

August 19, 2009: Multiple Tornadoes Across the Area, Including in Minneapolis

Tornadoes

Minneapolis, MN EF-0 Tornado

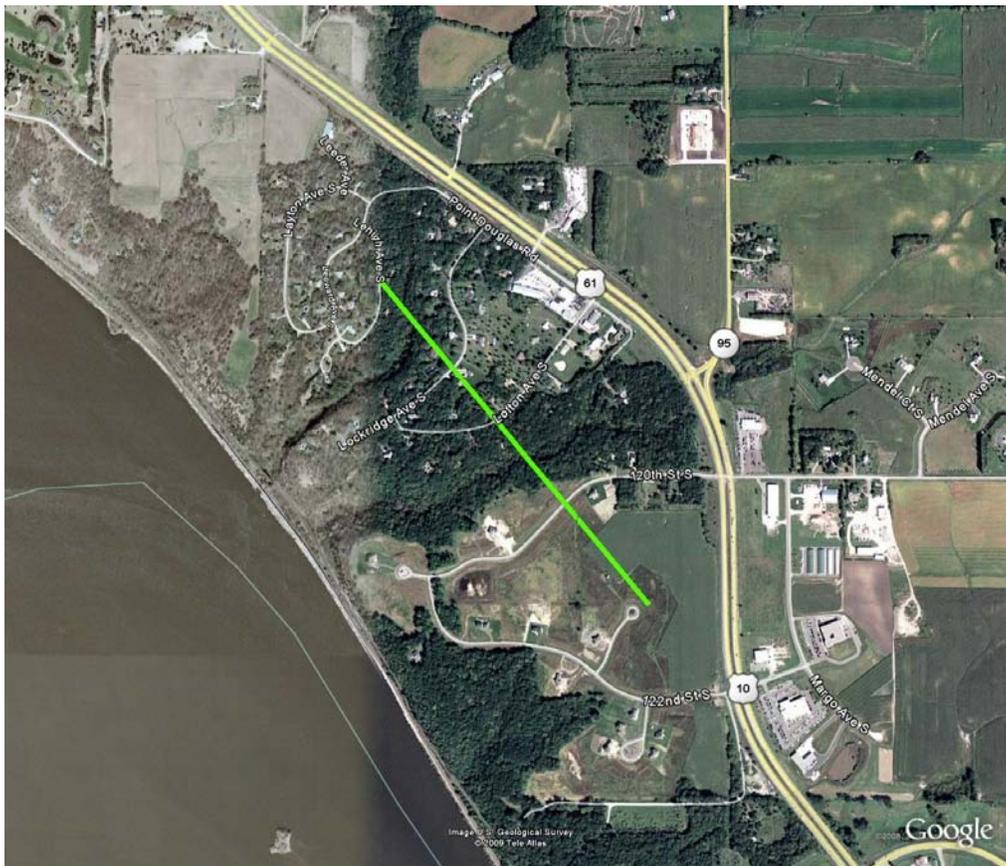
A damage assessment team from the National Weather Service in Chanhassen surveyed storm damage in Minneapolis. They confirmed that a tornado touched down in south Minneapolis, initially near East 53rd Street and Park Avenue around 150 PM CDT. The tornado then moved north from that location toward downtown, and eventually lifted near the Convention Center around 200 PM CDT. Damage was most intense and concentrated from East 45th Street north to East 38th Street, generally along Park, Oakland, Portland, and 5th Avenues. The track shifted slightly west of due north with time. The most intense damage was consistent with EF-0 intensity, with wind speeds between 75 and 85 MPH. Numerous trees were downed in the area, with damage to a number of homes and structures as well. Much of the structural damage was due to falling trees. The tornado track was approximately 4.5 miles in length, although it may have lifted for a brief time between East 29th Street and the Convention Center area. Maximum track width was approximately 500 yards, although the most intense damage occurred along a path approximately 250 yards wide.



