



Data Accessibility



AQS Conference

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Outline



- Background
- Trends in Use – Who’s getting the data
- AirData – Better than ever
- RESTful Web Services - New way to get data
- TTN Data Download page
- Additional methods for you

Background



- Context: About 4 years ago OAQPS embarked on an effort to reduce the number of places public could go to find data
 - Pick certain ones to enhance
 - Pick others to decommission
- Subtext: Air Quality data is being requested like never before
 - OAQPS publicly queryable AQS websites: 260,000 queries in 2011
 - Every 2 minutes (24/7/365) someone queries air quality data
 - 7 Billion data values (out of 2 Billion)
 - Recall: this is without AirData
 - Plus 100 personal contacts per year; 400 – 600 queries
 - Plus other locations (TTN page, trends page, design values page, etc.)
 - Easily thousands more (tens? hundreds?)
 - Plus AQS reports: 60,000 per year ... plus 10,000 Discoverer queries
 - Plus ???

Data Request Trends (Heuristics)



- Continuing Users
 - Many, many, many health / epidemiological studies
 - NGOs (e.g., ALA “State of the Air” www.stateoftheair.org/)
 - EPA systems (Ozone Watch, AirCompare, MyE, Data.gov, etc.)
- New Users
 - Public/Private Projects (e.g., IBM “City Forward” www.cityforward.org/)
 - EPA app challenges
- Anecdotal Trends
 - PM2.5 mass continues to be very popular
 - Gaseous criteria pollutants holding their ground
 - Met data still very much in demand
 - PM2.5 species quite popular in the right set
 - Lots of interest in AQI (vs. concentrations) [public health]

City Forward Example

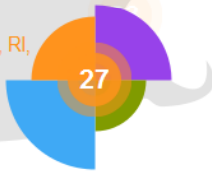


This is not an endorsement

- Data + Explorations + Discussions → Best Practices
- “All” data they can find
- AQ the “best data set”

Smarter Practices

How smart are our cities?
Suggest content for our collection of urban best practices for Providence, RI, USA.
Collaborate >



Providence, RI, USA

22 Subjects

- Air Quality Index (AQI)
- Building Permits
- Commute
- 19 more >

5 Explorations

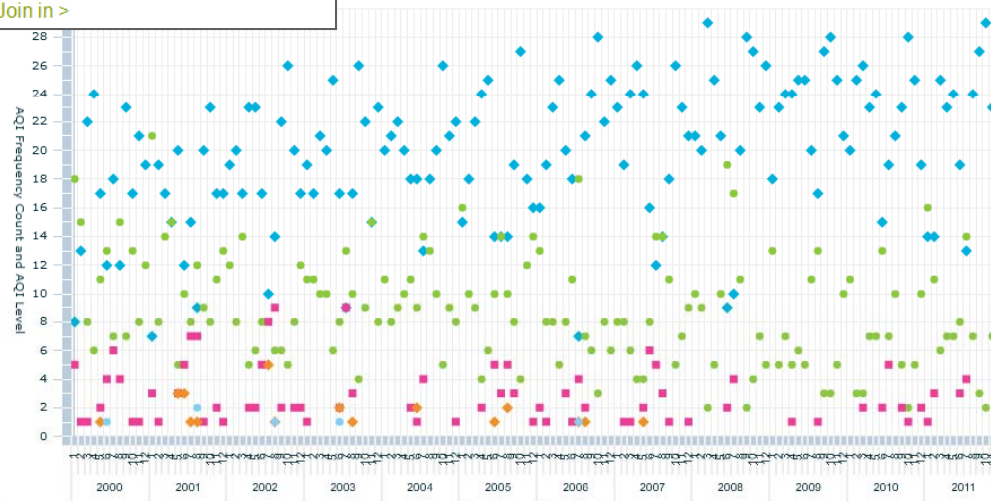
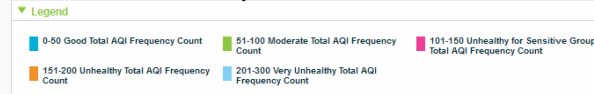
- Proficiency Levels in Three 'Smarter Cities'
- Five Key Events in the last 20 years Evident in US City Unemployment
- Providence, RI: Population, Households and Crime
- 2 more >

Discussions

What's on your mind?
Join the conversation by adding your voice to the City Forward Community.
Join in >

- ▶ Air Quality Index (AQI)
- ▶ Building Permits
- ▶ Commute
- ▶ Crime
- ▶ Education Attainment
- ▶ Education Enrollment
- ▶ Gross Domestic Product (GDP)
- ▶ Health Risk Factors
- ▶ Home Mortgage Loans
- ▶ Household Income
- ▶ Housing Occupancy
- ▶ Housing Price Index (HPI)
- ▶ Housing Vacancy Indicators
- ▶ Labor Statistics
- ▶ Land Area
- ▶ Population
- ▶ Quarterly Workforce Indicators (QWI)
- ▶ School District Demographic Indicators
- ▶ School District Financial Indicators
- ▶ School District Performance Indicators
- ▶ School Dropout and Graduation Statistics
- ▶ Vital Statistics

Count by Month



The Big Development



- AirData has been refreshed!
 - Combines parts of two previous sites
 - AirExplorer
 - AirData
 - Plus replacing AQS Data Mart Direct Interface
- <http://www.epa.gov/airquality/airdata/>
- Maps, plots, reports, data download
- Data is from AQS Data Mart (1 day old)
- Tools being continually updated
- News via RSS feed

AirData Front Page

This is an endorsement



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AirData

Access to monitored air quality data from EPA's Air Quality System (AQS) Data Mart

Basic Information

AirData gives you access to air quality data collected at outdoor monitors across the United States. [Read more](#)

Reports



Air Quality Index
Display an annual summary of AQI values.



