Non-Fed AWOS Connectivity

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T.K. Gwin, Program Manager
Colorado Division of Aeronautics
303.512.5250
tk.gwin@state.co.us

COLORADO
Department of Transportation
Division of Aeronautics

State and Individual Airport Concerns

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Ashish J. Solanki, A.A.E. | Director
Office of Regional Aviation Assistance
410.859.7064
asolanki@bwiairport.com

Maryland Department of Transportation

Maryland Aviation Administration

NAV CANADA Weather systems

Getting non sanctioned data into the system.

- Faycel Farza, P.Eng., PMP®, MPM
- **Manager Weather & SWIM**

About NAV CANADA

on safety performance

- Provides aviation weather

Reasons for this presentation

- NAV CANADA is always approached by 3rd party AWOS owners to display their data on the NAV CANADA Aviation Web Site.
- Explain reasons for not showing 3rd party information on NAV CANADA Website
- Discuss conditions to let them display 3rd party weather information on NAV CANADA website

Canadian Aviation Regulation Exemption

The current standards for the operation of Automatic Weather Stations for aviation are contained in a global exemption to CAR 804.01.

(http://www.tc.gc.ca/CivilAviation/Regserv/Affairs/exemptions/docs/en/1703.htm)

The following are highlights from the exemption:

- Maintain detailed training records,
- Individually certify that all persons providing installation, commissioning, inspection and maintenance services are qualified,
- Define performance criteria for visibility, present weather and sky condition,
- Provide METAR format for automated stations,
- Establish minimum SPECI criteria thresholds.

Clinical Observations and Data Analysis

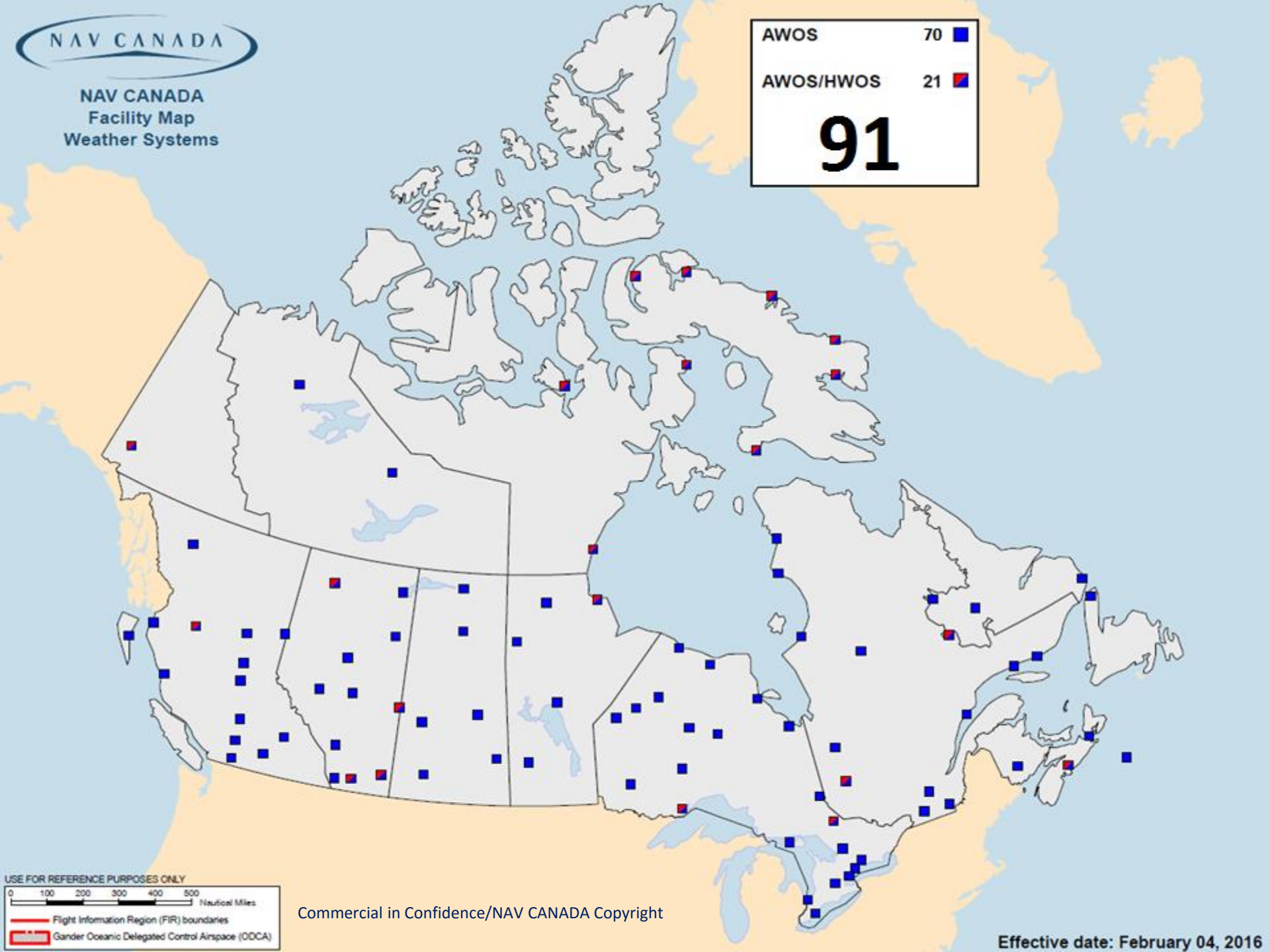
- Testing was conducted at :
  - Iqaluit for extreme cold temperatures and high winds,
  - St. John's for freezing precipitation, high winds, fog and salt atmosphere,
  - Ottawa for demonstrations to Transport Canada and additional testing.

