INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS

IMPROVE

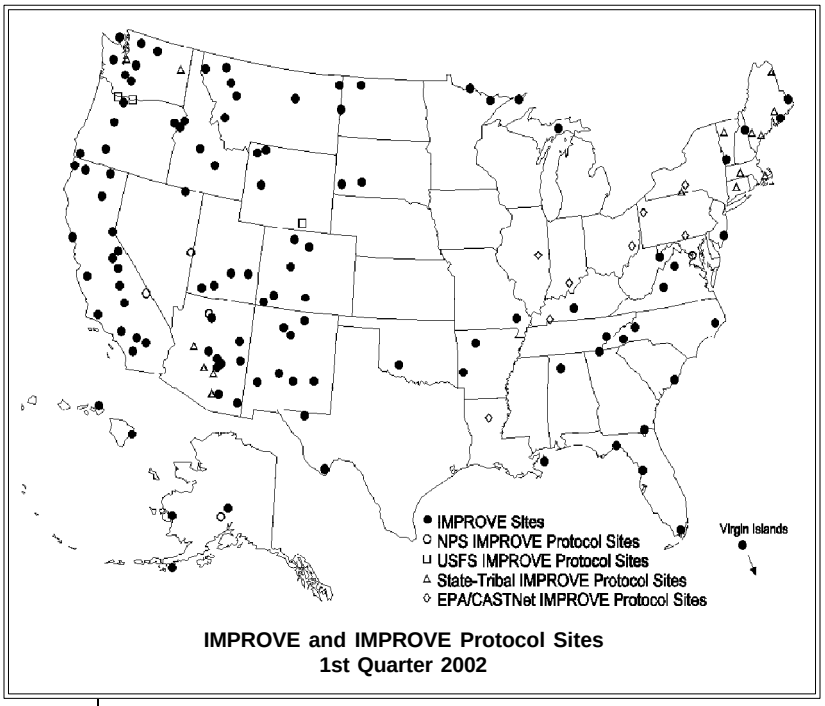
1st Quarter 2002 | The IMPROVE Newsletter | Volume 11 / Number 1

Monitoring update

Network expansion in the Midwest

The Midwestern United States has few Class I areas, hence up until now visibility monitoring was sparse in that region. The Regional Haze Regulations and the creation of regional planning organizations helped spur the movement to monitor visual air quality in this region. This spring, 19 sites in the Midwest are expected to join the IMPROVE protocol network and receive aerosol samplers. These new sites and sponsors will be:

1.	Blue Mounds	State of Minnesota
2.	Great River Bluffs	State of Minnesota
3.	Niobrara River	State of Nebraska
4.	Omaha Reservation	Omaha Tribe, NE
5.	North Platte	State of Nebraska
6.	Nebraska NF	State of Nebraska
7.	Viking Lake	State of Iowa
8.	Lake Sugema	State of Iowa
9.	Sac and Fox	Sac and Fox Nation, KS
10.	Cedar Bluff	State of Kansas
11.	El Dorado Springs	State of Missouri
12.	Tallgrass	State of Kansas
13.	Cherokee	Cherokee Nation, OK
14.	Ellis	State of Oklahoma
15.	Flathead	Confederated Salish and Kootenai Tribes, MT
16.	Fort Peck	Fort Peck Tribes, MT
17.	Northern Cheyenne	Northern Cheyenne Tribe, MT
18.	Cloud Peak	State of Wyoming
19.	Thunder Basin	State of Wyoming



IMPROVE and IMPROVE Protocol Sites
1st Quarter 2002

Network operation status

The IMPROVE network operated 110 aerosol samplers, 17 transmissometers, 8 nephelometers, and 5 camera systems during 1st Quarter 2002 (January, February, and March). Preliminary data collection statistics for the quarter are:

- Aerosol (channel A only) 92% collection
- Aerosol (all modules) 90% completeness
- Optical (transmissometer) 87% collection
- Optical (nephelometer) 99% collection
- Scene (photographic) 94% collection

Of the 10% lost aerosol samples, 5.6% was due to incorrect filter installation or improper time of installation.

