

AWARE Today. ALIVE Tomorrow.

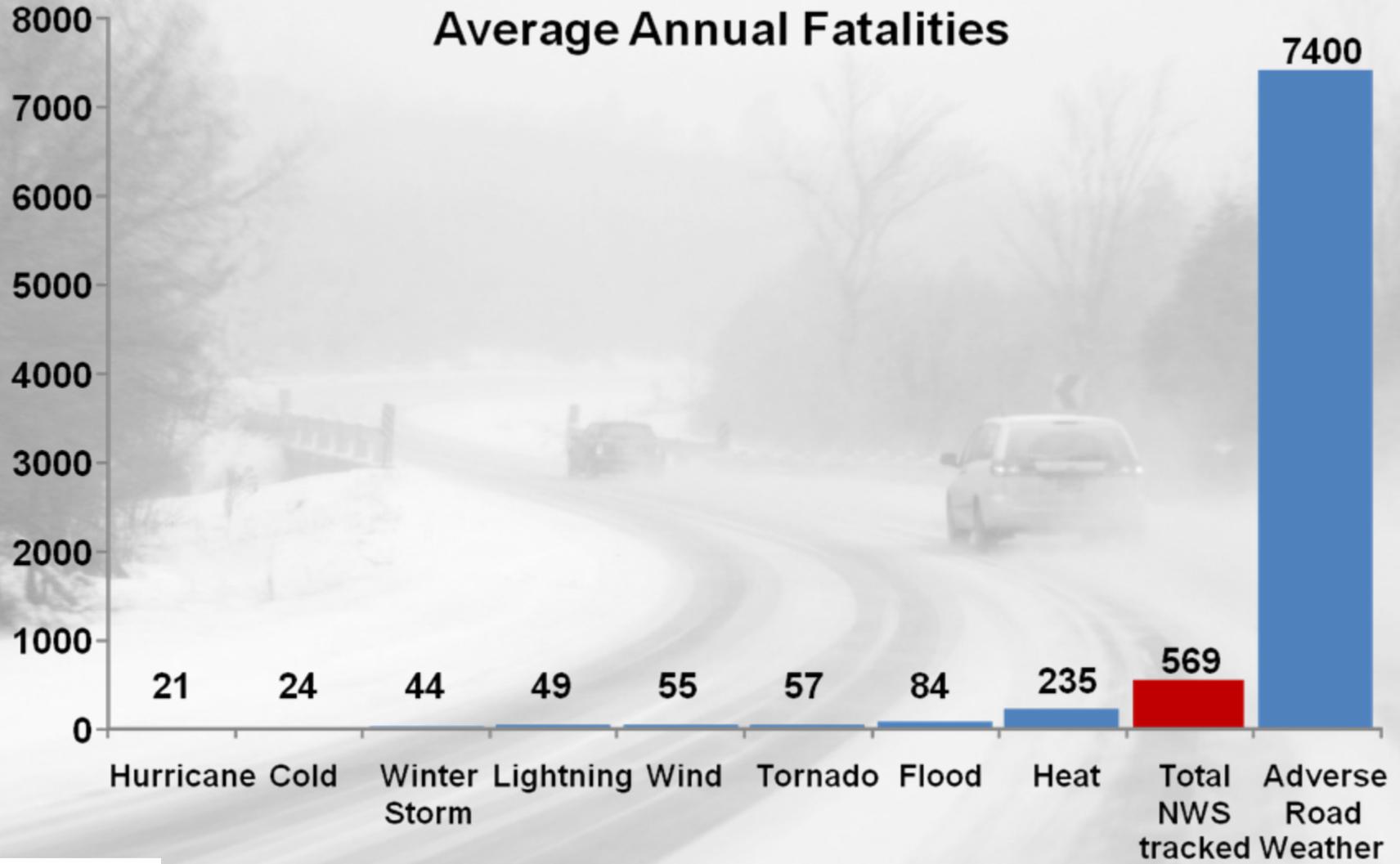
Vehicle Data Translator [VDT]

Using passenger vehicles to diagnose the weather

Sheldon Drobot
drobot@ucar.edu

Michael Chapman, Elena Schuler, Brice Lambi,
Gerry Wiener, William Mahoney, NCAR
Paul A. Pisano, FHWA
Ben McKeever, RITA

Safety



Mobility & efficiency

- ❖ **554 million vehicle-hours of delay per year result from snow, ice, and fog**
- ❖ **Delays to trucking companies range from \$2.2-\$3.5 billion annually**
- ❖ **Greenhouse gas emissions**



