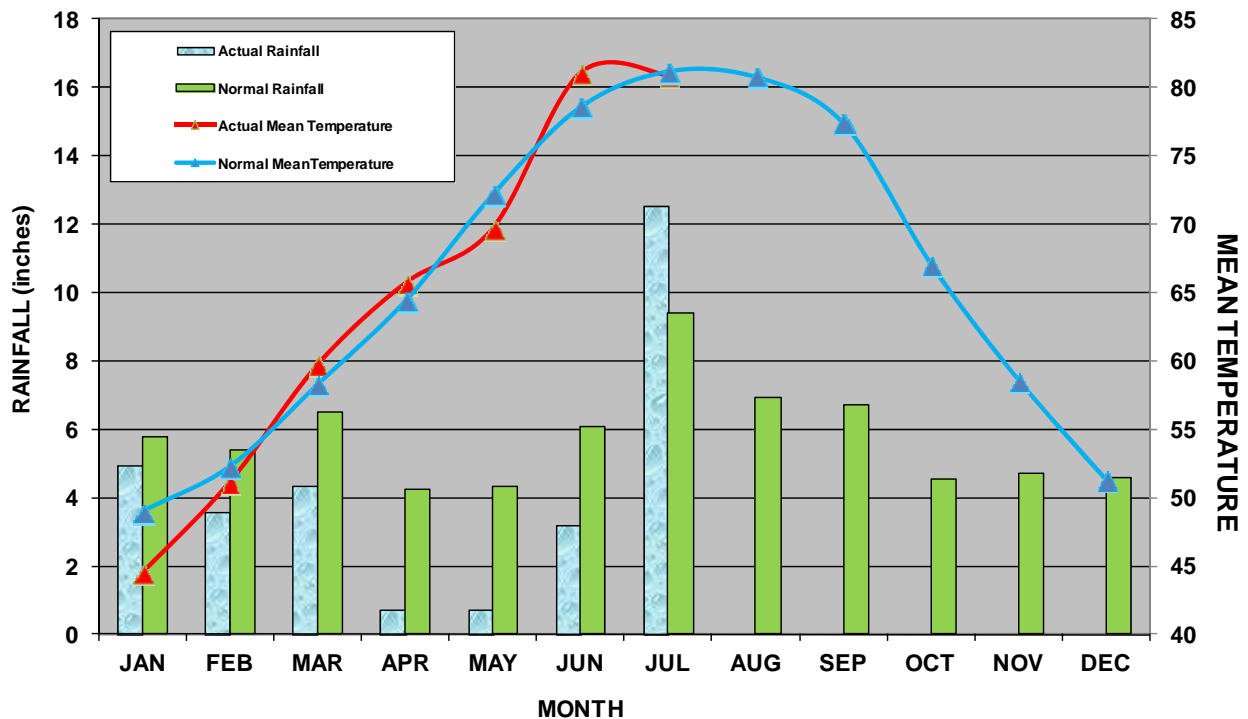


## Introduction

July 2011 produced normal temperatures and much above normal precipitation for Niceville, FL (see graph below). Exceptional drought (D-4), the highest level of drought severity peaked during the first ten days of the month as high temperatures reached into the mid to upper 90's. On 2<sup>nd</sup> July, a severe thunderstorm during the early afternoon hours produced 60 m.p.h. winds and 1 inch diameter hail between Eglin's Range Road 205 and Rock Hill Road (Walton County, FL). Other severe thunderstorms downed power lines in Pace (Santa Rosa County, FL) and damaged mobile homes in Nokomis (Escambia County, AL) and collapsed a roof on a gasoline service center in Loxley (Baldwin County, AL). Temperatures averaged above normal as an upper level low crossed the central Gulf of Mexico. At midmonth a significant weather pattern developed with a weak stationary front to the north of the Florida panhandle. Over the course of the 15-17 July period, a surface trough formed as high tropical moisture pooled over the local area and generated torrential rainfall. Along coastal northwest Florida, 3 to over 13 inches of rainfall fell. A weather observer in Destin measured 13.59 inches during this 72 hour event. ***Eglin AFB reported the second highest all-time 24-hour rain total of 9.56 inches on the 16<sup>th</sup> July.*** Pensacola (Escambia County, FL) set a record rainfall total for 17<sup>th</sup> July with 4.39 inches, breaking the previous record (3.04 inches) set back in 1988. Due to the long rainfall duration and extremely dry soil conditions, no significant flooding was reported. Daytime heating was suppressed into the upper 70's due to prolonged cloud cover, but once the rain ended, temperatures rebounded to seasonal levels. On the eastern edge of this trough off the Florida Atlantic, Tropical Storm Brett formed on the 17<sup>th</sup> July and later dissipated on the 22<sup>nd</sup> July in the Atlantic without making landfall. Tropical Storm Cindy formed on the 20<sup>th</sup> July and dissipated by the 22<sup>nd</sup> July over the open Atlantic Ocean. During the third and fourth weeks, land/sea-breeze induced convection produced numerous thunderstorms as temperatures remained at seasonal levels. Near month's end (27-30 July) another tropical wave impacted Okaloosa County with 2 to over 7 inches of rain. A weather observer in south Crestview reported 7.80 inches of rainfall over this 4-day period. Tropical Storm Don briefly formed in southern Gulf of Mexico on 27<sup>th</sup> July and struck south Texas on 30<sup>th</sup> July between Brownsville and Corpus Christi. Unfortunately, rainfall of less than an inch failed to lessen the exceptional drought affecting much of Texas. Three tropical storms which formed during July 2011 are above the long-term (1944-2010) average of one.

