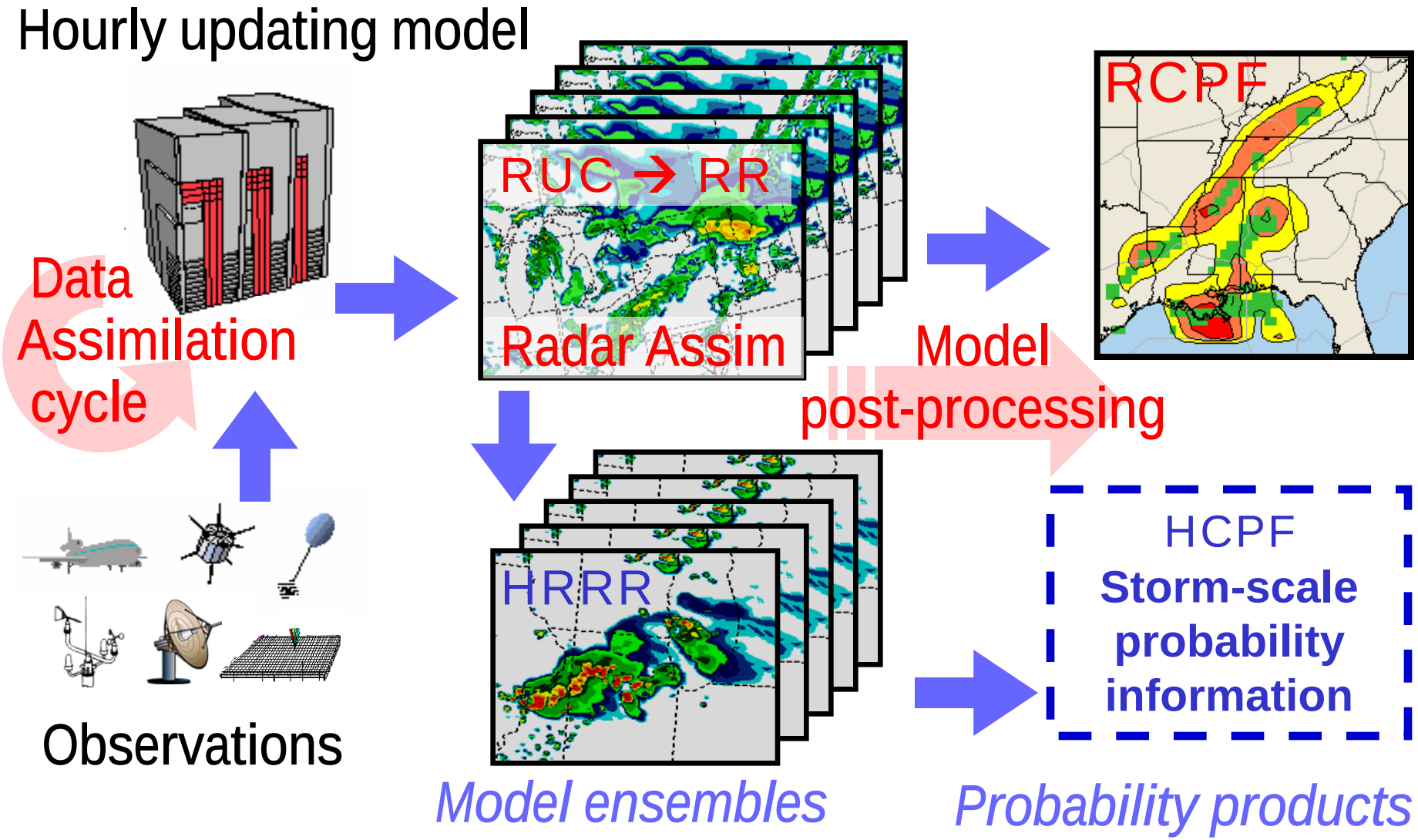
Earth System Research Laboratory
SCIENCE, SERVICE & STEWARDSHIP

Probabilistic Storm Forecasting for Traffic Flow Management: Progress and Challenges

