Clouds Simulated with WRF One-way Versus Two-way Nesting for a Frontal Event During the March 2000 ARM Cloud IOP

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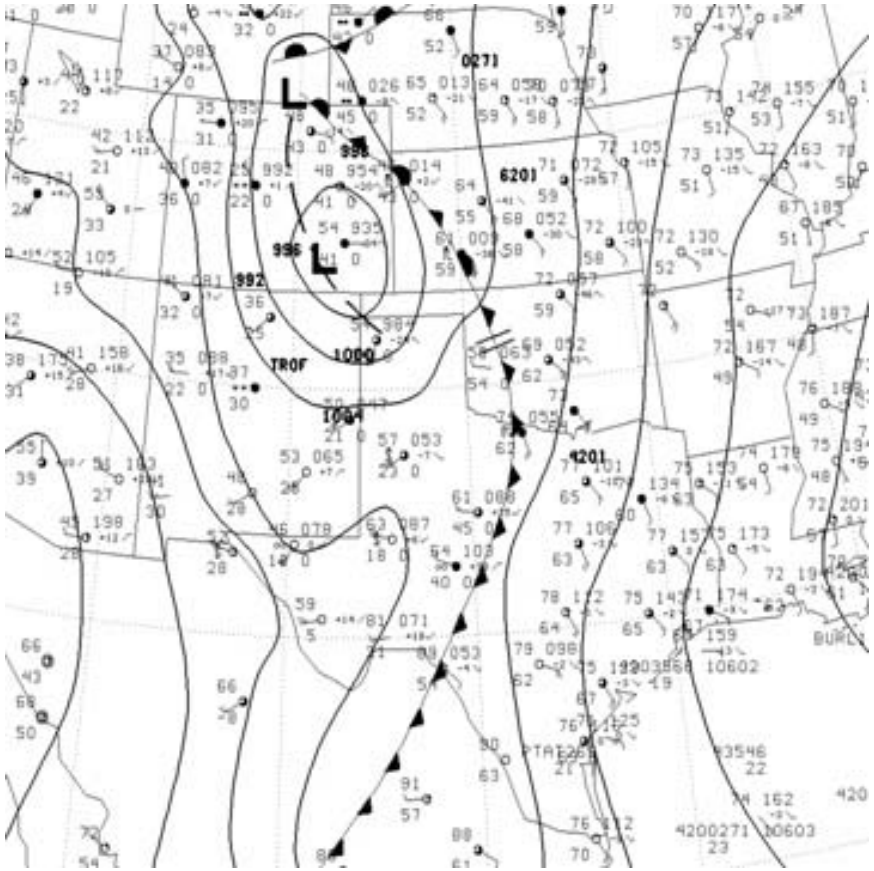

