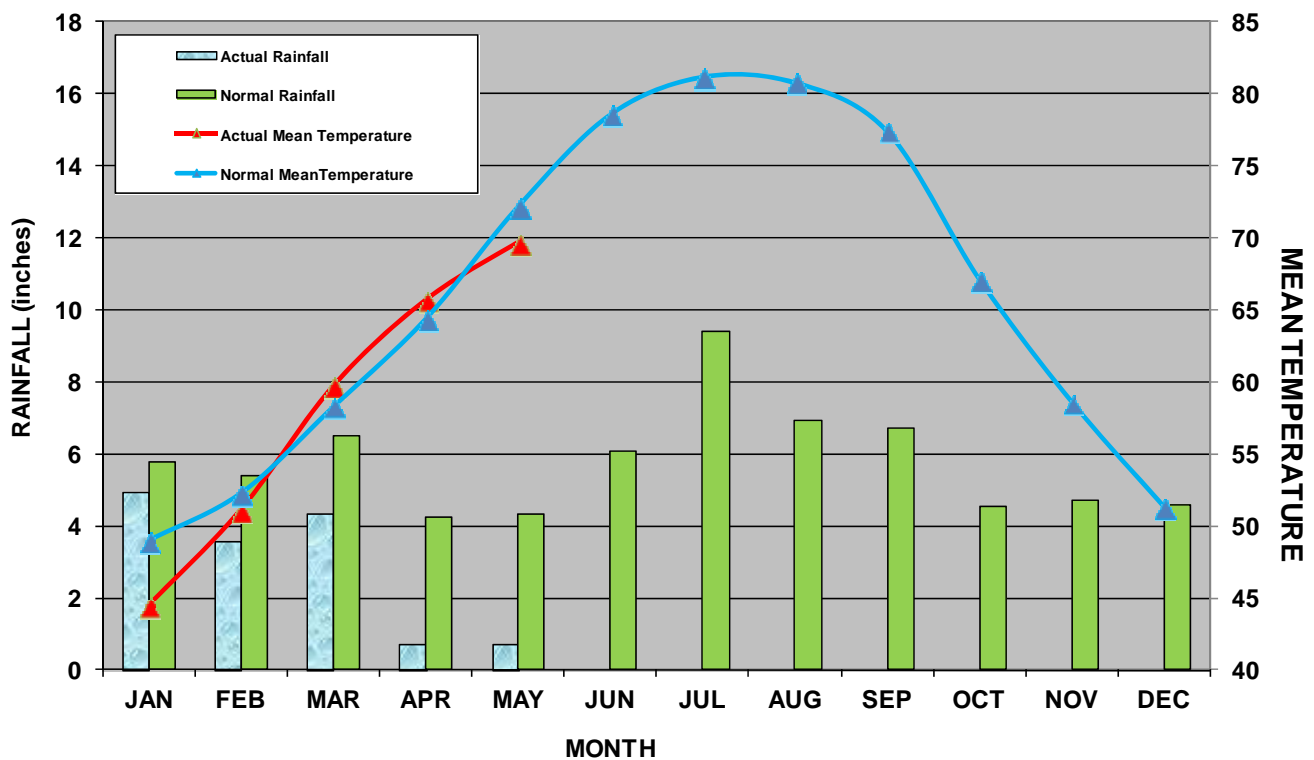


## Introduction

May 2011's temperature and precipitation averaged much below normal for Niceville, FL. The lingering effects of the La Niña phenomenon aggravated drought conditions resulting in a precipitation deficit over 20 inches since September 2010. Extreme drought conditions have returned for the first time since August 2006. May rainfall was the sixth driest at Eglin AFB, FL (since 1940) and the eighth driest at Niceville (since 1927). The long-term outlook is for a slow recovery and a possible short-term worsening of dry conditions. However, drought conditions would have been worse if temperatures were abnormally warm. In fact, the May 2011 average temperature was the fourth coolest on record dating back to 1940. Cooler temperatures suppressed evapotranspiration by saving less than an inch (0.62 inch) in soil moisture over the month. If warmer temperatures had exacerbated the dryness, then the available water for the spring greening would have produced a more extreme drought earlier in the spring. Three cold fronts cleared the panhandle on the 3<sup>rd</sup>, 14<sup>th</sup>, & 18<sup>th</sup> May and a warm front/upper air disturbance occurred on the 27<sup>th</sup> May. Cool air set record low temperatures from the 17-19<sup>th</sup> May. Catastrophic tornadoes occurred in Texas and Missouri, but the ridge of high pressure shielded the local area from severe weather. The only report of the month of straight-line thunderstorm wind downed trees in the Tallahassee area on the 13<sup>th</sup> May.

