Numerical Weather Prediction over Southeast Asia Using the WRF Model

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Numerical Weather Prediction for tropical environments remains a difficult one especially when it comes to forecasting precipitation due to deep tropical convection. The NCAR WRF (Weather and Research Forecast) model is being widely used around the globe for numerical weather prediction, other than being run in the climate mode. This paper discusses the performance of the WRF model in producing forecasts of up to 36 hours in advance at high resolutions of both about 10 km and 1 km. The model behaviour when initialized by both the NCEP GFS (Global Forecast System) and when implementing the data assimilation (WRF-Var) are described. The focus of model forecasts is however on Singapore and due to the limited area of the city as such, the ability of WRF to produce reliable forecasts for this small region is evaluated. The model sensitivities to different options of physics parameterizations are also discussed.

Key Words:

Numerical weather prediction, boundary conditions, spatial resolutions, model sensitivity