



# Air Quality Summary—August 2011



Residents in southern Louisiana experienced higher than normal levels of particulate matter in the air due to marsh fires that were burning in the Bayou Sauvage area of eastern New Orleans during the latter part of August. The fire, believed to have been started from a lightning strike, began burning around August 26. Because of the isolated location of the fire, it was inaccessible by land and therefore nearly impossible to extinguish. Tropical Storm Lee came ashore on September 2, putting out the majority of the fire. The Louisiana Department of Environmental Quality monitored the air from its fixed monitoring sites as well as its Mobile Air Monitoring Lab, which was located at a fire station at the corner of Read Blvd and Dwyer Road, several miles southwest of the fire.

## **Baton Rouge Area**

### **OZONE**

There were four (4) days that exceeded the National Ambient Air Quality Standard (NAAQS) for ozone in the Baton Rouge area during the month of August 2011. Please refer to page 2 for detailed information on August's ozone exceedances.

### **PM<sub>2.5</sub>**

There were two (2) days with violations of the NAAQS for PM<sub>2.5</sub> in the Baton Rouge area during the month of August 2011. Please refer to page 3 for detailed information on PM<sub>2.5</sub> levels throughout the state.

**Baton Rouge Action Days:** August 16 — Ozone, Code Orange/USG  
August 25 — Ozone, Code Orange/USG  
August 26 — Ozone, Code Orange/USG  
August 30 — Ozone, Code Orange/USG  
August 31 — Ozone and PM<sub>2.5</sub>, Code Orange/USG

## **Other Areas of the State**

### **OZONE**

There were thirteen (13) days that exceeded the National Ambient Air Quality Standard (NAAQS) for ozone in areas of the state other than Baton Rouge during the month of August 2011. Please refer to page 2 for detailed information on August's ozone exceedances.

### **PM<sub>2.5</sub>**

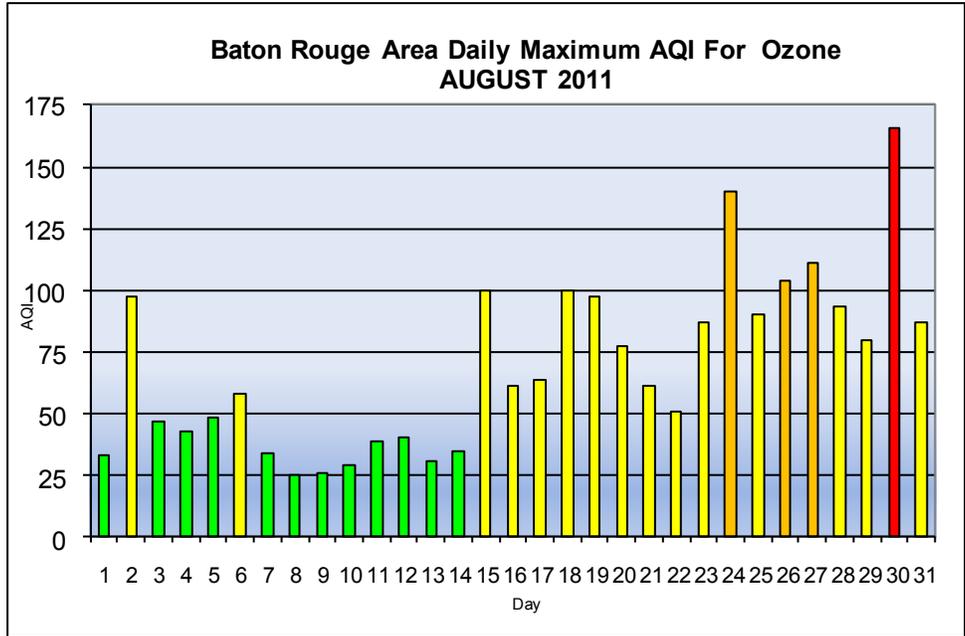
There were three (3) days with violations of the NAAQS for PM<sub>2.5</sub> during the month of August, 2011 in areas of the state other than Baton Rouge. Please refer to page 3 for detailed information on PM<sub>2.5</sub> levels throughout the state.

