



PM_{2.5} Chemical Speciation Network (CSN)

CSN Newsletter

This is the March, 2023 issue of the CSN newsletter. You can find previous editions of the newsletter [here](#). We use the newsletter to communicate information on CSN that is useful to the State, Local, and Tribal (SLT) monitoring agencies and data validators, as well as users of CSN data. The EPA AMTIC page for CSN is [here](#).

CSN National Contract Update

In early March 2023, the CSN Filter Shipping, Handling, and Laboratory Analysis Contract was awarded to the Air Quality Research Center at the University of California at Davis. The contract award includes a subcontract to RTI International (RTP, NC) for the filter preparation, shipping, handling, and gravimetric analysis work. This award means that UC Davis will continue conducting the lab analysis, data review, validation and submission, but the filter preparation, shipping, handling, and gravimetric analysis work will transition to RTI International. We are planning for a 90-day transition period, so the transition will occur later this spring. We are committed to minimizing impacts of this transition on site operators and other CSN stakeholders. Please stay tuned for more information about the timeline and details of the transition.

Air Quality System (AQS) and CSN Data

When using CSN data for data analysis projects, we recommend downloading data from AQS (e.g., via the API and [Air Data](#)). Occasionally, data revisions are identified by the analysis lab resulting in data updates in AQS. To ensure you are using the most up-to-date data for your analysis, get the data from AQS right before beginning your analysis. Also, please remember AQS is the official database for CSN data, and data are typically submitted to AQS six months after the end of the sampling month (e.g., July 2022 data were submitted to AQS in mid-January 2023).



Met One Super SASS

URG 3000N

Inside this issue

Recap of PM Speciation at the NAAMC	2
Filter Absorption and HIPS	3
Custody and Field Data Forms	3
CSN/IMPROVE Archive.....	4
Update on CSN Sampler Flow Verifications/Audits and AQS	5

Special points of interest

- The 2023 Shipping and Sampling Calendars for CSN are now available
- Reminder of DART Page for Agencies to Manage Users
- Sampler Maintenance and Repair
- Site Relocations
- 2020 and 2021 Site Summaries Available

2023 Shipping and Sampling Schedules Available

The 2023 CSN shipping and sampling schedules for 1-in-3 and 1-in-6 day sampling are now available. Copies of the schedules were sent to site operators in a December 2022 shipment and also emailed to site operators and EPA CSN Region representatives.

The schedules have also been posted on EPA's CSN AMTIC web site [here](#).



Reminder: DART Page for Agencies to Manage Users

There is a "Manage Users" feature in DART that allows monitoring agencies to configure CSN validator's roles. Select your agency at the top left of the Manage Users page to see a list of users with a DART account. Individuals can be assigned "CSN Admin", "CSN Validator", and/or "CSN Emails" roles.

Please confirm your Agency's Administrators, Validators, and those wishing to get DART emails using this page (uncheck or check the box as needed in the corresponding columns). Note, the "Manage Users" page is only visible to users with the CSN Admin role.

To add a new validator, users must first sign up for a DART account [here](#).

CSN at the August 2022 National Ambient Air Monitoring Conference

EPA, in conjunction with AAPCA and NACAA, hosted the [2022 National Ambient Air Monitoring Conference \(NAAMC\)](#) August 22-25, 2022 in Pittsburgh, PA.

NAAMC had one 2-hour technical session on PM Speciation and included 20 minute talks on:

- CSN Overview and Updates—*Melinda Beaver (EPA)*
- Source Specific Emission Factors of BC and OC—*Balint Alföldy (Aerosol)*
- Water Soluble Nitrogen—*Kevin Mishoe (Wood)*
- Low-Cost, High Performance Industrial Carbon Sensor—*David Gobeli (Met One)*
- Interlaboratory Comparison of Elemental Loadings via EDXRF and ICP-MS — *Colleen Rosales (UC Davis)*
- Suspected Stainless Steel Contamination on CSN Filters— *Sean Raffuse (UC Davis)*

Additionally, two CSN-related trainings were offered:

- CSN Data Analysis and Review Tool (DART) Training—*Alex Murrain (UCD) and Jennifer DeWinter (STI)*
- CSN/IMPROVE Data Viewer Demonstration — *Sean Raffuse (UC Davis)*

Several CSN Posters were also presented:

- Application of Hybrid Integrating Plate/Sphere Analysis for the Chemical Speciation Network—*Nick Spada (UC Davis)*
- Composition of Organic Aerosols in the IMPROVE and CSN Networks—*Nicky Young (UC Davis)*



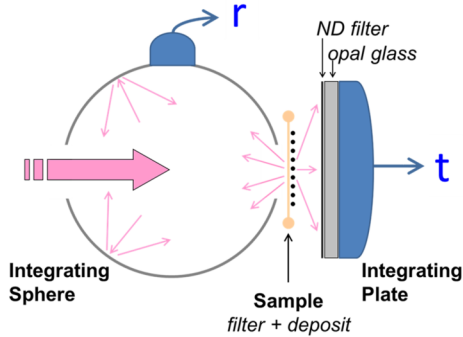
- CSN Data Trends Before and After the Contractor Transition in 2015—*Xiaolu Zhang (UC Davis)*
- Evidence of Organic Sulfur in PM2.5 in CSN and IMPROVE Samples—*Tracy Dombek (RTI)*
- Validation of CSN Data by Investigation — *Alex Murrain (UC Davis)*
- Next Generation Upgrades to the IMPROVE PM Sampler— *Faris Jawda (UC Davis)*

Slides for the presentations and data validation training are available at: <https://www.epa.gov/amtic/2022-national-ambient-air-monitoring-conference>.



HIPS and Filter Light Absorption Measurements

Hybrid Integrating Plate/Sphere (HIPS)



Illumination: He-Ne laser at 633 nm

Filter light absorption (F_{abs}) is currently being measured on CSN Teflon® filters using a HIPS (Hybrid Integrating Plate and Sphere) system. The HIPS uses a 633nm (red) light source directed at the filter. The transmitted and reflected light are measured for sampled and blank filters and used to calculate the absorption of the particulate matter on the filter. This method has been used on IMPROVE samples since 1994.

The HIPS data provides two advantages to the CSN dataset:

- 1) as a cross-filter validation tool for elemental carbon which is measured using Thermal/Optical Analysis on quartz filters; and 2) an additional parameter indicative of the light absorbing nature of the sampled particulate matter.

Starting with May 2022 samples, the filter light absorption data are being submitted to DART for validator use and review and then submitted to AQS as parameter 63120. For tips about using the F_{abs} parameter in data review and validation, please see the DART training slides 52 and 53 posted here: https://www.epa.gov/system/files/documents/2022-10/CSN_DART_Training_NAAMC_v3_508.pdf.

2020 and 2021 Site Summaries Available

Starting in 2017, our analysis laboratory contractor has compiled individual CSN site summaries.

These summaries include information on the site AQS ID, site latitude/longitude, completeness, daily reconstructed fine mass (RCFM), long-term trends in RCFM, chemical composition, and a map of RCFM as compared to both nearby CSN and Interagency Monitoring of PROtected Visual Environments (IMPROVE) monitoring sites.

To view all CSN site summaries for 2017–2021, please visit:

<https://agrc.ucdavis.edu/csn-field-sites-maps>.




The CSN submits approximately 1.2 Million raw data records to AQS each year:

- 78 routine parameters/site
- 79 1-in-3 sites
- 64 1-in-6 sites
- 1 field blank/site/month

Additionally, state and local monitoring agencies submit monthly QC flow verification and audit data to AQS.

CSN Custody and Field Data Forms

Just a reminder to print clearly when filling out field data sheets. The CSN contractors work hard to enter field data into the database and clear, legible handwriting helps speed this along and helps reduce errors. Thanks for your continued efforts!



PM2.5 CSN CUSTODY
AND FIELD DATA FORM

White (return to lab)
 Yellow (site retains)

A. CUSTODY RECORD (Name, Date) Bin ID:

Name		Date	
1. Laboratory Out:	<input type="text"/>	<input type="text"/>	<input type="text"/>
2. Site In:	<input type="text"/>	<input type="text"/>	<input type="text"/>
3. Site Out:	<input type="text"/>	<input type="text"/>	<input type="text"/>
4. Laboratory In:	<input type="text"/>	<input type="text"/>	<input type="text"/>

CSN Sampler Maintenance and Repair

Monitoring agencies are responsible for the maintenance, repair, and if needed, replacement, of CSN samplers.

