

# SECC Fall Climate Outlook

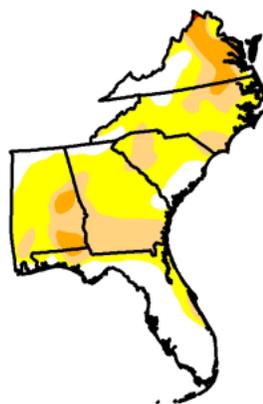
Date Updated: September 19, 2010

**Current Conditions: Drought setting in for much of the Southeast.** After a summer that can be characterized as one of the hottest on record, drought has begun to develop over much of the Southeast, with the exception of the Florida peninsula. The three-month period of May-July ranked as the hottest on record (since 1895) for the states of North Carolina, South Carolina, Georgia, and Alabama, while Florida ranked as the second hottest. Rainfall was generally below normal for much of the region, but was characterized by many observers as being more scattered or localized than in previous years. Large differences in daily, weekly, and monthly rainfall totals were seen not only from county to county (which is somewhat typical for summer rainfall), but also from field to field. Southeast Alabama and inland areas of the Florida Panhandle are feeling the drought most strongly, as most fields in this area are non-irrigated, leaving row crops and pastures suffering. The extent of drought conditions is shown in the current U.S. Drought Monitor, where most of the Southeast is depicted as being in drought conditions ranging from abnormally dry to severe.

## U.S. Drought Monitor Southeast

September 14, 2010  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	26.3	73.7	29.7	7.1	0.1	0.0
Last Week (09/07/2010 map)	50.1	49.9	16.2	4.8	0.1	0.0
3 Months Ago (06/22/2010 map)	91.5	8.5	0.0	0.0	0.0	0.0
Start of Calendar Year (01/05/2010 map)	99.5	0.5	0.0	0.0	0.0	0.0
Start of Water Year (10/06/2009 map)	82.6	17.4	5.5	1.0	0.0	0.0
One Year Ago (09/15/2009 map)	77.5	22.5	10.2	0.1	0.0	0.0



**Intensity:**

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

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

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



Released Thursday, September 16, 2010  
Author: M. Rosencrans, CPC/NOAA

For more detailed information on recent climatic conditions, please see our State climate summaries and press releases:

- [State Climate Summaries for Florida, Georgia, and North Carolina](#)
- [Mild drought returns to parts of Georgia](#)

Other climate monitoring resources

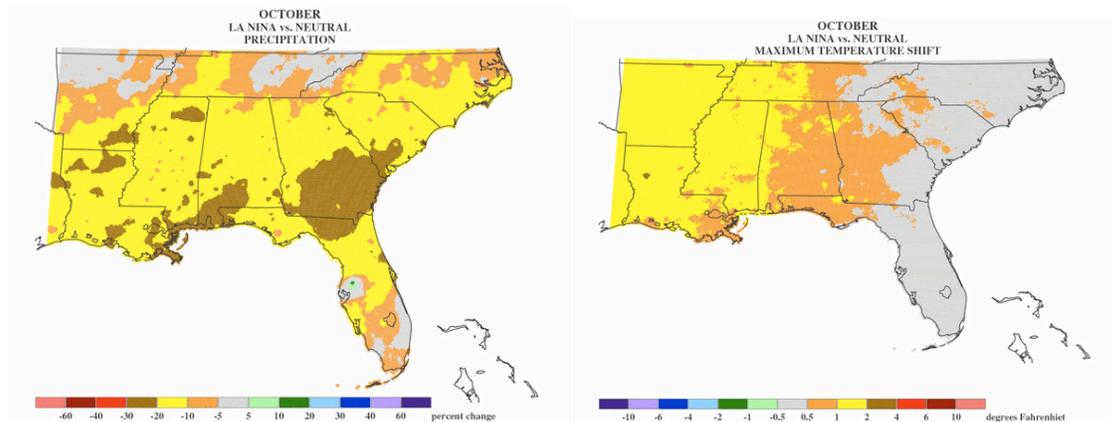
- [Florida Automated Weather Network](#)
- [Georgia Automated Environmental Monitoring Network](#)
- [Alabama Office of the State Climatologist](#)
- [Southeast Regional Climate Center](#)
- [NWS Radar-derived Precipitation Totals](#)

**Strong La Niña develops as the Pacific Ocean completes a rapid transition.** After last winter with moderate to strong El Niño conditions, ocean temperatures cooled very quickly during the summer months. El Niño refers to a periodic (every 2-7 years) warming of the tropical Pacific Ocean along the equator from the coast of South America to the central Pacific. Sea surface temperatures in this region cooled to near normal in May and June, but then continued their rapid cooling and have now reached thresholds consistent with the La Niña phase (SST's more that 0.5 C colder than normal averaged over the area). We now use the Multivariate ENSO Index (MEI) to keep track of El Niño and La Niña, and the MEI has registered the greatest one and two month drops since records have been kept starting in 1950.

