

Lessons learned from HWT-DTC interactions:
2008-09 Spring Experiments

NSSL perspective...

Can we use MODE to quantify objectively our subjective assessments of CAM forecasts?

Is it reliable?

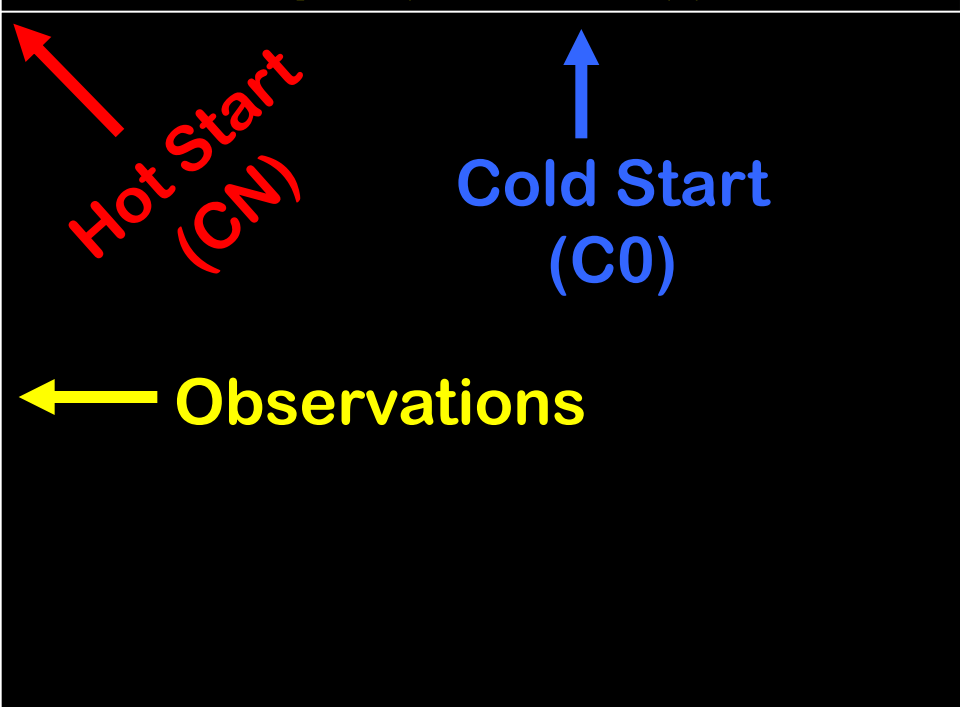
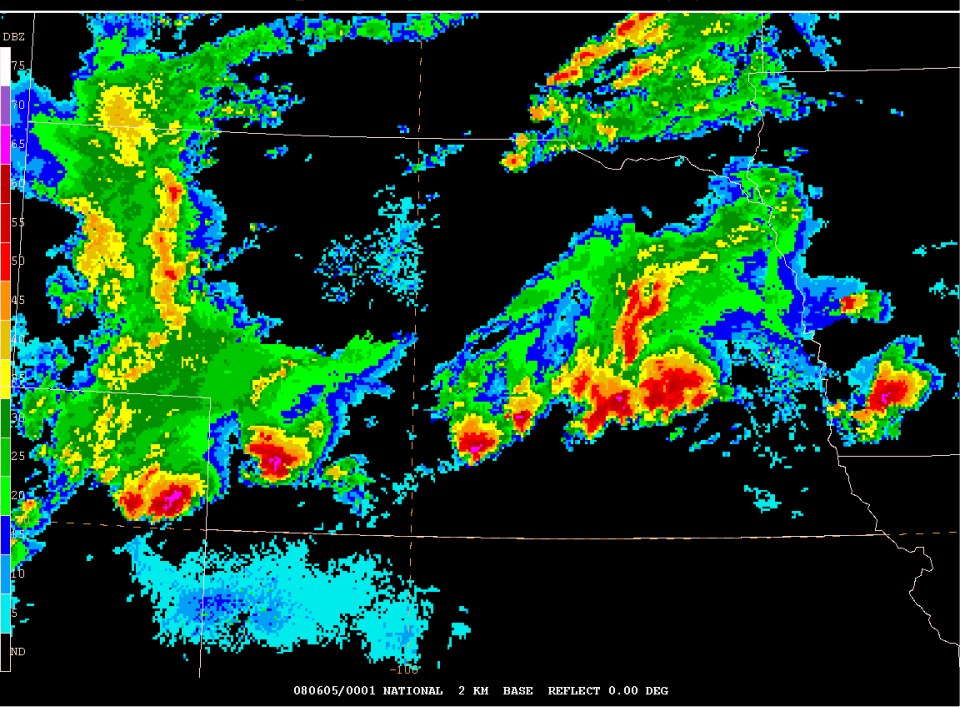
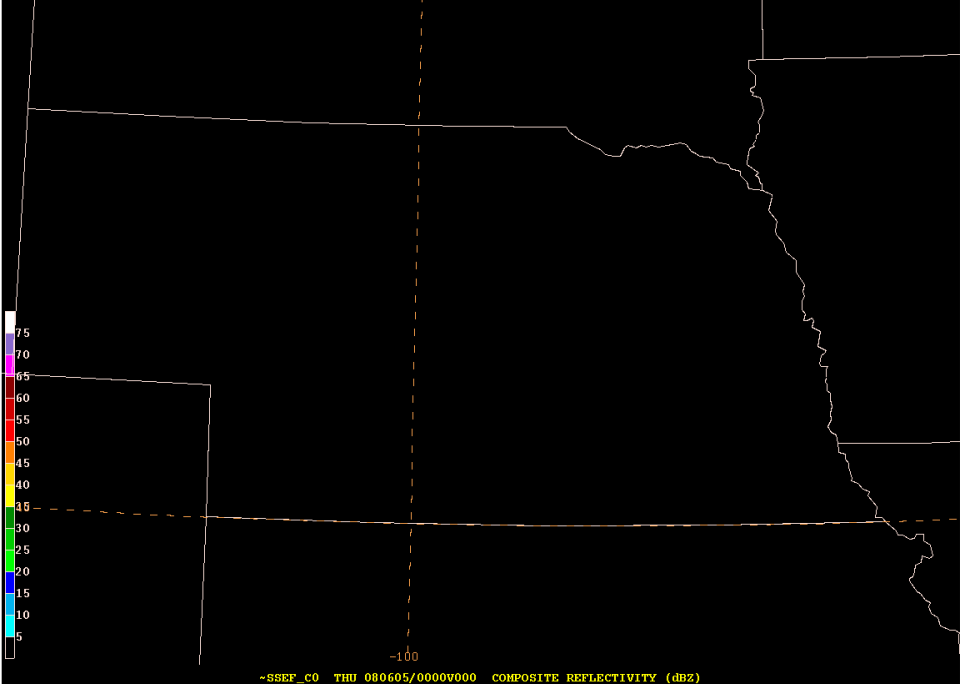
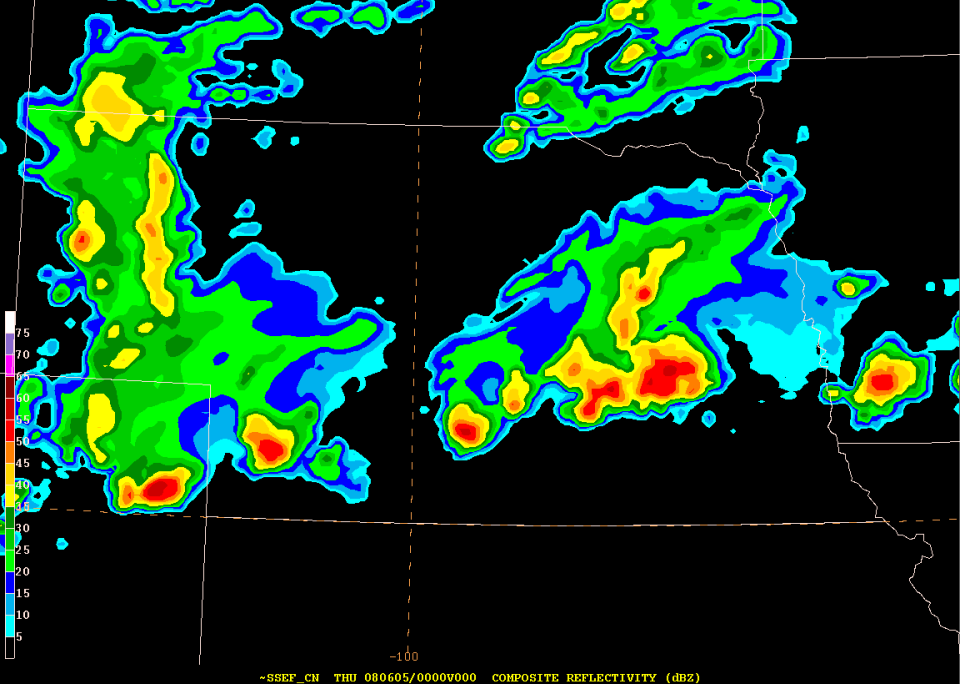
Is it worth a thousand words (like a picture)?

