

IMPROVE Steering Committee Meeting Summary
April 4 & 5, 2001
Hallmark Inn; 110 F Street; Davis, CA
Draft by Gloria Mercer, with revisions by Marc Pitchford

Overview

The steering committee met at Hallmark Inn in Davis, CA, on April 4th and 5th, 2001. A copy of the agenda and meeting participants is attached.

Major discussion topics included:

- Status of the Haze Rule guidance documents
- Status of the Quality Assurance Program Plan (QAPP)
- Aerosol audit program
- Commercially built IMPROVE samplers
- Summary of aerosol data quality workshop
- Budget update
- Nephelometer data review
- Data availability lag-time goals
- Status of IMPROVE Web site
- IMPROVE's role with RPOs, States, etc.

The following summarizes the meeting discussions and resolutions in greater detail as shown in the agenda.

Introductions and Welcome

Added to the agenda was a presentation on the Ozone Transport Commission, which is helping develop a Regional Planning Organization in the Northeast and Mid-Atlantic regions.

Several meeting attendees provided brief updates on the following visibility-related activities that they are involved with:

Arizona is planning a meeting May 10, 2001, to discuss their monitoring program plan and a source apportionment plan.

The Air and Waste Management Association is sponsoring a visibility specialty conference October 2 – 6, 2001, in Bend, OR.

Colorado power plants - Lawsuits have now been settled regarding the Hayden and Craig power plants in Colorado. The Hayden issue was settled in 1998. The Sierra Club sued Craig in October 2000 and a settlement occurred in January 2001. The settlement calls for Craig to operate with a 90% reduction in SO₂ emissions; baghouses will be used for the primary particle control.

Wyoming is establishing IMPROVE Protocol monitoring sites to fill in gaps in the IMPROVE network.

NESCAUM is funding composition analysis of FRM Teflon filters from 30-40 sites. The laboratory portion of the project is complete and data are being entered into a database.

Haze Rule Guidance Documents

Two documents are being drafted. The Trends Guidance Document will discuss how to use IMPROVE aerosol data (how to treat missing data and outliers, how to identify the best and worst days, etc.) to identify regional haze trends and determine progress toward the goal. A draft of this document is expected to be available for public review late summer or fall 2001.

The Natural Background Guidance Document will discuss three approaches: 1) Default Approach, 2) Modified Default Approach, and 3) Custom Daily Approach. The Default Approach follows John Trijonis' work in the NAPAP State of Science #24 Report. Trijonis developed reasonable estimates of natural concentrations for each of the aerosol species that contributes to haze; one set for the East and one set for the West. EPA will develop site-specific natural haze levels using these concentrations and site-specific relative humidity values for every class I area. The Modified Default Approach will allow states to technically justify the use on a site-specific basis of alternative natural species concentrations in place of those in the State of Science #24 Report. The Custom Daily Approach would involve making estimates of natural for each sample period at particle monitoring sites, and will calculate the average natural haze levels that correspond to the best and worst days for every year of data. This approach captures the sporadic nature of fire, dust, and possible volcanic contributions to natural levels. A draft of this document is expected to be available for public review sometime between Fall 2001 or Spring 2002.

WRAP is holding the second of two Fire Workshops, this one for decision-makers in May, in Phoenix, to develop a system to define natural and man-made fires and track their emissions.

Network Status

Optical: The optical networks for the NPS, USFS, USFWS, Tahoe Regional Planning Agency, Arizona, and Wyoming contain 34-35 Class I areas. These networks operate 17 transmissometers and 23 nephelometers. All operator problems have been alleviated except in San Geronio, California. Optical data through November 2000 will be available by April 15, 2001, on the IMPROVE Web site.

Standard operating procedures are being updated and will be completed in 3-6 months. They are available on the IMPROVE Web site. Slide spectrum CDs (containing good and bad visibility and special events) are being converted to HTML for placement on the Internet. The spectrums contain about 4,000 images. Digital camera systems are also being developed (both AC- and remote-powered). A Scene Monitoring Criteria Document is being drafted to present protocols of operating photographic equipment and handling data.

WinHaze, the computer program to display user-selected haze levels, now contains 57 base images of scenes at various sites, with 30 more USFS sites that will be added in about 6 weeks. The software can be used to visually change a scene on a personal computer by entering a visual air quality value. Policy-makers may find this useful in presenting air quality issues to the public's understanding. WinHaze is available on the <ftp://ftp.air-resource.com> and is linked from the IMPROVE Web site.

