Thoughts on June 17th 2010

From

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The day of June 17th was certainly one of the biggest, severe weather events in my career. In the early afternoon the science officer and I decided to divide our county warning area (CWA) into two parts, a northern area and a southern area, with a widespread severe weather event expected. I took the southern area. In the beginning of the event we had severe weather northwest of Alexandria (Douglas County) and the threat for tornadoes was high as this activity moved into our CWA. However, after an initial bout of severe weather in our northwest CWA, the activity waned some and as the afternoon wore on it become more widespread in southern Minnesota. There were many thunderstorms with rotation and subsequent tornadoes. At the time we had the WSR-88D radar, which was awesome to previous radars I had worked with in prior years at different offices. The WSR-88D is a Doppler radar, allowing one to see the direction and velocity of the air (storm relative) in addition to the reflectivity of the precipitation.

In the early days of my career (Bristol, TN) I began with the WSR-57 radar. This radar was deployed in the late 1950's and early 1960's at various locations across the nation. This radar used into the mid 1990's. It required a lot of manual work to interrogate storms as it required one to stop the rotation of the radar to manually inspect a storm in the vertical. The next radar I used was at Cleveland, OH and was called the WSR-74C. This radar was much like the WSR-57. If there were a scope full of storms, you had your hands full. That was the beauty of the WSR-88D in that the radar was fully automated and completed a volume scan, at that time, in a little over 4 minutes. Subsequent builds to the WSR-88D since that June 2010 event have included Dual Polarization, which allows one to interrogate the type of hydrometeor in the storm. One of the findings that came out of Dual Polarization was using the Correlation Coefficient (CC) product. CC is a measure of how similar objects are in the horizontal and vertical. This product can help identify tornadic debris being lifted aloft with a very low correlation being observed. This is known as the Tornadic Debris Signature (TDS). These would have been great tools to have had back in 2010. In addition, the current WSR-88D can scan in one minute mode, which again would have been a big help in seeing the developing circulation within the storms, allowing greater led time in the warning process.

Other challenges for this event were viewing surrounding radars. In 2010 we had to dial into these radars to receive them, so there was a lag in having the latest data. At the end of my career (2017) the radar data from all radars was automatically available in our Advanced Weather Interactive Processing System (AWIPS), making it much easier to interrogate storms as they approached the CWA. One tool that was instrumental with the June 2010 event was our Instant Messaging service (NWSChat). I remember monitoring the Des Moines NWS chat room. There were reports of funnel clouds south of MN in far northern IA. These storms were moving

northeast and as they pushed across the border, these reports along with radar and meteorological data increased my confidence on issuing tornado warnings for Faribault County. Several more warnings were subsequently issued for Blue Earth and Freeborn counties. This was during the late afternoon hours. The storms with tornado touchdowns would persist through the evening as they moved across the southeast quarter of Minnesota.