Stephen S. Weygandt
NOAA Earth System Research Laboratory

Friends and Partners of Aviation Weather
NBAA Convention, October 9, 2008

Model-based storm guidance



Mesoscale model guidance

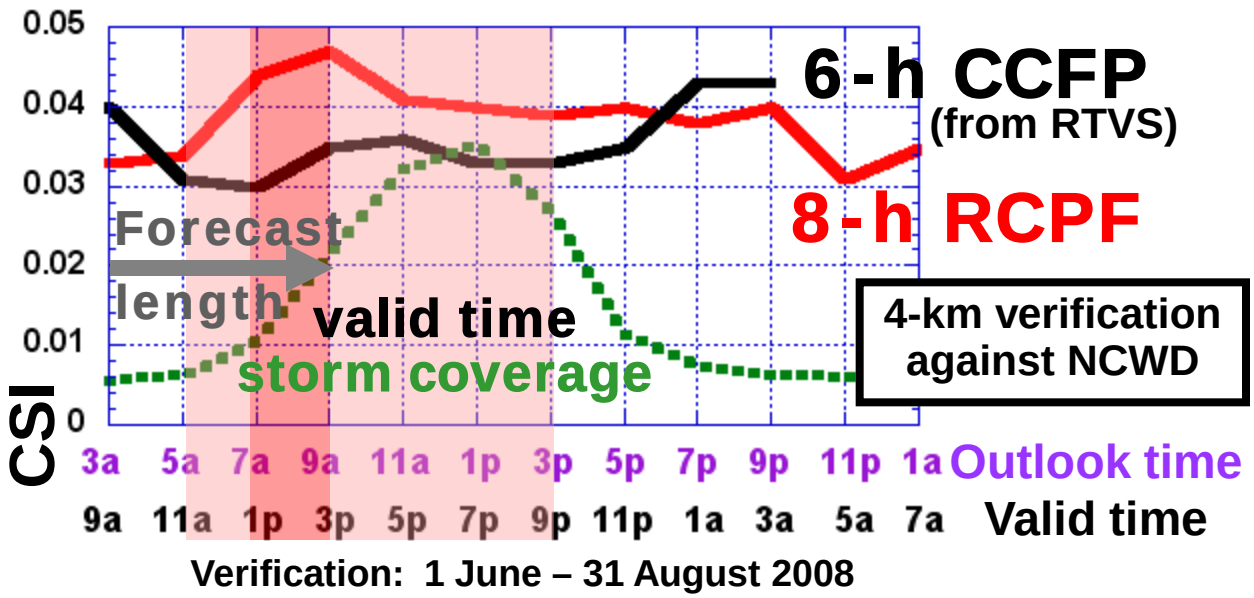
13-km RUC & Rapid Refresh

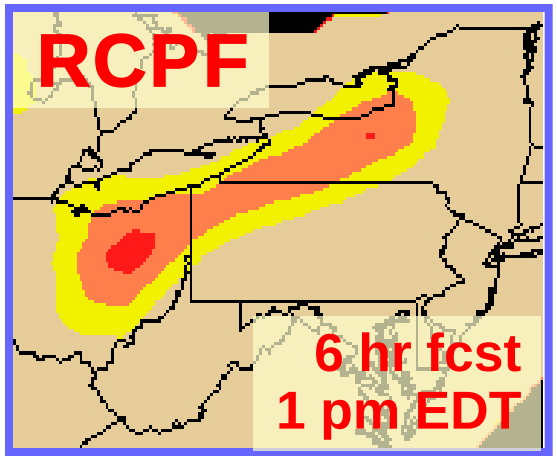
20 July 2008
9 am outlook

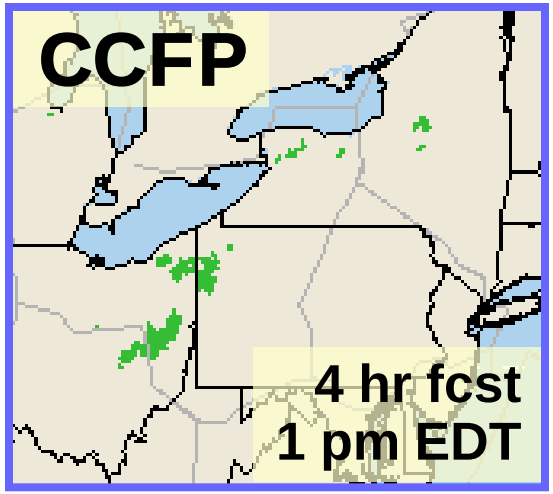
Hourly update cycle gives accurate mesoscale environment, good convective initiation