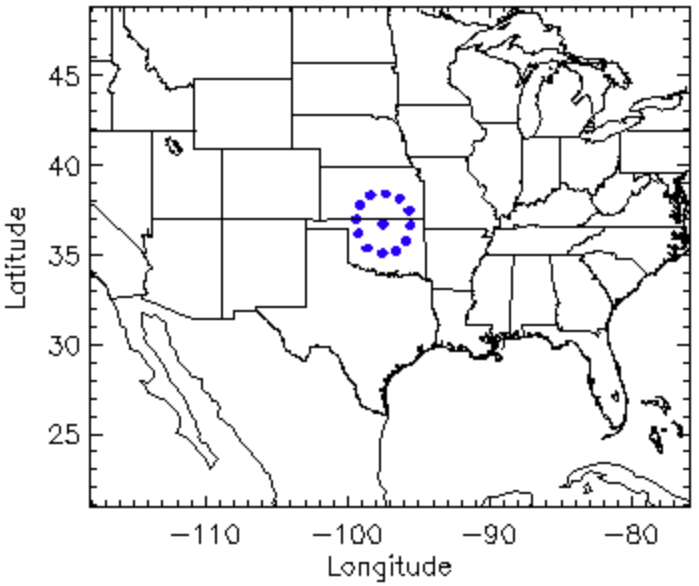

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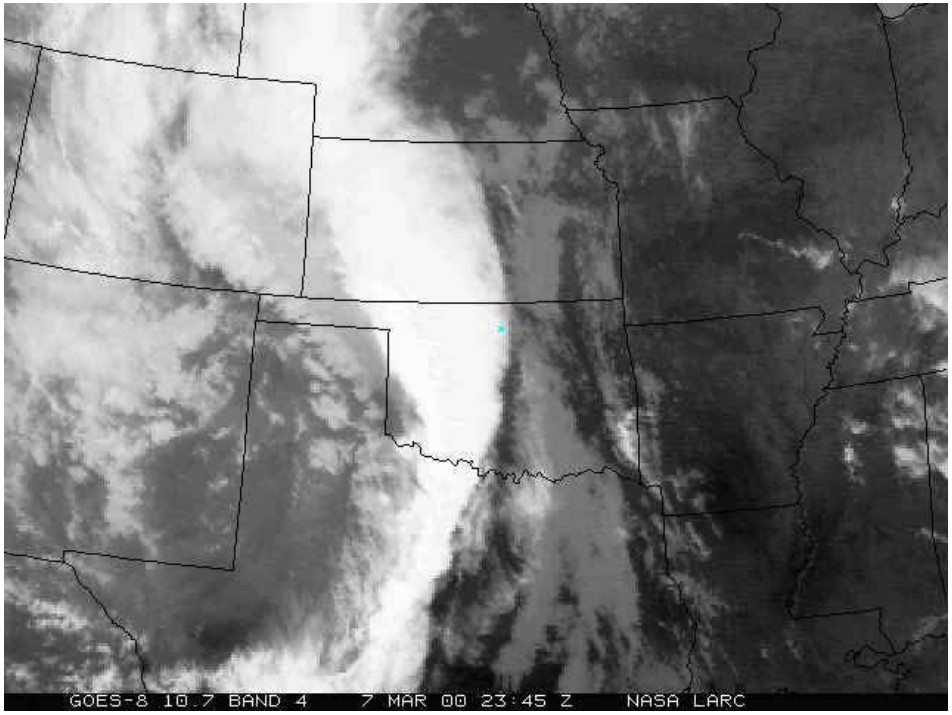

