

Hamilton Michigan Wind Damage early on September 3rd 2010

On the morning of September 3rd, damaging downburst winds occurred in the vicinity of Hamilton in Allegan County. The thunderstorm responsible for this damage moved onshore just north of South Haven and quickly intensified as it moved northeast.

The first area of damage occurred just south of Hamilton around Marcia Lane, where at least four healthy oak trees were toppled. The damage swath continued northeast to the Shady Acres Mobile Home Park where several more healthy trees up to two feet in diameter were toppled. At least two mobile homes incurred severe damage due to trees falling on them. Based on the tree damage, winds were estimated to be 65 to 75 mph.

Eyewitnesses reported strong to severe winds lasting anywhere from around a minute to ten minutes or more, which is indicative of a well-organized downburst. Downbursts occur when strong downdrafts associated with rain reach the ground and spread out in all directions (Fig. 1). This is similar to throwing a bucket of water on the ground. The water splashes in all directions, but moves fastest in the direction the bucket was thrown. In this case, the storms were moving northeast, resulting in the most damaging winds blowing to the northeast (Fig. 2).

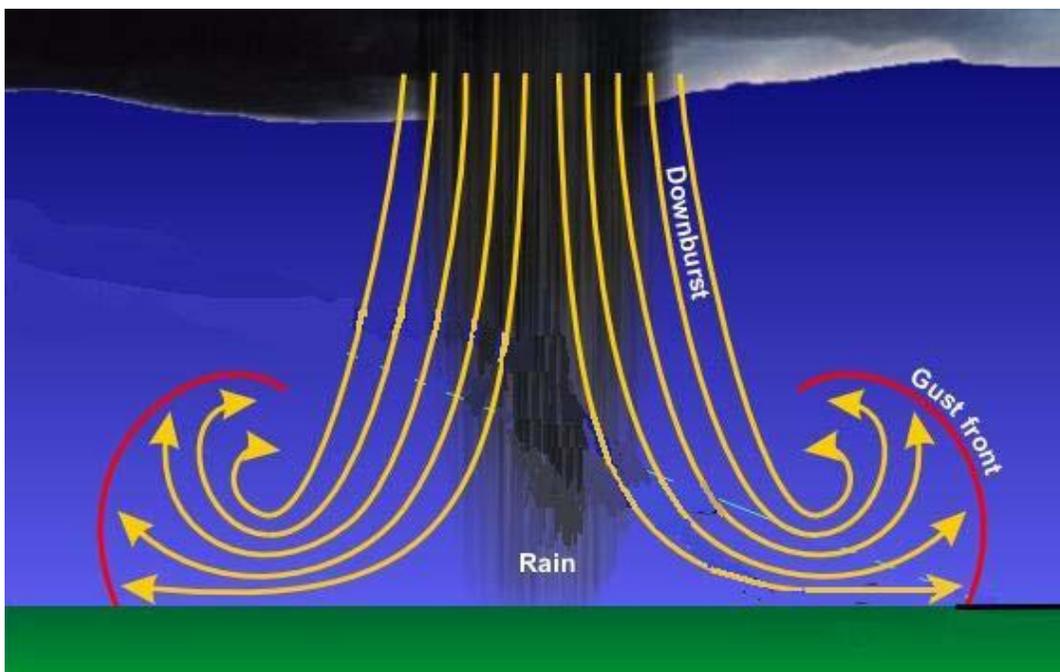


FIG. 1. Schematic of a downburst.

Hamilton Michigan Wind Damage early on September 3rd 2010



FIG. 2. Damage and wind estimates around Hamilton. Arrows denote the direction in which trees fell.

The most severe property damage occurred in the Shady Acres Mobile Home Park, where several trailers incurred moderate to severe damage due to falling trees and branches. Examples of the most severe damage are shown in Figs. 3 and 4.

Hamilton Michigan Wind Damage early on September 3rd 2010



FIG. 3. An example of trailer damage in Shady Acres. The occupant was sitting by the window just to the left of the tree when it fell.



FIG. 4. Another damaged trailer. This tree nearly sliced the trailer in half.

