Air Quality Summary—July 2014

OZONE

Baton Rouge Area

There were two days that exceeded the National Ambient Air Quality Standard (NAAQS) for ozone in the Baton Rouge area during the month of July, 2014. Please see the table below and the graph on page two for daily air quality index levels in the Baton Rouge area.

⇒ *No Action Days were called for the Baton Rouge area during the month of July.*

Other Areas of the State

There was one day that exceeded the National Ambient Air Quality Standard (NAAQS) for ozone in the Lake Charles area during the month of July, 2014. Please see the table below for details.

⇒ *No Action Days were called for any area of the state during the month of July.*

$PM_{2.5}$

There were no days that exceeded the National Ambient Air Quality Standard (NAAQS) for $PM_{2.5}$ in any area of the state during the month of July, 2014.

⇒ *No Action Days were called for* $PM_{2.5}$ for *any area of the state during the month of July.*

Please see the graph and table on the next page for detailed information on $PM_{2.5}$ levels throughout the state during the month of July and note the following regarding continuous $PM_{2.5}$ readings:

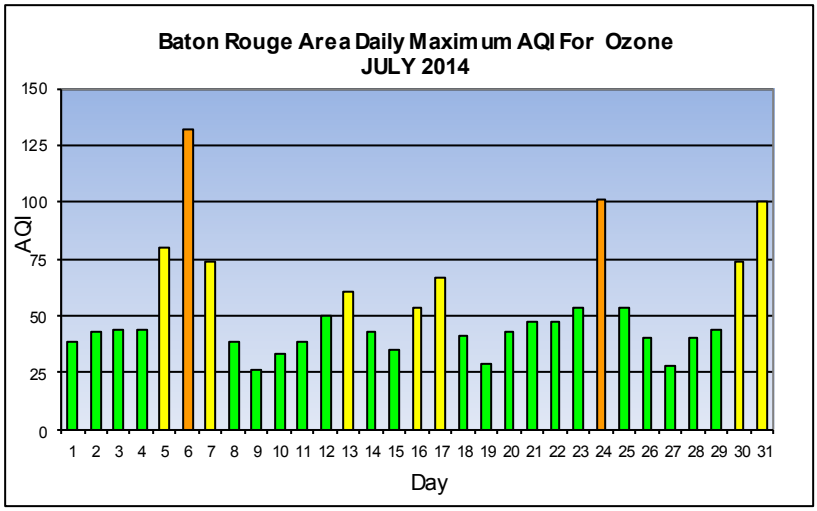
- $PM_{2.5}$ values contained in this report are not comparable to the National Ambient Air Quality Standards (NAAQS), with the exception of the Baton Rouge Capital site.
- Based on data analysis, the monitors that provide continuous $PM_{2.5}$ readings have given inconsistent and generally high readings when compared to the Federal Reference Method (FRM) monitors.
- Attainment of standards for all other $PM_{2.5}$ sites is based on the FRM $PM_{2.5}$ monitors that are collocated with the continuous monitors statewide. These monitors are filter-based and do not provide instantaneous readings.

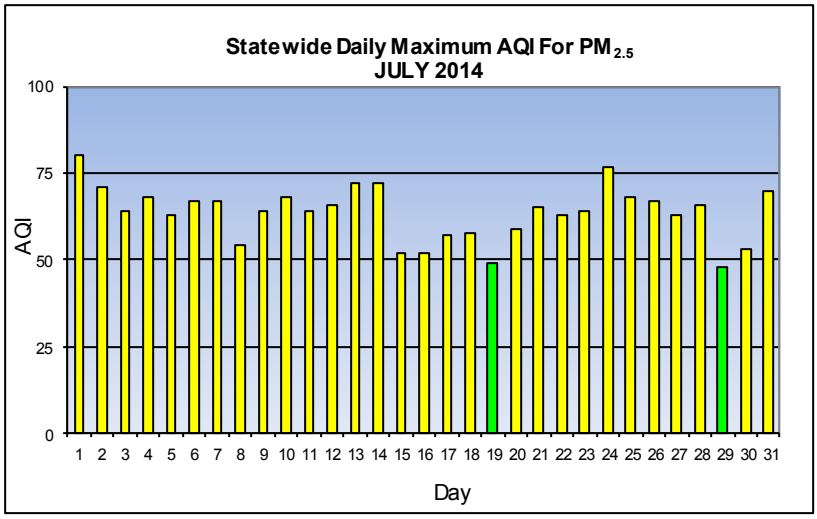
Statewide 8-HR Ozone Readings
Above 75 ppb - July 2014