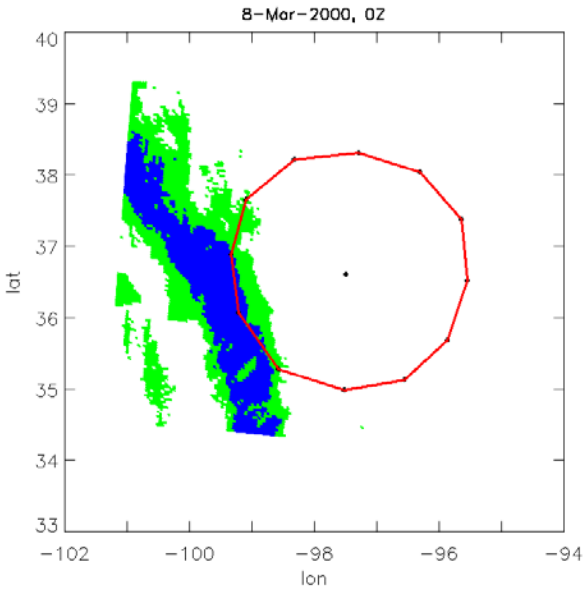

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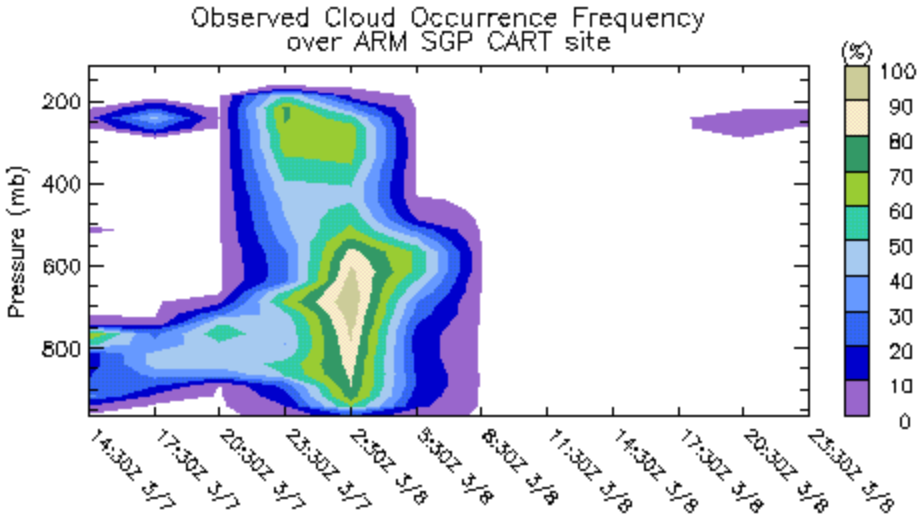

