabama coast and contributed to at least one drowning death.
- The beneficial rain from Tropical Storm Lee helped eliminate several areas of drought across the western and northern fringes of the region. In particular, areas of severe drought (D2) were eliminated across southern Alabama and northwest Georgia. Conversely, the region of extreme drought (D3) expanded into parts of northern South Carolina. Reservoir levels continued to fall across parts of Georgia, where rainfall deficits have been the greatest, and water restrictions were implemented in several more communities in the southern part of the state. For the second time this year, a locally-acquired case of dengue fever was confirmed in Miami-Dade County, FL in

September. This disease, which is carried by mosquitoes and thrives in warm and wet conditions, is now endemic in the county.

For more information, please go to the [Southeast Regional Climate Center Home Page](#).

**High Plains Region:** *(Information provided by the [High Plains Regional Climate Center](#))*

- September 2011 temperatures were generally below normal in the eastern portion of the High Plains Region and above normal in the western and northern areas of the Region. Temperature departures were up to 6.0 degrees F (3.3 degrees C) below normal in Kansas, Nebraska, and South Dakota. The cooler than normal temperatures allowed many locations across eastern Nebraska to be ranked in the top 10 coolest Septembers on record. Lincoln, Nebraska had its 6th coolest September with an average temperature of 61.5 degrees F (16.4 degrees C) which was 4.5 degrees F (2.5 degrees C) below normal (period of record 1887-2011). Lincoln's coolest September occurred in 1993 with an average temperature of 59.9 degrees F (15.5 degrees C). Meanwhile, Colorado, Wyoming, North Dakota, and pockets of western South Dakota and the panhandle of Nebraska had temperature departures which were up to 6.0 degrees F (3.3 degrees C) above normal. Some locations in Wyoming ranked in the top 10 warmest Septembers on record. For instance, Yellowstone National Park, Wyoming tied for its 6th warmest September on record with an average temperature of 57.0 degrees F (13.9 degrees C) (period of record 1894-2011). The warmest September occurred in 1990 with an average temperature of 58.9 degrees F (14.9 degrees C).
- September was a quiet month for the High Plains Region. Severe weather was reported on only a few days this month and the majority of the Region was dry. Much of Kansas, Nebraska, South Dakota, North Dakota, and Wyoming received only 50 percent of normal precipitation and many areas received less than 25 percent of normal precipitation. Several of these locations ranked in the top 10 driest Septembers on record and a few even broke records. For instance, Sioux Falls, South Dakota had its driest September on record with only 0.20 inches (5 mm) of precipitation (period of record 1893-2011). The old long-standing record of 0.21 inches (5 mm) occurred in 1899. Boysen Dam, Wyoming, which is located in the central part of the state, received no precipitation this month and tied for its driest September (period of record 1948-2011). Interestingly, the other driest September occurred just last year (2010) which makes two Septembers in a row without precipitation. Pockets of Colorado and North Dakota had precipitation which was more than 150 percent of normal. This month's wet location was Colorado Springs, Colorado. Colorado Springs had its wettest September on record with 5.91 inches (150 mm) of precipitation (period of record 1894-2011). The old record occurred in 2008 with 4.97 inches (126 mm). An impressive 4.50 inches (114 mm) of the monthly total fell in one day, September 14th. Not only did this set a record for the day, the September 14 precipitation set a new record for the highest one-day precipitation total on record (for any day of any month)! The old record of 4.29 inches (109 mm) occurred on September 11, 2008.
- There were many changes to the U.S. Drought Monitor this month. Areas of improvement include northeastern Colorado and the Black Hills region of South Dakota where abnormally dry conditions (D0) were erased. East central Kansas had a one category improvement from extreme drought (D3) to severe drought (D2) while a

pocket of exceptional drought (D4) in south-central Colorado was downgraded to D3. D0 expanded to include much of eastern South Dakota and two pockets of moderate drought (D1) expanded there as well. In addition, an area of D0 expanded through parts of central Nebraska and the panhandle. Meanwhile, the ongoing drought in eastern Colorado and western Kansas remained largely unchanged. According to the U.S. Seasonal Drought Outlook drought conditions in western Kansas and eastern Colorado were expected to improve somewhat. The drought conditions in central Colorado, western Kansas, and eastern South Dakota were expected to persist, while drought conditions in western Colorado were expected to develop

For more information, please go to the [High Plains Regional Climate Center Home Page](#).

