Clarus Regional Demonstration

Use Case #1: Enhanced Road Weather Forecasting Enabled by Clarus

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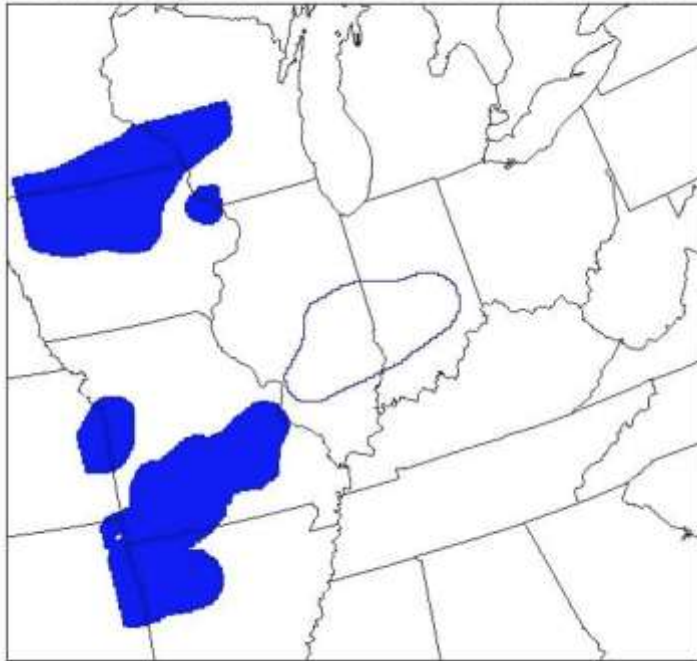
- Two primary objectives
  - Assess the impact of *Clarus* data on weather and pavement predictions
  - Provide enhanced *Clarus*-enabled forecasts for utilization in the Non-winter Maintenance and Operations Decision Support Tool and the Multi-state Control Strategy Tool.
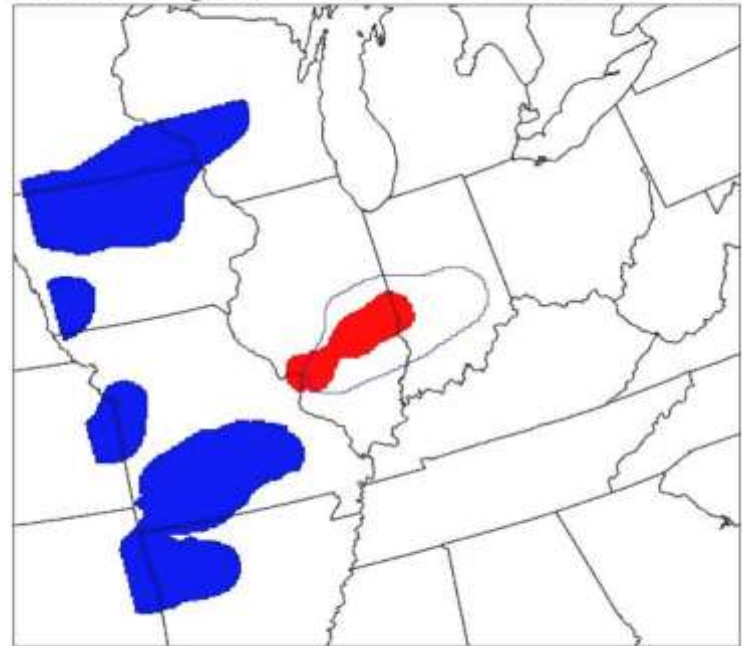
Methods

- GRIDDED MODEL RUNS - For each test event, a WRF spatial forecast was generated for each twelve hours, with the forecast being rerun every six hours

- POINT ROAD FORECASTS - An RWFS/METRo point forecast was generated for each hour for the next 8 days, with the forecast being rerun every hour