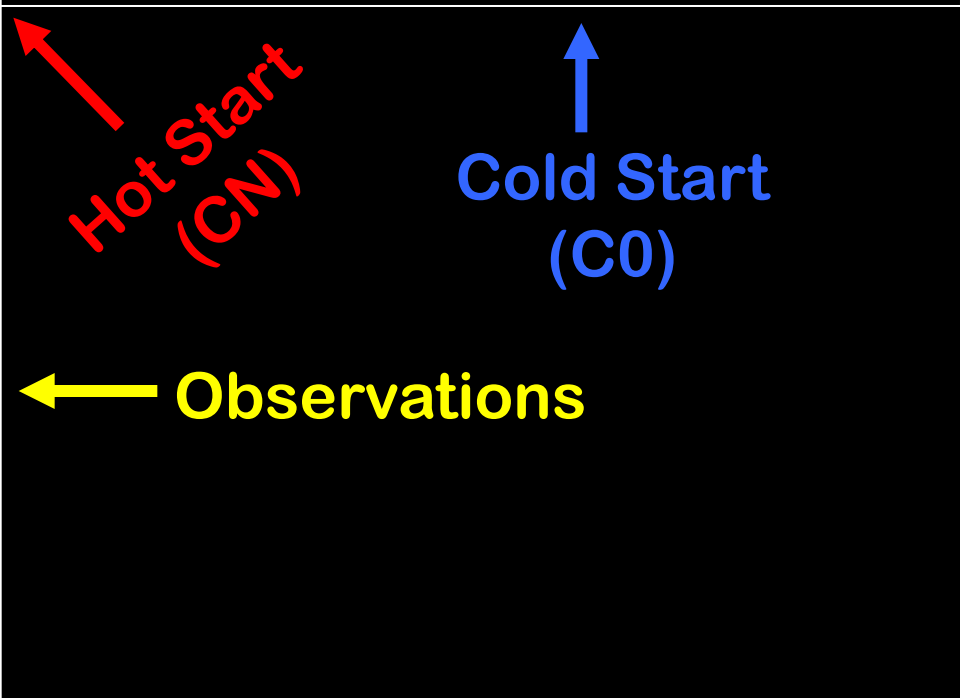
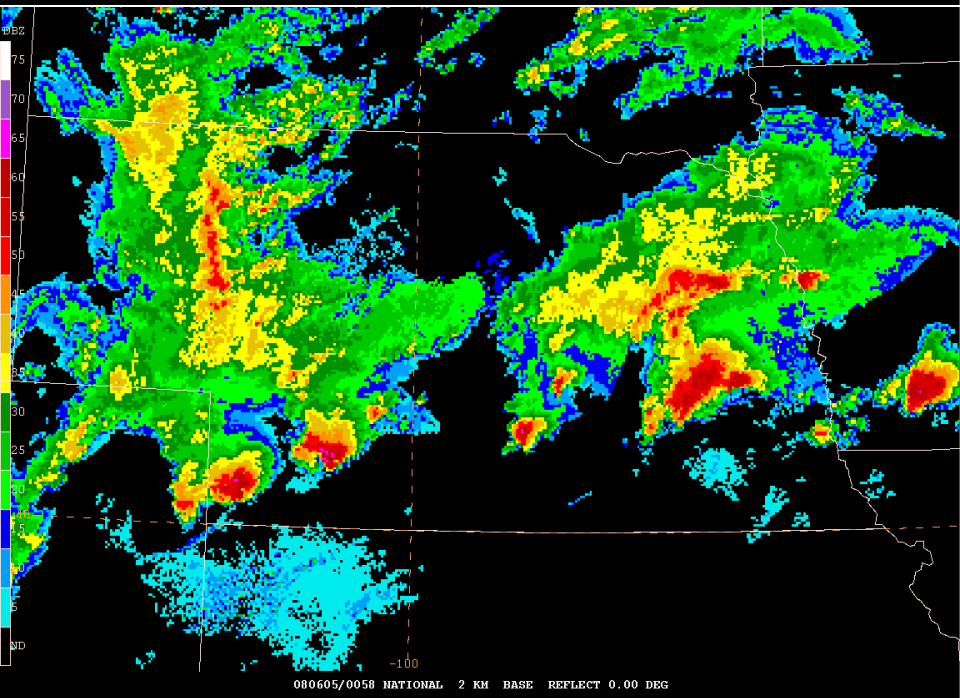
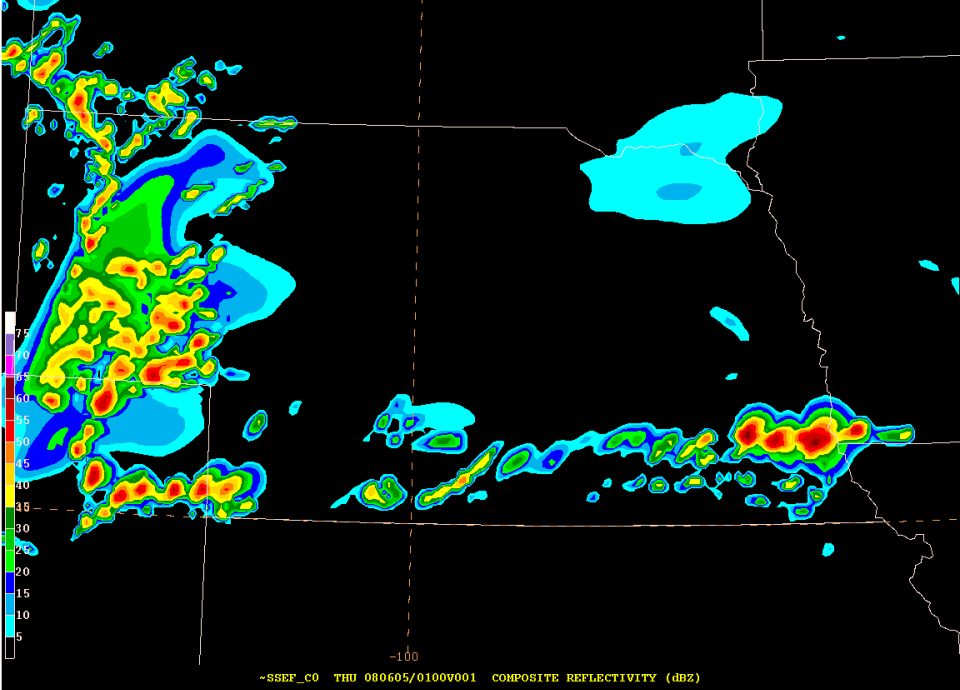
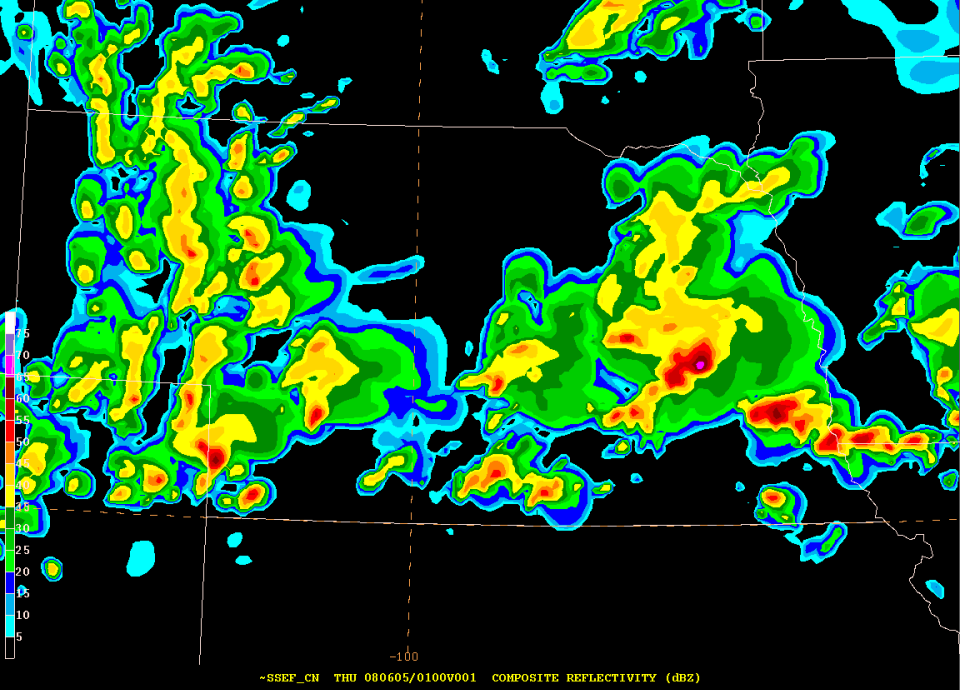
Can it be made simple enough to “catch on” with “casual” users?

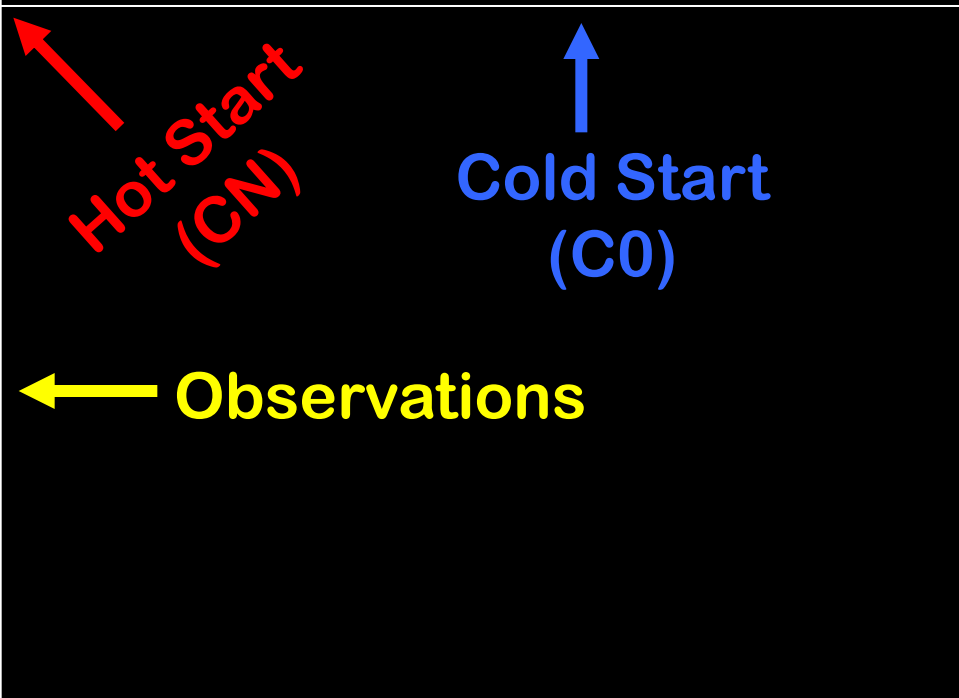
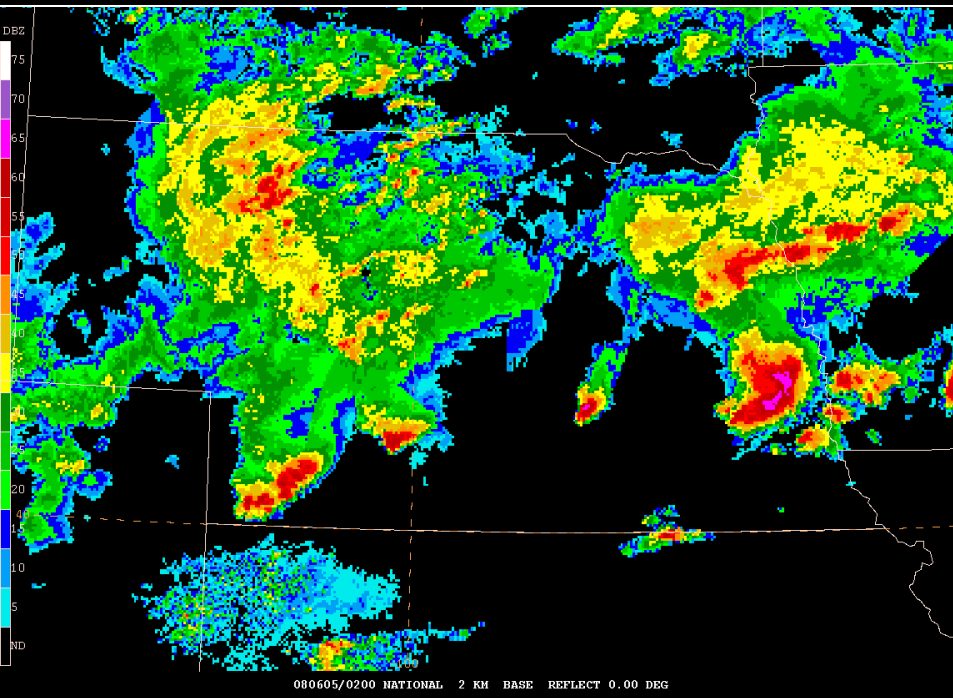
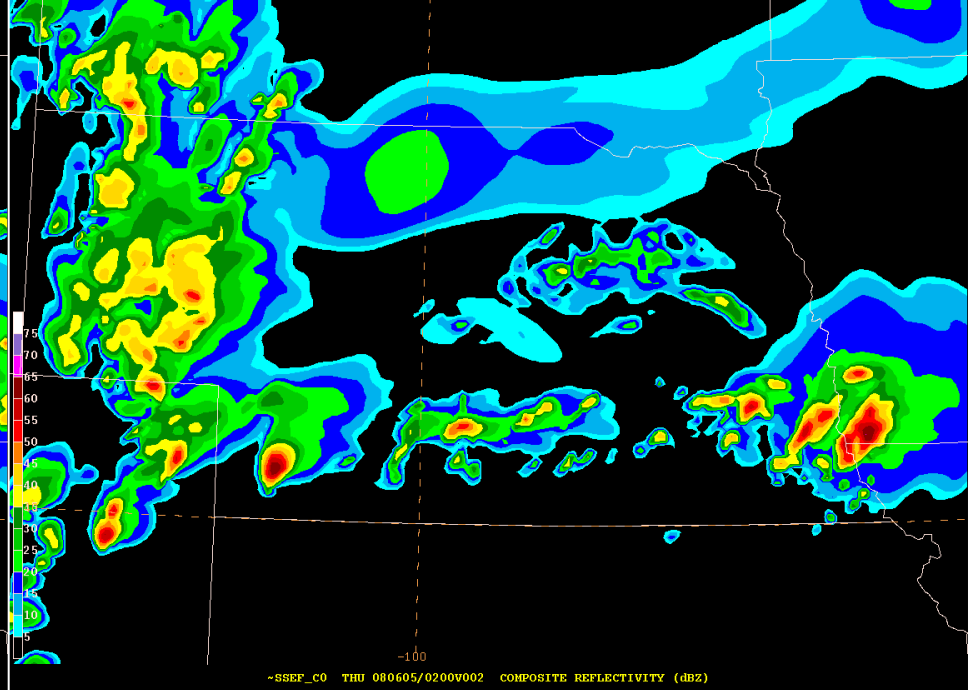
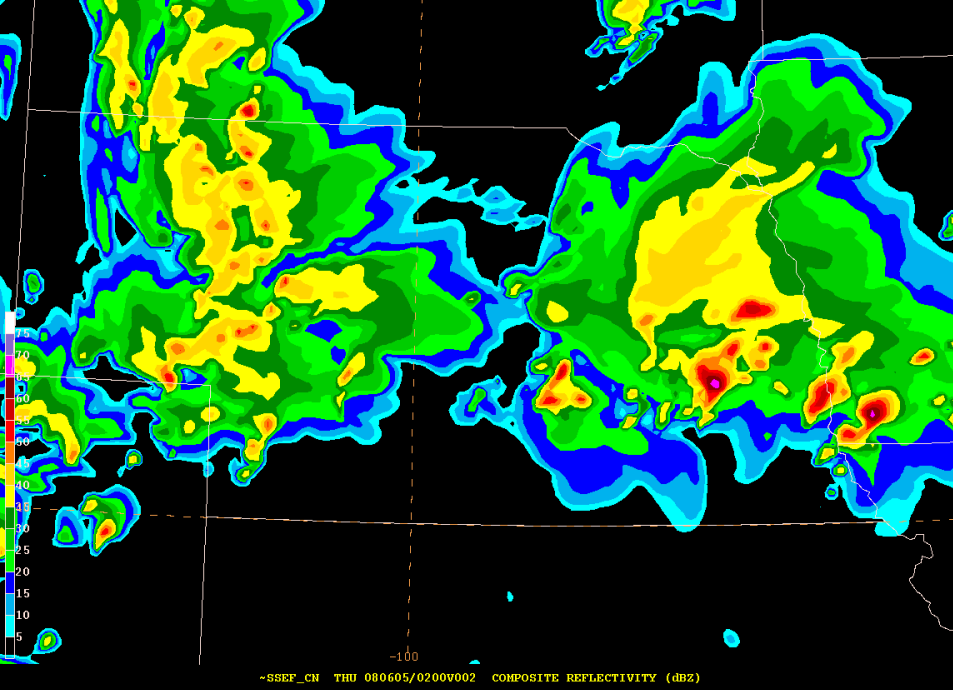
Assimilation of radar data...

