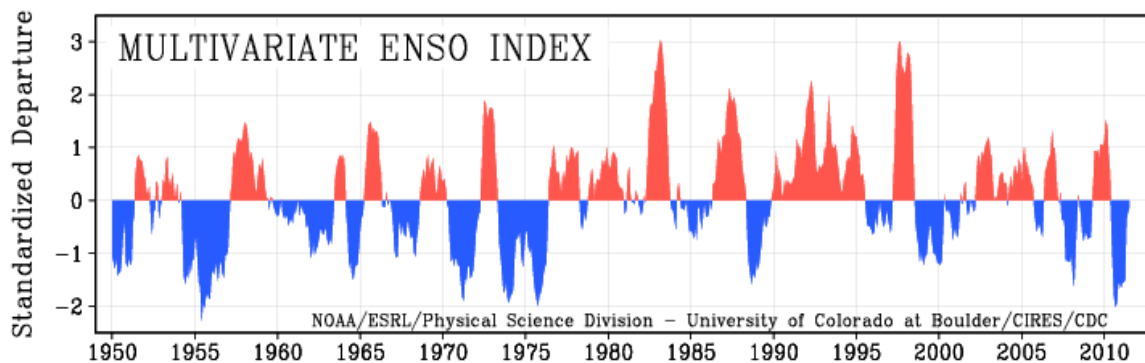


SECC Summer/Fall Climate Outlook

Date Updated: August 17, 2011

La Niña watch issued for the upcoming fall/winter. After enduring the winter and spring dominated by the influence of a strong La Niña, the summer season saw a return to near-normal sea surface temperatures in the tropical Pacific (Neutral Phase). La Niña refers to the periodic appearance of colder than normal ocean waters along the equator in the eastern and central Pacific Ocean, in many ways the opposite of El Niño. Even though ocean surface temperatures returned to near normal, the atmosphere continued to show signs of La Niña's influence in strong easterly low-level winds, lack of cloudiness or rain in the central Pacific, and negative SOI. In addition, La Niña's are often multi-year events, especially when the first year is a strong episode. For this reason we have been warning about the possibility of a return to La Niña this fall and winter. Now, several coupled ocean-atmospheric models, including NOAA's CFS, are now indicating changes in the system and are predicting the return of La Niña. Based on the historical tendency for strong episodes to last more than one year and now the agreement of some dynamic models, we are predicting a greater than 50% chance of La Niña redeveloping this fall and winter.

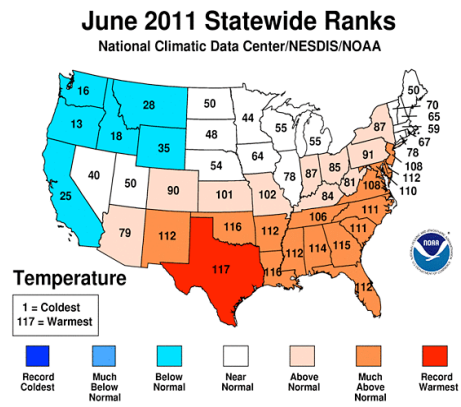
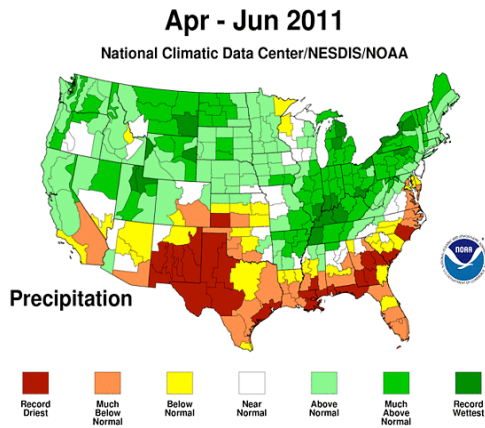


Negative values of the MEI index indicate La Niña episodes. Multi-year events are shown in 1954-1956, 1974-1976, and 1998-2000.