Aerosol: Handouts for Winter 2001 sample recovery for each site were distributed. Some version of this detailed site-by-site table will be generated quarterly and e-mailed to the Steering Committee, to provide timely feedback on site performance and permit more rapid management intervention by the sponsoring agency if it would be helpful. Consultation with UCD is essential prior to management intervention since many problems may already be solved before the tables are distributed.

Since the EPA in its regulations uses calendar years and quarters it is recommended that data reporting change from meteorological seasons to calendar quarters (or go month to month) for batch reporting of data.

Weight room relative humidity measurements are performed during post-weight filter measurements. These relative humidity measurements show seasonal trends ranging from 35% to 55%. An initial analysis performed with March, April, and May 2000 filters show that the difference between fine mass measured at laboratory relative humidity and reconstructed mass determined at essentially zero relative humidity do not significantly vary with laboratory humidity. The implementation of a relative humidity controlled weighing room has been held up for months by UCD facilities management but is expected to be installed this spring.

IMPROVE Network Expansion Status

Currently, 104 of the 110 samplers are installed and operating. Of the remaining 6, Saguario is scheduled to be installed within 2 weeks, Olympic and Simeonof have site preparation in progress, White Mountain and Hoover are currently inaccessible due to snow, and Tuxedni is pending approval.

Protocol Network Expansion Status

Currently, 19 of the 34 samplers are installed and operating. Several are scheduled to be installed within 2 weeks.

States and tribes, primarily in the center of the country, have approached NPS and UCD concerning the addition of another 17 aerosol IMPROVE Protocol sites next year. These should help fill gaps in the coverage by the current IMPROVE and IMPROVE Protocol networks.

Quality Assurance Program Plan (QAPP) Status

A first draft of the QAPP was submitted to Mike Papp November 11, 2000, and a second draft was submitted March 23, 2001. Papp recommended that the quality control and record keeping sections be modified, that the standard operating procedures summaries be shortened, and the sections on DRI and RTI be

strengthened. The Steering Committee input was solicited during the meeting on four remaining issues: 1) The scope of the QAPP should include Crocker Nuclear Labs, RTI, and DRI, and just reference the audits by EPA OAR and work done by CIRA; 2) The IMPROVE objectives should include only IMPROVE sites, not IMPROVE Protocol; 3) Data quality objectives will be supplied when the EPA guidance document is done; and 4) A description of the relationship between and responsibilities of contractors and sponsoring agencies; no resolution of this issue was made during the meeting.

QA Audit Program

EPA plans to contribute an external audit program for the IMPROVE aerosol program, to assess quality. EPA's Office of Radiation of Indoor Air (ORIA) will conduct the audit program for OAQPS. The program will review the following documents: a QAMP (Quality Assurance Management Plan; EPA will develop in Fall 2001); a QAPP (Quality Assurance Project Plan; UCD will develop in Summer 2001), and standard operating procedures (currently available). The program will also need a network plan, which should include photographs and latitude/longitude coordinates for every site, descriptions of representativeness to Class I areas, descriptions of local sources, and aerial photographs (if available). ORIA (Montgomery and Las Vegas offices) will conduct and report on technical systems audits, network reviews, performance evaluations, and management system reviews on a regular schedule starting later this year.

Commercially Built Samplers

UCD built all of the new version aerosol samplers available to date (144) and are not interested in building any others. They have started a bid process for an independent manufacturer to take over production. Several companies are bidding on the work, which will be done according to the same design specifications. A minimum of 5 samplers is specified in the request for bids; it has not yet been determined how many additional samplers will be ordered, including those for new sites, special studies, and network spares. Bids should be in by May 15, 2001.

Summary of Data QA Meeting in Ft. Collins

At an aerosol data QA meeting (February 5-7, 2001) plots were reviewed and trends and anomalies were identified. One trend that was found was a decrease in post-1995 nitrate concentrations at some sites principally in the eastern U.S. A possible cause of this may be an effect of glycerin that was added to the nitrate denuders at about this time. The cause of this trend is being further examined at UCD and will be reported on as part of the database.

Jim Sisler of CIRA will update the QA/QC procedure document next month. CIRA also uses optical and aerosol data together to test for comparability. When CIRA conducts trend analyses they may replace suspicious nitrate values with seasonal averages, and replace gaps of missing data with special study data to assemble a more complete data set. Past special study data often had non-standard start times, durations, and frequencies that are flagged so users recognize the differences. CIRA will also add flags to data indicating forest fires, extreme weather events, etc., and include a comment field.

