DUAL-DOPPLER KINEMATICAL AND DYNAMICAL RETRIEVAL ERRORS IN A SIMULATED SUPERCELL THUNDERSTORM

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(km)

Height (

MOTIVATION

IMPACT OF RADAR CROSS-BEAM ANGLE

•Dual-Doppler wind analyses (DDA) of mobile radar observations are valuable to the study of storm structure, dynamics

•Knowledge of DDA errors is required to properly interpret analyses

 Observing System Simulation Experiments (OSSEs) provide a powerful framework for estimating DDA errors under different scenarios

METHODS

•Numerical supercell generated on 200 m grid using NSSL Collaborative Model for Multiscale Atmospheric Simulation (NCOMMAS)

•Storm-scale V^{obs} computed using sophisticated radar emulator

•Radar cross-beam angle (CBA): 30°, 60° or 90° near hook echo (figure)

Several scanning strategies examined (table)

3D-VAR DDA technique used





(a)

42

£40

(b)

W

ל tilt

120

- TRUE

- DEEP 34

CBA = 30

t = 57 mi