**New Orleans Action Days:** August 25 — Ozone, Code Orange/USG  
August 28 — Eastern New Orleans only, PM<sub>2.5</sub>, Code Orange/USG  
August 29 — PM<sub>2.5</sub>, Code Orange/USG  
August 30 — PM<sub>2.5</sub>, Code Orange/USG  
August 31 — PM<sub>2.5</sub>, Code Orange/USG

**Shreveport Action Days:** August 30 — Ozone, Code Orange/USG  
August 31 — Ozone, Code Orange/USG



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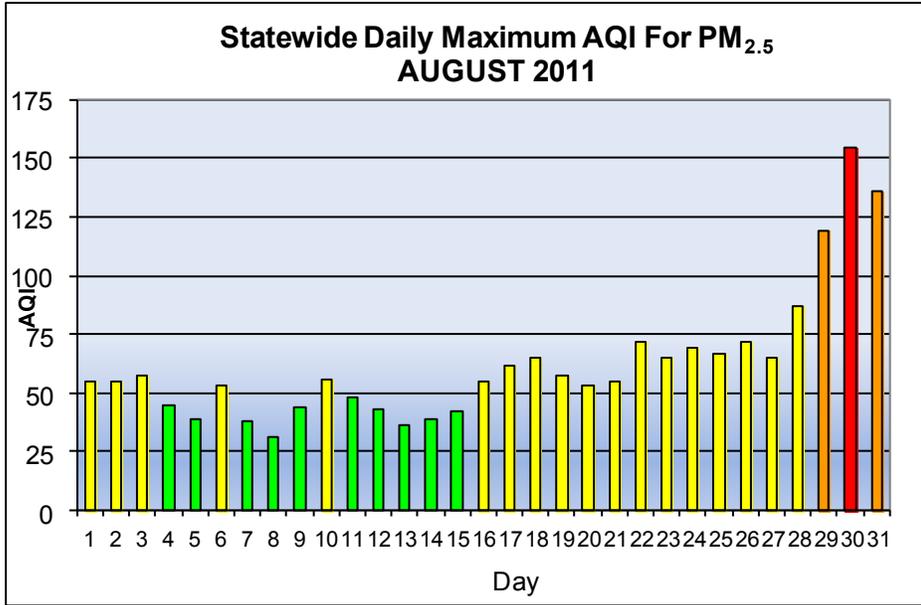
### Statewide 8-HR Ozone Readings Above 75 ppb - August 2011

DATE	AQI	8-HR OZONE Concentration (ppb)	MONITORING SITE
8/1/11	101	76	Shreveport
8/2/11	106	78	Shreveport
8/3/11	104	77	Shreveport
8/6/11	109	79	Garyville
8/17/11	101	76	Shreveport
8/18/11	101	76	Meraux
8/19/11	104	77	Shreveport
8/20/11	104	77	Shreveport
	101	76	Dixie
8/23/11	116	82	Shreveport
8/24/11	140	91	Capitol
	132	88	LSU
	132	88	Carville
	124	85	Port Allen
8/25/11	135	89	Shreveport
	122	84	Dixie

DATE	AQI	8-HR OZONE Concentration (ppb)	MONITORING SITE
8/26/11	127	86	Shreveport
	119	83	Dixie
	104	77	Dutchtown
8/27/11	111	80	Dutchtown
	111	80	Thibodaux
8/30/11	166	102	Port Allen
	135	89	Bayou Plaquemine
	127	86	New Roads
	127	86	Capitol
	127	86	Garyville
	124	85	Shreveport
	122	84	LSU
	111	80	Dixie
	111	80	Lafayette
	109	79	Thibodaux
	101	76	Convent



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### Statewide High PM<sub>2.5</sub> 24-Hour Average Readings - AUGUST 2011

DAY	UG/m <sup>3</sup>	AQI	SITE
1	17.1	55	Alexandria
2	17	55	Monroe
3	18	57	Monroe
4	14	45	Monroe
5	12	39	Monroe
6	16.4	53	Kenner
7	11.6	38	Madisonville
8	9.6	31	Alexandria
9	13.7	44	Alexandria
10	17.6	56	Kenner
11	14.8	48	Kenner
12	13.1	43	Alexandria
13	11.1	36	Alexandria
14	12.1	39	Alexandria
15	13	42	Monroe
16	17	55	Monroe
17	20	62	Monroe
18	21	65	Monroe, Chalmette Vista
19	18	57	Monroe
20	16.5	53	Alexandria
21	17	55	Monroe
22	24	72	Capitol
23	21	65	Capitol
24	23	69	Port Allen
25	22	67	Port Allen
26	24	72	Capitol
27	21	65	Capitol, Port Allen
28	30	87	Chalmette Vista
29	46.7	119	N.O. City Park
30	71.7	155	N.O. City Park
31	57.1	136	French Settlement

