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Coherence of rainfall propagation as simulated in the WRF model using two different convective schemes

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Numerical Weather Prediction (NWP) models continue to make advances and improvements to weather forecasts; however, convective precipitation remains poorly forecasted in mesoscale models. This study examines two convective schemes and whether one performs better in mostly strongly forced cases over a two-month period where convective propagating precipitation occurred. Observations were compared to precipitation forecasts for the 0-48 hour forecast generated by the Weather Research and Forecasting model using the Betts-Miller-Janjic and Kain-Fristch convective schemes. Propagation speed, beginning and ending longitude, beginning and ending time were measured by using Hovmöller diagrams for both convective schemes and observations. Results show that both the BMJ and KF have longer duration when compared to observations and are slower to propagate when compared to observations. However, both the BMJ and KF are close to observed data for beginning and ending longitude, with the difference being no greater than 0.4º. Examination of the diurnal averaged Hovmöller diagrams revealed that the BMJ convective precipitation was significantly less than the KF. The statistics for hits and misses will be compared to examine if the distributions are significantly different which would discriminate between a good and bad forecast.