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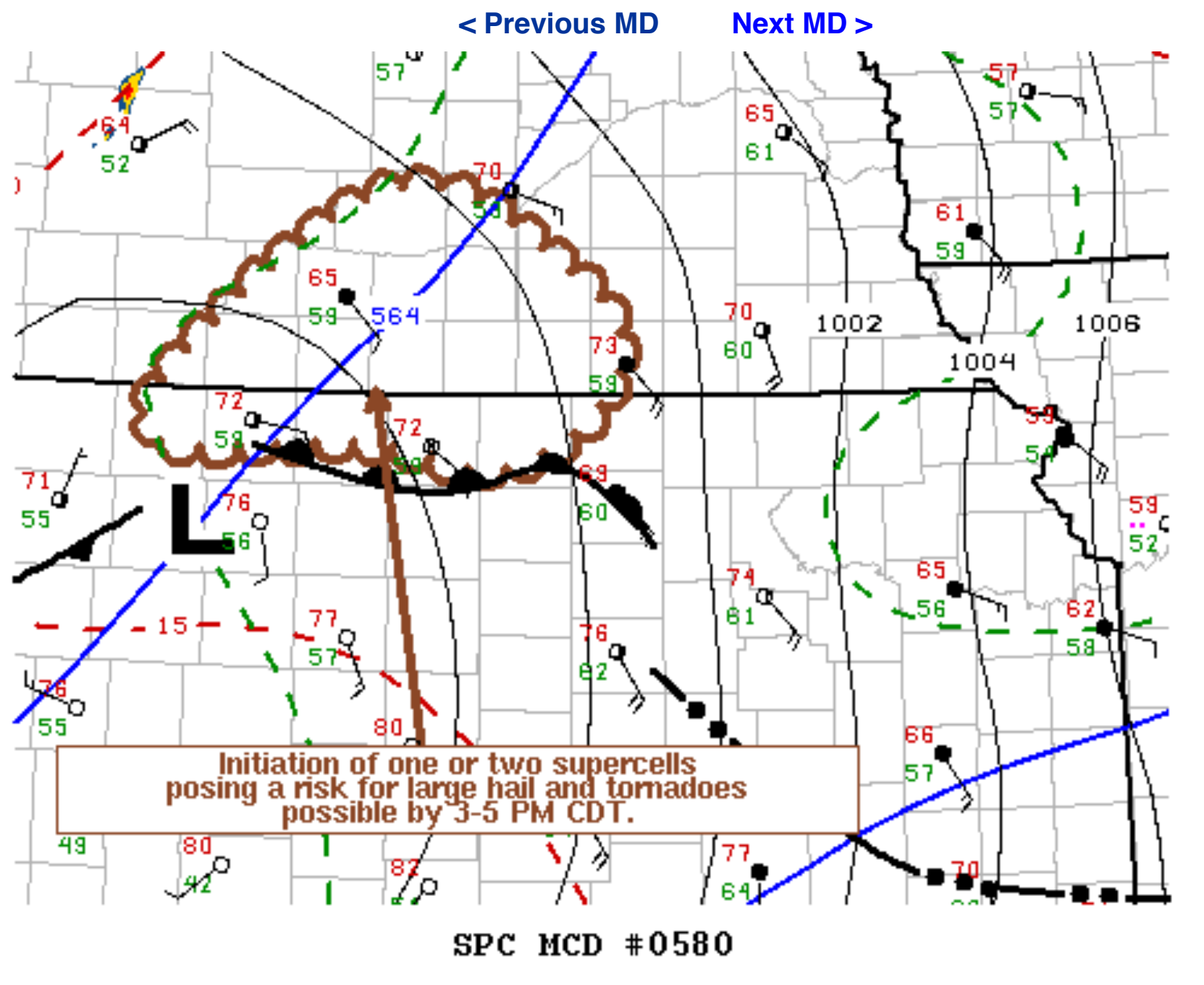
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## Mesoscale Discussion 580



Mesoscale Discussion 0580  
NWS Storm Prediction Center Norman OK  
1257 PM CDT Fri Apr 29 2022

Areas affected...the central Nebraska/Kansas border vicinity

Concerning...Severe potential...Watch likely

Valid 291757Z - 292000Z

Probability of Watch Issuance...80 percent

SUMMARY...The initiation of at least one or two supercells appears possible by 3-5 PM CDT, accompanied by the potential for large hail and a couple of tornadoes.

DISCUSSION...A plume of colder mid-level air (included 500 mb temps below -15C) is in the process of nosing east/southeast of the Colorado/Wyoming Rockies into the adjacent central Great Plains. Associated destabilization may have contributed to the recent transient intensification of thunderstorms near Imperial NE.

Farther east, deepening convective development is already underway, in response to boundary-layer destabilization driven by insolation and perhaps ascent associated with low-level warm advection, to the north and northeast of a deepening surface low, from southeast of McCook NE toward the Concordia KS vicinity. Despite somewhat modest surface dew points, becoming maximized near 60F along and to the north of the developing warm front, beneath the northern periphery of the warmer and more strongly capping elevated mixed-layer air, boundary-layer based CAPE appears to be increasing to 1500-2000 J/kg.

Further destabilization, and erosion of the mid-level inhibition, appears likely in response to continued daytime heating and eastward advection of the plume of cold mid-level air through 20-22Z. Latest Rapid Refresh and high-resolution Rapid Refresh output appears increasingly suggestive that this will support the initiation of isolated boundary-layer based storm development, to the north/northeast of the eastward migrating surface low center.

Despite the rather modest deep-layer ambient wind fields across this region (including southerly flow at 500 mb around 30+ kt), veering profiles with height in lower to mid-levels to the north of the warm front, coupled with the higher boundary-layer moisture and ambient vertical vorticity, may prove conducive to supercells capable of producing tornadoes, in addition to severe hail.

..Kerr/Hart.. 04/29/2022

...Please see [www.spc.noaa.gov](http://www.spc.noaa.gov) for graphic product...

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