Compliance to the Exemption

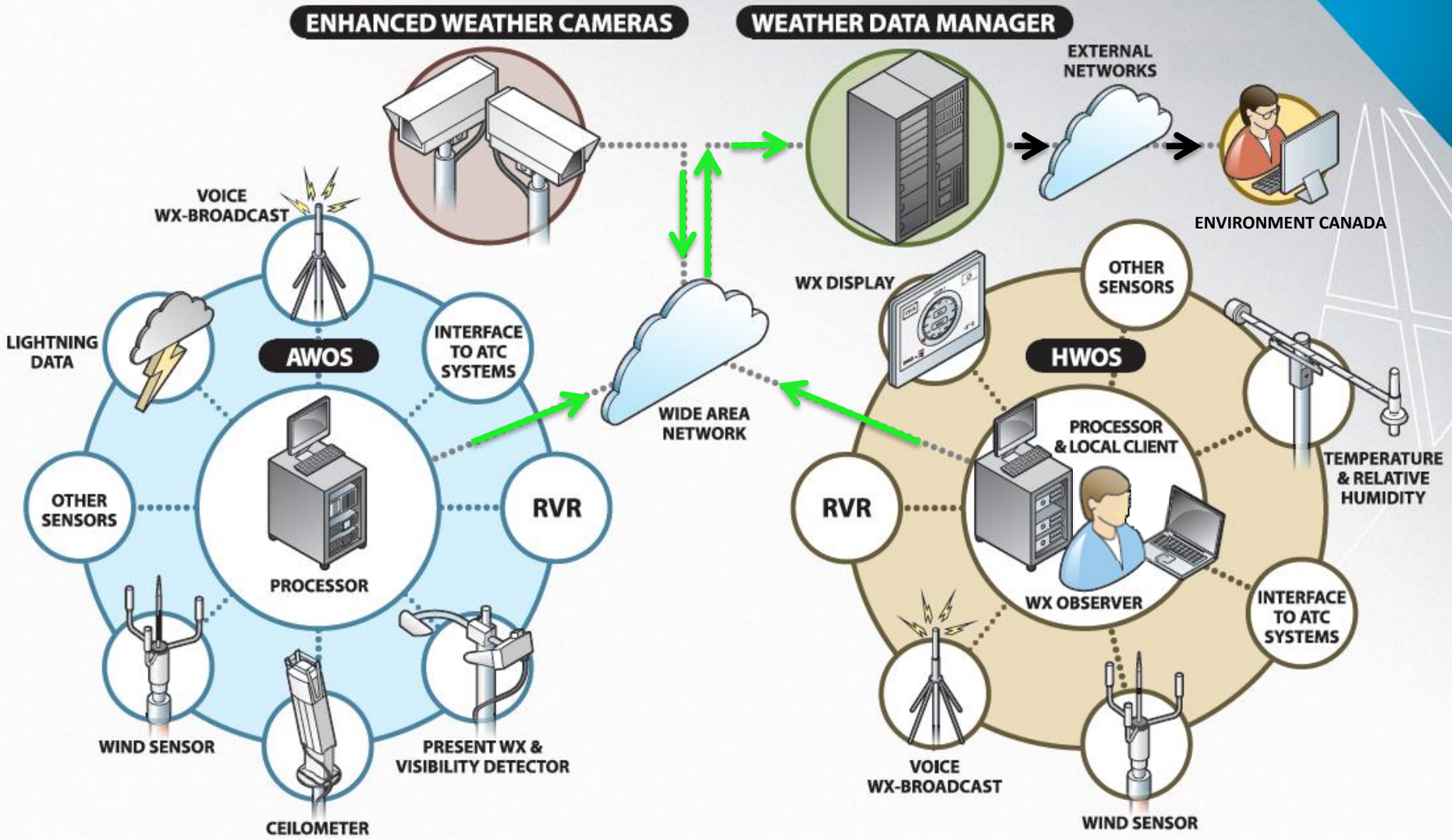
- In August 2007, evaluation results were submitted to Transport Canada.