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

RCPF used as guidance for CCFP







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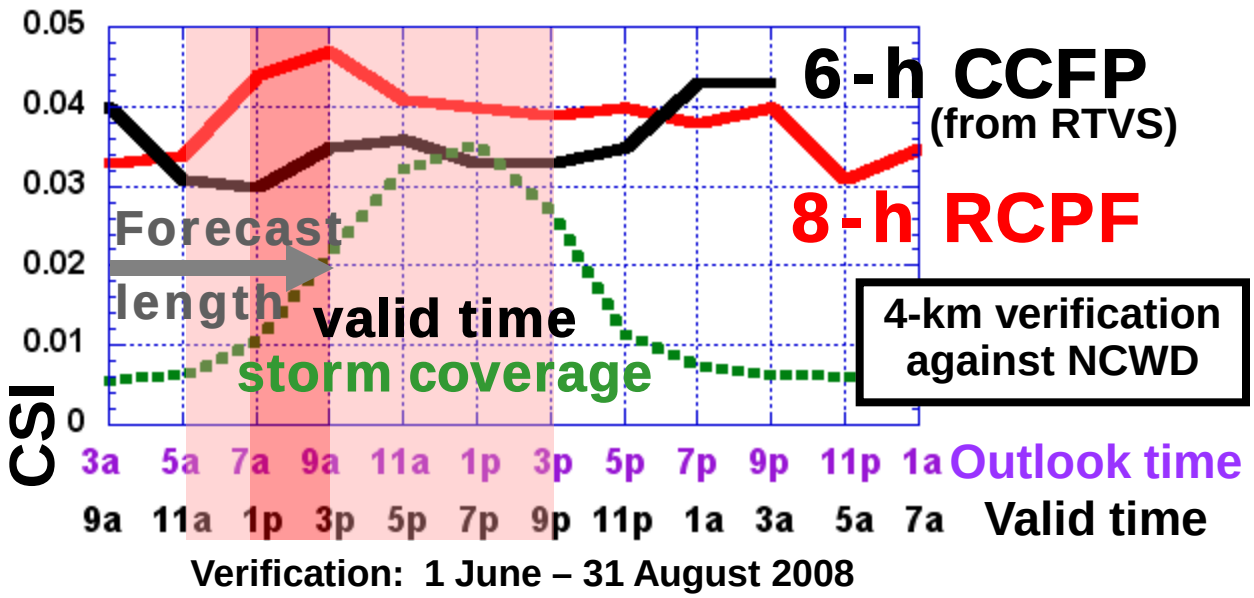
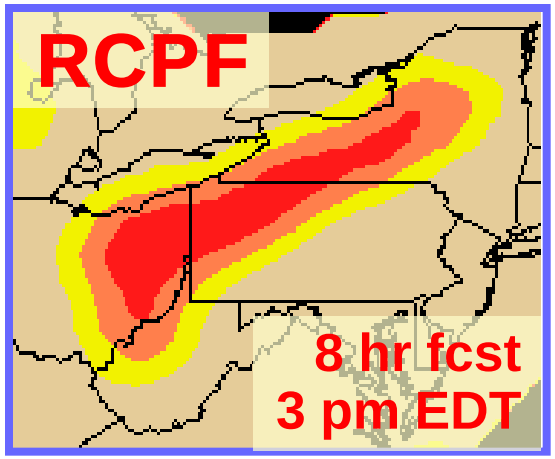
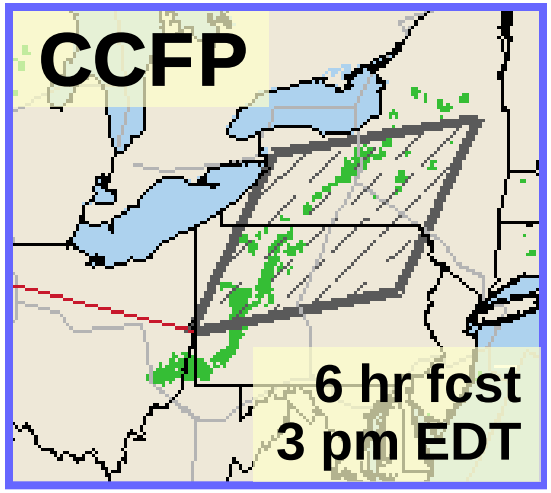