**2011 Jackson Guard Rainfall/NVOC Temperature  
1971-2000 Climatic Normal (Niceville, FL)**



## July 2011 Climate Summary

Jackson Guard rainfall for July totaled **12.54** inches and the Niceville (NVOC) Regional Sewer Board, Inc. recorded **12.25** inches. Eglin AFB recorded **17.14** inches for the month, 9.57 inches *above* the normal of 7.57 inches. *This is 3<sup>rd</sup> greatest July rainfall total for Eglin AFB since records began in 1940.* Pensacola, FL recorded **9.58** inches, which is 1.56 inch *above* the normal of 8.02 inches. There were 15 days with measurable rain (2 days *above* normal) and 19 days with thunder (1 day *above* normal). The heaviest rainfall at the Niceville NVOC was 5.09 inches recorded on the 17<sup>th</sup> July (record for this date remains at 5.62 inches in 1969). Record rainfall at the Niceville NVOC was set on 16<sup>th</sup> July when **3.10 inches** broke the previous record of 2.25 inches set back in 1975. Highest rainfall of the month occurred on 17<sup>th</sup> July when **5.09** inches fell, but did not break the existing record for this date (5.62 inches in 1969). Year to date rainfall at Eglin AFB is **38.59** inches, which is 2.01 inches *above* the normal of 36.58 inches. Year to date rainfall at Pensacola, FL is **28.54** inches, which is 10.58 inches *below* the normal of 39.12 inches.

The monthly mean temperature was **80.9**°F which was 0.3°F *below* normal. The average high temperature at Niceville NVOC was **90.2**°F (1.1°F *below* normal). The highest temperature of the month was 95°F observed on the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, & 8<sup>th</sup>, July. There were 23 days when the maximum temperature reached 90°F or above, which was 4 days *above* normal. The average low temperature was **71.6**°F (0.5°F *above* normal). There were 29 days when the minimum temperature was 70°F or above with the warmest morning of 75°F on the 11<sup>th</sup> July. The lowest temperature of the month was 69°F on 6<sup>th</sup> & 7<sup>th</sup> July.

The [Keetch-Byram Drought Index](#) (KBDI) at the end of July 2011 was *very low to normal*. The Florida Forestry Service's [fire weather outlook](#) for the summer 2011 forecasts a near normal fire risk due to the predicted above normal tropical activity and the recent July rainfall. Average Eglin AFB rainfall was **11.02** inches for July 2011 which was wetter than normal and lowered the fire danger level to moderate.