DATE	AQI	8-HR OZONE Concentration (ppb)	MONITORING SITE
7/5/2014	111	80	Carlyss
7/6/2014	132	88	Dutchtown
	129	87	Convent
7/24/2014	101	76	Carville
	101	76	LSU

Air Quality Summary—July 2014

Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy	Very Unhealthy	Hazardous





Statewide High PM2.5 24-Hour Average Readings - JULY 2014

DAY	UG/m3	AQI	SITE
1	25.9	80	Shreveport Airport
2	21.7	71	Monroe
3	18.4	64	Madisonville
4	20	68	Chalmette Vista
5	17.7	63	Port Allen
6	19.5	67	Capitol
7	19.8	67	Madisonville
8	13.3	54	Kenner, Monroe
9	18.3	64	Westlake
10	20	68	Alexandria, Shreveport Airport
11	18.2	64	Chalmette Vista
12	19.1	66	Chalmette Vista
13	21.9	72	Shreveport Airport
14	21.9	72	Alexandria
15	12.6	52	Shreveport Airport
16	12.8	52	Chalmette Vista
17	14.9	57	Capitol
18	15.2	58	Kenner
19	11.7	49	Kenner
20	15.9	59	Capitol
21	18.9	65	Capitol
22	17.8	63	Chalmette Vista
23	18.2	64	Lafayette
24	24.5	77	Capitol
25	20.1	68	Westlake
26	19.6	67	Monroe
27	17.6	63	Kenner
28	19.4	66	Chalmette Vista
29	11.5	48	Lafayette
30	13.2	53	Capitol
31	21.3	70	Chalmette Vista

*$PM_{2.5}$ values contained in this report are not comparable to the National Ambient Air Quality Standards (NAAQS), with the exception of the Baton Rouge Capital site.
Attainment of standards for all other $PM_{2.5}$ sites is based on the Federal Reference Method (FRM) $PM_{2.5}$ monitors that are collocated with the continuous monitors statewide. For details on these monitors, please visit LDEQ's website at www.deq.louisiana.gov/portal/DIVISIONS/Assessment/AirFieldServices/AmbientAirMonitoringProgram.aspx

Baton Rouge Climate Summary—July 2014

*Prepared by: Jay Grymes

(based on available preliminary data as of August 7, 2014)

July Weather Highlights:
- 2014's run of 'cooler-than-normal' weather continues
- three July 'cool' fronts … very uncommon
- no tropical activity in the Gulf through the first two months of the Hurricane Season

July's average monthly temperature at Baton Rouge Metro Airport (BTR) was 81.1°F, nearly 2° below the monthly norm (Table 1). While a monthly departure of 2° would not be an uncommon occurrence for most months, it is sizable departure for a summer month in south Louisiana. As evidence, July 2014 ranks among the "coolest" 25% of all Julys for the Red Stick (records back to 1893) and the "coolest" July since 1994. July also continues 2014's run of cooler-than-normal weather: it's the third consecutive month -- and the sixth month of the year -- with an average monthly temperature below the 30-year normal (Fig. 4). As a result, for the first seven months, 2014 is running more than 2° below-normal, ranking among the "coolest" first seven months for any year on record and the "coolest" since January-July 1984.

