First Half Of The Summer: Relatively Warm and Dry
Second Half Of The Summer: More Of The Same?

By: Bill Deedler, Weather Historian NWS Detroit/Pontiac Mi

Yes, it is already half over (and it really does seem like it just began), and the Summer of 2007 for the most part has been agreeable in the temperature department (with alternating hot and cooling-off periods) but a little more disagreeable when it comes to rainfall.

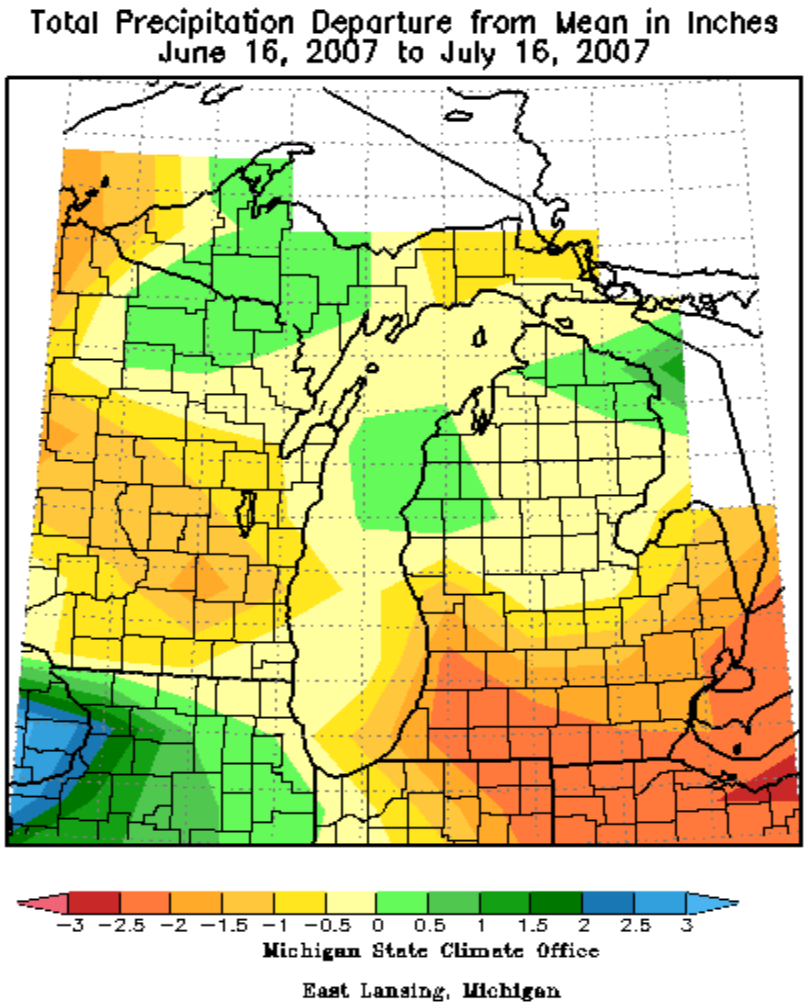
While temperatures across the region were above normal in June, they have been actually running below normal during the first half of July. Since July is usually our hottest month, if you dislike heat, July is the best candidate to average below normal. But what about rainfall, while Mother Nature served up Southeast Lower Michigan an adequate plate of rain the past several seasons, she's become somewhat stingy this summer, especially from the Detroit Metropolitan area south to the Ohio border. Further north across Saginaw and Flint, rainfall has actually averaged closer to normal. The rainfall totals thus far this summer (June – mid July) clearly displays this scenario.

The below precipitation table represents the first half of the summer across the region for the three cities and at the NWS in White Lake. Rainfall amount is for the six week period (6/1/07 - 7/16/07) or, the first half of the three summer month period. The normal rainfall for the NWS in White Lake is an estimate since normals haven't been established. Using the NWS totals here at White Lake gives a better idea how dry some parts of the area have been so far this summer.

