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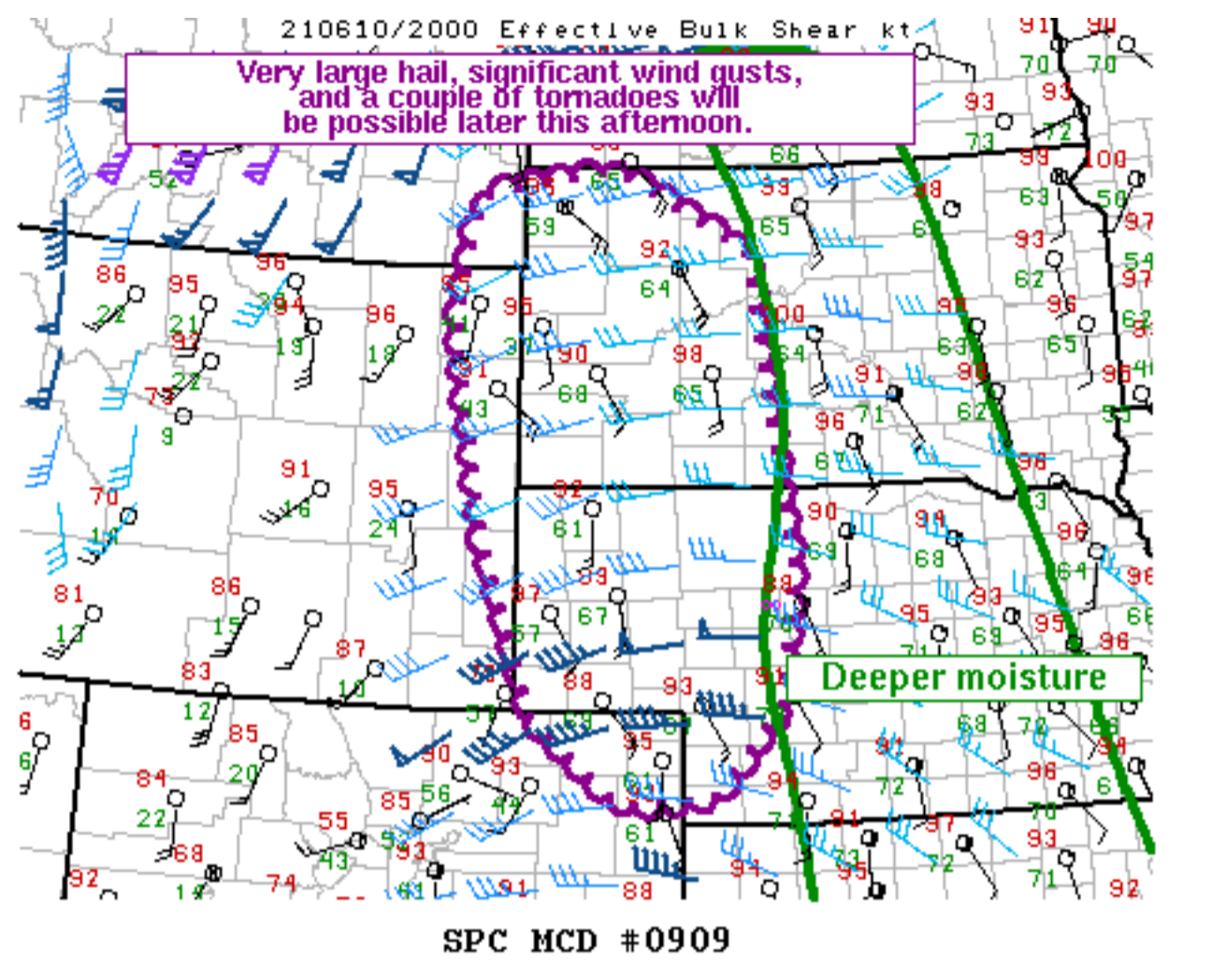
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Mesoscale Discussion 909

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Mesoscale Discussion 0909
NWS Storm Prediction Center Norman OK
0351 PM CDT Thu Jun 10 2021

Areas affected...Western South Dakota and western Nebraska

Concerning...Severe potential...Watch likely

Valid 102051Z - 102245Z

Probability of Watch Issuance...95 percent

SUMMARY...Supercells are expected to develop along the lee trough later this afternoon. Very large hail, severe wind gusts, and a couple tornadoes are possible. With time, initial storms are likely to grow upscale into intense lines/bowing segments capable of significant wind gusts. A WW is likely within the next 2-3 hours.

DISCUSSION...Cumulus clouds have begun to form along the MT/SD/WY border within the lee trough. Higher-based cumulus are also evident farther south in eastern Wyoming as well. Continued boundary-layer heating and mid-level height falls should continue to promote this development and eventual storm initiation later this afternoon. The 19Z UNR sounding showed extreme surface-based buoyancy, though this was only supported by a very shallow layer of low-level moisture. Farther to the east, the 18Z LBF sounding showed a deeper moist layer with similar instability/buoyancy. This richer moisture is apparent on visible satellite where boundary-layer cumulus have develop in central Nebraska/South Dakota.

Current visible satellite trends suggest that storm development is still likely a 2-4 hours away, which has been the general consensus of CAM guidance today. With 30-45 kts of effective shear orthogonal to the lee trough, initial storms will likely be supercellular and capable of very large hail (potentially 3+ inches) and severe wind gusts. Given the lower boundary layer RH towards the west, the tornado threat is not expected to be overly high, but a couple of tornadoes will be possible. If a storm can remain discrete into the evening, richer moisture to the east and a strengthening low-level jet, a brief window of greater tornado potential could develop.

The main concern beyond the initial supercells is expected to be a threat for significant wind gusts along with linear/bowing segments that develop. Guidance has varied in the exact evolution of convection this evening, but one or two of intense squall lines are possible as storms move into central Nebraska/South Dakota.

A WW is likely within the next 2-3 hours.

..Wendt/Guyer.. 06/10/2021

...Please see www.spc.noaa.gov for graphic product...

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