### Statewide PM<sub>2.5</sub> 24-Hour Average Above 35 ug/m<sup>3</sup> - August 2011

DATE	AQI	PM <sub>2.5</sub> 24-HOUR AVERAGE ug/m <sup>3</sup>	MONITORING SITE
8/29/11	119	46.7	N.O. City Park
8/30/11	155	71.7	N.O. City Park
	113	43	Port Allen
	108	40	Capitol
8/31/11	136	57.1	French Settlement
	123	49	Port Allen
	117	45	Capitol
	107	39	Lafayette

# Baton Rouge Climate Summary—August 2011

*\*Prepared by: Jay Grymes*

(based on available preliminary data as of September 27 2011)

By a number of measures, August 2011 was a record-setter in terms of excessive heat for metro Baton Rouge. August's monthly average temperature for the 'Red Stick' was 86.3°F, 3.4° above the 30-year normal -- a very large departure by summer standards. In fact, August 2011 ranks not only as the "warmest" August on record, but the "warmest" of any month in Baton Rouge's temperature record, dating back to 1905! And the record August heat goes hand-in-hand with an all-time record for the summer (Jun-Jul-Aug): Baton Rouge's 2011 average summer temperature was 84.7°, nearly a full degree warmer than the 2010 summer, which was Baton Rouge's warmest summer prior to 2011.

For trivia buffs, Louisiana's statewide-averaged 2011 summer (JJA) temperature was 84.8°F -- as determined by the National Climatic Data Center (NCDC). Not only is that a record for Louisiana, but according to NCDC, it ranks as the fourth warmest summer for any state since 1895, exceeded only by 'JJA' statewide averages for Texas (2011) and Oklahoma (2011 & 1934)!

Daily maximums during August 2011 at Metro AP climbed to 95° and above on all but two dates -- Aug 1st (93°) and 25th (94°) -- setting a Baton Rouge record for the number of 95° days in a single month. Highs reached the triple digits three times: Aug 18th (101°), 28th (100°) and 30th (100°). Along with the excessive daytime heat, daily minimums were at or above normal for all but three dates -- Aug 29-30. Daily minimums of 75° and above occurred on 23 days, tied for the second-most days for any month in the Baton Rouge record back through at least 1930.

Higher-than-normal minimums are often indicative of elevated humidity, which adds to the heat stress and utility demands for indoor cooling. Based on Cooling-Degree Days (CDDs) -- a rough guide to energy requirements for indoor comfort -- JJA energy demands for air-conditioning were on the order of 15% to 20% above average for Baton Rouge, with energy consumption for cooling likely establishing an all-time summer record for the metro area.

Contributing to the oppressive heat during August was an abundance of sunshine throughout the month as suggested by Table 1. August is typically a "partly cloudy month," but during August 2011, all but one day (Aug 12th) was classified as "clear to mostly sunny" through the daylight hours at Metro Airport.

Table 1: Average "daylight hours" sky conditions (to 12,000 ft) during August 2011, based on automated ASOS observations from Baton Rouge's Metro Airport.

Sky Condition: Sunrise to Sunset (Sky Coverage)	Clear to Mostly Sunny (0/10ths – 3/10ths)	Partly Cloudy / Partly Sunny (4/10ths – 6/10ths)	Mostly Cloudy to Cloudy (7/10ths – 10/10ths)
No. Days	30	1	0

Sunrise-to-sunset periods for Baton Rouge during August, excluding 'Civil Twilight,' ranged from 13.6 hours (Aug 1) to 12.8 hours (Aug 31).

# *Baton Rouge Climate Summary—August 2011*

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(based on available preliminary data as of September 27, 2011)

After a relatively "wet" second half of July, and a "wet" first day of August, the pesky "dry" pattern that has dominated the 2011 summer was re-established over the metro area through the remainder of the month. Based on reports from the 23 metro area sites included in Table 2, only one location reported more than six inches of rain during August, and fewer than a third of the sites recorded as much as four inches of rain for the month. Metro Airport's 2.17" for August 2011 was less than 40% of normal for that location.

Daily data from LSU-Ben Hur Farm (Figure 1) is representative of the metro area rainfall distribution pattern during August. Rains on August 1st -- produced by a cluster of afternoon thunderstorms -- accounted for a substantial portion of the monthly total, and generated the month's only one-day totals in excess of 1" at many locations.