Storm-scale model guidance

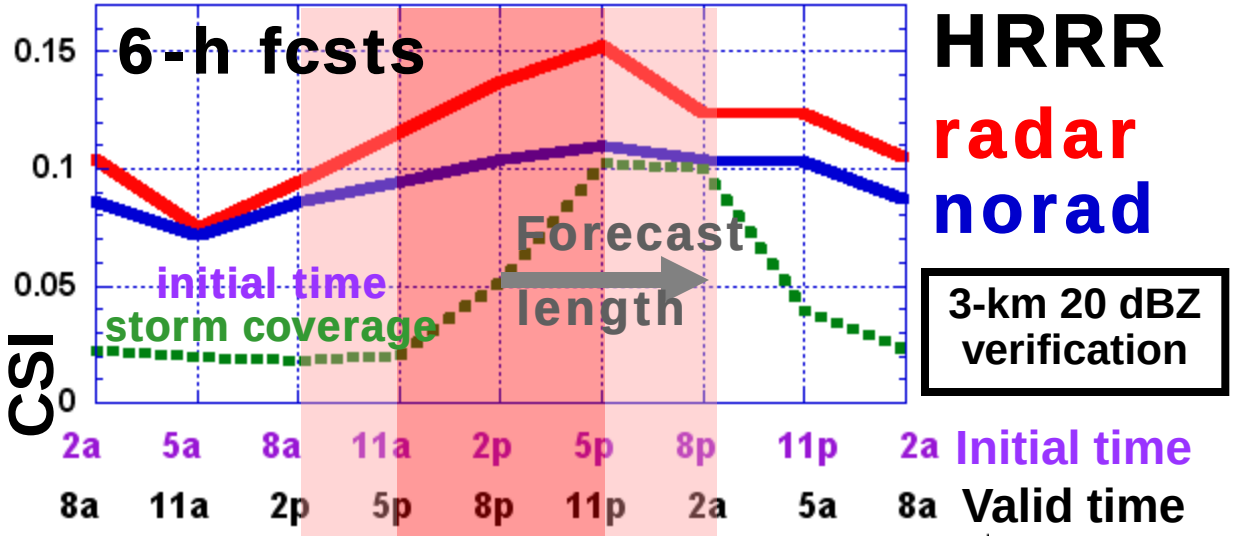
(3-km Hi-Res Rapid Refresh)

20 July 2008
2 pm initial time

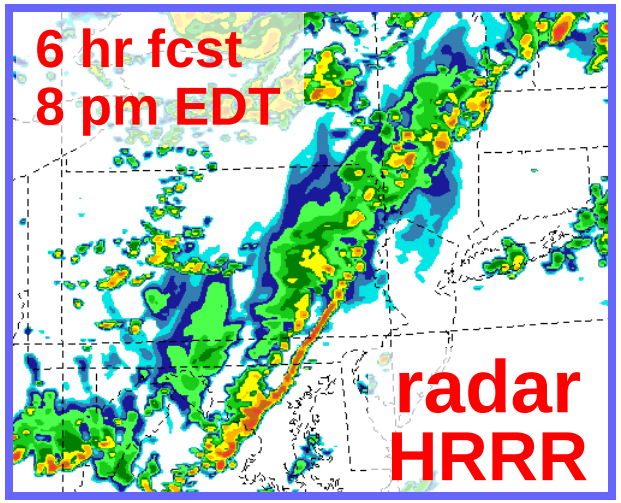
High resolution needed for realistic storm structure (storm-types, gaps in lines, etc.)