Chart - 1

LOCATION	RAINFALL	NORMAL	DEPARTURE	
DETROIT	3.41	5.34	-1.86	
FLINT	4.48	4.84	-0.17	
SAGINAW	4.23	4.23	-0.13	
WHITE LK	2.48	5.00(EST)	- 2.52	

In addition, while the above table shows the rainfall amounts for a particular location, it really doesn't give us the broader view of Southeast Lower Michigan. For that view, check out this rainfall map for the past month (and this is pretty much the timing of our recent dry spell, mid June – mid July). Note: recent scattered convective rains after the 16th have added to rainfall totals that are not reflected in some areas on the map.



In any event, this latest dry spell has prompted a Category 1 (abnormally dry) and Category 2 (moderate drought) to be posted for much of Southeast Lower Michigan in the mid July Drought Monitor Map (see below). For more information (and a National overview) click on:

http://www.drought.unl.edu/dm/monitor.html

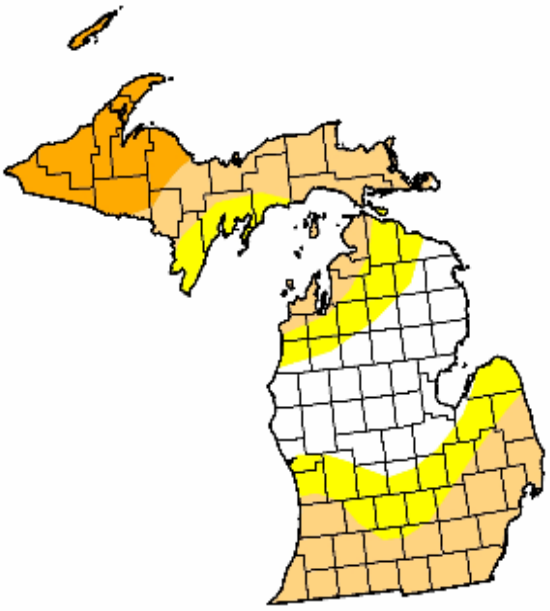
U.S. Drought Monitor

Michigan

July 17, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	26.1	73.9	50.8	12.3	0.0	0.0
Last Week (07/10/2007 map)	27.2	72.8	35.5	12.0	0.0	0.0
3 Months Ago (04/24/2007 map)	81.2	18.8	0.4	0.4	0.0	0.0
Start of Calendar Year (01/02/2007 map)	66.2	33.9	23.6	15.5	0.0	0.0
Start of Water Year (10/03/2006 map)	72.9	27.1	1.6	0.0	0.0	0.0
One Year Ago (07/18/2006 map)	62.7	37.3	12.5	2.3	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, July 19, 2007
Author: Brad Rippey, U.S. Department of Agriculture

Present versus Past

How does this match up with our analogue summers in our outlook thus far? To see, one has to glance back to our Spring Outlook, where there were hints of a drier pattern possibly developing by late spring. After a discussion of a possible drier trend developing, it was stated:

"With such variances around the Southeast Lower Michigan Region in the Midwest and Ohio Valley, near normal looks reasonable **but will watch for any possible drier trend developing."**

It was felt prudent at the time to keep near normal rainfall going for the spring as a drier trend looked unlikely (at least for spring). This worked out well as the extensive drier trend did not appear until a few weeks into summer. Now that it has appeared in many areas, what did the analogue summers suggest? If you recall, many of the summers were drier than

average and it was stated:

"Other distinctive trends in these particular summers surface under the precipitation mode as well. Paying close attention to just the Detroit figures first, shows numerous "dry" summers mainly in the first half of the data set extending from the late 1800s to the 1950s. Looking at the 1960s on, wetter summers materialized around metro Detroit in these developing La Nina summers. Another equally interesting trend reveals itself in the location of the dry and wet areas. If we now examine all three cities (and subsequent location differences), several times when it was dry in Detroit; chances were that it was wet at Flint and/or Saginaw (and visa-versa). The heavier convective rains tended to follow climate norms and lifted north during several of the earlier summers (1900, 1916, 1924, 1947 and 1958) which allowed Flint and Saginaw (minus 1916) to turn out wetter than Detroit."

