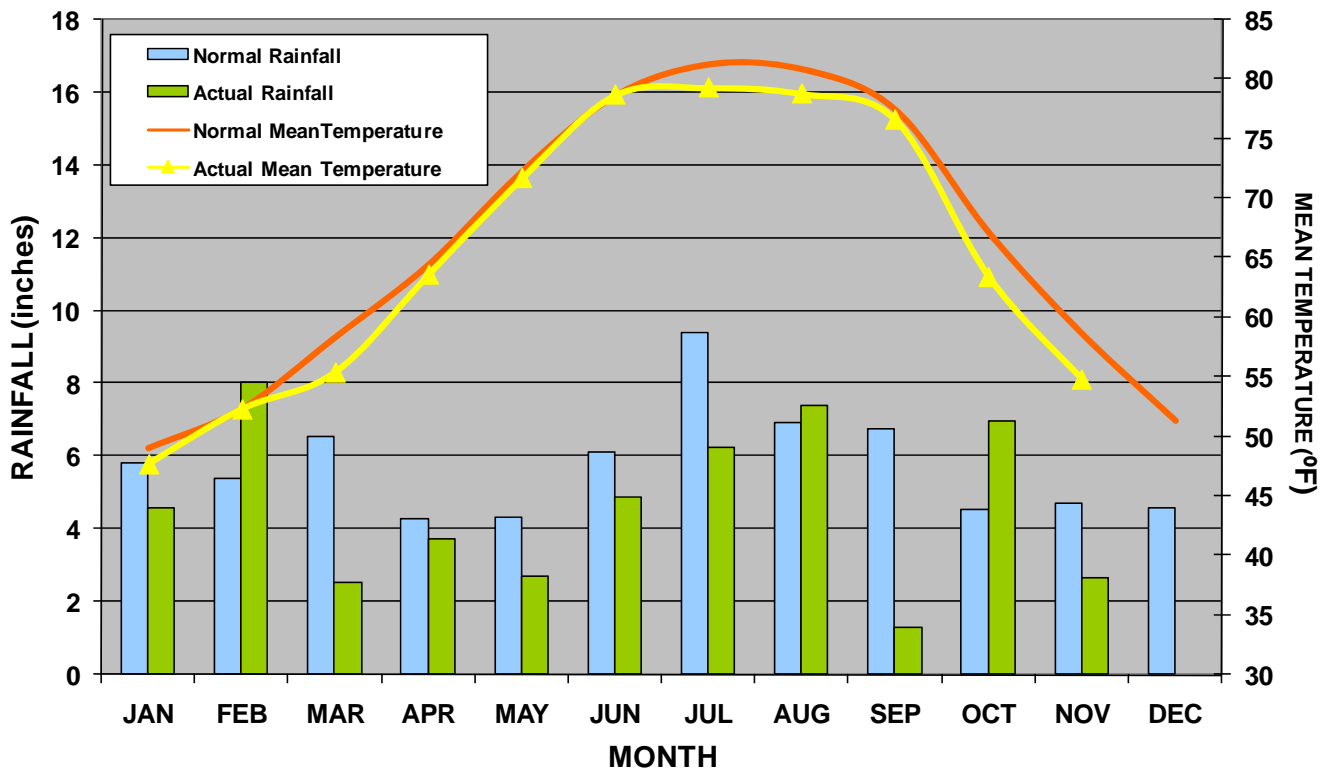


Introduction

November 2008 produced below normal temperatures (7th coolest November) and below normal precipitation (24th driest November) since record keeping began in 1948 for Niceville, FL. Overall, the past fall season (September-October-November) was cooler and drier than normal. Average fall temperature of **65.0°F** was 2.7° cooler than the normal (67.7°F) and total rainfall was **10.26** inches which was 4.87 inches drier than normal (15.13 inches). Cold fronts cleared the area on the 8th, 15th, 18th, 21st, 25th, and 30th and one warm front on the 14th November. Two Gulf lows crossed the Florida panhandle on the 13-14th and 30th November. The monthly weather pattern was a repeat of October 2008. After mid November, the progressive nature of the upper-level trough sent polar fronts through the local area encountering limited atmospheric instability; thus, only sparse rainfall was produced until the end of the month. Even the remnants of Hurricane Paloma on November 14th failed to generate significant weather as the weak low crossed the eastern Florida panhandle near Cape San Blas, FL. The first half of the month was dominated by a warm, humid, airmass, but after mid month several low temperature records fell from Mobile, AL to Tallahassee, FL on 19th November. While the first fall freeze (17th November) for Niceville was past average freeze date of 12th November, there were *twice* the number of morning frosts than normal (3.5 days <32°F).

