

DART for CSN

(Data Analysis and Reporting Tool for
Chemical Speciation Network Data)

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for

National Ambient Air Monitoring Conference
PAMS Session
St. Louis, MO

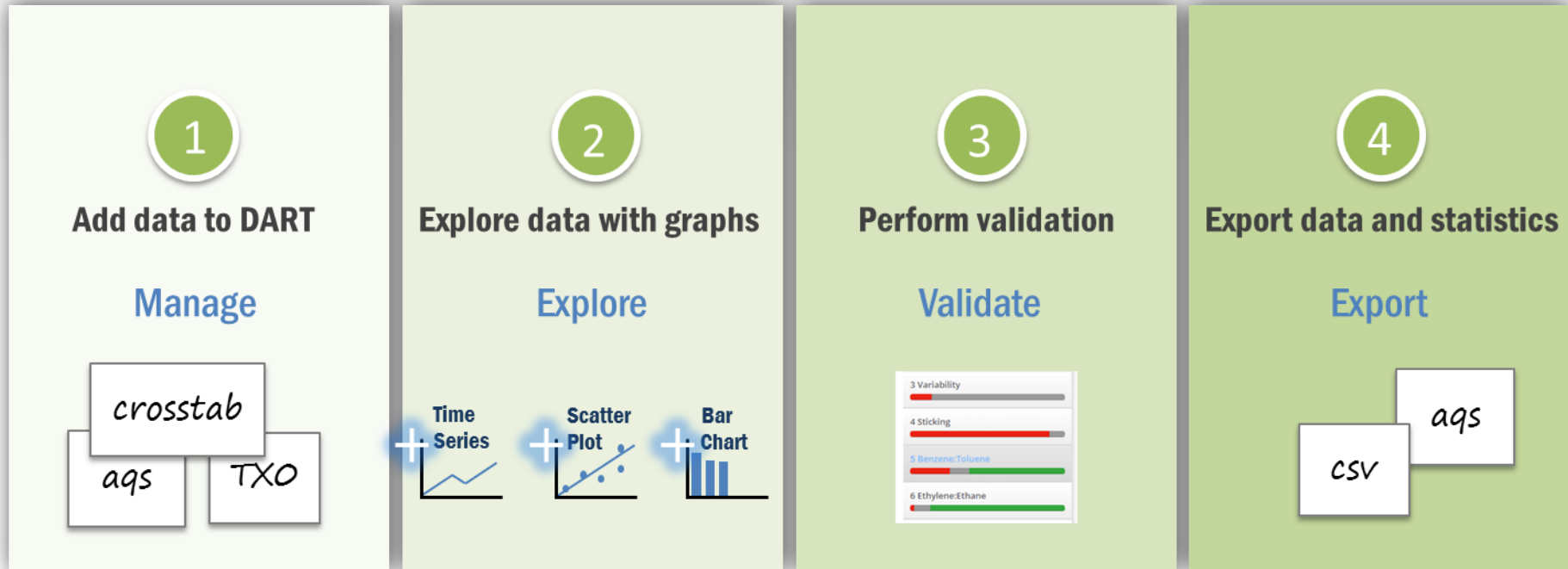
August 10, 2016



STi

Sonoma Technology, Inc.