La Niña is known to bring drier than normal weather and climate patterns to Florida and coastal areas of the Southeast and also Texas and the desert Southwest. Last year's strong event was the primary trigger for the unprecedented drought in Texas and New Mexico and very dry conditions here in the Southeast. A second year of La Niña could hard-hit areas.

Recent conditions – La Niña holds on longer than normal. Typically, La Niña brings warmer than normal temperatures to the entire Southeast and drier than normal rainfall patterns to Florida, southern Alabama and Georgia, and coast Carolina's during the colder months, basically October through March or April. Rainfall over the area generally followed this pattern as expected, but temperatures in December and early January were among the coldest on record and certainly unexpected during a strong La Niña. The cold temperatures were the result of a month-long stretch of strongly negative phase of the North Atlantic Oscillation (NOA), a pattern of surface pressure over the Northern Atlantic Ocean that is known to impact winter temperatures and snowfall in Europe and the eastern United States. After the NOA returned to normal, the usual La Niña temperature patterns prevailed the remainder of the winter and spring.

The normal cycle of a La Niña event is to weaken in the spring and it usually loses its strong connection to our weather and climate patterns by mid-April and May. This year, however, the warmer and drier conditions persisted through May and into most of June. The result was that the three-month period from April-June was the driest on record for the Florida Panhandle and southwest Georgia. Extremely hot temperatures accompanied the dry weather, as June ranked among the warmest on record for Florida, Georgia, and Alabama. July and August saw a return to more seasonal temperatures and regular rainfall that has eased drought concerns.



For more information on recent and current conditions, please check out the following resources:

State Climate Summaries

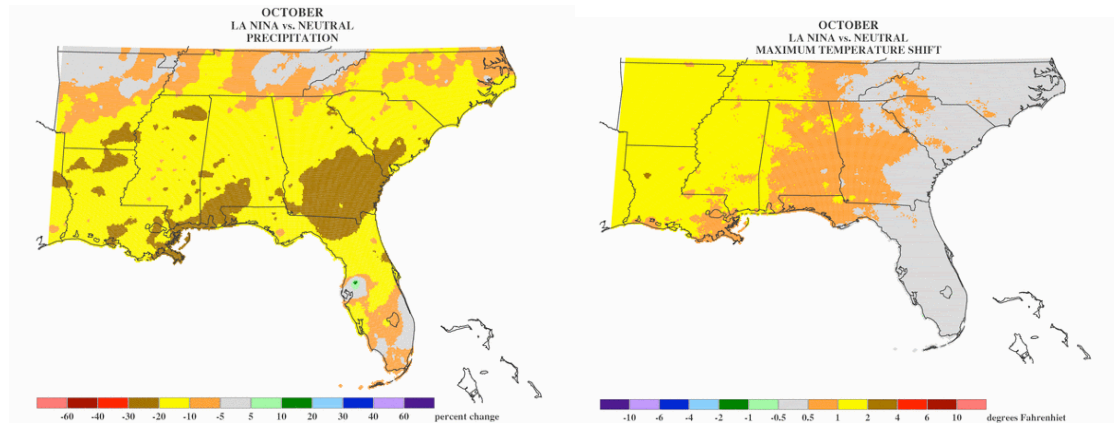
- [Florida](#)
- [Georgia](#)
- [North Carolina](#)

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](#)