- Chosen test cases for high impact events of rain, wind, snow, cold and warm extremes.
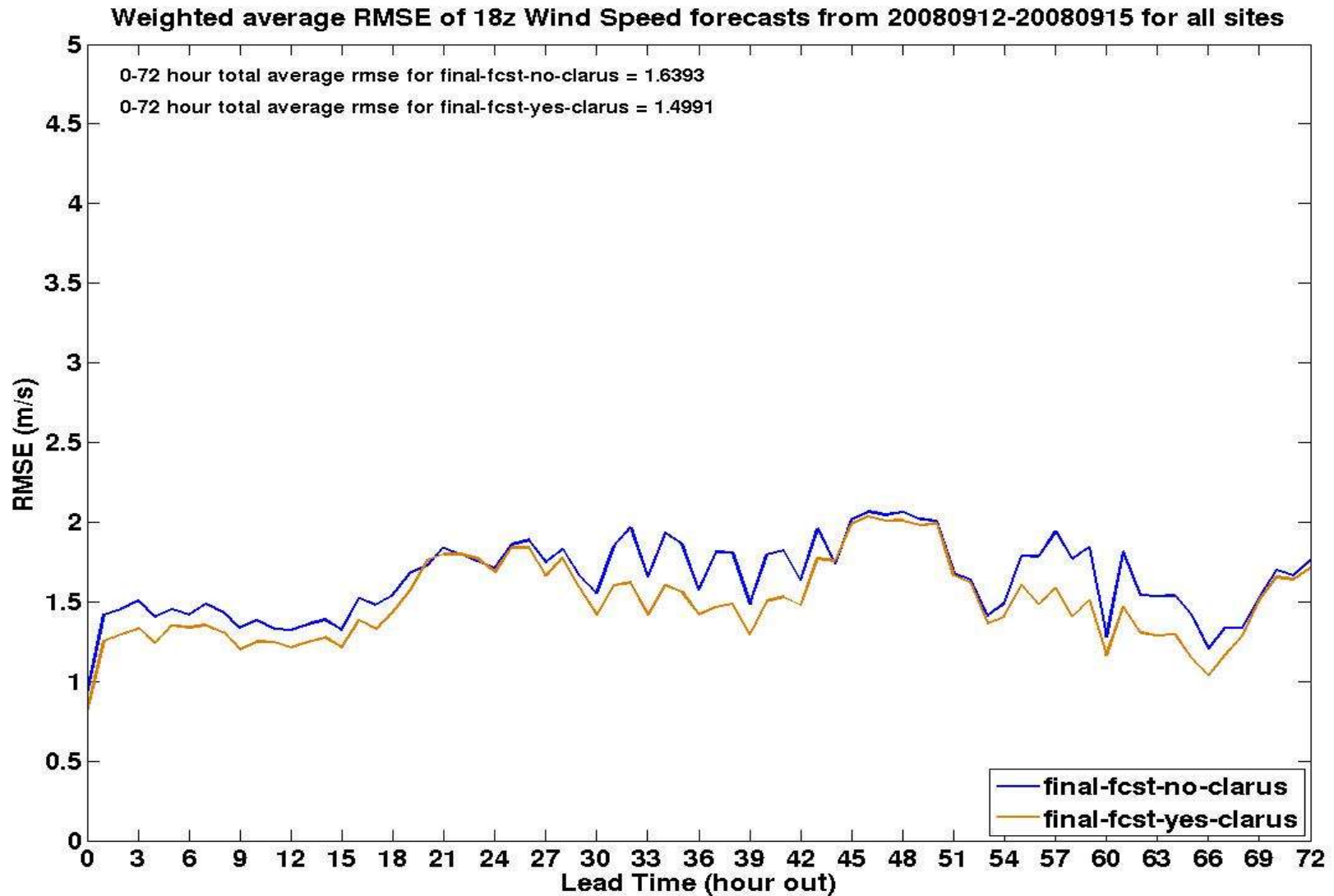
Heavy Rain case - Precipitation