Air Quality Statistics
Display standards-related summary data by city or county.



Monitor Values
Display summary data for individual monitoring sites.



More Reports
See other summary and technical reports.

Visualize Data



AQI Plot
Compare AQI values for a location & time.



Tile Plot
Plot daily AQI values for a location & time.



Concentration Plot
Generate a time series plot for a location.



Concentration Map
Generate concentration maps for a specific time.



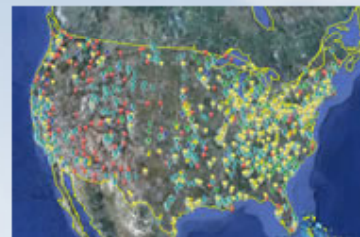
More Tools
See other visualization tools.

Download Data



Download and save daily data to a spreadsheet or file.

Interactive Map



See where air quality monitors are located, get information about the monitors, and download monitor data. Select which monitoring networks to display.

Latest News

- **May 10, 2012** - The [interactive map](#) now shows which monitors are active or inactive.
- **March 13, 2012** - You can now map individual states with the [Concentration Map](#).
- **February 27, 2012** - [Spreadsheet versions](#) of the monitoring network map layers are now available.

[Subscribe to our Content \(RSS\)](#)

Other Sources of Air Data

- [AirNow](#) - forecasts and real-time data
- [AirCompare](#) - help with planning a move or vacation
- [Air Emission Sources](#) - national, state, and county summaries
- [More Sources](#)

The Next Big Development



- Data Mart RESTful web services
 - Query via URL
 - Example: list of criteria pollutants
 - <https://ofmext.epa.gov/AQDMRS/ws/list?name=param&pc=CRITERIA&resource=rawData>
 - Can also get raw data
 - Will add summary data, etc. in the future
 - Will be hosted as part of AirData
 - Download Data page
 - Name is QAD = “Query Air Data”
 - Interface page also available
 - Really just a tool to build the URL

QAD Interface Page



Download Data

This page is strictly for querying & downloading data based on user selected parameters.

User Name:	<input type="text"/>
Password:	<input type="password"/>
Query Type:	<input type="text"/> ▼
Output Format:	<input type="text"/> ▼
Parameter Class:	<input type="text"/> ▼
Parameter Code:	<input type="text"/> ▼
Begin Date:	<input type="text"/> (yyyymmdd)
End Date:	<input type="text"/> (yyyymmdd)
Min. Latitude:	<input type="text"/>
Max. Latitude:	<input type="text"/>
Min. Longitude:	<input type="text"/>
Max. Longitude:	<input type="text"/>
State Code:	<input type="text"/> ▼
County Code:	<input type="text"/> ▼
Site:	<input type="text"/> ▼
CBSA:	<input type="text"/> ▼
CSA:	<input type="text"/> ▼
Duration:	<input type="text"/> ▼
FRM Only:	<input type="checkbox"/>
	<input type="button" value="Submit"/>

QAD Key Features



- Registration Optional
 - Registering gets you benefits – larger queries
- Variety of output formats
 - CSV (DMCSV and AQCSV)
 - AMP 501 (in the works)
 - More being considered (NetCDF, JSON, etc.)
- Interactive or off-line
- Can be run by computers (wget)

TTN Data Download Page



- The thorn in our side
- Few users
- Data is critical to them
- Takes us a lot of time to maintain (~300 files)
- No better options have presented themselves

Yearly Raw Data Files Retrieved From AQS

Year of data, zipped file size, (unzipped file size), Date of extraction

Pollutant (Parameter Code) File name (substitute year for "yyyy")	2012	2011	2010	2009	2008	2007	2006	2005	2004
Carbon Monoxide (42101) RD_501_42101_YYYY.ZIP	42101_2012 1045 KB (18445KB) 05/12/12	42101_2011 11267 KB (19627KB) 05/12/12	42101_2010 10763 KB (199577KB) 05/12/12	42101_2009 10431 KB (206445KB) 05/12/12	42101_2008 10566KB (218168KB) 05/12/12	42101_2007 10649KB (224159KB) 05/12/12	42101_2006 11021KB (232867KB) 05/12/12	42101_2005 11771KB (248359KB) 05/12/12	42101_2004 12176KB (256346KB) 05/12/12
Lead - PB - daily (12128) RD_501_12128_YYYY.ZIP	12128_2012 1k (3KB) 05/14/12	12128_2011 14k (180KB) 05/14/12	12128_2010 221k (293KB) 05/14/12	12128_2009 35KB (521KB) 05/14/12	12128_2008 64KB (949KB) 05/14/12	12128_2007 66 KB (975KB) 05/14/12	12128_2006 75KB (1138KB) 05/14/12	12128_2005 73KB (1136KB) 05/14/12	12128_2004 70KB (1105KB) 05/14/12

Reminder of Methods for AQS Users Only



- AQS Reports
 - Many ‘canned’ reports
 - Output generally text or PDF
- AQS Discoverer
 - ‘Ad hoc’ tool
 - Learning curve gives flexibility
- Revamping AQS reporting
 - Like with public reporting, we don’t have the resources to sustain all current methods
 - Looking for something better suited to your needs

Conclusion



- Demand for data increasing
- Keep up the good work
- We're adapting to limitations
- Change is continuous
- AQ Data Sources page:
<http://www.epa.gov/air/airpolldata.html>
- AirData Demo?