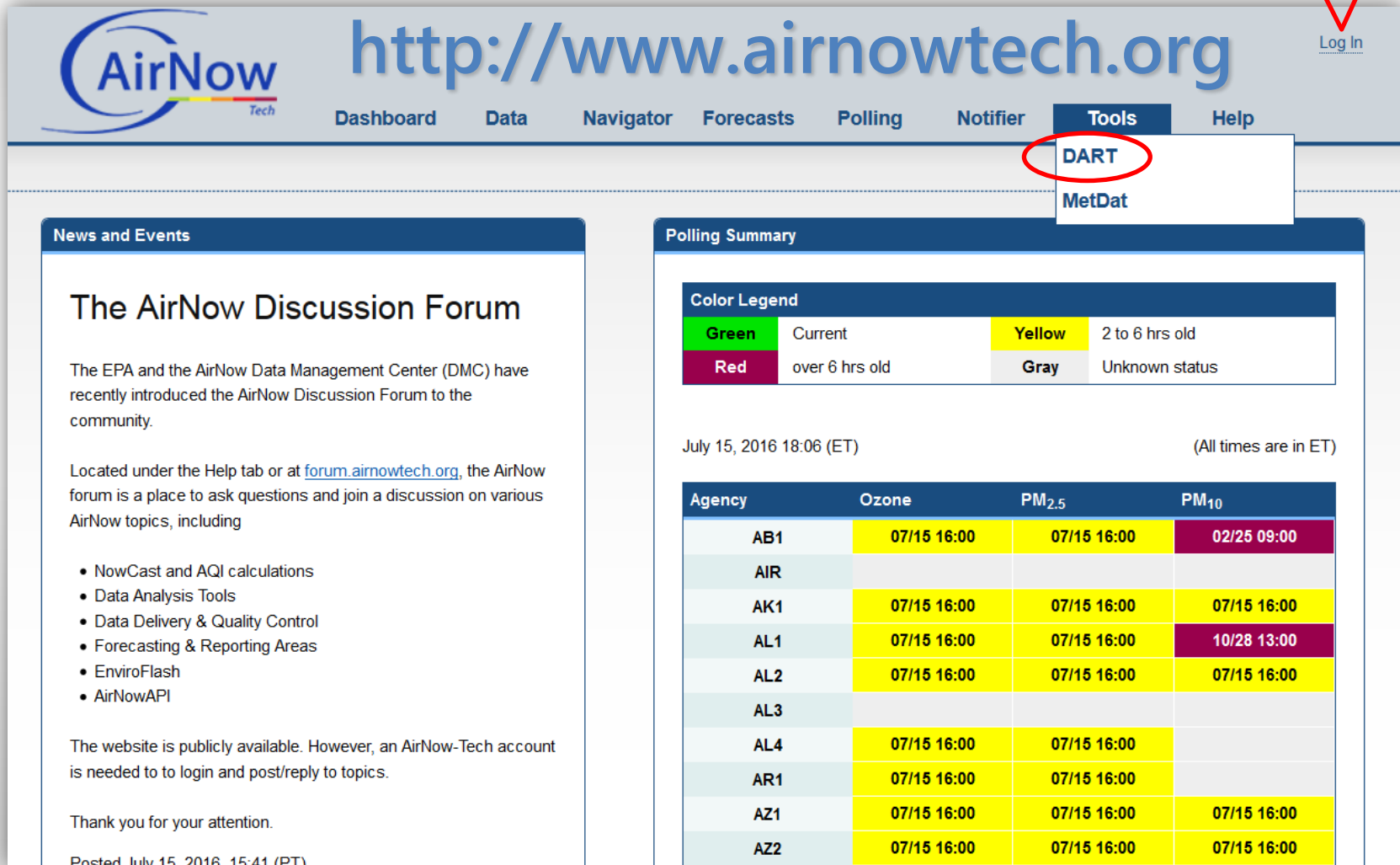
Data Analysis & Reporting Tool



- DART is a web-based data validation and analysis tool, and is part of a suite of tools available in EPA's AirNow-Tech.
- DART allows monitoring agencies to manage, explore, validate, and flag data – including automated screening, statistical summaries, and preparation for AQS submittal.

Accessing DART

Requires
AirNow-Tech
account



The screenshot shows the AirNow Tech website interface. The URL <http://www.airnowtech.org> is displayed at the top. The navigation menu includes Dashboard, Data, Navigator, Forecasts, Polling, Notifier, Tools, and Help. The Tools menu is expanded, showing DART and MetDat. A red callout box points to the DART option with the text "Requires AirNow-Tech account".

News and Events

The AirNow Discussion Forum

The EPA and the AirNow Data Management Center (DMC) have recently introduced the AirNow Discussion Forum to the community.

Located under the Help tab or at forum.airnowtech.org, the AirNow forum is a place to ask questions and join a discussion on various AirNow topics, including

- NowCast and AQI calculations
- Data Analysis Tools
- Data Delivery & Quality Control
- Forecasting & Reporting Areas
- EnviroFlash
- AirNowAPI

The website is publicly available. However, an AirNow-Tech account is needed to login and post/reply to topics.

Thank you for your attention.

Posted: July 15, 2016, 15:41 (PT)

Polling Summary

Color Legend

Green	Current	Yellow	2 to 6 hrs old
Red	over 6 hrs old	Gray	Unknown status

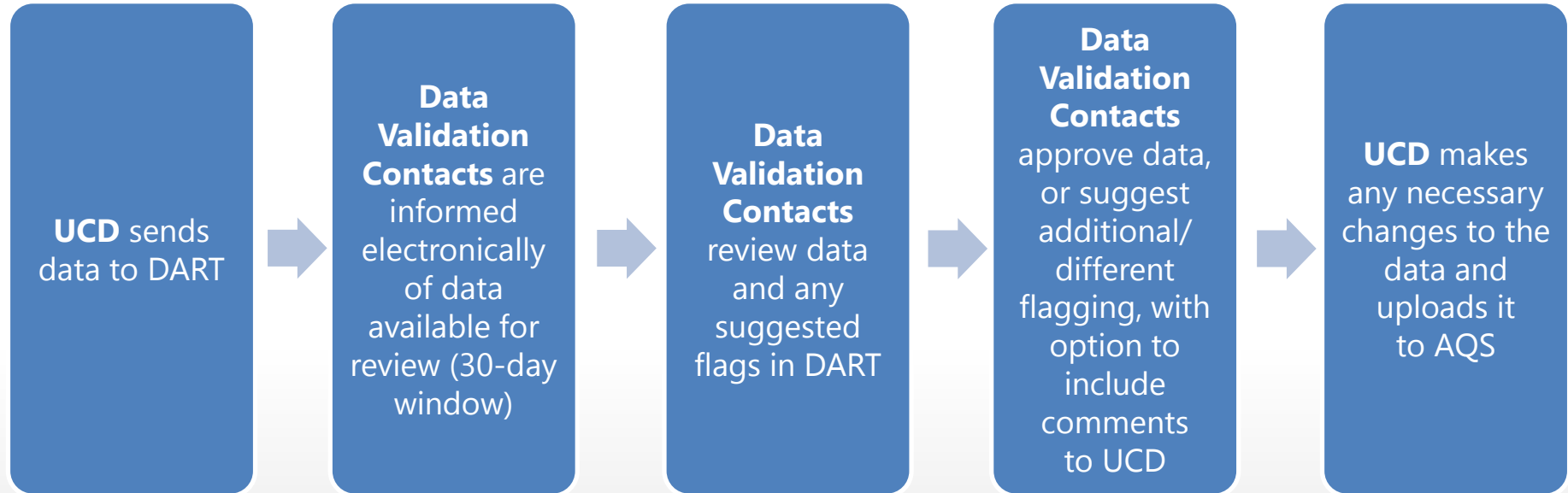
July 15, 2016 18:06 (ET) (All times are in ET)