- In September 2017, Transport Canada responded with the following excerpt:

"Based upon the information included in your letter, and its attachments, we have concluded that your implementation plan complies with the intent of the global exemption to the standards referenced by *Canadian Aviation Regulations* 804.01 c), as issued on January 9, 2007."

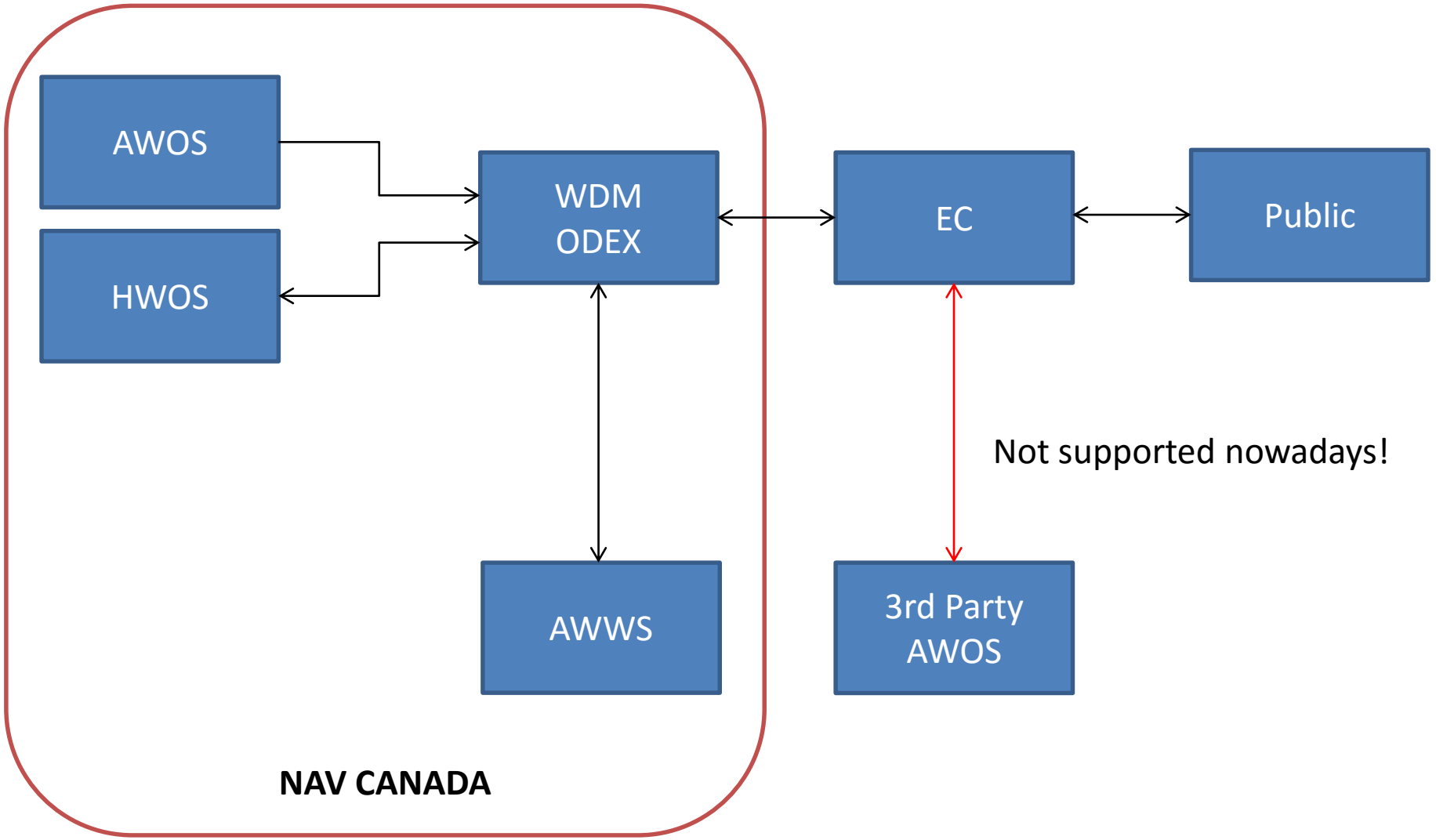


Effective date: February 04, 2016



NAV CANADA Weather Observation Network

Dealing with non NAV CANADA AWOS



What needs to be done!

- Third Party AWOS must demonstrate same level of certification that NAV CANADA went through for AWOS to obtain Transport Canada certification.

- Third party AWOS owners must demonstrate compliance to the Safety Management System (SMS) which identifies safety risks before they become bigger problems.

20
ANS | YEARS

Discussions?

MADIS – FPAW 2016 Summer Meeting

Meteorological Assimilation Data Ingest System (MADIS)

Getting Non-Sanctioned Data into the System

Greg Pratt

OAR MADIS Project Manager

MADIS Defined

- MADIS is a meteorological database and data delivery system that covers the globe. Jointly developed by the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) and the Office of Oceanic and Atmospheric Research (OAR) Earth System Research Laboratory (ESRL) Global Systems Division (GSD).
- MADIS started collecting data July 1, 2001 and provides access to all data sets collected since it's start.
  - Purpose:
    - To provide a finer resolution (temporal and spatial), higher quality, easy access observational data system for NOAA and the greater meteorological community.
    - To help improve weather forecasting, by providing support for data assimilation, numerical weather prediction, and other hydrometeorological applications.
  - How:
    - Leverage partnerships with international agencies; federal, state, and local agencies; universities; volunteer networks; and the private sector to integrate their stations with those of NOAA.