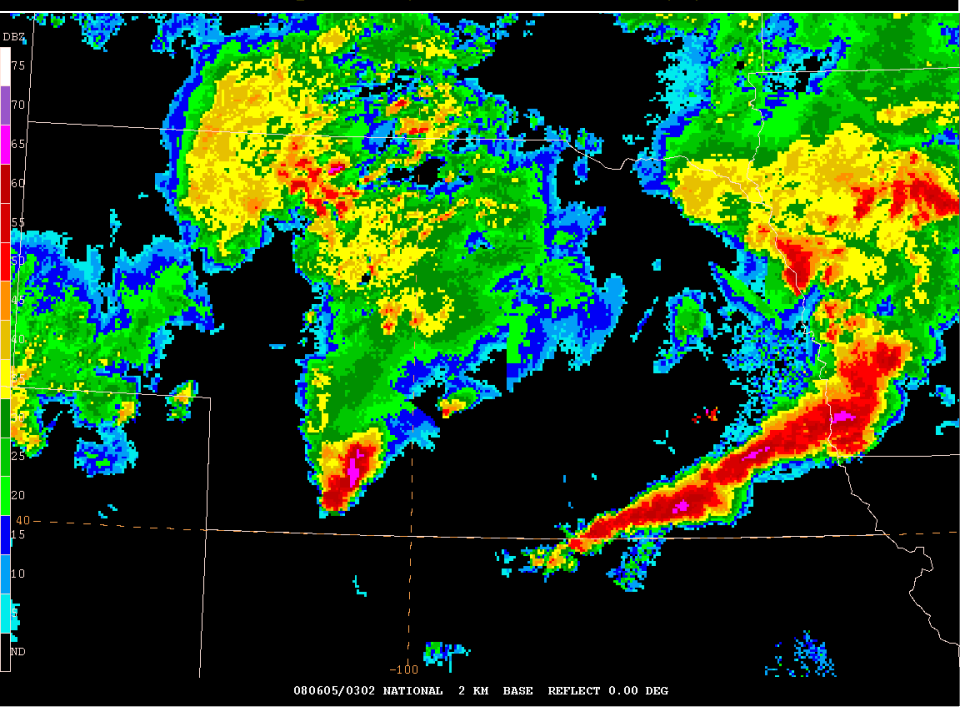
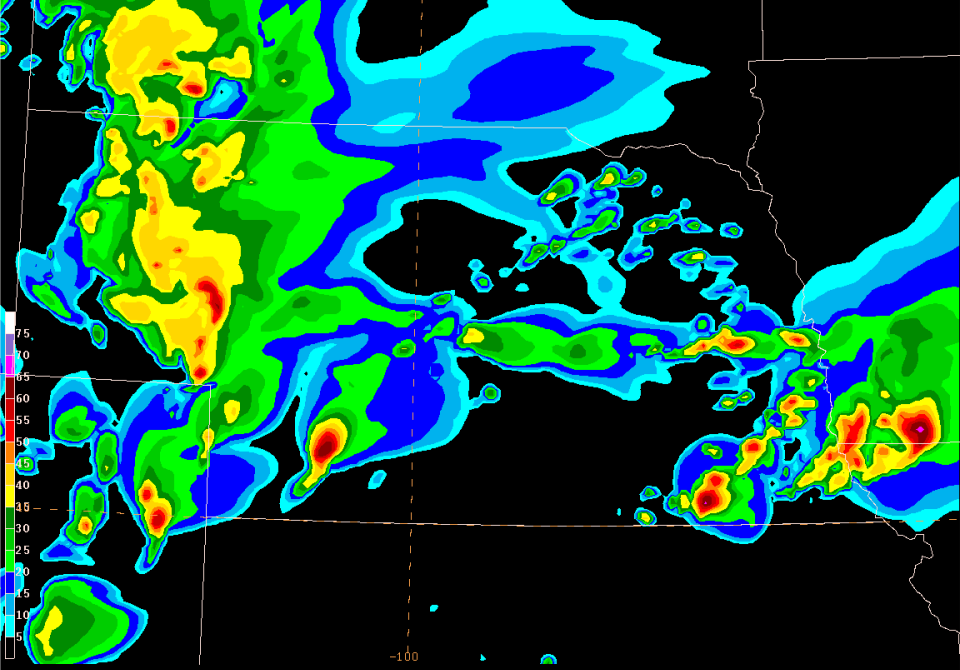
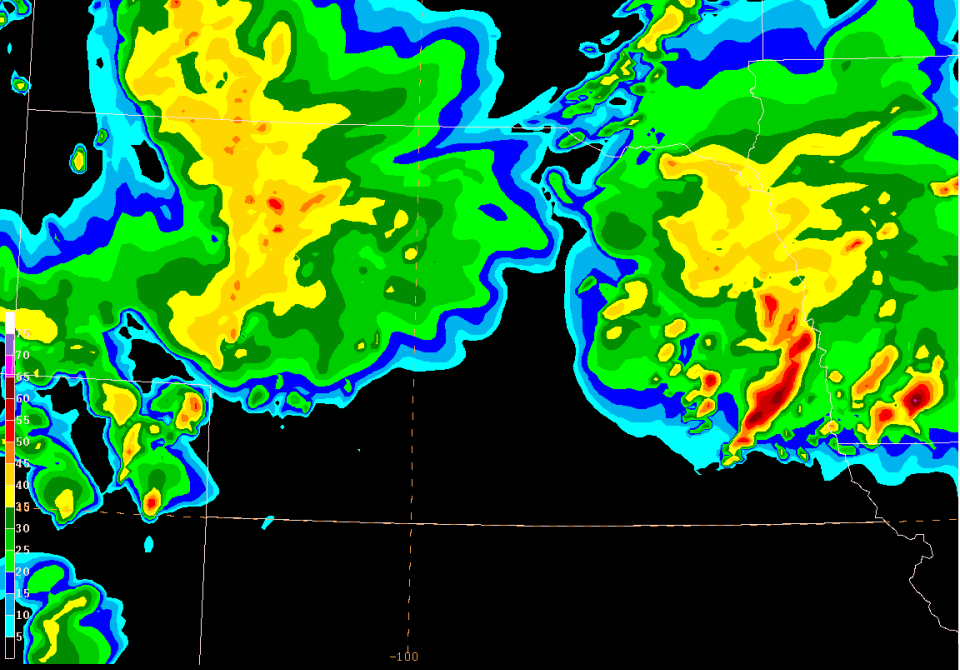
During SE2008, the CAPS high-resolution ensemble included two members that were configured identically, but one assimilated both velocity and reflectivity data from the nationwide array of WSR-88D radars using the ARPS 3DVAR and cloud analysis package (“hot start”), while the other did not assimilate radar data (“cold start”).

Consider a case from June 5, 2008...compare forecasts with (CN) and without (C0) assimilation of radar data...





