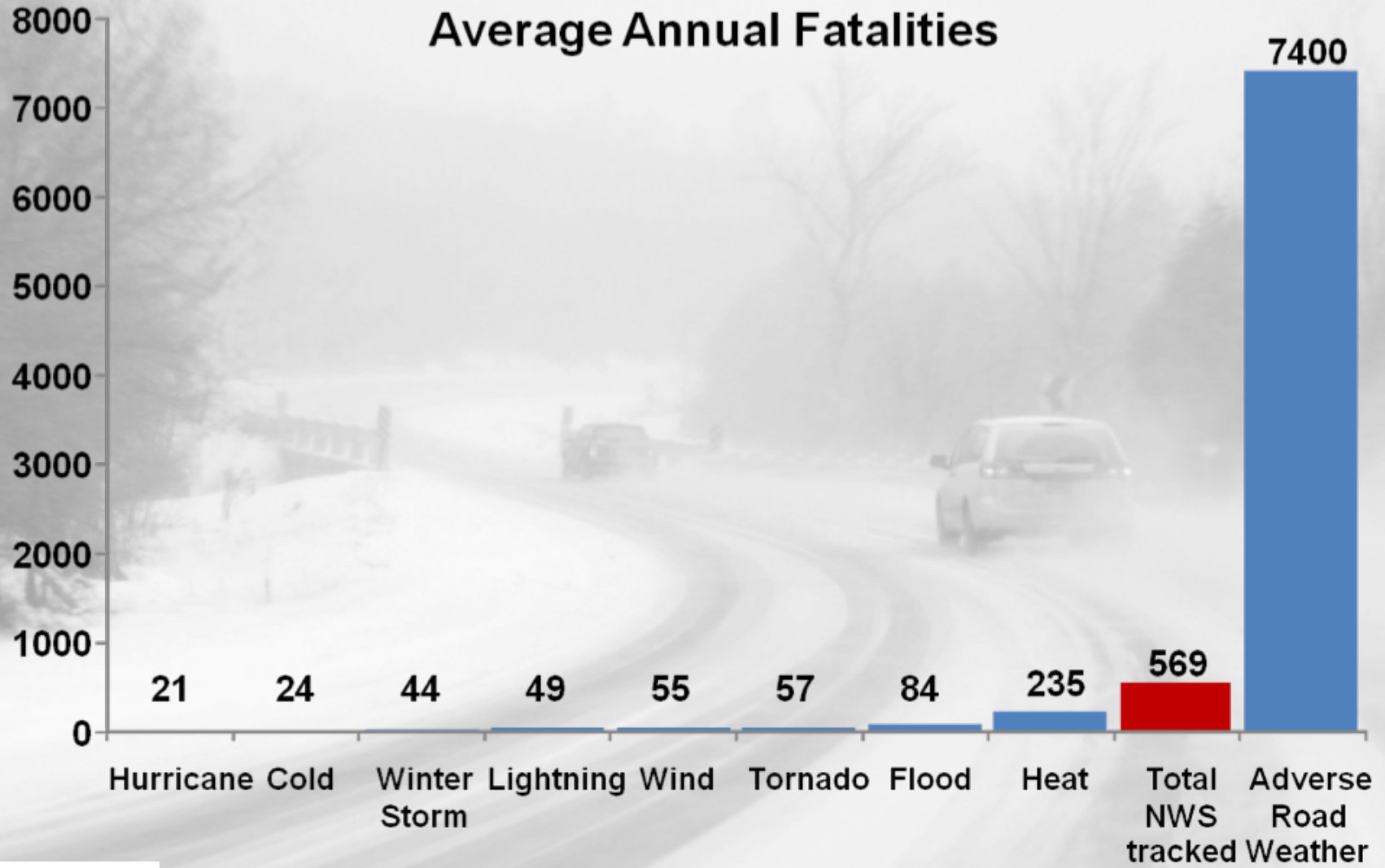


Overview of the Vehicle Data Translator

Michael Chapman, Sheldon Drobot, 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**