OTC Presentation

Rich Poirot summarized the organization and recent haze-related activities of the Ozone Transport Commission (OTC is the Regional Planning Organization for Northeastern States and Tribes). This summary is available at:

http://capita.wustl.edu/NEARDAT/Activities/OTC_haze/NEhazeUpdate.htm

He also discussed the application of multivariate receptor models being used to identify sources in the Northeast and Mid-Atlantic regions. Receptor analysis approaches were performed to identify the unique compositions and daily mass contributions of sources influencing the aerosol data, and trajectory analysis was used to identify possible regions for those sources. Application of these techniques had previously been conducted for IMPROVE-type data from Underhill, VT (NESCAUM network):

<http://capita.wustl.edu/NEARDAT/Reports/Underhill/awmattoxRP.pdf>

and are currently being applied to IMPROVE aerosol data from Brigantine NJ:

<http://capita.wustl.edu/NEARDAT/Reports/Brigantine/index.htm>

Budget Update

The IMPROVE Program budget is approximately \$5.9 million for 2001. This has increased from 2000 due to contract modifications to accommodate additional sites starting up. Costs to analyze each aerosol module (A, B, C, and D) are approximately \$83, \$48, \$67, and \$40, respectively, per sample which has not significantly changed in years.

ARS Review of Optical Data

Nephelometer data have been recently reviewed to evaluate whether existing algorithms are valid and to identify and correct past and existing errors. Interference tests, data flags, and algorithms used were discussed. All nephelometer data have been reprocessed and will be available April 15, 2001. The next edition of the IMPROVE Newsletter contains a feature article on this topic.

Data Availability Lag-Time Goals

The issue of data availability is becoming more important due to the Regional Haze Rule. States are required to report data annually to the EPA. Data reporting lag-time is close to one year now, however, it used to be only 6 months. The slower data lag-times were caused by disruptions due to network expansion, change of monitoring systems (including the building of new samplers), optical data quality assurance reviews and participation in the BRAVO Study.

Nephelometer and transmissometer data are collected daily. ARS can provide "provisional" optical data monthly (not reflecting the changes resulting from annual calibrations of the transmissometers). The data could be available in real-time but this will be costly. IMPROVE set a goal for real-time optical data, but for now, "provisional" optical data should be made available within 45 days after the period of record.

Several Web cameras post images on the Internet. Having scenic photographs is an excellent method to communicate visibility conditions to the public and policy makers. Great Smoky Mountains National Park is a good example of a Web site using a real-

time Web camera and additional air quality information. Costs to operate a remote, digital camera system range from \$6,000 to \$8,000 a year per site.

UCD is batch processing filters every 3 months. A shorter turnaround time may be possible if the processing was done on a monthly or 2-month basis. UCD can make data available 5-6 months after the month of record. Posting aerosol data on a more timely schedule is difficult due to different labs involved (UCD, DRI, RTI). The steering committee set an intermediate-term goal of a 6-month turnaround after the batch processing period.

States Review of IMPROVE Data

Time limits for data submittal were discussed. States generally rely on the federal land managers to get the data, and they need to submit the data to the EPA AIRS every year. They need 5 years' of data for an SIP. States should be included on IMPROVE data meetings such as the aerosol data quality assurance workshop held last February. IMPROVE recommends an annual data review. WESTAR is planning a workshop this summer for state data analysts who will be working with this data.

Status, Plans, and Priorities for IMPROVE Web Site

The IMPROVE Web site was officially operational January 2001. It now contains standard operating procedures, special study plans and reports, IMPROVE Newsletters, Steering Committee meeting minutes, and a link to a searchable database. Future additions include: enabling ad hoc queries to the aerosol database, other IMPROVE reports, haze spectrum photographs, an upgrade to the QA/QC section, and a gray literature section. Marc Pitchford, Bill Malm, and Bret Schichtel will decide what reports will be placed on the Web site.

CIRA is promoting the Web site. It was featured in the January 2001 issue of the IMPROVE Newsletter. It will be in the CIRA newsletter in Spring 2001, in AWMA's Environmental Manager in Fall 2001, at the AWMA conference in October 2001, and at the AAAR conference in October 2001.

Items scheduled to be upgraded or added to the Web site include: ad hoc data access (April 2001), gray literature (May 2001), optical data to the database (30-60 days), special study data (June 2001), scenic photographs (June 2001?), update the QA/QC section (August 2001), update the graphic viewers (August 2001), and update the educational section (ongoing).