Minneapolis Tornado Path Map

Cottage Grove, MN EF-1 Tornado

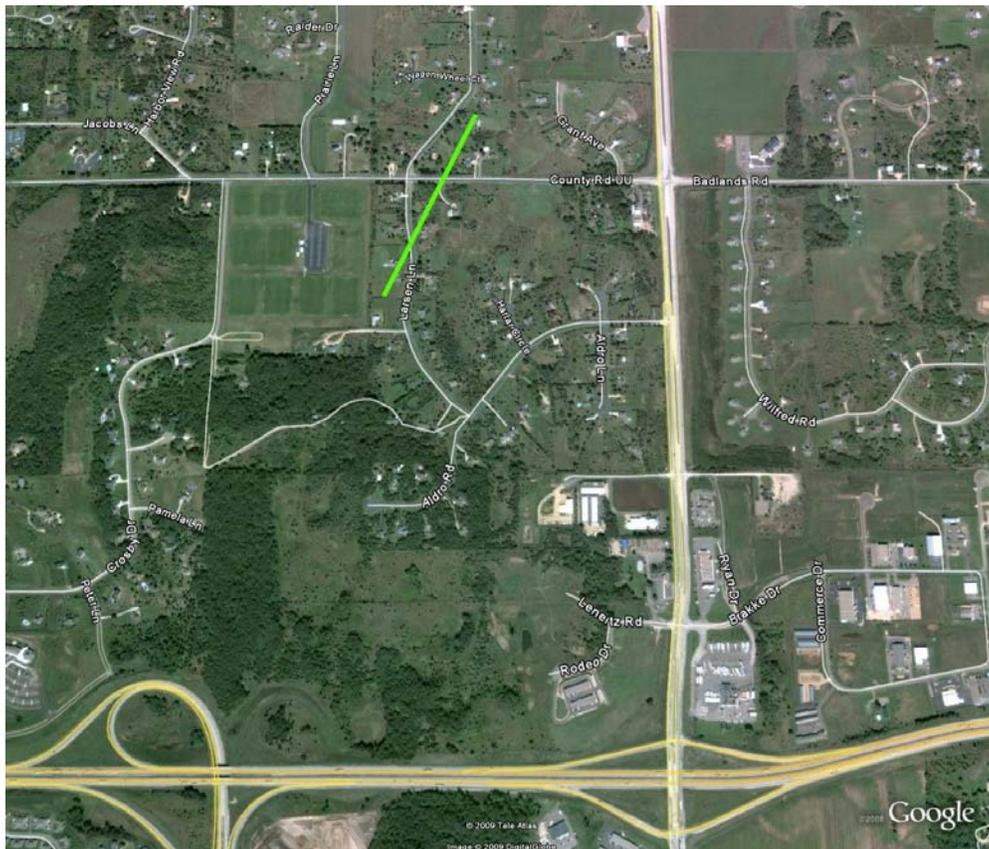
A National Weather Service assessment team also surveyed storm damage from the southern end of Cottage Grove, Minnesota. They confirmed that a tornado touched down near 122nd Street just west of Highway 61 in southern Washington County around 240 PM CDT on the afternoon of August 19th, where it initially produced EF-0 damage to a roof, playground equipment, and a garage door. The tornado then tracked northwest across Lofton and Lockridge Avenues just west of Highway 61 in Cottage Grove, where it produced low end EF-1 damage. The tornado either uprooted or sheared off a swath of large trees, many that were 2 to 3 feet in diameter. The approximate path length of this tornado was 1200 yards, and the maximum width was 75 yards. Estimated maximum winds with this tornado were 90 to 100 MPH.



Washington County Tornado Path Map

Hudson, WI Area EF-0 Tornado

Damage from another tornado was found by the National Weather Service damage assessment team near County Road UU and Larson Lane near Hudson, Wisconsin. This tornado produced EF-0 damage, and touched down shortly after 3 PM CDT. The tornado moved north-northeast and either downed or uprooted several 1 to 2 foot diameter trees, and also caused minor roof damage to multiple houses. The approximate path width was 25 yards, and the length was about 600 yards. Estimated maximum winds with this tornado were 80 to 85 MPH.