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

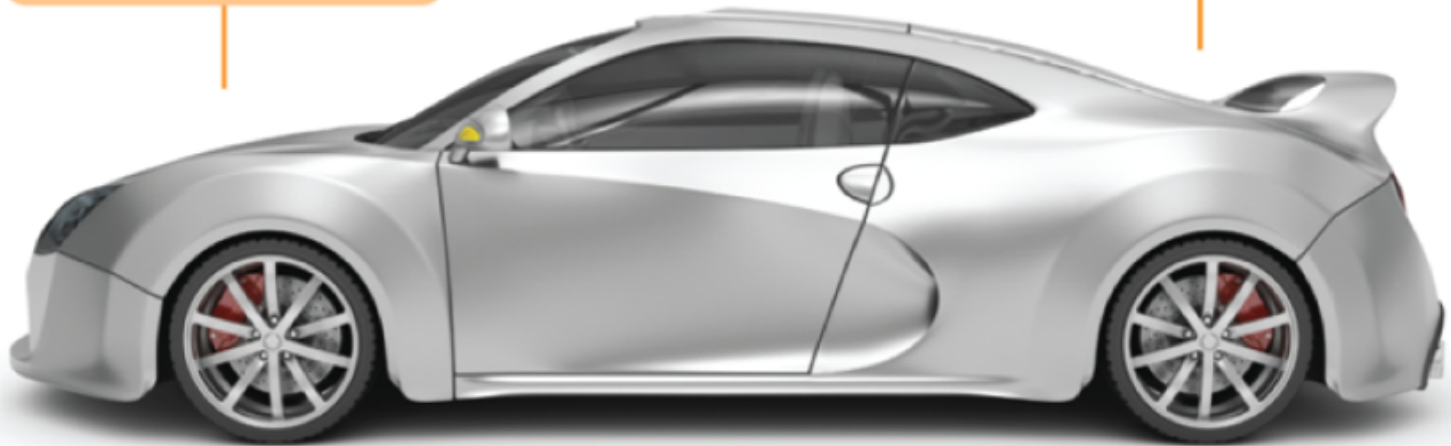


<http://www.intelldriveusa.org>

Vehicle data in IntelliDriveSM

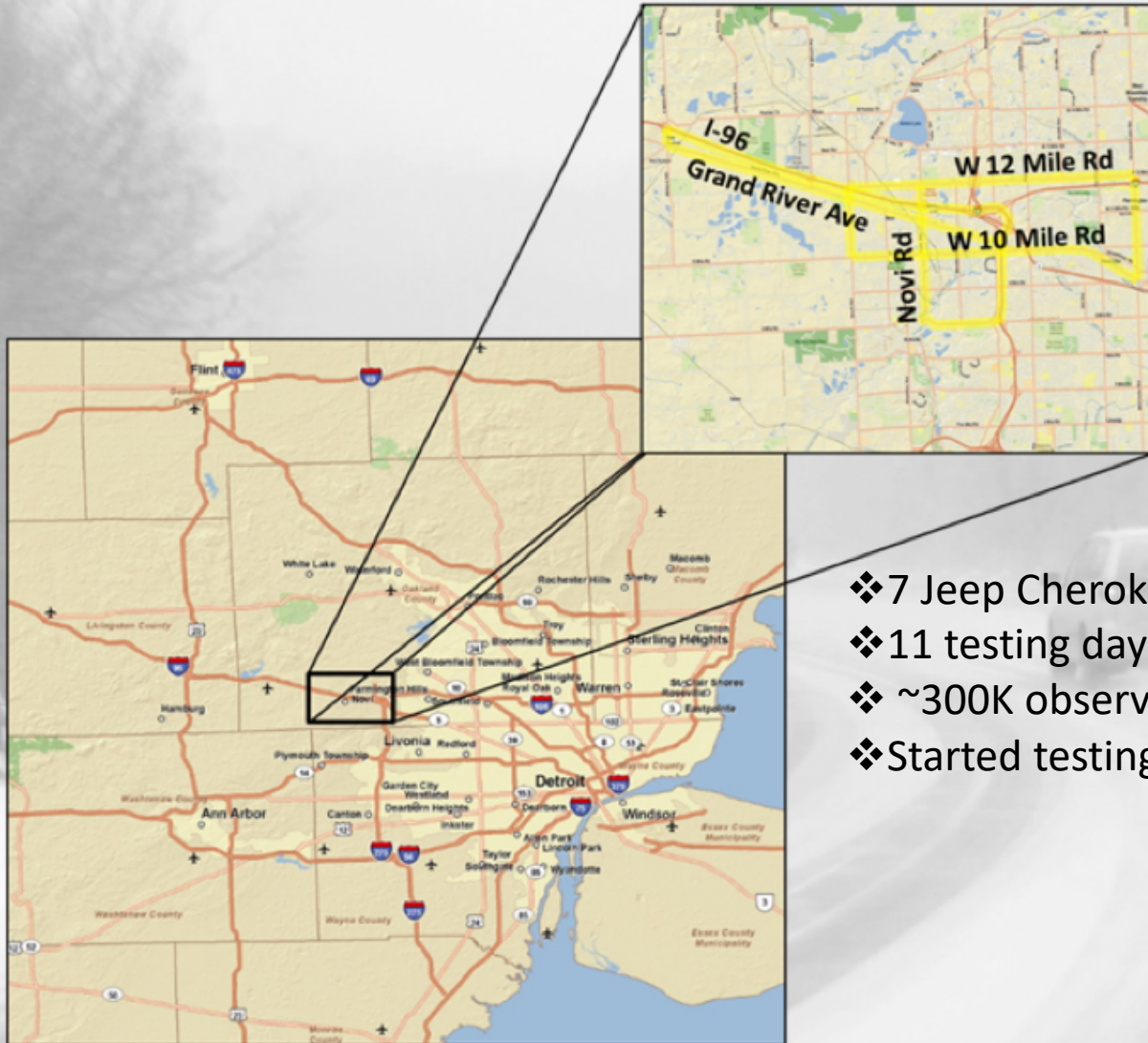
Sun/Rain Sensor
Windshield Wiper Setting
Head Lights Status
Ambient Air Temperature

