Abstract

Thunderstorms associated with severe gusty winds and lightening cause loss of life and property even though they last for an hour or so. Forecasting of these severe weather events is highly essential due to their impact on socio-economic conditions of affected regions. Kharagpur (22°30′ N, 87°20′ E) is in the region of Gangetic West Bengal (GWB) affected by high frequency of occurrence of thunderstorms during pre-monsoon months. In the present study an attempt has been made to understand the performance of convective parameterization schemes (e.g. Kain-Fritsch, Grell-Devenyi ensemble and Betts-Miller-Janjic) of a meso-scale model WRF-ARW version 3.2 in simulating pre-monsoon thunderstorm events that occurred during 12 May 2009 and 5 May 2010 over Kharagpur. Numerical experiments are carried out by considering convection explicitly. The model simulations are compared with the available observations. Statistical evaluation of simulated parameters along with the observations revealed Grell-Devenyi ensemble and Kain-Fritsch schemes performed reasonably well in representing the thermo-dynamical state of atmosphere during the thunderstorm events.
Performance Evaluation of Convective Parameterization Schemes of WRF-ARW Model in the Simulation of Pre-monsoon Thunderstorm Events over Kharagpur using STORM Data Sets

References

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