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



## May 2011 Climate Summary

Jackson Guard rainfall for May totaled **0.71** inches and the Niceville (NVOC) Regional Sewer Board, Inc. recorded **0.82** inches, which is 84% *below* normal (4.32 inches). There were 4 days (including 4 days with thunder) with measurable precipitation, which is 2 days *below* the normal May average. Eglin AFB recorded **0.69** inches for the month, 2.88 inches *below* the normal of 3.57 inches. Pensacola, FL recorded **2.65** inches, which is 1.75 inches *below* the normal of 4.40 inches. Year to date 2011 rainfall at Eglin AFB was 17.98 inches which is 5.21 inches below the normal of 23.19 inches. Year to date 2011 rainfall at Pensacola, FL was 17.32 inches, which is 7.39 inches below the normal of 24.71 inches.

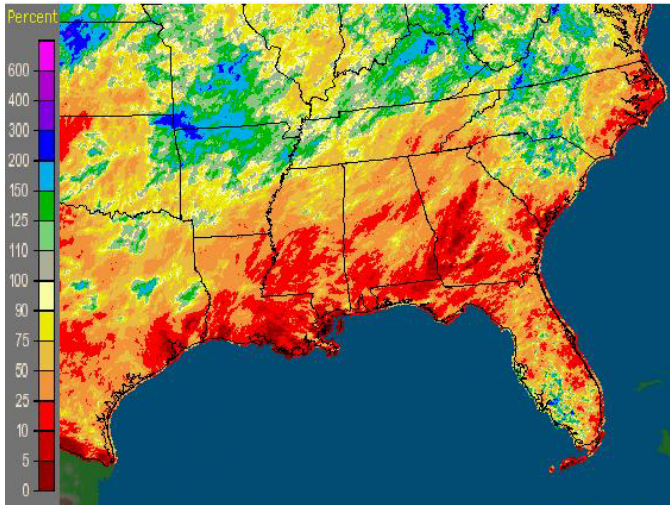


Figure 1. Percent of normal May 2011 rainfall. Orange color over NW FL shows 10-25% of normal rainfall. Normal May rainfall is 4.3 inches.

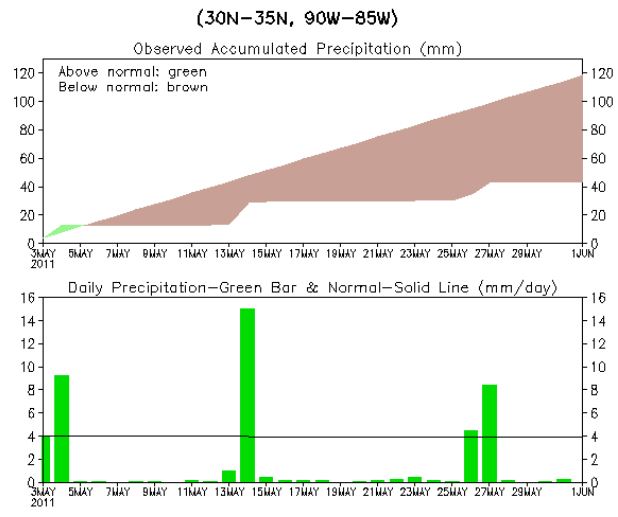


Figure 2. Accumulated rainfall of 43 mm (1.7 inches) fell across central Gulf Coast during May 2011.

The monthly mean temperature was **69.7°F** which is 2.6°F *below* normal. The average high temperature at Niceville NVOC was **81.6°F** (2.7°F *below* normal). There were 0 days when the maximum temperature was  $\geq 90^\circ\text{F}$  (4 days below normal). The highest temperature of the month was **88°F** recorded on the 13<sup>th</sup> & 30<sup>th</sup> May. Record low maximum temperatures were set on 17<sup>th</sup> May of **71°F** (old record 74°F 2008) and on 18<sup>th</sup> May with **74°F** (old record 76°F 2008). The average low temperature was **57.4°F** (2.5°F *below* normal). The lowest temperature of the month was **43°F** observed on 18<sup>th</sup> & 19<sup>th</sup> May. These dates established two record low minimum temperature records, breaking the previous record on the 18<sup>th</sup> May (47°F 1945) and the 19<sup>th</sup> May (47°F 1945).