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



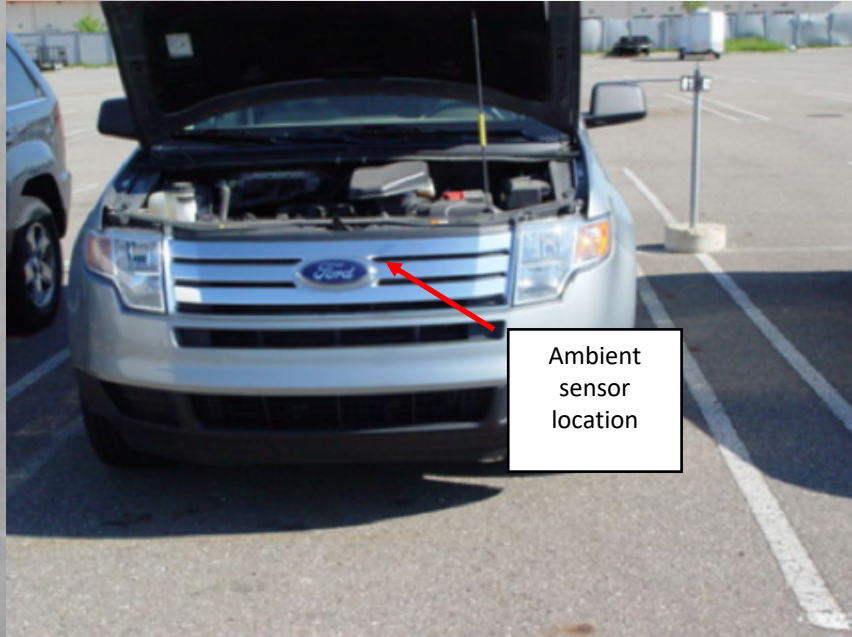
Antilock Braking System (ABS)
Brake Status
Stability Control
Traction Control

