July 2007 Climate Narrative
For Southwest Lower Michigan

By William Marino

Overview

The most significant feature of July weather in Southwest Lower Michigan was the developing drought. Grand Rapids, Lansing, and Muskegon never exceeded a third of an inch of daily rainfall. The total monthly rainfall between I-96 and I-94 was less than 2 inches, while normal rainfall over most of Southwest Lower Michigan is around 3 inches. Central Allegan County was the driest with less than half an inch of total rainfall, nearly 3 inches below normal.

Similar to June, areas near Route 10 were the wettest. Parts of Clare County received over 5 inches of rain. The rest of the Route 10 corridor saw between 3 and 5 inches of rain. It was this area where most severe weather occurred, especially on the 10th and the 18th.

Besides a few hot days, July temperatures averaged slightly cooler than normal, especially south and east of Grand Rapids, where averages were nearly one degree below normal. Areas north and west of Grand Rapids were close to normal.

There were two warm periods in the month; one from the 3rd to the 10th, and the other from the 27th through the 31st. Most inland locations experienced three or more consecutive days with highs of 90 degrees or greater from the 8th through the 10th, making this the first heat wave of the season. Highs reached the lower 90°s again by the 30th, and this continued well into the first week of August.

There was an extended cool period from the 11th through the 17th, when highs failed to reach 80 degrees everywhere except for Grand Rapids. It is worth noting that the severe weather events on the 10th and 18th were on each side of that cool period. The severe weather event on the 10th was the result an unseasonably strong cold front that moved through the Great Lakes. The severe weather event on the 18th corresponded with the end of the cool period and the beginning of an extended warmer period for Southwest Lower Michigan.

		Temperature (degrees F)	Precipitation (inches)	Snowfall (inches)
Grand Rapids	*Reported*	72.2	1.24	0.0
	Normal	71.4	3.56	0.0
	Departure	0.8	-2.32	0.0
Lansing	*Reported*	70.3	0.71	0.0
	Normal	70.3	2.68	0.0
	Departure	0.0	-1.97	0.0
Muskegon	*Reported*	69.5	1.65	0.0
	Normal	69.9	2.32	0.0
	Departure	-0.4	-0.67	0.0

Table 1. Temperature, precipitation and snowfall amounts for July 2007 for Grand Rapids, Lansing, and Muskegon.

Temperatures

The coolest average temperatures occurred in northern parts of the area (Fig. 1a), as is usually the case. The coolest departure from normal occurred to the southeast, while averages were close to normal elsewhere (Fig 1b).

