Integrating Traffic and Weather Prediction Models on I-80 Corridor

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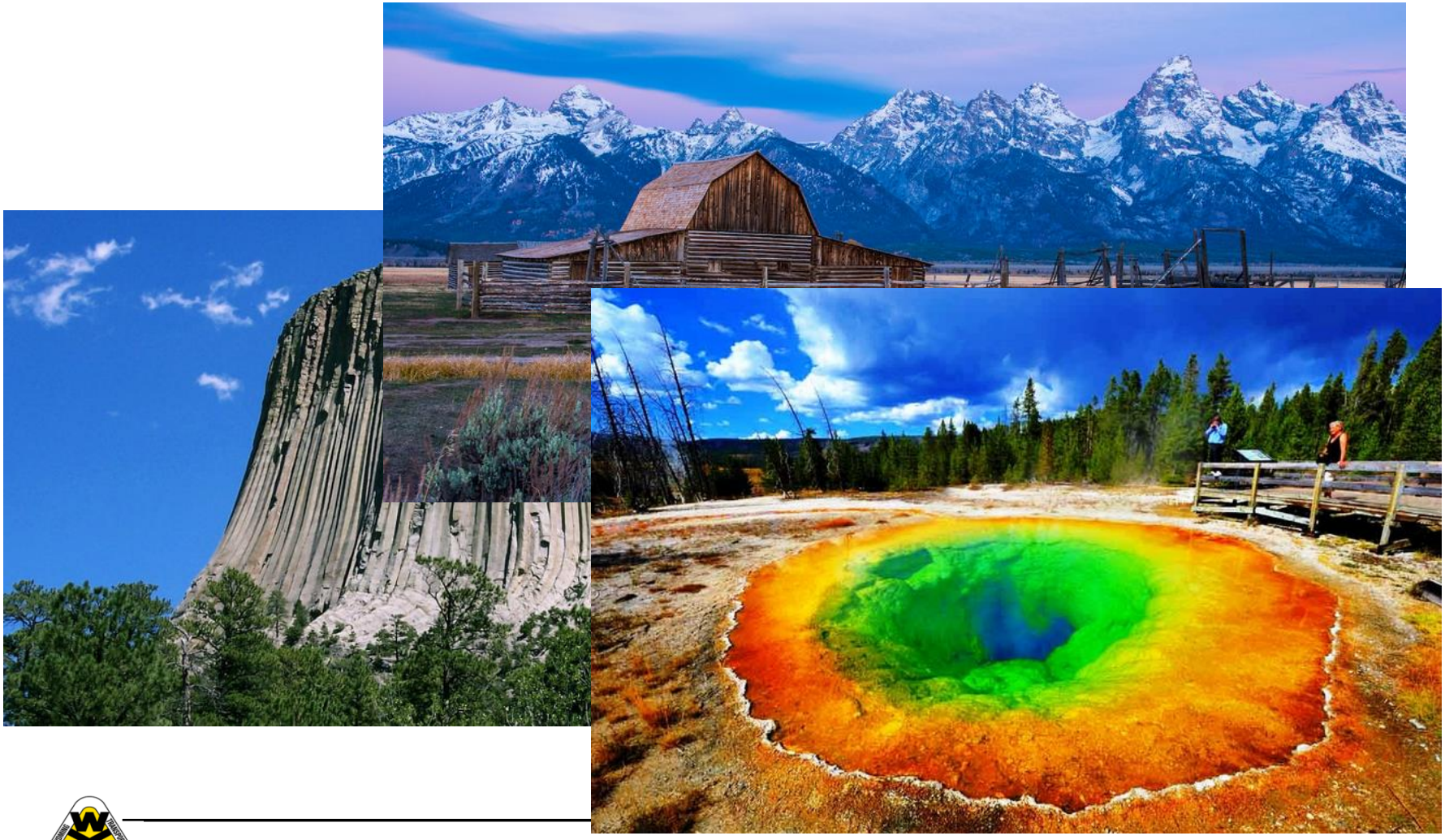
AASHTO Community of Practice for
Road Weather Management - Workshop