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.**

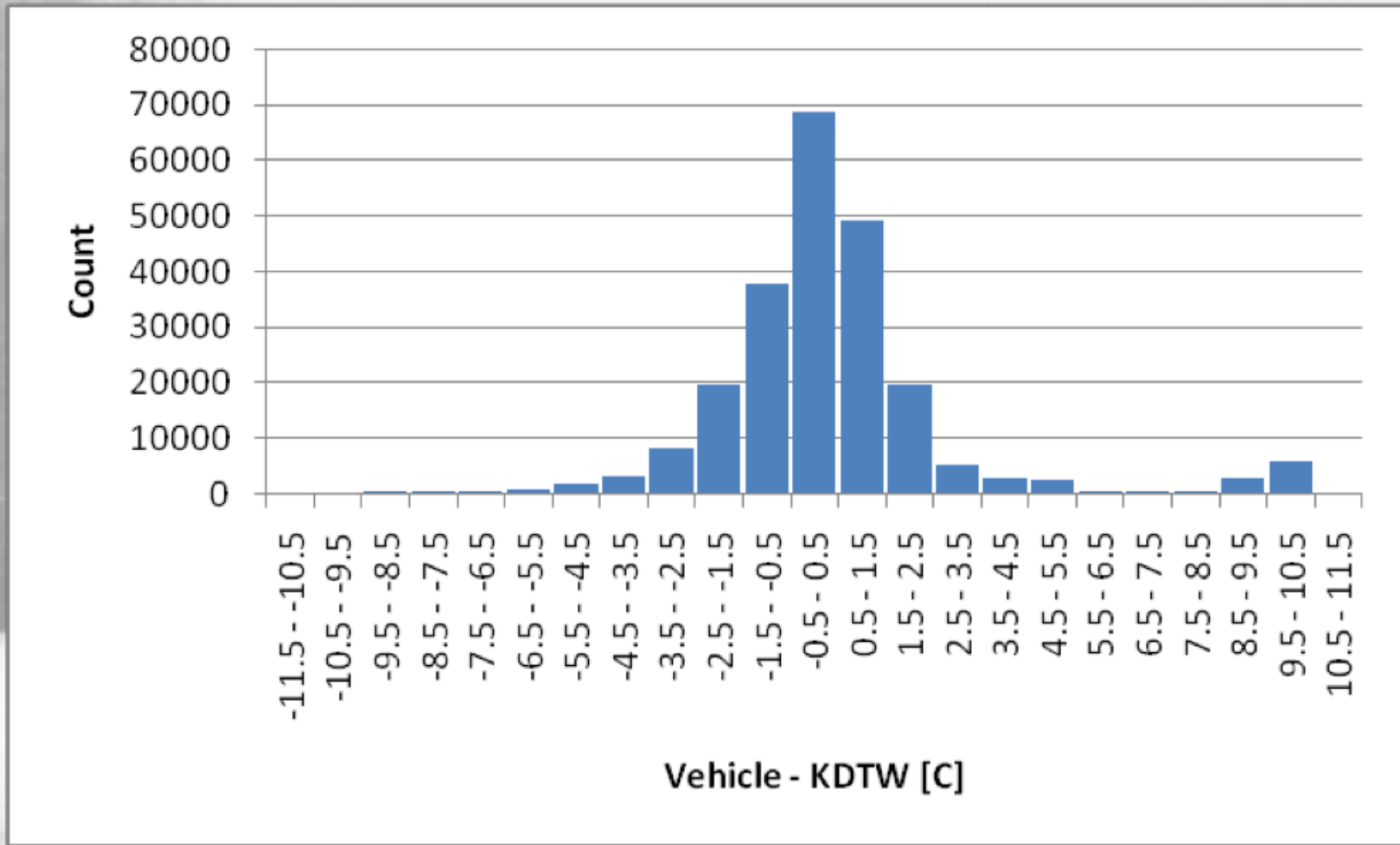


Ford Pressure Sensor

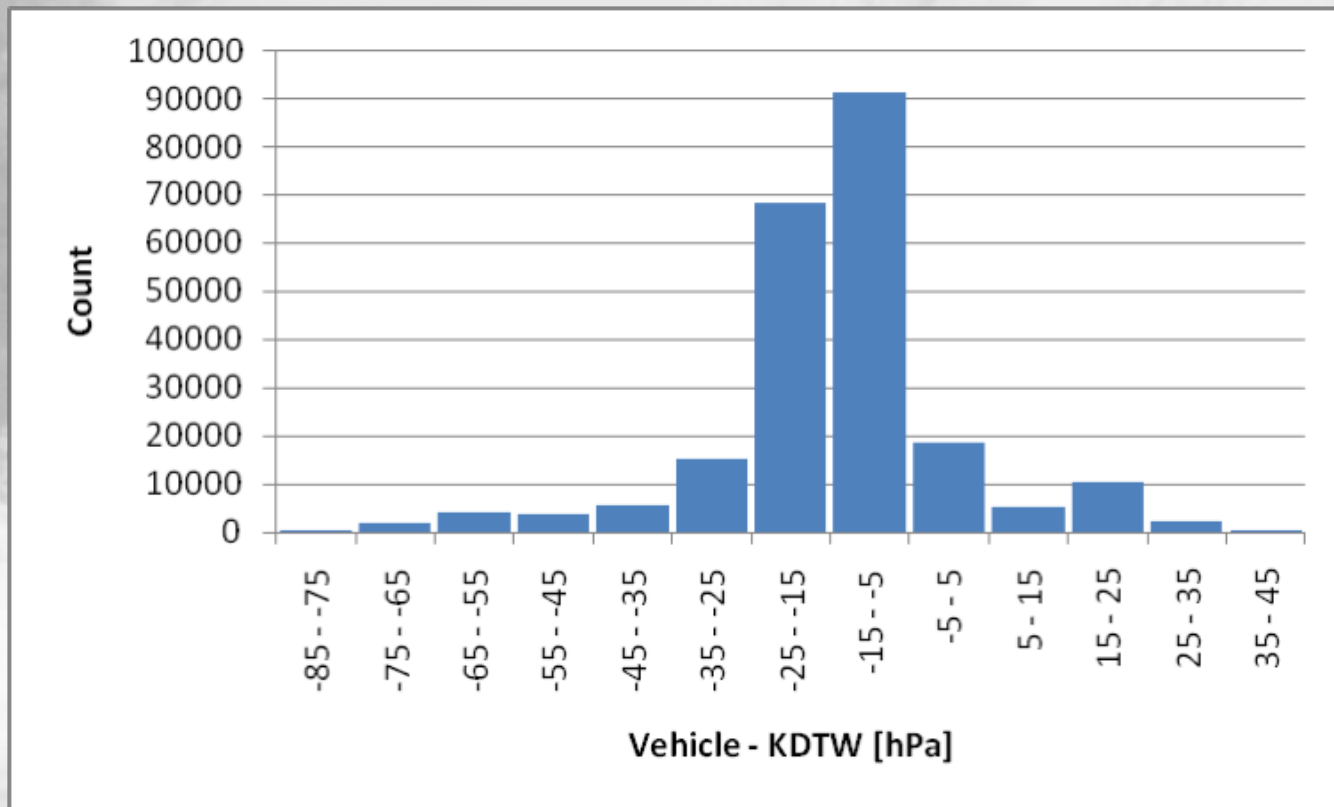
- ❖ **Ford Edge Mass Air Flow sensor calculates pressure**