Change is in the air

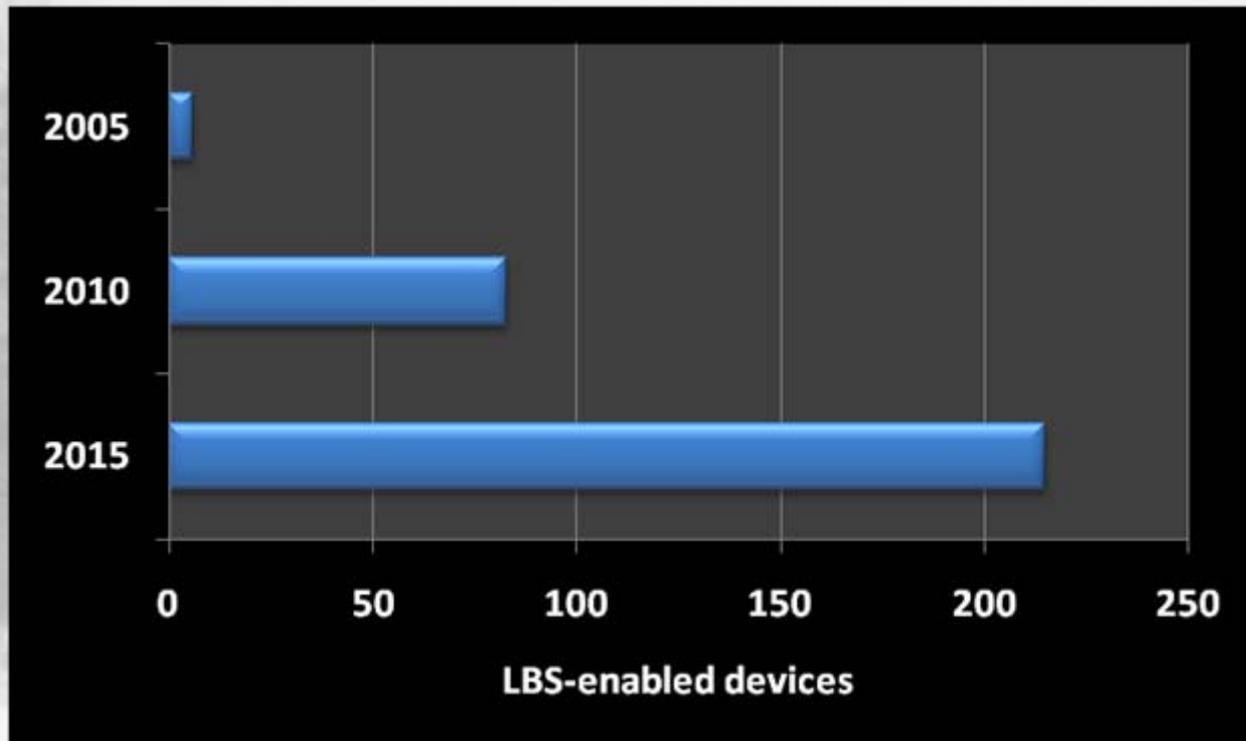
Technology

Consumer
Interest

DOT
IntelliDriveSM
Initiative

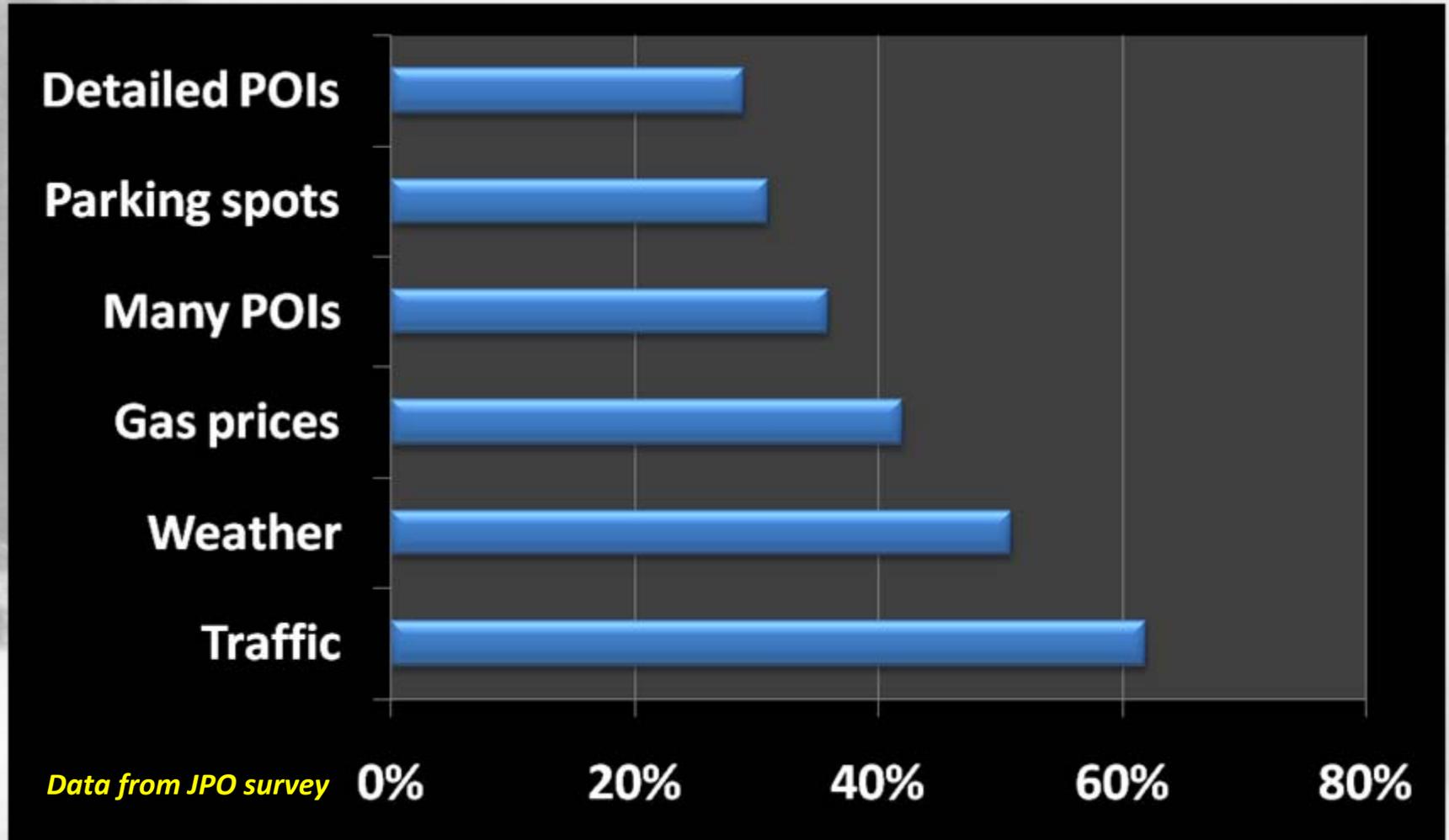
VDT

Transportation market trends



- ❖ 2016, connectivity will be a “critical buying consideration” on par with fuel efficiency, safety, etc.
- ❖ 2020, 30-90 million connected vehicles.