Looking at the 12 analogue summers (Chart – 2) reveals our quite variable rainfall patterns with truly a feast/famine scenario. Out of the 12 summers, 8 were drier (brown) than normal around the metro Detroit area. However, further north at Flint and Saginaw, 4 or less of the 12 summers turned out to be dry.

TEMP / RAINFALL
Chart - 2

DETROIT	JUN	JUL	AUG	SUM AVE		SUMMERS
1886	67.2	71.6	70.8	69.9	1	
1889	63.8	71.3	69.9	68.3	2	
1900	66.6	72.0	75.5	71.4	1	
1916	63.5	77.9	74.6	72.0	2	
1924	65.6	69.9	70.7	68.7	3	
1947	66.0	70.9	76.5	71.1	3	
1952	72.7	76.5	71.5	73.6	1	
1958	63.9	72.4	71.0	69.1	4	4
1964	69.6	76.0	69.1	71.6	4	
1973	69.9	72.6	72.9	71.8	5	
1988	70.4	77.1	75.1	74.2	2	2
1998	69.1	73.4	73.2	71.9	6	6
				Summer		
Ave	67.4	73.5	72.6	71.1	-0.4	
Norm	69	73.5	71.8	71.4		

FLINT	JUN	JUL	AUG	SUM AVE		SUMMERS
1900	64.5	70.0	73.6	69.4	1	
1916	60.9	75.7	70.6	69.1	2	
1924	66.1	69.3	66.7	67.4	3	
1947	64.4	68.9	76.0	69.8	1	
1952	70.3	73.6	68.7	70.9	2	
1958	61.0	69.5	68.1	66.2	1	1
1964	66.6	71.7	65.3	67.9	4	
1973	67.4	70.4	71.0	69.6	3	
1988	67.7	75.2	72.6	71.8	4	4
1998	66.8	70.4	71.1	69.4	5	5
				Summer		
Ave	65.6	71.5	70.4	69.1	0.7	
Norm	66.2	70.6	68.5	68.4		

SAGINAW	JUN	JUL	AUG	SUM AVE		SUMMERS
1900	66.3	71.3	75.1	70.9	1	
1916	62.2	76.8	71.9	70.3	2	
1924	64.2	67.1	66.4	65.9	1	
1947	63.3	68.7	74.8	68.9	1	
1952	69.1	72.9	68.1	70.0	3	
1958	61.8	70.0	69.3	67.0	2	2
1964	67.8	72.5	66.8	68.7	2	2
1973	69.2	72.4	72.0	71.2	4	
1988	68.0	75.8	72.3	72.0	5	
1998	69.3	73.4	72.4	71.7	6	6
				Summer		
Ave	66.1	72.1	70.8	69.7	0.8	
Norm	66.8	71.2	68.7	68.9		

DETROIT	JUN	JUL	AUG	SUM AVE		SUMMERS
1886	2.07	2.45	2.02	6.54	1	
1889	3.28	1.54	0.19	5.01	2	
1900	3.99	3.71	2.08	9.78		1
1916	3.00	0.99	2.98	6.97	3	
1924	3.15	0.78	1.71	5.64	4	
1947	3.49	2.42	2.85	8.76	5	
1952	1.06	3.14	2.18	6.38	6	
1958	2.98	3.01	2.25	8.24	7	
1964	2.35	2.37	5.87	10.59	1	
1973	4.86	4.66	1.67	11.19	2	
1988	0.97	2.43	3.13	6.53	8	8
1998	2.69	5.72	4.19	12.60		3
				Summer		
Ave	2.82	2.77	2.59	8.19	-1.62	
Norm	3.55	3.16	3.1	9.81		