Florida County	Average KBDI (8/1/11)	Florida County	Average July 2011 Rainfall (inches)
Santa Rosa	199	Santa Rosa	10.88
Okaloosa	261	Okaloosa	13.46
Walton	333	Walton	11.06
Gulf	158	Gulf	9.06

### Drought Conditions: Uneven Ameliorating Improvement

The U.S. Drought Monitor (Figure 1) shows the elimination of the exceptional drought (D-4) present during the first half of July 2011 across northwest Florida. Extreme drought peaked on 21<sup>st</sup> June when 23% of the state was under D-4 conditions. The most recent Drought Monitor shows severe drought conditions (D-2) occurring across the Escambia, Santa Rosa, the southern half of Okaloosa, Gulf and Franklin Counties. Extreme drought conditions (D-3) persist for Walton, Holmes, Washington, Bay, Jackson, Calhoun, and Liberty Counties. The seasonal outlook (Figure 2) for August-October forecasts above-median precipitation for the eastern Gulf of Mexico and SE Atlantic region, primarily due to long-term precipitation trends and expected tropical cyclone activity. Exceptional drought rivaling that of the Dust Bowl era of the 1930's will plague the Southern Plains and the Lower Mississippi Valley.

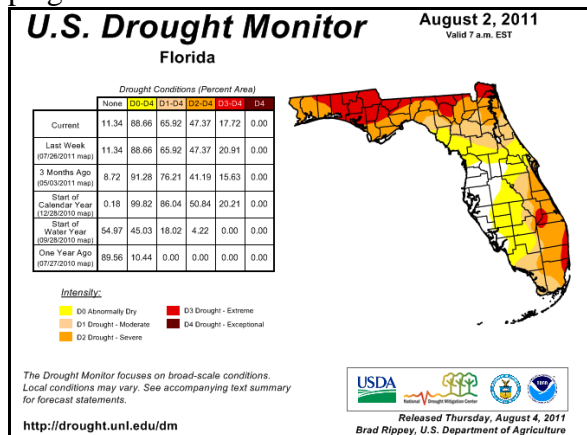


Figure 1. Florida Drought Monitor conditions.

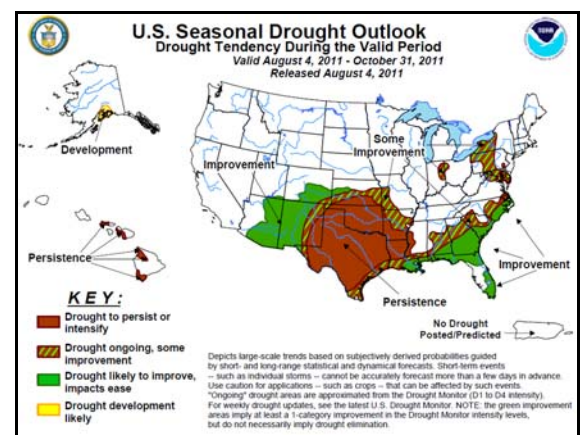


Figure 2. U.S. Seasonal Drought Outlook.

While the drought outlook portends an ameliorating or lessening condition, parts of north Florida are still recovering soil moisture or recharging aquifers. For example, the Florida Area Weather Network (FAWN) in Marianna (Jackson County) measured 5.48 inches of evapotranspiration (ET) loss which exceeded the total July 2011 rainfall of 5.11 inches. Contrast conditions at Jay (Santa Rosa County) which showed an ET loss of 1.69 inches and a total rainfall of 12.86 inches. The very heavy rainfall across extreme NW Florida (Figure 3) substantially boosted soil moisture for agriculture and forestry concerns; however, the rainfall departure rainfall map (Figure 4) shows the uneven distribution where not enough rainfall has fallen and is the reason for the ongoing severe drought conditions.

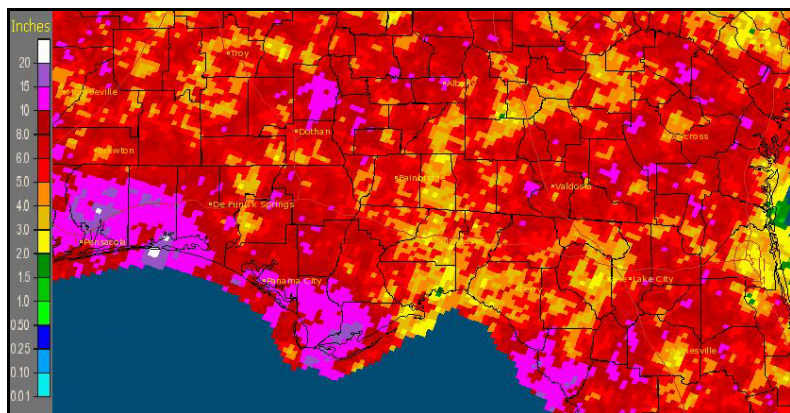


Figure 3. Northwest Florida panhandle observed July 2011 rainfall (inches) violet color 10+ inches across Escambia, Santa Rosa, Okaloosa, Walton, and Gulf Counties, Florida.