Agency	Ozone	PM _{2.5}	PM ₁₀
AB1	07/15 16:00	07/15 16:00	02/25 09:00
AIR			
AK1	07/15 16:00	07/15 16:00	07/15 16:00
AL1	07/15 16:00	07/15 16:00	10/28 13:00
AL2	07/15 16:00	07/15 16:00	07/15 16:00
AL3			
AL4	07/15 16:00	07/15 16:00	
AR1	07/15 16:00	07/15 16:00	
AZ1	07/15 16:00	07/15 16:00	07/15 16:00
AZ2	07/15 16:00	07/15 16:00	07/15 16:00

CSN Data Review Process

1. UC Davis (UCD) generates laboratory data; acquires mass data from continuous FEMs (as available) from AirNow-Tech.
2. UCD conducts data validation (details on next slide).
3. UCD sends the data batch to DART.
4. DART ingests the batch data, then automatically alerts CSN data reviewers (details on following slides) that data are available in DART.
5. CSN data reviewers then have 30 days to review and approve the data.
6. After 30 days, the data are sent back to UCD for final review and submission to AQS.

DART Data Flow for CSN



CSN Data Validators

- One agency is responsible for data validation for each site (e.g., the New York Department of Environmental Conservation will review Rochester site data).
- For each site, EPA provided a list of data validators and their associated agencies.
- All listed data validators for an individual agency have access to the agency data in DART; no one has access to data that are not for their agency.
- Once data are available for review in DART, the data validators will automatically be contacted via email.

CSN Data Review in DART

- Once data are in DART, validators have 30 days to review and approve the CSN batch.
- DART provides summary statistics
 - Flags and comments applied by UCD
 - Other data characteristics (percent complete, percent above detection limit, etc.)
- In DART, validators can flag and comment on data for UCD to review, and use sortable tables to review the CSN batch.
- Time series and bar plots are linked to the data table so validators can also graph the data.

CSN Data Review in DART

From: Dart Email Notification [<mailto:noreply@airnowtech.org>]
Sent: Friday, June 24, 2016 10:33 AM
To: Angela L. Ekstrand
Subject: Current batch of CSN data expires in 14 days!

Automated Notification
Via Email

Dear DART User,

Please disregard this email if you have already completed your review.

You currently have a batch of CSN data waiting for you to approve in [DART](#). These data are available until 11:59 pm on **Saturday, July 23, 2016**; upon expiration, the data are returned to the laboratory and submitted to AQS.

"Review By"

Your current batch has 2 sites.

QUEENS COLLEGE 2 (360810124) has 14 samples from 11/20/2015 00:00:00 to 12/29/2015 00:00:00.

Data sets

PINNACLE STATE PARK (361010003) has 14 samples from 11/20/2015 00:00:00 to 12/29/2015 00:00:00.

Please email CSNsupport@sonomatech.com if you have questions or trouble accessing your data.

Help!

Thanks,
DART Support Team

CSN Data Review in DART

DART Manage | Explore | Validate | Export | Help

New York Dept. of Environmental Conservation Data Sets

Approval Mode for review of data from the lab

Date Received	Type	Dataset Name	Date Range (LST)	Data Status	Download	Approval Status
06/27/2016	Lab - CSN	360010005 CSN Data	11/26/2015 - 12/26/2015	Ready for use		
06/27/2016	Lab - CSN	360050110 CSN Data	11/20/2015 - 12/29/2015	Ready for use		
06/27/2016	Lab - CSN	360290005 CSN Data	11/26/2015 - 12/26/2015	Ready for use		
06/27/2016	Lab - CSN	360310003 CSN Data	11/26/2015 - 12/26/2015	Ready for use		
06/27/2016	Lab - CSN	360551007 CSN Data	11/20/2015 - 12/29/2015	Ready for use		
06/27/2016	Lab - CSN	360610134 CSN Data	11/20/2015 - 12/29/2015	Ready for use		
06/27/2016	Lab - CSN	360810124 CSN Data	11/20/2015 - 12/29/2015	Ready for use		
06/27/2016	Lab - CSN	361010003 CSN Data	11/20/2015 - 12/29/2015	Ready for use		

CSN Data Review in DART

← Batch Created: 07/29/2016 - Review By: 08/28/2016 23:59

"Review By" Date

Total Samples: 6

Date Range: 01/07/2016 - 02/06/2016

Date	Species	Total Qualifiers	Total Null Codes	Data Completeness	Data Above Detection
01/07/2016	47	32	11	77%	32%
01/13/2016	47	45	1	98%	34%
01/19/2016	47	28	1	98%	40%
01/25/2016	47	26	1	98%	45%
01/31/2016	47	30	1	98%	36%
02/06/2016	47	25	1	98%	47%

Batch Data

Flag as reviewed

Filter:

