

## WEATHER-SAVVY ROADS



## Getting Data into the Weather Data Environment

The intent of this fact sheet is to inform those states implementing Integrating Mobile Observations (IMO) under Every Day Counts-4 (EDC-4): **Weather-Savvy Roads** how to share their data with the Weather Data Environment (WxDE).

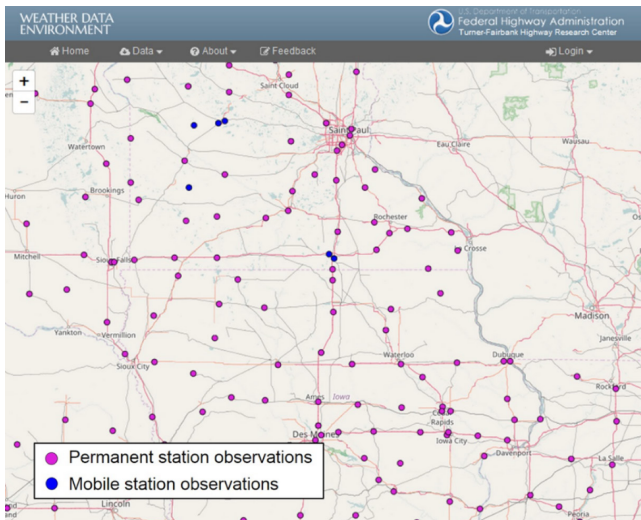
### Background

IMO implementations provide the potential for real-time access to road weather data at all points along a route; enhancing Traffic Management Center (TMC) situational awareness; new data sources for Weather Responsive Traffic Management and Maintenance Decision Support System applications; and objective condition reporting for performance measurement. The WxDE serves as a transportation-related road weather observation repository and provides a research tool through which such data can be shared with the road weather research and development community, transportation agencies, academia, and weather service providers. Fixed and mobile road weather data collection, storage, and sharing should follow the appropriate standards (see information listed on page 2).

### Top 5 Benefits of Sharing IMO (Integrating Mobile Observations) Data

1. Fills temporal and spatial gaps in road weather data.
2. Embedded data quality checks ensures high quality data and provides an indication of sensor health.
3. A one-stop shop for road weather data.
4. Viewing data in real-time and across state boundaries improves situational awareness of TMC operators to manage traffic and dispatch maintenance.
5. Enriches the road weather database for research and other related activities.





**Figure 1: Permanent station observations and mobile station observations.** (Source: FHWA)

The purpose of the WxDE is to demonstrate the value of sharing real-time fixed and mobile observations from environmental sensor stations, as illustrated in the map above. The system checks the quality of the observed data and can infer additional road weather conditions when combined with ancillary data. Real-time data can be browsed on a map, queried for a report, or subscribed to as a data feed.

Access the WxDE at <https://wxde.fhwa.dot.gov/>. The WxDE is a research tool and will not run in perpetuity. Users looking for an operational data platform of road weather observations should access the Meteorological Assimilation Data Ingest System, provided by the National Oceanic and Atmospheric Administration, at <https://madis.ncep.noaa.gov/>.

## Steps to Share IMO Data

The steps to share IMO data with the WxDE are described below.

### 1. Express Interest to FHWA

The first step to share weather and road condition data with the WxDE is to send an email to Gabriel Guevara ([Gabriel.Guevara@dot.gov](mailto:Gabriel.Guevara@dot.gov)) at the FHWA Road Weather Management Program. Once the email is received, a process will be initiated to work with the appropriate contractors to accomplish the following steps.

### 2. Execute a Data Sharing Agreement

Many of the EDC-4 IMO transportation agencies have existing WxDE data sharing agreements. This will be verified to see if one is needed. The purpose of the data sharing agreement is to agree to contribute and make available relevant Road Weather Information System (RWIS) data (i.e., stationary, portable, and mobile).

### 3. Establish the Data Sharing Approach

The WxDE is structured to accept data in any format. Typically, an ASCII or XML format works the best. Understanding the file structure, observation types, and units will ensure the ascertainties are correctly collected and shared.

The first step is to send an example observation file. Next, determine how to share the file. This can be accomplished via pushing data files to the WxDE, having the WxDE pull data files (from a server, with credentials), or having the WxDE collect the information from a streaming method (from a server, with credentials). The contractor team will work to validate that the information is collected correctly and identify any challenges.

### 4. Begin Sharing Data

Setting up a data sharing approach, testing the process, and making whatever refinements are needed is all that is required to share IMO data with the WxDE.

## Related Standards

- **National Transportation Communications for Intelligent Transportation System Protocol (NTCIP) 1204.** Currently active; describes static and mobile environmental sensor station interface standards.
- **J2735.** Currently active; a dynamic short range communication data dictionary that allows environmental sensor data to be transmitted vehicle-to-vehicle with the Basic Safety Message Part II and configurable environmental sensor data collection with the probe vehicle data and the probe data management.
- **J2945/3.** A future standard to leverage requirements for vehicle-to-infrastructure weather applications with J2735 messages using environmental data collection and distribution. Completion is expected by December 2018.