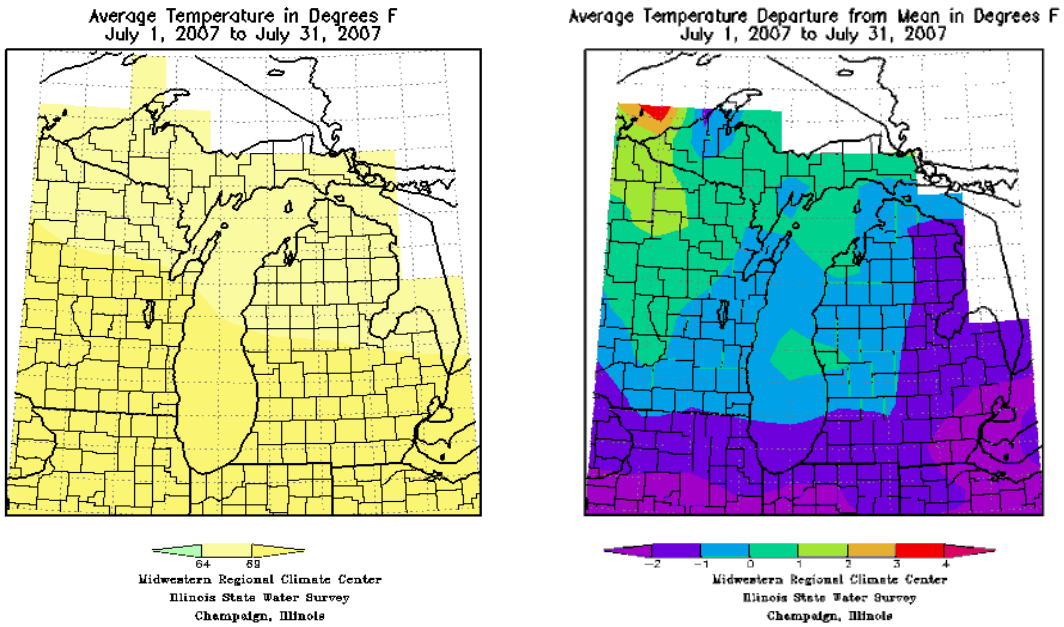


Fig. 1. Average Temperature in degrees F (a) and Departure from Average (b) for July 2007.

Precipitation

The wettest areas were near Route 10 through Mason, Lake, Osceola, and Clare Counties (Fig. 2), where rainfall amounts were locally over 5 inches (Fig. 2c). Some areas south and west of Kalamazoo received over 6 inches of rain, well above normal for July. The areas between I-94 and I-96 were the driest.

The U.S. Drought Monitor indicated moderate to severe drought had developed across most areas south of I-96 by the end of the month. The most intense drought was west of Route 131 and south of I-96. Figure 2a shows that some areas of Allegan and Barry Counties had less than a half inch of rain in July.

These details are seen in Figure 3. Figure 2a gives a broader, more synoptic view of the rainfall. Figure 3 adds details with Doppler radar precipitation estimates combined with rain gauge estimates. Figure 4 shows the normal precipitation for July in Michigan, based on the 1971 to 2000 normals.

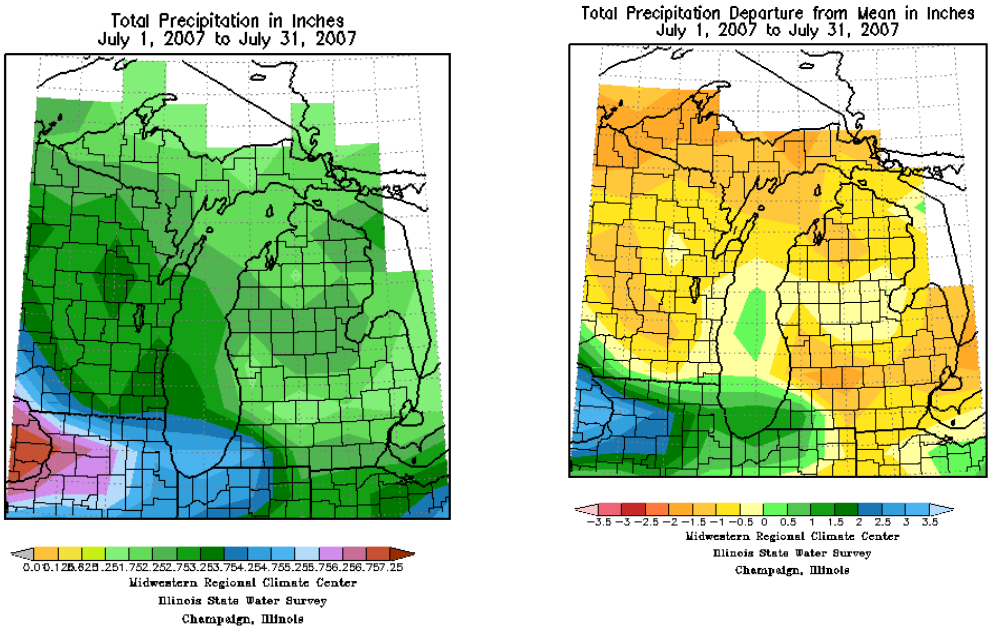


Fig. 2. Total Precipitation (a) and departure from normal (b) for July 2007.