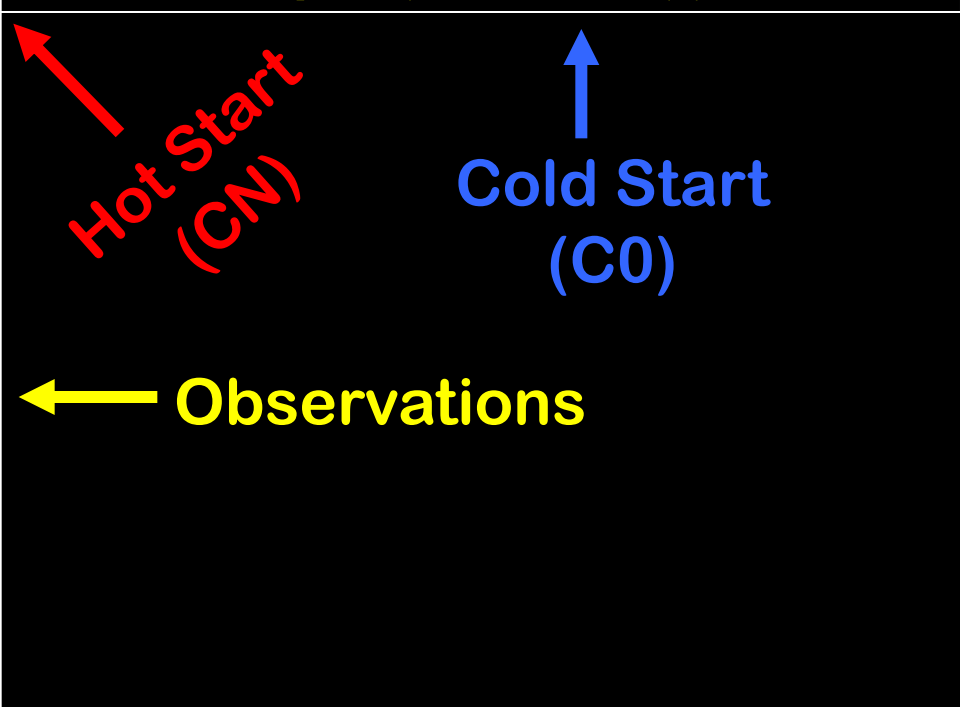
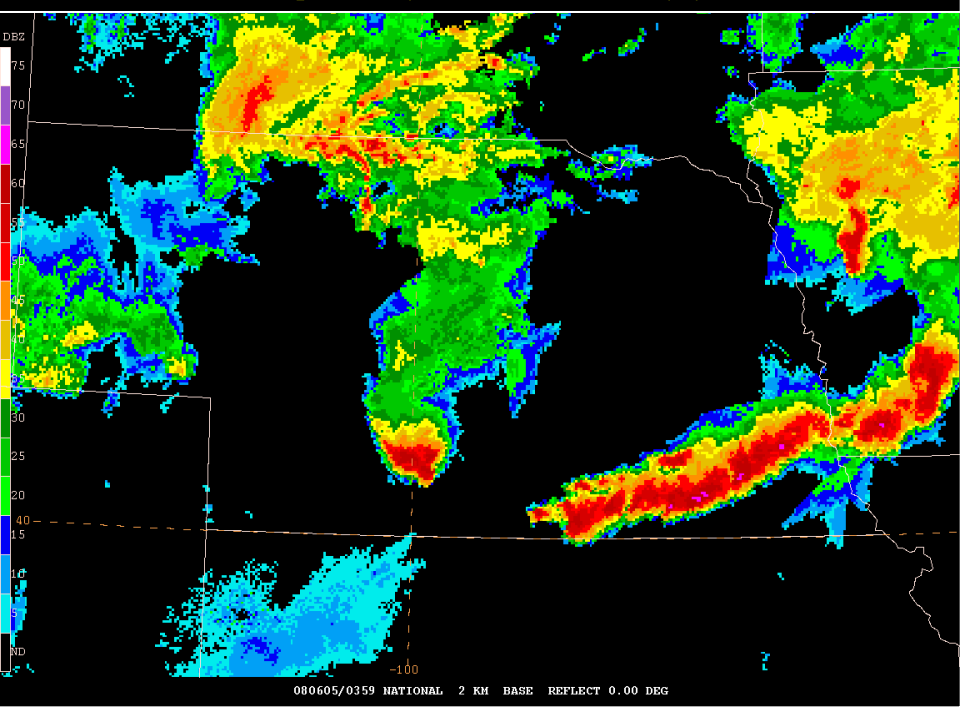
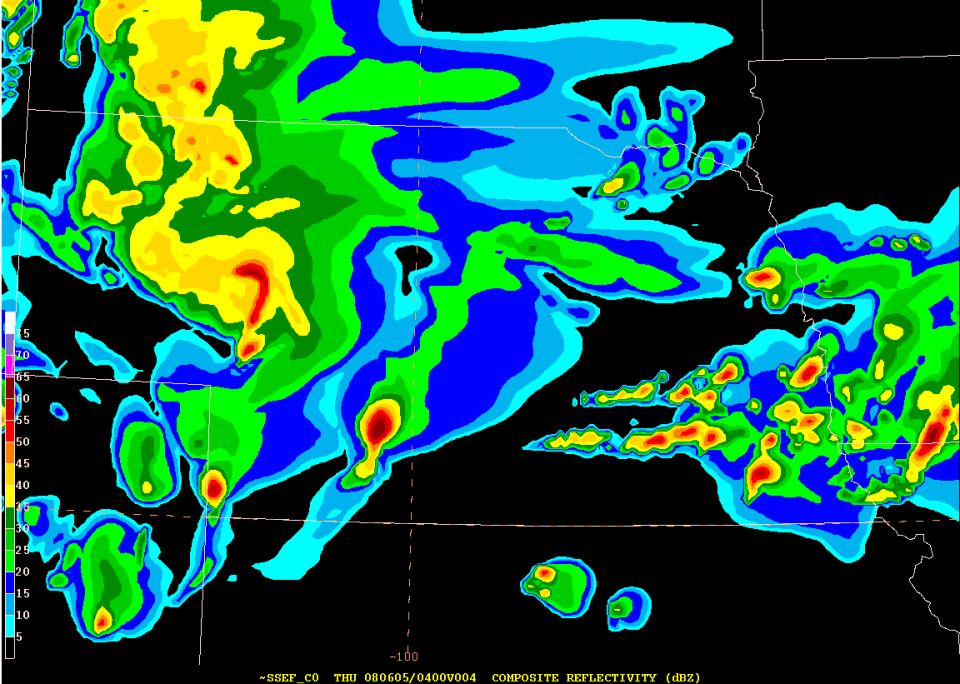
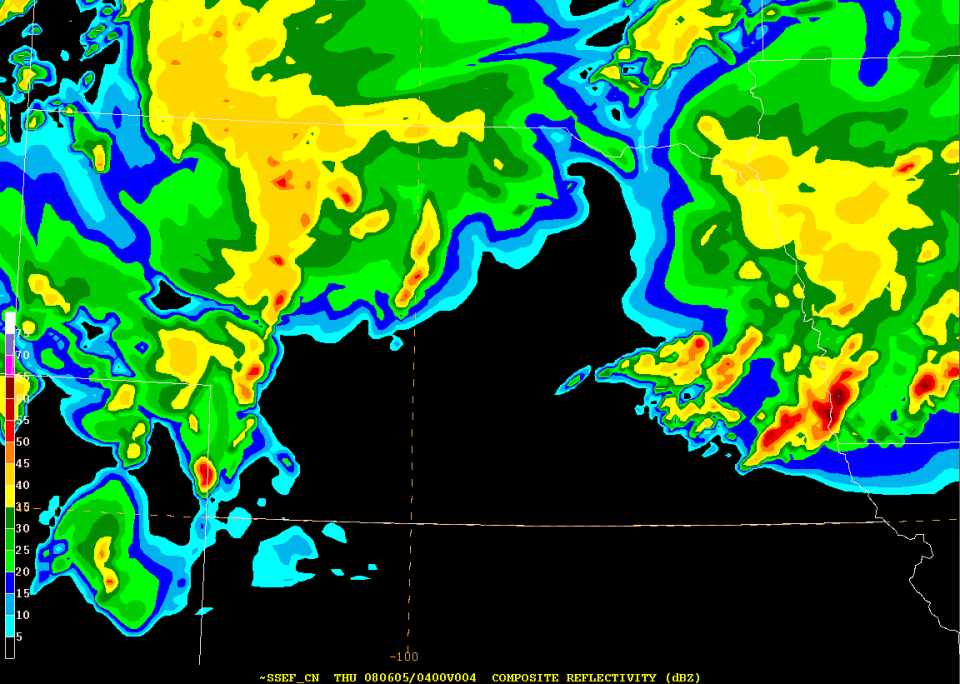


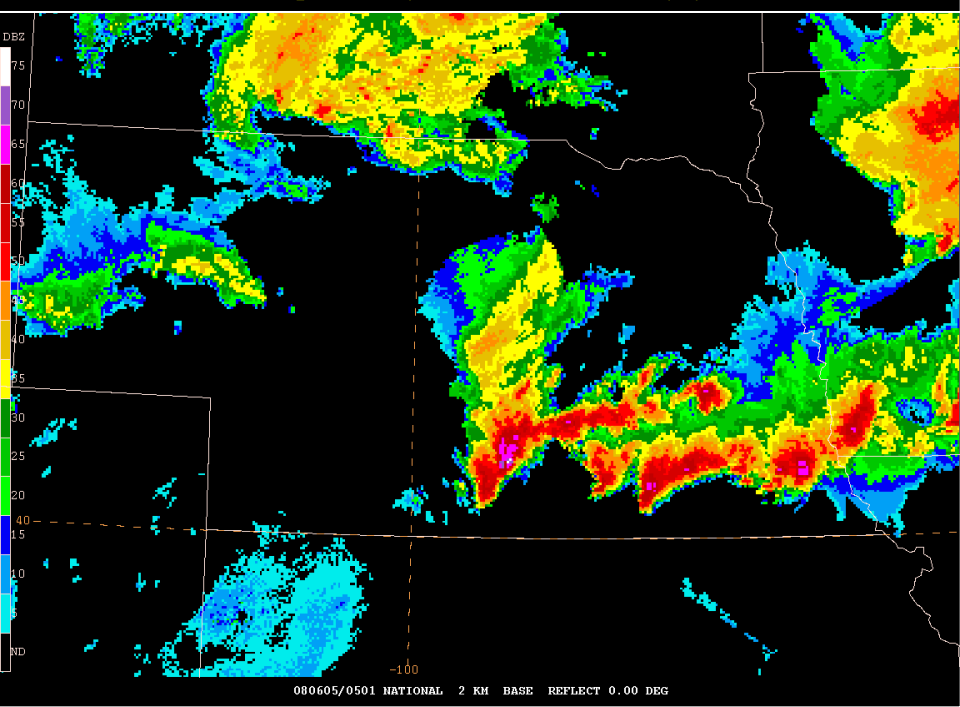
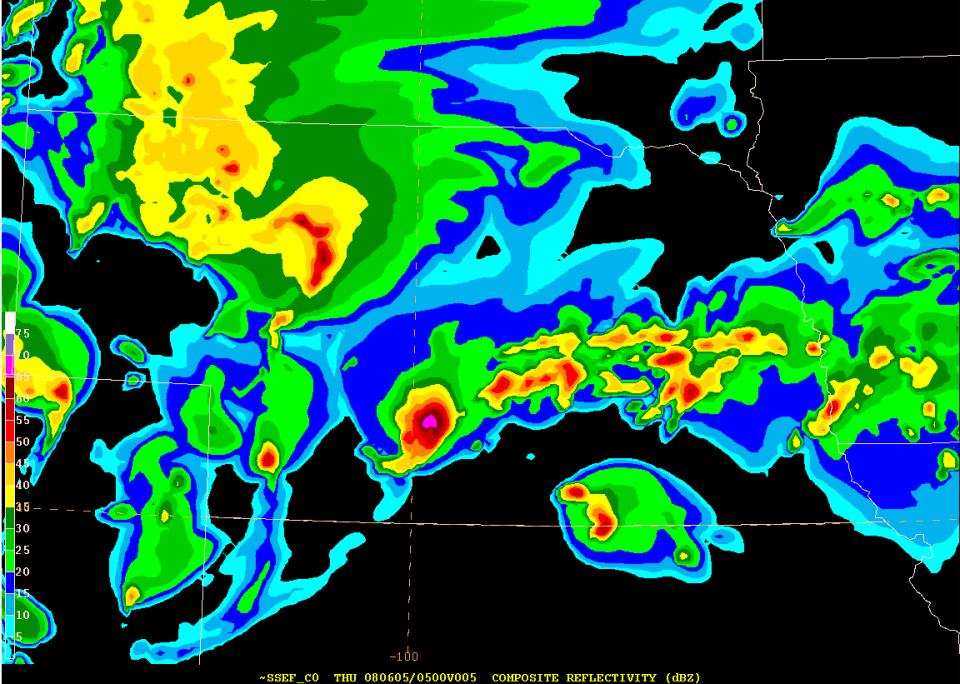
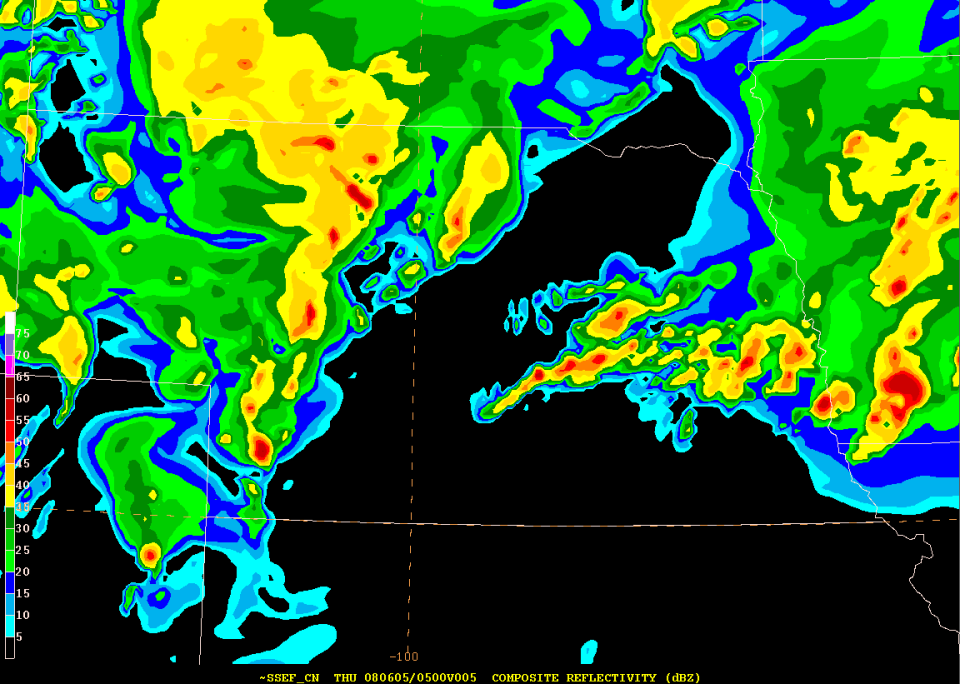


