Castle Rock Associates

What Storms May Come

Integrating predictive weather information into public traveler information systems

2016 National Rural ITS Conference
Monday, October 3, 2016
Chattanooga, TN
predictive weather models: enhancing public condition reporting

Minnesota Department of Transportation
Maintenance Decision Support System (MDSS)

Idaho Transportation Department
NWS National Digital Forecast Database (NDFD)
# CARS-Segment

manually entered condition reports

<table>
<thead>
<tr>
<th>District 1</th>
<th>Name/ID</th>
<th>Conditions</th>
<th>Update Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border</td>
<td>#1-TP1B0531</td>
<td>Partially Covered Slush</td>
<td>Confirmed: Today, 3:31pm Updated: Tuesday, 1:36pm by mt.braun1kel</td>
</tr>
<tr>
<td></td>
<td>#2-TP1B0731</td>
<td>Partially Covered Slush</td>
<td>Confirmed: Today, 3:31pm Updated: Tuesday, 1:36pm by mt.braun1kel</td>
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<tr>
<td></td>
<td>#3-TP1B0012</td>
<td>Partially Covered Slush</td>
<td>Confirmed: Today, 3:31pm Updated: Tuesday, 1:36pm by mt.braun1kel</td>
</tr>
<tr>
<td></td>
<td>#4-TP1B0013</td>
<td>Partially Covered Slush</td>
<td>Confirmed: Today, 3:31pm Updated: Tuesday, 1:36pm by mt.braun1kel</td>
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<tr>
<td></td>
<td>#5-TP1B0532</td>
<td>Partially Covered Slush</td>
<td>Confirmed: Today, 3:31pm Updated: Tuesday, 1:36pm by mt.braun1kel</td>
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<tr>
<td></td>
<td>#6-TP1B0061</td>
<td>Partially Covered Slush</td>
<td>Confirmed: Today, 3:31pm Updated: Tuesday, 1:36pm by mt.braun1kel</td>
</tr>
</tbody>
</table>

Pavement Coverage Options:
- Select
- Normal
- Partially Covered
- Completely Covered
- Travel Not Advised
- Closed
MDSS
analysis of multi-sourced weather data
24-hour forecasting

- National Weather Service (NWS)
- Road Weather Information Systems (RWIS)
- Automated Weather Observation Systems (AWOS)
- AVL-equipped plow data & images
<table>
<thead>
<tr>
<th>CARS-Segment</th>
<th>MDSS</th>
<th>511: Which report is more severe?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving conditions are normal.</td>
<td>The roadway may be dusted with snow.</td>
<td>At 8:10 AM, the DOT staff reported that driving conditions are normal. At 9:00 AM, our computers predicted that the roadway may be dusted with snow.</td>
</tr>
<tr>
<td>The roadway is completely covered with ice.</td>
<td>There may be icy patches on the roadway.</td>
<td>At 8:10 AM, the DOT staff reported that the roadway is completely covered with ice. At 9:00 AM, our computers predicted that there may be icy patches on the roadway.</td>
</tr>
</tbody>
</table>
improving efficiency & accuracy
integrating manual vs. automated public road condition reporting

- Integrating automated reports with operator-entered conditions
- Identifying severity & accuracy
- Predictive “trend” analysis: Can we tell travelers conditions will be getting better or worse?
Roadway is completely covered with snow. Look out for drifting snow on the roadway. Expect blowing snow.

Last updated last Tuesday at 3:35 PM CDT by MSP

I have something to say about this report.
integrating MDSS data + forecast “trends” are conditions getting better or worse?

US 59: Roadway is completely covered with mixed snow ice or slush.

Between MN 60 (Worthington) and MN 30; 156th Street (near Currie). The roadway is completely covered with mixed snow ice or slush. Visibility is reduced. Look out for plowed snow on the roadway.

At 1:35 pm, DOT staff reported that the roadway is completely covered with mixed snow ice or slush.

At 5 pm, our computers predicted that the roadway may be partially covered with slush. Conditions may improve soon.

I have something to say about this report
Roadway is completely covered with mixed snow ice or slush.

DOT staff reported that the roadway may be partially covered with slush. Visibility may improve soon.

Something to say about this report
plow cameras
National Digital Forecast Database (NDFD)

short-term weather predictions and forecasts: “nowcasts”
Bringing it all together

DOT + MDSS, RWIS Alerts & Citizen Reports

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At 1:35 pm, DOT staff reported that the roadway is completely covered with mixed snow ice or slush.

At 5 pm, our computers predicted that the roadway may be partially covered with slush. Conditions may improve soon.

MN 59: Fulda: High Winds
Questions?

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