Because of the rapid cooling of sea surface temperatures, the abrupt drop in the MEI index, and the broad extent of colder than normal waters, the further development and continuation of La Niña through the remainder of 2010 and into 2011 is nearly certain. Centers around the world that run El Niño/La Niña prediction models are in overwhelming consensus in predicting a strengthening and long-lasting La Niña. In fact, chances are good that the current La Niña will develop into one of the stronger events in the last 60 years.

## **Fall Outlook – Warmer and drier conditions are likely to set in as drought**

**worsens.** Typically, La Niña leads to fall, winter, and spring seasons that are warmer and drier than normal. This trend usually begins in mid-September over the entire Southeast, then intensifies and sets in most strongly over Florida and the coastal areas of the Gulf of Mexico and Atlantic Ocean in the heart of the winter. Because this La Niña has developed so strongly and quickly, there is an even greater likelihood that the warm and dry patterns will be stronger than the usual La Niña patterns this fall. The figures below show typical rainfall and temperature departures from normal during La Niña events.

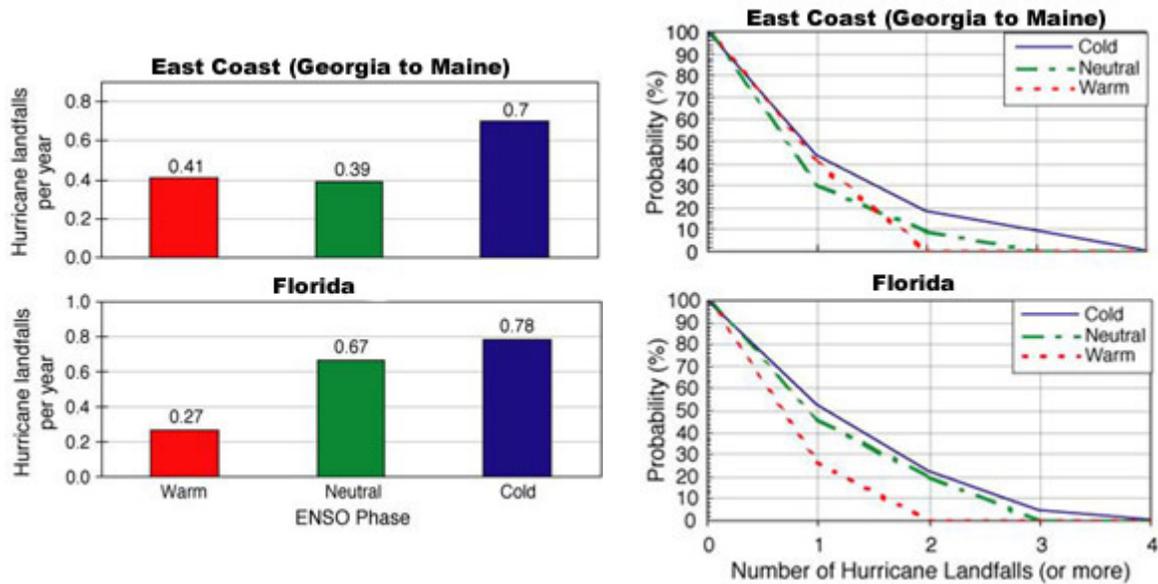


*Typical October rainfall (percent change) and temperature (degrees F) departures from normal during La Niña.*

With most of the Southeast now in the beginning phases of drought, the situation is likely to worsen during the fall. Mid September through October is the driest season of the year for much of the Southeast, and can be very dry without the influence of tropical events like hurricanes, tropical storms, and depressions. With evapotranspiration rates still high with warmer temperatures, expect surface water and soil moisture levels to continue their decline in areas that miss the impact of a tropical system.

**Hurricane Season Outlook.** The year-to-year variability in tropical activity in the Atlantic is partially controlled by the El Niño-Southern Oscillation. La Niña (colder than normal water in the eastern tropical Pacific) increases the formation of tropical storms and hurricanes, and a recent study co-authored by Dr. James O'Brien shows that this

increase is manifested by more hurricane landfalls along the East Coast of the U.S. (Georgia to Maine). Neutral conditions and La Niña both coincide with an increased risk of landfalls along Florida and the Gulf Coast.