Consumer interest in transportation information



The IntelliDriveSM initiative

- ❖ IntelliDriveSM is a suite of technologies and applications that use wireless communications
- ❖ IntelliDriveSM applications provide connectivity:
 - ❖ with and among vehicles
 - ❖ between vehicles and the roadway infrastructure
 - ❖ among vehicles, infrastructure, and wireless devices (consumer electronics, such as cell phones and PDAs) that are carried by drivers, pedestrians, and bicyclists

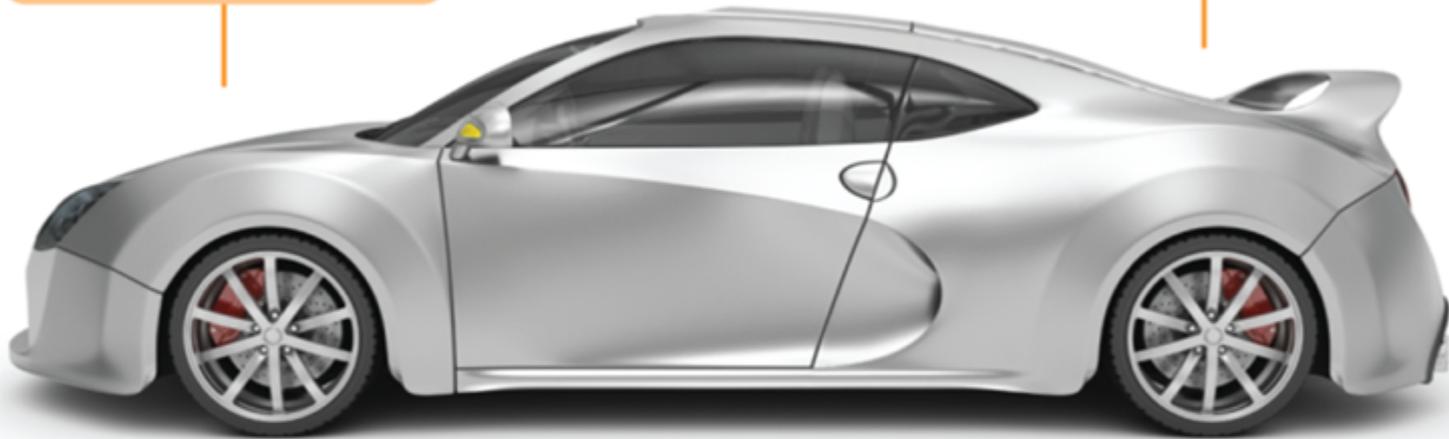


<http://www.intelldriveusa.org>

Vehicle data in IntelliDriveSM

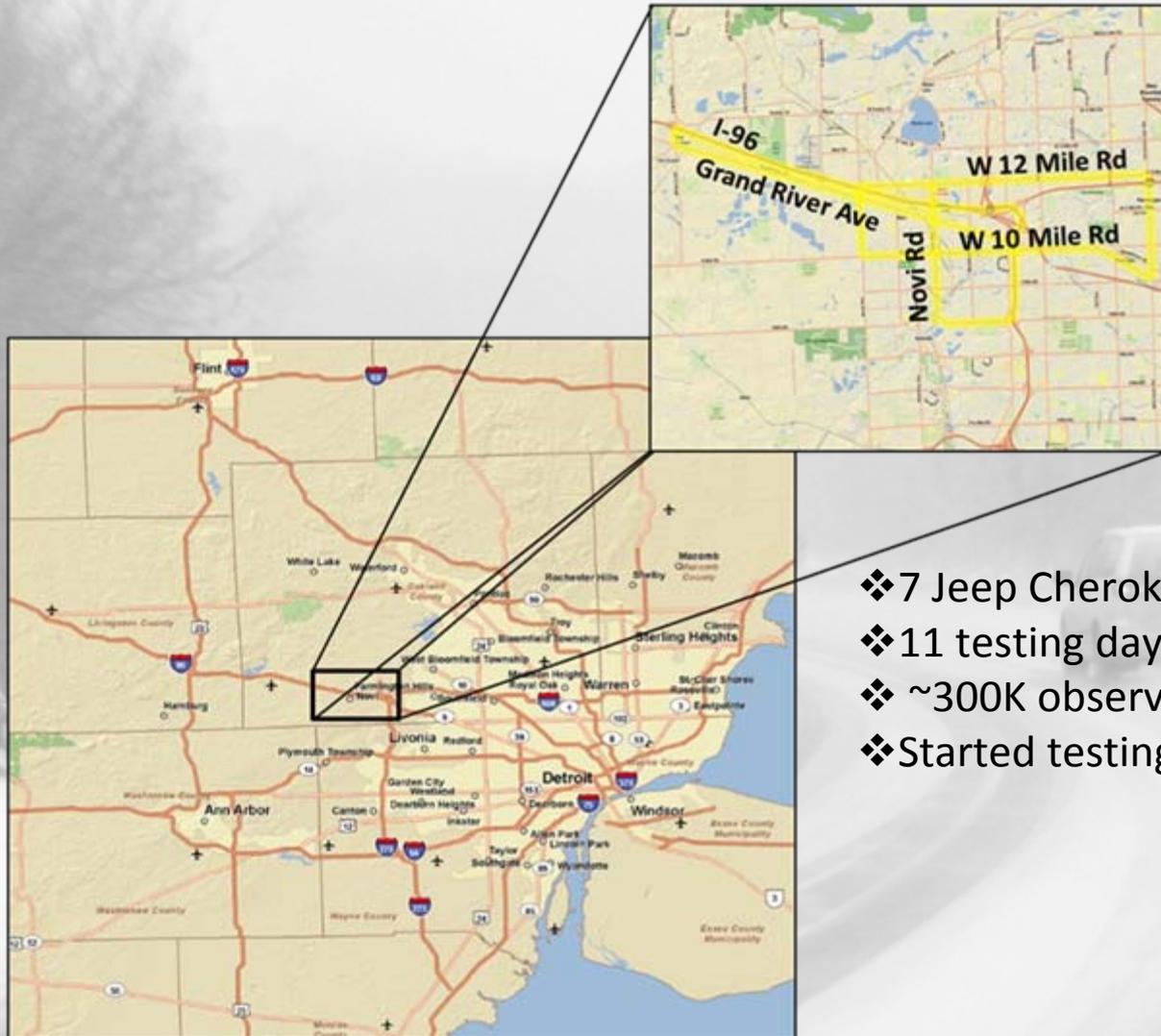
Sun/Rain Sensor
Windshield Wiper Setting
Head Lights Status
Ambient Air Temperature

