

2011 Road Weather Management Stakeholder Meeting

New Brunswick – Nova Scotia *Clarus* Integration Plus

AMEC Environment and Infrastructure
Vision Météo Plus



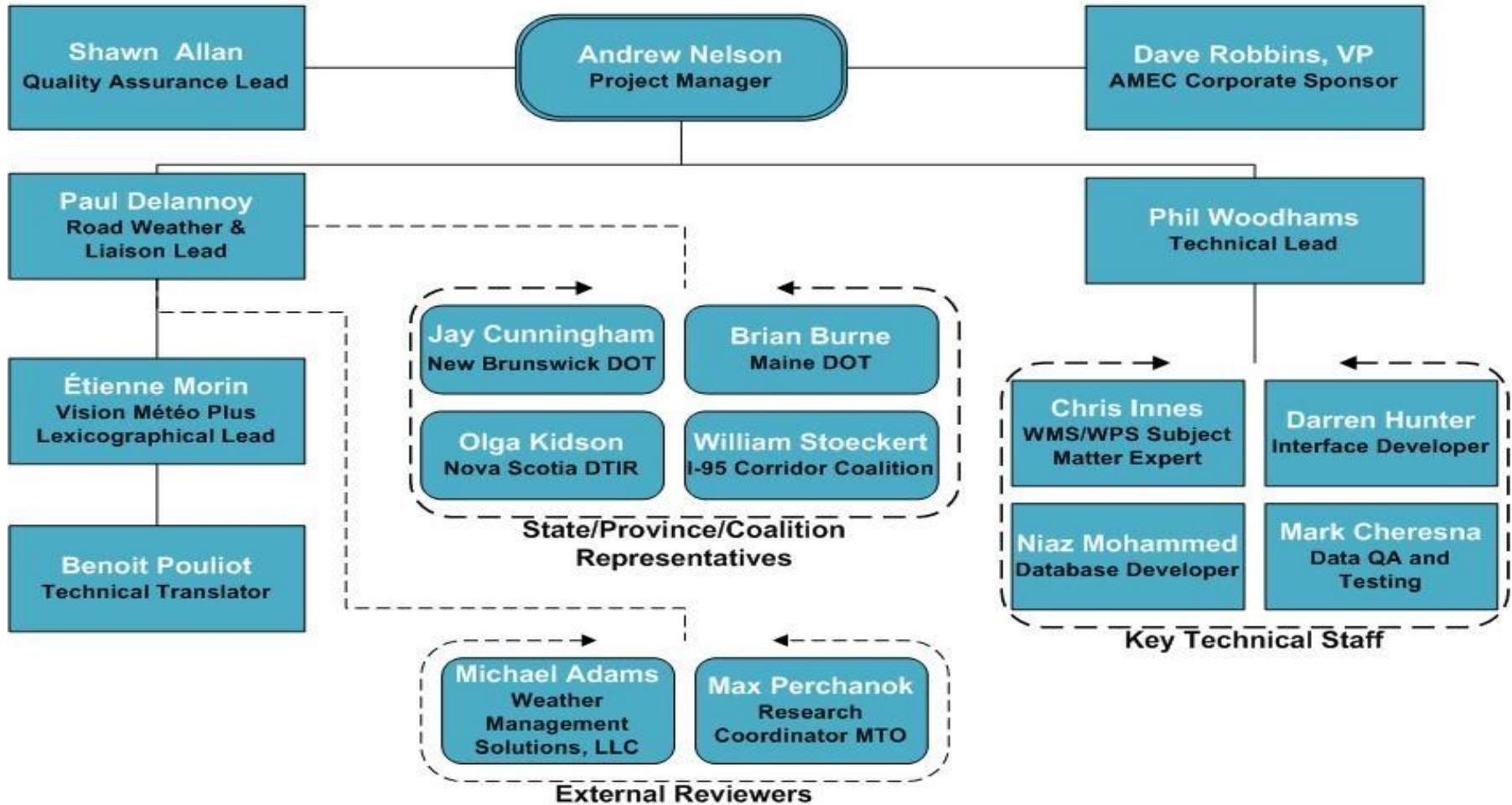
Outline

- ▶ Introduction
- ▶ Project Goals and Rationale
- ▶ Project Results
- ▶ Close



Introduction

- ▶ FHWA Broad Agency Announcement No. DTFH61-10-R-00015
 - ▶ Research on *Clarus* System Data
 - ▶ Issued 15 March, 2010
 - ▶ Awarded 27 September, 2010
 - ▶ Completed End September, 2011
- ▶ Project Players...



Project Goals

1. Integrate ESS/RWIS data from New Brunswick (NB) & Nova Scotia (NS) into *Clarus*;
2. Demo *Clarus* utility for road maintenance staff across Maine, NB, and NS using GIS industry standards;
 - ▶ Run a Demo Workshop for maintenance leads;
3. Prepare a vetted English-French lexicon of road weather data elements;
4. Develop a bilingual *Clarus* interface; and
5. Develop proposals for the integration into *Clarus* of Infra-Red (IR) Thermal Fingerprints (TF).