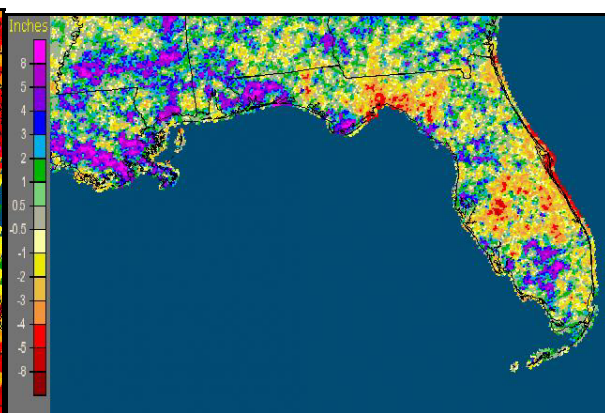


Figure 4. Southeast U.S. departure from normal rainfall (inches). Note the violet color shows 8 inches above normal July rainfall.

Another example showing the long-term effects of persistent drought is the amount of river runoff measured by the volume or discharge from watersheds receiving uneven distribution of above or below normal precipitation. Figure 5 shows the effects of local heavy rainfall upon the Yellow River in Okaloosa County, FL. Discharge (blue line, cubic feet per second) was raised from historic low flows (below the green-line 7-day\_10-year low flow) to briefly above the daily median flow (brown triangles). Figure 6 shows below normal runoff entering Choctawhatchee River in Walton County, FL where precipitation was below normal. Both figures show a falling trend toward low base flows and an indication of long-term effects from persistent drought.

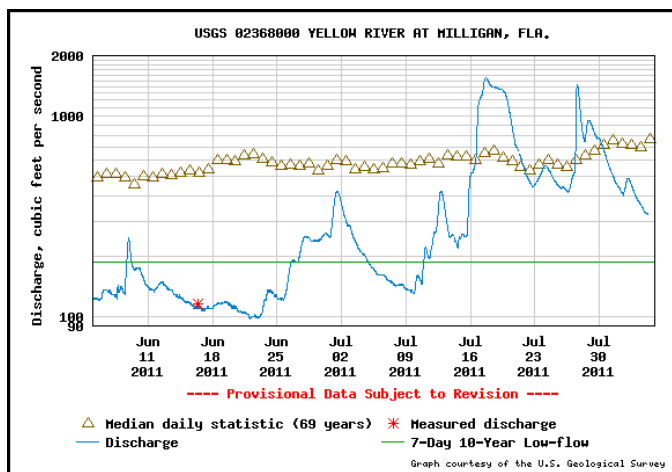


Figure 5. Yellow River discharge at Milligan, FL. (4 June - 4 August 2011).

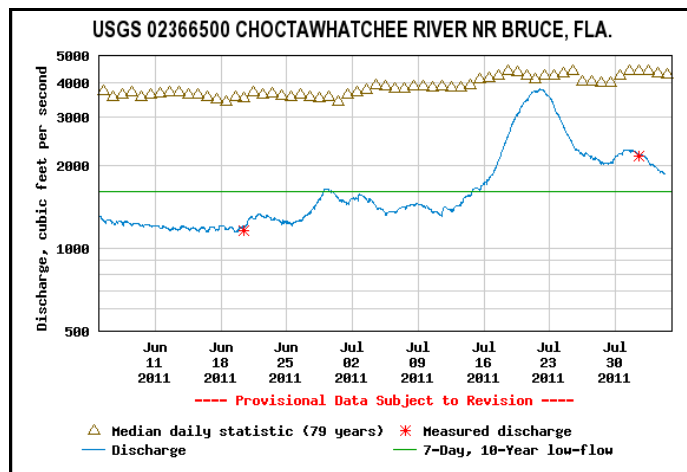


Figure 6. Choctawhatchee River discharge near Bruce, FL (4 June - 4 August 2011).