Hot Start (CN)

Cold Start (C0)

Observations



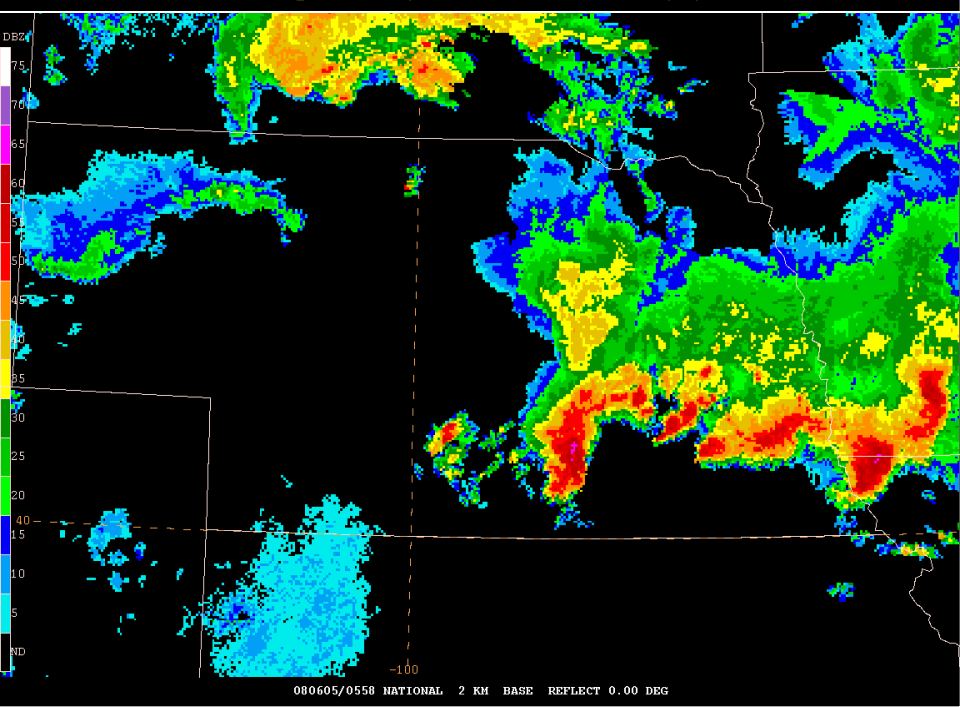
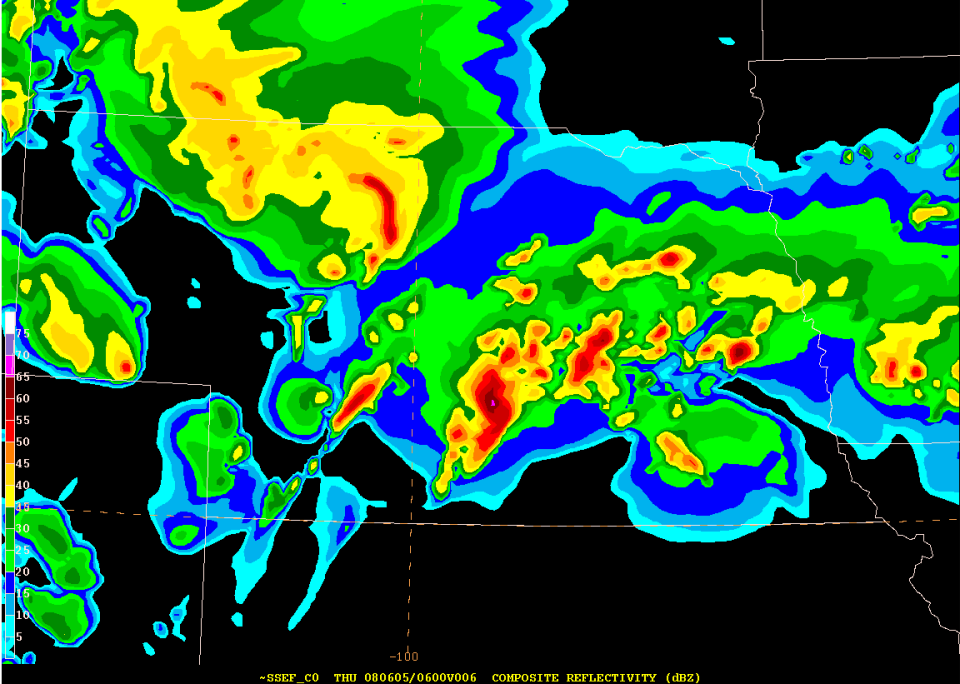
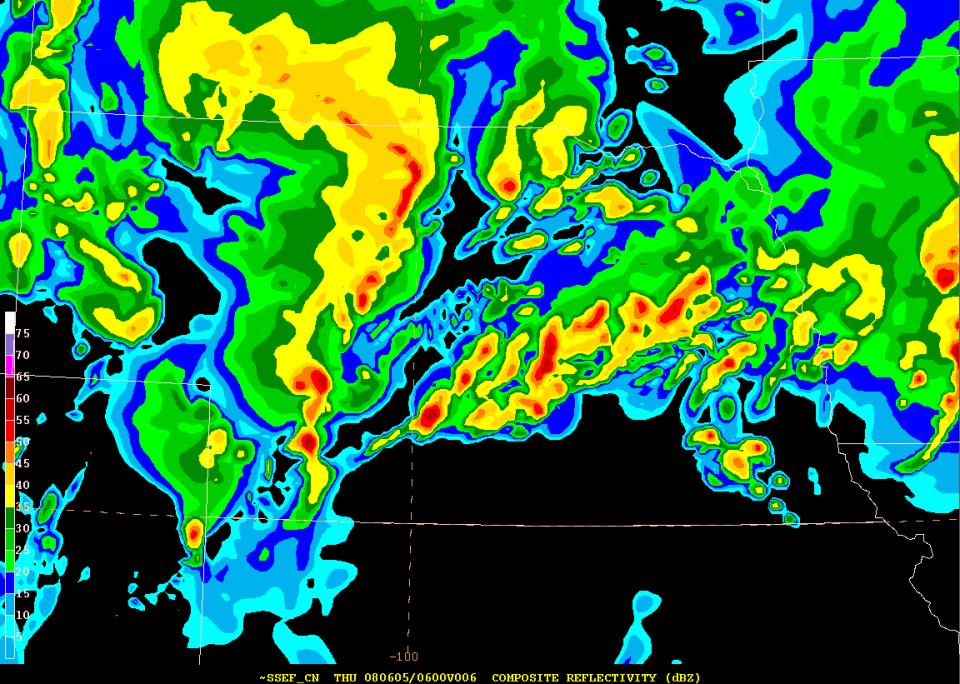


Hot Start (CN)

Cold Start (C0)

Observations

Three arrows point from the text labels to the corresponding maps: a red arrow points from 'Hot Start (CN)' to the top-left map, a blue arrow points from 'Cold Start (C0)' to the top-right map, and a yellow arrow points from 'Observations' to the bottom-left map.