While July may have been notably cooler-than-normal from a statistical perspective, that didn't mean Baton Rouge didn't suffer from routine summer heat-and-humidity. Daily highs at Metro Airport reached or exceeded 90° on 22 days (the long-term average is 24 days for July). The highest reading of the month was a sizzling 95°, recorded on the 26th and standing as the highest reading of the summer thus far. Yet BTR also set one of those oddball records during July 2014, with a high of only 79° on July 18th, a "record low maximum" for that date thanks to the day's rainy weather.

July's daily minimums played a key role in generating the unusual 2° monthly departure. Baton Rouge residents enjoyed six days during July when minimums dropped into the 60°s (instead of typical July lows in the 70°s), with those six dates highlighted by a very comfortable 62° on July 17th, a new "record low minimum" for that date at BTR.

2014's temperature departures over the past three months have translated into seasonal and monthly Cooling-Degree Day (CDD) totals averaging between 5% and 10% below the norm for metro Baton Rouge. As a result, area residences and businesses have benefitted from a slight reduction in energy consumption for indoor cooling and climate-control purposes (Table 1).

Table 1: July 2014 Temperature and Degree-Day Summaries

Temperatures & Departures (°F)

Monthly MeanT		Monthly MaxT		Monthly MinT		3-mo. MeanT		YTD MeanT	
81.1°	-1.9°	90.8°	-1.4°	71.4°	-2.3°	78.5°	-1.4°	65.7°	-2.3°

Cooling Degree-Days & %Normal				Heating Degree-Days & %Normal			
Monthly CDDs		Seasonal* CDDs		Monthly HDDs		Seasonal* HDDs	
504	91%	1479	92%	0	--	0	--

*CDD Season: Jan 1 thru Dec 31 *HDD Season: Jul 1 thru Jun 30

Baton Rouge Climate Summary—July 2014

*Prepared by: Jay Grymes

(based on available preliminary data as of August 7, 2014)

One of July's weather stories for Baton Rouge -- and all of the Gulf Coast region -- dealt with the three much-appreciated 'cool' front passages. Frontal passages occurred on July 3rd, July 16th, and July 27th, each delivering a brief run of "dry" (*i.e.*, low humidity) continental air and accounting for the six days with minimums in the 60°s. Occasional cool fronts can be expected during the summer months, but three in July is certainly unusual.

Those three fronts accounted for a large part of the monthly dew point temperature departure for July as well. July dew point temperatures for BTR typically average in the low to mid 70°s; by comparison, July 2014's monthly average dew point was 70.8°, uncommonly 'dry' for the area at this time of year (daily average dew points included in Figure 1).

Table 2: July 2014 rainfall for selected sites 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 LSU AgCenter, and additional volunteer sites.)

Rain-Reporting Site	July 2014 Rainfall					Two-Month Rainfall		Year-to-Date Rainfall	
	Total	DFN	1-Day Max*	No. Days ≥0.01"	No. Days ≥1.0"	Total	DFN	Total	DFN
BR - Metro Airport	***5.78"***	***+0.82"***	***3.57"***	***14***	***1***	***17.14"***	***+5.77"***	***41.48"***	***+5.59"***
BR - Concord Estates	11.30"	+5.10"	3.13"	10	4	20.17"	+6.91"	50.96"	+11.96"
BR - Sherwood Forest	7.63"	+1.64"	2.70"	12	3	15.68"	+3.26"	45.23"	+7.35"
Central 2.2 SE	8.76"	--	4.68"	9	3	15.58"	--	44.52"	--
Clinton 5 SE	6.89"	+2.16"	2.00"	9	3	M	--	M	--
Denham Springs	5.97"	+0.05"	3.20"	8	1	14.19"	+2.16"	50.58"	+13.90"
Dutchtown #2	3.97"	--	1.25"	10	2	12.84"	--	47.17"	--
Gonzales	4.20"	-1.85"	2.00"	8	1	12.11"	-0.98"	42.86"	+5.34"
Livingston	6.94"	+1.16"	3.06"	6	2	15.62"	+2.97"	49.27"	+10.71"
New Roads	5.51"	+1.26"	3.80"	8	1	11.63"	+1.75"	40.55"	+5.30"
Oaknolia	8.19"	+3.09"	2.34"	8	4	16.33"	+5.21"	44.80"	+7.05"
Plaquemine	5.43"	+0.39"	2.13"	7	2	13.91"	+2.42"	41.03"	+5.22"
Port Allen	8.70"	+3.34"	3.35"	11	3	20.45"	+8.18"	49.02"	+11.46"
St. Francisville	3.08"	-1.27"	0.82"	11	0	9.62"	-1.15"	41.69"	+4.52"
St. Gabriel	6.95"	+1.59"	2.41"	9	3	16.71"	+4.22"	45.01"	+9.72"
LSU-Ben Hur Farm	5.00"	+0.37"	2.07"	11	2	8.78"	-2.88"	36.53"	+1.02"
LSU Campus	8.29"	--	2.69"	10	3	16.93"	--	46.44"	--
WAFB-TV Studio	7.35"	--	3.36"	12	2	16.06"	--	45.57"	--
Regional Average	6.66"	+1.28"	2.70"	10	2	14.93"	+2.91"	44.87"	+7.63"
Regional Median	6.92"	+1.21"	2.70"	10	2	15.62"	+2.97"	45.01"	+7.05"