Please see the sampler Operators' Manuals for recommended maintenance tasks and schedules.

Contact info for sampler manufacturers is:

Met One: <https://metone.com/request-support/>

URG: <http://www.urgcorp.com/index.php/contact>

Reminder: Site Relocations

If monitoring agencies have a need to relocate a CSN site, please discuss with your CSN EPA Regional Representative.

Moving CSN sites that are designated as STN sites or that are at NCore Stations have a formal approval process per 40 CFR Part 58.11(c).

Also, setting up the new CSN monitors in AQS is the responsibility of the monitoring agency, but please let your EPA regional representative know if you have questions about this process.



CSN/IMPROVE Archive (CIA) Tool

The CSN/IMPROVE Archive (CIA) is a suite of interactive tools for CSN and IMPROVE data that has been developed by the UC Davis Air Quality Research Center (AQRC).

Some things you can do with the CIA:

- Map concentrations, overlay satellite imagery, and run backward trajectory modeling to assess transport.
- Navigate in space and time simultaneously through interactive linked views (see screenshot below).
- Assess how sampling methods at a site have changed over time.
- Look at data aggregated over months or over a spatial region.
- Examine the relationship between species.
- Look at network-wide and inter-network trends.
- Analyze the frequency and pattern of qualifier codes.
- Assess data quality through plots of

data from collocated monitors.

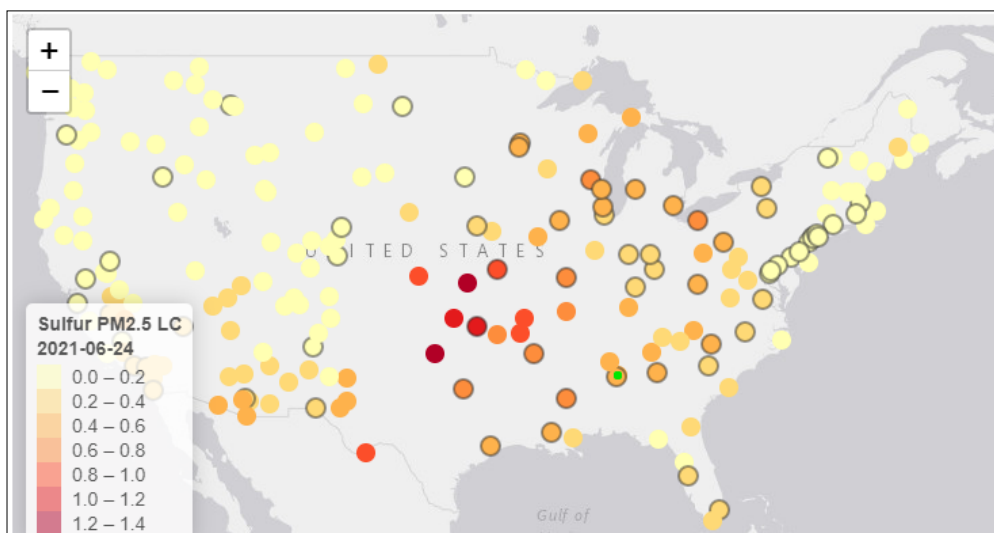
To access the CIA:

- 1) Go to <https://particles.ucdavis.edu> and sign up.
- 2) Email signup-aqrc@ucdavis.edu to request authorization
- 3) You should receive a notification that your account is active; go to <https://particles.ucdavis.edu> and explore.