Proposed changes to metadata are: 1) include metadata for all sites (photographs, locations, and site descriptions), 2) more descriptive site codes (12-character codes), and 3) more descriptive data flags (a sample flag to explain events such as wildfires or road construction, a validity flag to identify valid or missing data, and a detailed flag to identify cause of invalid data such as operator error).

These changes are designed to be consistent with the new meta standard being developed by NARSTO and used by the EPA Super Site program.

WRAP Annual Report Scope of Work

WRAP has contracted with CIRA to develop a Web database. The Scope of Work includes the ability to provide custom annual data reports. The reports will be easily downloaded and customized by the user (site-specific, etc.).

IMPROVE's Role with RPOs, States, Tribes, FLMs, and Haze Rule Needs

IMPROVE's role in helping Regional Planning Organizations (RPOs) and States was discussed. IMPROVE should principally be responsible for reporting its monitoring data. IMPROVE should also provide some guidance to the RPOs, states, and tribes concerning the uses of the data.

Newsletter

The IMPROVE Newsletter is published quarterly at an annual cost of about \$2,500. Distribution is 500 hardcopies and electronically on the IMPROVE and NPS Web sites. Discussion resulted in the belief that most people would prefer getting a hardcopy and that it should remain a quarterly publication. A notice should be sent to people asking whether or not they want to remain on the mailing list, or if they want additional copies.

Feature articles that were discussed include the new proposed Tuxedni site that will be wind-powered, and an article about the OTCs work on source attribution.

→ Kristi Morris will get the Tuxedni article to ARS by early June.

-- end --

IMPROVE Steering Committee Meeting Agenda
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<u>Time</u>	<u>Topic</u>	<u>Discussion Leader</u>
<u>Wednesday, April 4</u>		
9:30am	Pre-meeting UCD particle monitoring lab tour at Crocker Lab (see directions & map) -- includes talks on RH controlled weighing room, new XRF capability, data comparability of old & new version samplers, continuous flow rate data assessment, etc. –	UCD staff
12:00pm	Lunch	
1:30pm	Introductions & Welcome	Marc Pitchford
2:00pm	Haze Rule guidance documents updates	Marc Pitchford
2:30pm	Network Status	
	Optical	John Molenaar
	Aerosol	Lowell Ashbaugh
3:30pm	Break	
3:45pm	IMPROVE network expansion update	Bob Eldred
4:00pm	Protocol network expansion update	Bob Eldred
4:10 pm	Quality Assurance Program Plan status	Bob Eldred
4:20 pm	Commercial availability of samplers	Bob Flocchini
4:30 pm	Summary of data QA meeting in Ft. Collins	Bret Schichtel
5:00pm	Adjourn for the day	
<u>Thursday, April 5</u>		
8:00am	Budget update	Mark Scruggs
8:15am	ARS review of optical data	John Molenaar
8:45am	Data availability lag-time goals	Marc Pitchford
9:15am	States review of the IMPROVE data	Dan Ely
9:45am	Break	
10:00am	Status, plans, & priorities for IMPROVE Web -- includes proposals for new sites codes & flags, "gray" literature archive, interactions with WRAP, & potential other RPOs, etc.—	Bret Schichtel
10:45am	WRAP annual report SOW	Marc Pitchford
11:00am	IMPROVE's role with regard to RPOs, states, Tribes, & FLMs Haze Rule needs	Marc Pitchford
11:45am	Quarterly newsletter – continue as is or go 100% electronic, suggestions for new features	Gloria Mercer
12:00pm	Adjourn	

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Darcy Anderson	Arizona DEQ
Scott Archer	BLM
Lowell Ashbaugh	UCD
Bob Bachman	USDA FS
Scott Copeland	CIRA
Charles Davis	North Carolina / MARAMA
Bob Eldred	UCD
Dan Ely	Colorado Air Division / STAPPA/ALAPCO
Bob Flocchini	UCD
Scott Faller	EPA (ORIA – Las Vegas)
Dennis Haddow	USDA FS
Bob Lebens	WESTAR
Jeff Lentz	EPA – Las Vegas
Melissa Lunden	Lawrence Berkeley National Labs
Dave Maxwell	NPS
Gloria Mercer	ARS
John Molenar	ARS
Tom Moore	Arizona DEQ
Kristi Morris	USFWS
Marc Pitchford	NOAA
Rich Poirot	Vermont DEC / NESCAUM
Bret Schichtel	NPS / CIRA
Bob Schick	Wyoming DEQ/AQD
Mark Scruggs	NPS
Jewell Smiley	EPA - Montgomery