Hudson, WI Tornado Path Map

Marine on St Croix, MN EF-0 Tornado

A damage survey determined that this tornado touched down in the southwest corner of Marine on St Croix at 325 pm and moved toward the northwest, knocking down a couple dozen trees and large limbs. It dissipated just northwest of town after being on the ground for 0.7 mile. Winds were estimated at 65 to 70 mph. Its maximum width was 40 yards.

New Trier, MN EF-1 Tornado

A damage survey was also performed on the area four miles north of Cannon Falls, MN, or just southeast of New Trier. A tornado touched down and almost immediately hit a farmstead. A roof was completely removed from a farm house, windows were blown out, and several sheds and other outbuildings were severely damaged. The tornado was initially about 50 yards wide, then narrowed to about 20 yards as it traveled through some corn fields and struck two other residences. Like several other tornadoes this day, it moved toward the north-northwest, ending one mile southeast of New Trier. Maximum wind speeds were likely around 90 or 95 mph, and path length was 1.6 miles. Touchdown was at approximately 216 pm.

North Branch, MN EF-0 Tornado

The assessment team also confirmed that a tornado touched down in North Branch, just southeast of the middle school. It tracked north-northwest through fields into a neighborhood near 2nd and 3rd Avenues and Cedar Street, then lifted near Rivercrest and Riverview Courts. The track was approximately 1 mile in length with a maximum width of approximately 200 yards. Damage was consistent with EF-0 intensity, with winds between 70 and 80 MPH. Touchdown was at approximately 400 pm.

Ham Lake, MN EF-0 Tornado

A storm chaser witnessed and photographed a brief tornado in a sparsely populated section of Ham Lake at 307 pm. No damage was reported.

Rural Ellsworth, WI EF-0 Tornado

A damage survey revealed a brief tornado touched down 5 miles southeast of Ellsworth and tore through a couple fields of corn. The width

was rather narrow, only 20 yards at most. It was on the ground for only 0.2 mile, just north of the intersection of County Road V and DD. Touchdown time was about 257 pm, and wind speeds were about 65 to 70 mph.

Emerald, WI EF-0 Tornado

A storm spotter followed and photographed a tornado that briefly touched down several times as it moved northward, tracking from 3 miles southwest of Emerald to 1.4 miles west of Emerald. Tree limbs and other vegetation were occasionally tossed in the air. This occurred from 358 pm to 402 pm. Path length was 1.4 miles and the maximum width was 25 yards. Wind speeds were about 65 to 70 mph.

Forest, WI EF-0 Tornado

A storm spotter followed and photographed a tornado that briefly touched down several times as it moved northeast, from just west of Forest to 1 mile north of Forest. Tree limbs and other vegetation were occasionally tossed in the air. Time of this tornado was from 411 pm to 415 pm. Path length was 1.7 miles and maximum width was 25 yards. Wind speeds were about 65 to 70 mph.

Springfield, MN EF-0 Tornado

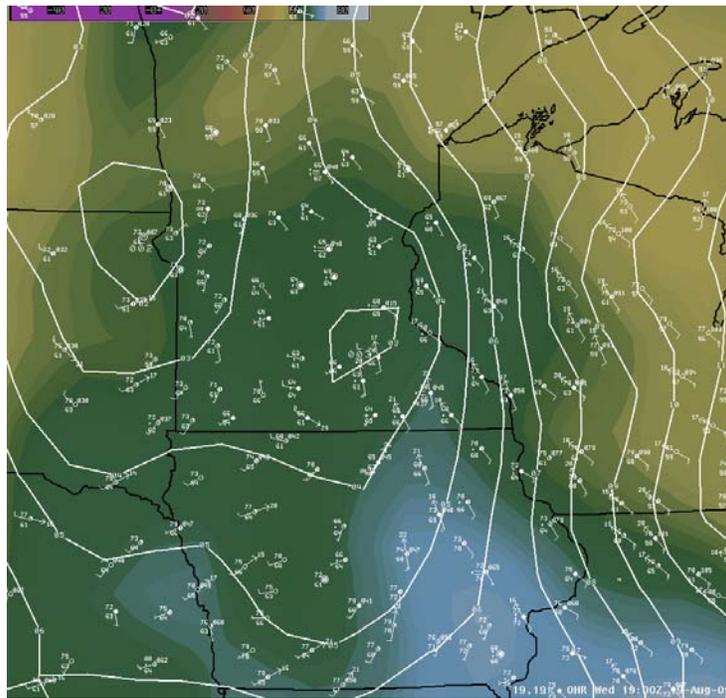
Skywarn spotters witnessed and photographed a tornado briefly touching down in Brown County, three miles east of Springfield, at 628 pm. Only minor crop damage was found in open areas. Wind speeds were approximately 65 to 70 mph.