**Southern Region:** *(Information provided by the [Southern Regional Climate Center](#))*

- With the exception of Texas, fall in the Southern Region began as a contrast to the past several months, in that most of the region experienced cooler than normal temperatures. The state average September temperature in Texas was 77.80 degrees F ( 25.44 degrees C), or the nineteenth warmest on record (1895-2011). Stations in the southern half of the state averaged between 2 to 5 degrees F (1.11 to 2.78 degrees C) above normal, while stations in the northern half of the state averaged between 0 to 3 degrees F (0 to 1.67 degrees C) above normal. The highest negative temperature anomalies were observed in northern Arkansas, where many stations averaged between 2 and 5 degrees F ( 1.11 to 2.78 degrees C) below monthly expected values. This was also the case in central Mississippi and in northeastern Oklahoma. Elsewhere, temperatures were only slightly cooler than normal. For Arkansas, it was the twentieth coolest September on record (1895-2011) with a state average temperature for the month of 70.30 degrees F (21.28 degrees C). In Mississippi, it was the ninth coolest September on record (1895-2011), with a state average temperature of 72.30 degrees F (22.39 degrees C). Tennessee and Louisiana reported state average temperatures of 68.30 degrees F (20.17 degrees C) and 75.90 degrees F (24.39 degrees C), respectively. Oklahoma recorded a state average temperature of 71.4 degrees F (21.89 degrees C). State rankings for Oklahoma, Tennessee and Louisiana are as follows: thirty-sixth coolest on record (1895-2011) for Oklahoma, thirtieth coolest on record (1895-2011) for Tennessee, and thirty-second coolest on record (1895-2011) for Louisiana.
- September precipitation totals in the Southern Region varied dramatically from west to east. Conditions were quite dry in Texas, Oklahoma and Arkansas, with most stations reporting only between 5 to 50 percent of normal. By contrast, conditions were quite wet in Tennessee, Mississippi, and Louisiana, with a bulk of stations reporting between 150 to 200 percent of normal precipitation. This was primarily due to Tropical Storm Lee, which stalled off the Gulf Coast in the early part of the month and eventually made its way inland across the eastern half of the Southern Region. The storm dumped copious amounts of rainfall. Areas within the Florida parishes of Louisiana reported up to 10 inches (254.00 mm) of rainfall, however, most of the values reported in the Southern Region varied from 3 to 7 inches (76.20 to 177.80 mm). By month's end, Louisiana recorded a state average precipitation value of 6.93 inches (176.60 mm). This equates to the tenth wettest September for the state on record (1895-2011). Both Mississippi and Tennessee reported their seventh wettest September on record (1895-2011). Mississippi averaged 7.67 inches (194.82 mm) for

the month, while Tennessee averaged 6.73 inches (170.94 mm) for the month. Drought ridden Texas remained dry for the month. The state averaged 1.08 inches (27.43 mm), which is the first time since May that the state averaged more than an inch of precipitation. However, it was still the seventh driest September on record (1895-2011) for the state. For Oklahoma, it was the twentieth driest September on record (1895-2011) with a state average precipitation value of 1.72 inches (43.69 mm). Arkansas experienced its thirty-seventh driest September on record (1895-2011) with a state average precipitation value of 2.63 inches (66.81 mm).

- Due to dry conditions in Arkansas, Oklahoma and Texas, drought conditions have changed very little over the western half of the Southern Region in the past month. Approximately 53 percent of the Region remains in exceptional drought, most of which is Texas and western and central Oklahoma. Exceptional drought is also still persisting in northwestern Louisiana. Drought conditions did, however, improve in Tennessee, Mississippi and southern/southeastern Louisiana. In the case of the latter, southern and southeastern Louisiana is now drought free. This is also the case for most of Mississippi. In Tennessee, a small area of moderate drought remains in the northwestern corner of the state.
- Several tornadoes touched down on September 3 and 4, in southern Louisiana and southern Mississippi. There were no reported injuries or fatalities, and damage was mostly limited to power lines and trees. One mobile home was turned over in Hancock County, Mississippi.
- According to the Star-Telegram, drought is having a big impact on tree health in northern Texas. It is reported that many trees in Trinity Park, are losing leaves and turning brown. It is further reported that in Houston, approximately ten percent of the trees are expected to die. A high mortality rate is also being seen in Hill County.
- On September 1, 2011, Tropical Storm Lee formed just off the southern coast of central Louisiana. The storm moved very slowly toward the coast. On September 3, 2011, the storm stalled just before landfall. The stalling of the storm allowed for some minor intensification, but more importantly, the stalled caused rainfall amounts to be quite high in the southeastern portion of the state. The storm finally made landfall in south central Louisiana on September 4, 2011. Lee continued to move slowly, moving north east. Shortly after landfall, Lee was downgraded to a tropical depression, but the rains did not let up. The storm passed through southern and central Mississippi, and then through eastern Tennessee. By the time the storm had moved out of the Southern Region, the storm had dumped up to 10 inches (254.00 mm) of rainfall in southeastern Louisiana, 3 to 10 inches (76.20 to 254.00 mm) of rainfall in central and southern Mississippi, and approximately 3 to 7 inches (76.20 to 177.80 mm) of rainfall in central and eastern Tennessee. Storm surges from Lee caused several homes to be flooded in parts of Slidell, Louisiana. Lee also caused major power outages in New Orleans, with approximately 38,000 customers losing power. Widespread flooding was also reported in Mississippi, in particular, in Hancock and Jackson Counties.