August 2011's regional (unweighted) average rainfall for these 23 sites was 3.02", with a median of 2.75" -- roughly half the long-term August average rainfall. August raindays (days with 0.01" or more) ranged from just 1 day to as many as 11 days among the 23 sites, with a median of 8 raindays -- well below the long term average of 12.3 raindays for August.

August 2011 reports from the Metro Airport ASOS weather platform included:

- 12 days with thunder, about average for the month of August (12.1 days);
- 13 days with fog, but no recorded occurrences of "dense" fog (visibility less than 1/4-mile); and
- notable smoke and/or haze on 8 dates: August 7, 10, 14, 18, and Aug 28-31.

(It is interesting that "days with thunder" were near normal for Metro Airport during August, even though rainfall was substantially below the norm and daytime cloud-cover also seems to have been below average for August.)

For the second consecutive month, winds at the Metro Airport ASOS platform averaged a modest 3.9 mph -- well below the 47-year August average of 5.5 mph. Daily winds during August averaged below 5.0 mph on all but 6 days, including each day from the 15th through month's end. Daily winds at Metro AP averaged above 8.0 mph on August 8-10, due in part to a south-to-north pressure gradient enhanced by a frontal boundary that remained positioned over the mid-Mississippi Valley during that period. Sustained winds reached or exceeded 25 mph on 4 dates -- Aug 5th, 8th, 18th & 23rd -- with peak gusts topping 30 mph on all four dates. The higher wind speeds on each of these dates likely were the result of local thunderstorm activity.

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(based on available preliminary data as of September 27, 2011)

Table 2: August 2011 rainfall for selected stations across the greater Baton Rouge metro area. (Data are preliminary and provided courtesy of the National Weather Service, the LSU Southern Regional Climate Center, the U.S. Geological Survey, the LSU AgCenter, and the CoCoRaHS Volunteer Network.)

Rainfall-Recording Site	Monthly Rainfall	Monthly DFN	No. Days $\geq 0.01$ "	No. Days $\geq 1.00$ "
<b>BR - Metro AP</b>	<b>2.17"</b>	<b>-3.65"</b>	<b>3</b>	<b>1</b>
<i>NWS Cooperative Network Sites</i>				
BR - Concord Estates	4.37"	-1.54"	11	1
BR - Sherwood Forest	2.75"	-4.04"	10	1
Denham Springs	4.99"	-2.06"	10	1
Gonzales	4.63"	-1.79"	8	1
Livingston	1.78"	-4.09"	6	0
New Roads	0.39"	-4.66"	1	0
<i>USGS HydroWatch Selected Sites</i>				
Clinton (07377195)	2.15"	--	8	0
Zachary (07377750)	1.00"	--	7	0
Central (07378100)	3.78"	--	10	1
Prairieville (07380107)	0.94"	--	10	0
Milldale (07377230)	2.69"	--	7	1
Pt. Vincent (07380120) ( <i>0.1"</i> )	3.80"	--	7	1
French Settlement (07380200)	2.18"	--	8	1
<i>LSU AgCenter LAIS Automated Stations</i>				
LAIS - Ben Hur Farm	3.77"	--	10	1
LAIS - St. Gabriel Res Sta	1.25"	--	9	0
<i>CoCoRaHS Volunteer Observers</i>				
Shenandoah 0.8 W (LA-EB-36)	M	--	M	M
Monticello 3.0 ENE (LA-EB-19)	6.05"	--	7	3
Brownfields 5.8 NE (LA-EB-9)	4.36"	--	7	1
Baton Rouge 2.5 E (LA-EB-27)	3.58"	--	11	2
Baton Rouge 2.7 SW (LA-EB-2)	4.58"	--	11	2
Zachary 3.5 WNW (LA-EB-28)	1.89"	--	2	1
LSU Campus (LA-EB-33)	3.90"	--	10	1
WAFB-TV, Downtown BR	2.40"	--	8	0

DFN - Departure-from-Normal  
M - Monthly Report Unavailable  
"--" - Normals Not Available

(i) - Monthly Report May Be Incomplete  
(e) - Estimated Value  
(0.1") - 0.1" Resolution Only

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## *Drought Status:*

Progression of the weekly **U.S. Drought Monitor** shows nearly all of Louisiana as falling within some level of drought designation throughout the entire month of August. At month's start, a swath across western Louisiana was included under "Exceptional Drought (D4)," the most critical of all drought categories. Although rains over portions of extreme southeastern Louisiana during August eased the drought burden there by month's end, the extent of "Extreme Drought (D3)" to "Exceptional Drought (D4)" across the western half of the state expanded through the month.