Event Synopsis

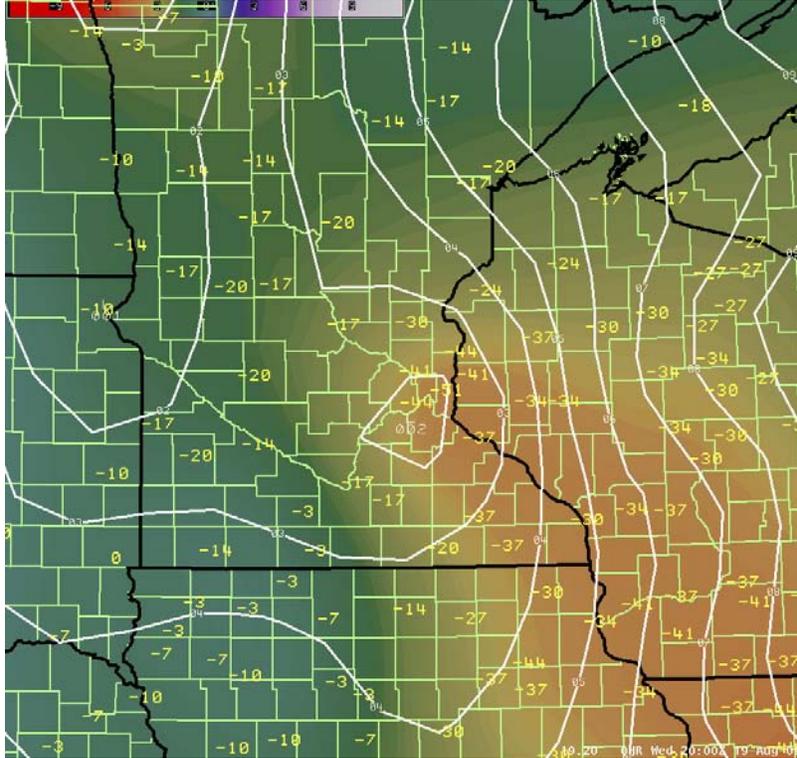
Scattered areas of damage were relayed to the NWS Twin Cities through the afternoon and early evening Wednesday, primarily from the Twin Cities metro area (including downtown Minneapolis), other parts of eastern Minnesota, and far western Wisconsin. Damage surveys took place on August 20, 25, 26, and 27. One interesting finding from the surveys was that most of the afternoon tornadoes traveled toward the north or northwest. Eleven tornadoes were determined to have touched down;

eight in Minnesota and three in Wisconsin. Our thanks go to those who provided reports, especially during the severe weather.

