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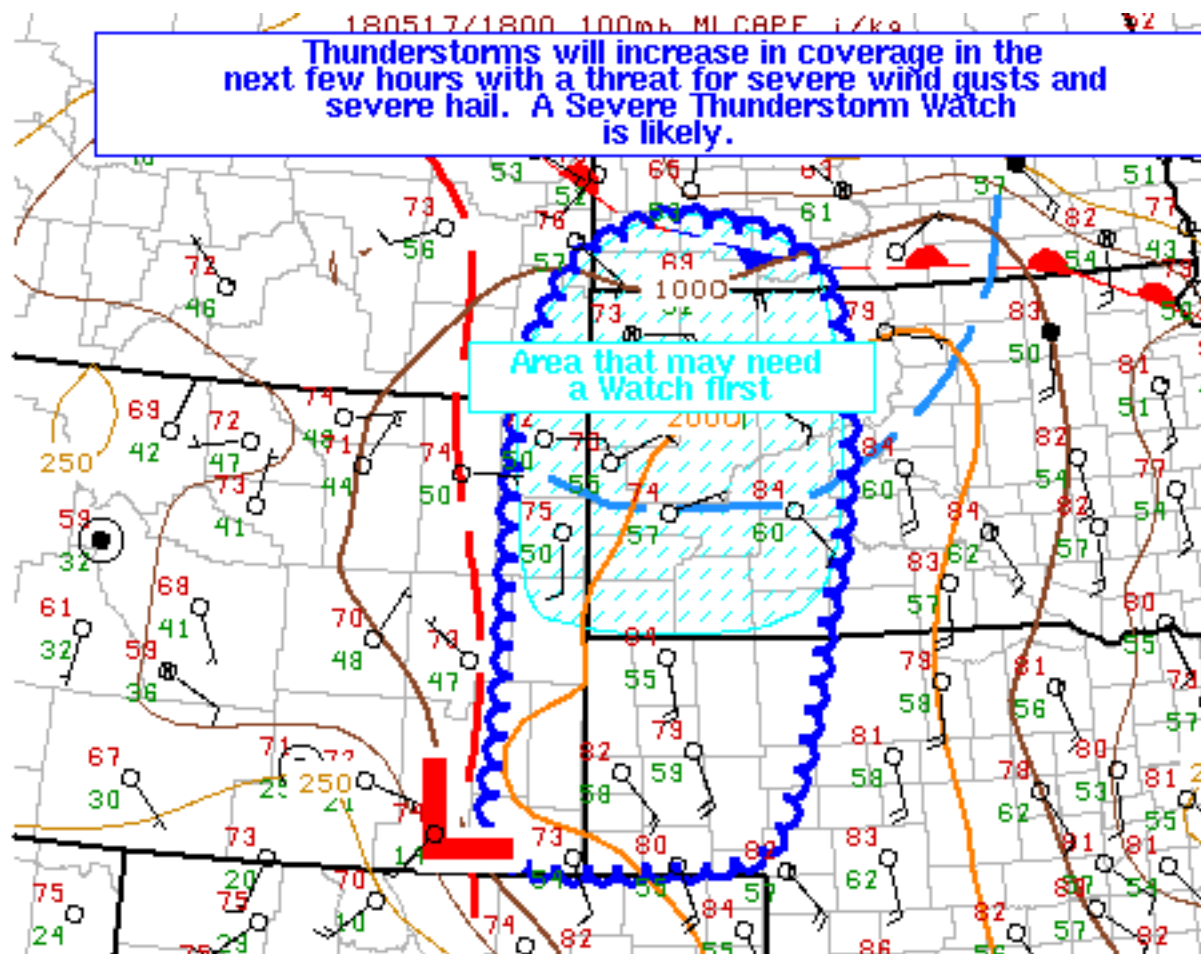
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## Mesoscale Discussion 440

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SPC MCD #0440

Mesoscale Discussion 0440

NWS Storm Prediction Center Norman OK

0158 PM CDT Thu May 17 2018

Areas affected...Far eastern Wyoming...Nebraska Panhandle...western South Dakota...far southwest North Dakota...and far southeast Montana

Concerning...Severe potential...Watch likely

Valid 171858Z - 172030Z

Probability of Watch Issuance...95 percent

SUMMARY...Thunderstorms will increase in the next few hours posing a risk for severe wind gusts and severe hail. A Severe Thunderstorm Watch is likely.

DISCUSSION...Strong heating over the area is contributing to thunderstorm development over the Laramie Range, along/north of the western portion of a decaying outflow boundary, and over the Black

Hills. Thunderstorms are expected to be most numerous over the northern portion of the area in the next hour or so, then develop/overspread a little later over the southern portion of the area as thunderstorms move off the Mountains, and potentially develop along the lee trough. The air mass north of the old outflow boundary has been somewhat slow to destabilize, but MLCAPE is now analyzed from 500 J/kg near the North Dakota/South Dakota border to over 2000 J/kg over central South Dakota, with rapidly decreasing MLCIN with time. Near-surface winds have maintained somewhat of an easterly component north of the outflow boundary, which is contributing to 35-40 kt of 0-6 kt shear over that area. The abundance of thunderstorms developing on recent GOES-16 imagery, steep mid-level lapse rates, and deeply-mixed boundary layers should contribute to strong cold pool development and upscale growth into mixed multicell/supercell clusters through the afternoon. Severe wind gusts and severe hail will be the primary threats.

Over the southern area, strong heating and boundary-layer dewpoints holding in the mid-to-upper 50s is contributing to higher MLCAPEs of 2500-3000 J/kg. However, given the rather weak deep-layer shear, thunderstorms are also expected to consist of multicell/supercell modes initially, with a consolidated area of thunderstorms growing upscale with time in the form of a loosely-organized MCS.

Given the expected coverage of thunderstorms, widespread steep lapse rates, and sufficient moisture, a Severe Thunderstorm Watch is likely, perhaps requiring issuance over the northern area first, followed by a second Watch over the southern part of the area.

..Coniglio/Weiss.. 05/17/2018

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