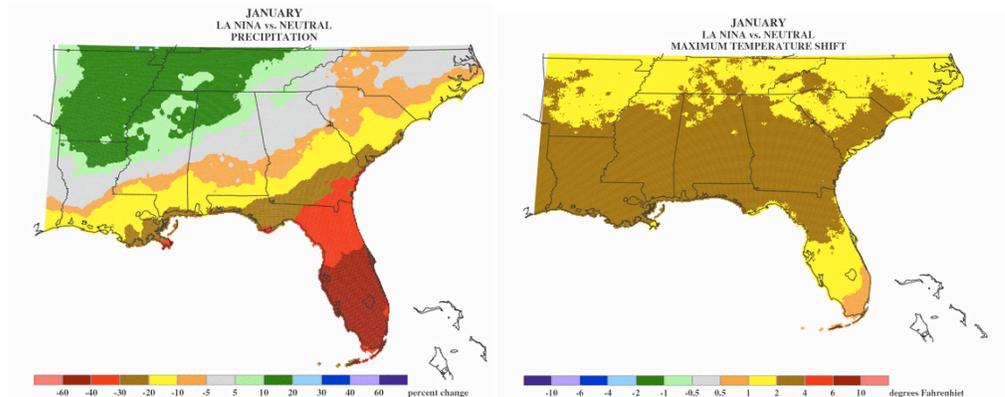


The left graph shows that Florida (both coasts) averages twice the number of landfalling hurricanes (the ones that count) during neutral conditions or a developing La Niña (cold) than during an El Niño (warm). The East Coast (Georgia to Maine) only sees this increase during a developing La Niña. This trend is detailed in probability of exceedence curves in the right-hand graph.

**Looking further ahead – La Niña brings greatly increased chance of warm and dry winter to the Southeast.** With much colder than normal ocean waters now in place in the tropical Pacific Ocean, it is nearly certain that La Niña will persist and possibly strengthen during the remainder of the winter and well into the spring season. La Niña conditions usually bring warmer weather to the entire region, with temperatures generally averaging 2 to 4 degrees F higher than normal from November through March.

La Niña also brings drier weather to much of the three states. During the winter season, the dry pattern actually pushes southward and intensifies over the peninsula of Florida and the immediate coasts of Alabama, Georgia, and the Carolinas, where average La Niña

rainfall is 30% to 60% less than normal. Inland North Carolina, Central Alabama, central Georgia, and northern Georgia usually see near normal rainfall during a typical La Niña, but the strongest events (like the current La Niña) push the dryness further north and inland. A strong La Niña will increase the likelihood that drought could develop in critical watersheds like those that feed Lake Lanier in northern Georgia.



*Typical January rainfall (percent change) and temperature (degrees F) departures from normal during La Niña.*

The reason for the rainfall patterns seen in January can be attributed to the predominant jet stream configuration that sets up during a La Niña winter. While the position of the jet stream will fluctuate with the passing of individual low pressure systems, fronts, and air masses, the preferred or average setup of the jet stream is that of high pressure or "ridging" over the Pacific near the U.S. west coast and low pressure or "troughing" over the mid-section of the country. This configuration tends to steer winter storms up the Mississippi Valley and Midwest. Unfortunately, this storm track often leaves the Southeast dry and the cold fronts with a little less punch.

For more detailed information on El Niño climate shifts in your particular county, please refer to the Climate Risk Tool at AgroClimate:

[Climate Risk Tool](#)

**So what are the implications for the Southeast?** The warmer temperatures will impact winter crops and fruit production, resulting in less chill accumulation over the course of the winter season. Warmer temperatures will also mean greater evaporation rates. Due to the jet stream configuration described above, severe or damaging freezes are less likely during La Niña than in neutral years. However, the risk of early or late season freezes (like in April of 2007) does not seem to be affected by the Pacific Ocean.

The shift towards drier than normal conditions becomes much more pronounced in Florida and coastal Georgia, Alabama, and the Carolinas as fall progresses into winter, resulting in much higher confidence in a forecast of dry conditions in these areas. Keep in mind that winter rainfall is vital to the recharge of surface and groundwater in Georgia, Alabama, and the Carolinas. While the worsening of drought may slow during the winter months when demand is much lower, it may intensify quickly come spring. Summer evapotranspiration rates are greater than even normal rainfall, so heading into the spring with deficits already accumulating from winter is a sure recipe for rapid drought intensification. In Florida and southeast Georgia where drought concerns are lower right now with recent rainfall, there is a strong possibility for drought to reintensify this winter and spring. Wildfires will also be a concern, where studies show that La Niña normally leads to an active wildfire season in Florida and South Georgia.

For more information on how La Niña and the developing drought will affect crops this fall and winter, please reference the agricultural outlook on AgroClimate:

[Agricultural Outlook](#)