2008 Jackson Guard Rainfall/NVOC Temperature
1971-2000 Climatic Normal (Niceville, FL)



November 2008 Climate Summary

Jackson Guard rainfall for November totaled **2.64** inches and the Niceville (NVOC) Regional Sewer Board, Inc. recorded **2.50** inches. Eglin AFB recorded **2.33** inches for the month, 1.68 inches below the normal of 4.01 inches. Pensacola, FL recorded **2.76** inches, which is 1.70 inches below the normal of 4.46 inches. There were 6 days with measurable precipitation in Niceville, which equals the November average. There were 2 thunderstorm days which is 1 day above normal. No new precipitation records were established during the month. Year to date rainfall at NVOC is 52.98 inches, which is 11.65 inches below normal of 59.93 inches. Year to date rainfall at Eglin AFB is 42.17 inches, which is 15.90 inches below the normal of 58.07 inches. Year to date rainfall at Pensacola, FL is 53.42 inches, which is 6.89 inches below normal of 60.31 inches.

The [Keetch-Byram Drought Index](#) (KBDI) at the end of November 2008 was *normal*. Beneficial rainfall replenished surface moisture to within 70-80% capacity and reduced the early November severe fire danger to near normal. The values below are an indicator of soil moisture conditions in the counties containing Eglin AFB natural resources.

Florida County	Average KBDI (1 December 08)	Florida County	Average November 2008 Rainfall (inches)
Santa Rosa	385	Santa Rosa	2.17
Okaloosa	322	Okaloosa	2.17
Walton	373	Walton	3.68
Gulf	253	Gulf	5.57

For more information on daily KBDI values, visit the Florida Division of Forestry: [KBDI index](#).

The monthly mean temperature was **54.9°F** which was 3.7°F *below* normal. The average high temperature at Niceville NVOC was **68.4°F** (3.1°F *below* normal). The highest temperature of the month was 79°F observed on the 15th & 16th November. The average low temperature was **41.5°F** (4.2°F *below* normal). The lowest temperature of the month was **26°F** observed on the 19th & 20th November, establishing two record low minimums which broke the previous records of 28°F set back in 1997 & 1968 respectively. There were no mornings when the minimum temperature exceeded 65°F.

Tropical Summary November 2008

Paloma became the second strongest November hurricane in the Atlantic basin reaching a category 4 strength with maximum winds of 145 m.p.h. and becoming the third major hurricane to strike Cuba during 2008, a new record. Paloma formed from an African tropical wave on 23rd October to a depression near the Nicaragua/Honduras border on 5th November. By 7th November Paloma became a hurricane and reached peak strength by 8th November near the Cayman Islands. Hurricane Paloma moved northeastward toward the southern coast of Cuba and encountered strong wind shear before making landfall with 125 m.p.h. winds near Santa Cruz Del Sur, Cuba. Paloma weakened to tropical storm by 9th November. A remnant low moved slowly northward and made two loops through Cuba and the Caribbean before entering the southeastern Gulf of Mexico by 13th November. The remnant low of Paloma then turned north and reached the Florida panhandle by 14th November.

Noteworthy 2008 Atlantic Hurricane Season Details

For the *first* time since Hurricane record keeping began in 1851, there has been a major hurricane in each month (except for June) of the Atlantic hurricane season (Bertha-July, Gustav-August, Ike-September, Omar-October, and Paloma-November). Also, for the *first* time on record, six consecutive tropical cyclones made U.S. landfalls (Dolly, Edouard, Fay, Gustav, Hanna, and Ike). This is the tenth season to produce above-normal tropical cyclones since 1995 and was the *fourth* most active in the number of named storms (16) and major hurricanes (5). The 2008 season is tied for *fifth* as the most active since 1944 when aircraft reconnaissance began flying into tropical storms and hurricanes. Dr. Gerry Bell, lead hurricane forecaster at NOAA-Climate Prediction Center (CPC) cites three factors for the above normal Atlantic hurricane activity:

1. Ongoing multi-decadal signal of the thermohaline (deep-ocean) circulation in the Atlantic basin since 1995,
 2. Lingering La Niña (abnormal cooling of the equatorial Pacific waters) that began in the fall of 2007 and ended in June 2008 and diminished the wind shear across the Cape Verde regional tropical cyclones, and
 3. Warmer (1°F above normal) tropical Atlantic Ocean temperatures during the peak of the season.
- Please see Figure 1 below for the tropical cyclone tracks that occurred during 2008.

