

MDSS Performance

A Quick-Look Assessment

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Overview

- System setup
- What is truth?
- Performance of MDSS
 - Basic Parameters
 - Air Temperature, Wind Speed
 - Potential effects on performance
 - Snowfall amount & location – typical event or two
 - Extended Parameters
 - Road Temperature
 - Recommended Treatments
- Summary

MDSS Output Used For These Tests

- 0-24 Hour Forecasts
- Standard model ingredients
 - ETA, AVN, NGMMOS, AVNMOS, MRFMOS
 - Road information
 - “Correct” surface and substrate
 - Representative of the road segment

MDSS Minnesota Highways/ Locations Of Interest

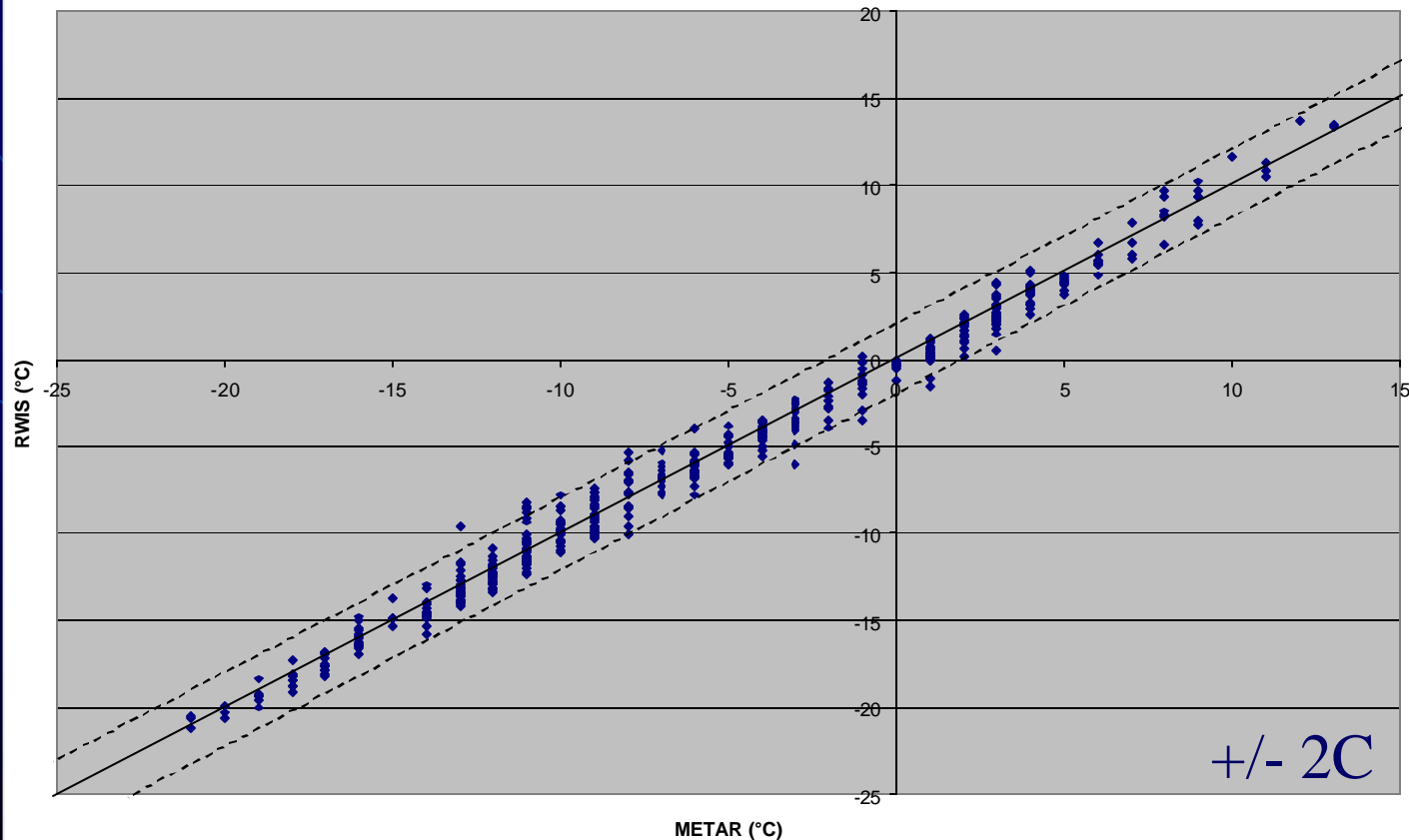
Focus Area:
Hanley Falls
Montevideo



What is truth?

