Modification of Carbon Procedures in the Speciation Network Overview and Frequently Asked Questions (FAQs)

Overview

The $PM_{2.5}$ carbon data appear to have the greatest disparity between the urban Speciation Trends Network (STN[1]) and rural Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring programs. Two different carbon methods are currently used by the STN and IMPROVE networks. The STN uses a Thermal Optical Transmittance (TOT) method and the IMPROVE uses Thermal Optical Reflectance (TOR). Sampling differences also exist. Data users have expressed the need for consistency across the organic carbon (OC) and elemental carbon (EC) measurements provided by these programs.

Given that data consistency is desirable, OAQPS requested the Clean Air Scientific Advisory Committee (CASAC) to provide expert advice and recommendations regarding the harmonization of the rural- and urban-based $PM_{2.5}$ chemical speciation networks. CASAC gave strong general support to making changes to the STN for comparability with IMPROVE. See CASAC's recommendations in the report "EPA's Final Draft National Ambient Air Monitoring Strategy", EPA-SAB-CASAC-05-006, May 2005; posted at http://www.epa.gov/sab/pdf/casac-05-006.pdf

OAQPS is committed to establishing data comparability between the STN and IMPROVE networks while maintaining the overall program objectives of the STN to support control strategy development for the $PM_{2.5}$ NAAQS. EPA plans to ultimately convert all of the Trends and supplemental sites in the STN (about 200 sites total) to IMPROVE-like carbon sampling and analysis protocols over the next 1-3 year period.

Frequently Asked Questions (FAQs)

OAQPS has started a dialog with Regional office representatives, State and Local agencies, and the data analysis and modeling community. Here are some of the FAQs and responses so far. This document and regular updates to the FAQs are part of OAQPS' overall communication strategy to inform Regions, States, and data users about the conversion.

1) When will the carbon conversion occur?
We anticipate that the installation of sampling devices at the first 54 sites should start in the summer of 2006. Full implementation of the first phase is expected to be complete in early 2007. The subsequent phases of conversion will continue in batches of about 50 sites until all sites are complete.

[1] STN includes both the 54 Trends sites and about 150 SLAMS sites.

2) What sites will be converted first?
Initially, we planned to convert the 54 Trends sites, but discussions with data users, modelers and health effects researchers have led to a multi-factor approach to site selection. Sites in projected non-attainment areas using CAIR modeling for year 2010 were targeted in the first phase of conversion, regardless of whether the sites were Trends or SLAMS. Additional sites in the Northeast corridor were selected based on importance to the data users, and a few more sites were selected based on the location of health studies. A map of the selected sites is provided below in Figure 1.

3) Where can I find a list of the sites?
Please contact OAQPS for the list of sites. See contact information below.

4) Will the site operators be trained on any software or filter installation issues? There may be some issues with siting at some sites.
Yes, under an interagency agreement, the National Park Service (NPS) contactor will provide the samplers, and with cooperation from site operators, install them at the sites. The contractor will provide on-site training when the installation occurs. It will be up to the site operator to make sure the necessary infrastructure is in place prior to the site visit. The contractor will provide more detail on the infrastructure needed prior to installation.

5) Should our site-specific Quality Assurance Project Plan (QAPP) be updated to reflect this change?
Yes, the national speciation field QAPP is currently under revision and can serve as a “template” to assist you in QAPP revision. We expect to complete the QAPP revision by the time data collection begins.

6) How is the data to be handled? Is the old carbon channel data to be "ended" in AQS and new channel data started?
Yes, the old carbon channel sample collection will cease and the new carbon sampler will be started. Carbon sample collection using both samplers may continue for a month or so to allow for any implementation “start up” issues. OAQPS will notify sites through the Regions, DOPOs, and RTI when the STN carbon channel should be discontinued. The new carbon data will have different parameter codes and we may also use method codes and comment fields to help communicate when the change occurred in AQS. Once all of the first 56 samplers are installed, sample collection with the new sampling device will start concurrently at all sites.

7) What are the power requirements for the IMPROVE carbon sampler?
The preferred requirement is 20 amps, but a single 15 amp circuit is the minimum. Where a second circuit is available the controller is plugged in to it to avoid possible electrical interference as a precaution.

8) Are there any costs for training that the states should be focused on?
EPA will pay the cost for samplers, installation, and training from the STAG (funds set aside by the savings in shipping cost).