Speed and Heading
Adaptive Cruise Control (ACC)
Location and Elevation
Hours of Operation



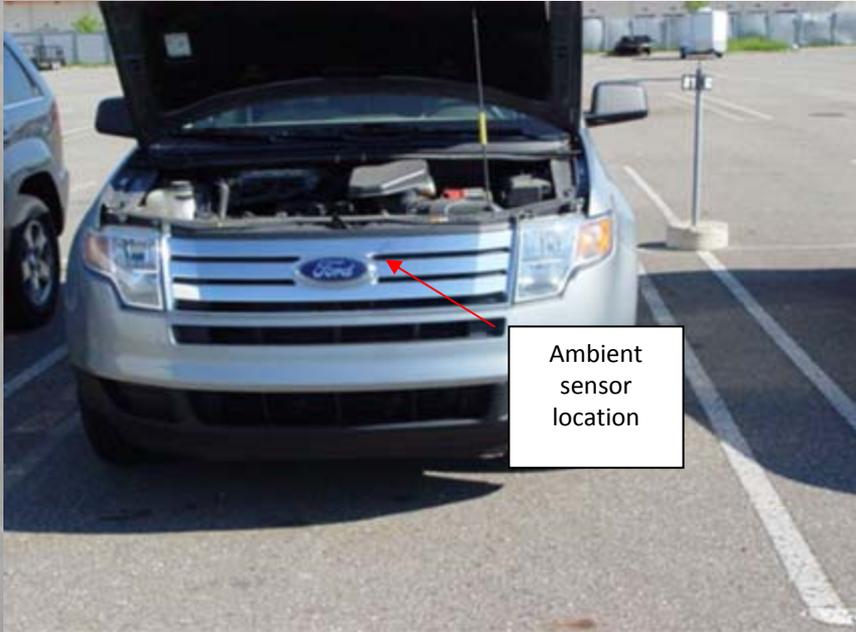
Antilock Braking System (ABS)
Brake Status
Stability Control
Traction Control

Detroit Testbed



- ❖ 7 Jeep Cherokees and 3 Ford Edges
- ❖ 11 testing days April 2009
- ❖ ~300K observations
- ❖ Started testing again Jan 2010