For more information, please go to the [Southern Regional Climate Center Home Page](#).

**Western Region:** *(Information provided by the [Western Regional Climate Center](#))*

- September was generally dry in the West with isolated pockets of high precipitation in the southern part of the region due to a strong mid-month monsoon surge.

Temperatures ranged from near normal and slightly below normal on the coast and in the Southwest to record breaking in the Northwest.

- Temperatures along the California and southern Oregon coast remained below normal as has been the case all summer. The Santa Barbara, California airport had one of the greatest negative temperature departures from normal this month in the West. Average temperature was 62.9 F (17.2 C), the 8th coolest September temperature in the record beginning in 1941.
- Many high temperature records were set throughout the Northwest, especially along the Oregon-Washington border, Northern California, Idaho and Wyoming. Northern Nevada and Montana also saw several high temperature ties and records. Seattle-Tacoma Airport experienced a streak of nine consecutive 80 F (26.6 C) and greater days ending September 11, breaking a record of eight consecutive days in 1989. The average temperature for the month at Seattle-Tacoma was 64.0 F (17.8 C), the 5th warmest September on record since 1948. Pullman, Washington had a monthly average of 62.7 F (17 C), the 4th warmest September on a record beginning in 1941. Nearby Lewiston, Idaho experienced its 3rd warmest September on record with a monthly average of 69.4 F (20.7 C). Phoenix saw several high temperatures tied, as did Las Vegas; though near and slightly above normal temperatures prevailed in Arizona, New Mexico, southern Nevada, Utah and Colorado.
- The Southwest monsoon season is typically taken as ending September 30, allowing rainfall totals for the season to be compared to previous years. The monsoon activity was slow for most of the season (since June 15). A final burst in mid-September brought record rainfall to Tucson, Arizona as well as significant precipitation to the Four Corners region into central Colorado. September 15 saw 2.83 in (71.9 mm) at the Tucson Airport, breaking a daily record of 1.18 in (29.9 mm) set in 1944. The same station received 5.6 in (142.2 mm) of precipitation for the month, the wettest September on record. The monsoon season total for Tucson, 8.62 in (218.9 mm), ranks as the 10th wettest in a record dating back to 1895.
- Colorado Springs also experienced intense precipitation due to the monsoon surge. On September 14, Colorado Springs received a daily record 4.5 in (114.3 mm), shattering the previous record of 0.46 in (11.68 mm) set in 1967. Their September was 5.91 in (150.1 mm), surpassing the previous 1984 record of 5.01 in (127.2 mm) in a record dating from 1948.
- The Northwest, northern Nevada, and California remained generally dry and at below average precipitation values due to persistent upper level high pressure throughout the month that held precipitation to the north. Salem, Oregon received 0.35 in (8.9 mm) of total precipitation, the 9th driest September since records began at that location in 1893. Very few locations in the Northwest received above average precipitation. One such station, Quillayute on Washington's Olympic Peninsula, received a total of 7.68 in (195 mm) for the month, the 9th wettest September at this location and 167% of the average rainfall of 4.59 in (116.6 mm).
- September (all month) Northwest Wildfires: Large acreages of lightning caused fires burned throughout the month in Montana, Oregon, and Idaho. In some areas, especially Missoula, MT, extensive smoke and haze to populated areas and reducing air quality and visibility.

- September (all month), Severe drought: The Southwest experienced moderate to exceptional drought during the month of September, with only little relief provided by monsoon rains in the first half of the month. The severity of the drought was reduced in parts of Arizona and southern Colorado by the end of the month; severe drought conditions persist in New Mexico.

See [NCDC's Monthly Records web-page](#) for weather and climate records for the most recent month. For additional national, regional, and statewide data and graphics from 1895-present, for any period, please visit the [Climate at a Glance](#) page.

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**PLEASE NOTE:** All of the temperature and precipitation [ranks](#) and values are based on preliminary data. The ranks will change when the final data are processed, but will not be replaced on these pages. Graphics based on final data are provided on the [Temperature and Precipitation Maps](#) page and the [Climate at a Glance](#) page as they become available.

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## Citing This Report

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