STRONG TO SEVERE STORMS EXPECTED THURSDAY MORNING AND THEN AGAIN THURSDAY AFTERNOON/EVENING ACROSS EASTERN MINNESOTA

Issued Wednesday, May 14, 2025 8:29 PM PDT / 10:29 PM CDT

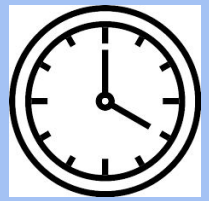
Hazards

TORNADOES
A few tornadoes expected.

WINDS
Wind gusts up to 70 mph in the stronger storms.

HAIL
Hail 1-1.5 inches in stronger storms, locally up to 2 inches.

FLOODING
Localized flooding is possible.



WHEN
Between 8am to noon CDT and then from 2pm to 4pm CDT.

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WHAT TO DO
Stay tuned for the latest forecasts.

Review severe weather plan and be ready to take shelter if warnings are issued.
Find other ways to receive warnings. Do not rely on sirens alone!

Note: The forecast area is within 25 miles of your location.

Minnesota Severe Weather Forecast for Thursday, May 15
Issued Wednesday, May 14, 2025 8:29 PM PDT / 10:29 PM CDT

SUMMARY: In the morning, the remnants of a convective complex will move through and bring primarily a severe wind risk, but there is also a chance of hail. Then in the afternoon there is a conditional risk of severe storms acorss Eastern Minnesota Thursday afternoon. If storms are able to form, then they will present an all-hazards threat of tornadoes, damaging winds, and hail. A few of the hail events could be significant (2+ inch).

DISCUSSION: As this discussion is being written, severe storms are currently active over Nebraska and South Dakota. As storms increase in coverage this evening and tonight, they will eventually merge into a line of storms, propelled by a fast-moving cold front. These storms will move into Minnesota at around 3AM CDT, and will likely reach the Twin Cities metro at around 8am CDT. These storms will be on a weakening trend as they enter the metro, but may pack a severe gust or two. Severe gusts are defined as gusts above 58 mph (50 knots). There may also be hail, but it is unlikely to reach severe limits. Severe hail is defined as hail greater than 1 inch in diameter.

After this storm complex moves through, the skies are expected to clear for an hour or two and this will allow daytime heating to destabilize the atmosphere. As the upper level trough inches closer, upper level forcing and broad diffluence will increase. Moisture and 60s dewpoints will continue to stream out of the south due to the southerly/southeasterly flow. The low-level jet at 850 mb will increase as the low level cyclone nears.

PLEASE PROCEED TO THE NEXT SLIDE

This will increase the low-level shear with veering and strengthening winds. As a result, between 200 and 300 m2/s2 of effective SRH expected. Deep layer sheer will be favorable for supercells, especially later (but then low level jet moves away) with effective bulk sheer right around 40 kts. The most favorable time for severe thunderstorms and tornadoes will be between 18z/1pm CDT and 21z/4pm CDT, given that the EML cap will be able to erode by that time. With morning convection, the onset of daytime heating will be delayed, and some model solutions are showing the stout EML cap struggling to erode through the morning with surface heating and upper level forcing. Especially as model trends have pushed the morning convection to arriving later in the morning, the cap and potential outflow form these storms have become more of a concern for afternoon convection. While storms are likely to be able to initiate, a stronger capping inversion may mitigate the tornado threat and most of the severe threat. If the cap is able to erode, then convection will have no problem gaining upscale growth and promoting all severe hazards, including damaging wind, tornadoes and hail. Some of the hail events in this case could be significant (2+ inches) and some tornadoes could be strong especially if supercells are able to maintain a discrete/semi-discrete mode before eventually merging into a line and moving east.

The morning convection will be key to how storms develop and progress in the afternoon, and it will be something that needs to monitored closely tomorrow morning.

By Max, 05/14/2025.

Note: There are no more scheduled forecasts for this event! A subsequent forecast will only be issued if conditions warrant it.