Temperature Sensor Locations

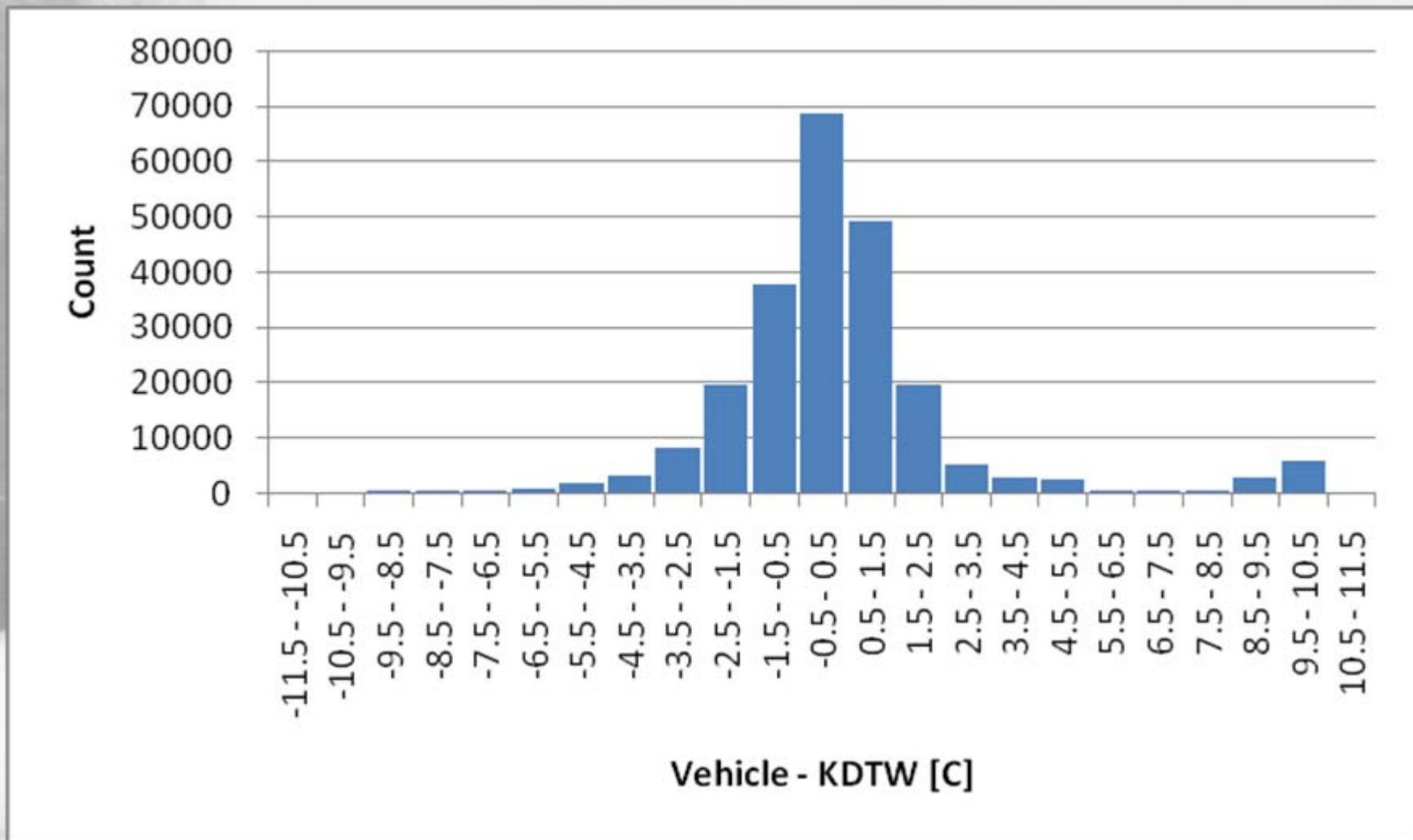


Jeep Pressure Sensor

- ❖ **Jeep 5.7L Hemi uses Manifold Absolute Pressure sensor to take pressure reading at initial key on and then updates the reading at Wide Open Throttle.**



Temperature accuracy (DTE09)



DTE2010 - Enhancements



QTT Inc Surface Patrol

- Air Temp
- Dew Point
- Surface Temp



Vaisala DSC111

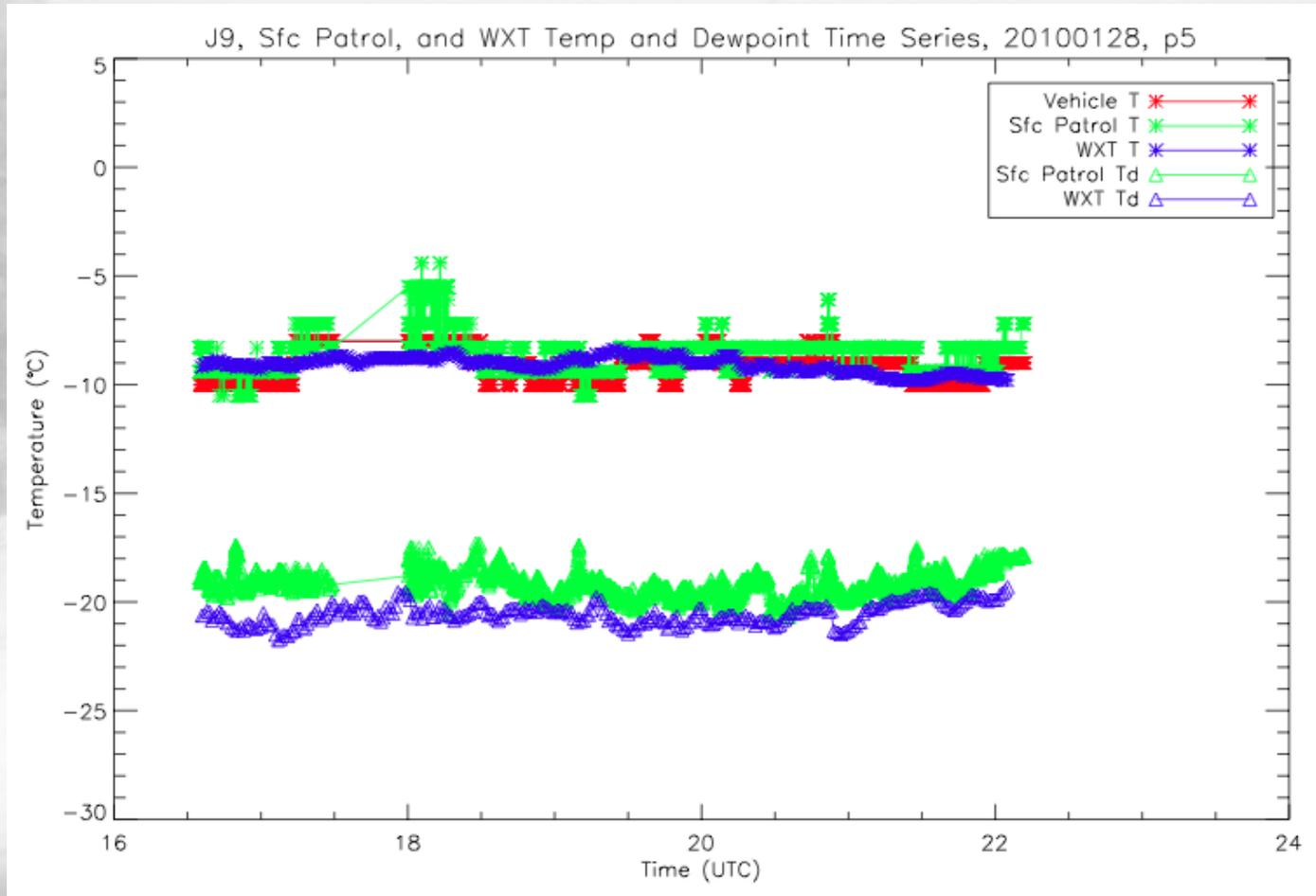
- Road Condition
- Road Friction
- Surface Temp