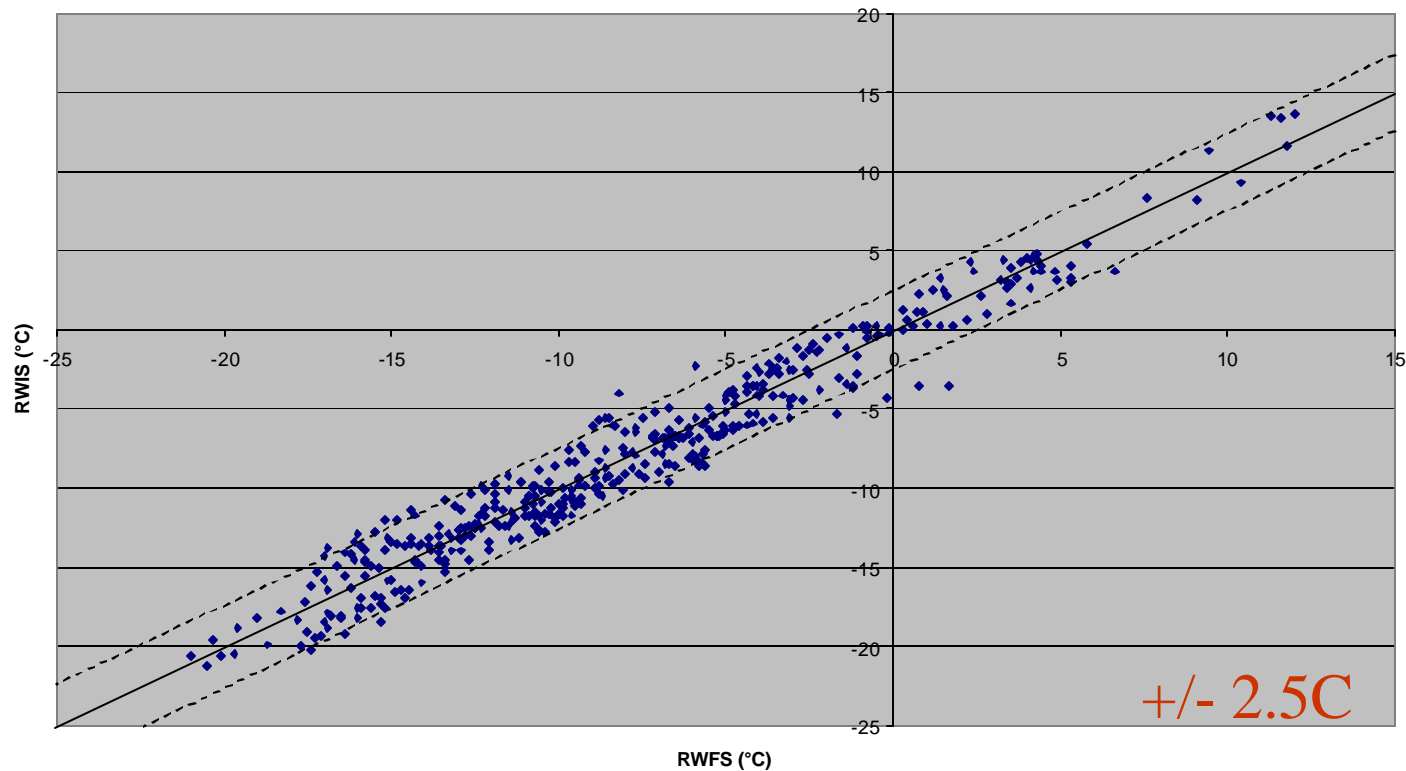
Quality of observations we compare to

Montevideo (METAR) vs Hanley Falls (RWIS) - OBSERVED Air Temp Comparison