Throughout August, most of the Baton Rouge metro area was rated as under "Severe Drought (D2)," with western sections of the extended Baton Rouge area slowly deteriorating to "Extreme Drought (D3)" classification by month's end (Figure 3).

Given the moisture deficits that have accumulated through the spring and summer for much of the state, it likely will require an extended run of 'near normal' and even 'above normal' rains to significantly ease drought conditions for many areas across the state.

## *Tropical Outlook:*

By the end of August, the season's 11th 'named storm' -- *Katia* -- had been confirmed by the National Hurricane Center (NHC), keeping the 2011 Hurricane Season on a near-record pace in terms of the number of storms through the first half of the season. Based on a NHC review of 1966-2009, the 'average date' of the 11th 'named storm' doesn't arrive until late November. And remember, September is traditionally the season's most active month, and accounts for nearly half (47%) of all Louisiana impacts by tropical systems (since 1900).

The consensus opinion among tropical forecasters earlier this year was that 2011 would be a "busy" year, and the storm count through the first half of the season certainly supports that perspective. Indeed, the number of 'named storms' is well ahead of what many forecasters anticipated for the first half of the season, although the number of storms achieving hurricane intensity (*Irene* and *Katia*) has stayed relatively low as of the end of August. Historically, roughly half of all 'named storms' attain hurricane strength. However, it should be noted that while only two hurricanes for eleven 'named storms' is well below the historical "ratio," two hurricanes as of the end of August is "average," based on the 1966-2009 NHC review.

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Figure 1: August 2011 Daily Max/Min Temperatures and Precipitation as recorded by the LSU AgCenter/LAIS Weather Station located at LSU-Ben Hur Farm (Nicholson Drive).

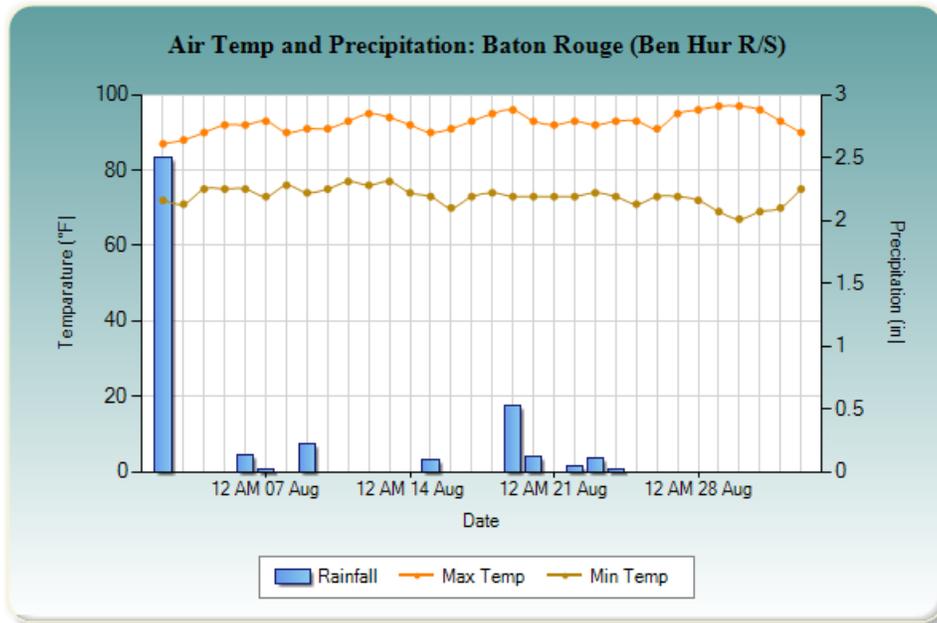
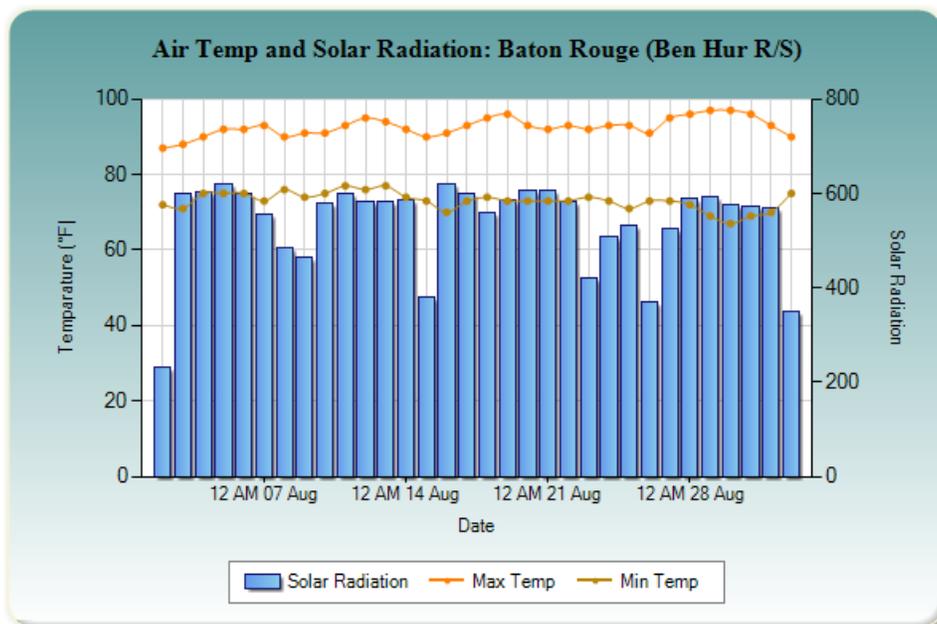