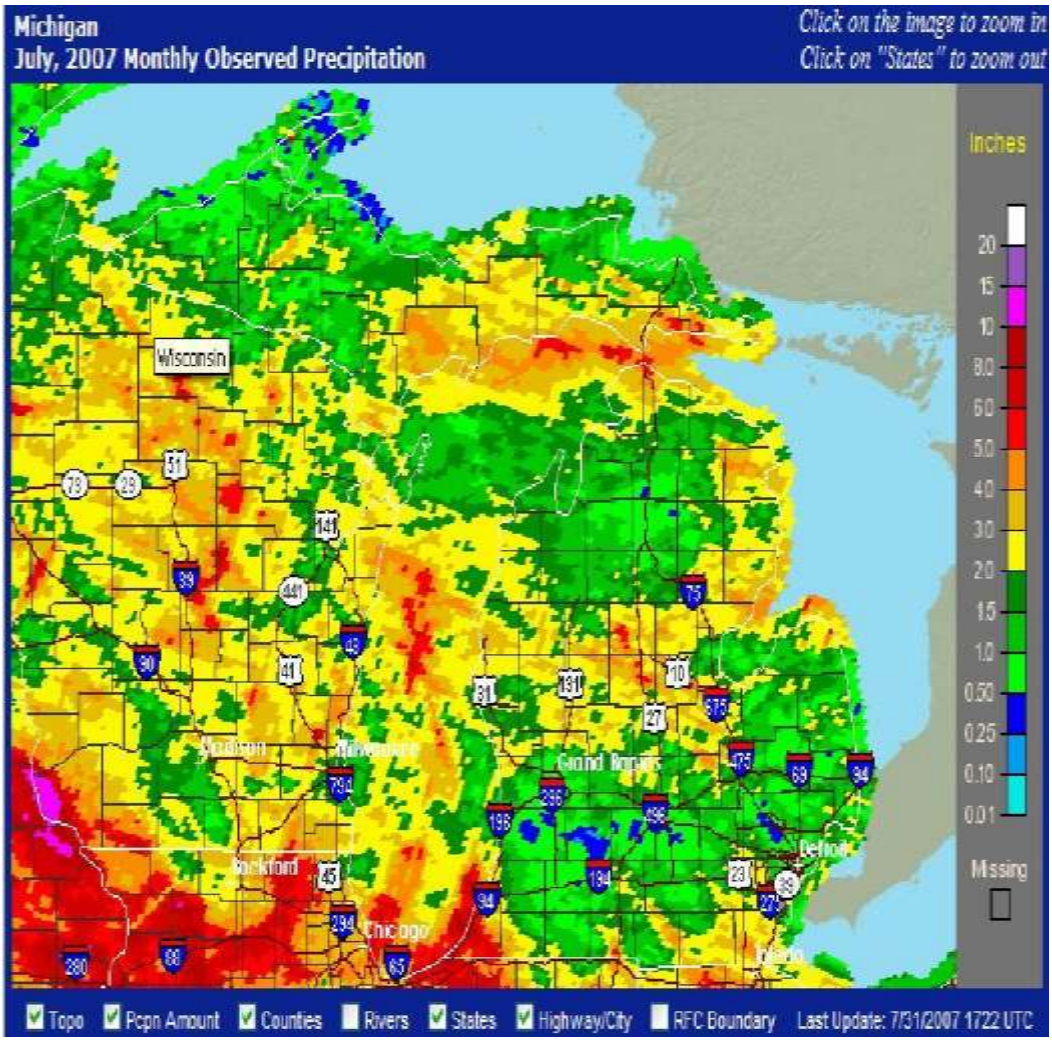


Fig. 3. Total radar-estimated precipitation in inches.

