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Planning Together

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Scientists all over the world are contemplating the impacts of sea level rise on coastal communities. Through these efforts, they are able to offer predictions about how rising sea waters will impact the habitability of coastal areas for people, plants, and animals. These models, from conservative to the most aggressive, demonstrate the need for adaptation. One might think that with this knowledge city planners could easily take this information and plan for future development in coastal communities. However, such assumptions fail to recognize the complexities of both private property rights and local democratic processes which lie at the heart of municipal governance. Understanding these issues is crucial to policymakers who desire to help prepare for the impending impacts of sea level rise in coastal states. This article seeks to explore an arts based approach utilized to engage private citizens in a democratic discussion of sea level rise for Levy County, Florida. This two year project was funded by Florida Sea Grant.

The Context

Levy County is a rural coastal county on the west coast of Florida. The area is comprised of saltmarshes and freshwater wetlands. The coastal portion of the county is low lying and highly vulnerable to impacts of sea level rise. The lion's share of the local population lives in two communities: Cedar Key-Rosewood (population 1600) and Yankeetown-Inglis (population 1800). These communities are diversely made up of full and part time residents, retirees and those employed in both blue and white collar professions. Fishing remains a viable industry

in the region. The politics of the region are conservative and match national standards. As one might imagine, planning for sea level rise was not a matter of first priority in the community. In fact, the research plan for this project had to be reformulated at the beginning of the grant given reluctance by some to engage in this project, as explained more fully below.

The Approach

An action research approach was employed in the design and implementation of this project. In action research those who might be traditionally classified as research subjects, i.e. private citizens, business owners, local government officials, etc., are made partners to the inquiry. These researchers are active at all phases of the research, including the identification of the need for and parameters of the study, as well as data collection and analysis (Reason and Bradbury, 2001). As explained by London, the action research approach "valorizes local knowledge and expresses confidence in the ability of people to critically reflect upon their own experiences to generate scientific knowledge without the intermediary of the outside researcher" (London, 2007, 407). In this study, researchers chose this approach to inquiry in an effort to help empower local stakeholders to grapple with the complex science associated with sea level rise projections, as well as the heightened politics and economic realities of planning for sea level rise in Levy County. Action research is commonly utilized in planning to bolster citizen participation thereby ensuring that plans crafted out of these efforts are "taken seriously and implemented" (Reardon et al., 1993, p.71).

Capacity Building Endeavors

At the inception of this grant, the research team sought to work with a series of specialized groups, including school children and the local fishing community, as a starting place for creating a climate where democratic dialogue could be allowed to happen. Initially, the research team planned to work with the schools in the county to develop a curriculum module that could be delivered on the topic of sea level rise. This did not come to fruition because the schools felt over-burdened by State mandates with respect to the content of curriculum. In an informal conversation with a city council member, the research team expressed its interest in engaging school aged children in this conversation. She provided us with the idea and opportunity to program content for a six-week summer camp for children K-middle school.

Cedar Key Summer Youth Program

The Cedar Key Summer Youth Program, funded partially by a federal program for migrant workers, provided a place for approximately 90 school-aged children from low-income households to spend six weeks of their summer vacations. The project team developed and delivered six weeks of enrichment activities

on the theme of coastal change, including lessons on archeology, law and civics, city planning, mapping, and art. The campers showcased their work to their families and invited community leaders.

The camp activity enriched knowledge of the participating children, their parents, the research team, and community leaders. The children learned about sea level rise and how it would impact their communities. They also were given the opportunity to contemplate the future they would like to see for their communities. They prioritized elevating buildings, moving important local infrastructure in land, and designating areas prone to flooding for park space. Their parents also learned from their children. They learned basic details about sea level rise. Most importantly, they were reminded of the capacity of their children to dissect complicated problems and to plan optimistically for the future. This exchange of knowledge was invaluable for the research team and the local policymakers as a first step in identifying interested stakeholders and beginning a local dialogue in a non-threatening manner. Inspired by this effort, the research team was asked to host an essay contest for 5th and 6th grade students in the county on the topic of sea level rise. While not part of the original grant, the team organized this

effort understanding the value of modifying the grant format where necessary to respond to the desires and interests of research partners from the community.