Data availability status

Data are available on the IMPROVE Web site, at *http://vista.cira.colostate.edu/improve/Data/data.htm.* Aerosol data for all measurements including carbon are available through August 2000. Transmissometer data are available through November 2000 and nephelometer data are available through November 2001. More recent aerosol data are expected to be available according to the following schedule:

Data Period	Expected Availability Date
Sept., Oct., Nov. 2000	May 7, 2002
Dec. 2000, Jan., Feb. 2001	May 21, 2002
March, April, May 2001	April 30, 2002
June, July, August 2001	April 30, 2002
Sept., Oct., Nov. 2001	June 18, 2002
Dec. 2001, Jan., Feb. 2002	August 19, 2002

Photographic slides and digital images are archived but are not routinely analyzed or reported. Complete photographic archives and slide spectrums (if completed) are available at Air Resource Specialists, Inc. Slide spectrums are now also available on the IMPROVE Web site, under *Data*.

Visibility news

WRAP Annex plan proposed for regional haze

Many of you operate the IMPROVE monitors that collect particulate samples. Your dedicated filter collection efforts and the subsequent filter processing provide data that indicate whether promulgated rules and policies are effective. This article provides a brief recent history of the Regional Haze Regulations and how your efforts support these rulemakings.

On July 1, 1999, EPA published the Regional Haze Regulations, which codified the requirements of Section 169A of the Clean Air Act. Section 169A requires states to develop State Implementation Plans (SIPs) for protection of Class I areas. Regional haze is visibility impairment caused by cumulative air pollutant emissions, including particulates, nitrogen oxides, and sulfur dioxide, from many sources over a wide geographic area. The Regional Haze Regulations require states to develop SIPs that provide for "reasonable progress" toward the national goal of achieving natural background conditions. For most of the country, states must turn in their first regional haze SIPs by 2008. These initial SIPs must state "reasonable progress" goals, in deciviews, for the time period between a "baseline period" of 2000 to 2004 and the year 2018. States are also required to revise their SIPs every 10 years. The initial SIPs must address "best available retrofit technology" (BART) controls for large (emitting greater than 250 tons/year) sources of visibility impairing pollutants in certain categories. The BART requirement only affects older "grandfathered" sources built between 1962 and 1977. Currently, two rulemaking efforts are underway to amend the Regional Haze Regulations to provide more detail on certain provisions of the regulations.

The first rulemaking, proposed last summer in the Federal Register, relates to the BART requirement and is expected to be promulgated in Winter 2002. The BART guidelines rule is intended to clarify the BART requirements in the Regional Haze Regulations. For example, EPA is considering including in the BART guidelines, a presumption that cost effective controls are available for utilities to control 90% to 95% of their sulfur dioxide emissions.

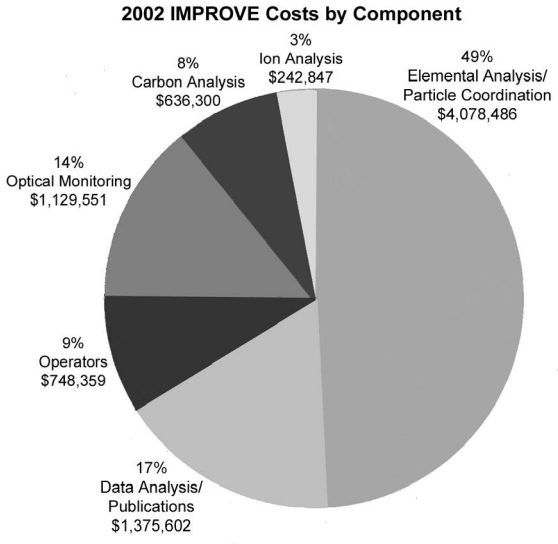
The second rulemaking relates to stationary source emissions of sulfur dioxide for nine western states and for eligible tribes within this same geographic area. The Regional Haze Regulations contain provisions that recognize the efforts of the Grand Canyon Visibility Transport Commission (GCVTC) and the Western Regional Air Partnership (WRAP). These provisions provide the West the option to achieve the visibility improvement milestones and goals in the Regional Haze Regulations using the strategy developed by the GCVTC. Part of this strategy, a specific program for stationary source SO_2 emissions, required the WRAP to submit further program details to EPA, and for EPA to write amendments to the Regional Haze Regulations to incorporate these details. EPA Administrator Whitman accepted this proposed WRAP Annex rule on April 25, 2002. The proposed rule will be out for public comment until July 5, 2002, and a final rule is expected later this year.