The Keetch-Byram Drought Index (KBDI) at the beginning of June 2011 was severe. Average Eglin AFB reservation rainfall was **1.05** inches. A high to very high fire danger exists under the present extreme drought conditions.

Florida County	Average KBDI (1 June 2011)	Florida County	Average May 2011 Rainfall (inches)
Santa Rosa	654	Santa Rosa	1.08
Okaloosa	668	Okaloosa	1.32
Walton	649	Walton	1.45
Gulf	623	Gulf	0.49
Niceville, FL (NVOC)	<b>Normal Spring (March-May) Temperature (1940-2010)</b>		<b>65.2°F</b>
	March - May 2011 Average Temperature <i>Temperature Departure</i>		<u>65.0°F</u> -0.2°F (0.3%)
Niceville, FL (NVOC)	<b>Normal Spring (March-May) Precipitation (1927-2010)</b>		<b>14.09 inches</b>
	March - May 2011 Total Rainfall <i>Rainfall Departure</i>		<u>6.55 inches</u> -7.54 inches 53.5%)

## Current Drought Assessment and Outlook

The western panhandle of Florida was placed under the *extreme* drought classification (D-3) on 19<sup>th</sup> May 2011 and continues through the latest Drought Monitor report (Figure 3). Stream flows in the western Florida panhandle, southern Alabama, and southwestern Georgia have been below the tenth percentile for the past month. Light precipitation is expected through early June, and the odds favor below-normal rainfall along the Gulf Coast through southeastern Georgia into the middle of June. June through August climatologically is the wettest time of the year along the central Gulf Coast; however, drought is well entrenched dating back more than a year. Considering these factors, drought is forecast to *persist* through August (Figure 4). Drought has severely impacted the Florida Panhandle this spring season, which coincides with its driest time of the year. The odds favor below-normal rainfall in northern panhandle areas through mid-June, and near-normal amounts farther south. The advent of the seabreeze rainy season in June should at least alleviate any surface moisture shortages existing at that time, even if June-August 2011 totals are unremarkable.

### U.S. Drought Monitor Southeast

May 31, 2011  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	27.03	72.97	50.55	34.62	19.75	0.46
Last Week (05/24/2011 map)	27.51	72.49	49.14	30.69	10.67	0.00
3 Months Ago (03/01/2011 map)	5.82	94.18	75.79	27.10	4.43	0.00
Start of Calendar Year (1/23/2010 map)	23.01	76.99	51.84	23.55	5.63	0.00
Start of Water Year (05/26/2010 map)	18.18	81.82	38.04	10.32	0.90	0.00
One Year Ago (05/29/2010 map)	94.18	5.82	0.00	0.00	0.00	0.00

**Intensity:**

■ D0 Abnormally Dry     ■ D3 Drought - Extreme  
■ D1 Drought - Moderate     ■ D4 Drought - Exceptional  
■ D2 Drought - Severe

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>

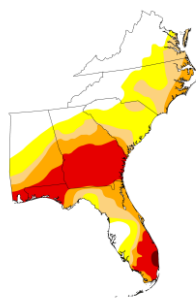


Figure 3. D-3 drought (red) across the FL panhandle.

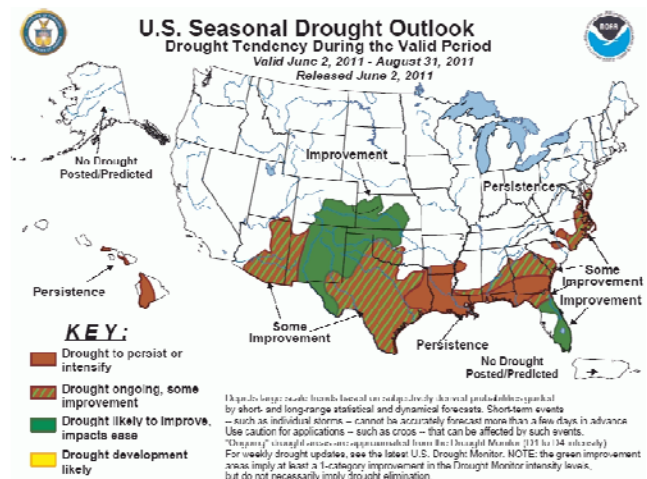


Figure 4. Persistence of current drought conditions through August 2011.