Oral Histories

In the original grant application, the research team proposed the construction of a brief documentary focusing on the fishing community in Cedar Key. The research team hypothesized that this community had a history of adaptive practices, some of which were precipitated by changes in coastal dynamics. When we approached the same town council woman who invited us to deliver the summer camp, she strongly discouraged us from pursuing the documentary project at the time. The town councilwoman was the wife of a local fisherman. She indicated that this particular group of individuals would not welcome the opportunity to participate. She explained that his community was still reeling from the economic impacts of the 2011 oil spill in the Florida Gulf.

We did not pursue the documentary project until 2013. At that point, the community had gotten to know the research team through a number of other activities and was ready to engage us this way. A team of students conducted video recorded

interviews with eight members of the community who earned their livelihoods from the sea. The resulting 15-minute video describes, in their own words, how this community has responded to observed environmental changes, as well as providing their thoughts on how the residents of Levy County might begin to plan for future adaptation. This video is available for view at: changinglevycoast.org.

The video has received more than 130 views on the project website and was also shown at both public workshops and the art exhibition opening. The video allowed observers to get to know their neighbors better and provided a mechanism for further sharing. In addition, those interviewed as a part of the documentary were drawn into the conversation about planning for adaptation to sea level rise in Levy County. Their stories of past adaptations further contributed to creating an optimistic dialogue about adaptation.

Art Exhibition

Levy County is home to a vibrant arts community. This community frequently commissions shows on topics of importance to area artists. We worked with them to craft a show visualizing the impacts of sea level rise on the region. Participating artists were taken on a boat tour of the area to discuss and demonstrate current and future impacts of coastal dynamics. Two months later, these same artists displayed their work at a gallery opening open to the public. Attendees received a short introduction to the topic of sea level rise, as well as a showing of the documentary, prior to viewing the art on display. Photographs of the art produced as a part of this endeavor are on the project website.

Conclusions

Climate change remains a difficult to discuss issue. The case of sea level rise is no exception. Sea level rise will alter the built and natural environment in coastal areas in Florida and beyond. The extent of these effects, as well as

the timeline in which they will occur, is uncertain at this point. The average resident, even those who believe that sea level rise is happening, is reluctant to take action because of the time horizon associated with climate change. In many cases, the best that planners in coastal communities can do is to get communities talking about what can be done, in both the present and future, to reduce the vulnerability of coastal communities to sea level rise. Arts based approaches to planning are a useful, and perhaps non-threatening way, to begin these dialogues.

Works Cited

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Reardon, K., J. Welsh, B. Kreiswirth, and J. Forester. Participatory Action Research From the Inside: Community Development Practice in East St. Louis. *The American Sociologist*, Spring 1993, 69-91.

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Drought Update

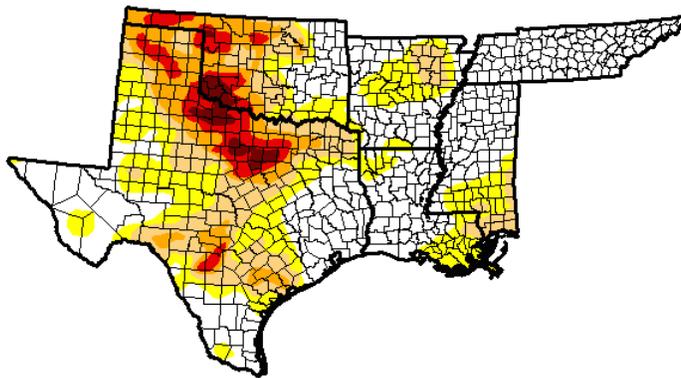
Luigi Romolo,
Southern Regional Climate Center

Despite some welcomed precipitation in Texas and southern Oklahoma, drought conditions for those two states, which dominate the drought story for the Southern Region, did not change significantly. Elsewhere, dry conditions allowed for a continuation of moderate drought designations in northeastern Arkansas and in southern Mississippi.

Due to persistent dry conditions, there was not a lot of severe weather in the month of November. Severe thunderstorms associated with a cold front on November 16, 2014 spawned four tornadoes in southern Louisiana and Mississippi. Two of these occurred in Louisiana's

Livingston parish, and the other two occurred in Walthall County Mississippi, and Jones County Mississippi. Fortunately, no fatalities or injuries were reported.