Figure 2: August 2011 Daily Solar Radiation and Max/Min Daily Temperatures as recorded by the LSU AgCenter/LAIS Weather Station located at LSU-Ben Hur Farm (Nicholson Drive).



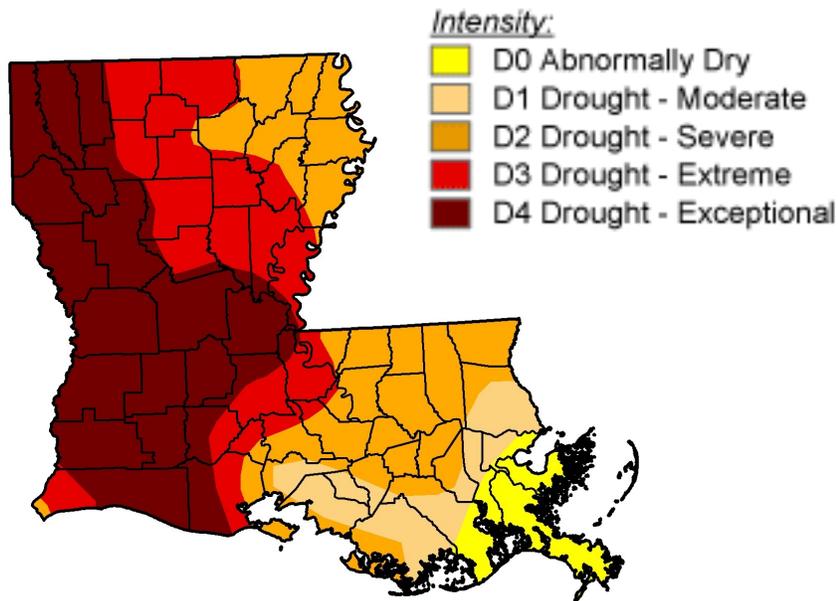
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Figure 3: Weekly **U.S. Drought Monitor** depiction for 30 August 2011.

Source: <http://drought.unl.edu/DM/>



## Acknowledgements:

- National Weather Service offices serving Louisiana
- LSU Southern Regional Climate Center (SRCC)
- Louisiana Office of State Climatology (LOSC)
- U.S. Geological Survey, Louisiana Water Science Center
- LSU AgCenter / LAIS Weather Monitoring Program
- CoCoRaHS Volunteer Network
- U.S. Drought Monitor (<http://drought.unl.edu/DM/>)
- NWS Climate Prediction Center (NWS/CPC)
- NWS Storm Prediction Center (NWS/SPC)
- NWS Hydrometeorological Prediction Center (NWS/HPC)
- NOAA/National Climatic Data Center (NCDC)
- WAFB-TV (Ch. 9), Baton Rouge

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\*Jay Grymes, LSU AgCenter Climatologist and WAFB Chief Meteorologist, provides the climatology portion of this report as a free service to DEQ and the citizens of Louisiana.