June 25, 2019

Wyoming Travel and Tourism



Safety and Mobility

Wyoming CV Pilot Deployment Overview

Goals

- Improved safety and mobility along I-80 through real-time communication with fleet drivers and managers
- Improved awareness of hazards through CV pilot applications

Implementation Elements

- 75 Roadside Units (RSUs) broadcasting/receiving messages via DSRC
- 400 equipped vehicles with on-board units (OBUs)
- V2V, V2I, I2V applications alerting drivers to various road conditions
- CV data collection for improved traffic management and traveler information

Analysis, Modeling and Simulation (AMS) Tools and Road Weather

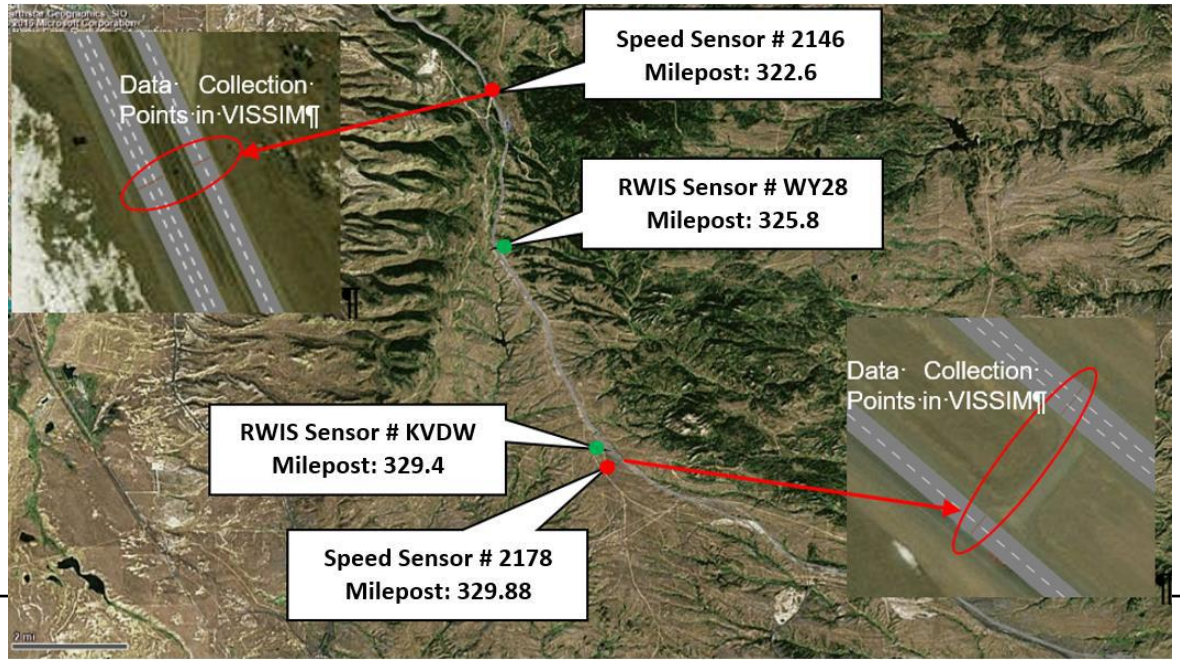
- AMS tools
  - Used to analyze Active Transportation Management (ATM) and other TSMO strategies for mobility improvement
  - Determine existing and predicted traffic conditions under various road weather and operational conditions.
- FHWA is currently implementing AMS tools for weather-responsive management strategies (WRMS) that use mobile and CV road weather data
  - Traveler Information Systems and Variable Speed Limit
  - Plow routing and Anti-icing
- Challenge is integrating CV data with WRMS AMS tool