In Texas, the cold weather had numerous impacts. This was a part of the system that brought early winter weather to portions of north Texas where roads were iced over. Lubbock reported over 100 accidents in a 12-hour period and in four of those accidents there was a fatality. A week later, parts of Texas were dealing with flash flooding. In Austin, three people had to be rescued from the flooding waters. In El Paso, over 5 inches (127 mm) of rain fell in a 4-hour period (Information provided by the Texas Office of State Climatology).



Released Thursday, December 4, 2014
Anthony Artusa, NOAA/NWS/NCEP/CPC

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	46.47	53.53	32.26	16.58	7.24	1.97
Last Week <i>11/25/2014</i>	46.51	53.49	31.83	16.57	7.24	1.97
3 Months Ago <i>9/2/2014</i>	42.82	57.18	40.69	25.29	10.37	1.69
Start of Calendar Year <i>12/31/2013</i>	55.85	44.15	27.23	13.21	3.58	0.72
Start of Water Year <i>9/30/2014</i>	41.74	58.26	35.49	22.66	8.47	1.98
One Year Ago <i>12/3/2013</i>	52.53	47.47	28.25	12.88	3.60	0.80



Intensity:

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

Above: Drought conditions in the Southern Region. Map is valid for December 2, 2014. Image is courtesy of National Drought Mitigation Center.

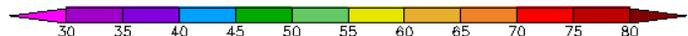
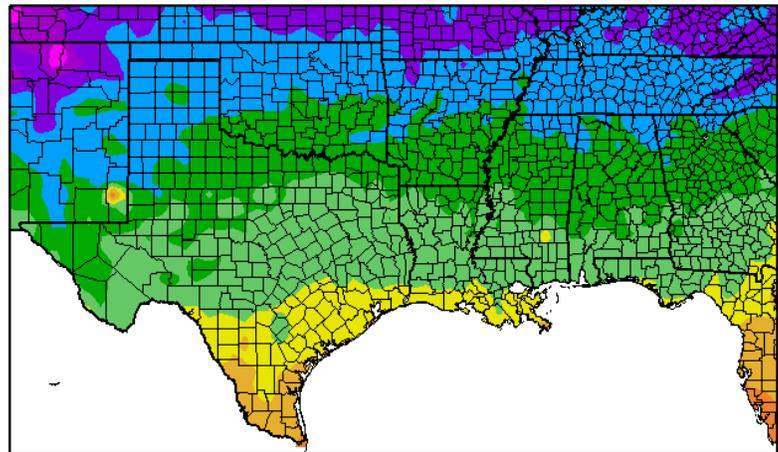
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Temperature Summary

Luigi Romolo,
Southern Regional Climate Center

November was a cold month across the board for the Southern Region, with temperatures averaging between 5 to 8 degrees F (2.78 to 4.44 degrees C) below normal in the northeastern portion of the region and between 3 to 6 degrees F (1.67 to 3.33 degrees C) below normal throughout much of Texas and Oklahoma. For the region as a whole, it was the sixth coldest November with a region-wide average temperature of 48.96 degrees F (9.42 degrees C). The statewide temperature averages are as follows: Arkansas averaged 44.80 degrees F (7.11 degrees C), Louisiana averaged 52.80 degrees F (11.56 degrees C), Mississippi averaged 48.80 degrees F (9.33 degrees C), Oklahoma averaged 44.30 degrees F (6.83 degrees C), Tennessee averaged 42.20 degrees F (5.67 degrees C), and Texas averaged 51.40 degrees F (10.78 degrees C). The state of Mississippi recorded its second coldest November on record (1895-2014). Both Arkansas and Louisiana experienced their third coldest November on record (1895-2014), and for Tennessee, it was their fourth coldest November on record (1895-2014). Oklahoma recorded its ninth coldest November on record (1895-2014), while for Texas, it was their seventeenth coldest November (1895-2014).