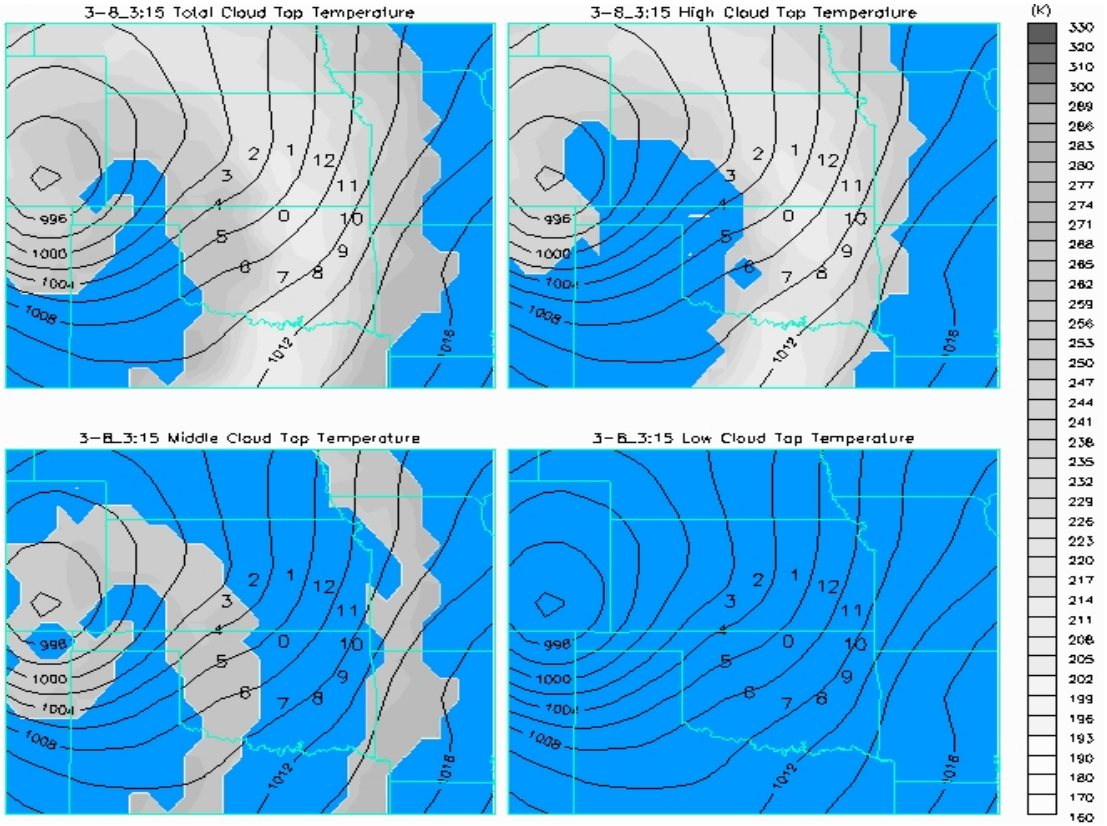

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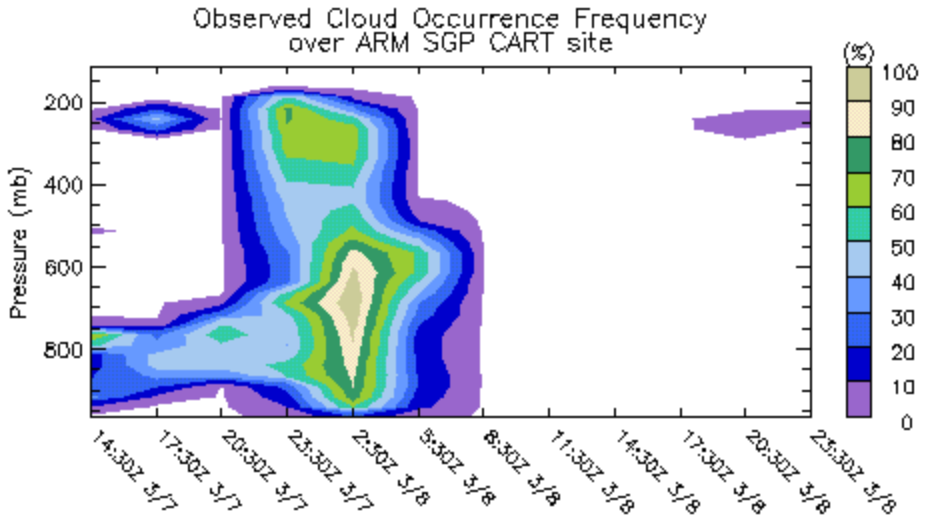