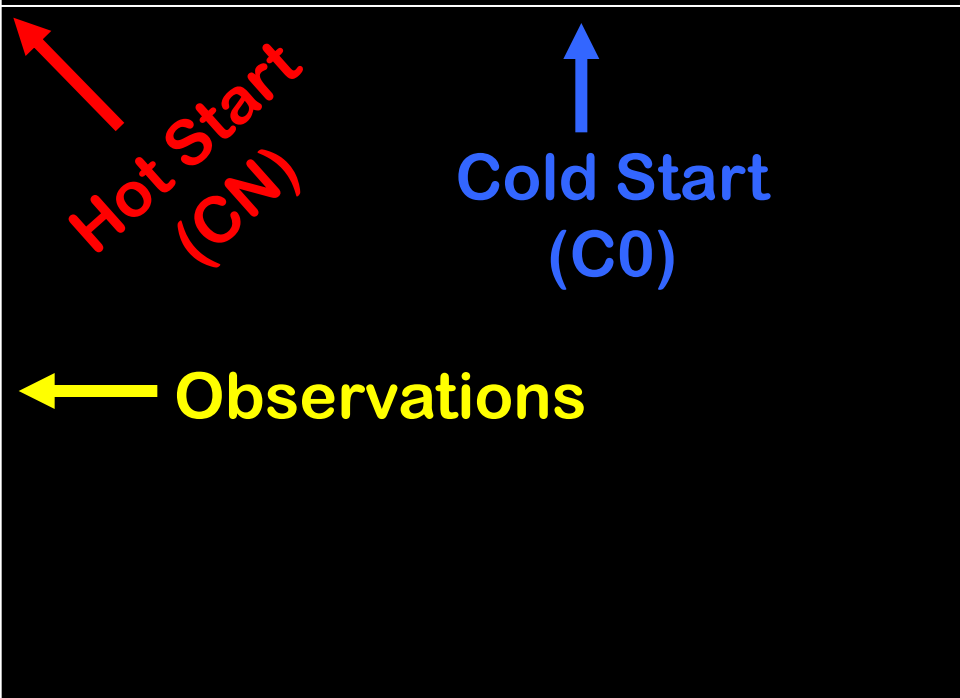
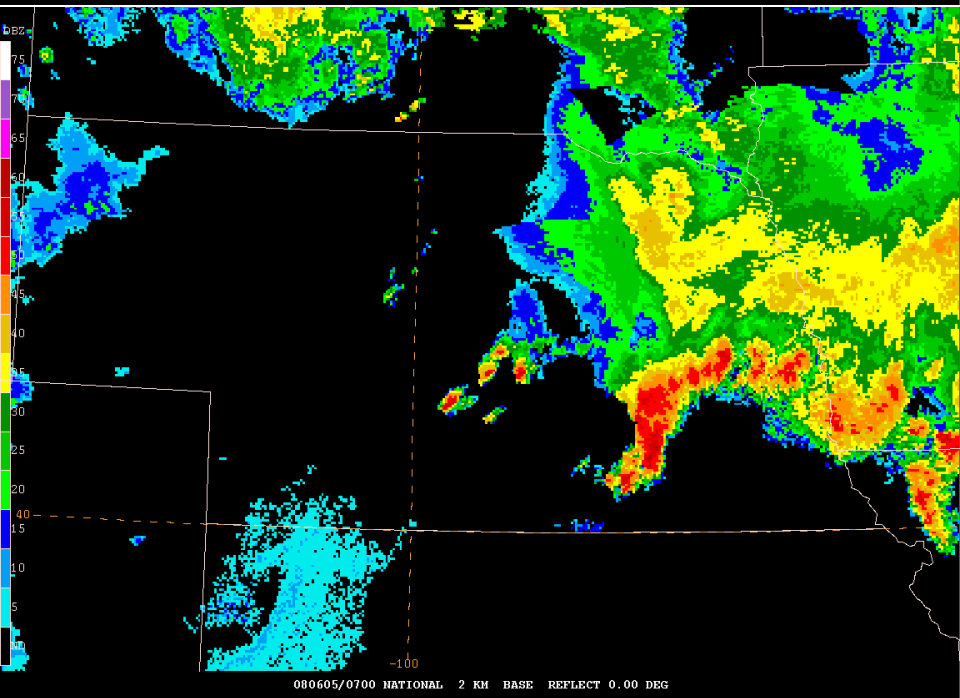
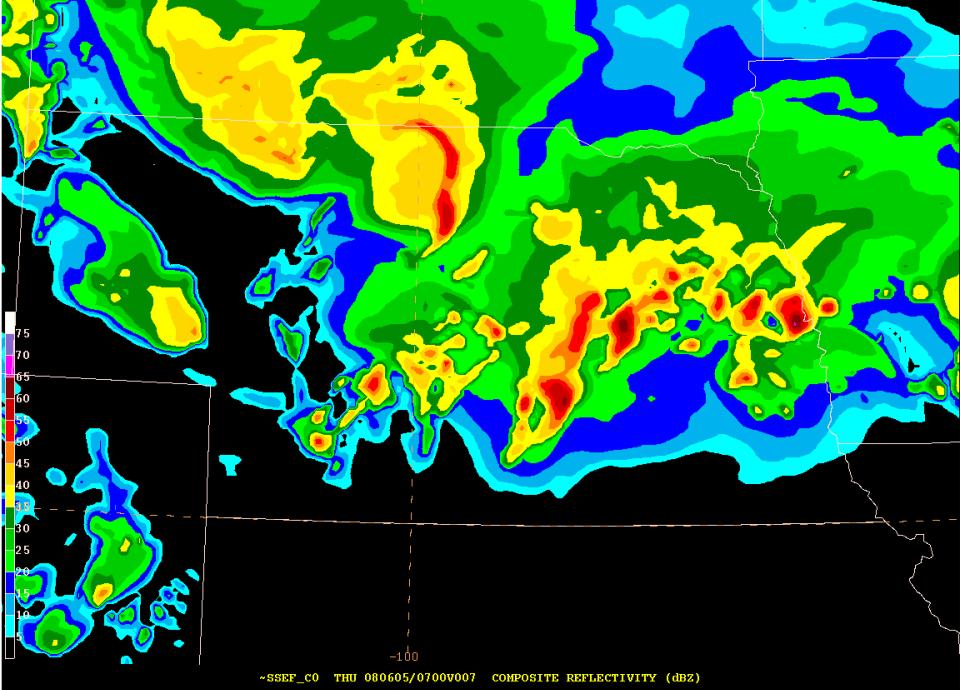
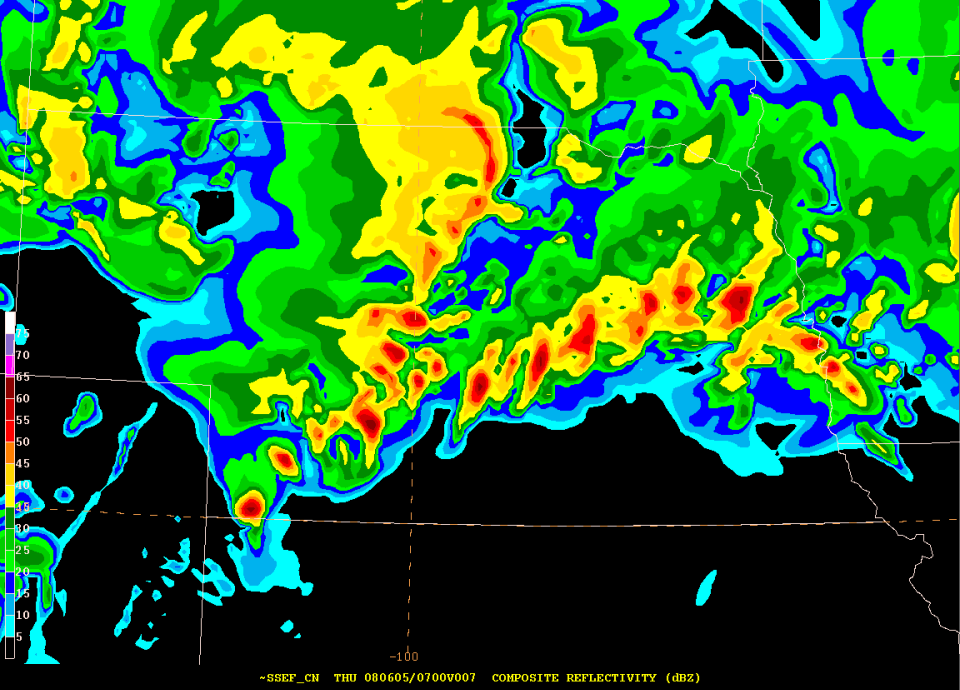


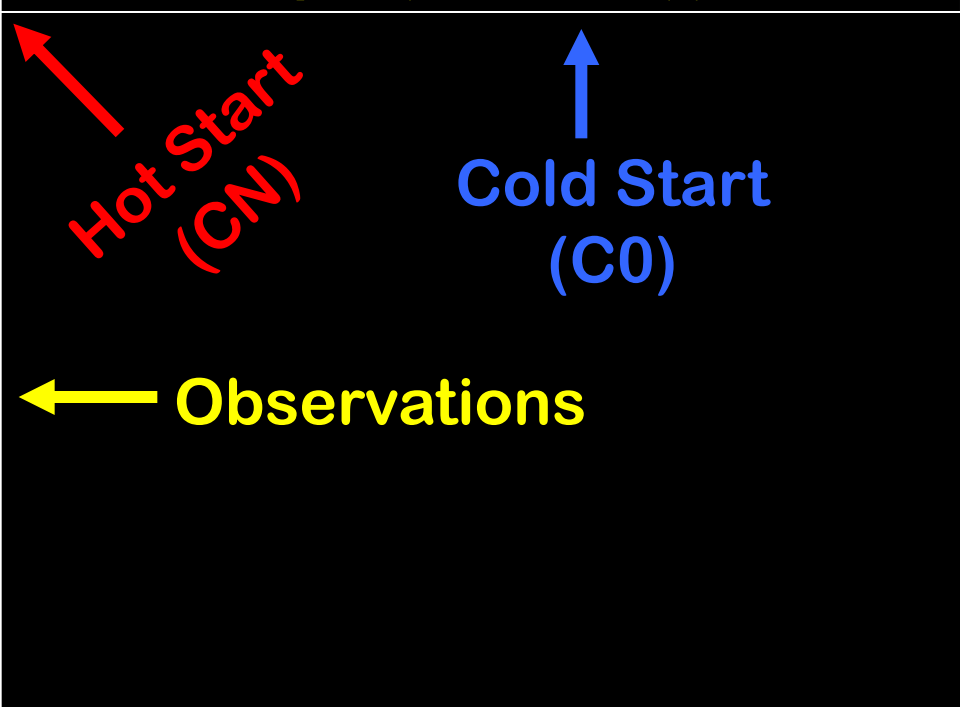
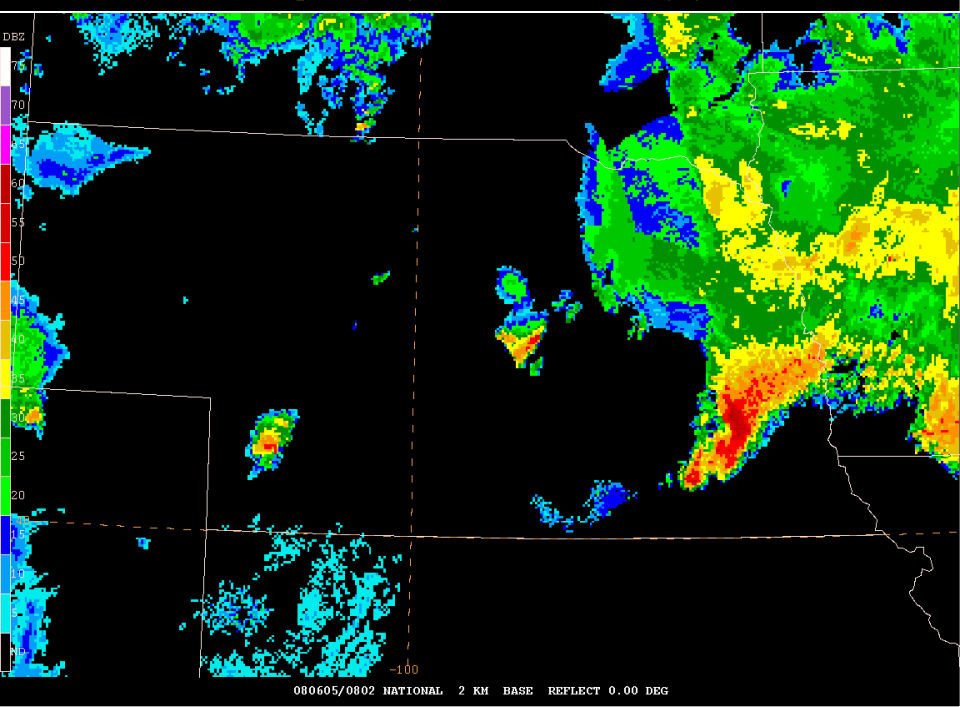
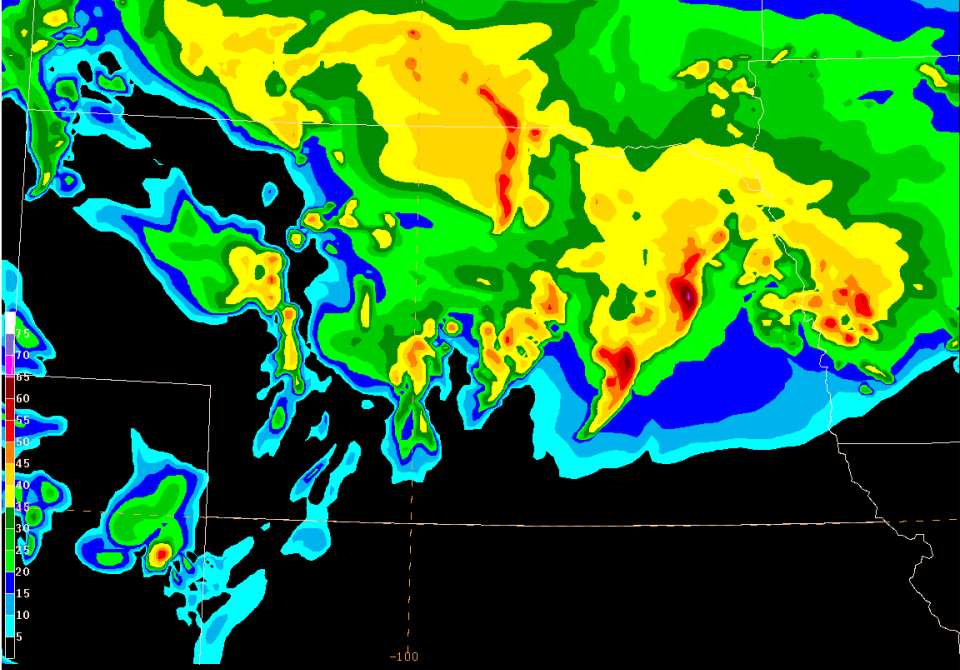
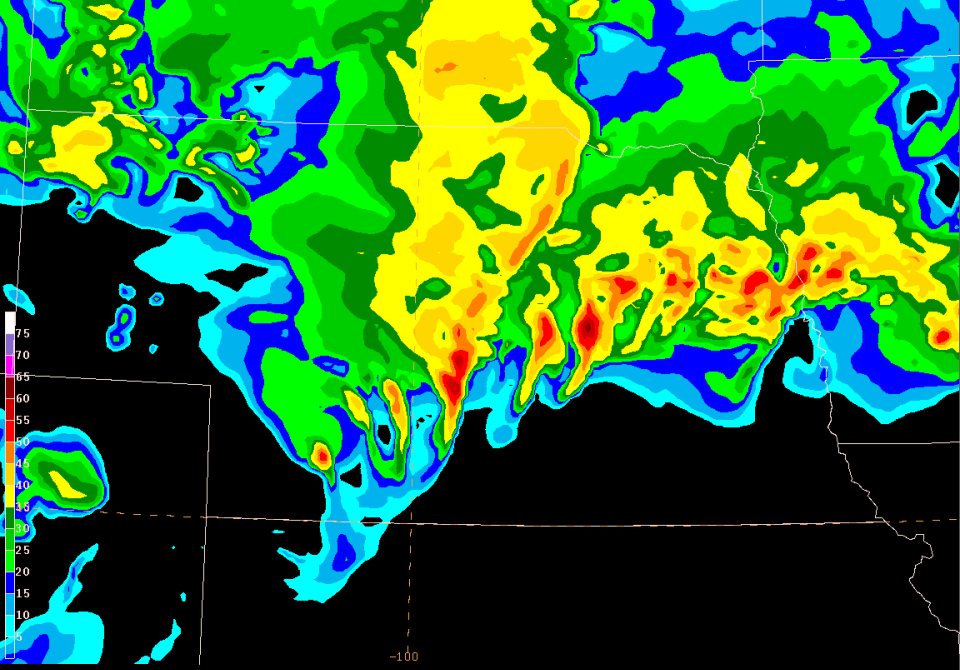
Hot Start (CN)