Reviewed	Date	Parameter	POC	Value	MDL	Uncertainty	Unit	Null Code	Qualifier Code	Comments
<input type="checkbox"/>	01/07/2016	Total Nitrate PM2.5 LC	5	-999.0	0.0	0.0	ug/m3	AM		
<input type="checkbox"/>	01/07/2016	Vanadium PM2.5 LC	5	-1.2E-4	0.00128	7.8E-4	ug/m3		MD	
<input type="checkbox"/>	01/07/2016	Zinc PM2.5 LC	5	0.00162	0.00326	0.00199	ug/m3		MD	
<input type="checkbox"/>	01/07/2016	Zirconium PM2.5 LC	5	-0.00198	0.01561	0.0095	ug/m3		MD	
<input checked="" type="checkbox"/>	01/13/2016	Zirconium PM2.5 LC	5	-0.01687	0.01563	0.01039	ug/m3		5, MD	
<input type="checkbox"/>	01/13/2016	Zinc PM2.5 LC	5	0.00189	0.00327	0.002	ug/m3		5, MD	

Save

CSN Data Review in DART

Batch Created: 07/29/2016 - Review By: 08/28/2016 23:59
Total Samples: 6 Date Range: 01/07/2016 - 02/06/2016

Date	Species	Total Qualifiers	Total Null Codes
01/07/2016	47	32	11
01/13/2016	47	45	1

Edit Batch

Recent Comment:
Comment has not been added yet.

Edit Null Code:
No null code

Edit Qualifier Code:
× MD - Value less than MDL

Apply to:
Selected Species

Edit Comment:

Cancel Save

Comments

"Outlier for XRF-IC Comparison"
07/29/2016 16:29 UTC

Add Comment:

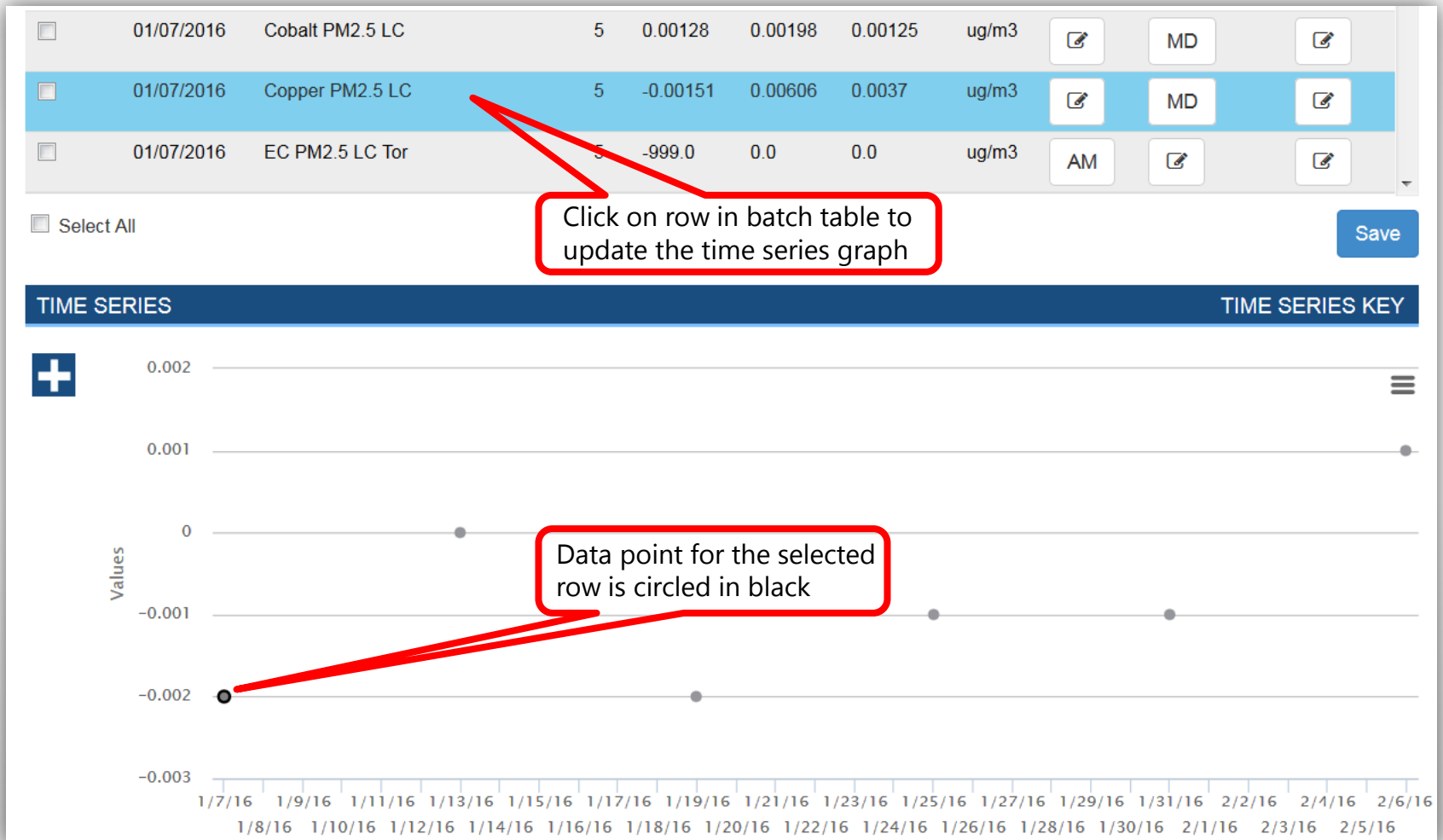
Save

MDL	Uncertainty	Unit	Null Code	Qualifier Code	Comments
0.0	0.0	ug/m3	AM		
0.00128	7.8E-4	ug/m3		MD	
0.00326	0.00199	ug/m3		MD	
0.01561	0.0095	ug/m3		MD	
0.01563	0.01039	ug/m3		5, MD	
0.00327	0.002	ug/m3		5, MD	