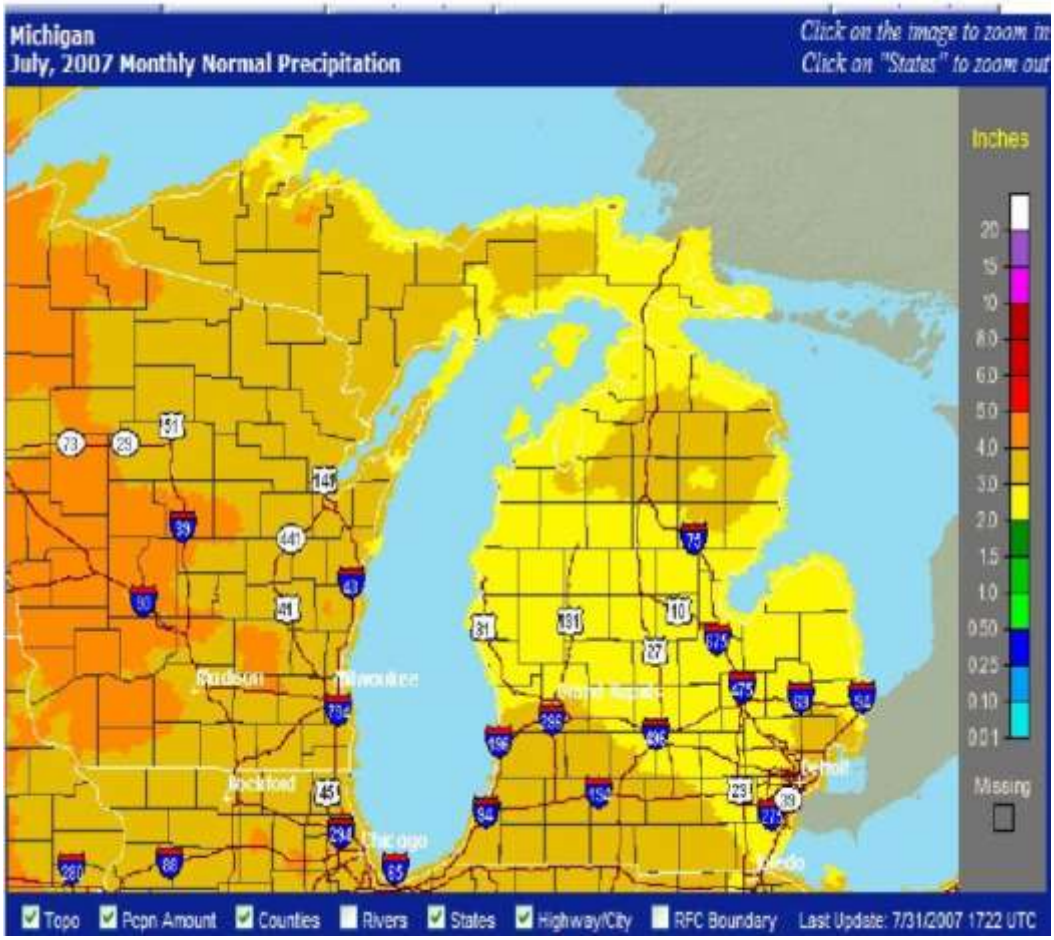


Fig. 4. Average July rainfall in inches.