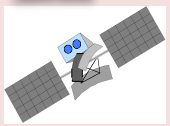
MADIS Defined

Surface Obs

Profilers

Radiosonde

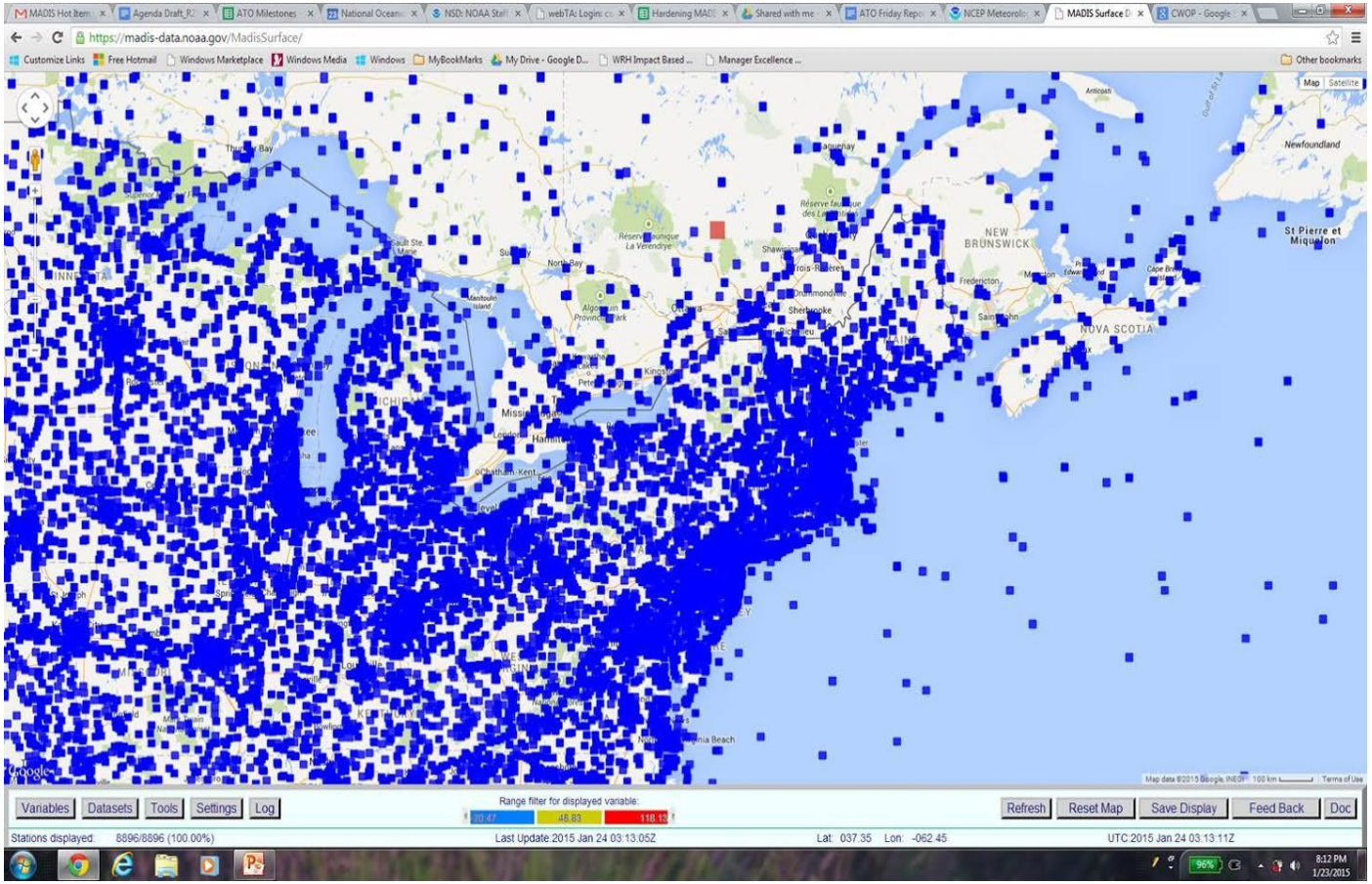
Satellite



Aircraft

Radiometer

NOAA surface stations with MADIS



Provides a finer resolution higher quality NOAA observational database and distribution system through partnerships with non-NOAA providers.