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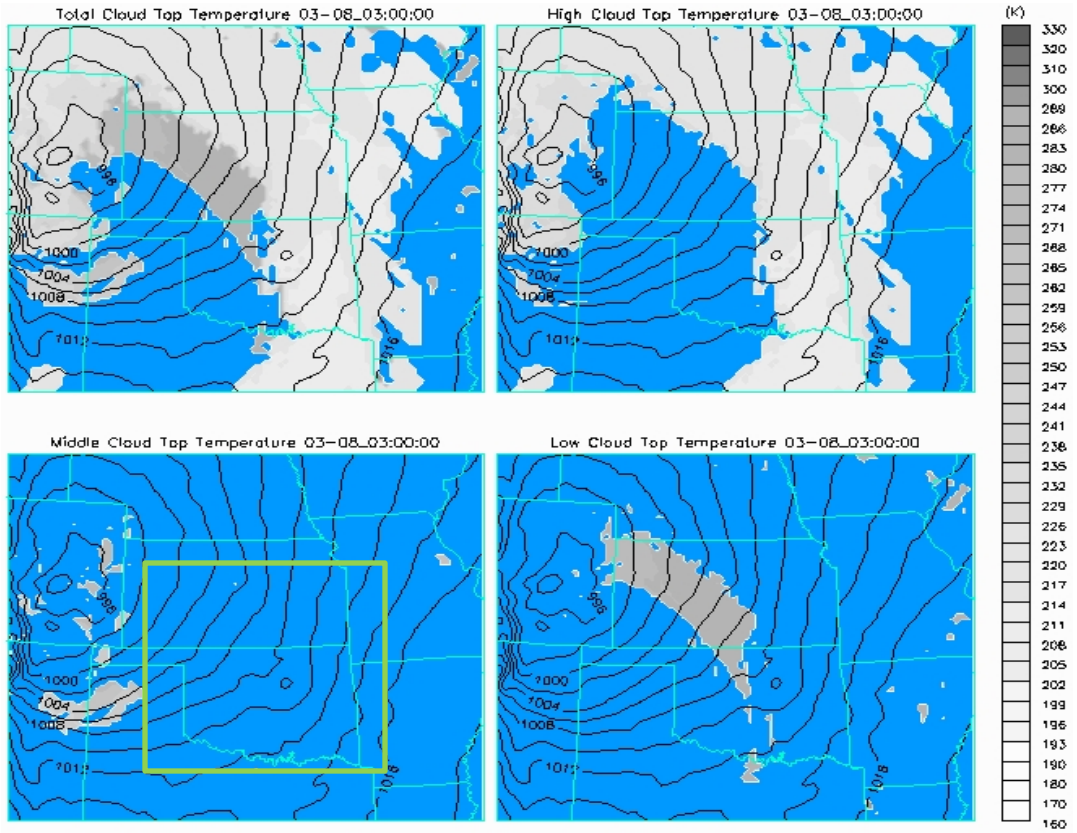