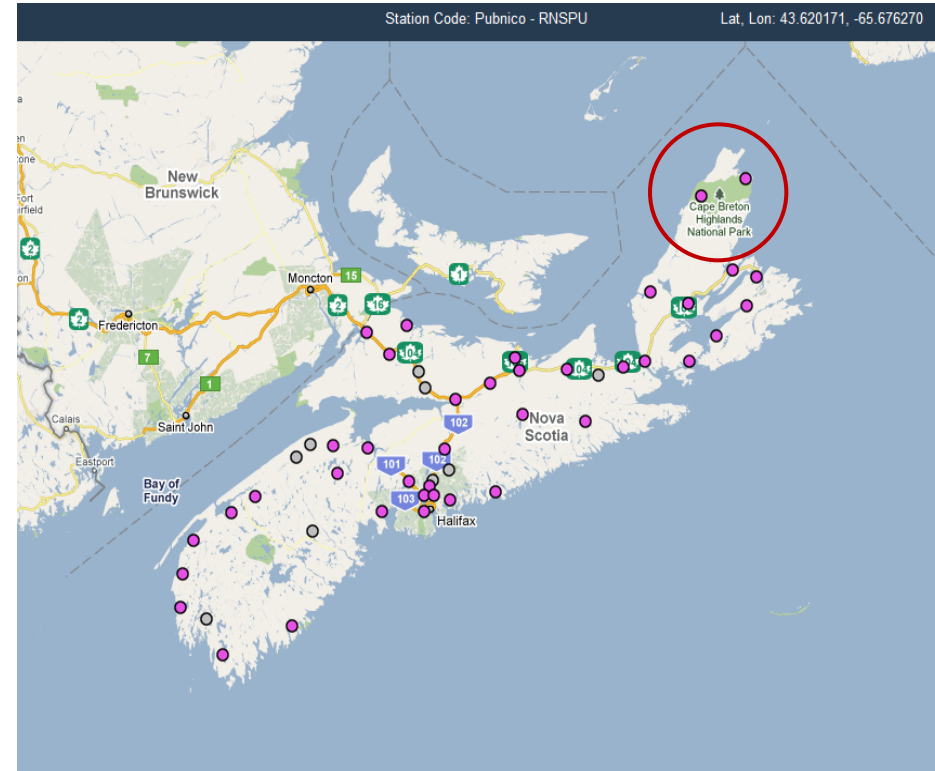
Project Rationale

- Expand *Clarus* coverage from I-95, across NB/NS to port of Halifax; major deep-sea ocean port open year round;
- Provide data-based tools to allow better tracking of road weather impacts of storms across the Maine, NB, & NS;
- Demo application of Open GIS Consortium standards (WMS and WPS) to integrate and display datasets from external sources; and
- Prepare *Clarus* to achieve design objective of integrating RWIS/ESS data from across North America by providing assistance with part of multi-lingual rendering requirement (English-French).

Project Results

1. Integrate ESS/RWIS data from NB & NS into *Clarus*:

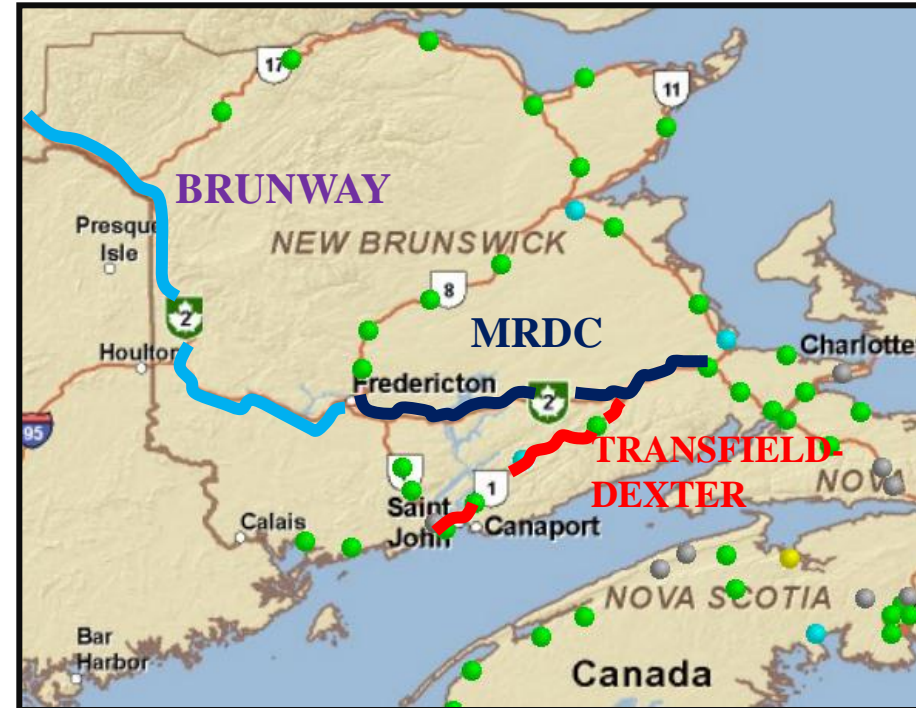
- Nova Scotia acceptance letter – Paul Richard, November 2010;
- Cape Breton Highlands National Park acceptance e-mail – Claudie Maillet, January 2011;



Project Results

1. Integrate ESS/RWIS data from NB & NS into *Clarus*:

- New Brunswick challenges: staff changes, election & change of government, re-tendering;
 - Agreed to inclusion with access-controlled demo system;
- Privately Operated Routes:
 - MRDC (Hwy 2) – owns 7 RWIS: support of Ross Mathers;
 - Brunway (Hwy 2) – 5 RWIS owned by Pelmorex – all supportive; and
 - Recently, Transfield-Dexter (Hwy 1) awarded June 2011: 4 + 2 RWIS.
- **Dialogue engaged; efforts will continue to Project close & beyond.**



Project Results

2. Demo *Clarus* utility for road maintenance staff across Maine, NB, and NS using GIS industry standards;

■ *Clarus* System:

- RWIS locations colored according to reception status;
- Mouse-over provides table of QC check results.