Hamilton Michigan Wind Damage early on September 3rd 2010

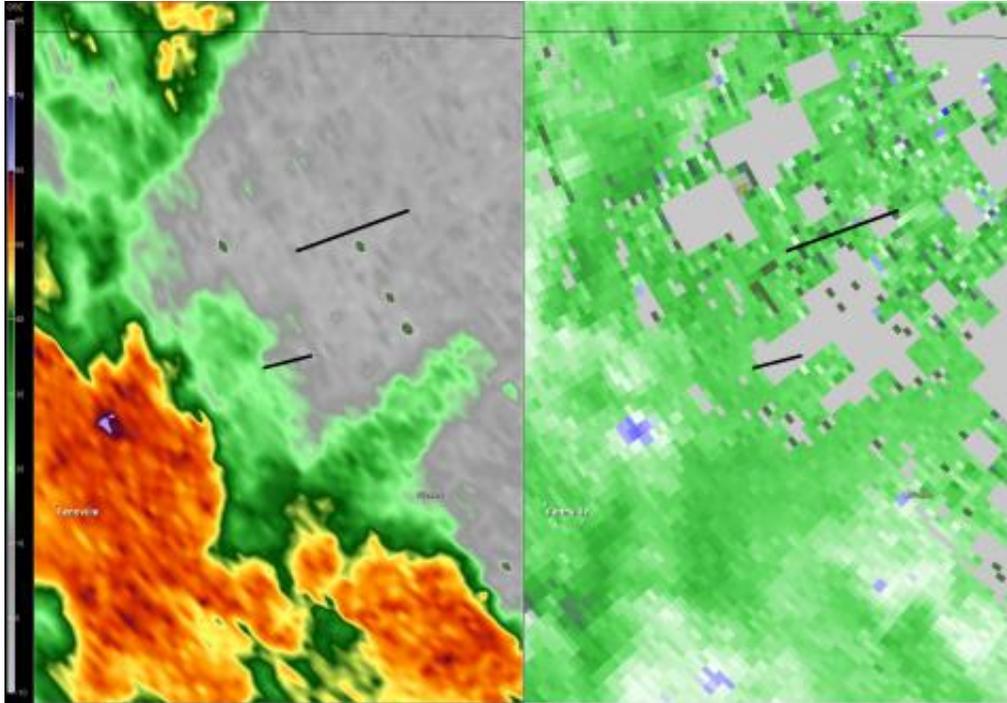


FIG. 5. Radar reflectivity (left) and wind velocity to the northeast (right) at 1205 AM EDT on September 3rd. Black lines denote the approximate swaths of damage that occurred. The blue color to the right is associated with approximately 70 mph winds approximately 2000 feet above the ground.