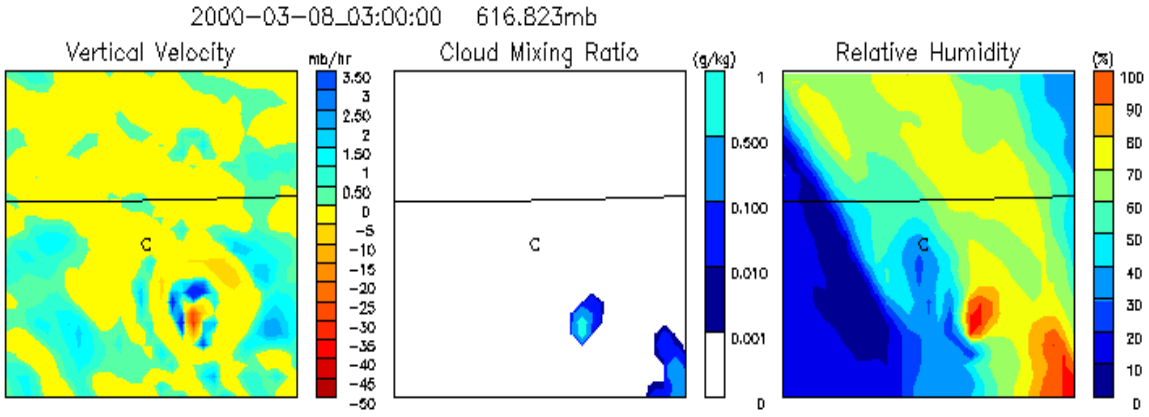

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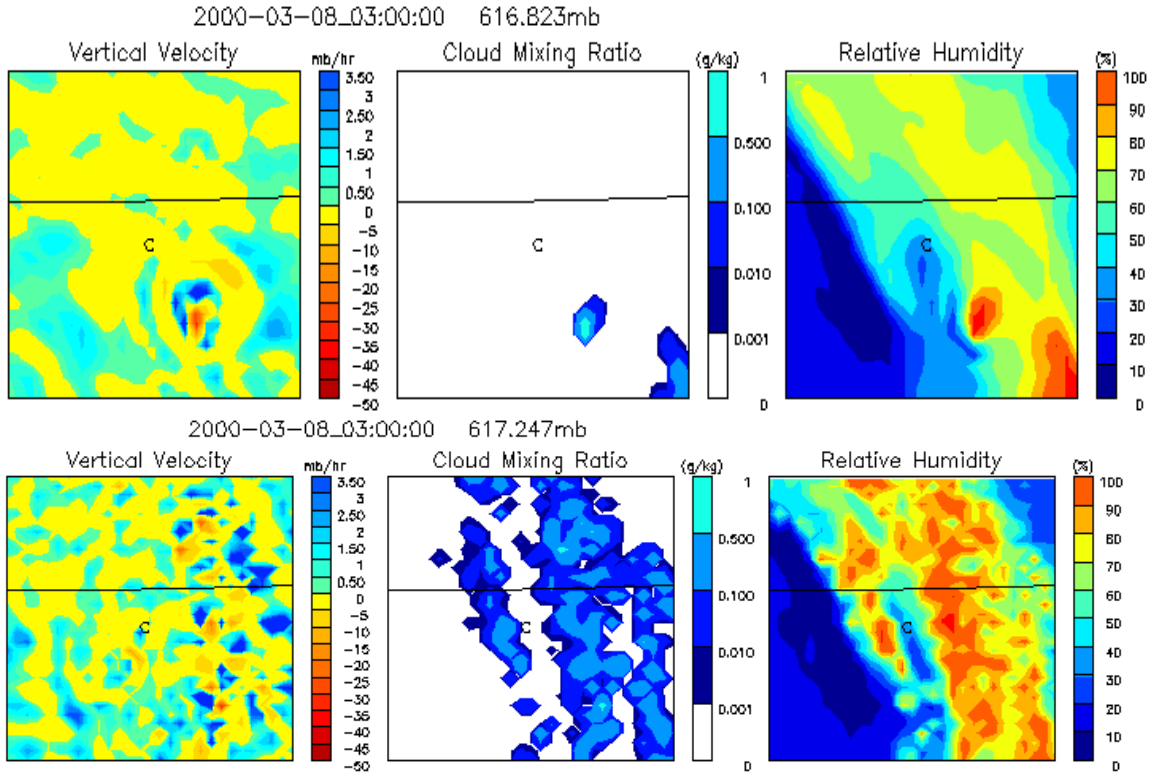
WRF 12 km