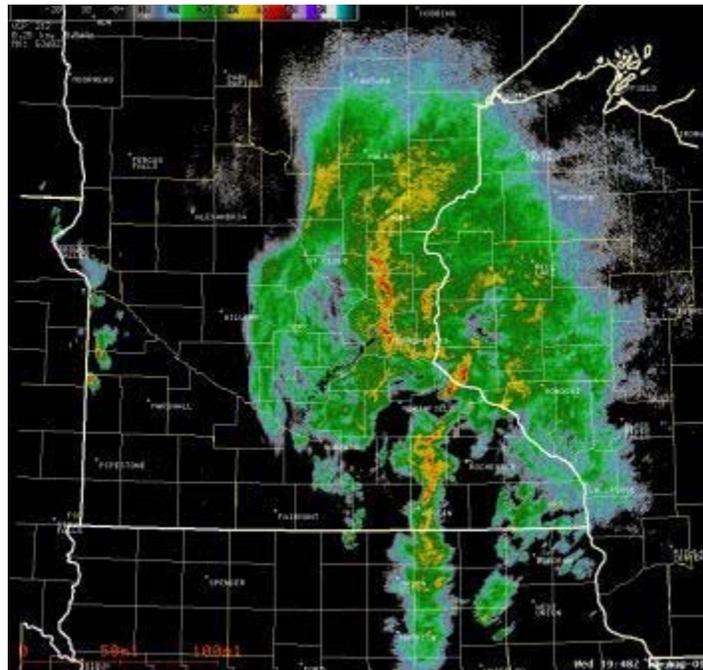
Low pressure was moving into Minnesota from the west southwest on Wednesday, August 19. This low began to deepen rapidly in the late morning and especially the afternoon as it moved northeast over the Twin Cities metro area. After a morning and early afternoon of primarily rain across the Twin Cities on Wednesday, embedded circulations developed within the shower activity by 2 pm. These circulations were moving quickly north and many were not associated with thunderstorms. There were only a handful of cloud-to-ground lightning strikes all afternoon in the areas where damage was reported. The circulations formed due to strong atmospheric wind speeds which were turning in the lower portion of the atmosphere. While there was little instability, or what meteorologists look for to know that air can rise and form thunderstorms, there was enough rising air to stretch these circulations at times and form likely short-lived tornadoes.



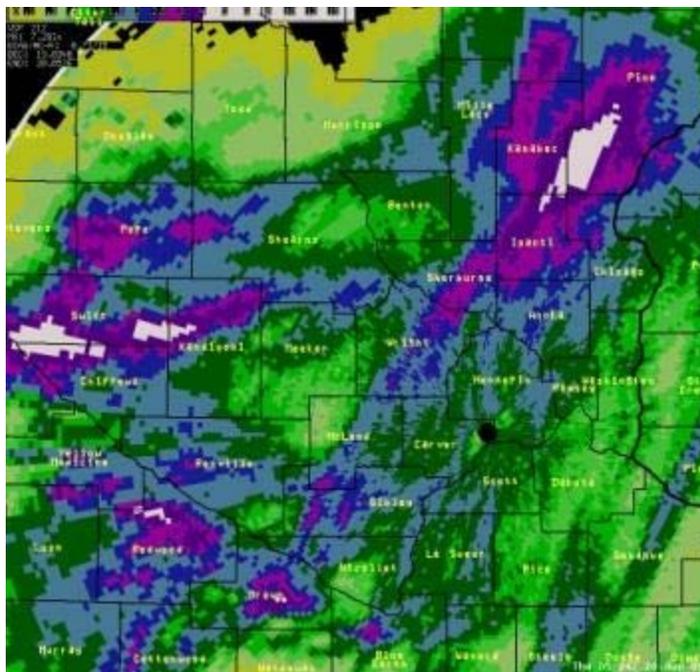
August 19, 2009: 2 pm Surface Weather Map - The image is of dew points, with white lines indicating sea level pressure. Observations are also on the map. Note the surface low approaching the Twin Cities and the gusty east southeast winds in southeast Minnesota into western Wisconsin. These were steering more moisture into the Twin Cities. In addition, a southeast wind at the surface created larger directional turning in the lowest part of the atmosphere.