## August Climatology

August continues the hot-humid weather pattern established during July. The maritime tropical air mass flows around the west side of the Bermuda high-pressure that continues the landbreeze-seabreeze phenomenon of frequent convective precipitation. During the month of August, an average of three tropical storms form, of which two become hurricanes somewhere in the Atlantic, Caribbean, or Gulf of Mexico.

Thunderstorm frequency averages 17 days with 13 days of measurable rain. Rainfall averages **6.93** inches at Eglin AFB and **6.91** inches at Niceville. The maximum 24-hour Eglin AFB rainfall is 6.10 inches recorded on August 14, 1987. Eglin AFB record August rainfall is 14.83 inches (1992). Their driest August produced only 1.90 inch in 1986.

Average monthly temperatures range from **74°F** to **89°F**. The record high is 104°F (August 5, 1947) and the record low is 61°F (August 30, 1992). High temperatures, 90°F or above, average 16 days; above 95°F, an average of two days occur during August. Low temperatures below 70°F are rare during the month.

Relative humidity (RH) averages 77%. RH > 70% occurs 70 percent of the time. The highest hourly humidity (average RH = 85%) occurs between the hours of 3 and 5 a.m.

Surface winds are calm or northerly during the nighttime and early morning hours. Afternoon southerly winds occur with the speed averaging between 8 to 11 m.p.h. during the afternoon. Highest August wind gust was 105 m.p.h. in 1970 from the west northwest.

## August Outlook

The Climate Prediction Center [30-Day Outlook](#) for August 2011 predicts a 40% probability for above normal temperatures and equal chances for normal precipitation for the Florida panhandle.

## August Tropical Weather Outlook

Decrease in vertical wind shear in August produces a significant increase of tropical activity and the start of the Cape Verde, long-track hurricanes by the end of the month. Given the current season statistics, there is likely to be four named systems and two hurricanes occurring by August 30.

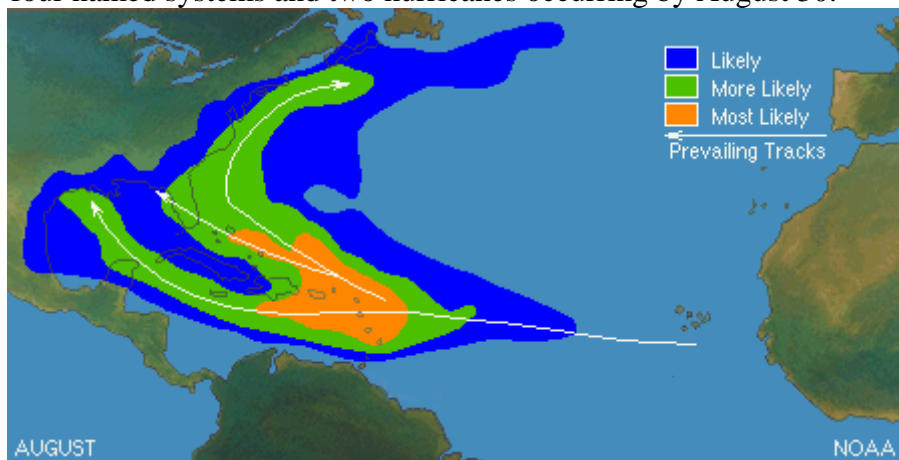


Figure 7. August hurricane climatology for favorable development regions.

This information was compiled from Jackson Guard rainfall observations. Other reports were obtained from Eglin AFB 46<sup>th</sup> Weather Squadron, Mobile National Weather Service, NOAA Climate Prediction Center, National Hurricane Center-Tropical Prediction Center, Southeast Regional Climate Center, and the Florida Division of Forestry. NVOC Regional Water Sewer Board, Inc. in Niceville, FL provided the temperature and rainfall data. Jackson Guard is a member of the Community Collaborative Rain, Hail, & Snow Network ([www.CoCoRaHS.org](http://www.CoCoRaHS.org)).