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

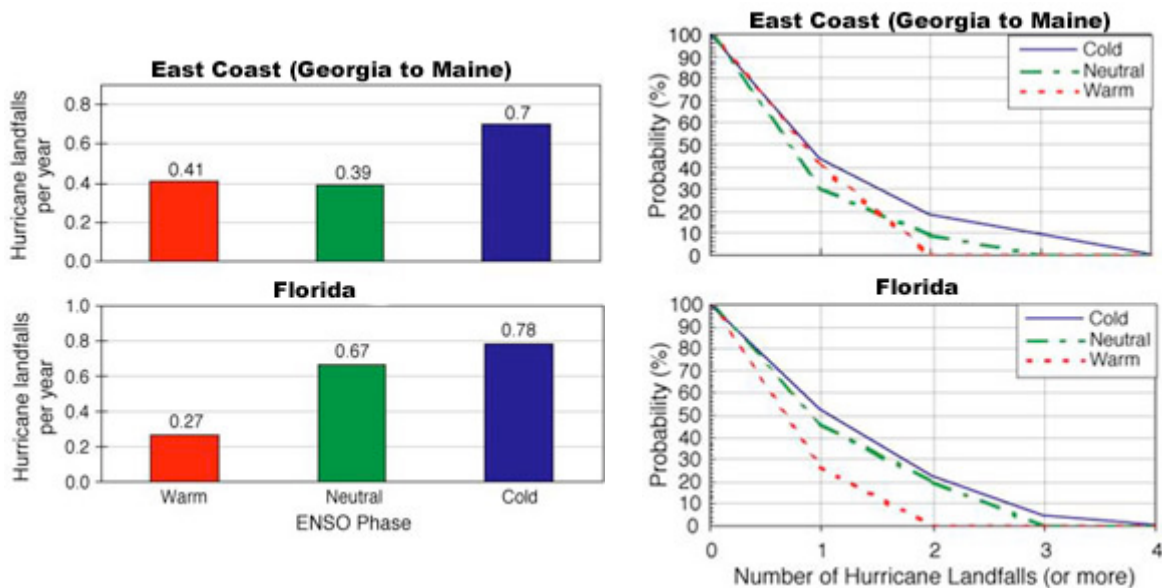
Southeast, then intensifies and sets in most strongly over Florida and the coastal areas of the Gulf of Mexico and Atlantic Ocean in the heart of the winter. The figures below show typical rainfall and temperature departures from normal during La Niña events.



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

With most of the Southeast now in various 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.

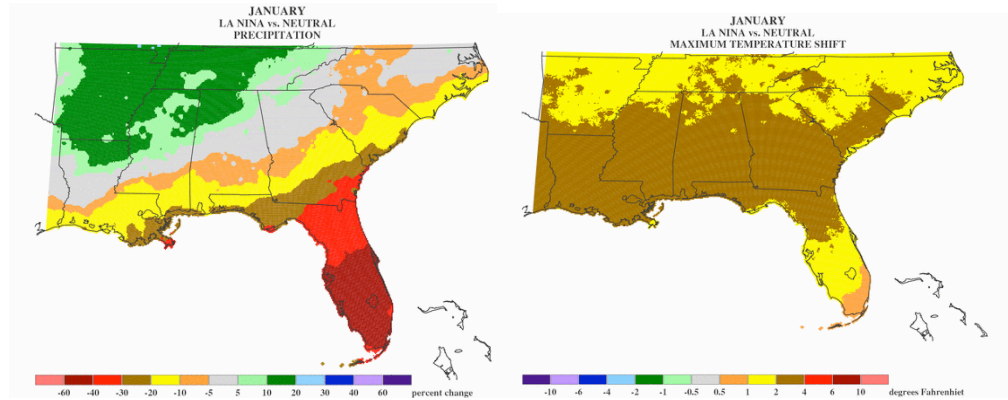


The left graph shows that Florida (both coasts) averages twice the number of landfalling hurricanes (the ones that count) during neutral conditions or a developing La Niña (cold) than during an El Niño (warm). The East Coast (Georgia to Maine) only sees this increase during a developing La Niña. This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

Looking further ahead – La Niña brings greatly increased chance of warm and dry winter to the Southeast. If La Niña conditions develop in the next one to three months, it usually brings warmer weather to the entire region, with temperatures generally averaging 2 to 4 degrees F higher than normal from November through March. The strongly negative North Atlantic Oscillation (NAO) that brought frigid temperatures to the Southeast the past two winters is not likely to return so strongly and the last two years have been extraordinary occurrences.

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. We understand that many crops are at risk from an early season freeze due to delayed planting from the drought. However, the risk of early or late season freezes 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 water 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 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](#)