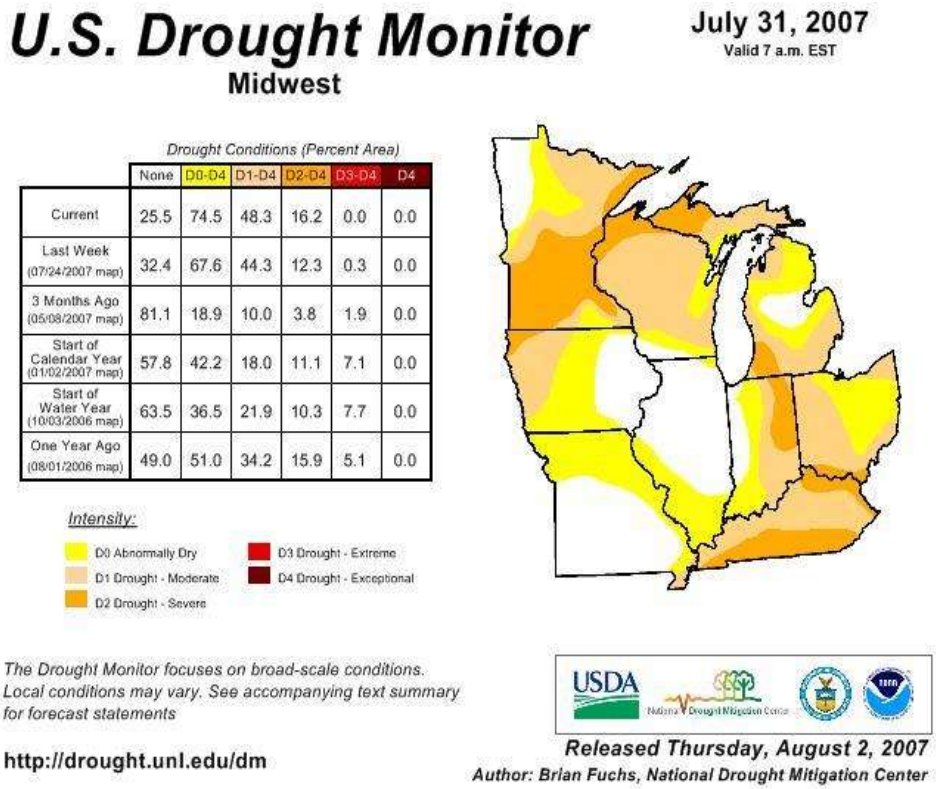


Fig. 5. U.S. Drought Monitor for Michigan

Severe Weather Events for July 2007

There were two significant severe weather events in July. The first was the result of an unseasonably deep storm system that tracked across Lake Superior during the daytime hours of the 10th. This system's cold front brought the coolest weather of the month that lasted until the next significant severe weather event. The warm front was over northern Lower Michigan and the cold front was over Lake Michigan at the time of this event, between 3 PM and 4 PM. Strong thunderstorm winds destroyed a garage and blew the roof off another garage, then blew the doors in on four other garages, just southeast of Mount Pleasant. Nearby, ball park bleachers were blown over and a tin roof was blown off a barn. There also were numerous reports of trees, limbs and wires down. Figures 6 and 7 show where severe weather occurred.

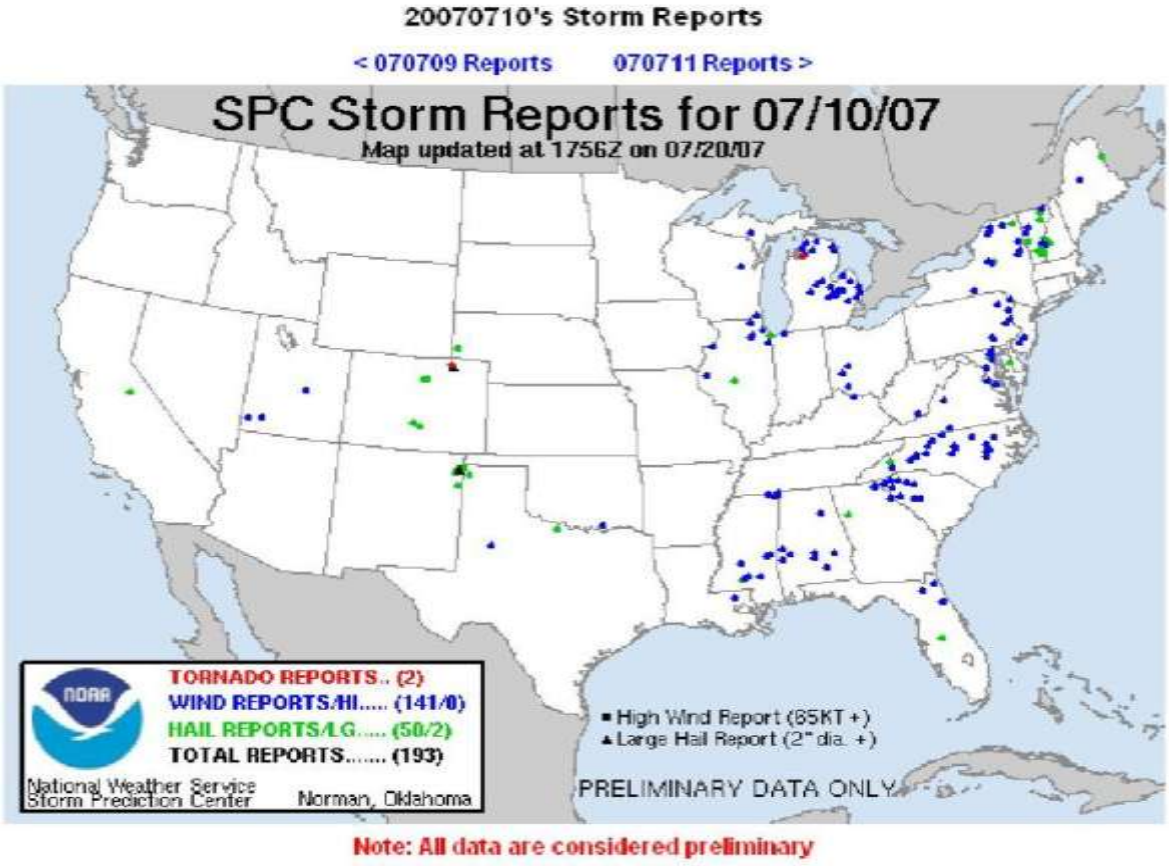


Fig. 6. Severe Weather Events of July 10th, 2007.