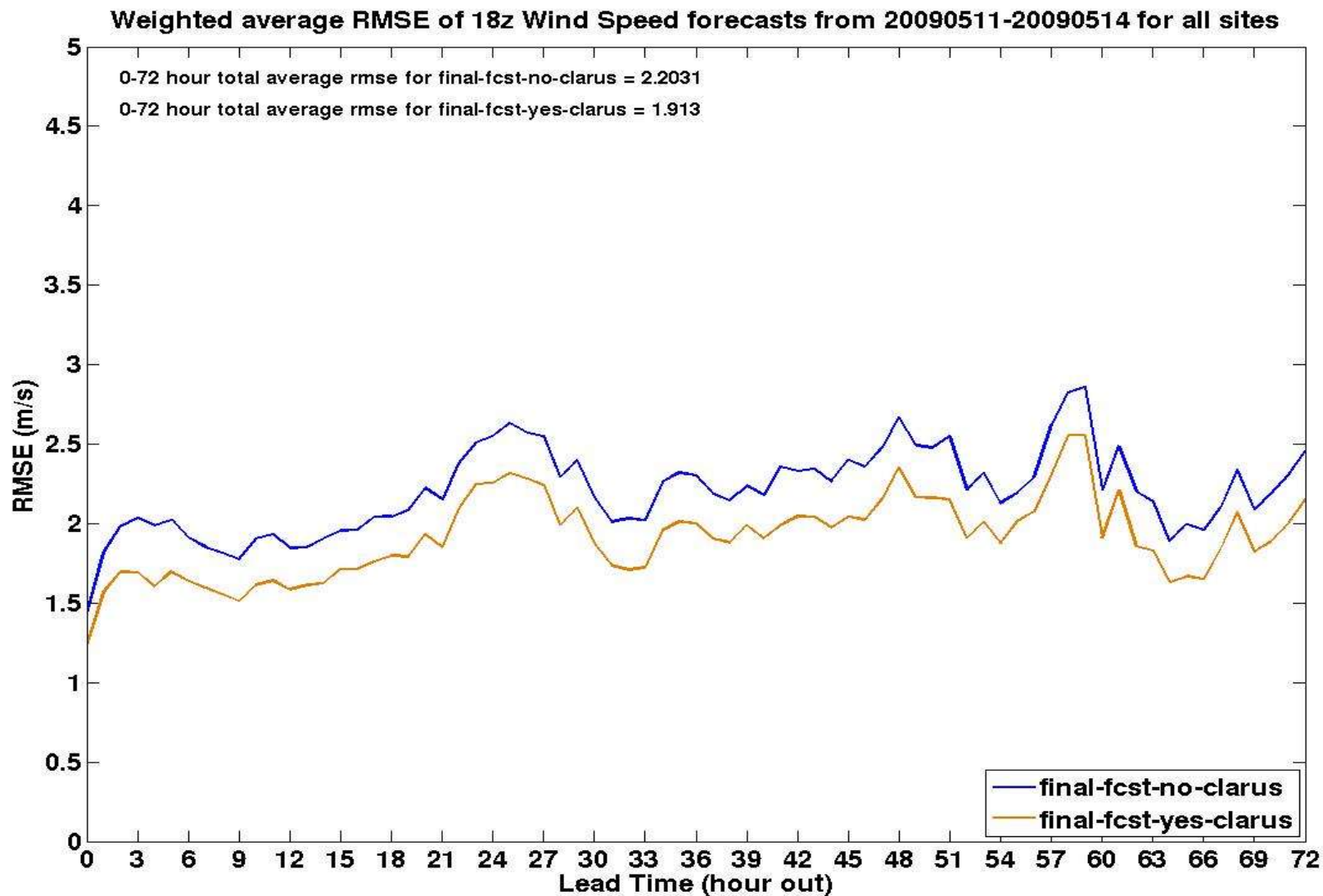Forecast Objects with Observation Outlines

Wind/Precip case - Hurrican Ike

Weighted average RMSE of 18z Wind Speed forecasts from 20080912-20080915 for all sites

Squall line case

Weighted average RMSE of 18z Wind Speed forecasts from 20090511-20090514 for all sites

0-72 hour total average rmse for final-fcst-no-clarus = 2.2031

0-72 hour total average rmse for final-fcst-yes-clarus = 1.913

Legend:
- final-fcst-no-clarus
- final-fcst-yes-clarus

Y-axis: RMSE (m/s)

X-axis: Lead Time (hour out)