9) Are there additional costs that will be incurred?
There will be a recurring increase in lab analysis cost for the IMPROVE TOR analysis. This cost will be about $7 per sample which translates into $1,050 per site per year for 1 in 3 day sampling and $525 per site for 1 in 6 day sampling.

The increase will be deducted from available STAG shipping funds.

10) Who will provide carbon sample analysis?
RTI will coordinate the analysis of samples by Desert Research Institute (DRI)

11) Will the IMPROVE carbon samples be shipped separately from the routine Speciation samples?
No, RTI will add the necessary sampling cassettes and cartridges to the routine speciation shipping container. The samples will continue to be shipped under ice. You will receive one package with the necessary sampling modules, cassettes and documentation.

12) Will the carbon data be blank corrected in AQS?
Yes, the carbon data will be corrected prior to loading into AQS. New parameter codes will help clarify changes in AQS.

13) Will the method of collecting carbon field and trip blanks change?
Yes, field blanks for all species will remain in the sampler (without air flow) for the duration of sample collection. In addition, some percentage of backup filters will be collected for the carbon channel only. Trip blanks may be eliminated.

14) Is there a picture of the URG-3000N speciation sampling module for carbon?
A picture of the URG-3000N controller and sampling module is shown in Figure 2. The dimensions of the controller are: 17" x 12" x 6.75" and the weight is 22 lbs. The sampling module dimensions are: 17" x 12" x 6.75" and the weight is 39 lbs.

For more information or questions, contact Joann Rice at rice.joann@epa.gov or 919-541-3372.

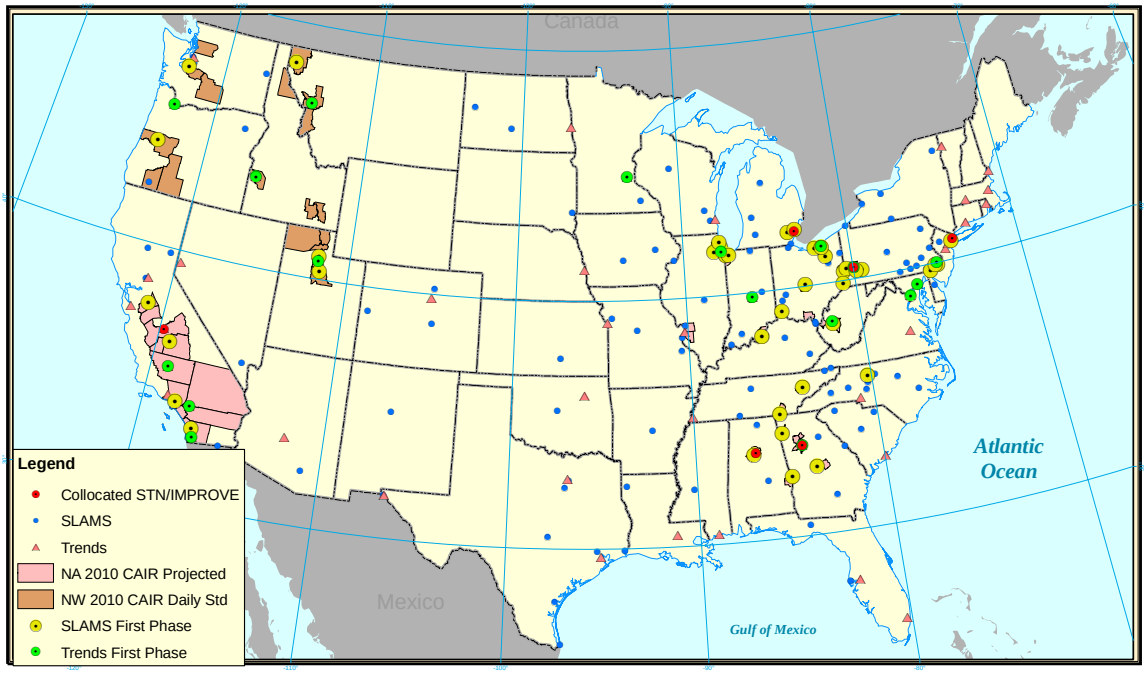

Figure 1. Map of Selected STN and SLAMS Sites

Figure 2. Picture of URG-3000N Controller and Sampling Module