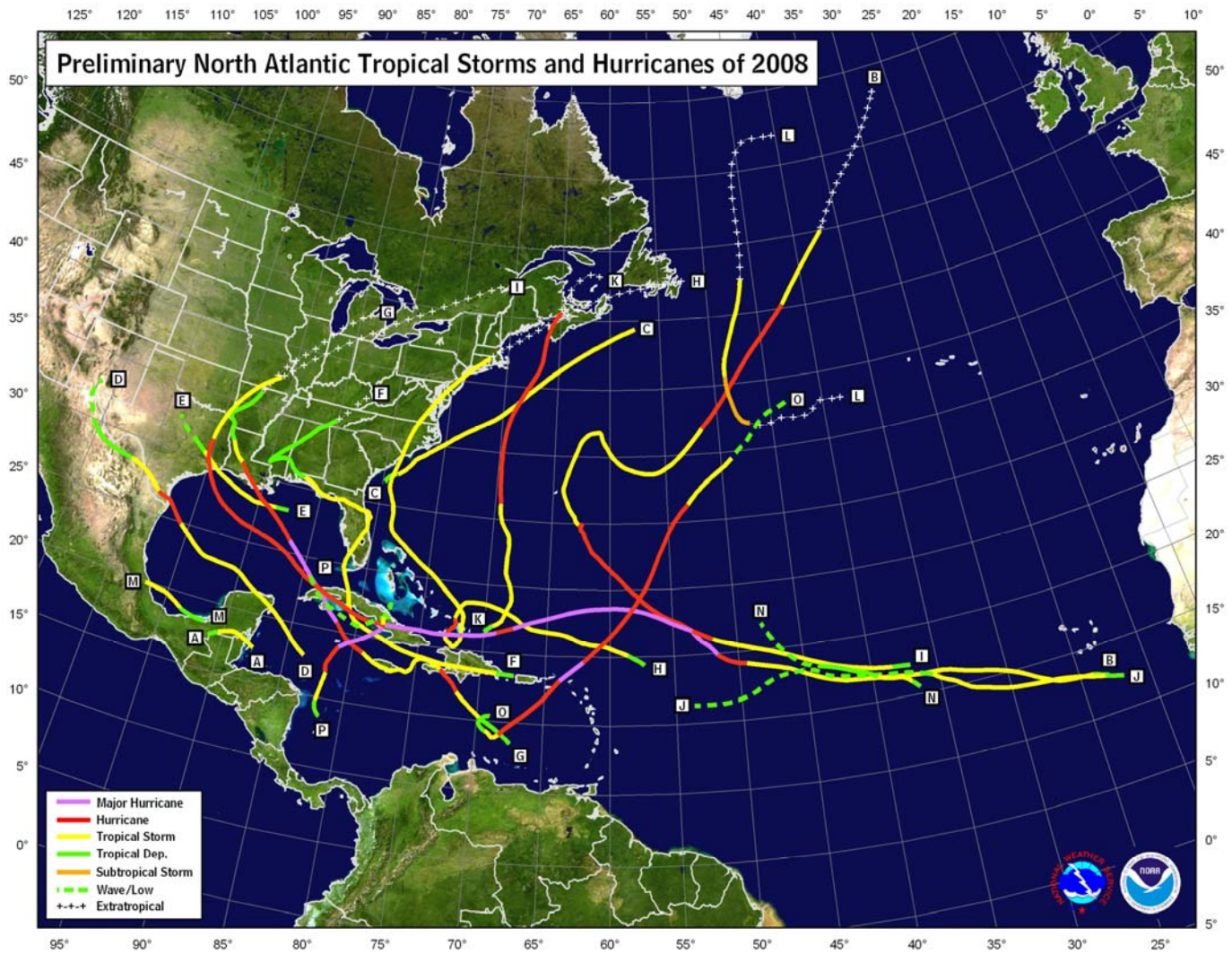


Figure 1. 2008 Atlantic Hurricane Track Map

December Outlook

The Climate Prediction Center <http://www.cpc.ncep.noaa.gov/products/predictions/30day/> outlook for December 2008 predicts near to below normal temperatures and near normal rainfall for the western FL.