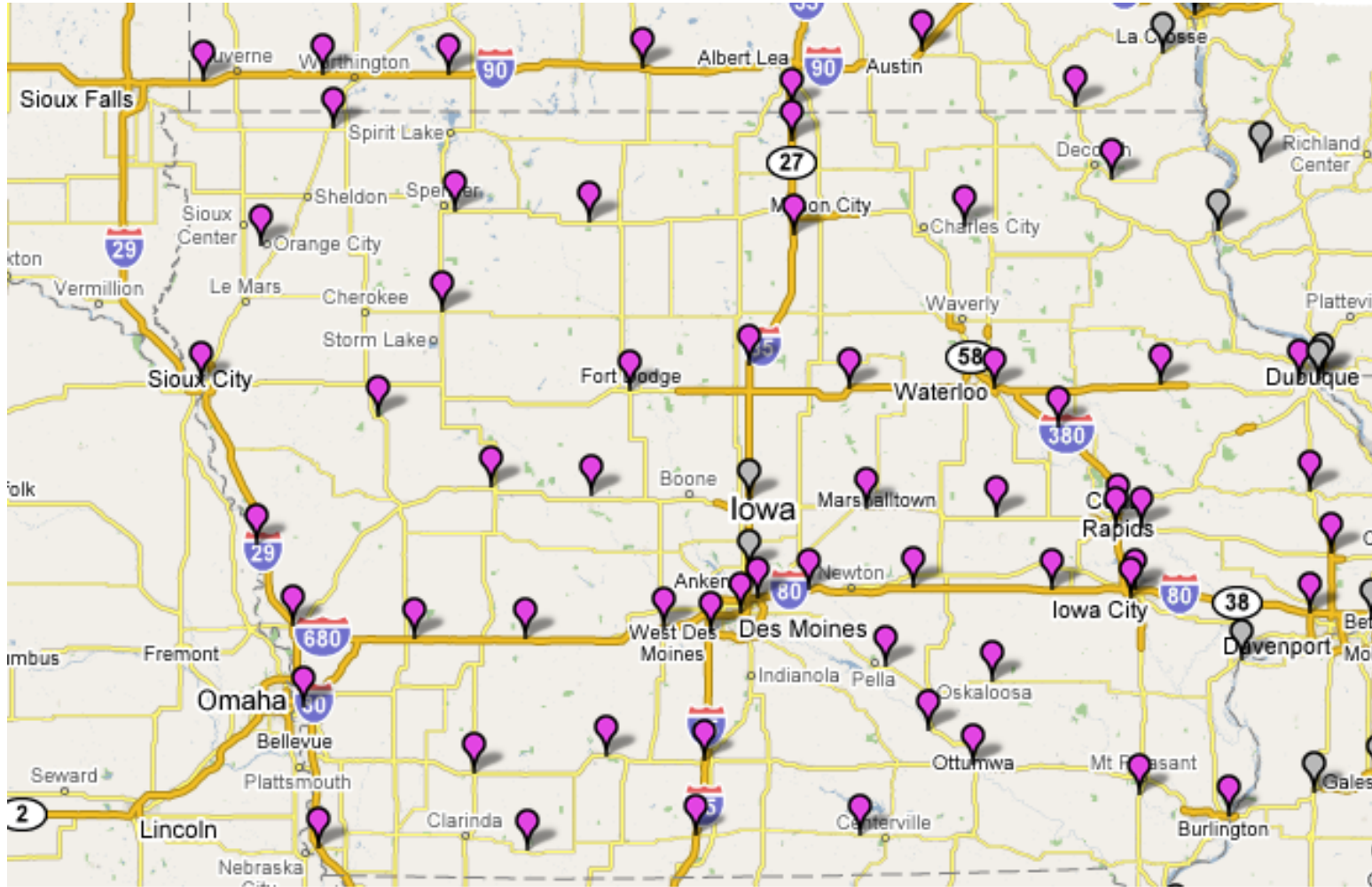
■ Demo System:

- RWIS locations colored according to latest reported road condition;
- Mouse-over provides data, pictures, and a trend graph of air, pavement, and dew point temperatures.