## Historic Mississippi River Flooding

The Mississippi River floods in April and May 2011 were among the largest and most damaging recorded along the U.S. waterway in the past century, comparable in extent to the major floods of 1927 and 1993. In April 2011, two major storm systems deposited record levels of rainfall on the Mississippi River watershed. Rising from springtime snowmelt, the river and many of its tributaries began to swell to record levels by the beginning of May. On 19<sup>th</sup> May Vicksburg, MS set a record crest 57.06 feet and Natchez set a record crest of 61.91 feet (Figure 4). For the first time in 37 years, the Morganza Spillway has been opened, deliberately flooding 4,600 square miles of rural Louisiana to save most of Baton Rouge and New Orleans. Another reason for opening Morganza Spillways was to relieve pressure on the Old River Control Structure north of Baton Rouge (Figure 5). The Atchafalaya River has already captured the Red River which flows from the west and used to be a tributary of the Mississippi. Already 30 percent of the flow of the Mississippi goes into a channel called the Old River and thence into the Atchafalaya River. The configuration is roughly in the form of an “H” in which the Atchafalaya-Red Rivers form the left leg and the Mississippi the other with the Old River being the cross branch. The Old River Control Project of the Corp of Engineers is working to prevent the capture of 100 percent of the Mississippi by the Atchafalaya. Such a catastrophe was averted and saved the economies of Baton Rouge and New Orleans as well as disruption to the U.S. international trade.

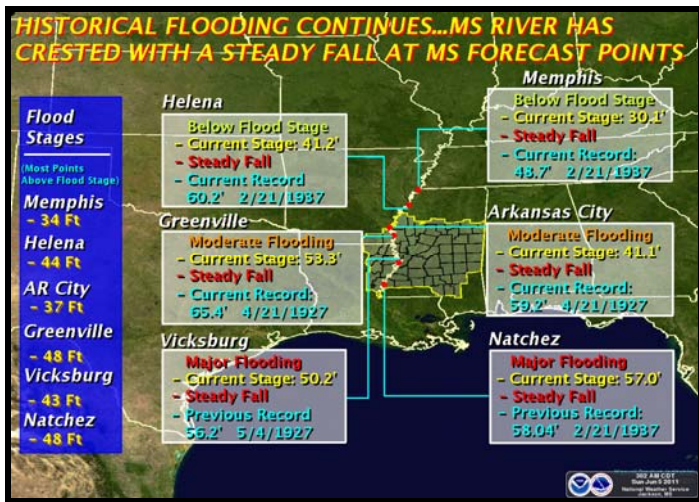


Figure 4. 5 June 2011 Mississippi River levels.



Figure 5. Corps of Engineers Old River Control Structure north of Baton Rouge, LA. Mississippi River leftside and Atchafalaya River on the rightside.

### May 2011 Tornado Summary

The deadly pattern that set records in April returned by mid May to produce more destruction and misery. On 22 May 2011, the [Joplin, MO tornado](#) killed 138 people and injured 1150 becoming the deadliest U.S. tornado since 1947. This EF-5 tornado (winds greater than 200 m.p.h.) caused \$1 - \$3 billion damage and now ranks as the most expensive tornado in history (Figure 6). The El Reno [OK tornado](#) on 24 May 2011 killing nine people was another EF-5 with winds greater than 210 mph. These incredible destructive EF-5 tornados were long-track and large-path storms that debarked trees and caused extensive damage to well-built homes as their tornadic winds sheared structures from their foundations. Thus far, the total number of EF-5 tornadoes this year is *five*, tying 2011 with 1953 for *second* place for greatest number of these upper limit tornadoes in one year. Only 1974 (six) had more. The year 2011 now ranks *third* behind 1974 and 1965 for highest number of strong to violent EF-3, EF-4, and EF-5 tornadoes.