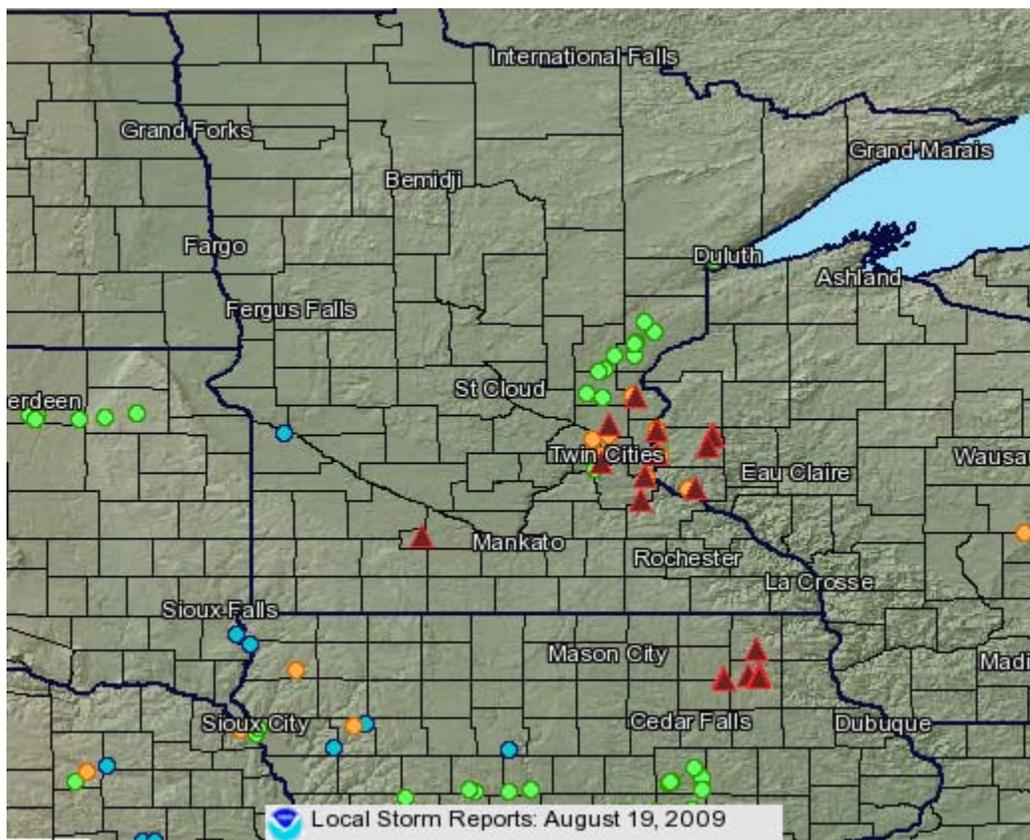
August 19, 2009: Afternoon Pressure Falls - The image is of pressure falls, with the yellow numbers indicating 3 hour pressure falls (in tenths of a millibar). Large falls are indicated in the orange, which extended up the Mississippi River valley. Such a phenomenon is a signature of a rapidly deepening low pressure.



North to south bands of stronger showers moved north across the Twin Cities and then western Wisconsin as the afternoon progressed. These were the areas where wind damage and likely tornadoes occurred.



Storm total rainfall amounts from the NWS Doppler Radar in Chanhassen along with Skywarn spotter and observer reports indicate the heaviest rain fell on Wednesday in the far northern Twin Cities towards Mora, as well as in west central Minnesota the night before.



PRELIMINARY LOCAL STORM REPORT...SUMMARY
 NATIONAL WEATHER SERVICE TWIN CITIES/CHANHASSEN MN
 406 PM CDT TUE SEP 01 2009

..TIME...	...EVENT...	...CITY LOCATION...	...LAT.LON...
..DATE...MAG....	..COUNTY LOCATION..ST..	...SOURCE....
	..REMARKS..		
0150 PM 08/19/2009	TORNADO	4 S MINNEAPOLIS HENNEPIN	44.91N 93.27W MN NWS STORM SURVEY

AN NWS STORM SURVEY TEAM CONFIRMED AN EF-0 TORNADO TRACKED FROM NEAR EAST 53RD STREET AND PARK AVENUE IN SOUTH MINNEAPOLIS...TO NEAR THE CONVENTION CENTER IN DOWNTOWN MINNEAPOLIS. DAMAGE WAS PRIMARILY LARGE TREES DOWNED...SEVERAL OF WHICH FELL ON STRUCTURES. THE PATH LENGTH WAS APPROXIMATELY 4.5 MILES WITH A MAXIMUM WIDTH OF 500 YARDS.

