



# The MONITOR

A Newsletter for National Park Service  
Air Quality Site Operators

Summer 1997

Volume 1 Number 1

## JUST FOR YOU



The MONITOR is new and is just for you. We created this newsletter to keep you, air quality station operators, updated on important information, knowledgeable about what is happening in the network, and connected with the people and places who do the same job as you.

The MONITOR will be produced and delivered to you quarterly. Feel free to provide us with any news or information you would like to share, or ideas or suggestions.

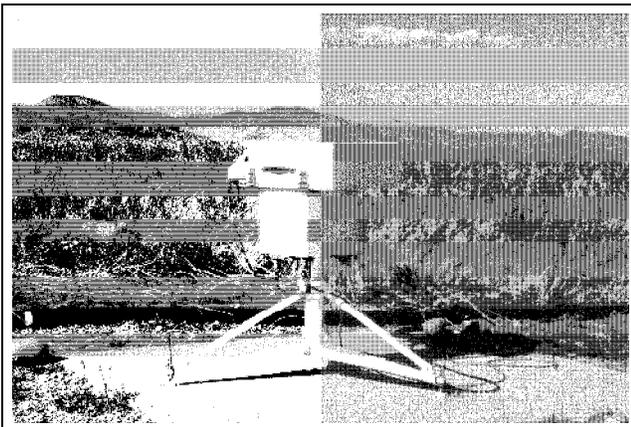
## NETWORK NEWS

### NPS to begin UV-B monitoring

The NPS has recently agreed to participate with the EPA's long-term environmental monitoring program, the Demonstration Index Site Project (DISPro), by providing rural monitoring sites and operation of a Brewer spectrophotometer.

This high-spectral resolution spectroradiometer measures full-sky UV-B and UV-A spectral flux, from which absolute irradiance and total column ozone concentrations are calculated. These data can be used to measure and predict stratospheric ozone depletion, or "ozone holes," that occur primarily in the polar regions. These ozone holes allow high intensity UV-B radiation to reach the Earth's surface, causing sunburn and perhaps skin cancer in humans, and damaging nucleic acids and proteins in plants.

*UV-B monitoring continued on page 2....*



Brewer Spectrophotometer

## Meet the information management staff

The Information Management Center (IMC) at Air Resource Specialists, Inc. (ARS) is the new name for what was known as the DPC, or Data Processing Center. This name change reflects what is actually done in the center, which is much more than collecting and validating data. ARS has geared up to expand its original field service responsibilities to include additional staff and computer hardware to handle the megabytes of air quality data that stream in daily.

The IMC staff of three full-time data managers perform a multitude of jobs including: all data polling, anomaly screening, validating, plotting, generating monthly and annual reports, submitting to the EPA AIRS database, and fulfilling a variety of special data requests. After the labor intensive validation process, most output and plot routines are automated and data products are generated with the help of batch programs and database macros.

Automation, however, has not eliminated the need for a hands-on approach to data management. ARS has streamlined the generation process of monthly preliminary reports (you should be familiar with them by now) so they can be mailed to site operators within 60 days of the end of the data reporting month. IMC staff is also now putting the final touches on the new annual reports, with production of the 1994 reports slated for later this month. Annual reports for 1995 and 1996 should follow soon after, with the goal of having future annual reports produced for all sites within 6 months of the end of the year.

The IMC staff includes Edie Pope, Data Coordinator, who has extensive air quality data validation experience, and Bob (Mr. Hockey) Deemer and Cheryl Dandel, both Information Specialists.

*Meet the staff continued on page 4....*

## What's inside:

- ◆ 1st Quarter 1997 data collection summary
- ◆ Feature operator Andrea Blakesley
- ◆ Dasibi frequency adjustments
- ◆ John's puzzle page
- ◆ Network gets a facelift

## DATA COLLECTION SUMMARY

Data collection statistics for the 1st Quarter 1997 (January, February, and March) are:

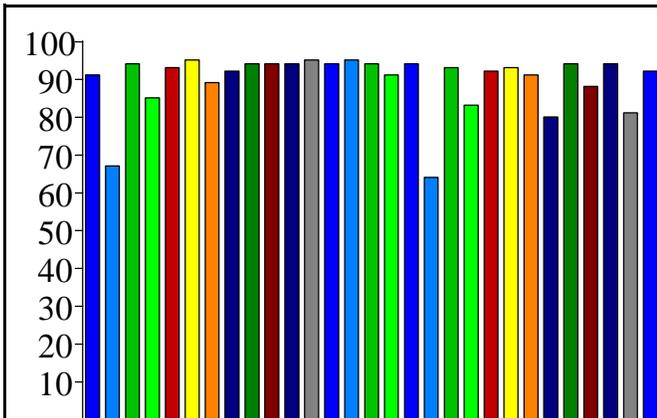
Sites with final validation of ambient air quality parameter collection greater than 90% include:

|                   |                                      |                                                   |
|-------------------|--------------------------------------|---------------------------------------------------|
| Big Bend          | Great Smoky Mtns.<br>(Cades Cove)    | Mount Rainier                                     |
| Chiricahua        | Great Smoky Mtns.<br>(Cove Mountain) | Olympic                                           |
| Death Valley      | Great Smoky Mtns.<br>(Look Rock)     | Pinnacles                                         |
| Denali<br>Glacier | Hawaii Volanoes<br>Joshua Tree       | Rocky Mountain<br>Sequoia Kings<br>(Lower Kaweah) |
| Grand Canyon      | Lassen Volcano                       | Vovageurs                                         |

Sites with final validation of ambient air quality parameter collection greater than 80% include:

|                     |                |                             |
|---------------------|----------------|-----------------------------|
| Craters of the Moon | North Cascades | Shenandoah<br>(Big Meadows) |
| Everglades          | Sequoia-Kings  | Yellowstone                 |

The entire network achieved 89.5% final validation of ambient air quality parameters.



Ozone collection statistics for all sites 1/1/97 - 3/31/97.

### UV-B monitoring continued from page 1....

Brewer spectrophotometers have been installed in Big Bend, Everglades, Great Smoky Mountains, and Shenandoah National Parks. Future installations are slated for Acadia, Canyonlands, Denali, Glacier, Olympic, Rocky Mountain, Sequoia, and Virgin Islands National Parks.

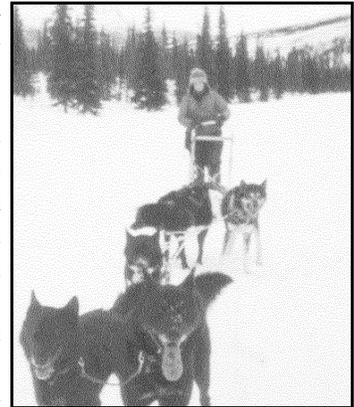
Big Bend and Grand Canyon National Parks are also participating in a USDA-sponsored program using spectral and broad-band radiometers. Responsibility for management of the Brewer network, data collection, and reporting is currently with the University of Georgia's National UV Monitoring Center.



## SITE OPERATOR FOCUS

### Andrea Blakesley tracks arctic haze

If you ask Andrea Blakesley how she ended up in Denali National Park, she'll tell you she's one of those people who came to Alaska on vacation and never left. That was in 1988, and she's lived in Denali ever since, working for the NPS in various capacities. She's currently responsible for maintaining the air quality monitoring program at the park.



When Andrea first became involved with air quality monitoring, her motivation for collecting sound data was to file away an accurate 1990s baseline, believing there would be no significant threats to air quality in interior Alaska for many decades. After searching the scientific literature and talking to researchers at the University of Alaska, she became aware that arctic areas worldwide, including Alaska, are already less than pristine. Due to a complex interaction of global weather patterns and yearly extremes of daylight, industrial pollutants from Eurasia accumulate in the far north in the winter and form a visible haze in spring. Although Denali's air is exceptionally clean, the data show a springtime maximum that cannot be attributed to local or regional sources, and is likely the result of arctic haze. As a high profile park, Denali can focus attention on this international environmental issue which is not well publicized in the United States.

When not performing multipoint calibrations or laboring over ozone data validation, Andrea escapes into the wilderness with her two Alaskan huskies. Luckily, the wilderness in Denali starts immediately adjacent to the road, so even deskbound people can experience it year round. During winter, the dogs are welcome in the wilderness, as long as they are used for transportation. This usually means high speed crash-and-burn adventures with Andrea on skis and the dogs pulling, but sometimes they go mushing with a full team of sled dogs. Either way, the dogs' enthusiasm is contagious. More than one contractor from Air Resource Specialists has learned the hard way that you don't want to be attached to one of her dogs when Andrea is further ahead on the trail. The acceleration will send you into the exceptionally clean air, and you'll probably also get a close-up look at the pristine snow -- face first.

# JOHN'S PUZZLE PAGE

Find these words:

- |        |          |        |
|--------|----------|--------|
| Data   | Solenoid | Dasibi |
| Filter | Span     | Lamp   |
| NPS    | Ozone    | Sensor |
| Teflon | TECO     | Zero   |
| Pump   |          |        |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| O | M | D | N | P | S | S | E |
| D | Z | A | L | U | O | I | O |
| N | N | T | E | M | L | R | T |
| O | D | A | O | P | E | X | F |
| L | A | M | P | Z | N | N | I |
| F | S | E | N | S | O | R | L |
| E | I | R | P | C | I | N | T |
| T | B | S | E | L | D | T | E |
| A | I | T | M | P | F | X | R |



Name this park: \_\_\_\_\_

## Puzzle Page Questions

- ◆ What state contains the most NPS units?
- ◆ What state has the least NPS units?
- ◆ What park's theme is the cultural history of a lost civilization?
- ◆ What monument was featured in a popular 1977 science fiction movie?
- ◆ What park was described by a Mormon rancher as "a hell of a place to lose a cow?"
- ◆ What national park has "The Valley of Ten Thousand Smokes?"