Cold Case

Weighted average RMSE of 18z Dewpoint forecasts from 20090112-20090115 for all sites
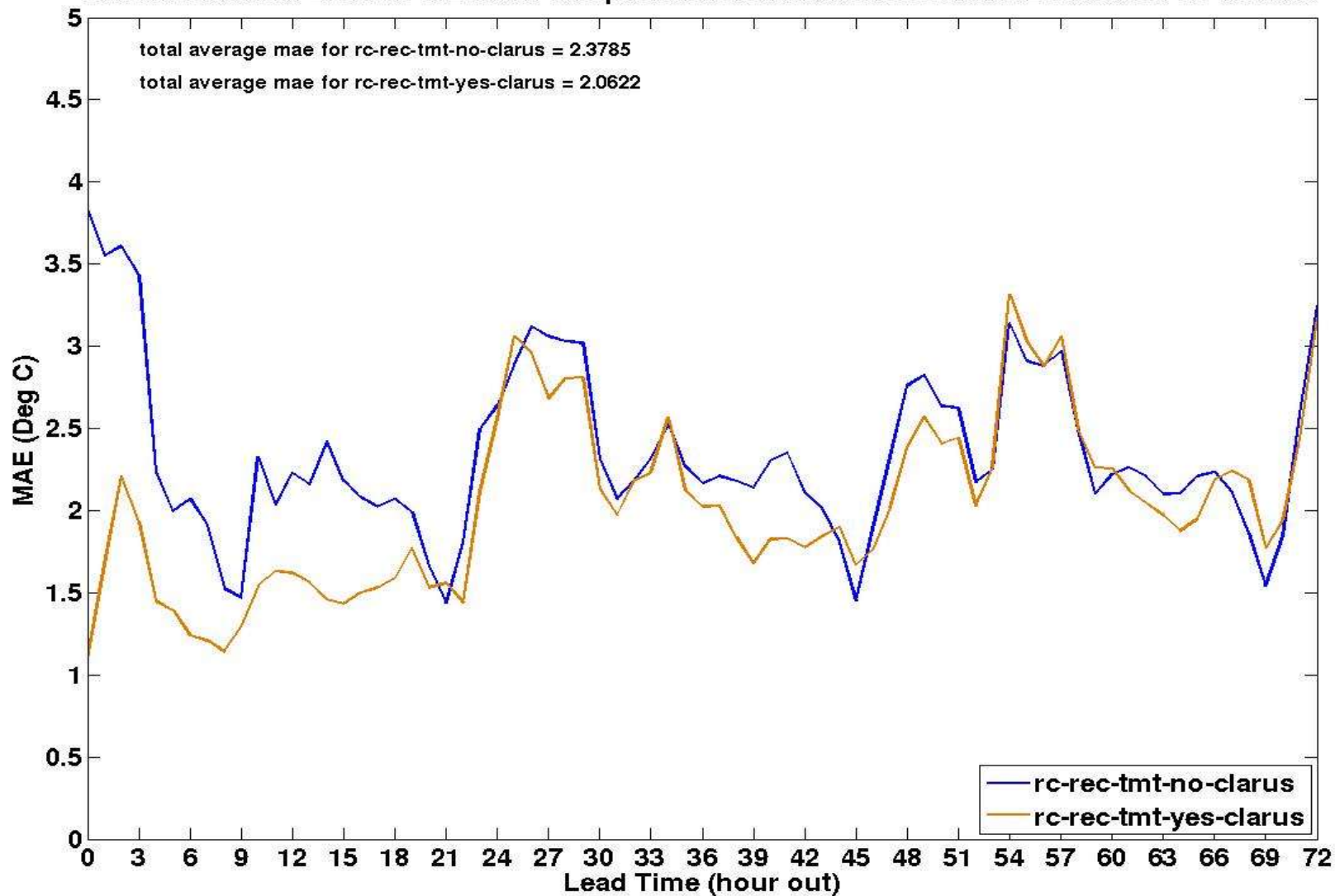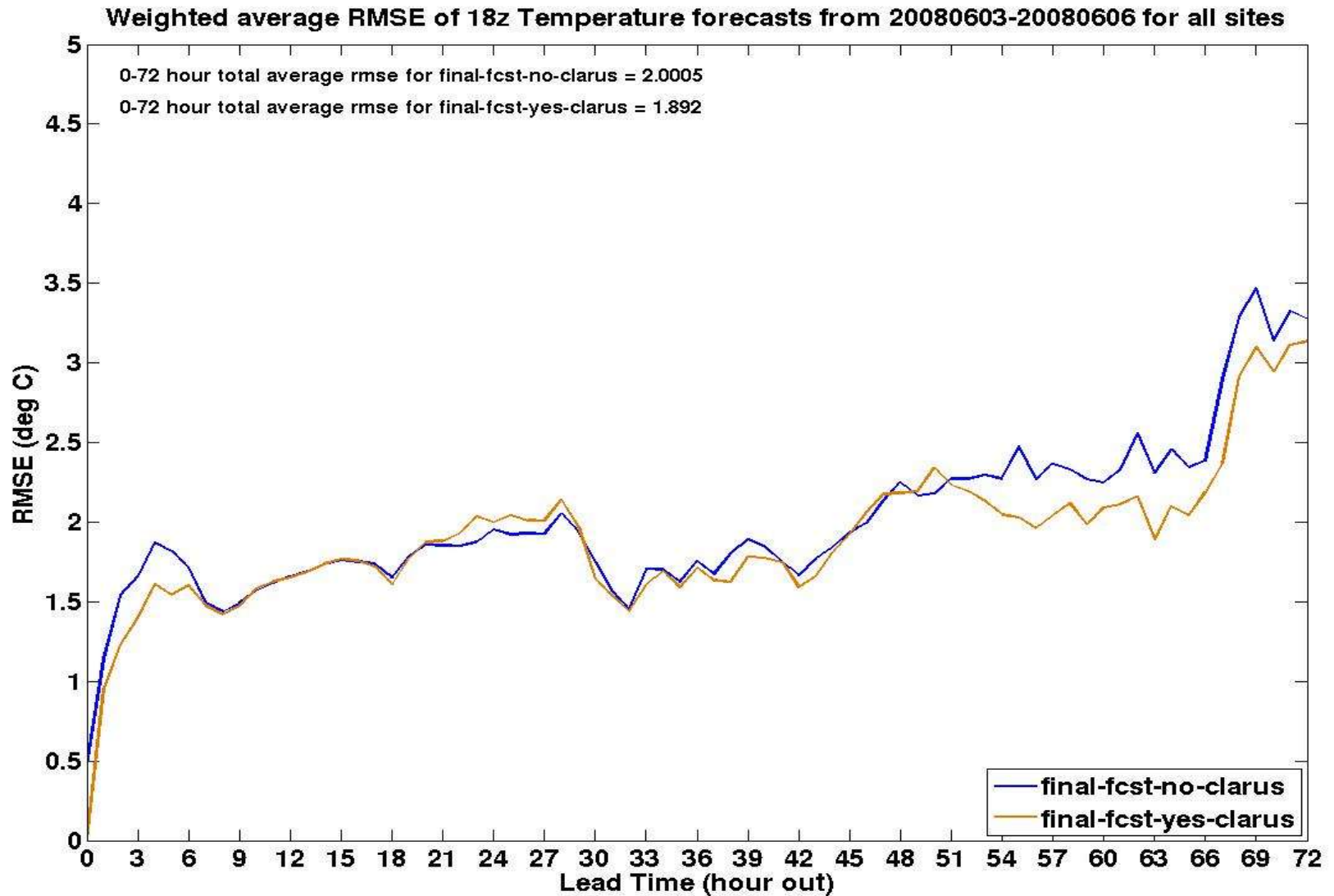
Cold Case

Median Absolute Error of 18z Road Temperature forecasts from 20090112-20090115 for all sites

Hot/Humid case

Weighted average RMSE of 18z Temperature forecasts from 20080603-20080606 for all sites

0-72 hour total average rmse for final-fcst-no-clarus = 2.0005

0-72 hour total average rmse for final-fcst-yes-clarus = 1.892

final-fcst-no-clarus
final-fcst-yes-clarus

RMSE (deg C)

Lead Time (hour out)

Summary

- Inclusion of *Clarus* data did not degrade the gridded forecast

- Inclusion of *Clarus* data provides small but significant improvement in many of the meteorological variables – especially road temperature point forecasts

- Inclusion of *Clarus* data showed improvement in the forecast of fine-scale precipitation features but not significant overall