DFN - Departure-from-Normal "--" - Not Available M - Missing Value
(e) - Estimated ***(i)*** **-** Incomplete Total
1-Day Max* - largest "daily" total; based on the daily observation time for each location

Table 3: Distribution of July 2014 rain totals based on selected regional sites (Table 2, 18 sites).

No. Sites ≤ 3.00"	No. Sites 3.01" - 5.00"	No. Sites 5.01" - 7.00"	No. Sites 7.01" - 9.00"	No. Sites 9.01" - 11.00"	No. Sites > 11.00"
0	4	7	6	0	1

Metro Airport's July rains totaled 5.78", nearly an inch above the monthly normal and marking the third consecutive month with above-normal rainfall for BTR. Yet BTR's July total is nearly an inch below the regional average; based on the 18 reporting sites included in Table 2, metro area regional rainfall for July 2014 averaged 6.66" (with a median of 6.92"), more than 1" above the regional July norm.

The array of stations in Table 2 shows that the metro area averaged 10 raindays during July -- roughly 3 days below the monthly average (based on records from BTR). Note that July thunderstorm activity was markedly below average (Table 6a) with only half of the normal number of thunderstorm days reported at BTR.

Figure 1 shows that rains at Metro Airport were concentrated within the middle-third of the month. While some stations displayed slightly different day-to-day distributions, the majority of regional sites mimicked July daily pattern shown by BTR. A number of sites in the region to the north and east of Baton Rouge did record significant rains on July 2nd, including a 24-hour total of more than 3" at Livingston. In fact, nearly half of the sites listed in Table 2 reported a July single-day maximum rain of more than 3", but most of these coincided with the July 18th maximum at Metro Airport (3.57"). Interestingly, those July 18th rains were not directly tied to one of July's 'cool' front passages; they were the product of local instability and thunderstorm enhanced by a meandering, quasi-stationary boundary that lingered over the state throughout the day.

Two-month totals (June+July) exceeded 10" for all but two of the 18 sites listed in Table 2; more than half of the sites recorded more than 15" of rain for the period. For the year (January-July), every site with long-term normals* in Table 2 reported above-normal rainfall for the year thus far. The regional average (based on Table 2) for the first seven months of 2014 stands at roughly 45", about 20% above the regional norm for this time of year.

(normals* - define by NOAA as 30-year averages based on the periods 1981-2010)

Table 4: July 2014 significant preliminary 'Local Storm Reports' as posted by the NWS for the greater Baton Rouge metro area. (Final Reports available through the NWS.)

Date	Time (CDT)	Event	Location*	Parish
7 / 2	7:15 PM	Wind damage, trees & limbs down	Livingston	Livingston
*Locations approximated in whole miles from town center where noted				

Table 5: July 2014 Watches, Warnings and Key Advisories issued for East Baton Rouge Parish.

