Probabilistic Storm Forecasting for Traffic Flow Management: Progress and Challenges

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Friends and Partners of Aviation Weather
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Model-based storm guidance

- Observations
- Model ensembles
- Data assimilation cycle
- Radar Assim
- Model post-processing
- HRRR
- RCPF
- Storm-scale probability information
- Probability products
13-km RUC & Rapid Refresh

Hourly update cycle gives accurate mesoscale environment, good convective initiation

RCPF (hourly 3-10 h outlook) made from time-lagged ensemble of RUC

RCPF used as guidance for CCFP

Verification: 1 June – 31 August 2008
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Verification: 1 June – 31 August 2008
(3-km Hi-Res Rapid Refresh)

High resolution needed for realistic storm structure (storm-types, gaps in lines, etc.)

Hourly 12-h forecast, 15-min VIL output

RUC radar assimilation improves HRRR

Verification: 1 June – 31 August 2008

20 July 2008
2 pm initial time

6 hr fcst
8 pm EDT

Truth
(3-km Hi-Res Rapid Refresh)

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RUC radar assimilation improves HRRR

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Model-based TFM guidance

Radar assimilation improves HRRR forecast through 12-h

HRRR key component of CoSPA

HRRR storm structure allows extraction of ATM information

HRRR and HRRR-based probabilities Important for automated ATM

HRRR ensembles \rightarrow ATM probabilities