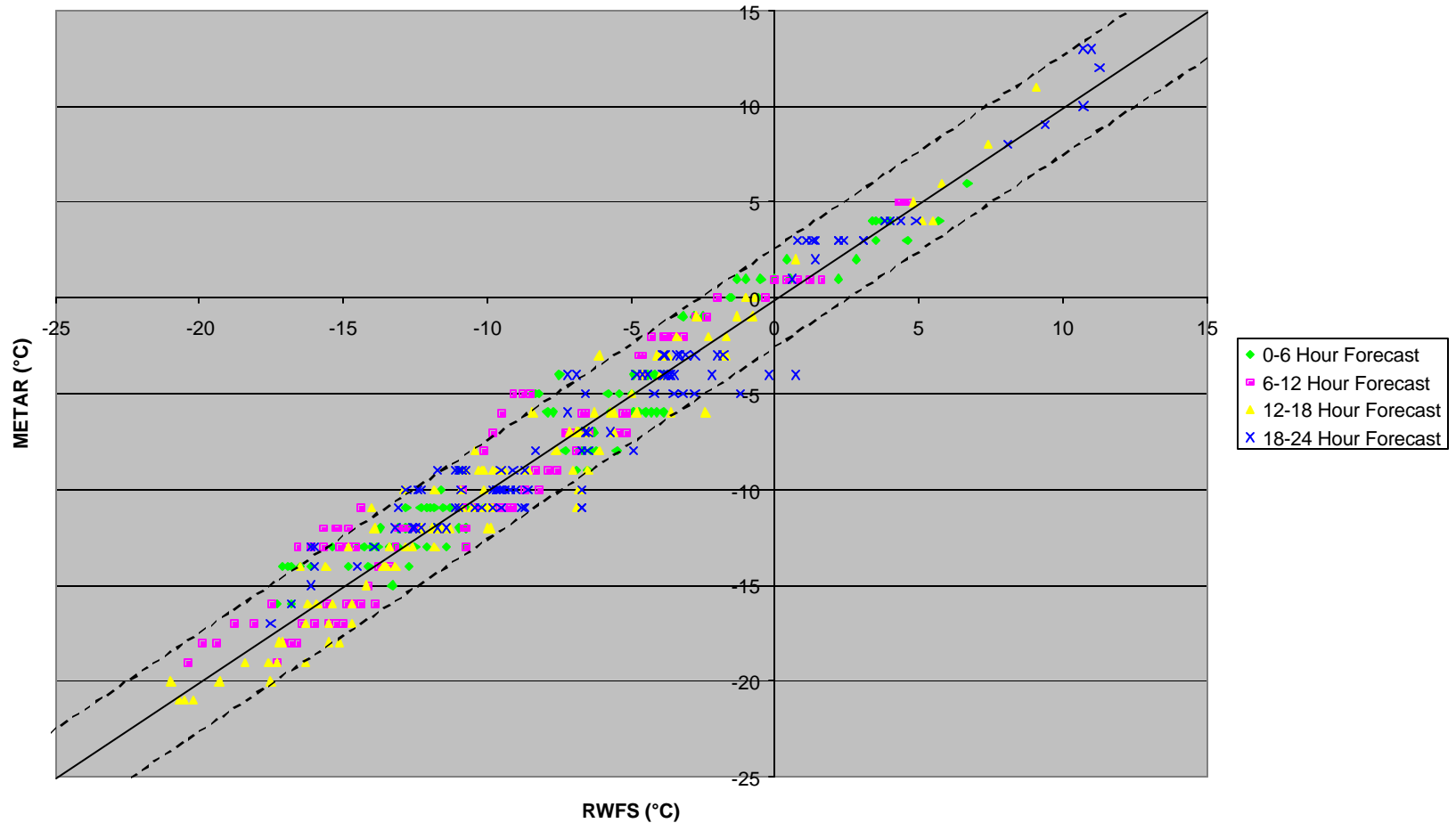
How did MDSS perform for T?

Hanely Falls Air Temp Comparison
(W/ FSL Models)