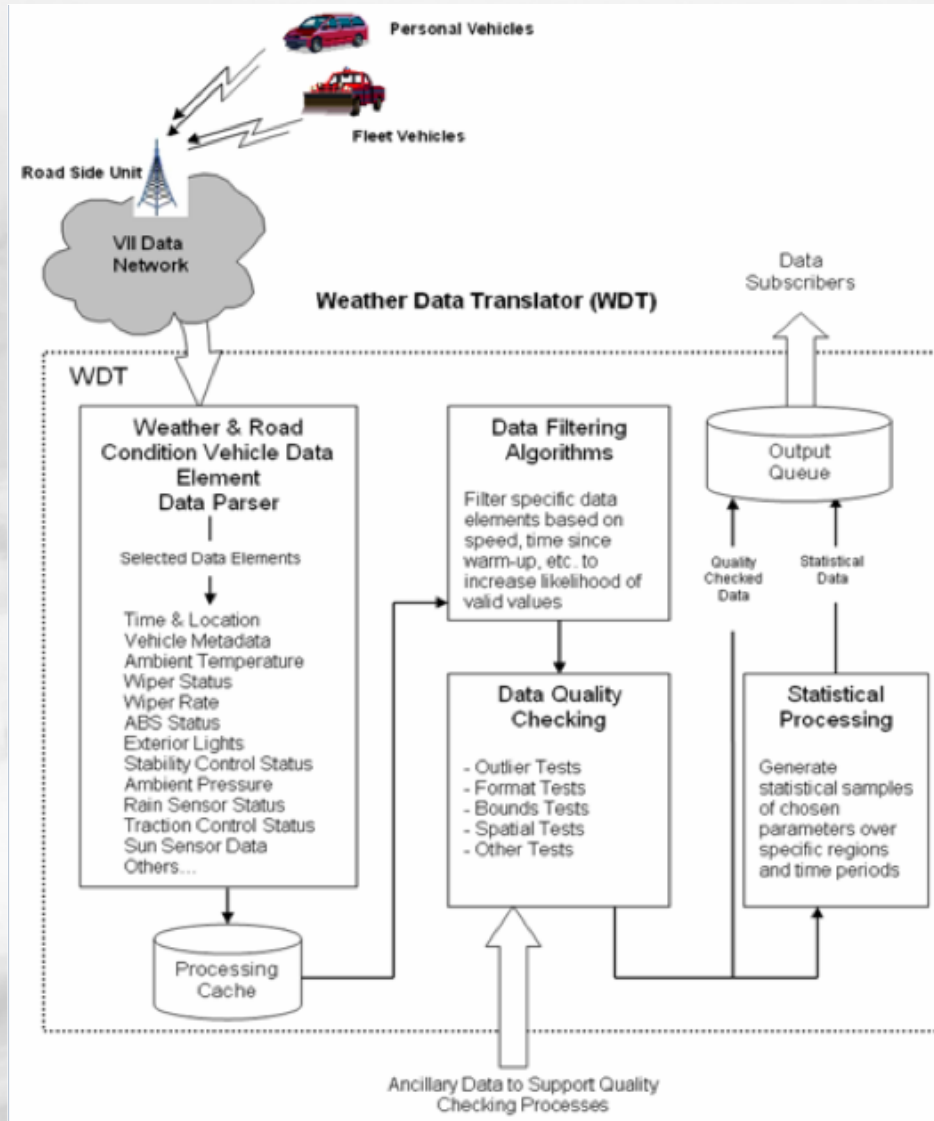
Temperature accuracy (DTE09)



Pressure accuracy (DTE09)



Vehicle Data Translator (VDT)