Current Data Capabilities

- 15 Different Data Types
  - Surface
    - Hydro, Mesonet, Maritime, METAR, Climate, 1 Minute ASOS/AWOS, Mobile Platform Environmental Data (MoPED), and Snow
  - Upper Air
    - Profiler, RAOB, Automated Aircraft, Radiometer, and Satellite (winds, sounding, and radiance)

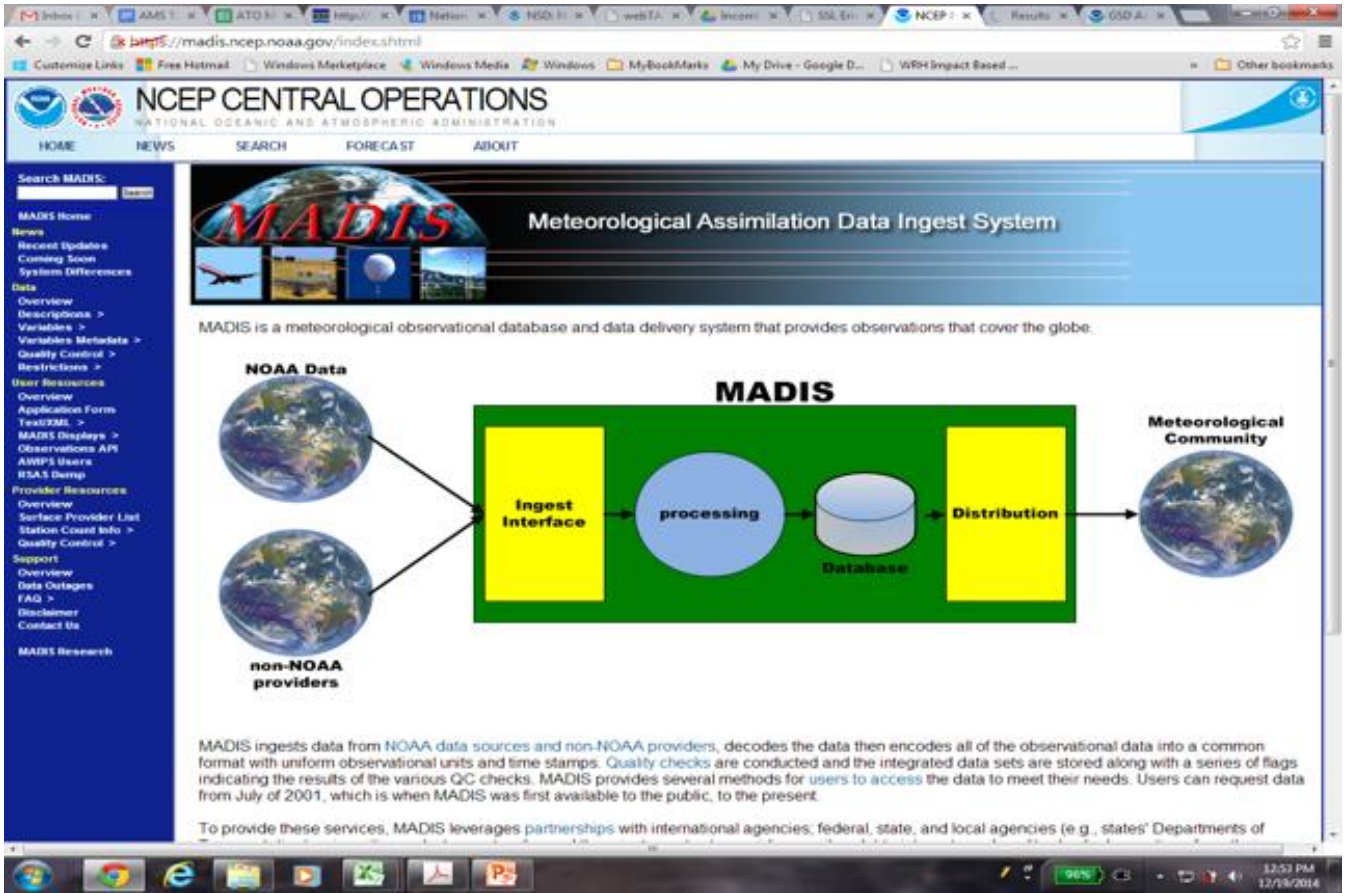
  Green ---- Data available since 2001.