FLINT	JUN	JUL	AUG	SUM AVE		SUMMERS
1900	4.72	4.30	5.00	14.02	1	
1916	3.10	2.61	4.56	10.27	2	
1924	3.57	4.33	3.15	11.05	3	
1947	3.53	4.75	3.36	11.64	4	
1952	0.90	4.53	2.71	8.14	1	
1958	4.18	2.61	3.46	10.25	5	5
1964	3.98	2.82	2.65	9.45	1	1
1973	3.24	1.78	1.76	6.78	2	4
1988	0.63	3.74	4.00	8.37	3	
1998	1.25	1.13	2.62	5.00	4	
				Summer		
Ave	2.91	3.26	3.33	9.50	-0.17	
Norm	3.07	3.17	3.43	9.67		

SAGINAW	JUN	JUL	AUG	SUM AVE		SUMMERS
1900	2.57	3.89	5.23	11.69	1	
1916	2.68	0.82	1.25	4.75	1	
1924	1.79	5.19	3.18	10.16	2	
1947	3.64	4.46	2.16	10.26	3	
1952	0.64	6.38	3.00	10.02	4	
1958	3.32	3.34	2.63	9.29	1	
1964	1.39	5.33	4.21	10.93	5	5
1973	3.41	1.70	2.86	7.97	2	2
1988	0.61	2.53	2.75	5.89	2	
1998	1.81	1.30	1.51	4.62	3	3
				Summer		
Ave	2.19	3.49	2.88	8.56	-0.38	
Norm	3.06	2.50	3.38	8.94		

Color Legend:	Temps	Degrees
	Below	1.0>
	Normal	0.0-1.0
	Above	1.0>

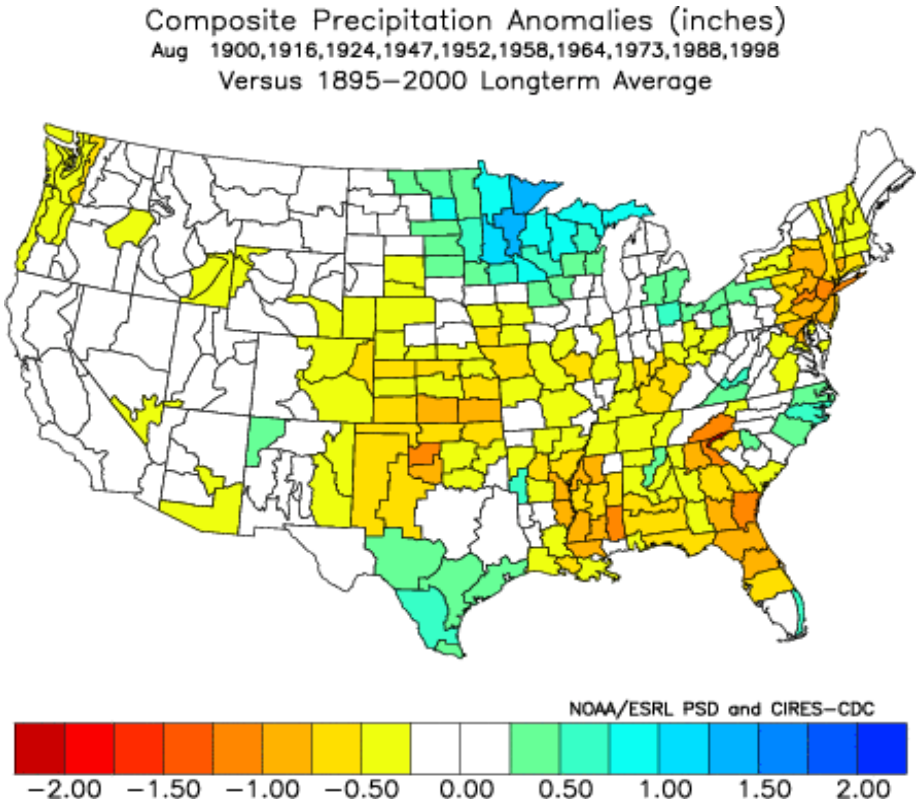
Rain	Inches
Below	1.00>
Normal	0.00-1.00
Above	1.00>