Temperature (F)
11/1/2014 - 11/30/2014

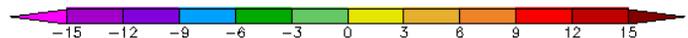
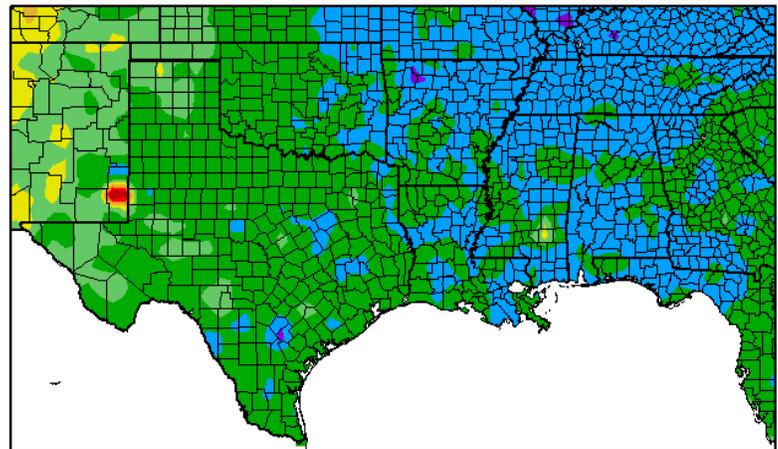


Generated 12/11/2014 at HPRCC using provisional data.

Regional Climate Centers

Average November 2014 Temperature across the South

Departure from Normal Temperature (F)
11/1/2014 - 11/30/2014



Generated 12/11/2014 at HPRCC using provisional data.

Regional Climate Centers

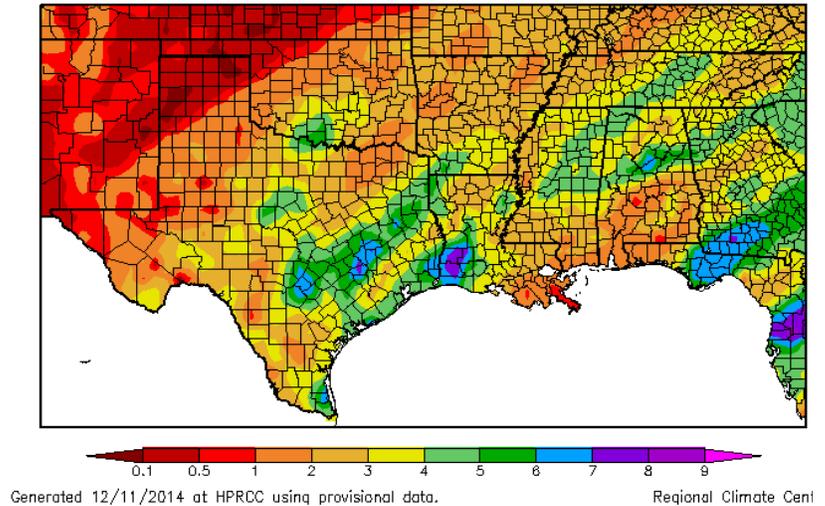
Average Temperature Departures from 1971-2000 for November 2014 across the South

Precipitation Summary

Luigi Romolo,
Southern Regional Climate Center

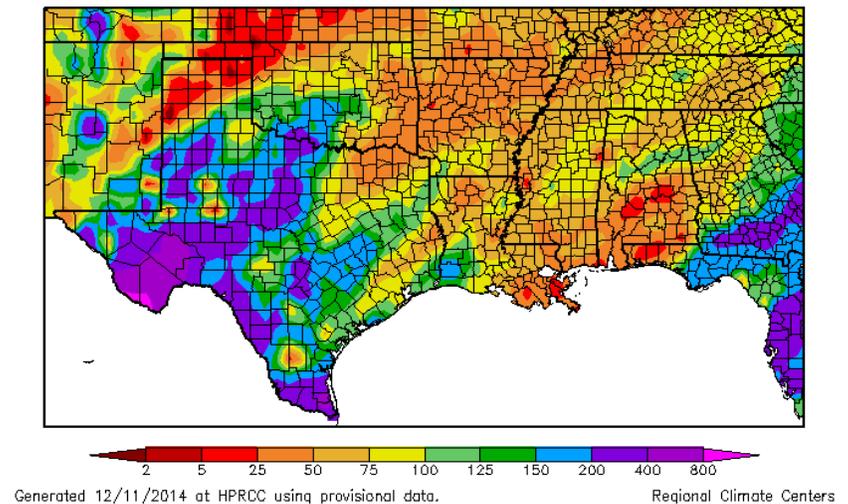
For the majority of the Southern Region, November was a dry month, with many stations in Louisiana and Arkansas experiencing extended periods without any measurable rainfall. Throughout much of Arkansas, Louisiana, Mississippi, and Tennessee, precipitation totals for the month varied between 25 to 75 percent of normal precipitation. The only areas in the region to experience wetter than normal conditions were in the south and southwestern counties of Texas, and a small handful of counties in southern Oklahoma. The Tran-Pecos climate division of Texas reported the highest precipitation anomalies with stations reporting between two to four times the monthly normal. The state-wide average precipitation totals are as follows: Arkansas reported 2.59 inches (65.79 mm), Louisiana reported 3.45 inches (87.63 mm), Mississippi reported 3.06 inches (77.72 mm), Oklahoma reported 1.87 inches (47.50 mm), Tennessee reported 3.18 inches (80.78 mm), and Texas reported 2.73 inches (69.34 mm). For Texas, it was the twenty-second wettest November on record (1895-2014). All other state-wide rankings fell within the two middle quartiles.

