Iowa Demonstration Results Overview

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FHWA – Road Weather Management Program
Technology Transfer Process

It is the intent of the FHWA that the prototype MDSS be used as a *template* by the private sector.

It is anticipated that the MDSS will ultimately be deployed by road operating agencies and supplied by the private sector.

Release-1: September 2002
Release-2: September 2003
Release-3: September 2004?
System Releases

Release-1
- Parts of system code **still crude**
- Interprocess communication **not complete**
- Significant **weaknesses** in rules of practice

Release-2
- **More mature** components
- **End-to-end** (real-time) processing
- Components will be much **easier to utilize**
MDSS Software Release-1

Release-1 Recipients

Total Registrations: 41

Private Sector: 17
DOTs 8
R&D/Labs/Univ 16
International 7
License Completed 5
License Desired 18
Iowa Demonstration

Iowa DOT

Treatment History

IA MDSS Seg 1, IA

Recommended Treatment History

Treatments Recommended for 6:00 CST Run:
Mon Feb 03, 10:00 – treat with 110 lbs/lane-mile of NaCl
Mon Feb 03, 17:00 – treat with 200 lbs/lane-mile of NaCl

Treatments Recommended for 9:00 CST Run:
Mon Feb 03, 10:00 – treat with 110 lbs/lane-mile of NaCl
Mon Feb 03, 17:00 – treat with 200 lbs/lane-mile of NaCl

Selected Treatment History

No Treatments Selected for 6:00 CST Run
Treatments Selected for 9:00 CST Run:
Mon Feb 03, 10:00 – treat with 100 lbs/lane-mile of NaCl
Treatments Selected for 12:00 CST Run:
Mon Feb 03, 13:00 – treat with 250 lbs/lane-mile of NaCl
“We have to be careful not to end up helping the end user do the wrong thing more precisely!”

Dennis Burkheimer & Richard Hedlund – December 2002
MDSS Performance Overview

The Iowa demonstration was very productive, not because the MDSS performance was stellar, but because it was useful in highlighting system weaknesses.

The good news and bad news will be presented candidly in this forum.
Iowa Demo - Verification & Validation

Evaluate:

1) Weather prediction component
2) Treatment recommendations
3) Impact of the supplemental mesoscale models
4) Potential benefit of operational system
5) Identify & evaluate current system limitations
Problems and Issues - Overview

• MDSS weather predictions need improvement (tuning problems, model configuration)
• Rules of Practice module needs refinement
• Use for tactical support problematic
• Some display refinements needed to make it easier to view predicted values
Preliminary Lessons Learned

Major Findings

1) The MDSS requires highly specific forecasts of precipitation, which are pushing the current limits of predictability.

1) The Road Condition & Treatment Module, which includes the rules of practice, needs additional development to handle a wider variety of weather scenarios and treatment responses.
Preliminary Lessons Learned

- Availability and quality of real-time precipitation rate data are very poor.
- Uncertain if the local rules of practice are followed consistently enough.
- A system reset is required when routes are cleared of snow, otherwise future predictions will be suspect.
Preliminary Lessons Learned

• Light **snow events (intermittent flurries)** are **critical** and particularly hard to predict. Frost and blowing snow need attention.

• **Tactical** as well as strategic decision support is needed.

• Because weather will never be predicted perfectly at road scales, **probabilistic** products should be developed.