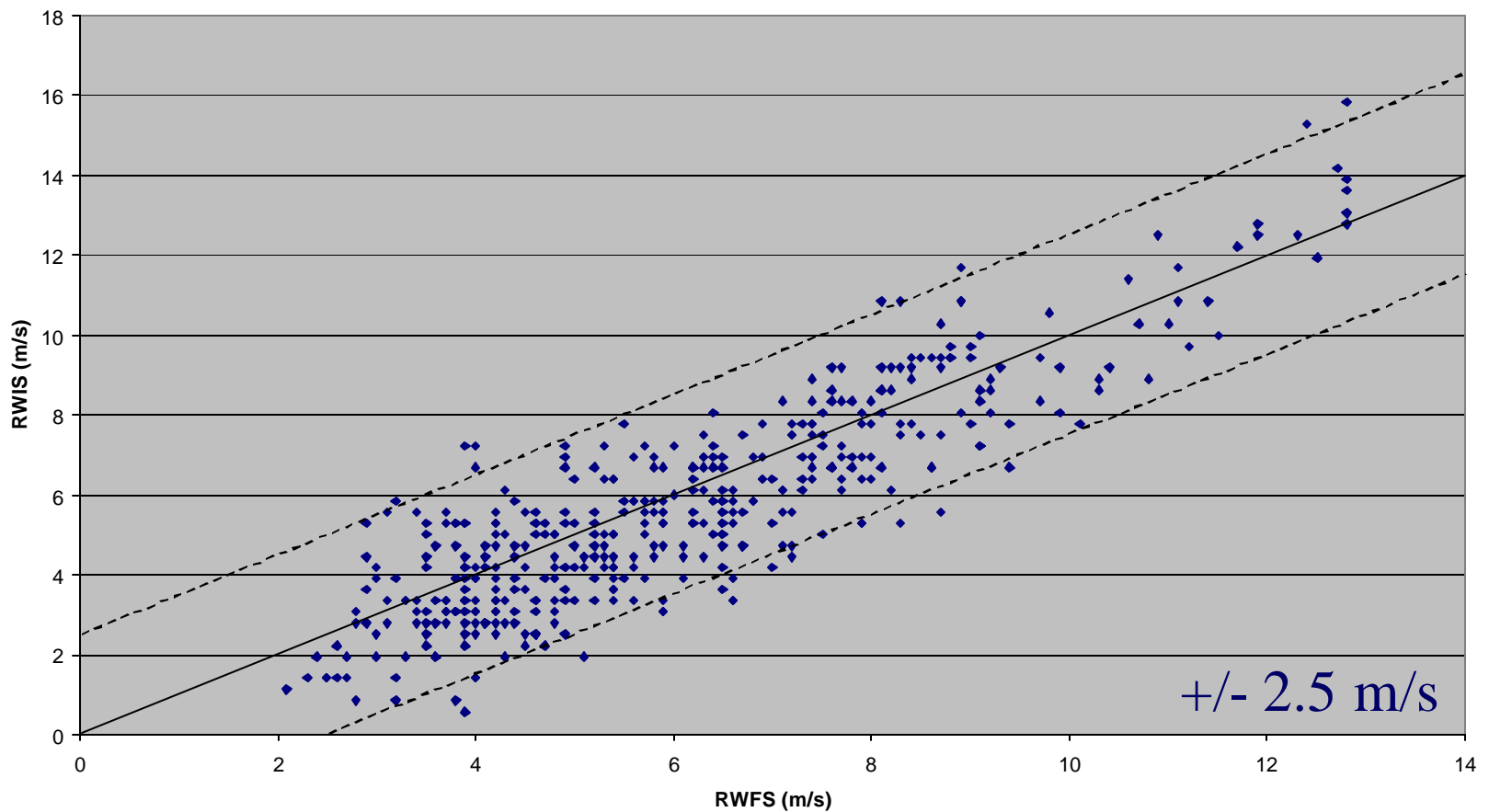
Effects of forecast length on T

**MONTEVIDEO Air Temp Comparison
(w/ FSL Models)**



How did MDSS perform for Wspd?