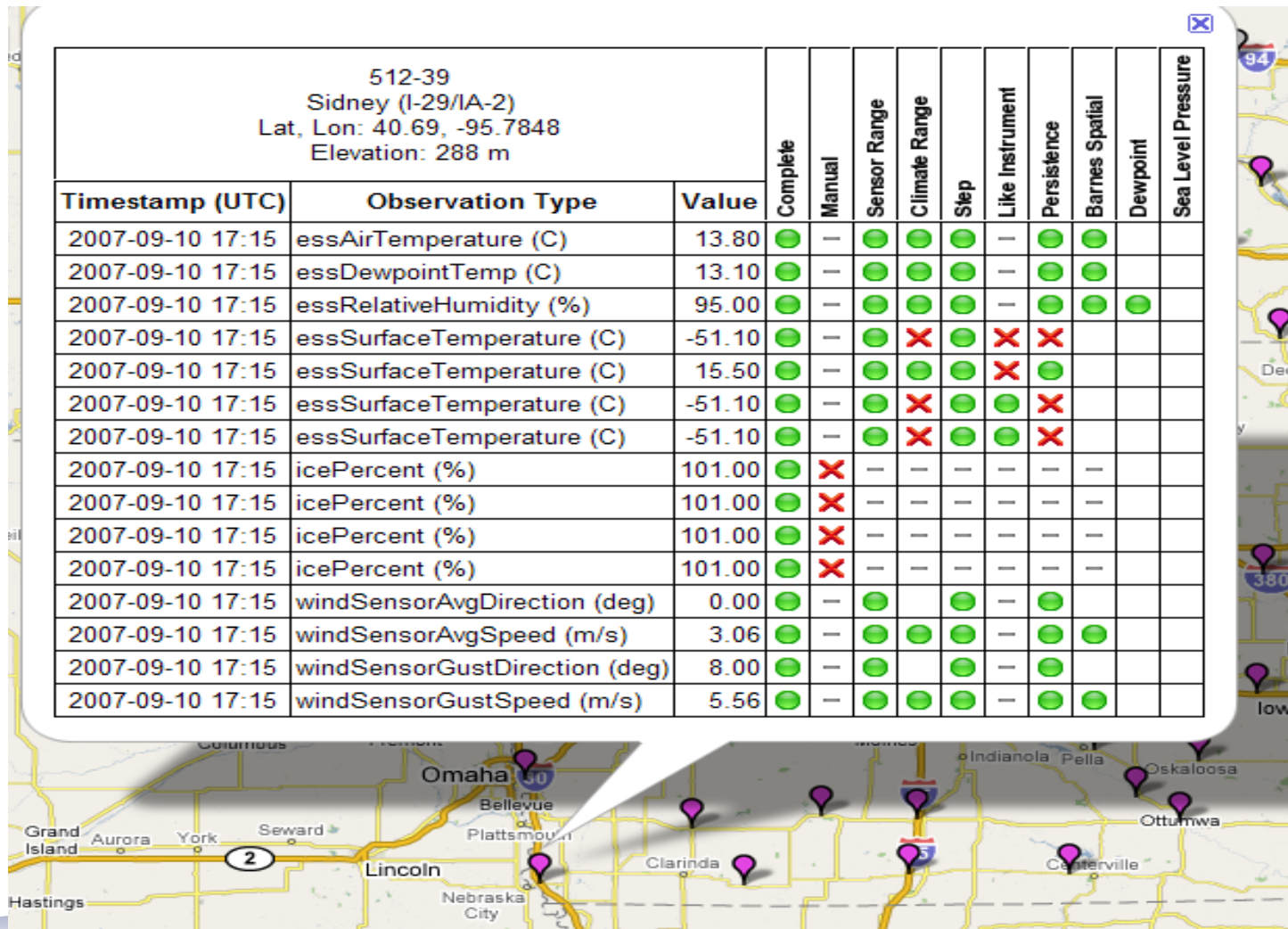
NETWORK OPERATOR

MAINTENANCE SUPERVISOR

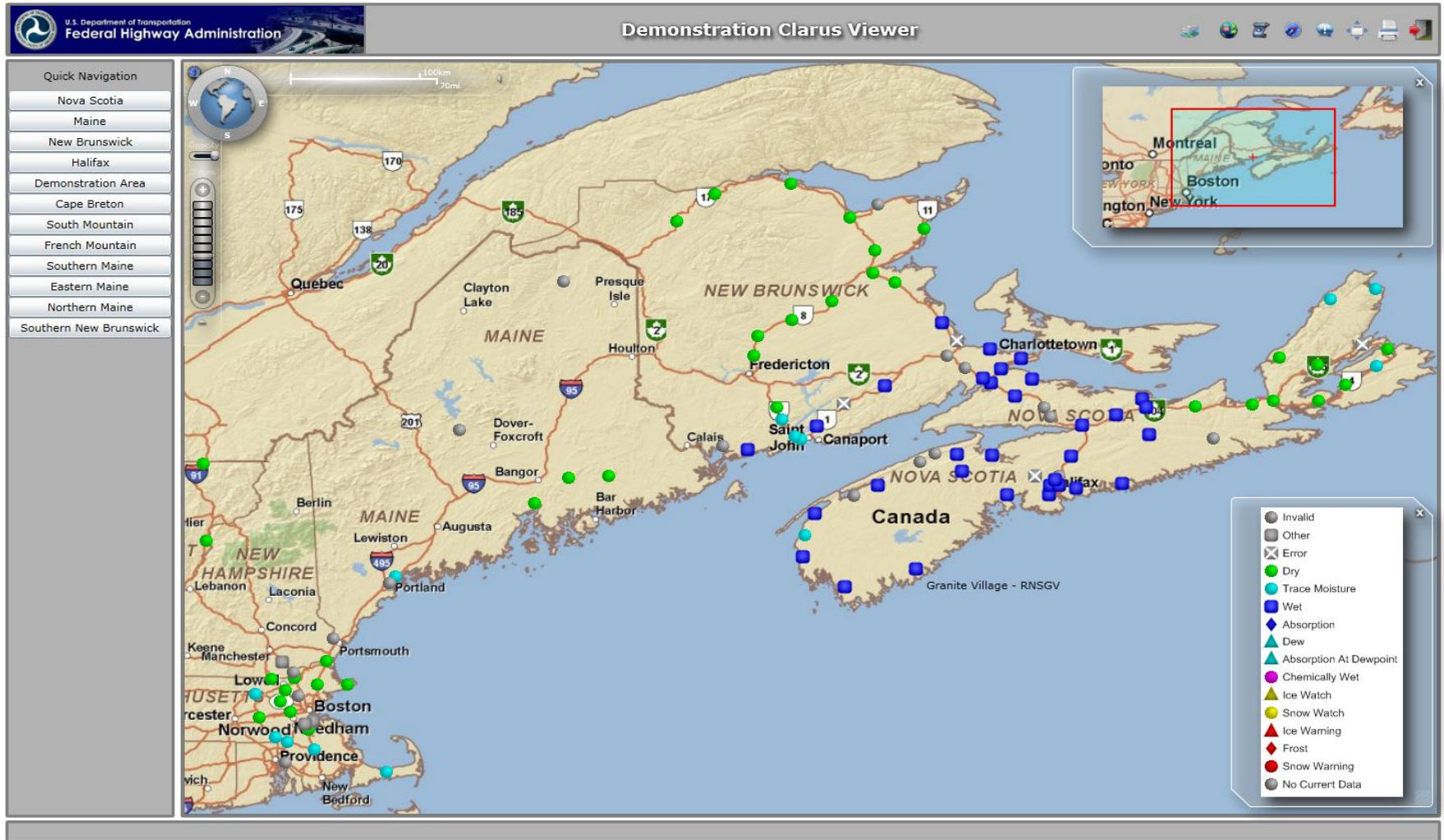