IMPROVE monitoring will play a big part in implementing the Regional Haze Regulations by helping states and regional planning organizations identify baseline conditions, provide speciated data to identify control strategies, and, over time, show whether the control strategies have worked. The requirements for BART and the WRAP program for SO_2 provide examples of the types of actions that will be taken to protect visibility.

For more information contact Tom Driscoll at the EPA. Telephone: 919/541-5135. Fax: 919/541-5489. E-mail: driscoll.tom@epa.gov.

FY2002 IMPROVE Program budget

The graphic below shows anticipated funding distributions for operating the IMPROVE Program during Fiscal Year 2002. The total budget for the year is $8,211,145. Of this amount, $5,100,000 is EPA's contribution, used exclusively for carbon, ion, and elemental analysis, and for particle coordination, for IMPROVE and IMPROVE Protocol sites.



For more information contact Dave Maxwell at the National Park Service Air Resources Division. Telephone: 303/969-2810. Fax: 303/969-2822. E-mail: david_maxwell@nps.gov.

Operators of distinction

Operators of distinction is a new feature in this newsletter. The IMPROVE monitoring network consists of over 100 monitoring sites, and data collection begins with those who operate, service, and maintain the instrumentation. It is the individuals who take on these responsibilities, that deserve acknowledgment of their efforts. Some operators are federal employees, others are part-time contract personnel, and still others are volunteer. We want to thank all the site operators for their efforts in operating the IMPROVE network.

Operators who achieved excellent data collection for calendar year 2001 (aerosol) or 1st Qtr 2002 (optical/scene) are:

100% data collection

Acadia (nephelometer)	Bill Gawley
Big Bend (nephelometer)	John Forsythe/ Robert Wirt
Cape Romain (aerosol)	Sarah Dawsey/ Angela McClelland/ Mary-Catherine Martin
Death Valley (aerosol)	Carrie Lanetta/ James Roche/ Linda Manning
Grand Canyon (nephelometer)	Hernan Abreu
Hercules-Glades (aerosol)	Frances Wyman/ Elwood Wyman/ Leslie Wyman
M.K. Goddard (aerosol)	Richard Croskey/ Mark A. Schroth
Mammoth Cave (nephelometer)	Bobby Carson
Mount Rainier (nephelometer)	Ann Bell
Presque Isle (aerosol)	Heather VanOeson
Quaker City (aerosol)	Mary Lou Trainer
Rocky Mountain (aerosol)	Mary Sandmann
San Juan Islands (camera)	Leigh Smith

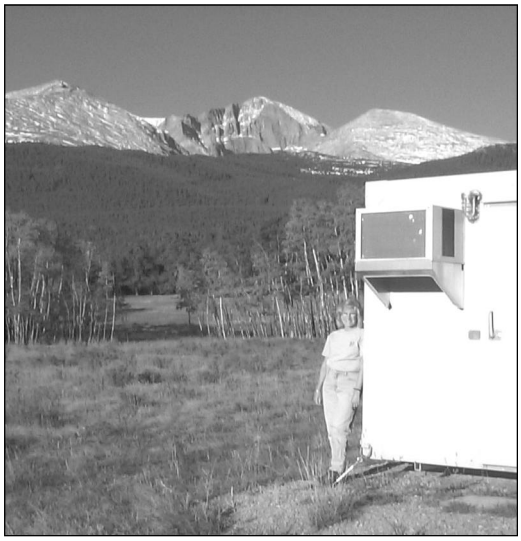
99% data collection

Acadia (aerosol)	Bob Breen/ Mike Fraser
Badlands (aerosol)	Pat Sampson/ Sandee Dingman
Bridgton (aerosol)	Don Prince/ Peter Lowell
Bryce Canyon (camera)	Clyde Stonaker
Casco Bay (aerosol)	Jeff Emery/ Cathy Richardson
Rocky Mountain (transmissometer)	Mary Sandmann
Weminuche (aerosol)	Bob Lang

This issue focuses on operators at two of these monitoring sites: Cape Romain National Wildlife Refuge, South Carolina, and Rocky Mountain National Park, Colorado.