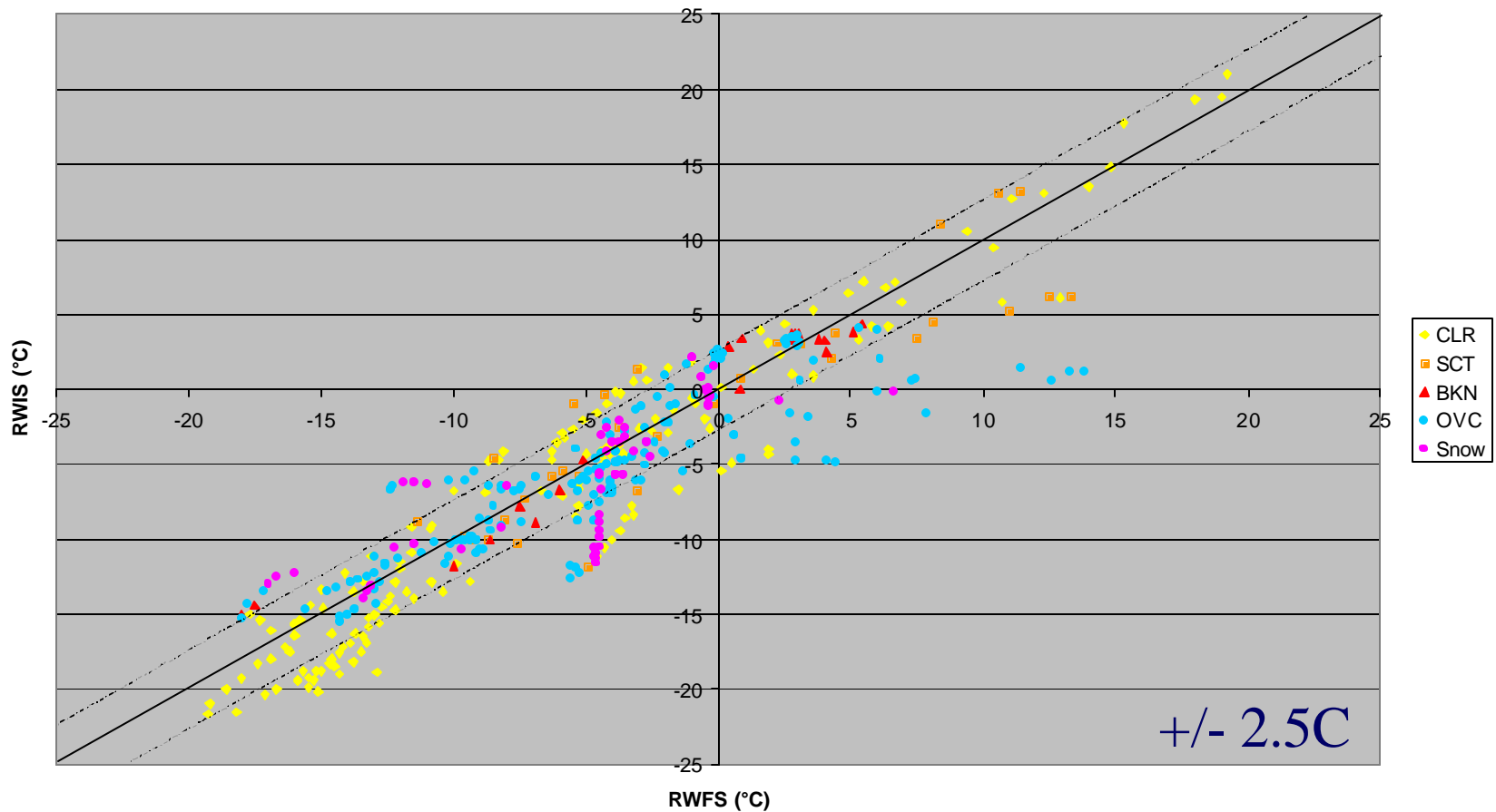
Hanely Falls WDSP Comparison
(w/ FSL Models)



How good were the T-Road fcsts?