Clarus System Site



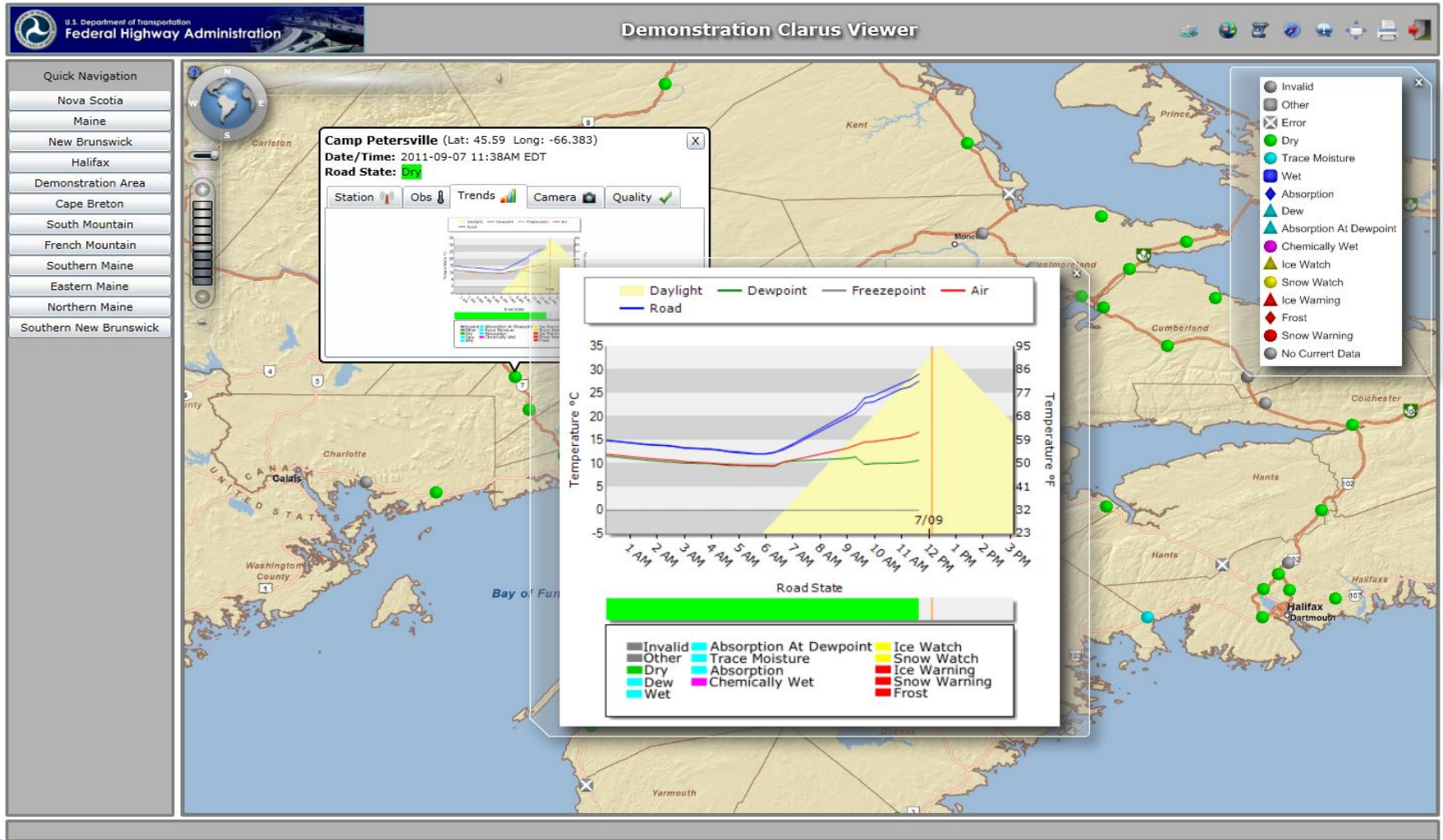
Clarus System Site



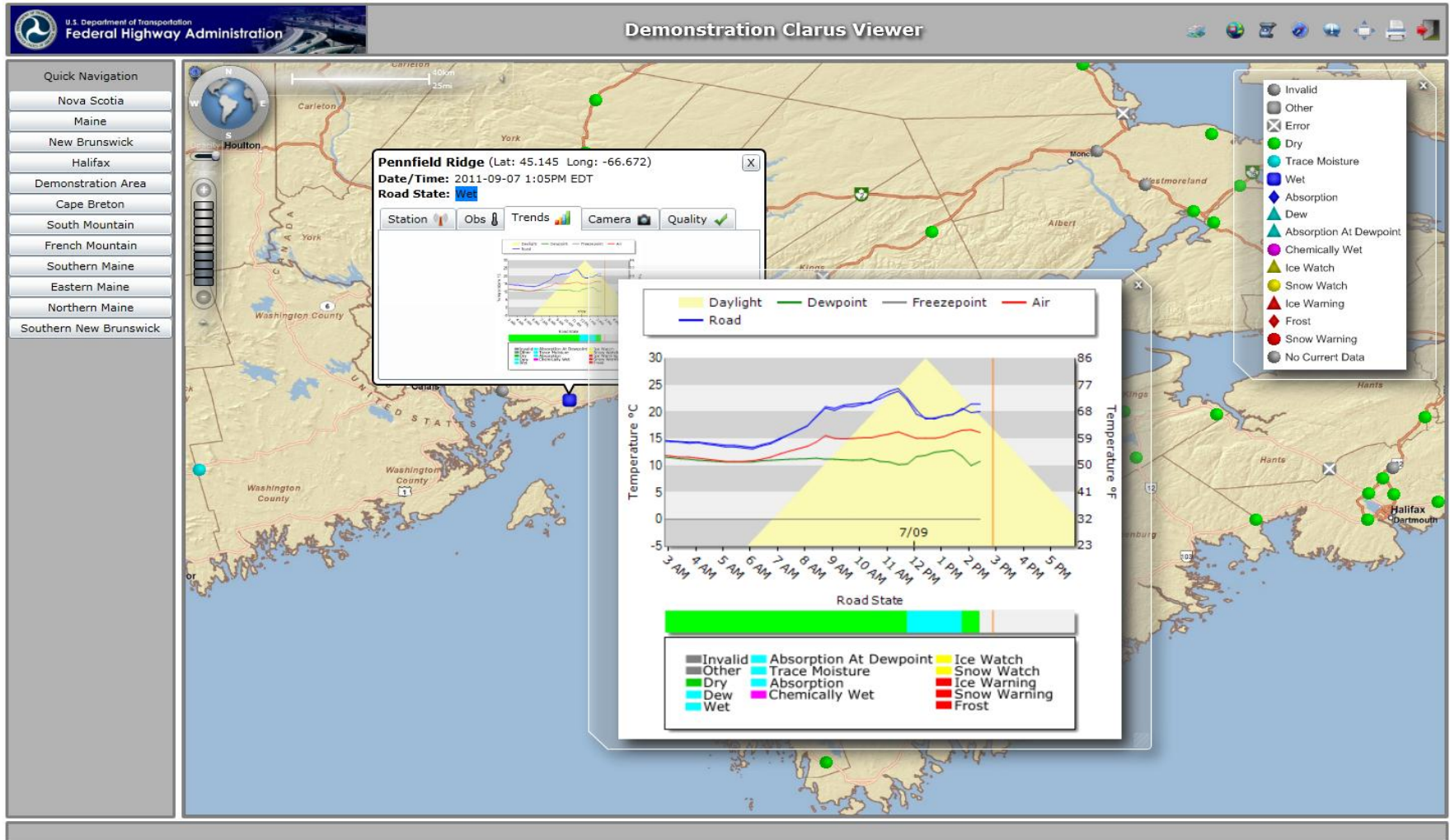
Demo System Site - Overview



Demo System Site – Trend Graph



Demo System Site – Trend Graph (2)