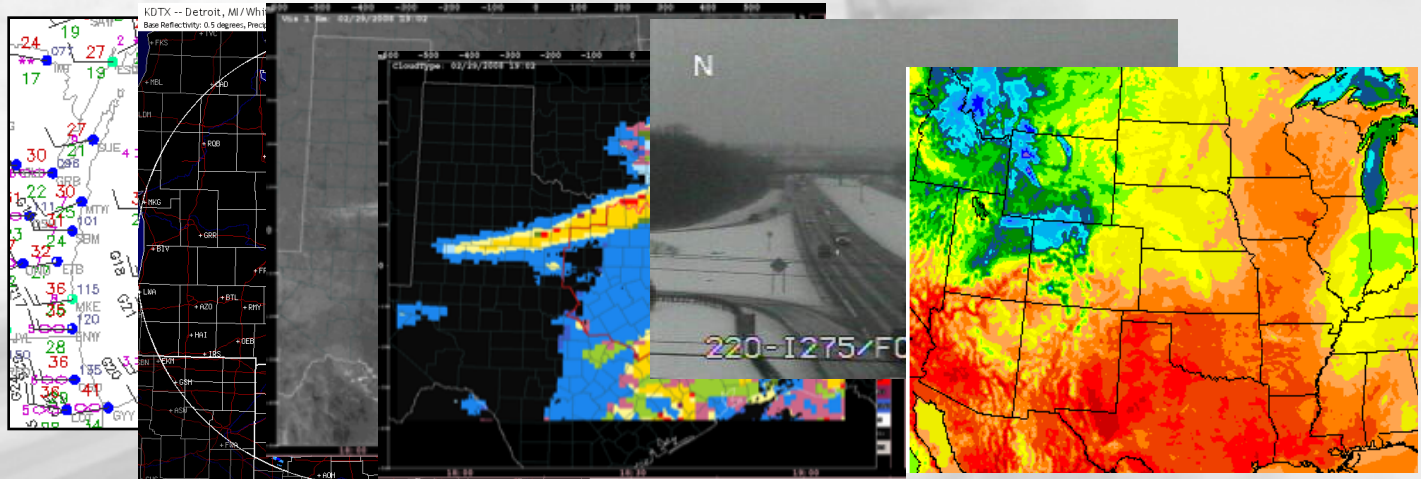
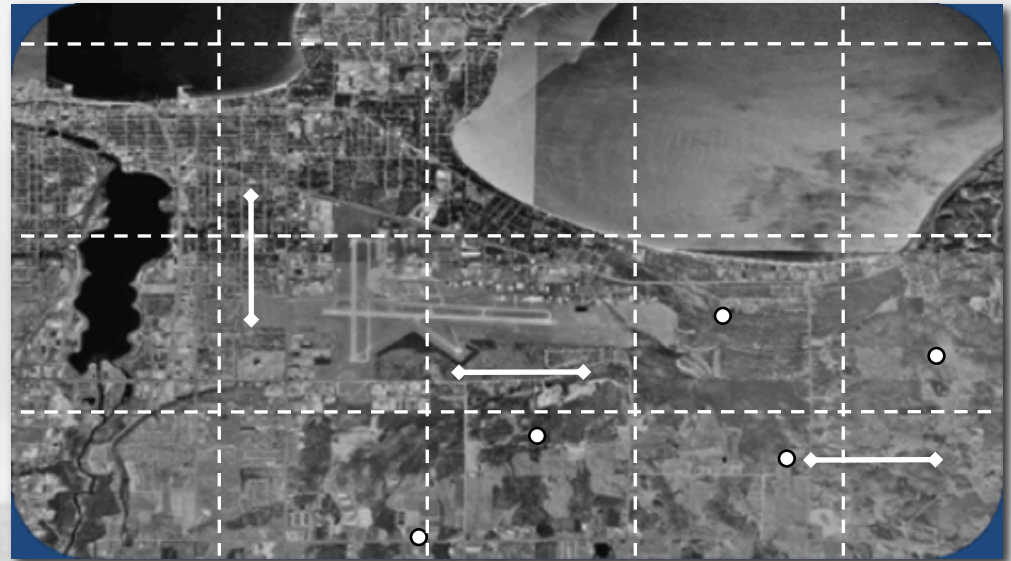


Vehicle Data Translator (VDT)

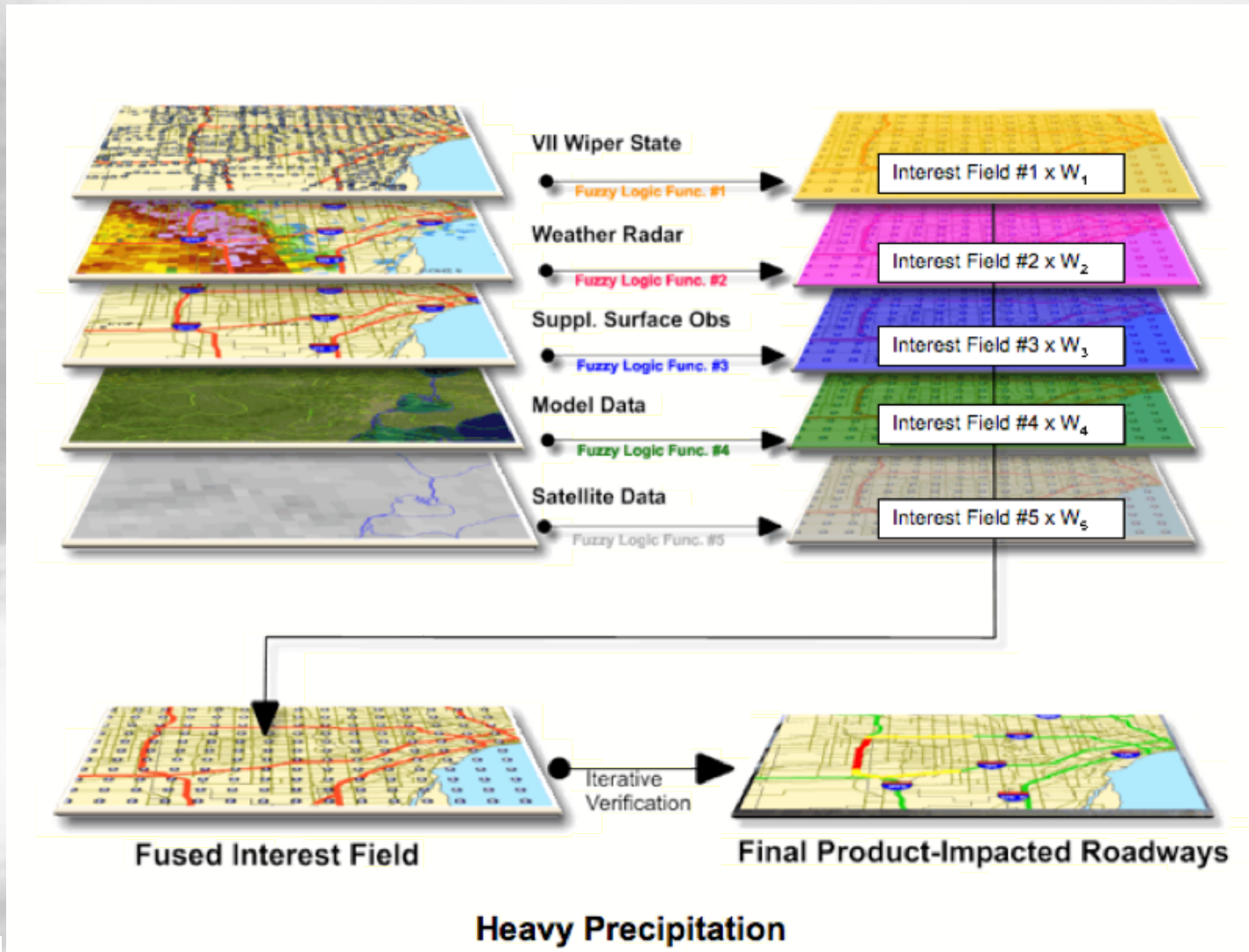
Data processing for weather applications and products