Apply null or qualifier codes

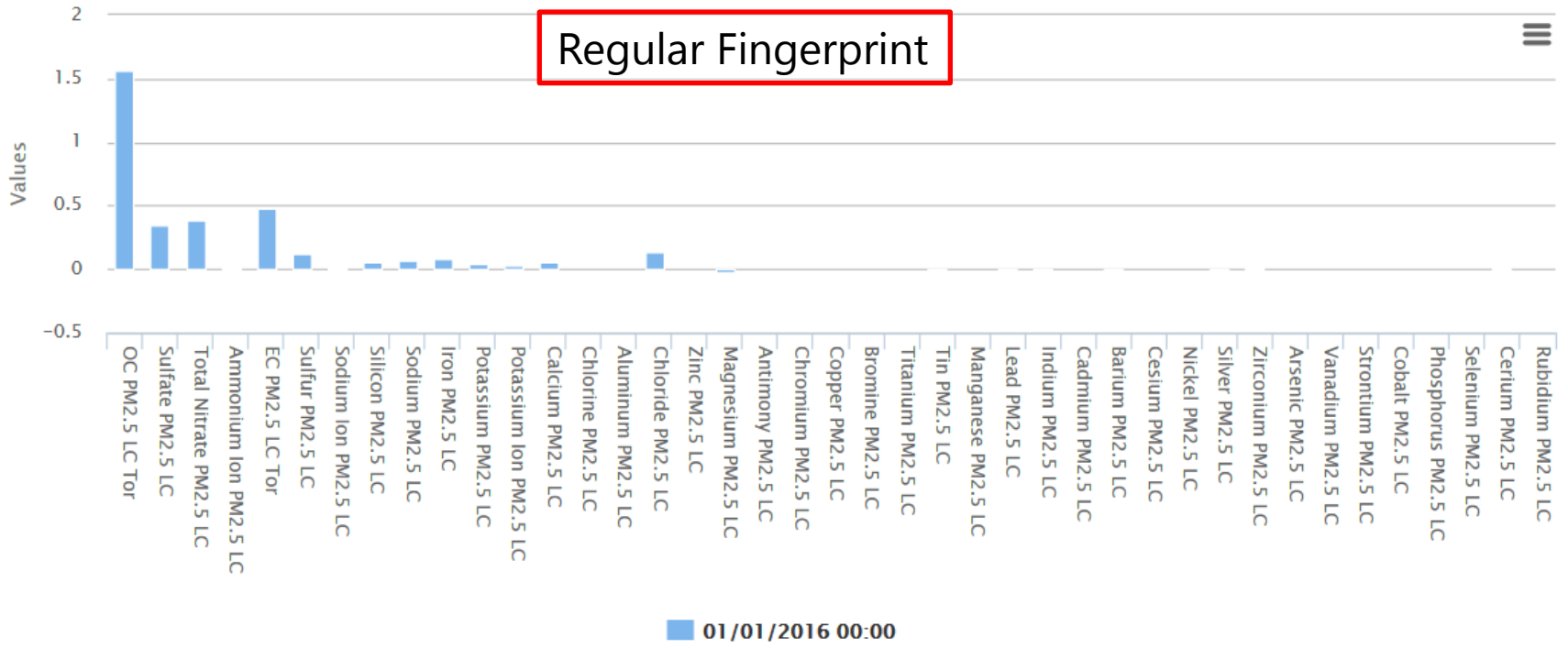
Changes and comments log

CSN Data Review in DART



CSN Data Review in DART

FINGERPRINT PLOT



01/01/2016 00:00

Date Range

01/01/2016 [calendar icon] 00 [dropdown] to 02/09/2016 [calendar icon] 00 [dropdown]

