



Weather Telematics

Mobile Mesonet

Delivering Decision Support RdWx Data

“From the Ground Up!”

Presentation Agenda

- Weather Telematics Overview
- Capabilities & Services
- Applications
- Mobile Mesonet Status
- How to Partner with Us

Thank You

Helping to put Weather Telematics into Perspective.

- Dale Thompson / Connected Vehicle Program
 - Combination of “Real-time Data Capture & Management” and “Dynamic Mobility Applications!”
 - WT’s platform – **Dyna-Mo**
- Jim Koermer / Nationwide Network of Networks
 - Recommendations stated that:
 - Connected Vehicles and Road Weather
 - Dramatically improve Weather Related Decision Support

Weather Telematics Overview

- Expertise in Telematics and Mobile Sensing Systems focusing on safety, security, and sustainability
- Fact: Mobile Mesonets cannot exist without Telematics
- Largest private sector mobile observation and surveillance network in the world
- 2nd largest private sector surface observation network in the US
- Currently partnering with GST to provide NWS with nationwide coverage environmental data acquired from 1500 WT roving mobile platforms for enhancing weather prediction and forecasting
- Innovation Partner with GeoDecisions / near real-time weather data available on their IRRIS platform

Capabilities & Services

- End-to-End mobile observation system for road weather and environmental conditions along and near transportation and critical infrastructure.
 - Mobile sensing system design & fabrication (Dyna-Mo)
 - Instrument Integration, installation, sighting & testing
 - Fleet Partnerships and selection
 - Access to over 100,000 commercial vehicle across US
 - National to smart city signatures
 - Data acquisition, processing (QA), and dissemination
 - Data assimilation, integration, and application development

Capabilities & Services

- End-to-End mobile observation infrastructure design, implementation and maintenance
 - Experts in Telematics / AVL
 - Patented Compression Algorithm
 - Automotive grade, defect rate of less than .05%
 - Ruggedized and miniaturized design.
 - Completely scalable, Accept multitude of sensors, Cameras, Etc.
 - Tattle Tale sensors self calibrating / auto reboot
 - Provides most accurate black ice recognition capability, goes beyond simple Road Temp sensor technology
 - Network maintenance team of 3500 technicians across the US
 - Extremely cost effective / fraction of the cost - fixed