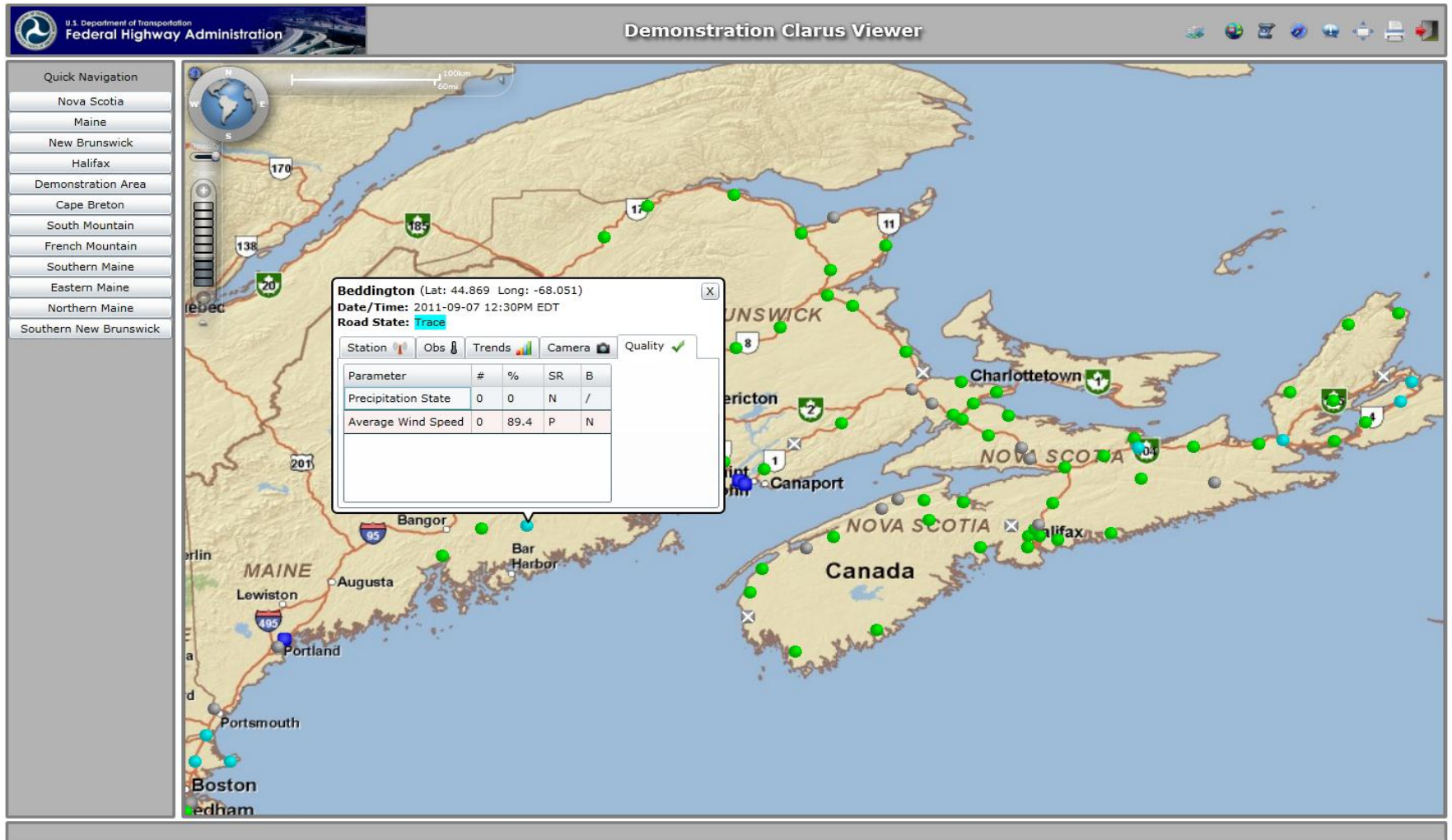


Demo System Site – French

The screenshot displays the Clarus navigation system interface in French. At the top, the U.S. Department of Transportation Federal Highway Administration logo is on the left, and the title "Démonstration Navigateur de Clarus" is in the center. The interface includes a "Navigation Rapide" sidebar on the left with buttons for various regions like "Nouvelle-Écosse", "Maine", and "Halifax". The main map area shows Nova Scotia with various weather data points represented by colored icons. A legend on the right lists these icons: "Invalide", "Autre", "Erreur", "Sec", "Trace humidité", "Mouillé", "Absorption", "Rosée", "Absorption au point de rosée", "Chimique mouillé", "Glace - veille", "Neige - veille", "Glace - avertissement", "Neige - avertissement", "Gelée", and "Pas de données à jour". A pop-up window for "Camp Petersville" (Lat: 45.597, Long: -66.383) shows the date and time "2011-09-06 1:18PM EDT" and the road condition "État du chemin: Sec". Below this, a camera view shows a road scene with the timestamp "Camp Petersville 2011-09-06 15:38:54".



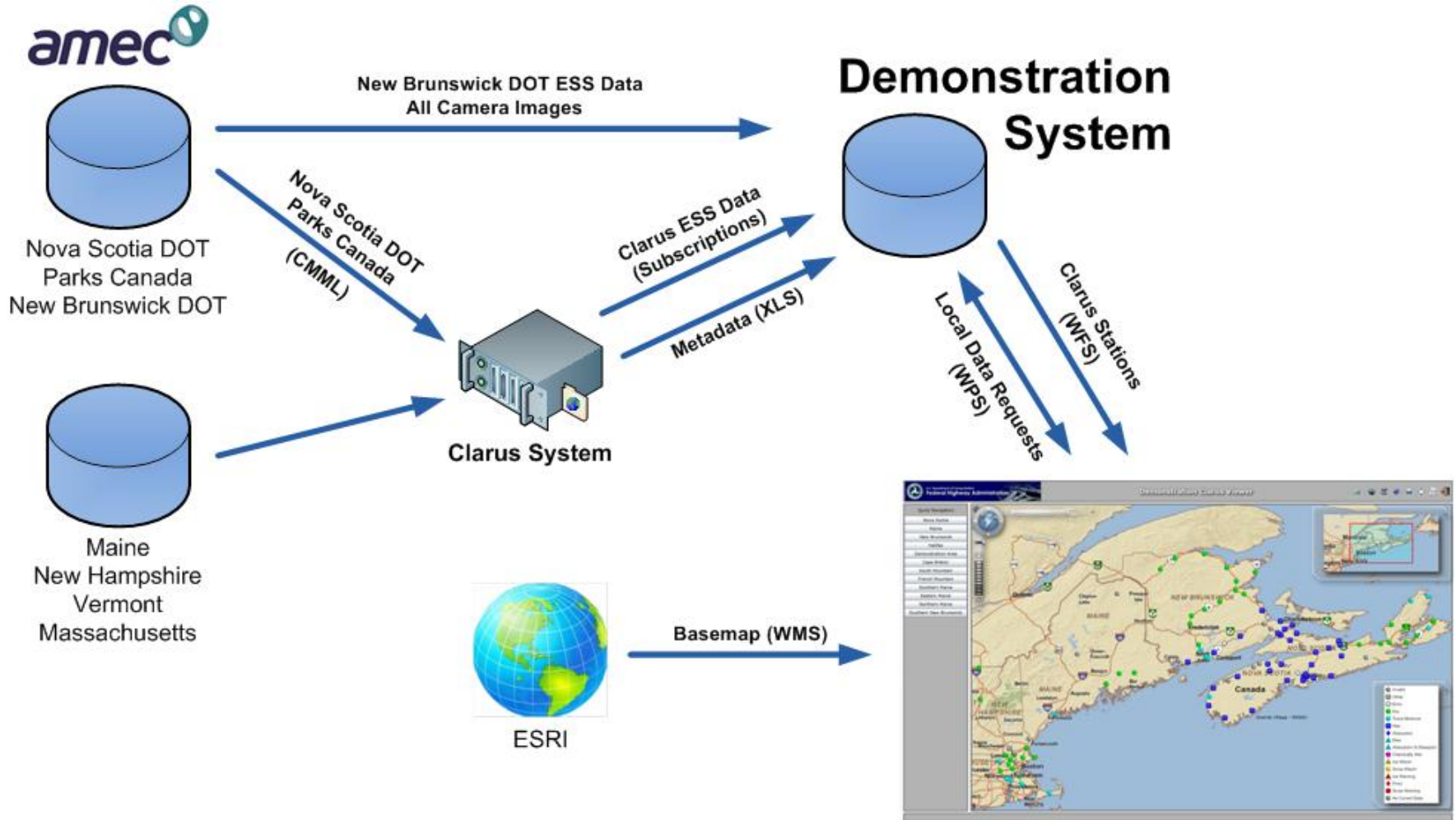
Demo System Site – Tooltip (Quality)



