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A Basis for Improving Numerical Forecasting in the Gulf Area by Assimilating Doppler Radar Radial Winds

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ABSTRACT

An approach to assimilate Doppler radar radial winds into a high resolution Numerical Weather Prediction (NWP) model using 3D-Var system is described. We discuss the types of errors that occur in radar radial winds. Some related problems such as nonlinearity and sensitivity of the forecast to possible small errors in initial conditions, random observation errors, and the background states are also considered. The technique can be used to improve the model forecasts, in the Gulf area, at the local scale and under high aerosol (dust/sand/pollution) conditions.

KEYWORDS

3D-Var, Data Assimilation, Doppler Winds, Errors, NWP, Nonlinearity, Sensitivity

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