INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS

IMPROVE

Volume 7, No. 4 **Fall 1998** **January 1999**

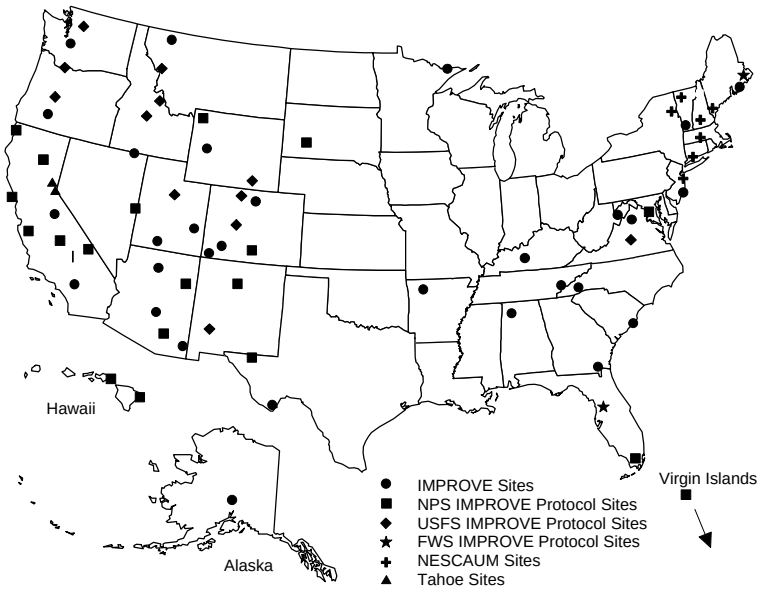
IMPROVE MONITORING UPDATE

Preliminary data collection statistics for the Fall 1998 season (September, October, and November) are:

Data Type	Collection Percentage
Aerosol Data	94%
Optical (transmissometer) Data	94%
Optical (nephelometer) Data	94%
Scene (photographic) Data	74%

Particulate data have been submitted through August 1998 for all measurements including carbon. The data are available on the UC-Davis FTP site, and as hard copy seasonal summaries.

Optical data have been submitted through August 1998. The data are available on ftp://alta_vista.cira.colostate.edu. Scene data are no longer routinely reported.



IMPROVE and IMPROVE Protocol Sites
Fall 1998

VISIBILITY NEWS....

Winter storm snags Great Smokies

A winter ice storm hit Great Smoky Mountains National Park, Tennessee, knocking down an estimated 6,000 trees just one day before Christmas. The air quality monitoring station at Look Rock was hit hard; all monitoring instruments were inoperable during the following three-day power outage, but no instruments were damaged.

Two inches of ice covered vegetation, and downed trees made the road to the air quality station impassable. Maintenance crews will spend the next several weeks clearing out the trees. Meanwhile, a tunnel has been cut through to make the road and air quality station accessible to park personnel.

A nearby lightning hit days before the ice storm damaged modems to the air quality exhibit in the visitor's center, causing it to be inoperable for two weeks. All systems were up and running again by early January.

For more information, contact:

Jim Renfro / Great Smoky Mountains NP
Telephone: 423/436-1708

A&WMA annual meeting and exhibition

The Air & Waste Management Association (A&WMA) will hold their 92nd Annual Meeting and Exhibition in St. Louis, Missouri, June 20-24, 1999. In addition to the traditional topics, themes for the meeting will include:

- Urban air quality
- Alternate fuels
- Global climate change
- Voluntary environmental management initiatives
- Market-based approaches to manage emissions
- International technology exchange
- Risk-based environmental management
- Public participation in environmental management
- Pollution prevention
- Sustainable development
- Clean production

For more information, see the A&WMA website at:

http://www.awma.org

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Feature Article

Virgin Islands National Park one of the smallest parks to monitor air quality in a big way

Virgin Islands National Park, located on the island of St. John in the Caribbean Sea, is one of the smallest national parks in the system. It is also the most recent park to receive an air quality monitoring station, complete with visibility and ambient air quality instrumentation involving several programs and using IMPROVE protocols.

The national park, established in 1956, encompasses nearly one-half of the island of St. John, with approximately 13,000 acres of land and another 5,000 acres of adjacent waters. St. John is the smallest and least developed of the three main U.S. Virgin Islands, which lie just east of Puerto Rico. The islands feature white sand beaches, turquoise waters, mountain vistas, and historical ruins. Figure 1 views some of these features from atop the air quality station.

Figure 1. View from atop the air quality monitoring station on the western shore of St. John, in Virgin Islands National Park.

St. John's northern slopes are comprised of subtropical forest, while the southern and eastern shores portray a desert-like landscape. In 1976, Virgin Islands National Park established a Biosphere Reserve to serve as an environmental and ecological research facility. Air quality monitoring is just one environmental effort being conducted at the park. The monitoring shelter is located near the Biosphere Reserve amid dense vegetation (Figure 2).

The National Park Service operates a four-module IMPROVE aerosol sampler and an ambient nephelometer at the park. The aerosol sampler has been operating since 1990, and was relocated in February 1998, when the air quality station was installed. The ambient nephelometer was added to the monitoring station in April 1998.

The air quality station also houses a full complement of meteorological sensors (wind speed, wind direction, air temperature, delta temperature, relative humidity, precipitation, leaf wetness, and solar radiation), an ozone analyzer, a National Dry Deposition Network filter pack system, a National Atmospheric Deposition Program wet/dry sampler, and a PRIMENet Brewer ultraviolet-B spectrophotometer.

Captain Sandy West, a St. John resident, boat captain, and tour guide contracts to service the air quality site. When not at the helm of her tour boat, Sandy performs site operator duties for all of the monitoring instrumentation. Her weekly instrument servicing visits generally take about 12 hours to complete.