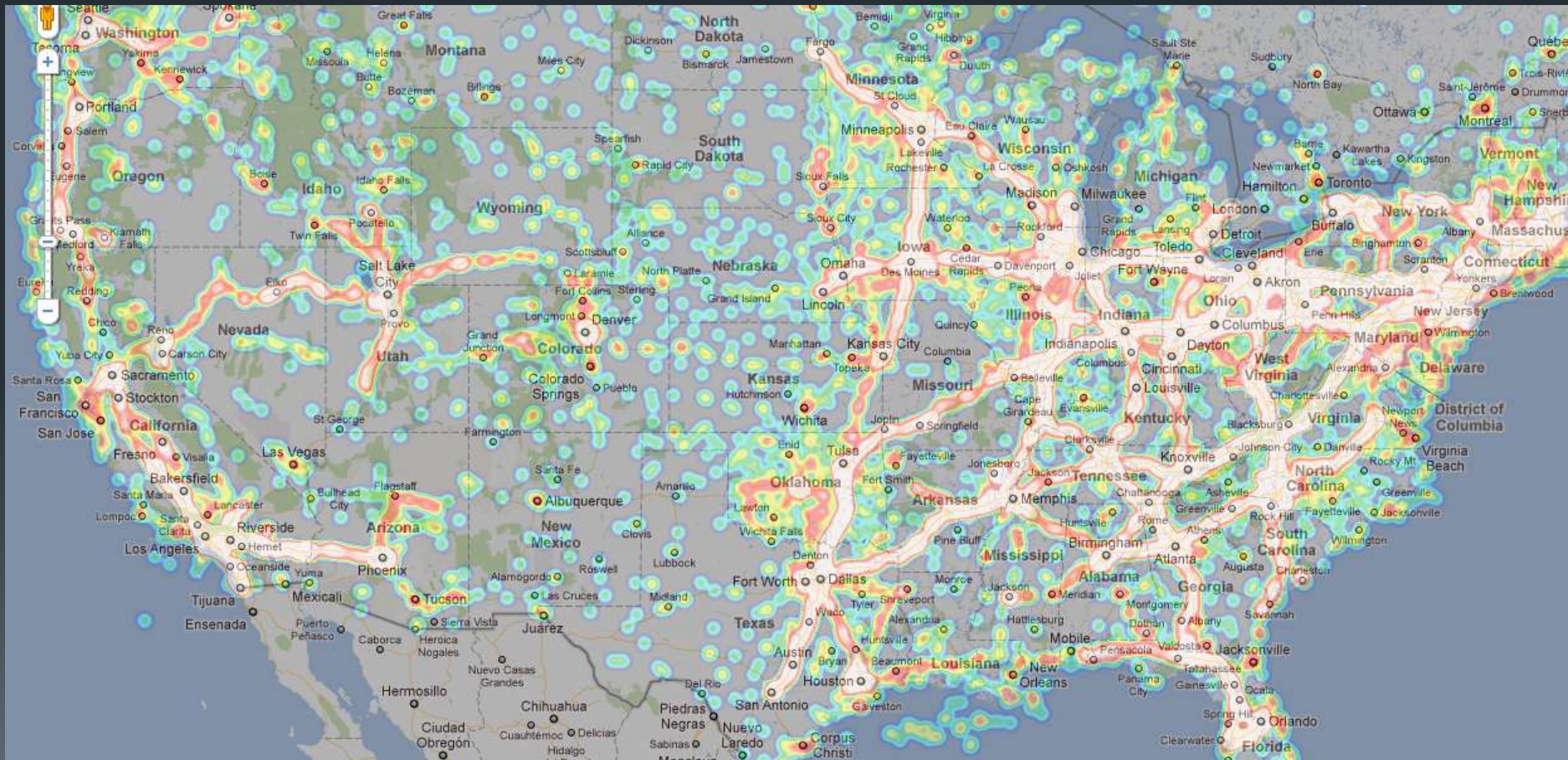
Applications

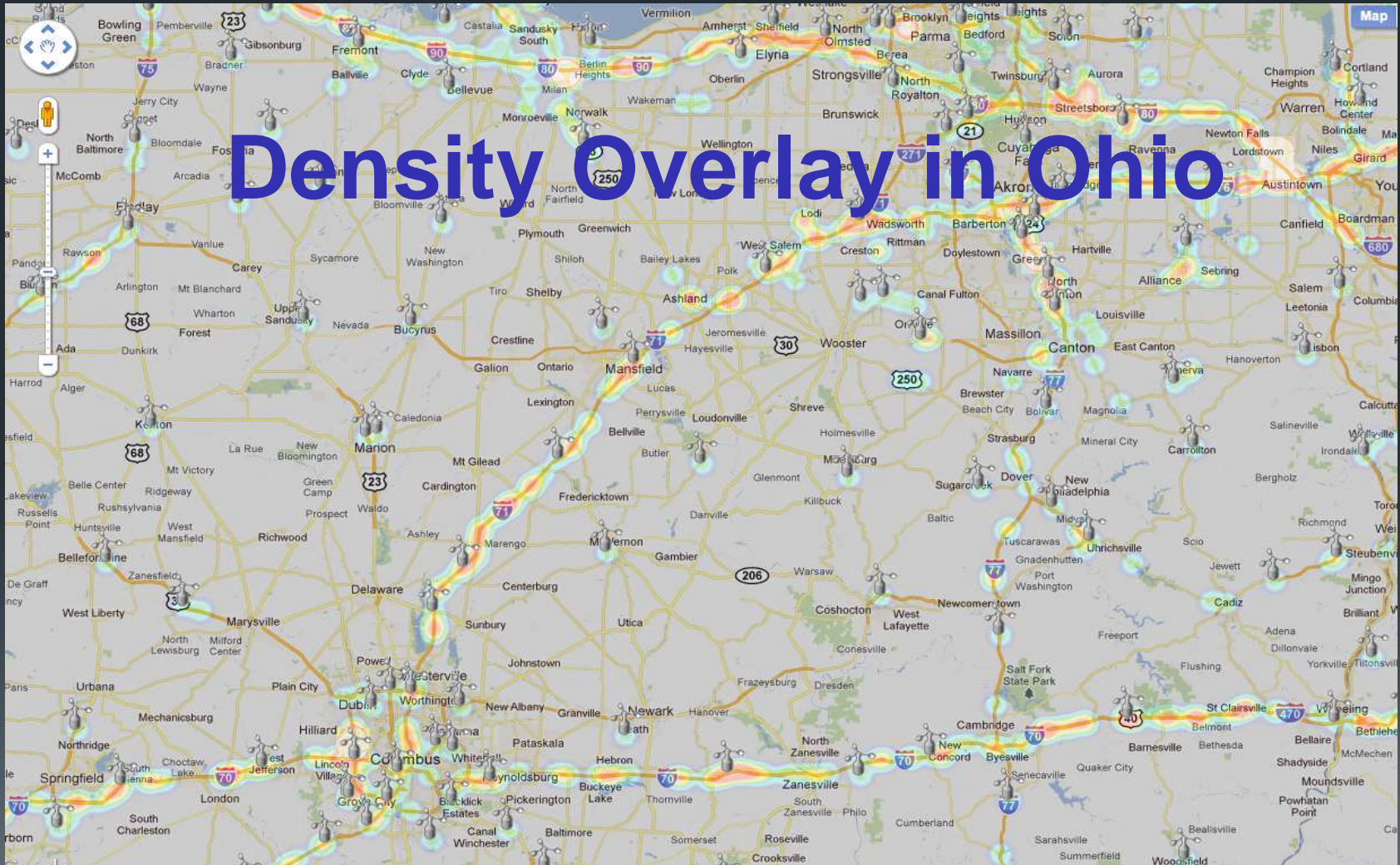
- Weather Telematics' sensing systems and observation and surveillance network (Mobile Mesonet) are capable of meeting many challenges that our nation and communities face today.
 - *Weather Forecast & Prediction*
 - *Transportation & Travel*
 - *Air Quality & Environmental*
 - *Homeland Security & Civil Defense*
 - *Communication & Broadcasting*
 - *Energy & Utilities*
 - *Infrastructure Maintenance & Assessment*
 - *Insurance & Risk Mitigation*

Mobile Mesonet Status

- Mobile Mesonet is intended to supplement existing observation data by filling in the gaps between fixed assets and providing targeted observation capability. Meteorologically approved!
- 1,500 vehicles traveling across US in major transportation corridors
- 10 seconds sampling interval
- 3k-6k observations per vehicle per day
- 8 data parameters Currently(Temp, Road Surface, Rain, Light, RH, Pressure, Dew Point, Ozone)
- CAN-Bus Parameters
- Tens of millions of observations per day
- Billion observations per year
- Tens of billions of data points per year

1-Day National Density Coverage





Density Overlay in Ohio

Mobile Mesonet Standards

- The Mobile Mesonet standards account for updated interfaces and communications protocols:
- Data Format
- XML format for a mobile platform observation
- Data Submission
- RESTful interface
- National Weather Service (NWS) land standards
- Society of Automotive Engineers (SAE) vehicle standards
- Instrument Siting - Equipment height above ground, exposure, and aspiration

Mobile Mesonet Standards

- Station Naming Convention
- Conversion from native vehicle name to MADIS station ID
- Position reporting
- GPS-derived latitude/longitude provided by the data provider
- Mobile Mesonet was developed to deliver data of High Level Quality based on industry accepted standards

Mobile Mesonet Data Quality

- GST implements a Data Quality Assurance program for WT
- Weekly Reports
- Monthly Reports
- Spot Checks
- Field Work
- Monthly and weekly reports capture comparisons of vehicles when in proximity of Automated Service Observing Systems (ASOS) and Road Weather Information Systems (RWIS)
- Instrumented Chase Vehicles

Data Quality Check Example

Vehicle 789 passing through an interchange near NYDOT 3239 RWIS



Partnering with Weather Telematics

- Purchase current observation data available through our Mobile Mesonet
- Install Weather Box on mobile assets to create a unique observation network
- Design custom applications to meet specific needs that incorporate mobile observation data / Telematics applications
- Do not have a monopoly on all the good Ideas
- Let's Innovate together