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# An evaluation of Brightness Temperatures Simulated by Various WRF-ARW Microphysical Algorithms for an Atmospheric River Event

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Significant precipitation events in California during the winter season are often caused by landfalling "atmospheric rivers" associated with extratropical cyclones from the Pacific Ocean. When an atmospheric river makes landfall on the coast of California, the northwest to southeast orientation of the high terrain will exert forcing on the low-level flow in the warm sector of approaching extratropical cyclones. As a result, sustained precipitation is enhanced and modified by the complex terrain. Due to the fact that the lower elevations of the Central Valley are areas of a large urban and infrastructural expansion, a good understanding and numerical prediction of these events is critical.
For this type of event, previous studies have shown a large sensitivity of simulated precipitation amounts to the choice of microphysical schemes used in numerical models for weather prediction. The main focus of the present study is the assessment of differences in performance of various microphysics within WRF by statistically comparing simulated brightness temperatures with observations from channel 4 (10.7 micrometers) of GOES-10 For this purpose an atmospheric river event that occurred on December 30, 2005 was simulated. For this purpose WRF-ARW simulations were performed over nested domain with 20 km and 4 km grid spacing, respectively and using four different microphysical schemes (Lin, WSM6, Thompson and Schultz). Synthetic imagery for the simulation was created and scenes from the simulations were statistically compared with observations. Results from this comparison will be presented