

## State Planning and Research Program Quarterly Report

**PROJECT TITLE:** Mapping Weather Severity Zones

**OBJECTIVES:** To analyze weather severity in snow and ice states to develop a methodology to map weather severity, from a winter maintenance perspective, across the regions and states.

**PERIOD COVERED:** Q1 / January 1<sup>st</sup> – March 31<sup>st</sup>, 2012

**PARTICIPATING AGENCIES:**

Clear Roads Member Agencies

**PROJECT MANAGER:**

Tom Peters

**SP&R PROJECT NO:**

TPF-5(218)

**PROJECT IS:**

☐ Planning  
☒ Research & Development

**LEAD AGENCY:**

Minnesota Department of Transportation

**PRINCIPAL INVESTIGATOR:**

John Mewes

Meridian Environmental Technology, Inc.

**ANNUAL BUDGET:**

\$49,725.18

**PROJECT EXPENDITURES TO DATE:**

\$28,243.18

**WORK COMPLETED:**

Acquisition and analysis of the data required for generation of the weather severity maps was the primary focus of work efforts during the quarter. While point-based surface weather observations will be used as a basis for generating the weather severity maps, these observations alone do not provide adequate sampling of weather conditions to serve as the sole basis for the desired maps. Further, station-to-station differences in sensitivity to precipitation and/or other aspects of the weather can be large enough to totally obscure the true underlying weather patterns. Because of these issues, the research team recommended an approach where weather model data is used to provide highly-detailed “background fields” (which provide information on weather patterns between observing locations), which are subsequently adjusted to match the surface weather observations where available and deemed reliable. A Technical Advisory Committee teleconference was held on 02/01/2012 to provide a discussion of this process as well as an update on progress. During the quarter, the research team was able to develop a national dataset of average annual snowfall, at a grid resolution of 4-km, using this process. Work toward developing similar datasets exploring the average annual duration of snowfall and freezing rain was also initiated.

**SUMMARY OF ACTIVITIES EXPECTED TO BE PERFORMED NEXT QUARTER:**

Work on the development of datasets exploring the duration of snowfall and freezing rain across the country during an average winter is expected to be completed early in the quarter. A fourth dataset exploring the frequency of blowing/drifting snow is also planned. Unlike the other parameters discussed here, there is no reliable national dataset of the frequency of blowing/drifting snow. Because of this, the blowing snow dataset is expected to be more theoretical in nature. After generation of these datasets, work toward developing a winter severity measure based on some combination of these datasets will commence. Work toward developing publication quality maps, and other data formats as desired by the Technical Advisory Committee, will commence thereafter.

**STATUS AND COMPLETION DATE:**

The project is proceeding on schedule and is expected to be completed by the July 31, 2012 expiration date of the contract.