0216 PM 08/19/2009	TORNADO	4 N CANNON FALLS DAKOTA	44.57N 92.91W MN NWS STORM SURVEY
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DAMAGE SURVEY DETERMINED AN EF-1 TORNADO WAS ON THE GROUND FOR 1.6 MILES. IT COMPLETELY REMOVED THE ROOF OF A HOUSE AND DESTROYED SEVERAL LARGE SHEDS AND OTHER OUTBUILDINGS. THE TORNADO ALSO MOVED THROUGH SEVERAL CORN FIELDS. MAXIMUM WIDTH WAS 50 YARDS. IT DISSIPATED ONE MILE SOUTHEAST OF NEW TRIER.

0220 PM 08/19/2009	TSTM WND DMG	BROOKLYN PARK HENNEPIN	45.11N 93.35W MN NWS STORM SURVEY
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SCATTERED TREES AND LARGE LIMBS ACROSS A BROAD AREA 3/4 BY 1/2 MILE WERE KNOCKED OVER DUE TO A DOWNBURST JUST NORTHEAST OF HWY 252 AND 85TH AVENUE.

0240 PM 08/19/2009	TORNADO	4 SE COTTAGE GROVE WASHINGTON	44.78N 92.87W MN NWS STORM SURVEY
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AN NWS STORM SURVEY TEAM CONFIRMED AN EF-1 TORNADO TRACK FROM NEAR US HWY 61 AND 122ND ST SOUTH...TO NEAR LEHIGH AVENUE SOUTH ON THE FAR SOUTHEAST PERIPHERY OF COTTAGE GROVE. LARGE TREES WERE UPROOTED OR SHEARED OFF AND MINOR STRUCTURAL DAMAGE OCCURRED TO RESIDENCES. THE PATH LENGTH WAS NEAR ONE HALF OF A MILE WITH A MAXIMUM WIDTH OF 75 YARDS.

0246 PM 08/19/2009	HEAVY RAIN U0.00 INCH	BLOOMINGTON HENNEPIN	44.83N 93.32W MN TRAINED SPOTTER
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NORMANDALE SERVICE ROAD FLOODED BETWEEN I494 AND WEST 84TH STR.

0255 PM 08/19/2009	HEAVY RAIN U0.00 INCH	BLOOMINGTON HENNEPIN	44.83N 93.32W MN AMATEUR RADIO
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ONE FOOT OF WATER ON I494 IN BOTH DIRECTIONS AT I494 AND

LYNDALE AVE SOUTH.

0257 PM TORNADO 5 SE ELLSWORTH 44.68N 92.42W
08/19/2009 PIERCE WI NWS STORM SURVEY

DAMAGE SURVEY DETERMINED AN EF-0 TORNADO TOUCHED DOWN BRIEFLY JUST NORTH OF THE INTERSECTION OF COUNTY ROADS DD AND V. THE TORNADO KNOCKED DOWN A NARROW STRIP OF CORN FOR 0.2 MILE.

0305 PM TORNADO 1 NW HUDSON 44.98N 92.76W
08/19/2009 ST. CROIX WI NWS STORM SURVEY

TREES DOWN AT COUNTY ROAD UU AND LARSON LANE. TRACK LENGTH WAS APPROXIMATELY ONE THIRD OF A MILE. TIME OF EVENT IS ESTIMATED.

0307 PM TORNADO 1 SSE HAM LAKE 45.25N 93.20W
08/19/2009 ANOKA MN STORM CHASER

BRIEF TOUCHDOWN IN AN UNPOPULATED SECTION OF HAM LAKE. RATED EF-0.