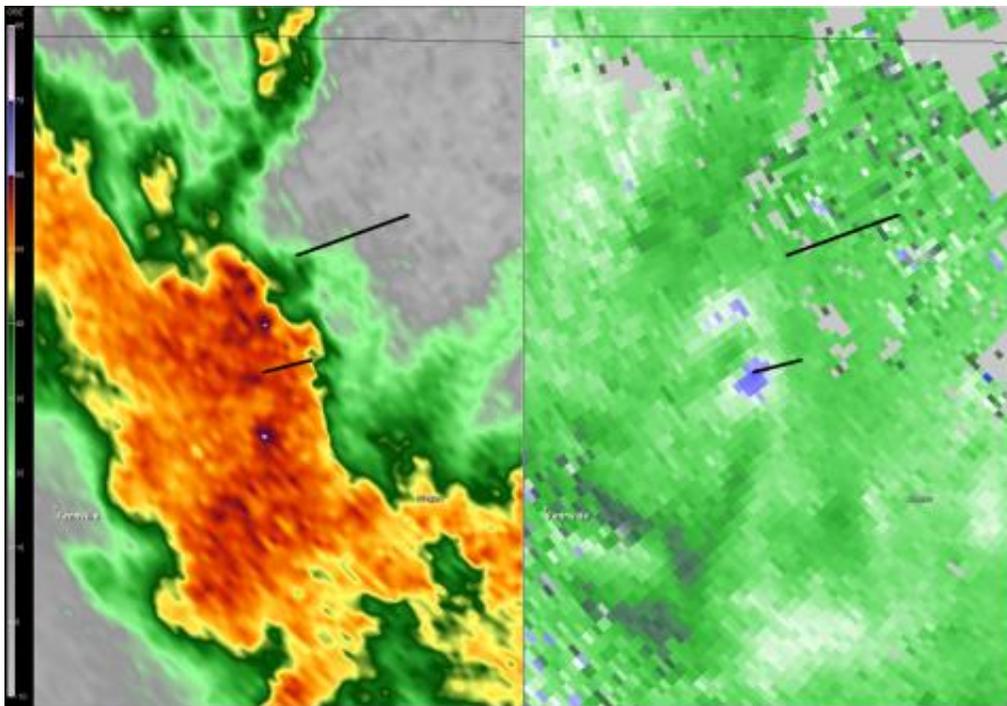


FIG. 6. As in FIG. 5, except at 1209 AM EDT on September 3rd. The blue color at the beginning of the southern damage swath is again associated with approximately 70 mph winds just under 2000 feet above the ground.

Hamilton Michigan Wind Damage early on September 3rd 2010

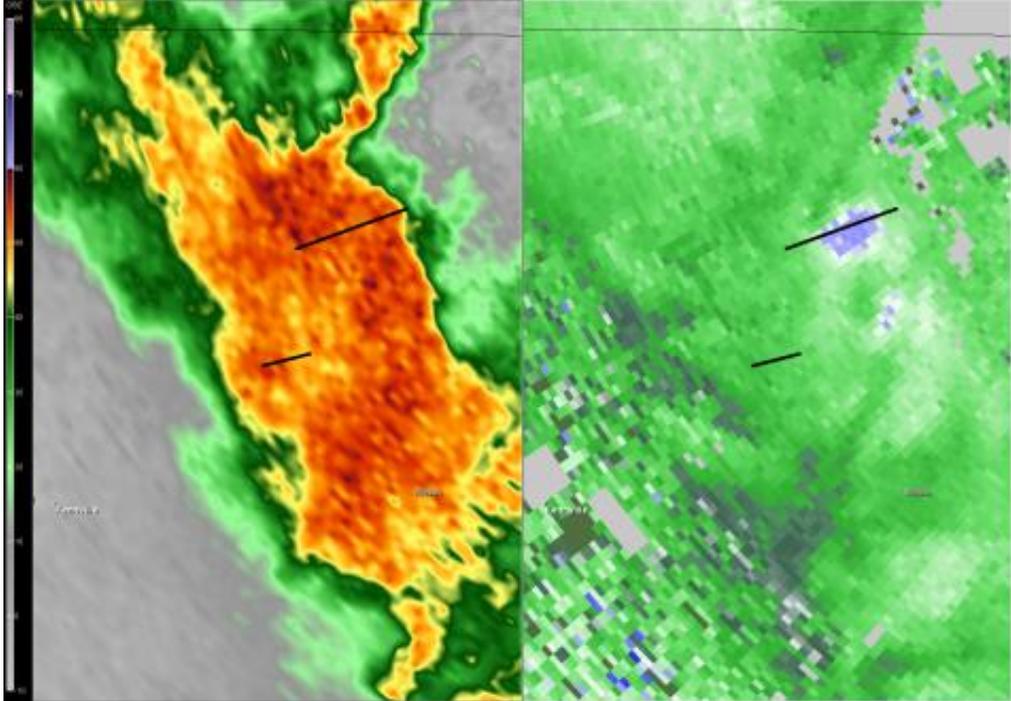


FIG. 7. As in FIG. 5, except at 1214 AM EDT on September 3rd. The blue color at the northern damage swath is associated with approximately 65 mph winds about 1600 feet above the ground. Comparing with FIG. 6, the winds over the northern swath strengthened dramatically as the storm surged rapidly to the northeast.