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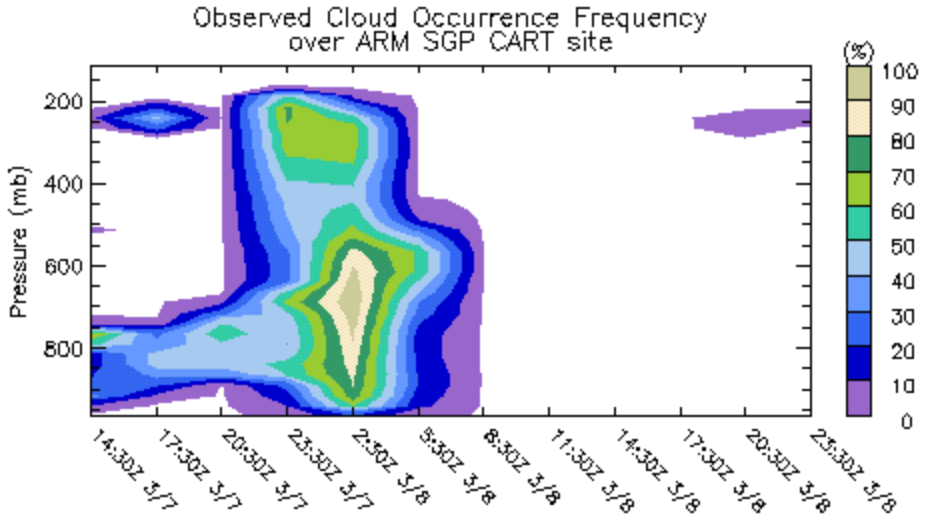
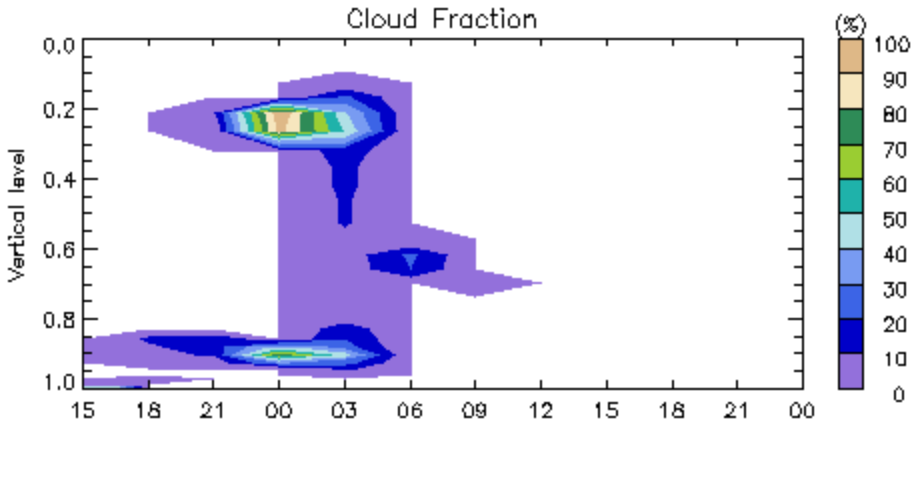
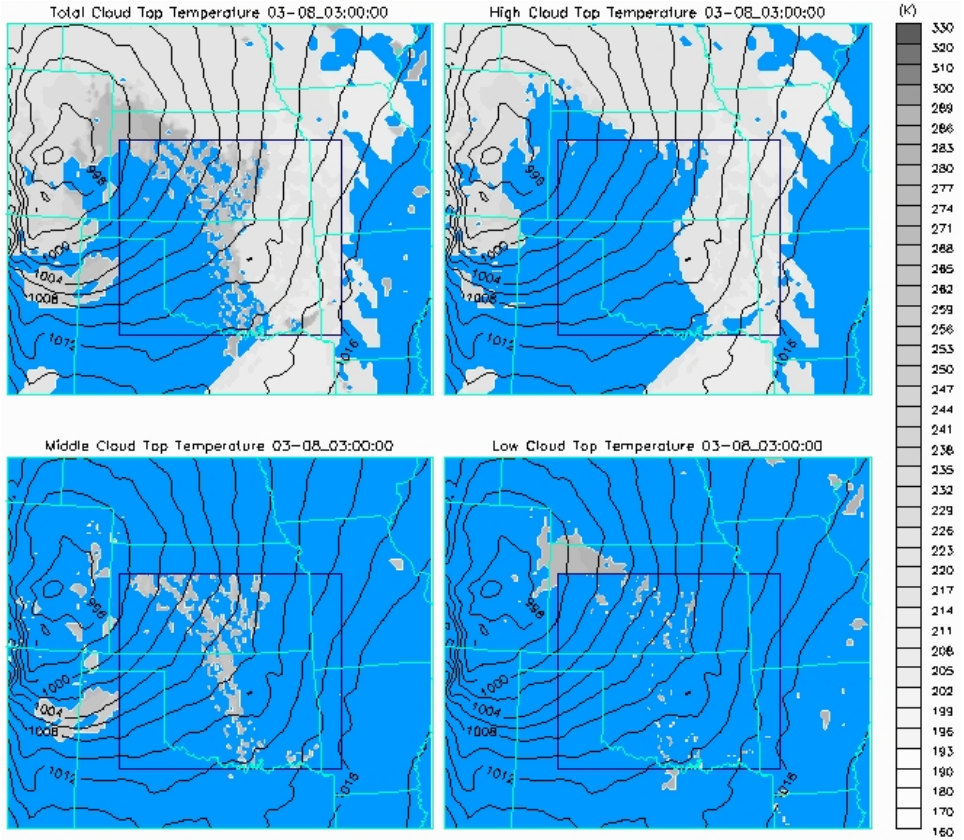
WRF 12 km