Logarithmic Y Axis
Fixed Y Axis

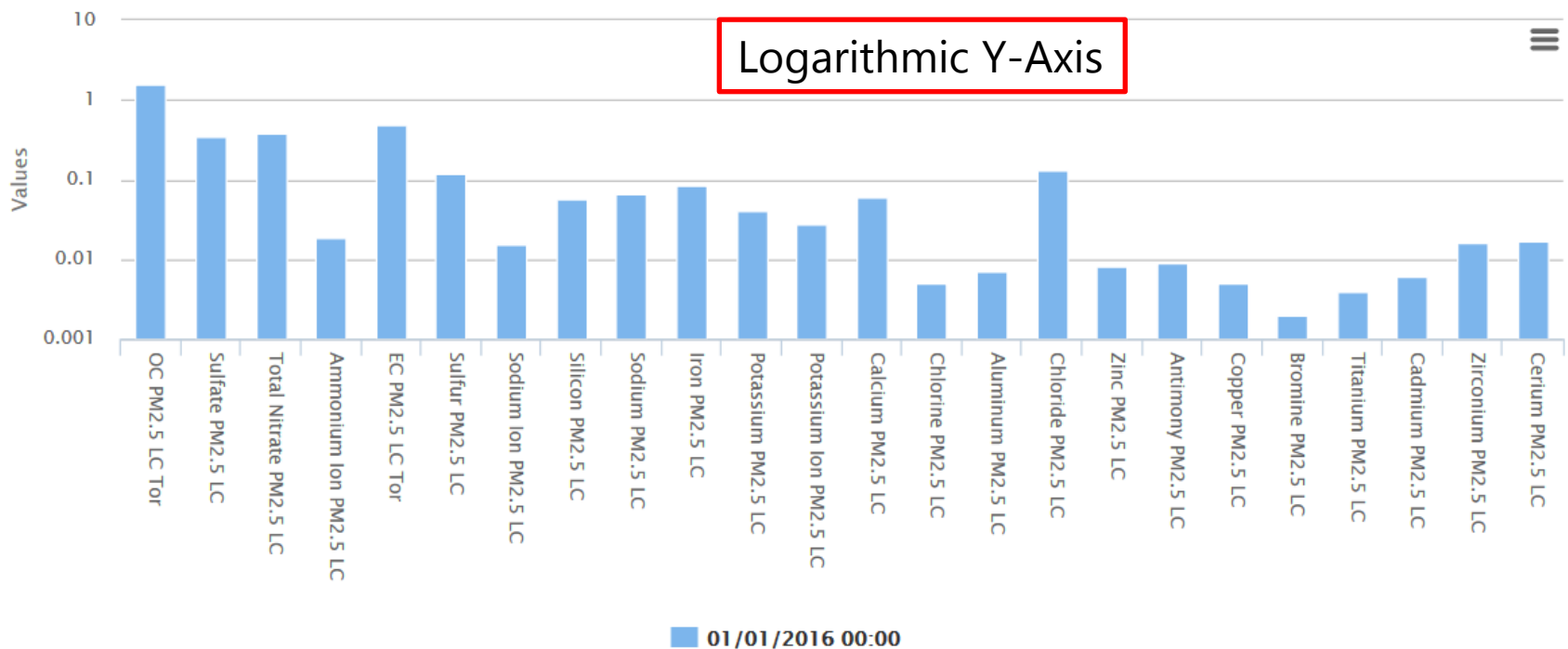
-0.5 2

Update Graph

Next

CSN Data Review in DART

FINGERPRINT PLOT



Warning: With a logarithmic Y axis, negative and zero values are not shown.

Next

Logarithmic Y Axis

Fixed Y Axis

Date Range

01/01/2016



00

▼

to

02/09/2016



00

▼

-3

1

Update Graph

CSN Data Review in DART

FINGERPRINT PLOT

ROCHESTER 2 Settings Graph

360010005 CSN Data
 360050110 CSN Data
 360290005 CSN Data
 360310003 CSN Data
 360551007 CSN Data
 360610134 CSN Data
 360810124 CSN Data
 361010003 CSN Data

My Data Sets
 My Sample Data Set

Date Range: 01/01/2016

Select All
 Select All CSN Species
 Sort by CSN
 Filter by Nylon
 Filter by Quartz
 Filter by Teflon

<input checked="" type="checkbox"/> OC PM2.5 LC Tor	<input checked="" type="checkbox"/> Sulfate PM2.5 LC	<input checked="" type="checkbox"/> Total Nitrate PM2.5 LC	<input checked="" type="checkbox"/> Ammonium Ion PM2.5 LC
<input checked="" type="checkbox"/> EC PM2.5 LC Tor	<input checked="" type="checkbox"/> Sulfur PM2.5 LC	<input checked="" type="checkbox"/> Sodium Ion PM2.5 LC	<input checked="" type="checkbox"/> Silicon PM2.5 LC
<input checked="" type="checkbox"/> Sodium PM2.5 LC	<input checked="" type="checkbox"/> Iron PM2.5 LC	<input checked="" type="checkbox"/> Potassium PM2.5 LC	<input checked="" type="checkbox"/> Potassium Ion PM2.5 LC
<input checked="" type="checkbox"/> Calcium PM2.5 LC	<input checked="" type="checkbox"/> Chlorine PM2.5 LC	<input checked="" type="checkbox"/> Aluminum PM2.5 LC	<input checked="" type="checkbox"/> Chloride PM2.5 LC
<input checked="" type="checkbox"/> Zinc PM2.5 LC	<input checked="" type="checkbox"/> Magnesium PM2.5 LC	<input checked="" type="checkbox"/> Antimony PM2.5 LC	<input checked="" type="checkbox"/> Chromium PM2.5 LC
<input checked="" type="checkbox"/> Copper PM2.5 LC	<input checked="" type="checkbox"/> Bromine PM2.5 LC	<input checked="" type="checkbox"/> Titanium PM2.5 LC	<input checked="" type="checkbox"/> Tin PM2.5 LC
<input checked="" type="checkbox"/> Manganese PM2.5 LC	<input checked="" type="checkbox"/> Lead PM2.5 LC	<input checked="" type="checkbox"/> Indium PM2.5 LC	<input checked="" type="checkbox"/> Cadmium PM2.5 LC
<input checked="" type="checkbox"/> Barium PM2.5 LC	<input checked="" type="checkbox"/> Cesium PM2.5 LC	<input checked="" type="checkbox"/> Nickel PM2.5 LC	<input checked="" type="checkbox"/> Silver PM2.5 LC
<input checked="" type="checkbox"/> Zirconium PM2.5 LC	<input checked="" type="checkbox"/> Arsenic PM2.5 LC	<input checked="" type="checkbox"/> Vanadium PM2.5 LC	<input checked="" type="checkbox"/> Strontium PM2.5 LC
<input checked="" type="checkbox"/> Cobalt PM2.5 LC	<input checked="" type="checkbox"/> Phosphorus PM2.5 LC	<input checked="" type="checkbox"/> Selenium PM2.5 LC	<input checked="" type="checkbox"/> Cerium PM2.5 LC
<input checked="" type="checkbox"/> Rubidium PM2.5 LC	<input type="checkbox"/> Ammonium Nitrate PM2.5 LC	<input type="checkbox"/> Ammonium Sulfate PM2.5 LC	<input type="checkbox"/> Elements
<input type="checkbox"/> Ions	<input type="checkbox"/> Organic Carbon Mass PM2.5 LC	<input type="checkbox"/> PM2.5 Raw Data	<input type="checkbox"/> Reconstructed Mass PM2.5 LC