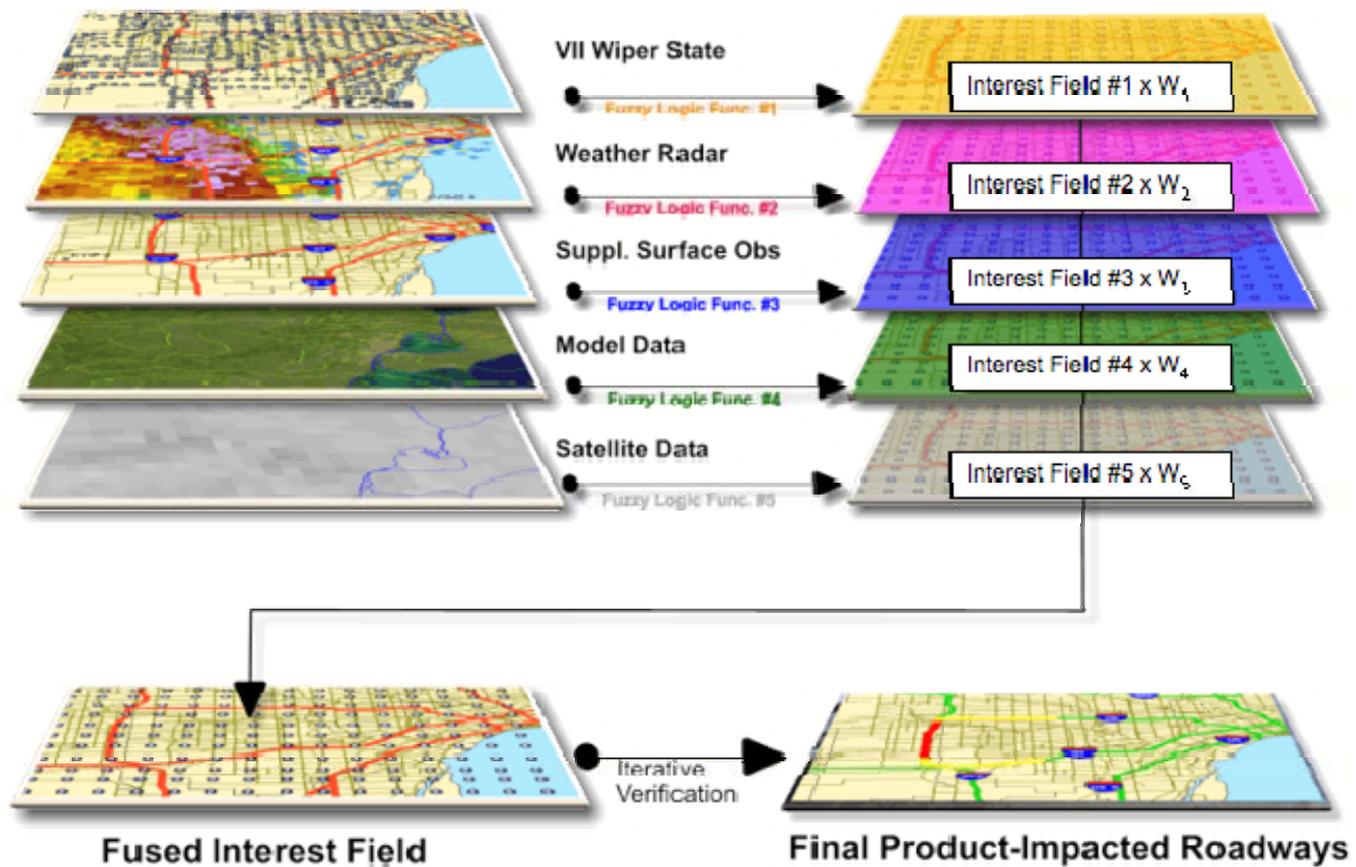
Vaisala WXT520

- Temp
- RH
- Pressure
- Wind

DTE2010

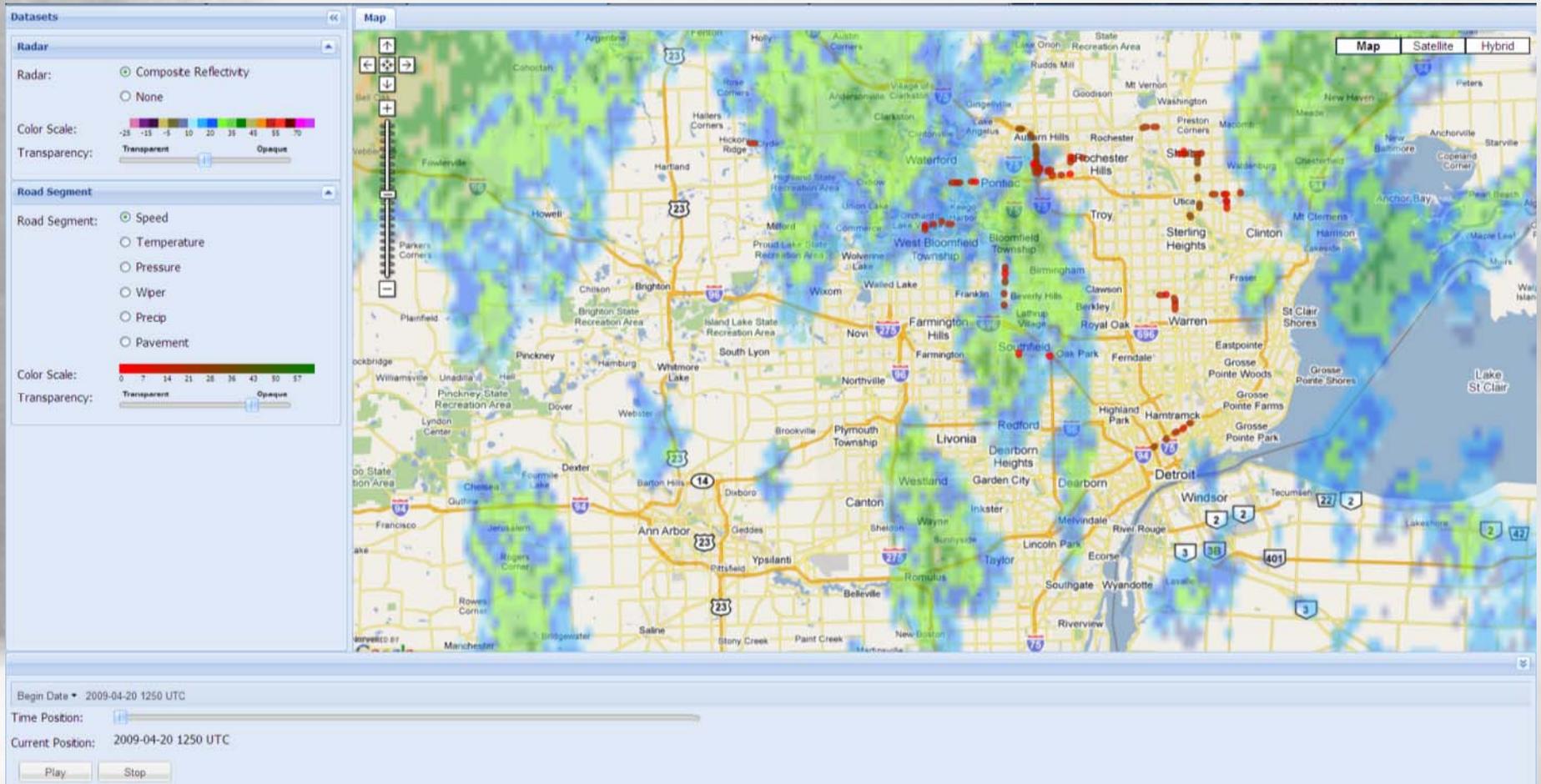


Precipitation algorithm