With Feedback to

12 km Scale from 4 km







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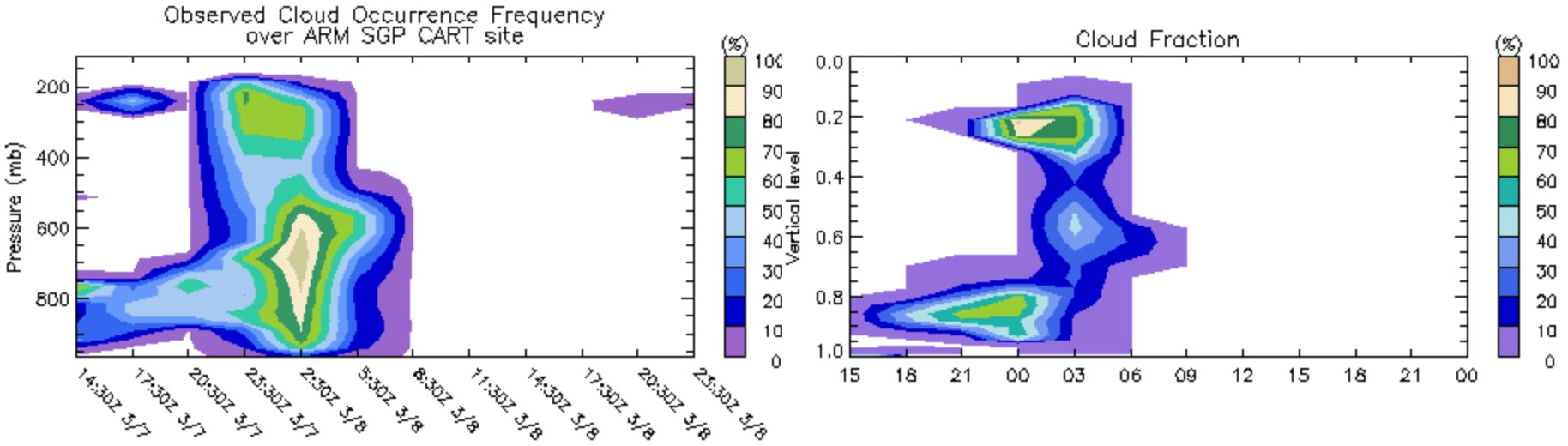
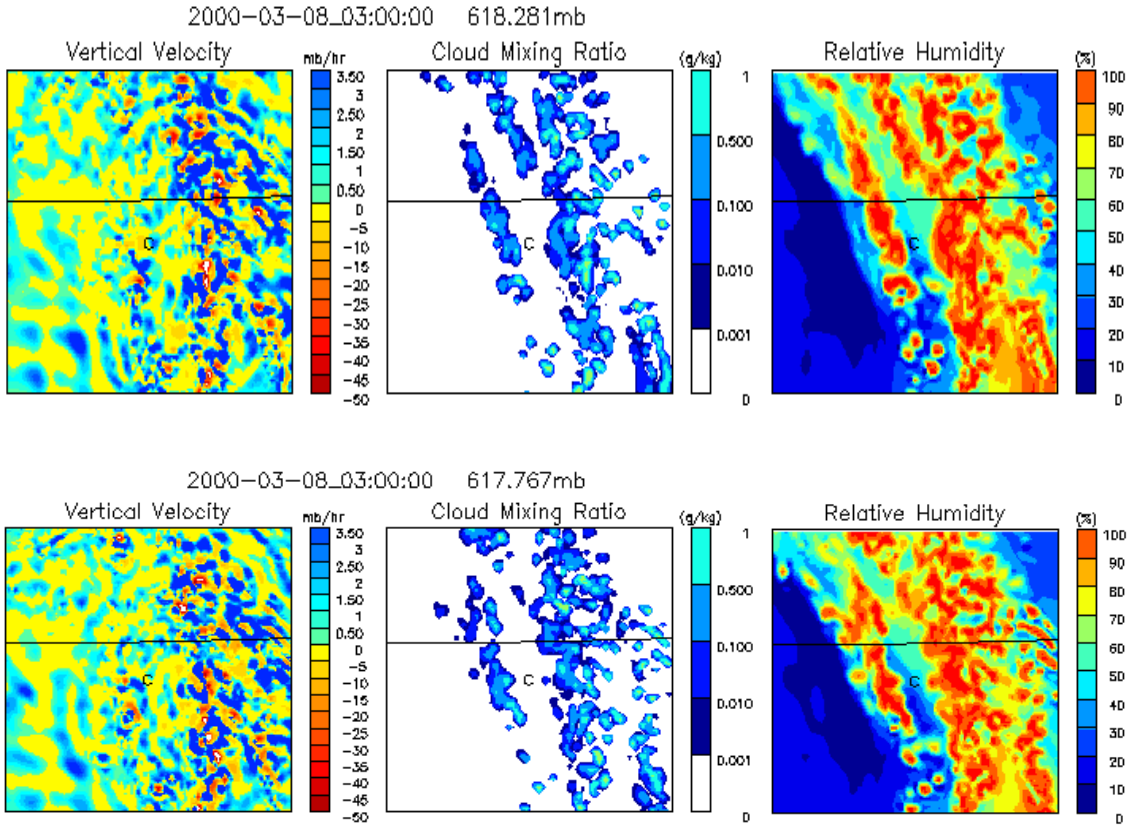
WRF 12 km + 4km

Two-way





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4 km

Two-way versus One Way

Summary:

For the March 7-8 event during the ARM 2000 Cloud IOP, the 12 km resolution WRF with parameterized convection cannot simulate middle clouds.

Two-way nesting using 4 km with explicit convection calculation simulated middle clouds, but still underestimated the amount.

If the parameterized convection is taken from the 4 km simulation, i.e., upscale feedback is more realistic, and the coarse resolution simulation is improved to some degree.

For this particular case with convection dominating the event, one-way and two-way nesting with convection-resolving simulation produced similar results.