Summer of '07: Part Two

RAINFALL

Therefore, what trend(s) showed up during the second half of the summer? Some summers actually showed a pick up in rainfall in late July or August;

while others remained dry (or extended further north into Flint and Saginaw). However, when looking at the general August rainfall map from our analogue summers, rainfalls actually averaged normal to above. We can only hope that trend shows up because of the prevailing dry spell in many areas. Keep in mind, and as you can see in the analogue summers, even with a wetter August several of the summers still turned out drier than normal (especially over extreme Southeast Lower Michigan).



TEMPERATURE

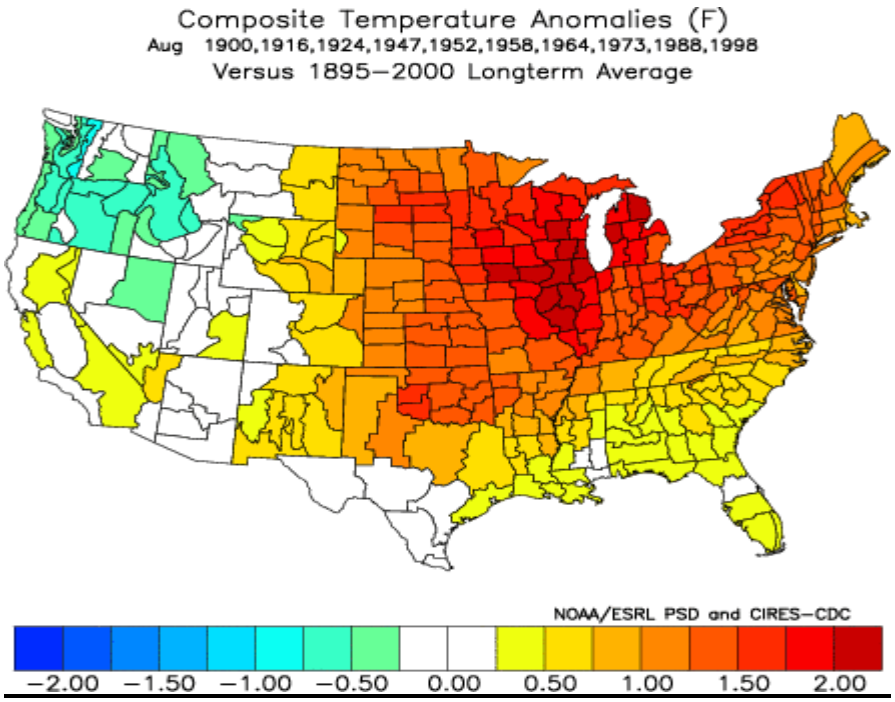
What about temperatures? While we've seen a mixed picture when it comes to temperatures, slightly above normal temperatures dominated the first half of the summer. The following table reflects the average temperature thus far this summer (thru July 16th) and the normal summer average temperature.

	Summer thru 7/16	Summer Normal
DETROIT	71.6	71.4
FLINT	68.9	68.4
SAGINAW	69.7	68.9

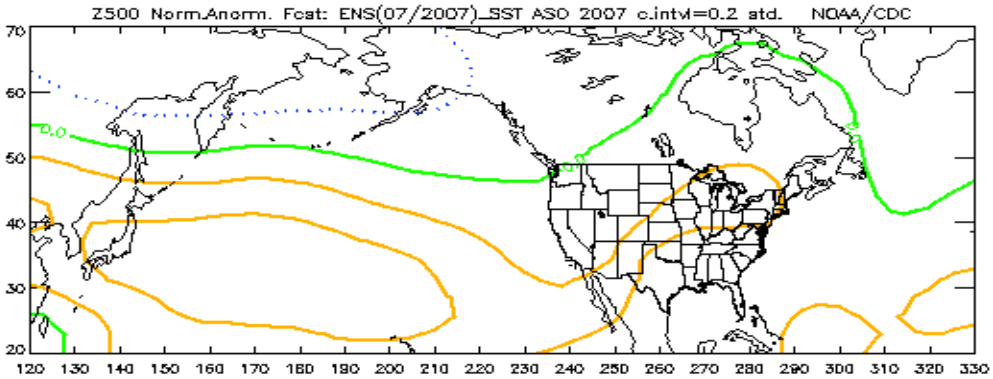
In our outlook, it was stated:

"Overall, look for temperatures to range from near normal to above /0.0 to +2.0 degrees/ in the final analysis."

August turned out to be above normal over Southeast Lower Michigan in many of the analogue years.

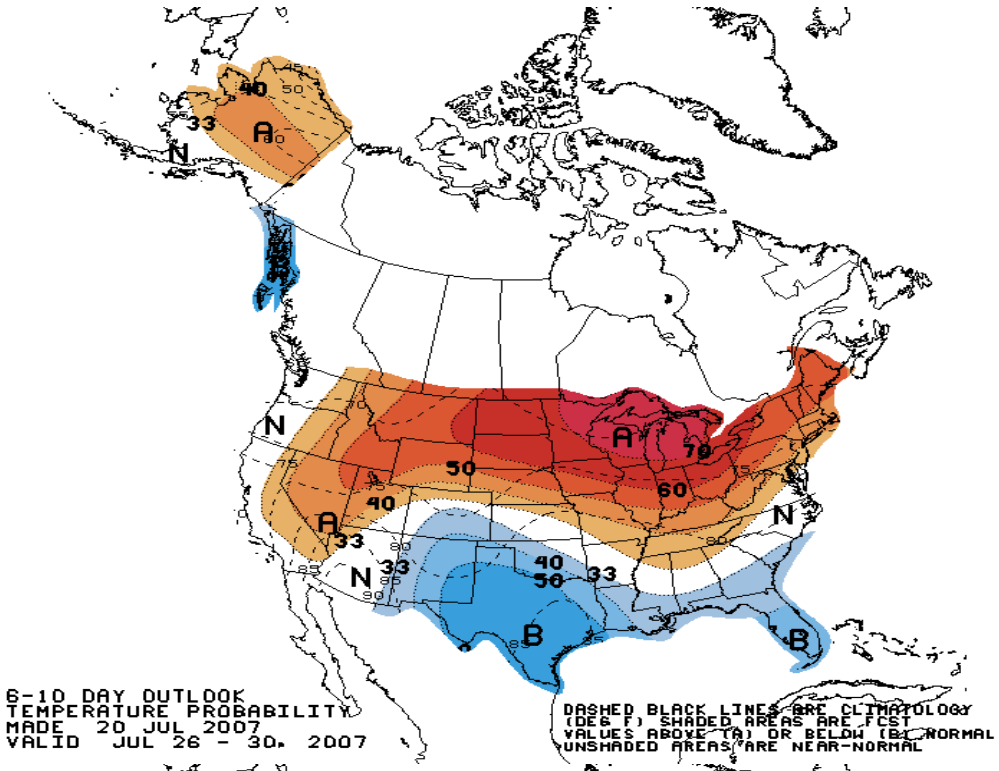


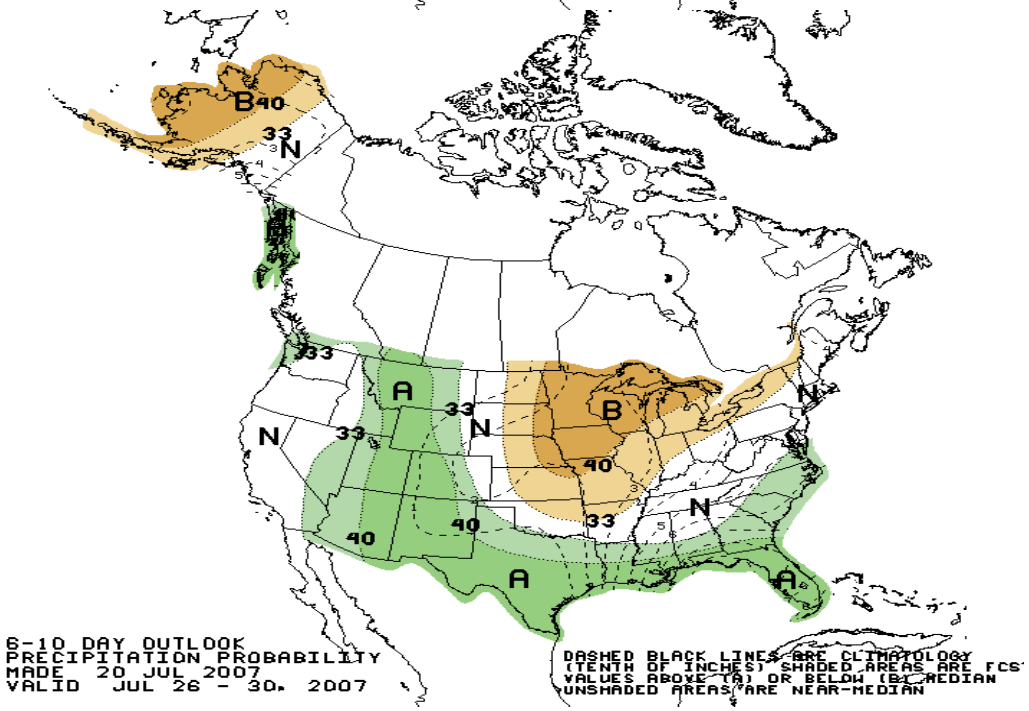
Many of our computer models (as of July) are indicating the ridge that has dominated out west (and brought the heat) to expand eastward toward the Great Lakes into early fall.