Date(s)	Event	Approx.Time in Effect (CDT)
--	** None during July **	--

Table 6: July 2014 additional reports and observations from the ASOS (Automated Surface Observing System) weather platform at Baton Rouge Metro Airport (BTR). (*Data are preliminary*.)

6a. Notable Weather Occurrences

No Days:	July 2014	Median*
Thunderstorms	7	14
"Heavy" Fog (Vis** ≤ ¼ mi.)	3	< 1
All Visibility*** (Vis** < 7.0 mi.)	15	18
Fog / Mist (Vis** < 7.0 mi.)	15	17
Smoke / Haze (Vis** < 7.0 mi.)	3	3

Median* - based on observations during 2000-2012 (13 years)

Vis** - Sensor Equivalent Visibility; Fog/Mist are distinguished from Haze/Smoke through evaluation of temperature and humidity at the time of observation

All Visibility*** - total number of days with any obstructions leading to at least one observation with Visibility estimated at less than 7 miles

6b. Average Daily Wind Speed

July 2014	< 3.0 mph (Near Calm)	3.0 mph < 5.0 mph	5.0 mph < 10.0 mph	10.0 mph < 15.0 mph	≥ 15.0 mph
No. Days	6	17	8	0	0

6c. Average Sky Conditions (cloud-cover estimate to 12,000 ft) from Sunrise to Sunset

July 2014	Clear to Mostly Sunny (0/10ths – 3/10ths)	Partly Cloudy To Partly Sunny (4/10ths – 6/10ths)	Mostly Cloudy To Overcast (7/10ths – 10/10ths)
No. Days	26	2	3

6d. Sunrise/Sunset Summary

Sunrise, Sunset & daylight Duration: (excludes 'Civil Twilight')

July 1	**July 15**	**July 31**
6:06 am 8:11 pm	6:13 am 8:08 pm	6:22 am 7:59 pm
14.1 hours	*13.9 hours*	*13.6 hours*

Figure 1: July 2014 *Daily Maximum and Minimum Temperatures, Daily Average Dew Points and Precipitation* from the Baton Rouge Metro Airport ASOS.