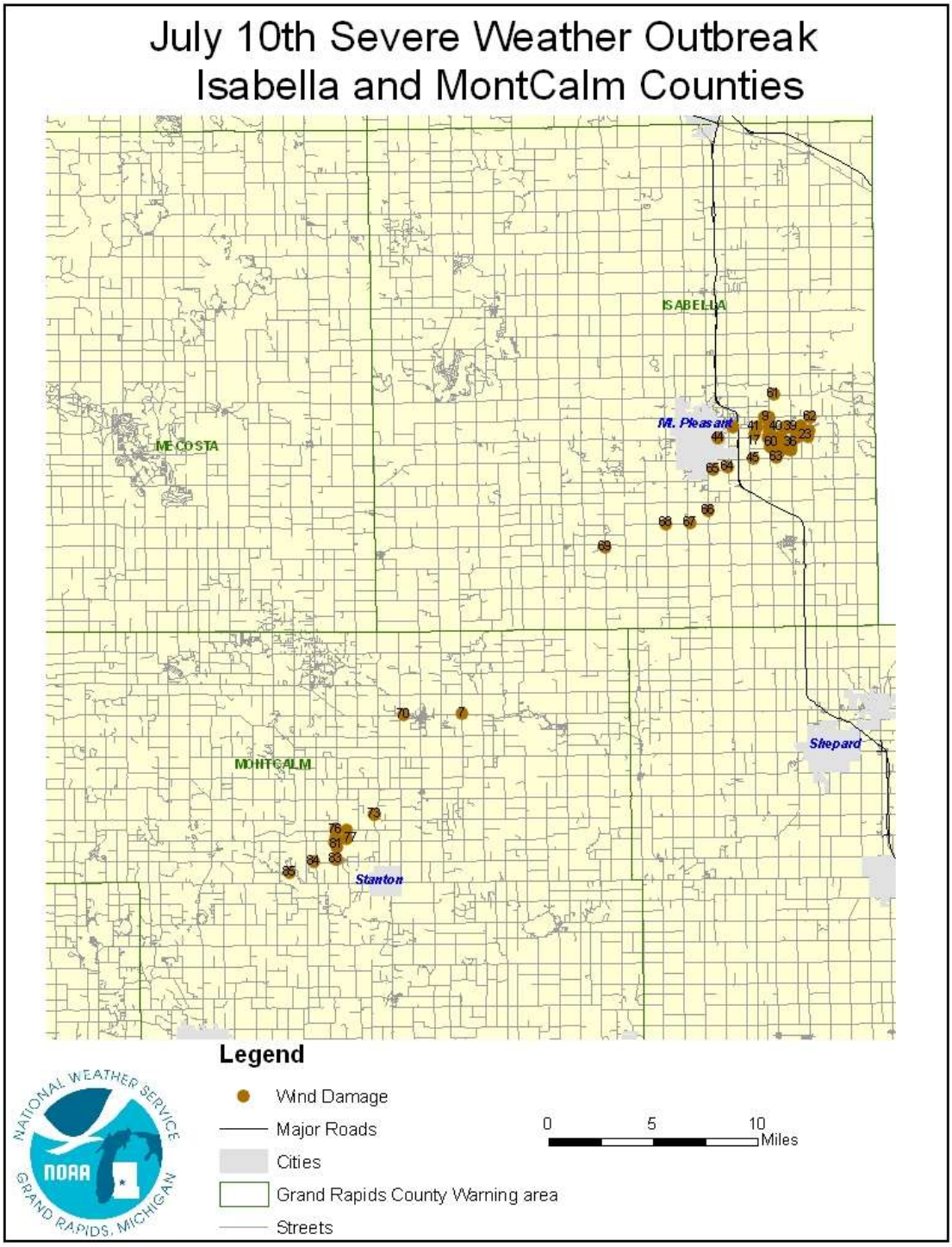


Fig. 7. Severe weather reports from July 10.