The Cape Romain National Wildlife Refuge aerosol monitoring site is serviced by three Fish and Wildlife employees. Sarah Dawsey, Biologist, has been with the refuge since 1986. Angela McClelland and Mary-Catherine Martin are both Biological Science Technicians, and both have been at the refuge approximately one year. Angela and Mary-Catherine perform most of the site servicing, and efforts by all three operators achieved 100% data collection with the aerosol sampler in calendar year 2001. In addition to servicing the air quality instrumentation, Angela and Mary-Catherine are also involved with numerous wildlife studies including a sea turtle nest relocation project, wildlife surveys, waterfowl surveys, and administrative duties. The refuge has operated an IMPROVE aerosol sampler since 1994. A newer, Version II sampler was installed in 2000.

Mary Sandmann of Rocky Mountain National Park works for the National Park Service as a part-time Biological Science Technician. She is primarily responsible for the IMPROVE visibility monitoring and NPS gaseous pollutant monitoring stations, but she also lends a hand to other park studies. Mary has worked at the park as a paid employee since 1994. Before that she worked as a volunteer responsible for a variety of tasks, including numerous wildlife studies concerning bear and bighorn sheep. Mary has a B.S. degree in nursing from Florida State University and a B.A. degree in psychology/ biology from Bowling Green State University, Ohio. In addition to her part-time work at Rocky Mountain, she works part-time as a registered nurse in a Denver hospital operating room. Mary achieved 100% data collection with the aerosol sampler in calendar year 2001 and 99% collection with the transmissometer in 1st Quarter 2002.



Mary Sandmann takes a break while servicing the air quality instrumentation at Rocky Mountain National Park, Colorado.

Visibility news continued on page 6....

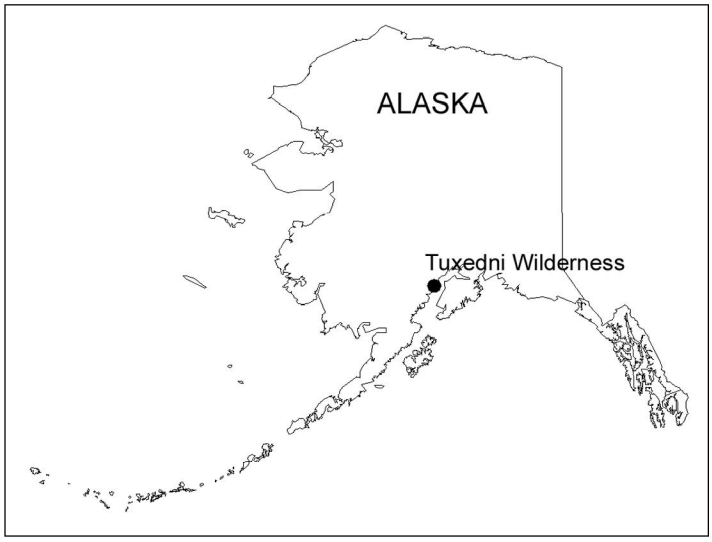
Feature article

IMPROVE aerosol monitoring established near Tuxedni Wilderness, Alaska

Introduction

When IMPROVE committed itself to monitoring in all 156 Class I areas, it knew the Tuxedni Wilderness would be a tough one to establish. But not long after the aerosol sampler's installation in late 2001, IMPROVE found the site to be manageable, and may not be so tough after all.

Tuxedni Wilderness, a Class I area managed by the U.S. Fish and Wildlife Service (FWS), is situated off the west coast of the Cook Inlet in Alaska. Finding a location for an IMPROVE site that would be representative of visibility conditions at Tuxedni was not an easy task. It was difficult to find a remote site in the state that is accessible year-round and has continuous power. This is further complicated by the fact that residents of remote Alaska generally get their power from diesel generators and heat their homes with wood-burning stoves, emissions from which may contaminate filter samples.



Tuxedni Wilderness, a Class I area, is located off the west coast of Cook Inlet, in south-central Alaska.

About Tuxedni

In 1909 two islands at the mouth of Tuxedni Bay off of Cook Inlet, Chisik Island and Duck Island, were established as a refuge for local wildlife including seabirds, bald eagles, and peregrine falcons. In 1970, Congress designated the islands as the Tuxedni Wilderness Area, which now encompasses 5,566 acres. In 1980, the area joined the Alaska Maritime National Wildlife Refuge. Most of the refuge lies on Chisik Island (six-acre Duck Island is rocky with almost no vegetation). Chisik Island has sandy beaches sloping up to cliffs. Much of the island is a wet jungle of brushy growth and spruce-hemlock forest. Higher elevations on the island are alpine tundra. Sudden winds and rough waters make access to the island by small planes and boats difficult.