Winter Season Outlook

The absence of a clear climatic signal in the equatorial Pacific, essentially a neutral El Nino Southern Oscillation forecast (neither [La Niña](#) nor [El Niño](#)) gives rise to other climate patterns. Trends in the Arctic and North Atlantic regions may influence the climate pattern over Pacific basin for the upcoming weather season. Figures 2 & 3 are the official temperature and precipitation forecast for the U.S.



Temperature Outlook

December - February (Winter) 2008/09

Chances for **Cooler Than Normal**, **Warmer Than Normal**, or Near Normal Temperatures (based on 1971-2000)

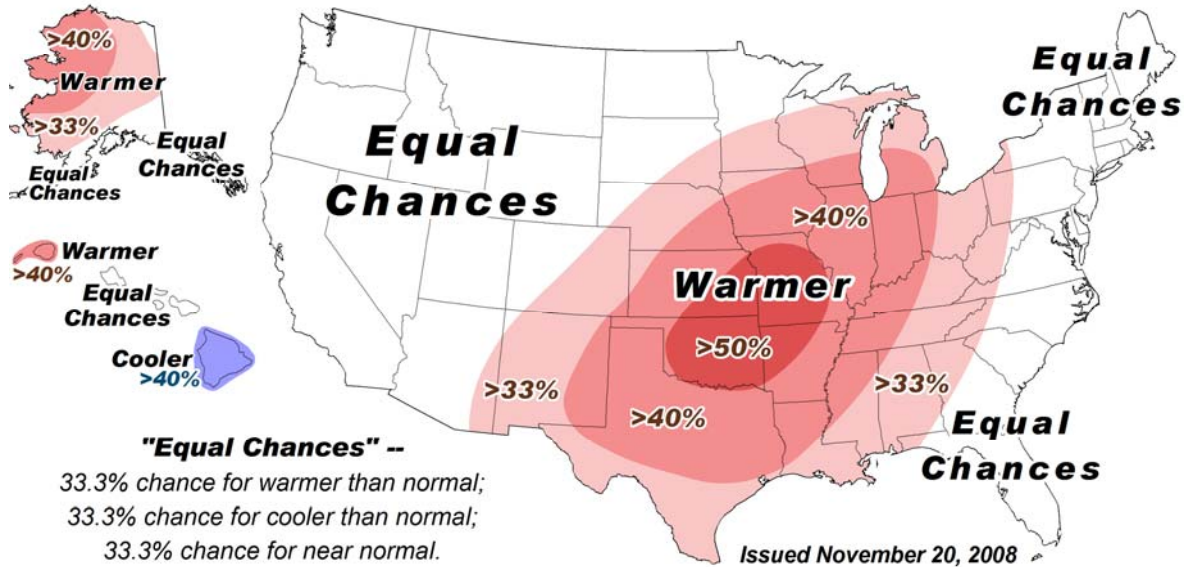


Figure 2. The CPC temperature forecast (December 2008-January-February 2009) for the Florida panhandle calls for equal chances to a >33% chance for above normal temperatures for the western Florida panhandle.



Precipitation Outlook

December - February (Winter) 2008/09

Chances for **Wetter Than Normal**, **Drier Than Normal**, or Near Normal Precipitation (based on 1971-2000)