Demo System – Technical Details

- ▶ NS/Cape Breton RWIS data submitted to *Clarus* (Mixon Hill) in CMML (Canadian Meteorological Markup Language);
 - ▶ Used by Environment Canada to receive prov/terr data;
 - ▶ Metadata provided as an Excel file;
- ▶ Demo System uses Open GIS Consortium standards:
 - ▶ Accessing OGC WFS/WMS services for:
 - ▶ Demo data layers come from *Clarus*;
 - ▶ ESRI provided base map layers (similar to Google); and
- ▶ Approach supports display within other GIS viewers, e.g.: ArcGIS.

Demo System – Data Architecture



Workshop for Maintenance Leads

Houlton, Maine, 07 April 2011 (1 day)

▶ Present on site:

- ▶ NB -Jay Cunningham
 - ▶ NS - Paul Richard
 - ▶ Brunway – Rob McCormack
 - ▶ FHWA – Paul Pisano
 - ▶ AMEC – Andrew Nelson and Paul Delannoy
- Maine – Brian Burne
Clifton Curtis
Mark Ireland

▶ Via WebEx

- ▶ MTO – Heather McClintock
 - ▶ Pelmorex – Sean Pinney
 - ▶ MSC – Daniel Huang
 - ▶ Clarus– Brenda Boyce (Mixon Hill)
 - ▶ Reviewers: Michael Adams (Weather Management Solutions, LLC)
- MTQ – Claude Lapointe
Michel Brown
Yves Desrosiers

Max Perchanok (MTO)

Workshop for Maintenance Leads

Excellent feedback to improve the Demo system:

- ▶ Add local time zones – Maine is on EDT, NB/NS on ADT;
- ▶ Filter or Flag old data to user;
- ▶ Add QC outcome indicator for user;
- ▶ Differentiate major road friction impact phenomena;
- ▶ Consider expanding to MA, NH and VT;
- ▶ Refresh data more frequently (up to shortest polling frequency in use);
- ▶ Show surface states for all sensors;
- ▶ Include a version number; and
- ▶ Standardize line colours on trend graph.

Project Results

3. Prepare a vetted English-French lexicon of road weather data elements:
 - Targets ESS/RWIS data & metadata for road maintainers;
 - Based on NTCIP 1204 codes/data definitions, PIARC/WRA Dictionary, and AMEC NB Internet site;
 - Drafted by Étienne Morin of Vision Météo Plus – December 2010;
 - Reviewed by Benoit Pouliot of AMEC – January 2011;
 - Reviewed by Roméo Poitras & NB DOT – March 2011; and
 - Submitted to *Clarus* – June 2011.
4. Develop a bilingual Clarus interface:
 - Demo system uses terminology from lexicon.

Project Results

5. Develop formats for integration into *Clarus* of Infra-Red (IR) Thermal Fingerprints (TF);
 - Likely 3 selectable map layers, I/scenario
 - Extreme, Intermediate, and Damped;
 - User selects scenario to post corresponding surface temperature variations along thermally-mapped roadway;
 - Will propose and explore alternative formats and approaches with *Clarus* leads this month.

Project Results - Promotional Activities

CLARUS project presentations:

- ✓ Annual Conference of the Québec Road Association (AQTR), 12 April in Montréal, Québec (in French);
- ✓ Annual Conference of ITS Canada, 14 June in Vancouver, British Columbia.

Demo system will remain active through Sep & Oct

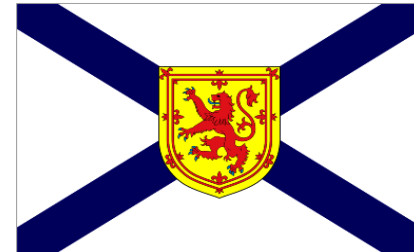
Access controlled – Please Contact us for an account.

<http://weather2.amec.com/clarus/>

Will continue to offer encouragement and assistance to Ontario and Québec.

Thank You

Merci Beaucoup



PAUL.DELANNOY@AMEC.COM