Soil PM2.5 LC
 02/01/2016
 Update Graph

















Getting Help

Access the online Help from any page in DART

DART

Manage | Explore | Validate | Export | Help

New York Dept. of Environmental Conservation Data Sets

Date Received	Type	Data Set Name	Date Range (LST)	Data Status	Download	Approval Status
06/27/2016	Lab - CSN	360010005 CSN Data	11/26/2015 - 12/26/2015	Ready for use		
06/27/2016	Lab - CSN	360050110 CSN Data	11/20/2015 - 12/29/2015	Ready for use		
06/27/2016	Lab - CSN	360290005 CSN Data	11/26/2015 - 12/26/2015	Ready for use		
06/27/2016	Lab - CSN	360310003 CSN Data	11/26/2015 - 12/26/2015	Ready for use		
06/27/2016	Lab - CSN	360551007 CSN Data	11/20/2015 - 12/29/2015	Ready for use		
06/27/2016	Lab - CSN	360610134 CSN Data	11/20/2015 - 12/29/2015	Ready for use		
06/27/2016	Lab - CSN	360810124 CSN Data	11/20/2015 - 12/29/2015	Ready for use		
06/27/2016	Lab - CSN	361010003 CSN Data	11/20/2015 - 12/29/2015	Ready for use		

Section 4.1.2 describes using DART for CSN data review.

Getting Help

DART

Search

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 - 4.1.2 Agency Data Sets from a Labo
 - 4.2 Explore
 - 4.3 Validate
 - 4.4 Export
- 5. More Information
- Acknowledgments
- Glossary and Acronyms

(Previous Topic: [4.1.1 Supported File Formats](#))

4.1.2 Agency Data Sets from a Laboratory

In addition to ingesting file uploads and AQS requests, DART can ingest data directly from an air quality laboratory. Data from a laboratory can be provided to DART via File Transfer Protocol (FTP) and are automatically made available in the correct DART user accounts.

Currently, PM_{2.5} speciation data collected as part of the Chemical Speciation Network (CSN) program are transferred to DART from the Crocker Nuclear Laboratory at the University of California, Davis. CSN data are listed in the **Agency** table on the **Manage** screen, in the DART user accounts that are registered to the appropriate agency. Data are received from the laboratory in batches and are available for review and validation using the DART **Approval Mode** screen.

Date Received	Type	Data Set Name	Date Range (E-ETS)	Status
03/30/2016	Lab - CSN	306019605 CSN Data	11/26/2015 - 11/26/2015	Ready
03/30/2016	Lab - CSN	306019116 CSN Data	11/23/2015 - 11/24/2015	Ready
03/30/2016	Lab - CSN	306019065 CSN Data	11/26/2015 - 11/26/2015	Ready
03/30/2016	Lab - CSN	306119063 CSN Data	11/26/2015 - 11/26/2015	Ready
03/30/2016	Lab - CSN	306019067 CSN Data	11/23/2015 - 11/24/2015	Ready
03/30/2016	Lab - CSN	306019134 CSN Data	11/23/2015 - 11/24/2015	Ready
03/30/2016	Lab - CSN	306019124 CSN Data	11/23/2015 - 11/24/2015	Ready
03/30/2016	Lab - CSN	306119063 CSN Data	11/23/2015 - 11/24/2015	Ready

View the date of the most recent batch from the laboratory.

View the data set name; each data set includes data for one monitoring site.

Note the green check mark for data that do not require review.

Click the icon to enter Approval Mode and review data from the laboratory.

Important CSN Contacts

CSNSupport@sonomatech.com

<i>Role</i>	<i>Contact</i>	<i>Phone Number</i>	<i>Email</i>
EPA Project Officer	Jeff Yane	919-541-2962	yane.jeff@epa.gov
EPA Project Manager	Elizabeth Landis	919-541-2262	landis.elizabeth@epa.gov
EPA QA Officer	Jenia Tufts	919-541-0371	tufts.jenia@epa.gov
Shipping & Handling (Amec)	Justin Knoll	352-333-6621	justin.knoll@amecfw.com
Gravimetric Analysis (Amec)	Bill Barnard	352-333-6617	bill.barnard@amecfw.com
Laboratory Analysis (UCD)	Nicole Hyslop	530-754-8979	nmhyslop@ucdavis.edu
DART (STI)	Jennifer DeWinter Steve Brown	707-665-9900	jdewinter@sonomatech.com steveb@sonomatech.com