Precipitation (in)
11/1/2014 - 11/30/2014



November 2014 Total Precipitation across the South

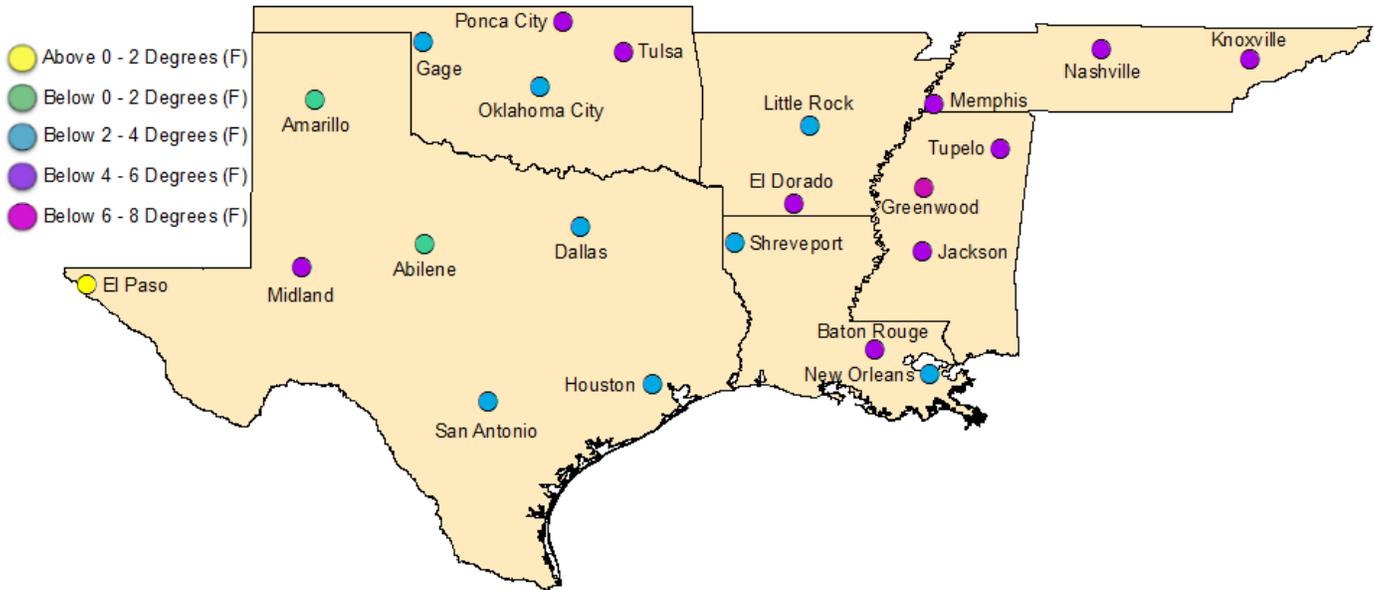
Percent of Normal Precipitation (%)
11/1/2014 - 11/30/2014



Percent of 1971-2000 normal precipitation totals for November 2014
across the South