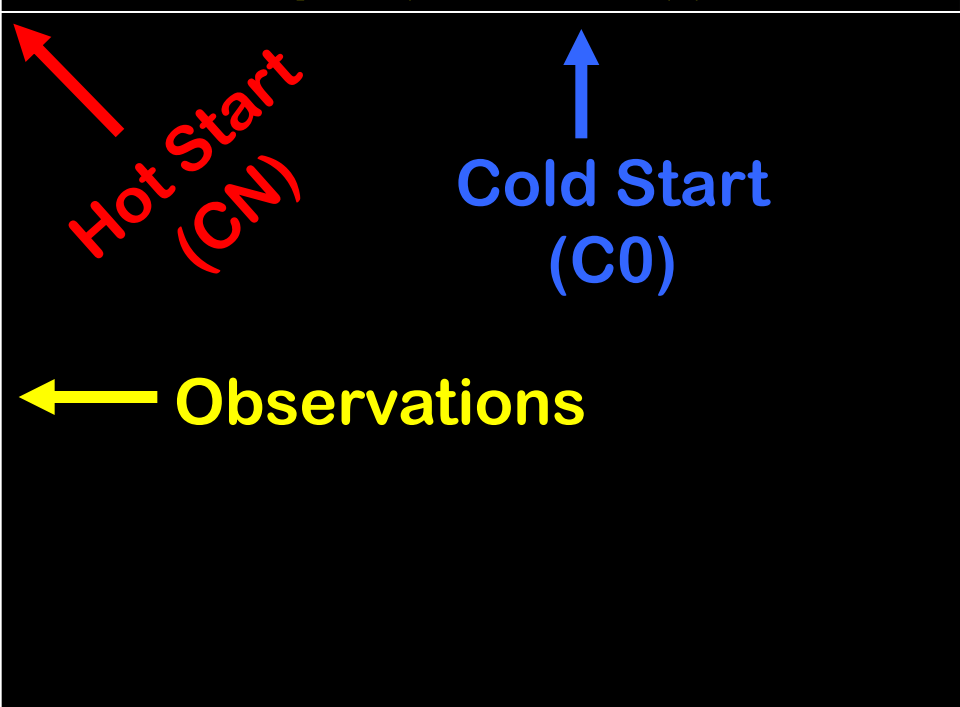
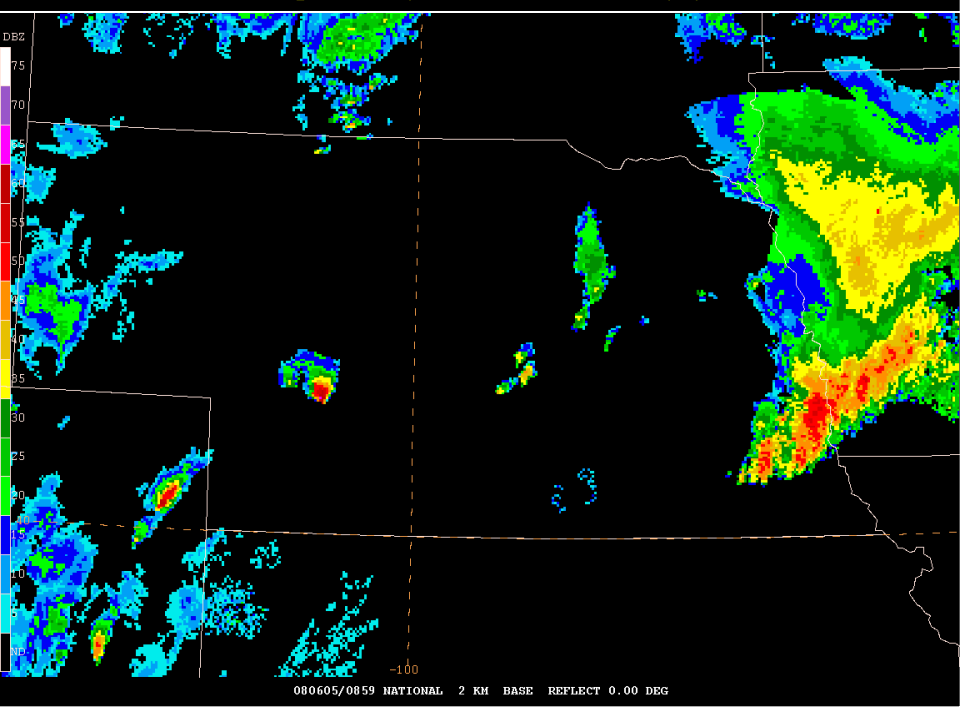
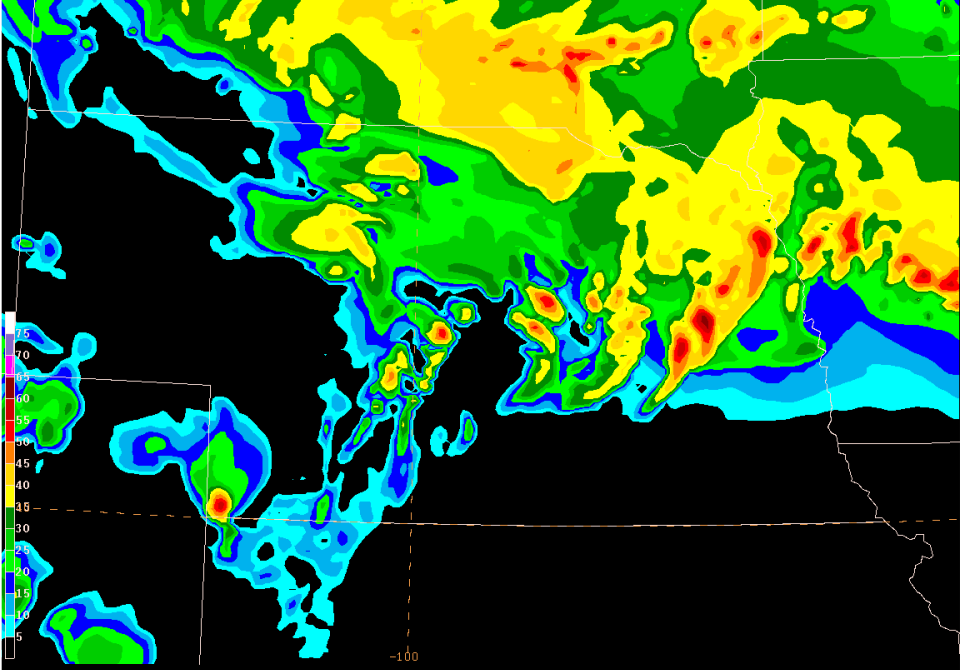
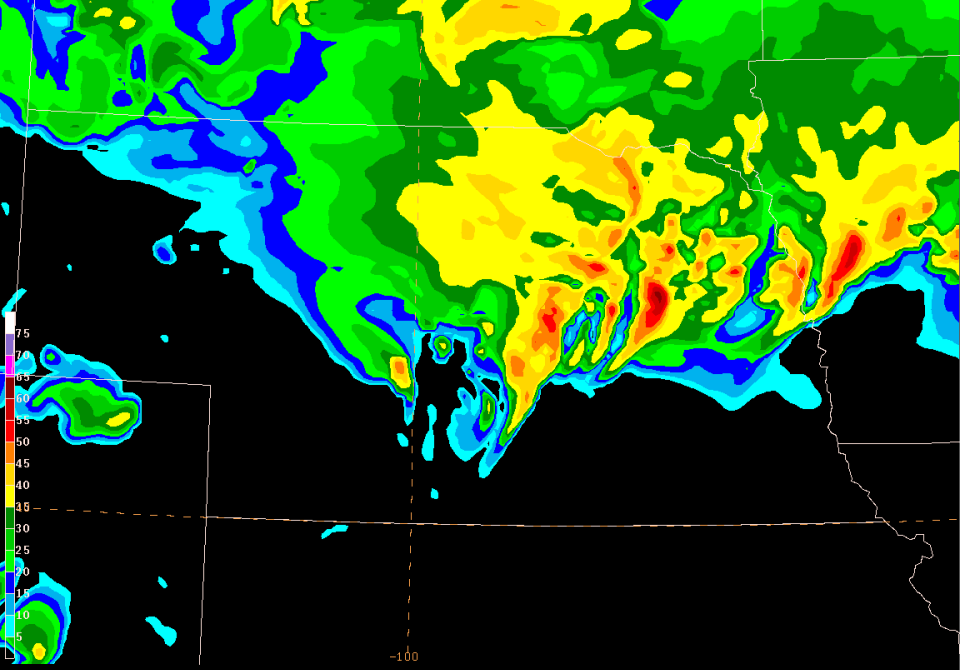
Cold Start (C0)