WRMS, Data, and Tools

- Weather-responsive management and operations strategies are spreading quickly among agencies
- IMO, AVL, and CV data sources are increasing, but not ubiquitous
- Weather-aware simulation tools and applications are still developing
- Wyoming DOT agreed to work with FHWA for this implementation

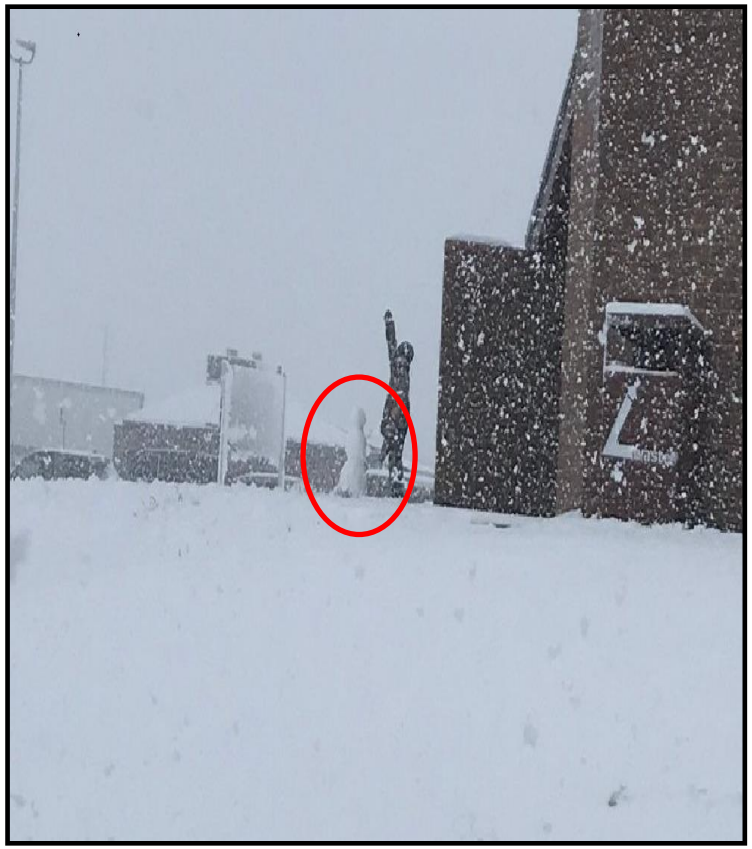
Wyoming AMS Application

- Partnered with FHWA and Univ. of Wyoming
- Uses I-80 corridor traffic model using VISSIM
- CV data from WYDOT plow trucks



Wyoming I-80 Analysis Corridor

- A portion of the Wyoming CV Pilot corridor on I-80 between Cheyenne and Laramie (mileposts 317 to 340) was developed as a VSL corridor
- Challenging traffic situations: high altitude, adverse weather events, and steep vertical curves
- Model calibrated using WYDOT speed sensor data for various weather conditions, such as clear, moderate, and severe conditions



Wyoming I-80 Analysis Corridor (Cont.)

- Calibrated geometrically, including the number of lanes, roadway segment lengths, and grades, the location of lane additions and drops, locations of rest and parking areas
- Traffic control parameters (VSL and other WRMS strategies to be added)
- Key traffic parameters: traffic composition, vehicle dynamics data, posted speed limits, the presence of work zones (including location, length, lane closure condition, etc.)