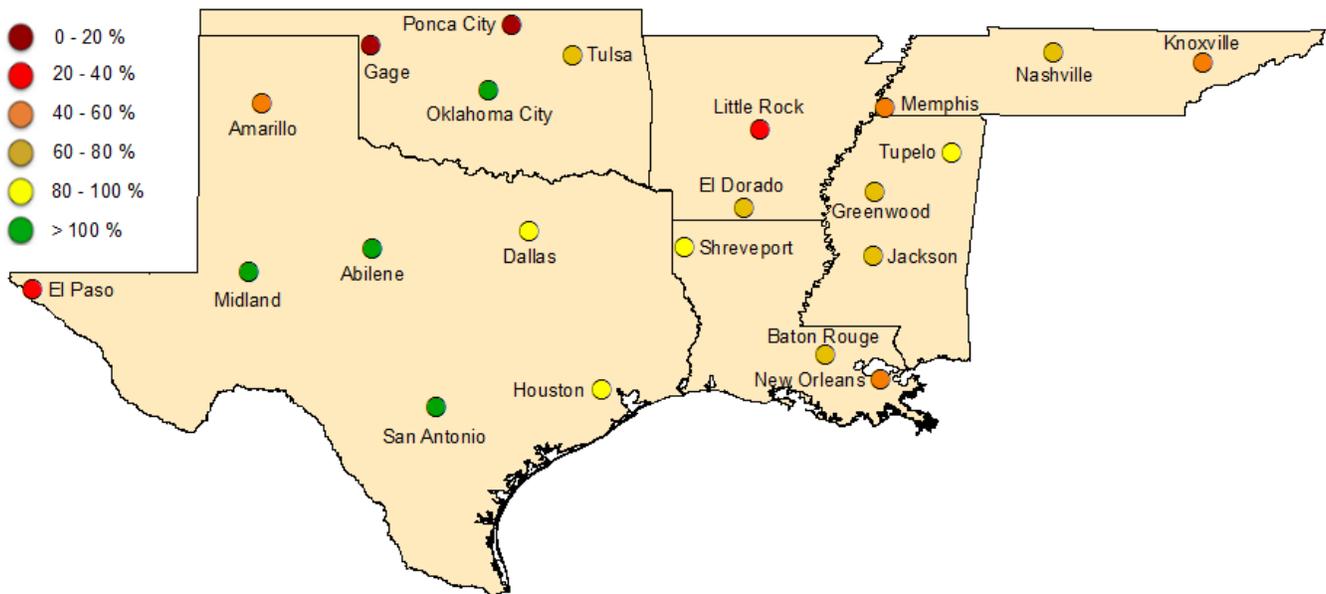
Regional Climate Perspective in Pictures

November Temperature Departure from Normal



November 2014 Temperature Departure from Normal from 1971-2000 for SCIPP Regional Cities

November Percent of Normal Precipitation



November 2014 Percent of 1971-2000 Normal Precipitation Totals for SCIPP Regional Cities

Climate Perspective

State	Temperature	Rank (1895-2011)	Precipitation	Rank (1895-2011)
Arkansas	44.80	3rd Coldest	2.59	33rd Driest
Louisiana	52.80	3rd Coldest	3.45	52nd Driest
Mississippi	48.80	2nd Coldest	3.06	41st Driest
Oklahoma	44.30	9th Coldest	1.87	59th Driest
Tennessee	42.20	4th Coldest	3.18	39th Driest
Texas	51.40	17th Coldest	2.73	22nd Wettest

State temperature and precipitation values and rankings for November 2014. Ranks are based on the National Climatic Data Center's Statewide, Regional, and National Dataset over the period 1895-2011.