Finding a monitoring location

The FWS, state of Alaska, and members of the IMPROVE Steering Committee began looking for an IMPROVE site for Tuxedni in 1999. The obvious place for a monitor was the old cannery located on the southern end of Chisik Island, adjacent to the wilderness. The cannery, owned by Ward Cove Inc., was shut down in the 1970s; however, a caretaker resides there year-round. Unfortunately, when the owners were consulted, they were reluctant to commit to a long-term project, because the cannery was up for sale and the future of the site uncertain.

A long list of other potential sites were then investigated. The owners of the Kalgin Island Resort, approximately 35 miles north of Tuxedni, declined to host an IMPROVE sampler feeling that noise from running a generator for 24-hours at a time would disturb their guests. The Drift River Terminal, near Kalgin Island, was considered but eventually determined not to be suitable due to its proximity to Anchorage and other sources, and local contamination from the terminal itself. As a last resort, a few sites on the east side of the Cook Inlet were investigated, and although there were willing participants, including the Kenai National Wildlife Refuge and a middle-school in Anchor Point, it was determined that sites on the east side of the Inlet would not be representative of visibility conditions at Tuxedni.

Site location found

Just as site options were running out, the National Park Service put the FWS in touch with James Isaak, the owner of a small inholding on the coast of Lake Clark National Park, just 8 miles south of the Tuxedni Wilderness. James is one of very few year-round residents of Silver Salmon Lakes and also operates the only wind-powered generating system on the west side of Cook Inlet. A diesel generator is used only for back up. After speaking with James, who was not only interested but enthusiastic about operating an air quality monitoring station, the site location group knew they had finally found the Tuxedni site! A site visit by all interested parties during Summer 2001 confirmed it.

The University of California - Davis (UCD), the aerosol contractor to IMPROVE, began shipping materials and supplies that fall. James built a platform for the shelter. The shelter and monitor were installed along with a bank of 16 batteries to store the power generated by the wind turbine,

IMPROVE aerosol monitor at Silver Salmon Lakes near the Tuxedni Wilderness, Alaska.

and an inverter to convert the power for the samplers. The first filter was collected during late November 2001. Since then, only two samples have been lost (James often travels to Anchorage by airplane, and on two occasions the weather prevented him from flying back).

Unfortunately, mechanical problems with the wind generator and several "no-wind" days have resulted in the frequent use of the back-up diesel generator. UCD plans to install twelve 120-watt solar panels on a tracker that will enhance the charge capacity of the battery bank and minimize the use of the back-up generator. The shortest period of daylight at the Tuxedni site is about six hours during the months of December and January. While the issues that arose were not completely unexpected, IMPROVE is growing more confident in the long-term reliability of this site.

Tuxedni site operator

James Isaak was born and raised in Alaska and has been a bush pilot of a J3 Cub since 1977. One of his favorite places to spend time had always been at Silver Salmon Lakes with the original homesteader. James bought the property in 1994, and soon turned it into his home and business. James and his wife Sheila run the Alaska Homestead Lodge (*http://www.alaskawildlife.com*) where you can enjoy viewing bears on the beach, fishing for salmon and halibut, clamming, canoeing, hiking, and berry picking.

The Fish and Wildlife Service would like to offer a special thanks to James and Sheila Isaak and others involved for all the hard work that has made this site possible.

For more information contact Kristi Morris, U.S. Fish and Wildlife Service, Air Quality Branch. Telephone: 303/987-6941. E-mail: Kristi_Morris@nps.gov.

The Alaska Homestead Lodge and wind tower in Silver Salmon Lakes.

James Isaak, the site operator, with wife Sheila and dog Murray.

James' mode of transportation to and from home, a J3 Cub.

Visibility news

continued from page 3 ....

Regional planning organizations
Part 5: Western Regional Air Partnership

The Western Regional Air Partnership (WRAP) is in its fifth year as a voluntary organization comprised of western states, tribes, and federal land management agencies working together with stakeholders and EPA to address the federal Regional Haze Regulations and other air quality issues assigned by the WRAP Board.