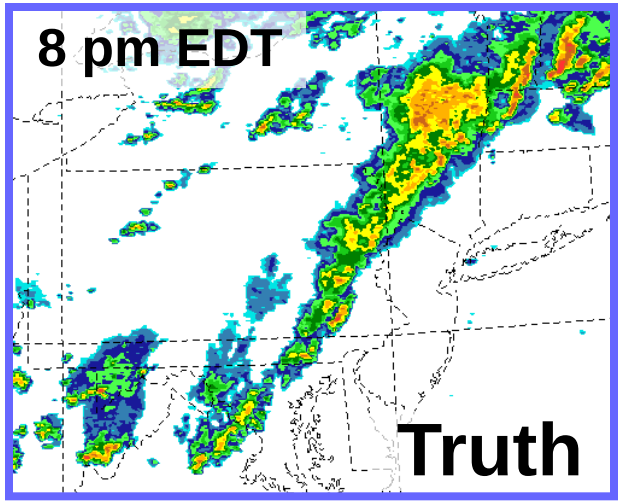
Hourly 12-h forecast, 15-min VIL output

RUC radar assimilation improves HRRR



Verification: 1 June – 31 August 2008





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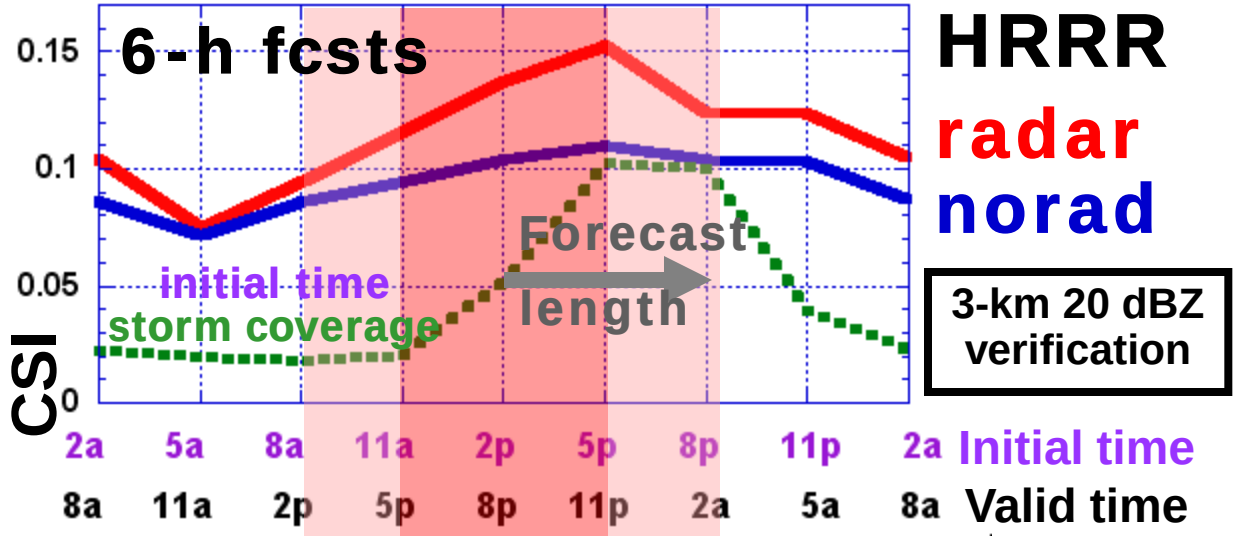