0325 PM TORNADO S MARINE ON ST CROIX 45.20N 92.77W
08/19/2009 WASHINGTON MN NWS STORM SURVEY

DAMAGE SURVEY REVEALED AN EF-0 TORNADO MOVED 0.7 MILE THROUGH THE WESTERN SECTION OF MARINE ON ST CROIX. SCATTERED TREES AND LARGE LIMBS WERE DOWNED.

0330 PM TSTM WND DMG 1 E HUDSON 44.97N 92.72W
08/19/2009 ST. CROIX WI AMATEUR RADIO

4 INCH BRANCHES IN ROAD AND WHOLE TREES DOWN ON HWY 12 ONE HALF TO ONE MILE EAST OF HUDSON.

0343 PM HEAVY RAIN 8 WNW ISANTI 45.53N 93.41W
08/19/2009 M5.50 INCH ISANTI MN TRAINED SPOTTER

5.5 INCHES OF RAIN REPORTED BY SPOTTER IN SPENCER BROOK.

0345 PM HEAVY RAIN 5 S BRUNSWICK 45.72N 93.29W
08/19/2009 M4.40 INCH ISANTI MN TRAINED SPOTTER

RAINFALL TOTAL SINCE 330 AM.

0358 PM TORNADO 3 SW EMERALD 45.06N 92.30W
08/19/2009 ST. CROIX WI TRAINED SPOTTER

TORNADO TOUCHED DOWN BRIEFLY SEVERAL TIMES AS IT TRACKED NORTHWARD ALONG 250TH STREET FOR 1.4 MILES. VEGETATION WAS OCCASIONALLY TORN UP AND TOSSED IN THE AIR.

0400 PM TORNADO SE NORTH BRANCH 45.51N 92.97W
08/19/2009 CHISAGO MN NWS STORM SURVEY

AN NWS STORM SURVEY TEAM CONFIRMED AN EF-0 TORNADO TRACKED FROM NEAR NORTH BRANCH MIDDLE SCHOOL TO NEAR RIVERCREST AND RIVERVIEW COURTS. DAMAGE WAS DONE TO THE MIDDLE SCHOOL ROOF...NEARBY TELEPHONE POLES...AND SMALL TREES. THE PATH LENGTH WAS APPROXIMATELY ONE MILE WITH A MAXIMUM WIDTH OF 200 YARDS.

0405 PM HEAVY RAIN 3 WNW BRAHAM 45.74N 93.24W
08/19/2009 M6.00 INCH KANABEC MN TRAINED SPOTTER

12 HOUR RAINFALL TOTAL

0411 PM TORNADO FOREST 45.14N 92.26W
08/19/2009 ST. CROIX WI TRAINED SPOTTER

TORNADO ON GROUND AT HWY 64 AT HWY 63 INTERSECTION.

0415 PM TORNADO 2 N FOREST 45.17N 92.26W
08/19/2009 ST. CROIX WI TRAINED SPOTTER

TORNADO STILL ON GROUND AT INTERSECTION OF 270TH STR. AND 20TH AVE.

0420 PM HEAVY RAIN 3 SSE QUAMBA 45.87N 93.15W
08/19/2009 M4.40 INCH KANABEC MN TRAINED SPOTTER

RAINFALL TOTAL IN 12 HOURS. MUD CREEK IS OUT OF ITS BANKS.

0454 PM HEAVY RAIN 5 SSW CAMBRIDGE 45.49N 93.25W
08/19/2009 M3.50 INCH ISANTI MN TRAINED SPOTTER

RAINFALL OCCURED OVER THE PAST 12 HOURS.

0628 PM TORNADO 3 E SPRINGFIELD 44.24N 94.92W
08/19/2009 BROWN MN TRAINED SPOTTER

SEVERAL TRAINED SPOTTERS REPORTED SEEING FUNNEL CLOUDS AND OCCASIONAL TORNADO TOUCHDOWNS BETWEEN SPRINGFIELD AND LEAVENWORTH. REPORTS RECEIVED BETWEEN 628 AND 643 PM.