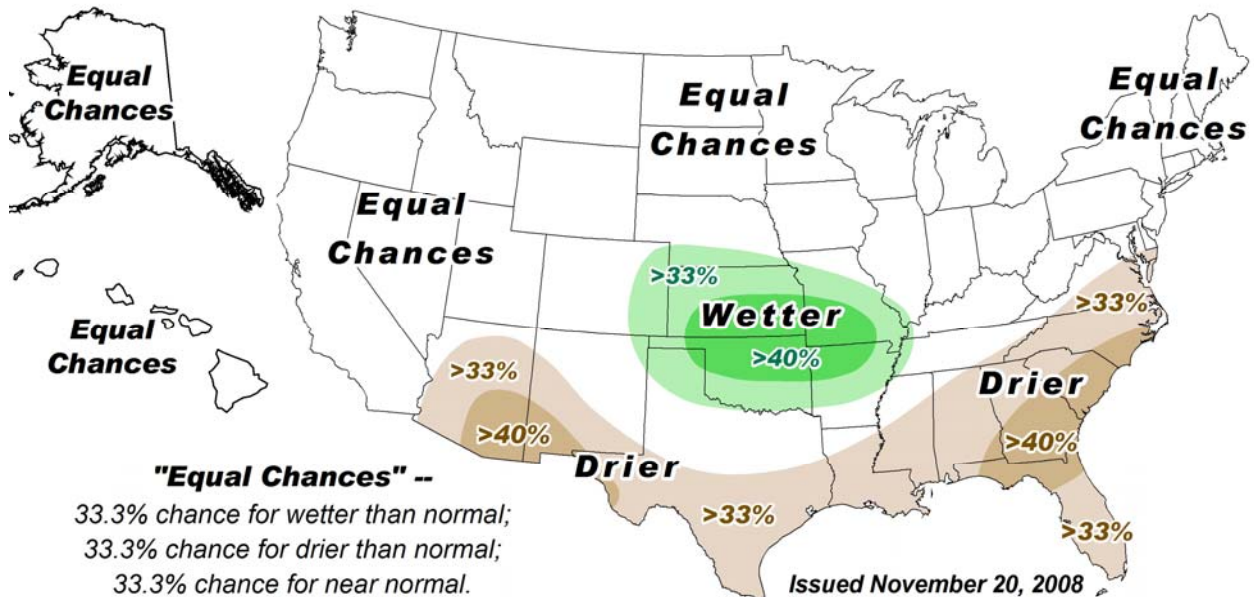


Figure 3. The CPC precipitation forecast (December 2008-January-February 2009) for the Florida panhandle calls for a >33% chance for below normal rainfall for the western Florida panhandle to > 40% below normal chance for the rest of north FL.

December Climatology

December starts off the winter season with an increase in cloudiness and prevailing northerly winds. Cold fronts arrive every four to five days. Occasionally stalled frontal boundaries may develop waves that migrant eastward across the Gulf of Mexico causing widespread heavy rainfall in some years. Visibility becomes obstructed an average of 16 days occurring between the hours of 6 to 8 a.m. Radiation fog (cooling to the dew point during clear calm nights) can limit visibility to less than a quarter mile, but usually dissipates by mid morning. Advection (sea) fog (warm air moving over colder Gulf water) can occur anytime during the day, but most often forms during the late afternoon and can persist for several days.

Thunderstorm frequency averages 2 days during December and 9 days have measurable rainfall. Normal rainfall is 4.64 inches at Eglin AFB and 4.57 inches at Niceville recording stations. The maximum 24-hour rainfall (Eglin) is 7.70 inches recorded on December 10, 1967. Record December rainfall (Eglin) is 15.58 inches in 1953. The driest December (Eglin) produced 0.59 inch during 1946.

Average monthly temperatures range from 64°F to 40°F (Niceville). The record high is 84°F (December 20, 1968) and the record low is 8°F (December 13, 1962). Minimum temperatures below 32°F average ten days during December. The latest date for the first fall freeze occurred on December 12.

Relative humidity (RH) averages 71%. RH > 70% occurs 56 percent of the time. The highest hourly humidity (average RH = 78%) occurs between the hours 3 and 8 a.m.

Surface winds tend to remain calm at nighttime. North winds occur during the day occur with speeds averaging up to 9 mph. Highest December wind gust was 62 m.p.h. in 1973 from the southwest (Eglin). Surface winds tend to remain calm, or light and variable, or northerly during the nighttime. Northerly or easterly winds tend to prevail during the day with wind speeds averaging up to 8 mph. The highest recorded wind speed is 60 mph in 1947.

This information was compiled from Jackson Guard rainfall observations. NVOC Regional Water Sewer Board, Inc. in Niceville, FL provided the temperature and additional rainfall data. Other reports were obtained from Eglin AFB 46th Weather Squadron, 10th Combat Weather Squadron-Hurlburt Field, Mobile National Weather Service, NOAA Climate Prediction Center, Southeast Regional Climate Center, Florida Division of Forestry, Weather Services International, and the National Hurricane Center websites.