- Points
- Road segments (fixed and dynamic)
- Grids or regions

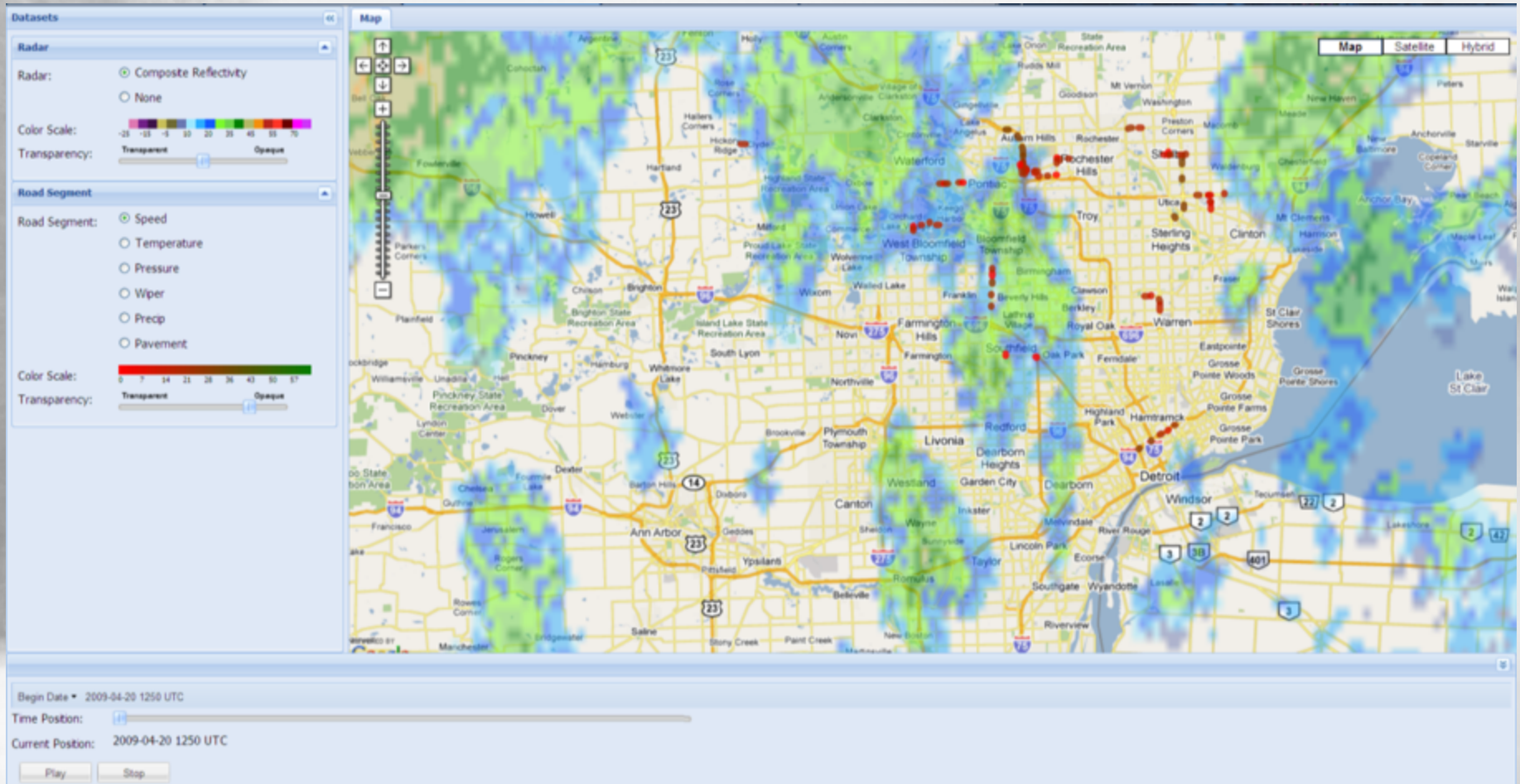
The use of ancillary data, as well as data fusion techniques, will be important