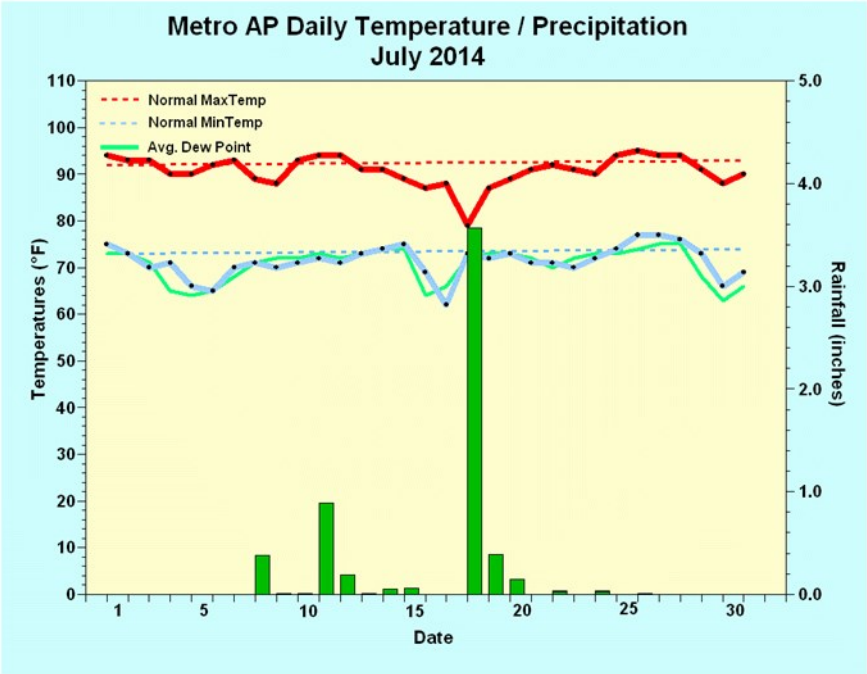
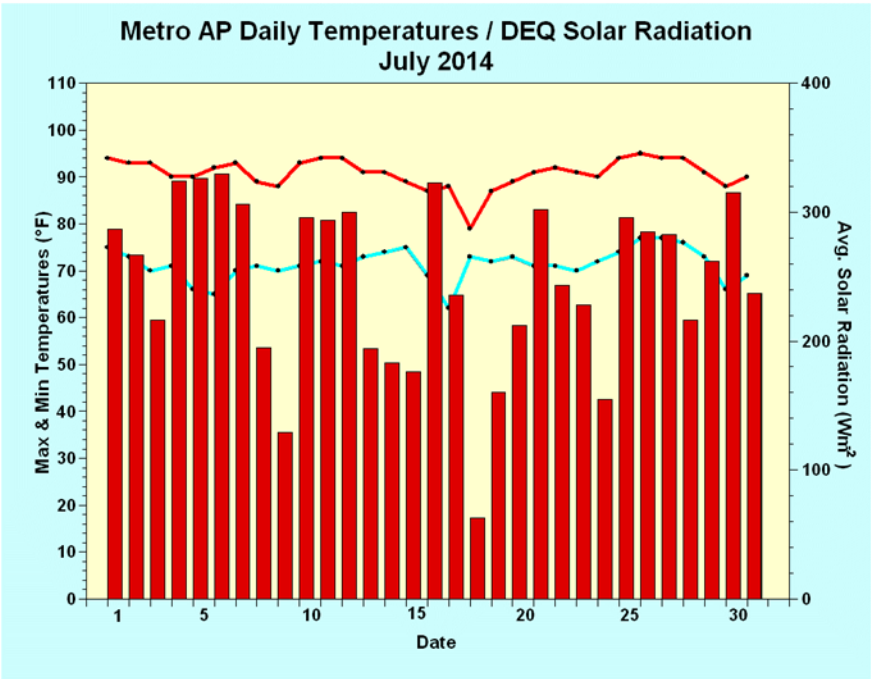
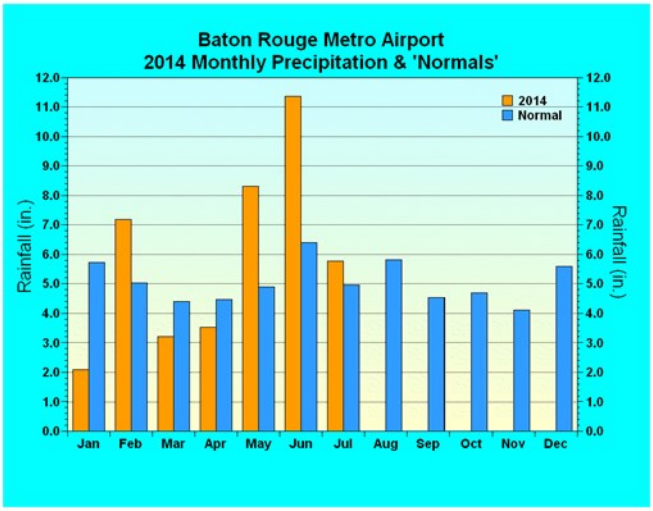


Figure 2: July 2014 *Daily Average Solar Radiation* as recorded at DEQ's Capitol site and *Daily Maximum and Minimum Temperatures* from the Baton Rouge Metro Airport ASOS.



Figures 3 & 4: 2014 monthly rainfall and average monthly temperatures plus comparative monthly normals for Baton Rouge Metro Airport (Normals based on 1981 - 2010).