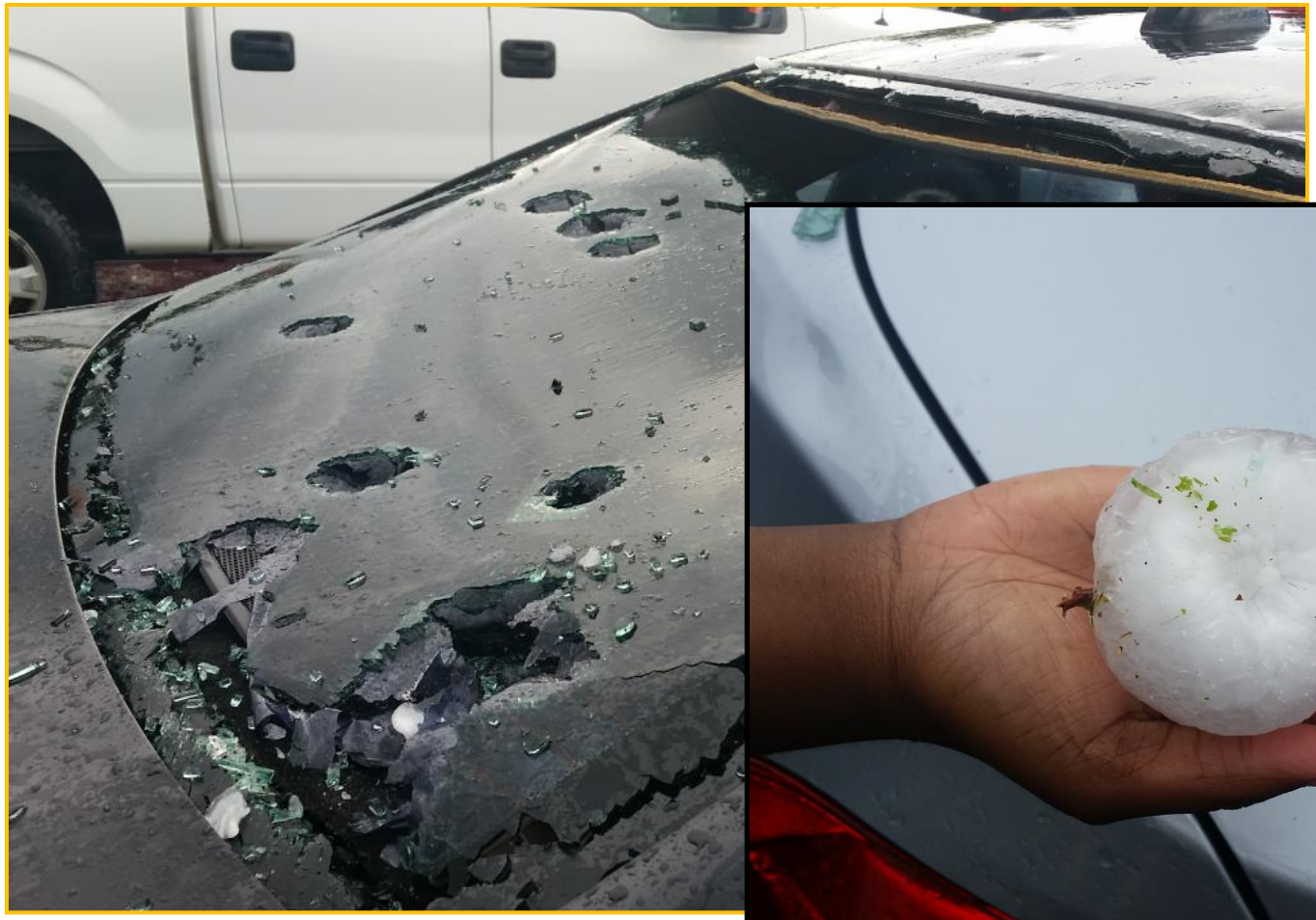
Selected WRMS Strategies

- Snow plow truck pre-positioning (as a variant of plow routing along a corridor or single roadway)
- Enhanced view of VSL (connected VSL)
- Traveler Information System (variable message sign)
- Results of the simulations would be provided to and evaluated by the TMC without any direct integration to their ATMS

Next Steps

- Develop the Implementation Plans for getting CV data, setting up the simulation models, and providing data to each of the sites/agencies
- Work with FHWA to implement the outputs in maintenance and operations (Winter 2019-20)
- Report out implementation results

Hail – Cheyenne – 6.12.2017



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