w/o treatment

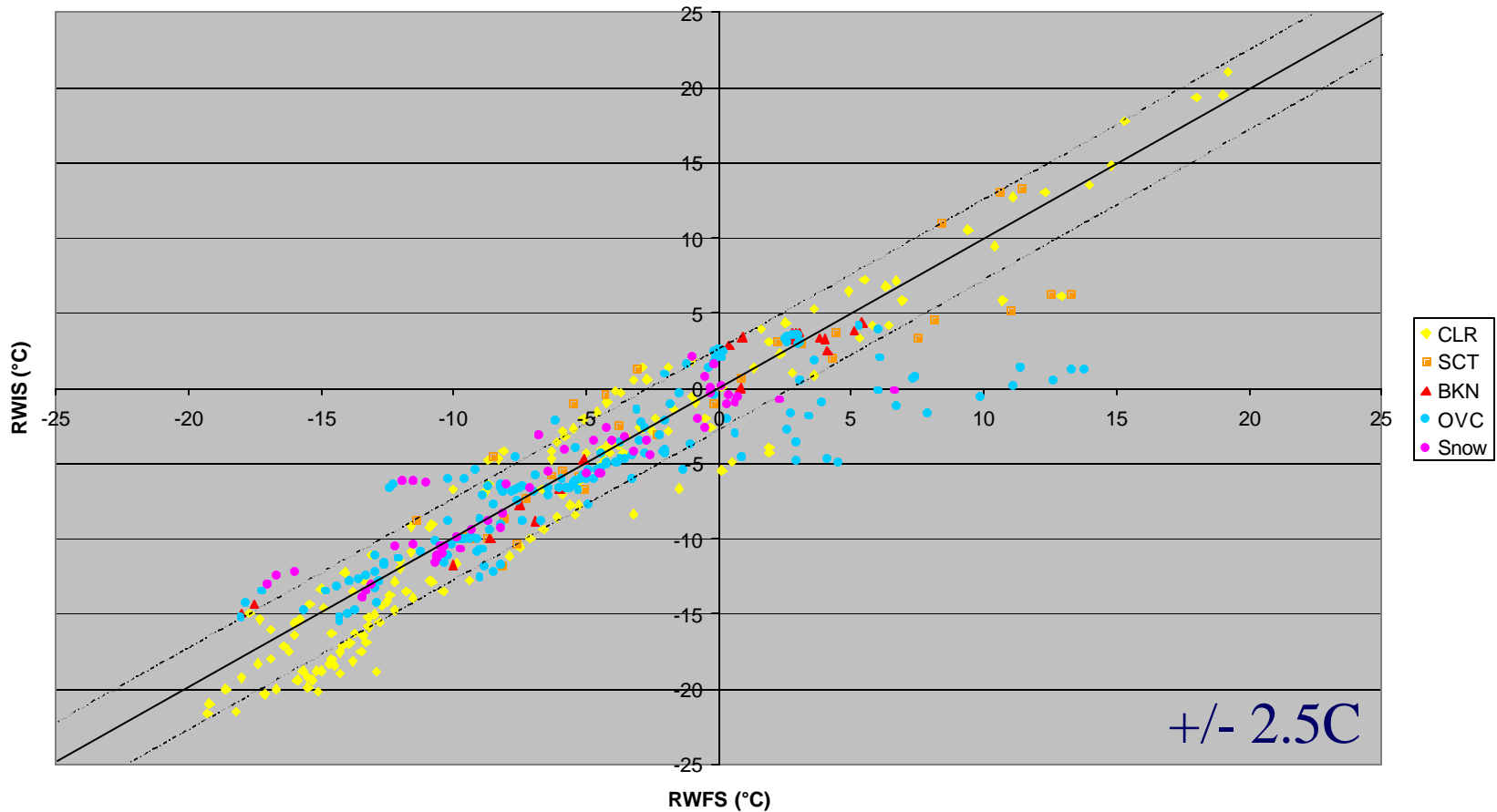
Hanley Falls Road Temp Comparison
(No treatment - w/o FSL models)



How good were the T-Road fcsts?

with treatment

Hanley Falls Road Temp Comparison
(With treatment - w/o FSL models)

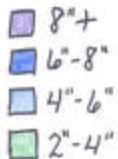
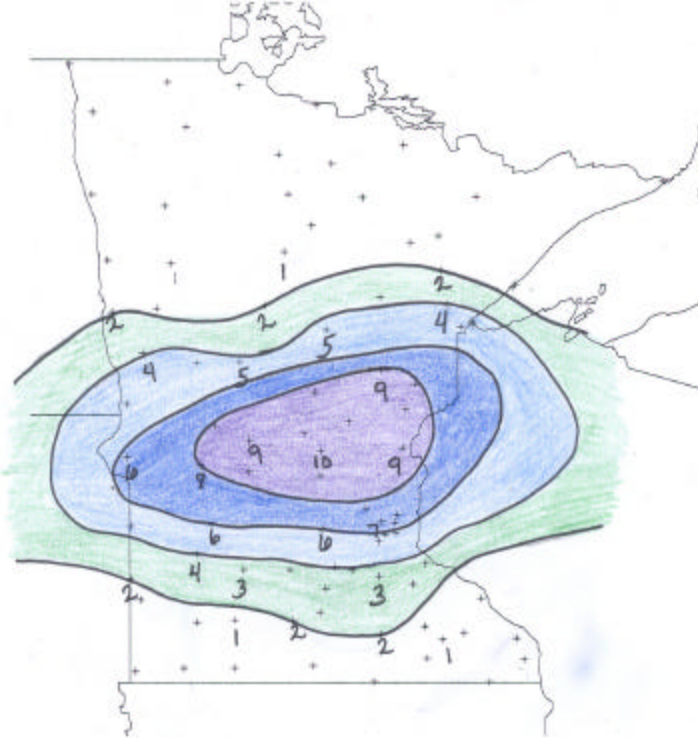