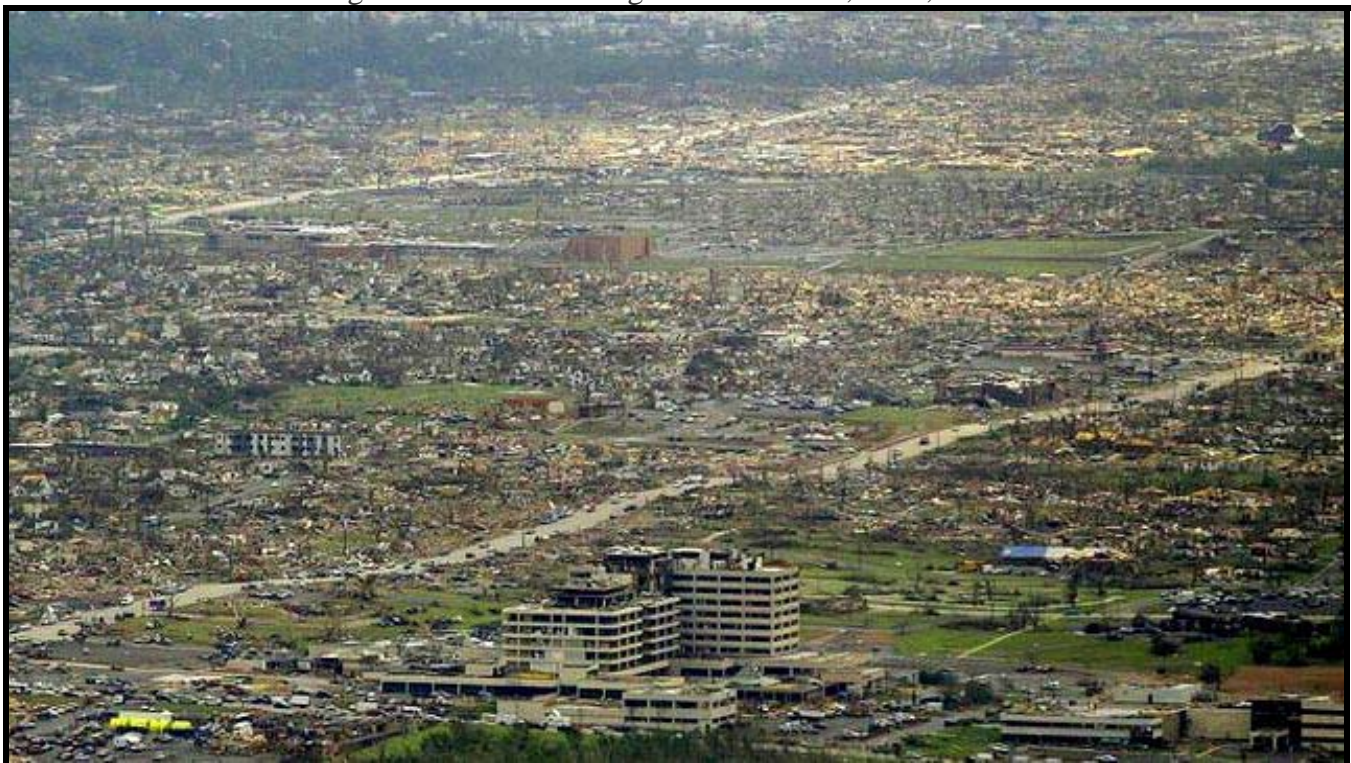


Figure 6. Aerial view of Joplin, MO after the EF-5 tornado occurred on Sunday 22 May 2011. St. John's Hospital (center foreground) was shifted 4 inches off its foundation.

## 2011 Atlantic Hurricane Season Outlook

The [NOAA](#) Climate Prediction Center (CPC) outlook (19 May 2011) calls for an *active* hurricane season. The CPC suggests that there is a 70% probability of the following ranges compared to the 2010 Atlantic Hurricane Season, tied for third place most named storms in single season (in parentheses):

- 12 to 18 Named Storms (19 Named Storms–2010, 1969, & 1887)
- 6 to 10 Hurricanes (12 Hurricanes–2010 & 1969)
- 3 to 6 Major Hurricanes –Category 3, 4, or 5 (5 Major Hurricanes-2010)

The [Colorado State University](#) Klotzbach and Gray (1 June 2011) also calls for an above normal Atlantic Hurricane Season. The following forecast is compared to the NOAA average Atlantic Hurricane Season (in parentheses):

- 16 Named Storms (11 Named Storms)
- 9 Hurricanes (6 Hurricanes)
- 5 Major Hurricanes –Category 3, 4, or 5 (2 Major)

These outlooks take into consideration: 1) enhanced multi-decadal frequency that began in 1995; 2) reduced vertical wind shear and weaker easterly trade winds; 3) continuation of warmer than average sea surface temperatures (SSTs) in the eastern tropical Atlantic; 4) below average sea-level pressure; and 5) a favorable position of the African easterly jet stream (due to the lingering influence of a dissipating La Niña).