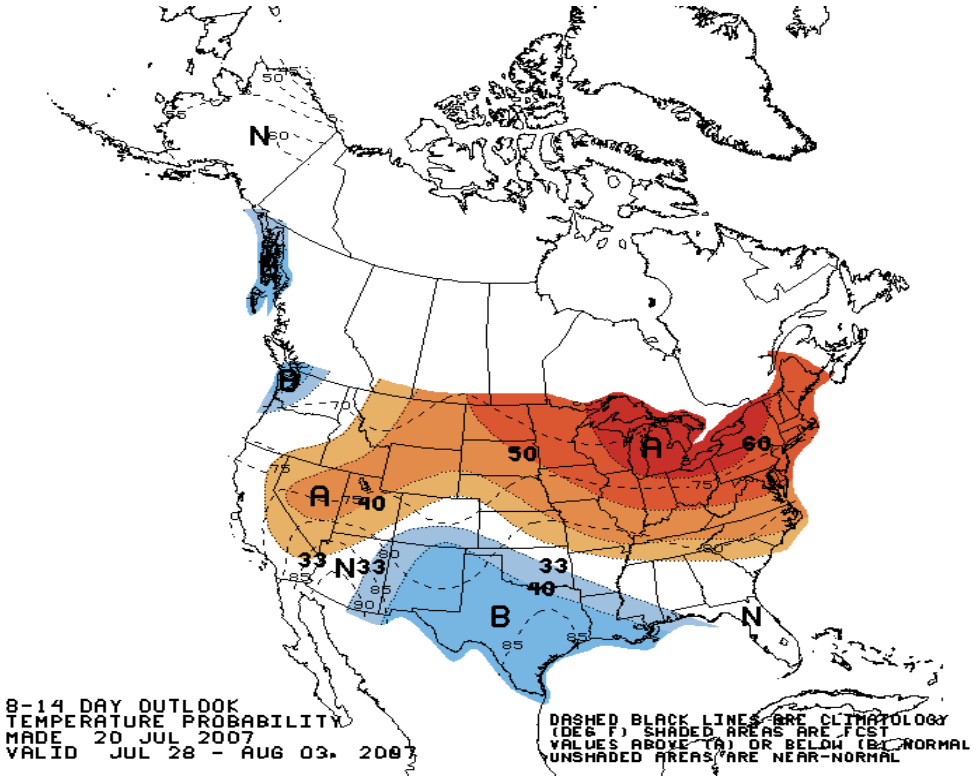


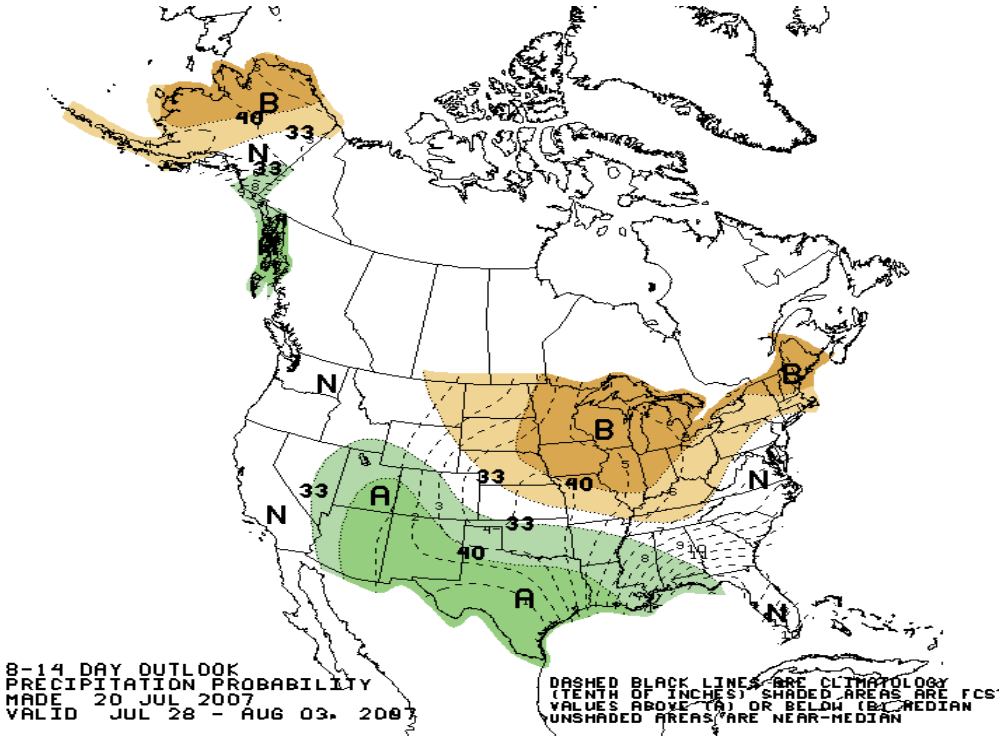
Under these conditions, above normal temperatures would be expected.

Note the recent (7/20), 6-10 and 10-14 day outlook for the remainder of July into early August certainly start us off in that direction.






8-14 DAY OUTLOOK
TEMPERATURE PROBABILITY
MADE 20 JUL 2007
VALID JUL 28 - AUG 03, 2007
DASHED BLACK LINES ARE CLIMATOLOGY
(DEG F) SHADED AREAS ARE FCST
VALUES ABOVE (A) OR BELOW (B) NORMAL
UNSHADED AREAS ARE NEAR-NORMAL


8-14 DAY OUTLOOK
PRECIPITATION PROBABILITY
MADE 20 JUL 2007
VALID JUL 28 - AUG 03, 2007
DASHED BLACK LINES ARE CLIMATOLOGY
(TENTH OF INCHES) SHADED AREAS ARE FCS
VALUES ABOVE (A) OR BELOW (B) MEDIAN
UNSHADED AREAS ARE NEAR-MEDIAN

We Shall See!