The WRAP is the successor organization to the Grand Canyon Visibility Transport Commission (GCVTC), which was Congressionally designated under the 1990 amendments to the Clean Air Act to assess and make recommendations to improve visibility in the 16 federally mandated Class I areas of the Colorado Plateau. Among its 76 recommendations, issued in 1996, the GCVTC suggested creation of a follow-up body to continue the GCVTC's stakeholder and consensus-based approach to addressing air quality concerns.

The WRAP Board of Directors is comprised of governors or their designees from 13 western states, 13 tribes, the Department of Interior, Department of Agriculture, and EPA. The state members are: Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming. Tribal nations are: Pueblo of Acoma, Campo Band of Kumeyaay Indians, Confederated Salish and Kootenai Tribes, Cortina Indian Rancheria, Hopi Tribe, Hualapai Nation of the Grand Canyon, Nez Perce Tribe, Northern Cheyenne Tribe, Pueblo of San Felipe, and Shoshone-Bannock Tribes of Fort Hall, with three tribal positions pending.

The WRAP's technical analysis and development of policy recommendations is done through forums, work groups, and committees by state, tribal, and federal representatives working with a wide variety of stakeholders from industry, academia, environmental, and other public interest groups. WRAP forums and committees convene problem-solving work sessions to achieve consensus on recommendations to the WRAP Board. The forums and committees hire consultants to conduct analysis and also rely on forum and committee members to compile data and policy recommendations. A Technical Oversight Committee and a policy-oriented Initiatives Oversight Committee work to assure that the work products have balance and consensus before they are passed on to the WRAP Board for approval (by consensus) or review. A Communications Committee seeks to make certain that WRAP members communicate internally as well as with the general public.

Given its creation before the formal announcement of EPA's Regional Haze Regulations in 1999, the WRAP is unique among the five regional planning organizations established by EPA to help states and tribes meet the Regional Haze Regulations requirements. The WRAP's charter initially targeted follow-up on the GCVTC recommendations, which provided the organization with a head-start of sorts in addressing some of the Regional Haze Regulations requirements released in 1999. Based on the work of the GCVTC, the Regional Haze Regulations included two options that Western states and tribes can follow. The Section 308 approach is the so-called national rule, while Section 309 provides certain considerations for the GCVTC members that agree to submit a SIP (State Implementation Plan) in 2003 implementing the GCVTC recommendations.

One of the GCVTC recommendations drew national attention to the WRAP's much-discussed program for reduction of sulfur dioxide emissions from stationary sources and a related backstop market trading program. The GCVTC had called for development of such a program, which was submitted by the WRAP to EPA as an Annex to the GCVTC report in September 2000. EPA accepted this proposed Annex plan in April 2002. In the meantime, the WRAP is reviewing the Clear Skies Initiative to determine how the initiative's multi-pollutant proposal and the Annex may interface.

The development of the Annex was one of two major policy recommendations that the WRAP Board approved by consensus. The other was a request that the EPA recognize the need to provide small refineries with a separate timeline for meeting national sulfur emissions reductions in gasoline. The Western governors requested that the WRAP use its tools for developing consensus on the gasoline sulfur rule, thereby generating the groundwork needed to build understanding and support among industry and environmental stakeholders while meeting the expectations of regulators. The WRAP's Mobile Sources Forum developed a proposal that eventually led to EPA's agreement to provide small western refineries with a different timeline than large refineries in meeting stricter gasoline sulfur refining rules, thereby avoiding gasoline shortages in the West or refinery shutdowns. Industry received permission to use emission credits and trading under rules that protected against backsliding.

WRAP states that are considering a Section 309 regional haze plan with a deadline of December 2003 are working hard to bring together the necessary technical analysis and policy recommendations. In the tool kit to be provided by the WRAP for drafting the implementation plans are modeling runs for 1996 and 2018 best case scenarios, along with scenarios that include the strategies for reducing sulfur dioxide emissions, managing smoke from all fire sources, and expanding the use of renewable energy. The WRAP is sponsoring a technical conference on July 9 and 10 in Denver to present these modeling runs, along with information on emission inventories and other technical data, to air managers, policymakers, and stakeholders (for agenda and registration, go to *www.wrapair.org*).