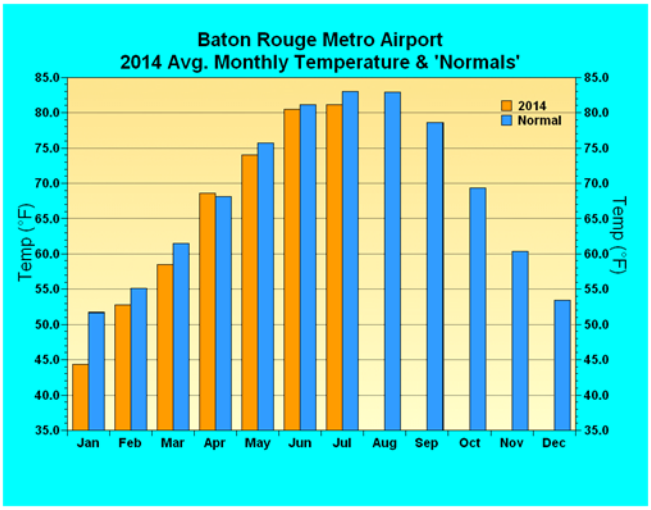
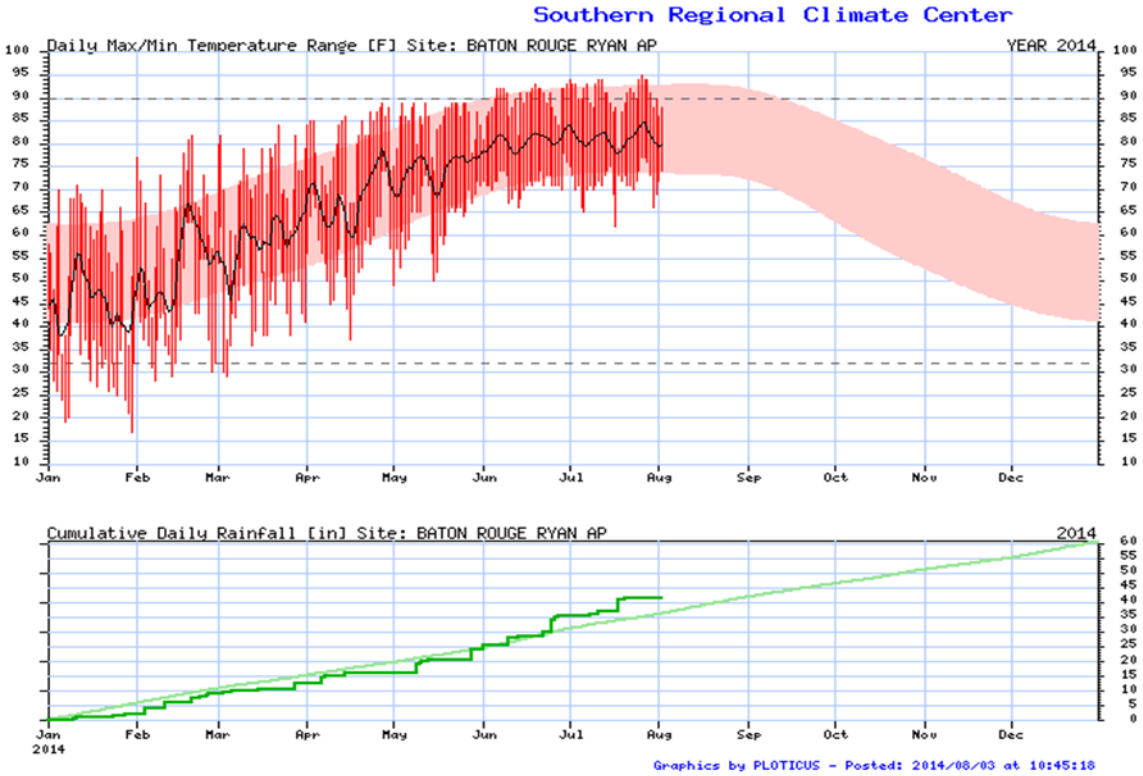



Figure 5: 2014 daily temperature and cumulative rainfall for Baton Rouge Metro Airport compared to long-term averages (as of 3 August 2014).