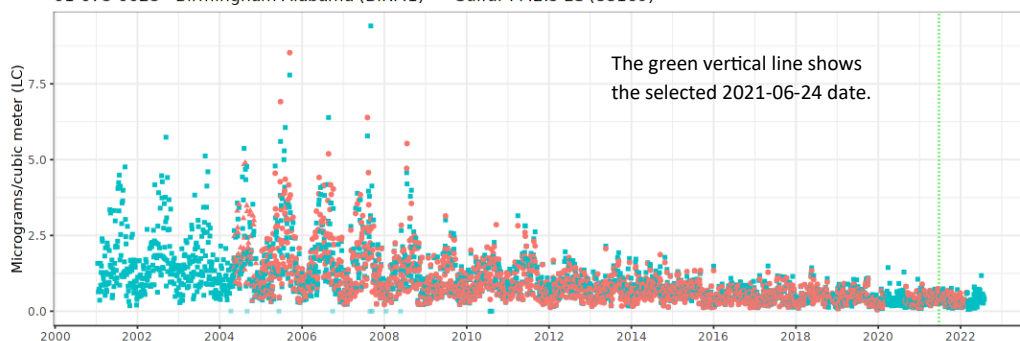
Note, the CIA Tool is a match of the CSN and IMPROVE data in UCD AQRC's database and will not reflect updates to data that states may have made after data were submitted to AQS.

A few development tasks for CIA are underway in 2023. If users have additional suggestions for CIA development, please reach out to sraffuse@ucdavis.edu or beaver.melinda@epa.gov.

An example from the CIA of a national spatial map of Sulfur and a time series of CSN and IMPROVE data for the selected site Birmingham, AL (green dot on the map) are provided below.



01-073-0023 - Birmingham Alabama (BIRM1) -- Sulfur PM2.5 LC (88169)



The green vertical line shows the selected 2021-06-24 date.

Update on CSN Sampler Flow Verifications/ Audits and AQS

In the March 2022 newsletter, we included a summary of an effort to increase the submission of CSN sampler flow rate results in AQS. EPA continues to work with monitoring agencies on Phase I of the process, which is to get missing 'Sampler ID' and 'channel count' AQS fields updated. Once completed, we will move to working with agencies to edit existing fields where needed.

In each phase, EPA is preparing the AQS transaction files, offering the monitoring agencies a chance to upload them. Or if the monitoring agencies request, EPA will upload to AQS.

We would like to thank the state and local monitoring agencies that have assisted EPA with this ongoing effort and we look forward to continuing the work. Please

contact Doug Jager (jager.doug@epa.gov) if you have questions about this effort.

Flowrate Data Completeness

Year	CSN Network Size		Flow Checks in AQS (%)
	Sampler	Count	
2017	SASS	139	39.7
2017	URG	132	48.1
2018	SASS	141	42.0
2018	URG	135	49.2
2019	SASS	144	44.5
2019	URG	136	53.6
2020	SASS	141	42.3
2020	URG	135	48.5
2021	SASS	141	38.3
2021	URG	136	45.6

Ambient Air Monitoring Group (AAMG)

We plan, implement, and assess the nation's ambient air quality networks.

We collaborate with states, locals, tribes, instrument companies, researchers and colleagues at EPA and other Federal agencies to optimize the ambient air monitoring networks.

We provide oversight, guidance, and tools to ensure quality data for clean air decisions across the country.

CSN Contacts

Wondering who the right people are to contact regarding CSN? The current contacts are:

EPA Contacts

Program Lead: Melinda Beaver; beaver.melinda@epa.gov

Technical Point of Contact: Joann Rice; rice.joann@epa.gov

Quality Assurance: Doug Jager; jager.doug@epa.gov

Mega Performance Evaluation Program: Colin Barrette; barrette.colin@epa.gov

Regional Contacts

Region 1: Anne McWilliams; mcwilliams.anne@epa.gov

Region 2: Gavin Lau; lau.gavin@epa.gov

Region 3: Lori Hyden; hyden.loretta@epa.gov

Region 4: Keith Harris; harris.keith@epa.gov

Region 5: Chad McEvoy; mcevoy.chad@epa.gov

Region 6: Josh Madden; madden.joshua@epa.gov

Region 7: Leland Grooms; grooms.leland@epa.gov

Region 8: Josh Rickard; rickard.joshua@epa.gov

Region 9: Julia Carlstad; carlstad.julia@epa.gov

Region 10: Will Wallace; wallace.will@epa.gov

General Contacts

CSNsupport@sonomatech.com