Station Summaries Across the South

Station Summaries Across the South											
Station Name	Temperatures								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	%Norm
El Dorado, AR	60.6	37.6	49.1	-4.7	79	11/4	21	11/18	3.11	-1.69	65
Little Rock, AR	58.2	37.5	47.9	-3.8	76	11/29	20	11/18	2.19	-3.54	38
Baton Rouge, LA	67.2	42.0	54.6	-4.4	82	11/11	27	11/19	3.50	-1.26	74
New Orleans, LA	67.7	48.3	58.0	-3.4	81	11/5	31	11/19	2.14	-2.95	42
Shreveport, LA	63.0	41.9	52.4	-3.7	80	11/4	24	11/18	4.43	-0.25	95
Greenwood, MS	60.3	36.5	48.4	-6.2	77	11/30+	21	11/18+	3.06	-1.79	63
Jackson, MS	63.1	37.6	50.3	-4.5	81	11/11	24	11/19+	3.88	-1.16	77
Tupelo, MS	58.2	35.5	46.8	-4.7	75	11/30	21	11/18+	4.50	-0.51	90
Gage, OK	56.7	27.9	42.3	-2.5	86	11/10	8	11/17	0.13	-0.97	12
Oklahoma City, OK	58.4	34.9	46.6	-2.2	80	11/10	17	11/17	2.38	0.27	113
Ponca City, OK	55.2	30.5	42.4	-5.0	76	11/10	10	11/18	0.35	-2.24	14
Tulsa, OK	56.6	33.7	45.1	-4.6	79	11/10	14	11/18	2.11	-1.36	61
Knoxville, TN	53.4	33.0	43.2	-5.8	70	11/24	18	11/19	2.11	-1.87	53
Memphis, TN	56.5	38.2	47.4	-4.9	75	11/4	20	11/18	2.56	-3.20	44
Nashville, TN	54.4	33.8	44.1	-5.2	73	11/4	18	11/19	3.34	-1.11	75
Abilene, TX	64.3	39.9	52.1	-1.6	84	11/10	21	11/17	2.44	1.14	187
Amarillo, TX	58.2	29.3	43.8	-1.3	83	11/29+	9	11/17	0.34	-0.34	50
El Paso, TX	65.4	40.6	53.0	0.3	81	11/2	25	11/19	0.11	-0.31	26
Dallas, TX	62.2	40.7	51.5	-3.6	79	11/30+	22	11/18	2.13	-0.44	83
Houston, TX	67.6	47.2	57.4	-3.5	82	11/4	30	11/19	3.40	-0.79	81
Midland, TX	61.1	34.9	48.0	-5.2	75	11/29	19	11/17	1.95	1.21	264
San Antonio, TX	67.2	47.5	57.3	-2.7	81	11/23+	31	11/17	7.21	4.63	279

Summary of temperature and precipitation information from around the region for November 2014. Data provided by the Applied Climate Information System. On this chart, "depart" is the average's departure from the normal average, and "% norm" is the percentage of rainfall received compared with normal amounts of rainfall. Plus signs in the dates column denote that the extremes were reached on multiple wdays. Blueshaded boxes represent cooler than normal temperatures; redshaded boxes denote warmer than normal temperatures; tan shades represent drier than normal conditions; and green shades denote wetter than normal conditions.

Climate Forecast for Winter 2014-2015

Barry Keim, Louisiana State Climatologist, Louisiana State University

The Climate Prediction Center has issued their forecast for this upcoming winter season. In this instance, winter is defined as the months of December, January and February. The forecast calls for cooler than temperatures normal across the Gulf South, with a high probability of being wetter than normal across all the southern States of the U.S. (Figure 1). These conditions are typical of what you'd expect during an El Nino winter, though El Nino has not yet officially arrived on the scene. Currently, forecasters are estimating that we have a 65 percent chance of experiencing an El Nino this winter, and if it does indeed emerge, it is likely to be weak. Even if

it doesn't, I wouldn't be surprised if the forecast holds anyway as El Nino-like phenomena continues to play out – take for example our rather mild hurricane season, which is typical during El Ninos. So far, this has been the best non-El Nino “El Nino-like” year that we've ever had! So....despite the forecast for coolish temperatures, December has gotten out of the gate on the rather warm side, but note that this forecast is for the entire three month period in its totality. Only time will tell if the forecast will hold. Please contact me with any questions at keim@lsu.edu.