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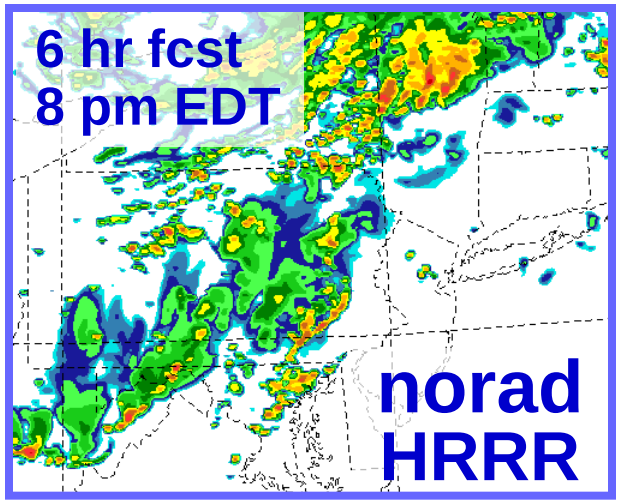
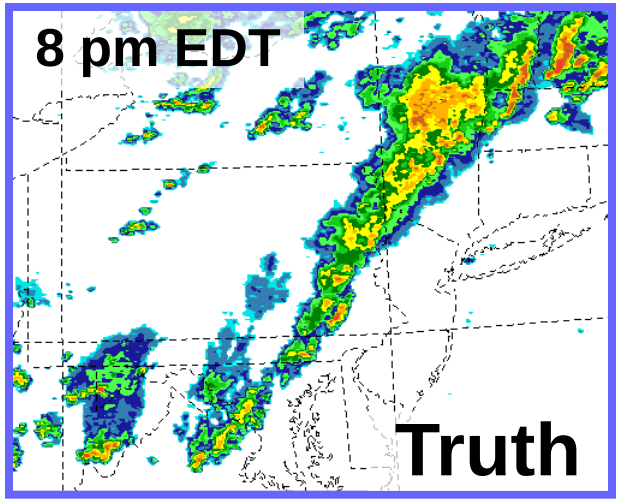
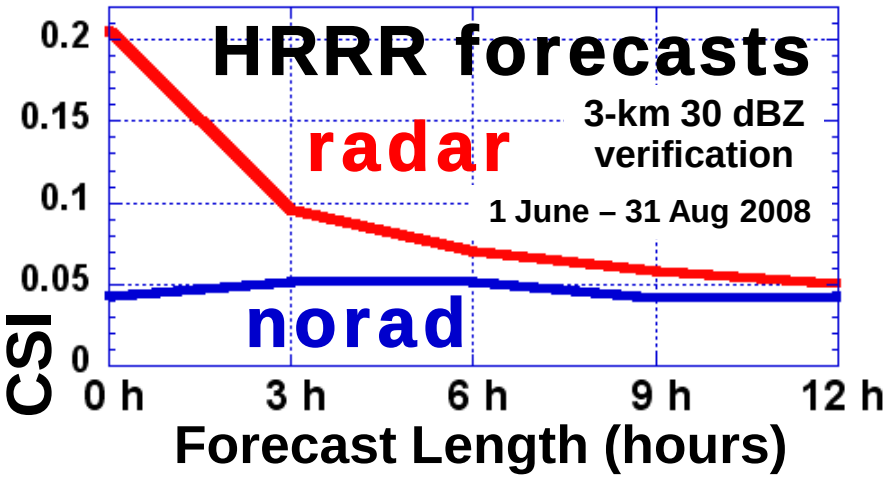




Model-based TFM guidance

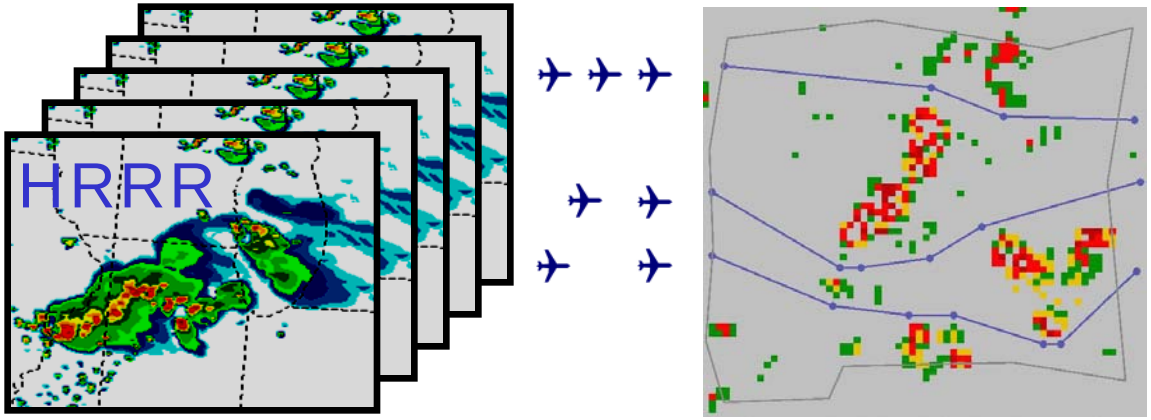


Radar assimilation improves HRRR forecast through 12-h

HRRR key component of CoSPA

HRRR storm structure allows extraction of ATM information

HRRR and HRRR-based probabilities Important for automated ATM



HRRR ensembles → *ATM probabilities*