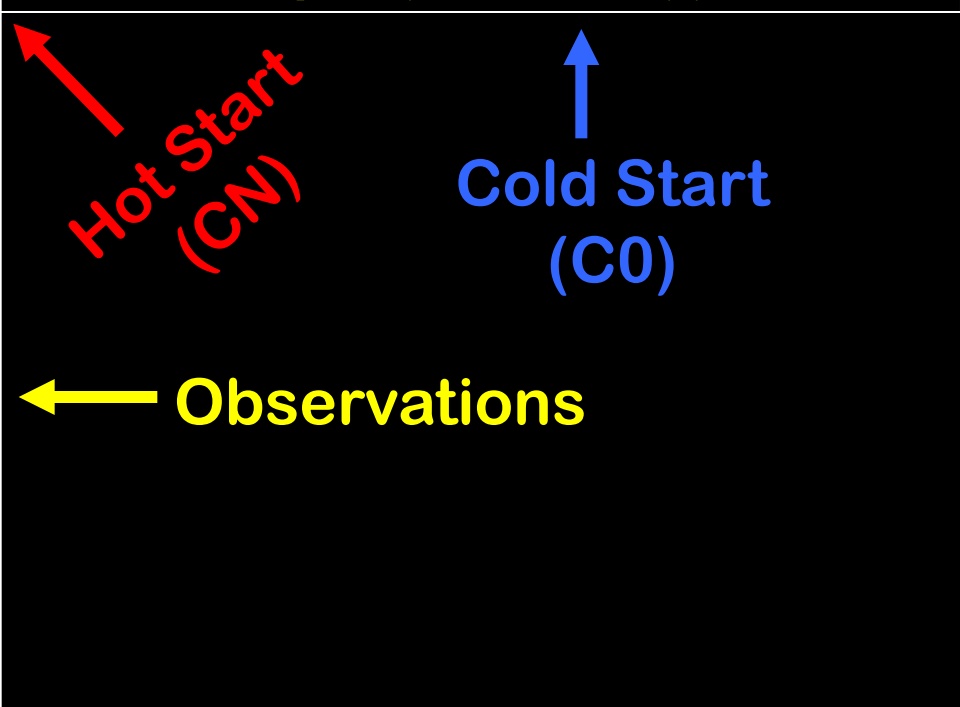
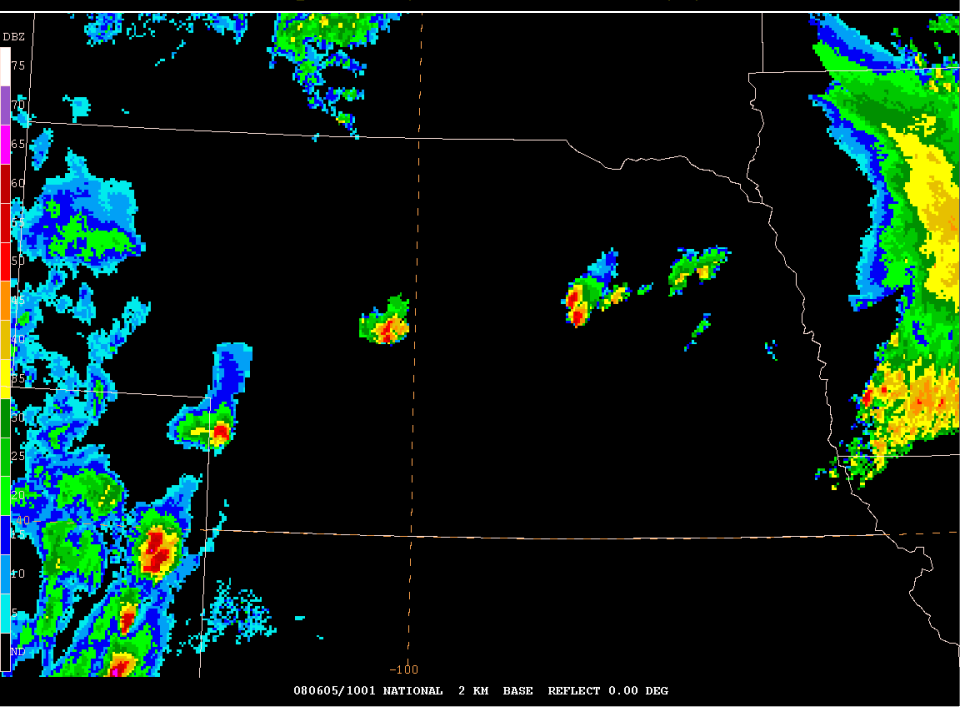
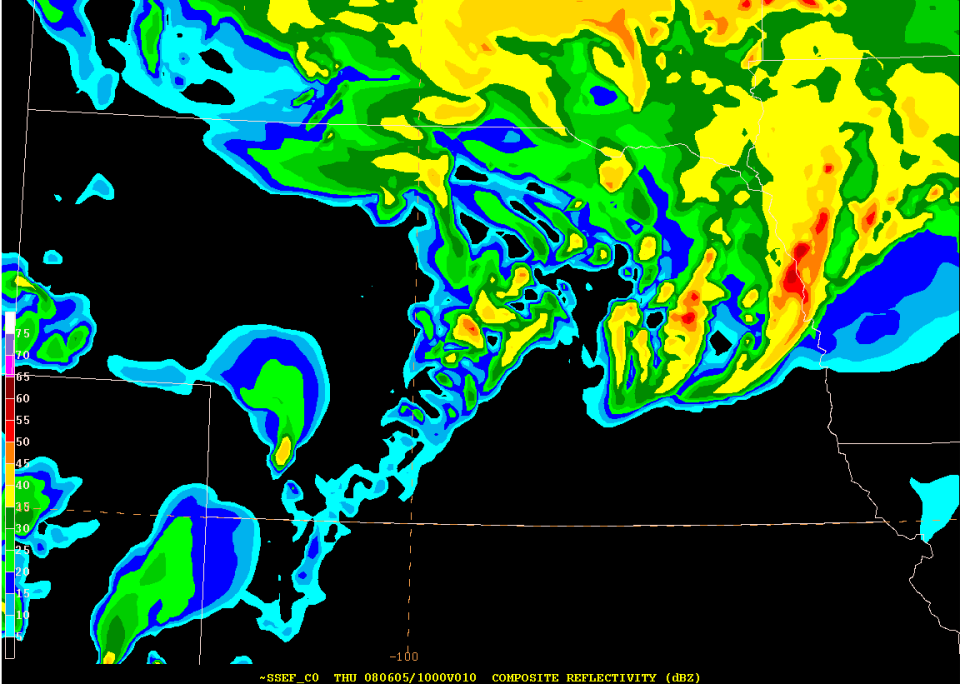
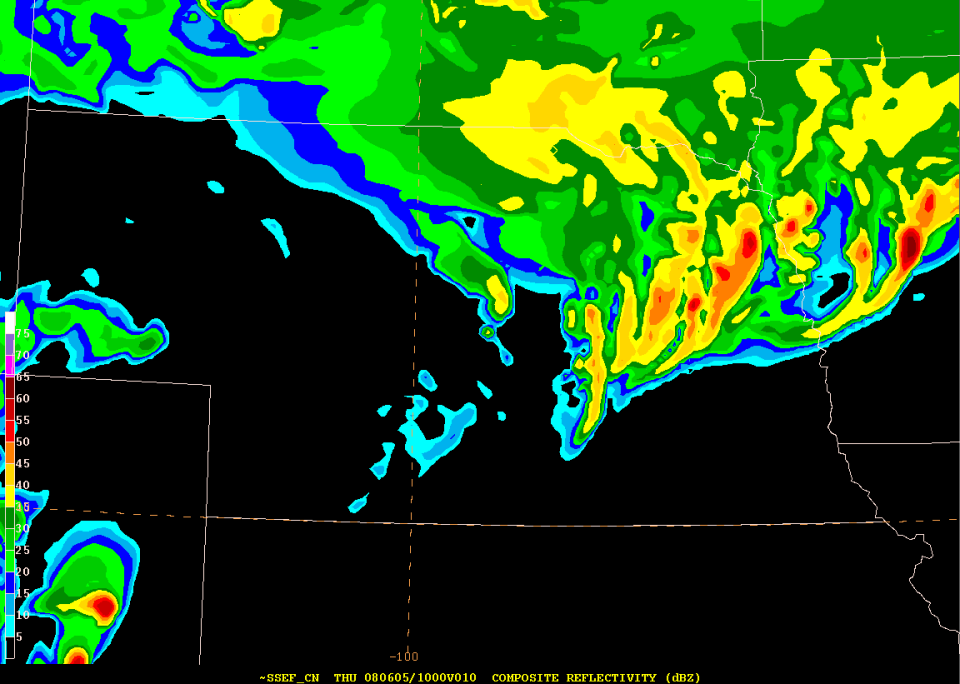
Observations

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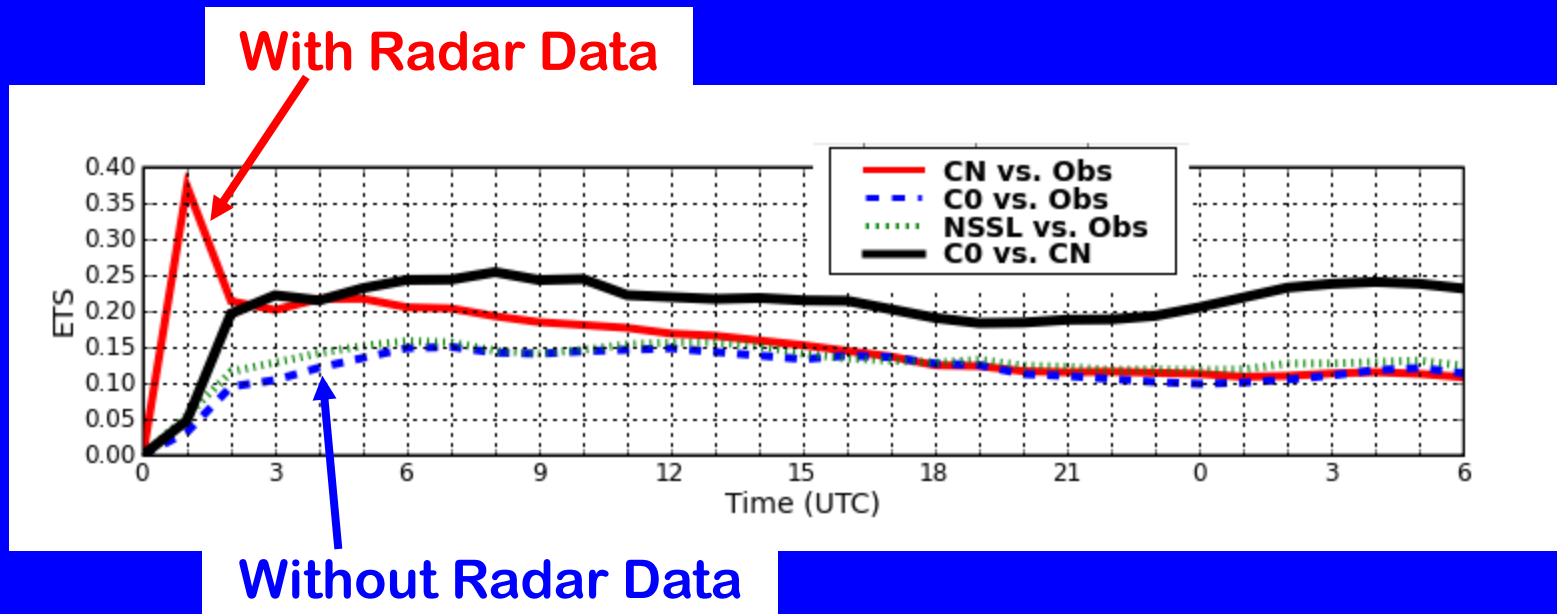








Equitable-threat Scores as a function of time
(1.0 mm/hr precipitation threshold; aggregated
over all days of SE2008)



In 2009, simple overlay plots provided by DTC revealed important additional information about the character of differences between CN, C0 forecasts

[May 14 loop](#)

[May 21 loop](#)

[May 27 loop](#)

[June 5 loop](#)

Upstream phase lag in C0 forecasts

Lessons learned

- Simple overlays of obs and model forecasts were very helpful in identifying a systematic time lag in the cold-start CAPS forecasts
- Participants in SE2009 found the matching/merging problem to be disconcerting in realtime evaluations of MODE output
- Generally speaking, both traditional and new objective measures seemed to correctly identify “superior” forecasts a qualitative sense, but subjective assessments were still much better at revealing the character of any differences.
- The DTC and HWT clearly have several areas of common interest and continued collaboration will serve both testbeds well.