Were Recommended Treatments *“Reasonable”?*

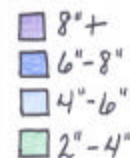
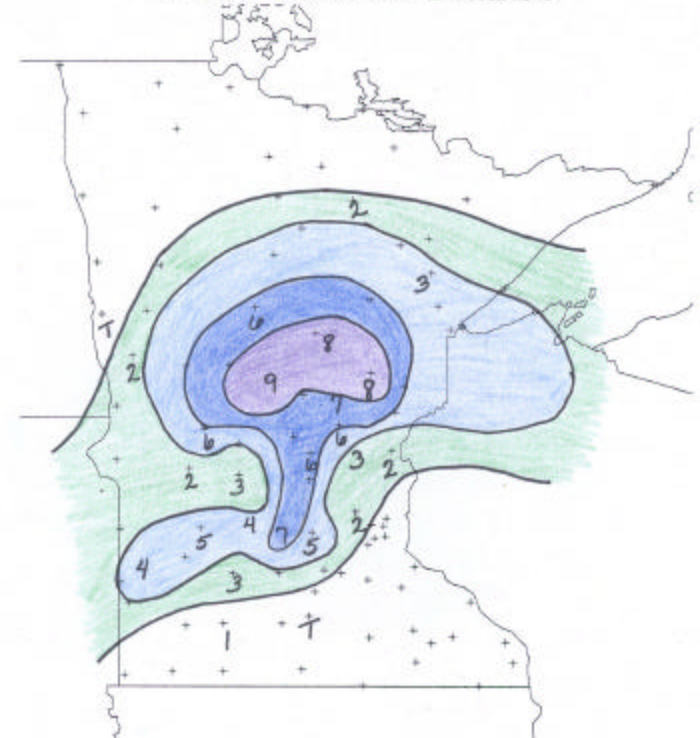
- Insufficient data for winter '02 demo
- Plan to assess this in winter '03
 - Forms for DOT to fill out
 - Build database
 - Comparisons will be tricky

How did MDSS do on snow amount & placement? (Feb. 24-5 event, from 2/23-12Z (5am) model runs)

MDSS forecast snowfall totals
20020224
STATION & HIGHWAY LOCATIONS



Actual Snowfall totals
20020224
STATION & HIGHWAY LOCATIONS



NWS Forecast – Issued Friday ~12 pm, 23 February

CITIES OF...ALEXANDRIA...ST CLOUD

.TONIGHT...SNOW DEVELOPING AFTER MIDNIGHT. A PERIOD OF FREEZING RAIN POSSIBLE. LOWS IN THE MIDDLE 20S. WIND BECOMING NORTHEAST AT 15 TO 20 MPH. CHANCE OF PRECIPITATION 60 PERCENT.

.SUNDAY...SNOW LIKELY IN THE MORNING...THEN TAPERING TO FLURRIES BY THE AFTERNOON. **TOTAL ACCUMULATIONS 1 TO 2 INCHES**. BLUSTERY AND COLDER WITH STEADY TEMPERATURES IN THE MIDDLE 20S. NORTH WIND 15 TO 25 MPH. CHANCE OF SNOW 60 PERCENT.

.SUNDAY NIGHT...MOSTLY CLOUDY AND BLUSTERY WITH SCATTERED SNOW SHOWERS. LOWS AROUND 10 ABOVE.

***NWS forecast increased to 3-5 inches by 10am on 24 February.**

Actual snowfall was 6-9 inches, MDSS predicted 5-10 inches.

***Just one example case!**

Summary

- Overall performance appears to be good
 - On the order of observation quality for T
 - T and Troad typically within 2.5C
 - Wind speed within 2.5 m/s
 - No obvious trends or biases with:
 - Forecast length
 - 0-24 hours. Beyond 24 h?
 - Precipitation, cloud cover
 - Forecast two “typical” snow events well
 - If all models miss, MDSS will miss (3/14-15)
- Future work
 - Look at precipitation type more closely
 - Little variety during winter ‘02