The second significant severe weather event was the result of the warm air returning to Michigan on the 18th. This event primarily affected Gratiot and Isabella Counties. Like the event on the10th, this was primarily a wind event. This event occurred between 4:30 PM and 5:30 PM. Figures 8 and 9 show where the severe events occurred.

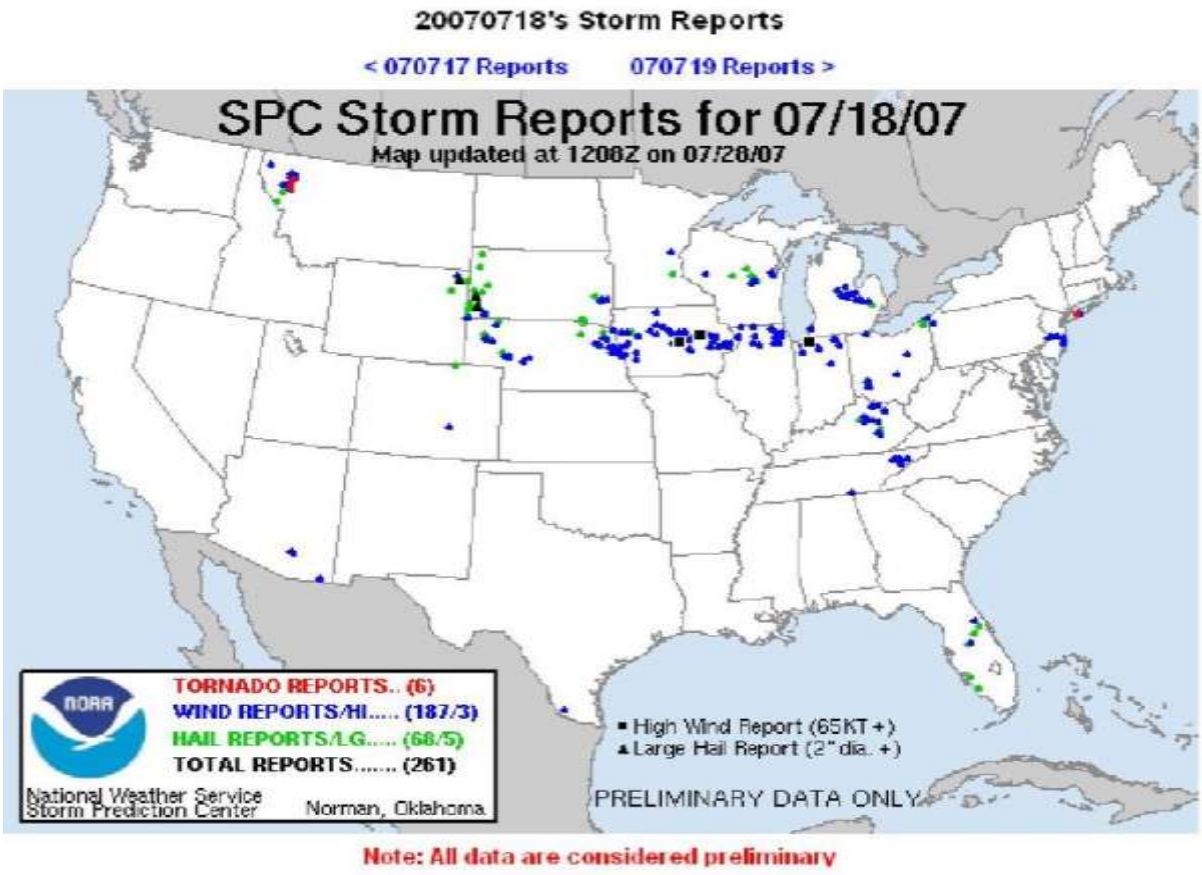
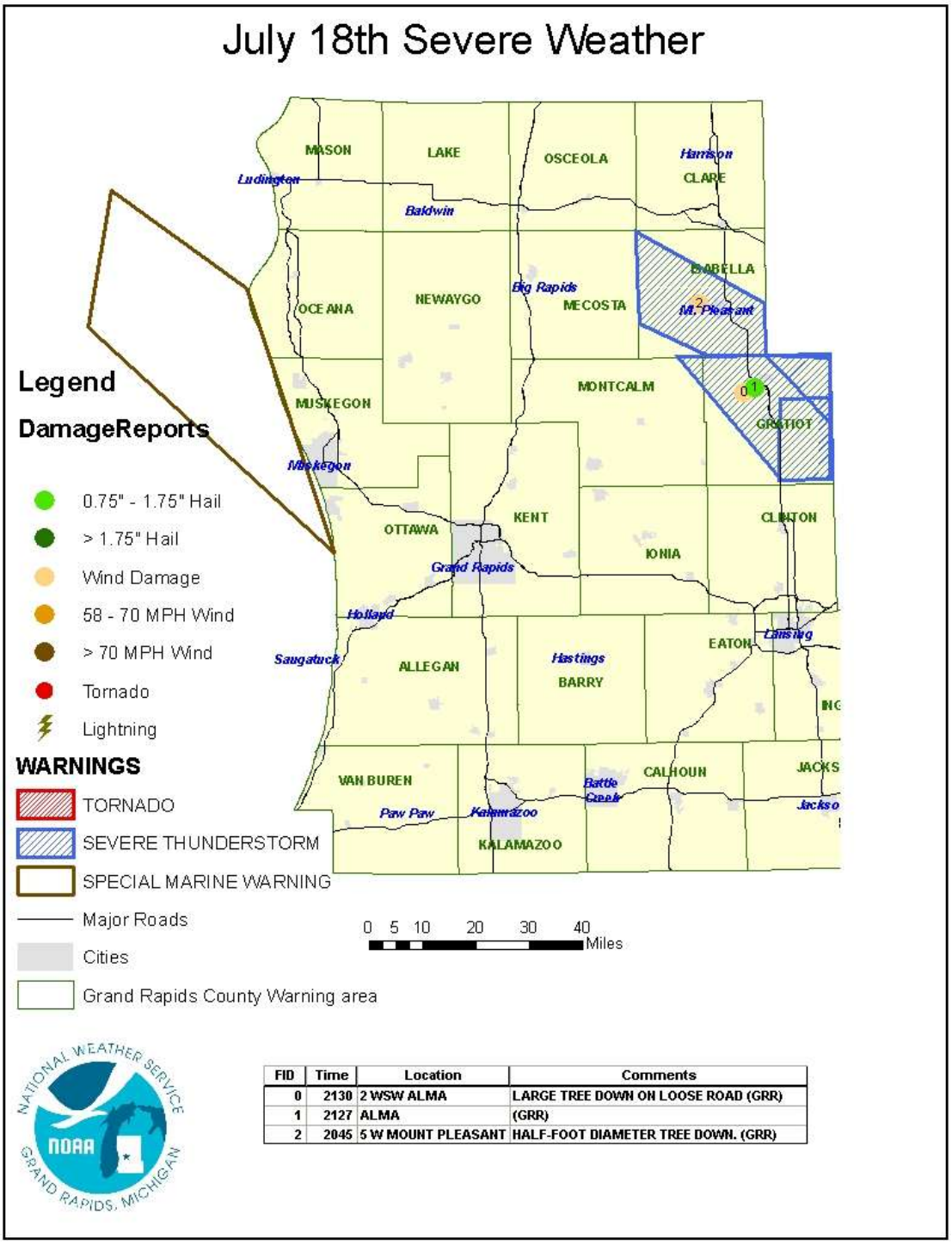


Fig. 8. Severe Weather Events of July 18, 2007.



FID	Time	Location	Comments
0	2130	2 WSW ALMA	LARGE TREE DOWN ON LOOSE ROAD (GRR)
1	2127	ALMA	(GRR)
2	2045	5 W MOUNT PLEASANT	HALF-FOOT DIAMETER TREE DOWN. (GRR)

Fig. 9. Warning polygons and severe weather reports from July 18.