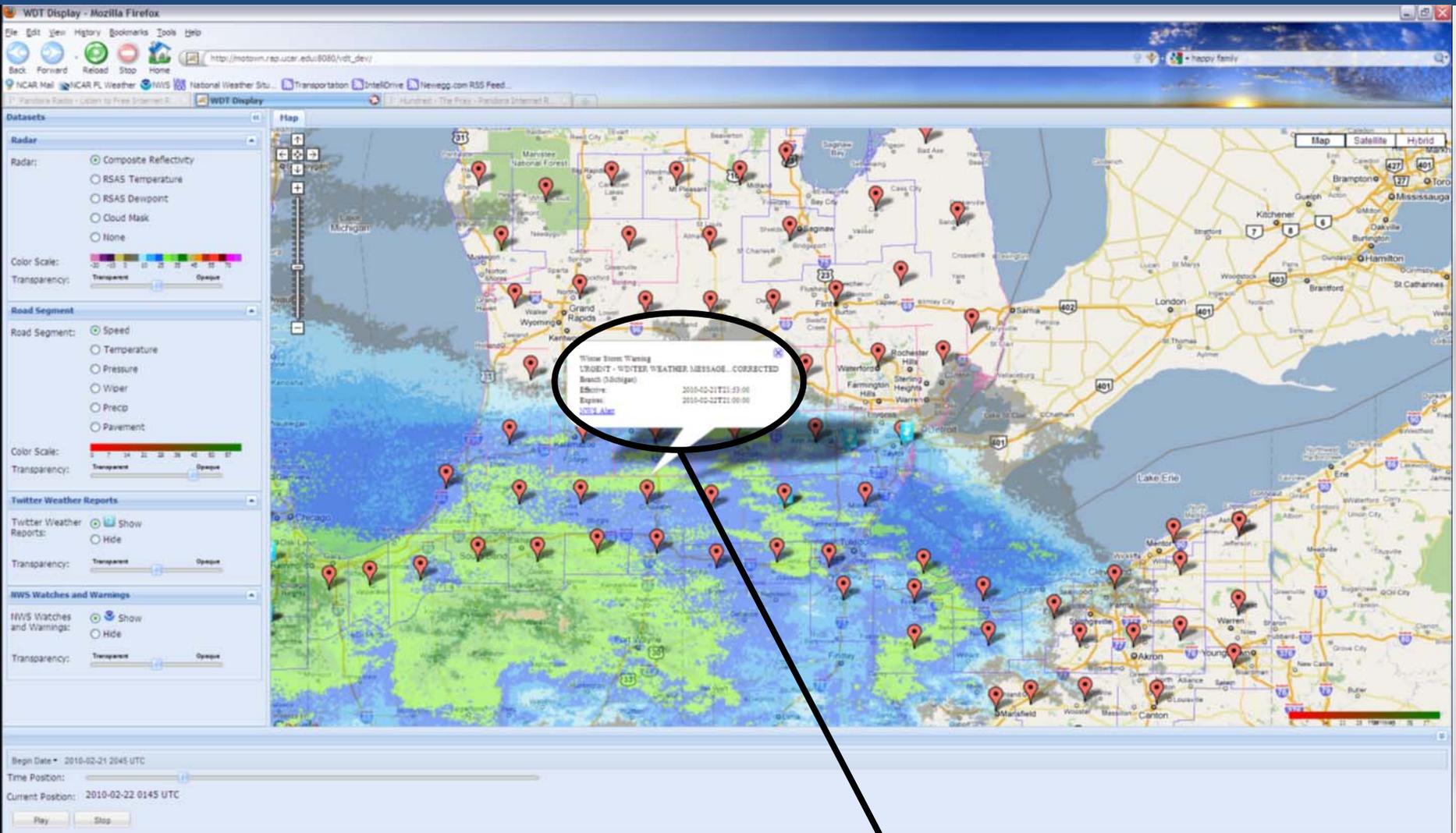


Heavy Precipitation

VDT display

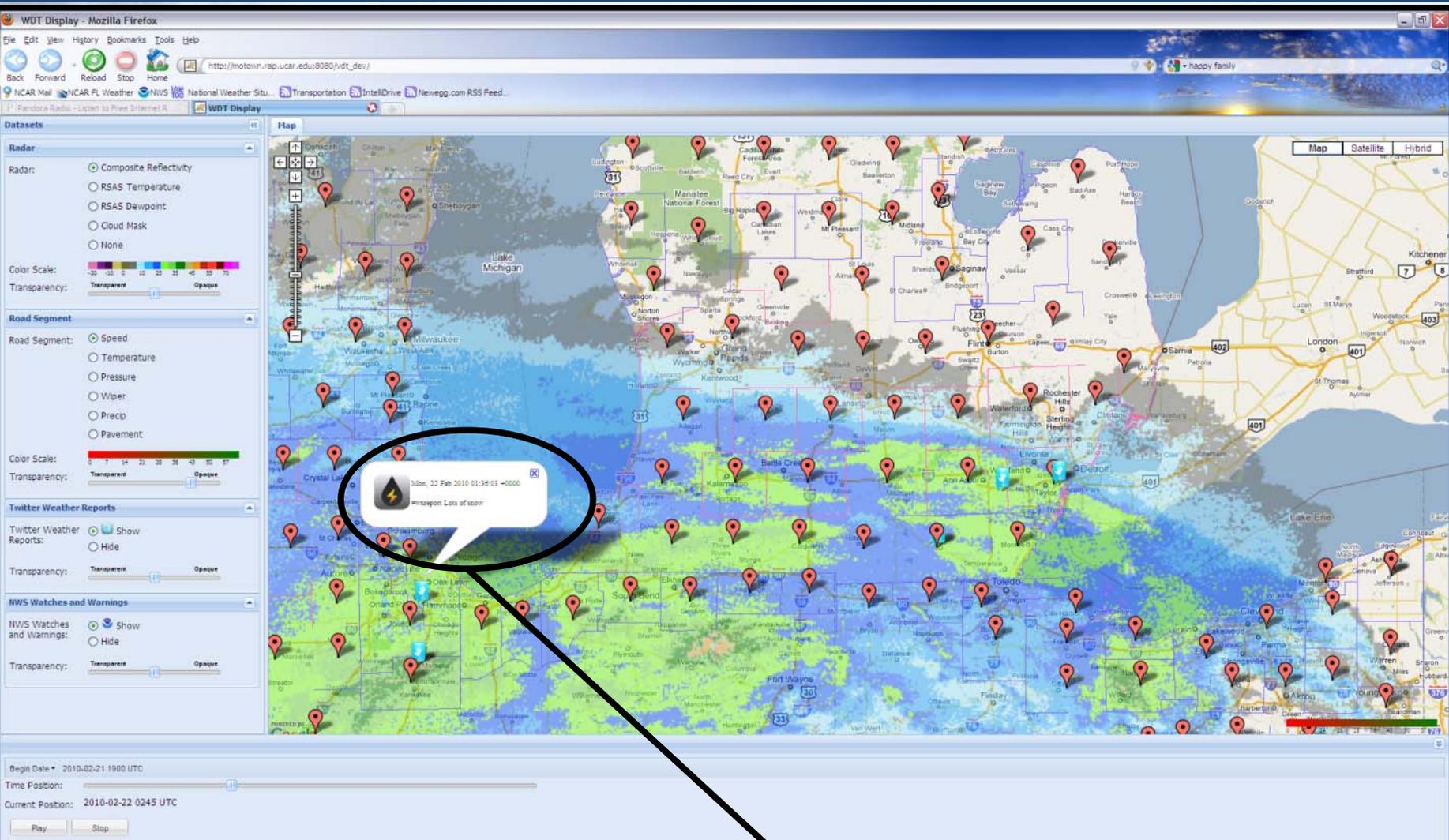


NWS watch / warning information



Active links to NWS watch / warning statements

Twitter Feeds



#wxreport Lots of snow

It's just the beginning it's not the end

*"Dream no small dreams for they have no
power to move the hearts of men."
--Johann Wolfgang von Goethe*