Sandy took over site operator's duties last August when the hurricane season was about to start. The latest hurricane to hit the islands, Hurricane Georges, came in October 1998. It took a toll on the islands, but the air quality instrumentation held up solid. "The hurricane lifted the air quality shelter and tilted it several inches sideways," said Sandy. "After the storm left, the station was without electricity for six weeks. The equipment held up but it took a while to put it all back in place." The spectrophotometer, mounted on the shelter's roof, was temporarily removed in anticipation of the storm's approach, and was reinstalled several weeks later.

Visitors can access Virgin Islands National Park only by water or hiking trails; Sandy has been a tour guide for these visitors for 10 years. She leads hikes, shuttles hikers back to their origination point in her boat, and leads day and night snorkeling tours. Virgin Islands may be one of the smallest national parks, but it monitors air quality like the larger ones, in a big way. It is scheduled to be part of the expanded IMPROVE network later this year.

Figure 2. Air quality station on St. John, U.S. Virgin Islands.

SPECIAL STUDIES....

CARB studies new NGN-3 nephelometer

The California Air Resources Board (CARB) is performing a 30-day air quality study to evaluate various aerosol measurement systems, including the $PM_{2.5}$ size-cut NGN-3 nephelometer. The study is being conducted during January in Bakersfield, California.

The NGN-3 nephelometer, recently developed by Optec, Inc., is similar to the NGN-2 deployed in the IMPROVE network. The NGN-3, however, is designed for applications where continuous monitoring of 2.5μm particle size aerosols is required. Unlike a filter-based aerosol sampler that requires filter changes for analysis, the NGN-3 nephelometer takes and records air samples every 2 minutes.

Figure 3 shows the NGN-3 nephelometer with its exterior cover removed. Unlike the NGN-2, the NGN-3 does not have an opening door that allows ambient air inside the instrument. Instead, the NGN-3 uses a sample inlet cyclone, operated at a flow of 6 lpm, to provide a 2.5μm aerosol size-cut. A digital display shows the current measurement reading, which can be switched to show either a mass value or a scattering value.

Instruments operating in Bakersfield also include an IMPROVE aerosol sampler, continuous aerosol, and particulate samplers that have size-cut ranges from $PM_{2.5}$ to PM_{10}. CARB will compare and evaluate the results of all tested samplers for possible future air quality monitoring applications.

For more information about the study, contact:

Mac McDougall / CARB
Telephone: 916/327-4720

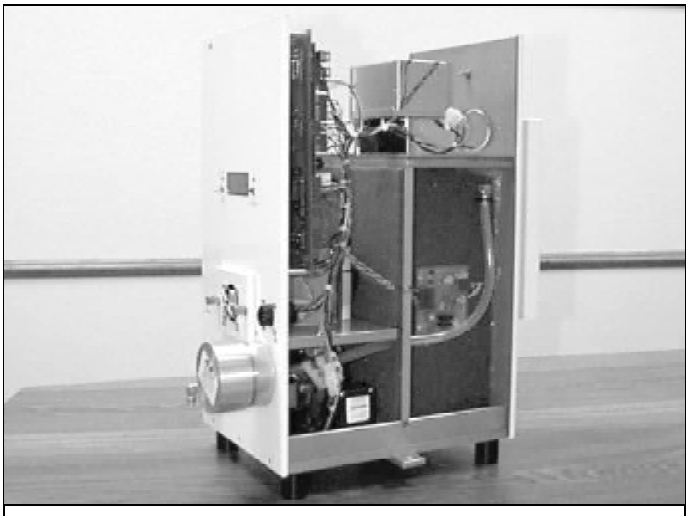

Figure 3. The Optec, Inc. NGN-3 size-cut nephelometer is similar to the NGN-2 in design and size.

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IMPROVE committee meeting highlights

The IMPROVE Steering Committee met in December to discuss major issues facing the IMPROVE Program. Among the topics discussed were the following:

- A new organization was selected to join the steering committee. MARAMA (Mid-Atlantic Regional Air Management Association) will join the other organizations that guide the IMPROVE Program. MARAMA has selected Charles Pietarinen, of the New Jersey Department of Environmental Protection, to represent it. His telephone and fax numbers are listed with other IMPROVE Steering Committee members on page 4 of this newsletter.
- The steering committee approved the strategy for implementing additional IMPROVE monitoring sites. IMPROVE has resources for 108 monitoring sites (30 sites are currently monitoring and 78 sites are expected to begin monitoring). The 78 new sites are scheduled to be selected and begin monitoring in 1999.
- The committee approved to change the aerosol monitoring sampling schedule to synchronize with the EPA/state monitoring schedule. A 1-day-in-3 schedule will be implemented beginning the first sample period of December 1999.
- The state of Arizona has plans to augment IMPROVE monitoring in its state with additional air quality and visibility monitoring sites.
- The National Park Service Air Resources Division briefed the committee on a new NPS program called "Adopt-a-Park." The program calls for each Air Resources Division staff member to join with or "adopt" two Class I parks. Staff members will visit and learn about specific park resources and air issues important to each park. The program is designed to view parks as individual entities rather than as a small part of a network.

For more information about the steering committee meeting and its agenda, contact:

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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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The next IMPROVE Newsletter will be published in April 1999.

Please Contact Us: If you know someone who would like to receive the newsletter or if you are no longer interested in receiving a copy, please call us at 970/484-7941. Your ideas and comments are always welcome. We continue to look for ways to improve the newsletter and to provide you with interesting and pertinent information.

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National Park Service web site

http://www.aqd.nps.gov/natnet/ard/impr/index.htm

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