NOAA has a 95% confidence interval that the 2011 Atlantic Hurricane season will be normal to above normal. The CSU researchers cite a 47% probability for at least one major hurricane (Category 3-4-5) to make landfall on the Gulf Coast from the Florida panhandle westward to Brownsville, TX compared with the 30% long-term average for the last century.

## June Outlook

The Climate Prediction Center [30-Day Outlook](#) for June 2011 predicts above normal temperatures and near normal precipitation for the Florida.

## June Climatology

June starts off meteorological summer with hot, humid conditions. Thunderstorm frequency averages 11 days with 10 days of measurable rain. Lightning strikes generally occur between 2 p.m. and 6 p.m. and average 1 to 8 strikes per square mile. Rainfall averages **5.81** inches at Eglin AFB (climatic period 1940-2010) and **6.08** inches at Niceville recording stations (climatic normal 1971-2000). The maximum 24-hour Eglin AFB rainfall is 6.28 inches recorded on June 15, 1985 and 6.86 inches at Niceville also observed on June 15, 1985. Record June rainfall for Eglin is 15.84 inches (2003) and for Niceville is 16.20 inches (2003). The driest June produced only 0.66 inch in 1986 at Eglin and 1.37 inches in 1998 at Niceville.

Average monthly temperatures range from **68°F** to **90°F** for Niceville, FL. Niceville's record high is 102°F (June 28, 1950) and the record low is 48°F (June 1, 1984). During June, average high temperatures of 90°F or above occur on 14 days.

Relative humidity (RH) averages 72%. RH > 70% occurs 59 percent of the time. The highest hourly humidity (average RH = 84%) 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. The highest June wind gust was 69 m.p.h. in 1954 from the west-northwest.

June is the quietest month of the Atlantic hurricane season. On average, one named storm forms every three years in June (Figure 7). Typically, June storms only form over the Gulf of Mexico, western Caribbean, and Gulf Stream waters just offshore Florida, where water temperatures are warmest. June

storms originate from a cold front that move off the U.S. coast and stall out; the old frontal boundary serves as a focal point for the tropical disturbance. Whereas African tropical waves off the Cape Verde Islands instigate about 85% of all major hurricanes, such systems are usually too far south in June to trigger tropical storm formation due to the slightly cooler waters of the tropical Atlantic at the start of the season.

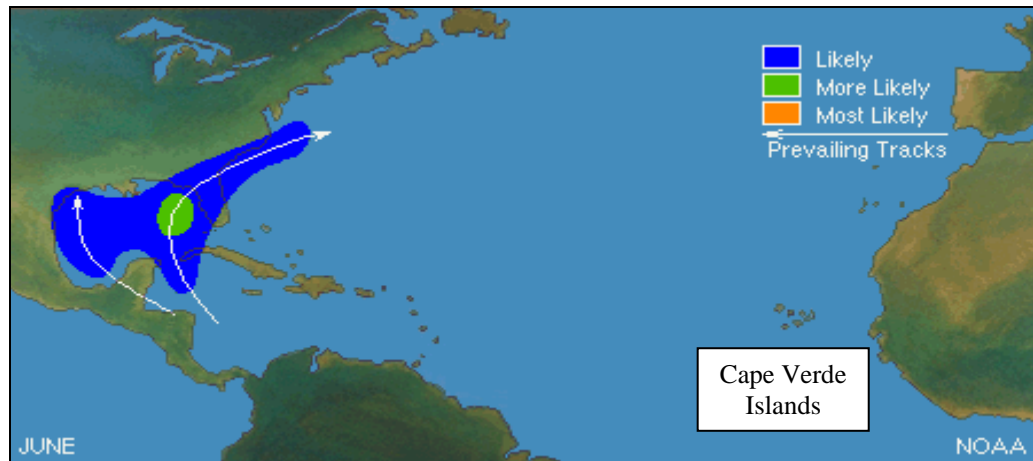


Figure 7. June climatology of tropical systems originating in the Gulf of Mexico.

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, Florida Division of Forestry, Southeast Regional Climate Center and the Weather Underground websites. NVOC Regional Water Sewer Board, Inc. in Niceville, FL provided the temperature and rainfall data.