Precipitation algorithm



VDT display



DTE2010 - Enhancements



QTT Inc Surface Patrol

- Air Temp
- Dew Point
- Surface Temp



Vaisala DSC111

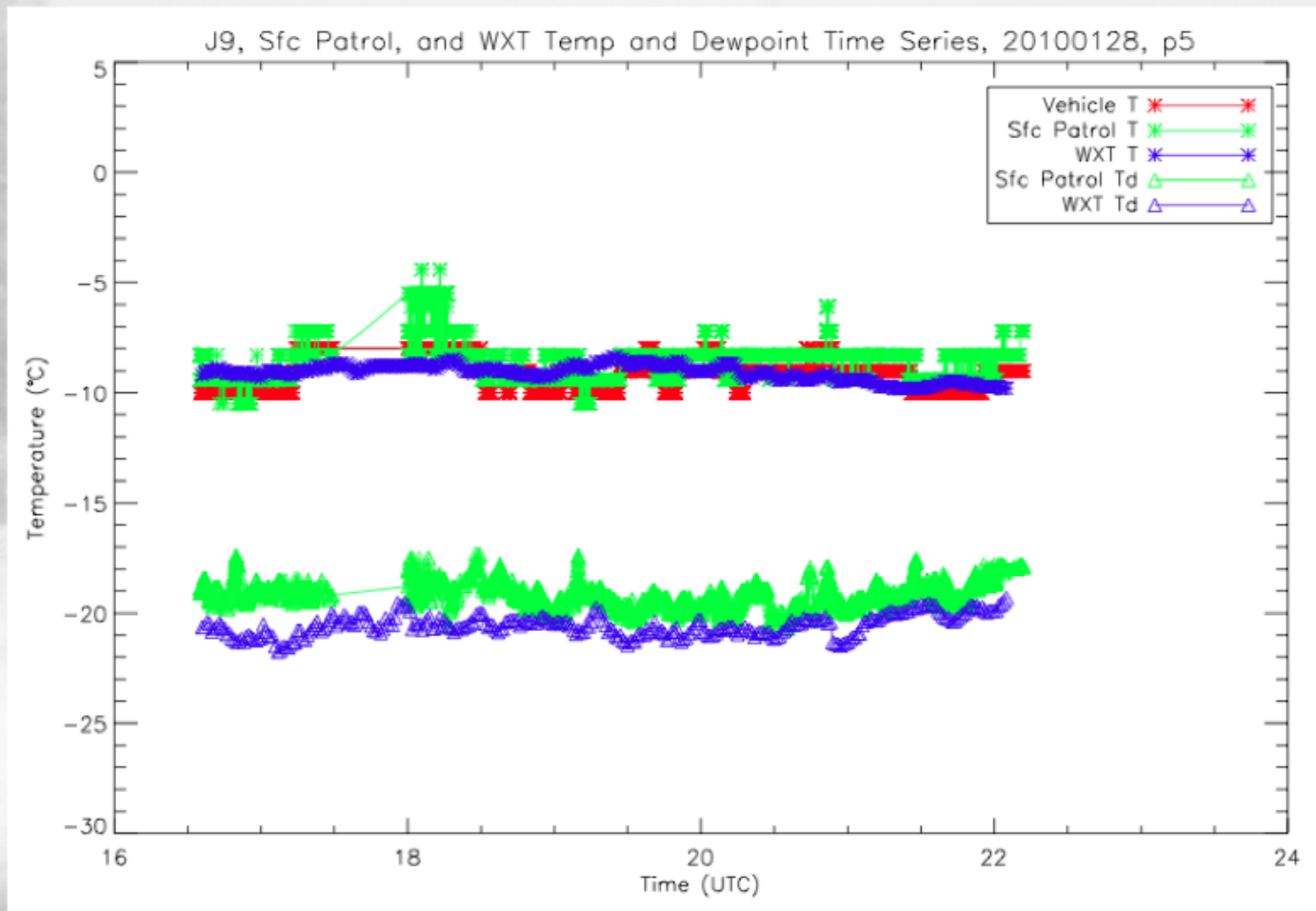
- Road Condition
- Road Friction
- Surface Temp



Vaisala WXT520

- Temp
- RH
- Pressure
- Wind

DTE2010



Thanks for your time

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