CSN Regional Representatives

R1 - Alan VanArsdale & Catie Taylor

R2 – Mazeeda Khan

R3 – Lori Hyden

R4 – Keith Harris

R5 – Scott Hamilton

R6 – Frances Verhalen

R7 – Leland Grooms

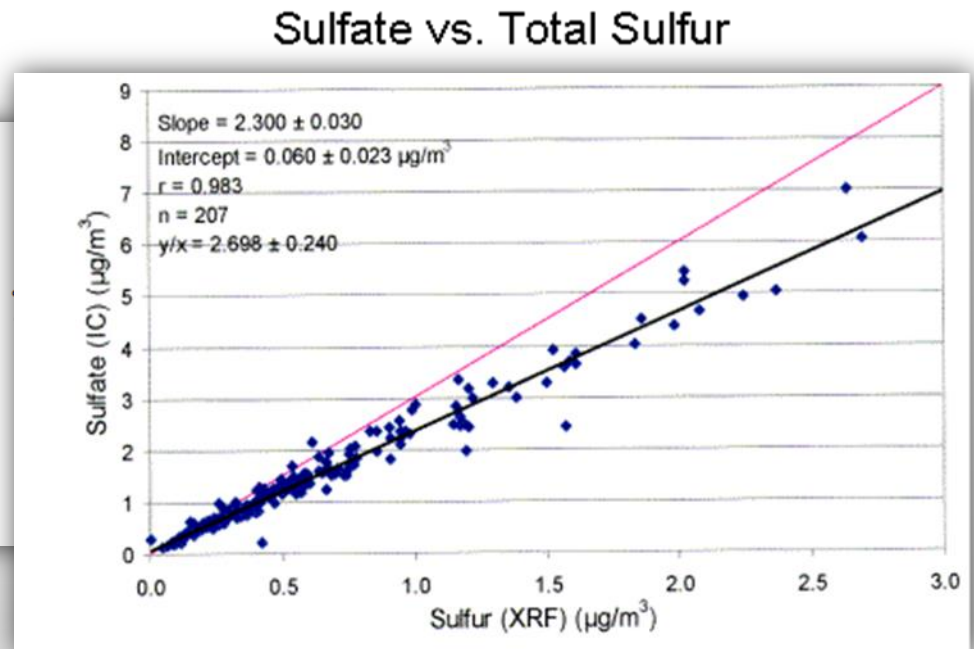
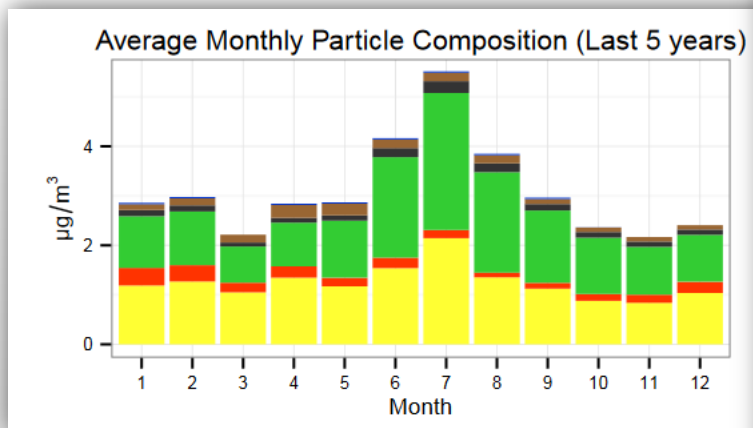
R8 – Joshua Rickard

R9 – Anna Mebust & Dena Vallano

R10 – Chris Hall & Keith Rose

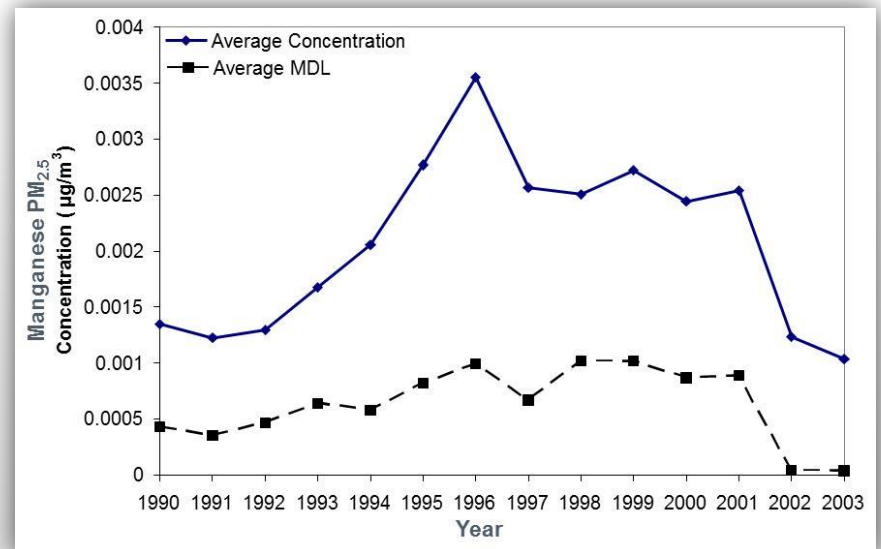
Potential New Features

- Interactive map for Data Mart AQS requests
- Compare site data to national statistics
- New analyses and plot types



Potential New Features

- Plot concentrations with MDL values
- Plot concentrations with annual averages
- Support for more import file formats
- Stacked bar plots in approval mode
- Pollution and wind roses



Acknowledgments

- Kevin Cavender, Work Assignment Manager, EPA
- Beth Landis and Joann Rice, CSN Program Support, EPA
- National Association of Clean Air Agencies Steering Committee
- Nick Mangus and Robert Coats, AQS Support, EPA

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