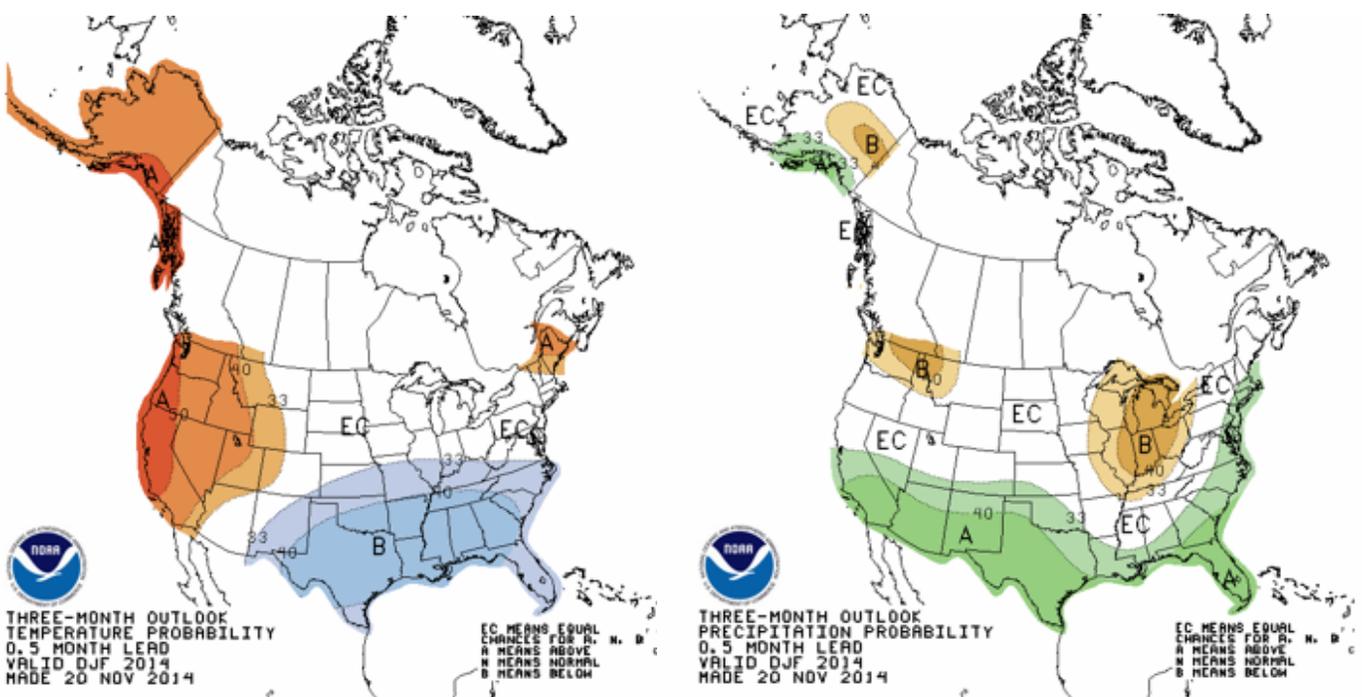


Figure 1. Long lead forecast for winter (December, January, and February) 2014-2015 from the Climate Prediction Center. Image is from <http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1>.

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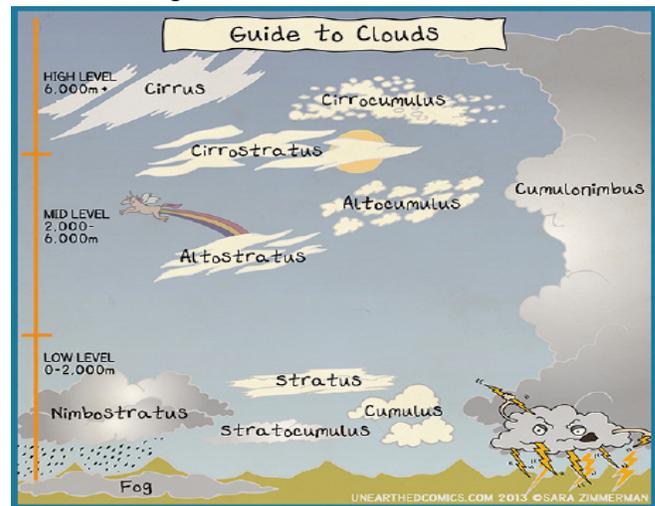
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For questions or inquiries regarding research, experimental tool development, and engagement activities at the Southern Climate Impacts Planning Program, please contact us at [405-325-7809](tel:405-325-7809) or [225-578-8374](tel:225-578-8374).

Monthly Comic Relief



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