Much is happening at the WRAP. For a more complete look at the WRAP's activities, check its Web site at http://www.wrapair.org. Or contact Project Co-Directors Patrick Cummins at the Western Governors' Association (Telephone: 303/623-9378) or Bill Grantham at the National Tribal Environmental Council (Telephone: 505/242-2175).

WRAP technical conference coming up

All interested parties are invited to attend a WRAP technical conference at the Adam's Mark Hotel in downtown Denver, July 9-10, 2002. The purpose of the conference is to present a comprehensive overview of the technical work that has been completed over the last two years to support state and tribal plans to implement Section 309 of the Regional Haze Regulations (for the grand Canyon Transport Region). This work also lays the foundation for future state and tribal plans under Section 308 of the regulations (the national regional haze program).

WRAP forum members, contractors, and other technical experts will review emissions inventories, modeling results, monitored data, and other technical inputs needed for state and tribal responses to the Regional Haze Regulations. The conference will address point and area sources, mobile sources, fire and dust emissions, and tribal data.

Those encouraged to attend include: state and tribal air managers, policymakers, federal officials, business and environmental stakeholders, representatives of other regional planning organizations, and anyone interested in gaining a better understanding of the development of technical data needed for submitting state and tribal regional haze plans under Section 309 or 308.

More details about the conference are available on the WRAP Web site, at http://www.wrapair.org.

What's new on the IMPROVE Web site

Two major additions have been made to the IMPROVE Web site in recent months (*http://vista.cira.colostate.edu/improve*), and an additional feature is becoming more popular. These three features are:

IMPROVE aerosol metadata. Metadata are now available for all aerosol monitoring sites. This includes site specifications, location, a monitoring site history, and a link to a topographic map of the area.

Photographic spectrums. Images from IMPROVE monitoring sites with more than 5 years of data are included for 46 sites. These images capture the range or "spectrum" of visual conditions at each site. The spectrums include a project overview, site history, site specifications, and images of the spectrum, pollution episodes, layered hazes, and scenic images.

Discussion Forum. The IMPROVE Discussion Forum has gained popularity and is becoming a useful communication tool among users. Site visitors may post a question or comment and check back for a reply. The forum is the place to ask specific questions about the data or uses of data, and more.

For more information or questions regarding the IMPROVE Web site, contact Bret Schichtel at CIRA. Telephone: 970/491-8581. Fax: 970/491-8598. E-mail: Schichtel@cira.colostate.edu.

IMPROVE meets at Breton Island

The IMPROVE Steering Committee met in New Orleans in March, to discuss current operations and the future path of the program. Steering committee members and other attendees also boated to the nearby aerosol monitoring site, representative of the Breton Island National Wildlife Refuge. Louisiana Wildlife & Fisheries personnel guided the tour of the monitoring site and provided information regarding the region.

Participants of the IMPROVE Steering Committee meeting in New Orleans prepare to boat to the nearby Breton Island aerosol monitoring site, Louisiana.

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IMPROVE STEERING COMMITTEE

IMPROVE Steering Committee members represent their respective agencies and meet periodically to establish and evaluate program goals and actions. IMPROVE-related questions within agencies should be directed to the agency's Steering Committee representative. Steering Committee representatives are:

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ASSOCIATE MEMBERS

Associate Membership in the IMPROVE Steering Committee is designed to foster additional IMPROVE-comparable visibility monitoring that will aid in understanding Class I area visibility, without upsetting the balance of organizational interests obtained by the steering committee participants. Associate Member representatives are:

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Government organizations interested in becoming Associate Members may contact any Steering Committee member for information.

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The IMPROVE Program was designed in response to the visibility provisions of the Clean Air Act of 1977, which affords visibility protection to 156 federal Class I areas. The program objectives are to provide data needed to: assess the impacts of new emission sources, identify existing human-made visibility impairments, and assess progress toward the national visibility goals as established by Congress.

To submit an article, to receive the IMPROVE Newsletter, or for address corrections, contact:

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IMPROVE Newsletters are also available on the IMPROVE Web site at http://vista.cira.colostate.edu/improve/Publications/publications.htm, and on the National Park Service Web site at: http://www.aqd.nps.gov/ard/impr/index.htm

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