AIRNow Data Transfer Standards

Alan C. Chan, Timothy S. Dye, and Adam N. Pasch
Sonoma Technology, Inc.
Petaluma, CA

John E. White, Phillip G. Dickerson, and Scott A. Jackson
U.S. Environmental Protection Agency, AIRNow Program
Research Triangle Park, NC

Presented at the 2009 National Ambient Air Monitoring Conference
Nashville, TN
November 2-5, 2009
Outline

- Overview of AIRNow
- OBS format
- AQCSV format
- Air quality data exchange node
- Schedule
Overview of AIRNow (1 of 3)

AIRNow provides a common framework for acquiring and distributing air quality information that

• Fosters community effort among federal, state, local, and tribal air quality agencies (130+)
• Collects, quality assures, and transfers real-time and forecasted air quality information to the public
• Communicates air quality via the Air Quality Index (AQI)
• Issues weather/air quality news stories
• Enables partnerships with national media
• Provides air quality education and outreach
Overview of AIRNow (2 of 3)

• Systems
  – Centralization: one-stop data source for real-time/forecast data
  – Quality control: automated and manual quality checks
  – AQI conversion: consistency across the nation
  – Mapping: quick mapping methods
  – Distribution: data for public, media, researchers, systems

• Data
  – AIRNow data are considered preliminary and unofficial
  – Air quality agencies control what data is approved for public reporting
  – Raw data can be accessed through AIRNow-Tech
Overview of AIRNow (3 of 3)

Current Data Path

- Agencies
  - Data
  - Forecasts

- AIRNow w DMC
  - Data
  - Forecasts

- AIRNow Web Site
  - Maps and Forecasts
  - Public and Decision Makers

- Media Outlets
  - Data

- AQS
  - Missing
OBS Format (1 of 2)

• Legacy format for data ingest into AIRNow
• Why are we phasing it out?
  – Difficult to program
  – No native support for
    • Mobile monitors
    • Three-dimensional data
  – Difficult to use in mobile applications
  – Limited list of accepted parameters
  – No sub-hourly data
  – Applied only to North America
OBS Format (2 of 2)

Required for every data submittal. Makes creating a data encoder and parser difficult.

BEGIN_FILE
BEGIN_DATA

ARV217, 060295001, 39, 36, 33, 34, -999, 32, 37, 47, 55, 62, 70, 75, 70, 01, 05, 01, 77, 70, 67, 67, 67, 60, 53, 42
EPL255, 060290014, 29, 33, 28, -999, -999, 26, 32, 39, 48, 54, 60, 60, 60, 58, 67, 69, 71, 72, 72, 74, 67, 53, 41, 40, 37
EMY001, 060659003, 26, 22, 15, 19, -999, 17, 21, 33, 40, 45, 46, 49, 50, 47, 44, 45, 46, 45, 41, 40, 35, -999, -999,
CIC628, 060070002, 30, 28, 25, 26, -999, 21, 24, 25, 29, 33, 39, 41, 47, 47, 47, 47, 50, 55, 54, 48, 46, 41, 34, 30
CIX698, 060250005, 20, 7, 6, 13, -999, 10, 9, 18, 38, 58, 65, 71, 73, 74, 68, 61, 55, 37, 31, 24, 19, 13, 9, 11
CIX700, 060250006, 13, 16, 21, 20, -999, 19, 22, 24, 37, 19, 50, 53, 54, 56, 55, 51, 48, 30, 27, 22, 17, 14, 10, 18
AQCSV Format (1 of 3)

• Supports
  – AQS standards (parameter codes, POC)
  – Any AQS parameters
  – Speciated/lab data
  – Mobile monitors data (changing location)

• Allows for
  – Ingest of AQS data into AIRNow
  – Backfill of AQS certified data into AIRNow when available
  – Bulk data updates
  – Support of international data exchange
  – Easy encoding and parsing of data (Excel)
AQCSV Format (2 of 3)

- ISO Standards
  - Country Codes (840 = USA)
  - Date and Time
- AQS-Based
  - Parameter Codes
  - Units Codes
- Support for
  - AQS qualifier codes
  - Location information
    - Latitude and longitude
    - Elevation and GIS datum
  - Method codes
  - Measurement performance characteristics
    - Value and uncertainty
AQCSV Format (3 of 3)
Data Exchange Node

- Uses the existing Exchange Network to transfer data among states, agencies, tribes, AQS, and AIRNow DMC
- Exchanges data between state and AIRNow DMC nodes using web services
- Allows simultaneous submittal to AIRNow and AQS
- Requires more programming effort

More information: [http://www.exchangenetwork.net/exchanges/air/aqde.htm](http://www.exchangenetwork.net/exchanges/air/aqde.htm)
What does this mean for you?

• Better data
  • Backfilled with AQS data
  • Support for AQS parameters

• Easier data delivery
  • AQCSV
  • XML data exchange node

• Implementation schedule
  • Work with vendors to add support for AQCSV
  • Need to update your software
  • OBS will be phased out January 1, 2011
Contact Information

U.S. EPA

Phil Dickerson
dickerson.phil@epa.gov
John White
white.johne@epa.gov
Scott Jackson
jackson.scott@epa.gov

AIRNow DMC

Tim Dye
dye.tim@epa.gov
Alan Chan
chan.alan@epa.gov
AIRNowDMC
AIRNowDMC@sonomatech.com