  Black ---- Data added after 2001.

- 400+ Observation Types
- 11 GB/Day (Uncompressed) – 823 MB/Day (Compressed)

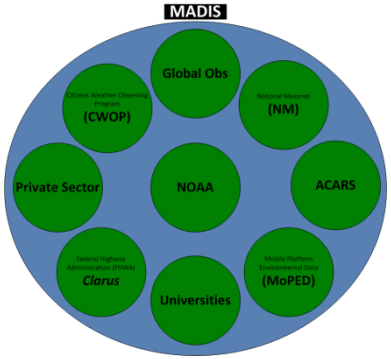
MADIS Operations/Processing

- MADIS has been owned and operated by the National Weather Service National Centers for Environmental Prediction (NCEP) Central Operations (NCO) as part of the Integrated Dissemination Program (IDP) since January 21, 2015.
  - Primary Operations at NCO College Park, MD.
  - Backup Operations in Boulder, CO.



Continued NWS and OAR Support

- True conduit for quickly transitioning new, improved, and higher quality observations to NWS operations.



MADIS Pipeline to Operations

  - This years transition efforts to MADIS:
    - Federal Highway Administration's (FHWA) *Clarus* system.
    - Hydrometeorological Automated Data System (HADS)/Automated Flood and Warning Systems (AFWS).
    - SNOw TELemetry (SNOTEL).
    - Sensing Hazards with Operational Unmanned Technologies (SHOUT).

- Quality Control (QC) improvements.
  - *Clarus* QC added 2015.
  - QC Sandbox for distributed development efforts.
  - Standardized and more complete metadata provided by NM providers.

Continued NWS and OAR Support

- Improved distribution.
  - Fully operational WFS service.
    - NWS/AWIPS version. (NWS Operations)
    - NWS/NCO/IDP version. (FAA)
  - Ability to subscribe to and only receive the latest data requested through the MADIS web service.
  - Highly configurable graphic and observational interfaces.

- Improved performance – observations received and QCed in five minutes.

Why Use MADIS for Non-sanctioned Data

- MADIS Ingest
  - Designed to handle different data formats which contain observations in various units from stations reporting from various time zones.

- MADIS Processing
  - Decodes and converts data to standardized observational units and time stamps.
  - Observational units are: pressure, temperature, wind speed, wind direction, relative humidity, …

- MADIS Quality Controls Data
  - Static - validity, internal consistency, and vertical consistency.
  - Dynamic – History and spatial consistency.

Why Use MADIS for Non-sanctioned Data

- MADIS Distribution
  - Graphical displays and surface dump utilities.
  - HTTP
  - FTP
  - LDM
  - Emerging technologies and standards such as Web Feature Service (WFS) following Open Geospatial Consortium (OGC) standards. The MADIS team is working with the FAA and NWS and is currently providing aircraft and surface observations via WFS .
- MADIS fully supported by NWS and OAR.
- MADIS currently handles METAR, FAA One Minute ASOS, and non-federal ASOS/AWOS stations.

Contacts

- NWS MADIS Program Manager
  - Steven.Pritchett@noaa.gov

  office (301) 427-9121

- OAR/GSD MADIS Program Manager
  - Greg.Pratt@noaa.gov

    office (303) 497-7237

- MADIS System Support
  - madis-support@noaa.gov