Get the answers when you phone in your multipoint results!

## LAB TALK

### Dasibi frequency adjustments

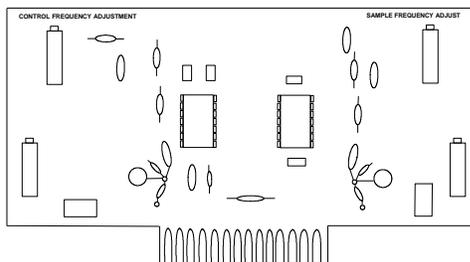
Sample and control frequency adjustments are often confusing to site operators. If you have a Dasibi ozone analyzer, identify the electrometer board your machine has by comparing it to these illustrations. If your Dasibi has a "four-pot" board, refer to Method A for adjustment. Use Method B for a "two-pot" board.

**Method A:** To adjust the sample frequency on a "4-pot" electrometer board, have the main OPERATE switch in the SAMPLE FREQ position. Adjust the blue potentiometer screw labeled "Sample Frequency Adjust" (usually located on the upper right corner of the board), until the desired frequency is achieved.

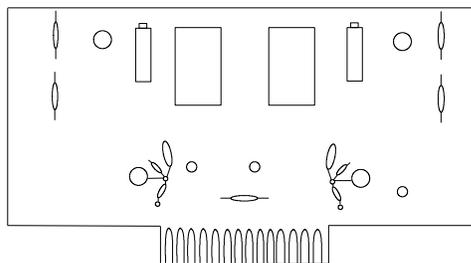
To adjust the control frequency on a "4-pot" board, have the main OPERATE switch in the CONTROL FREQ position. Adjust the blue potentiometer screw labeled "Control Frequency Adjust" (usually located on the upper left corner of the board) until the desired frequency is achieved.

When adjusting either frequency, wait 24 seconds for the display to update, and remember to return the main switch back to its original OPERATE position when you've completed this procedure!

**Method B:** Adjusting frequencies with a "2-pot" electrometer board is done using the above main OPERATE switch settings. The sample frequency is adjusted by loosening the photometer lamp retaining screw. Next, reposition the lamp slightly toward the middle of the machine to increase the frequency.



Dasibi 4-potentiometer electrometer board.



Dasibi 2-potentiometer electrometer board.

Rotating the lamp in its socket also changes the frequency. Tighten the lamp retaining screw. Wait for the next display update and readjust if necessary.

The control frequency is adjusted on the "2-pot" board by loosening the recessed screw securing the control frequency detector head (use a 1/16<sup>th</sup> inch hex-wrench). Next, move slightly the control frequency detector head (housed perpendicular to the long sample tubes) to the left (toward the middle of the machine). After adjusting, retighten the screw. Wait for the next display update and readjust if necessary. Return the unit to the OPERATE position.

Always check control frequencies after sample frequency adjustments!



## NEWS FROM THE FIELD Network gets a facelift

Is the door falling off your station? Do you pitch a tent over the instruments inside to keep them dry? Have insects taken up residence and challenge your authority every time you visit?

These are common occurrences to Jim Renfro and Scott Berenyi at Great Smoky Mountains NP and to Shelly Hall at Olympic NP. Both stations are located in structures over 20 years old and in need of a facelift. The shelter at Great Smoky was replaced this past April and Olympic is scheduled to receive a new shelter this month. Both structures will include a sliding shelf rack system for the instruments and be modeled similar to other NPS stations.

Stations at Chiricahua NM, Glacier NP, and Grand Canyon NP will also undergo a facelift in the next few months. Operators there will benefit from a more conveniently designed station; ARS support personnel will also be able to better assist them.

Lastly, Bobby Carson at Mammoth Cave NP is getting the plug pulled on him -- literally. The local utility is relocating all overhead power lines underground. Bobby's station is the only service on a 5 mile stretch of line, and unless he wants to pay for relocating costs, the line is to be abandoned. Not one to resist a challenge and anxious to move to higher ground anyway, Bobby has taken on GSA to get private land leased, arranged for the construction and installation of a replacement shelter, and negotiated the reinstallation of his monitoring equipment with various contractors. All entities are to smoothly begin work together on June 9<sup>th</sup>, right Bobby?



### The MONITOR

The MONITOR is published quarterly (March, June, September, December) by Air Resource Specialists, Inc. under Contract CX-1270-96-007, for ambient air quality site operators in the National Park Service monitoring network.

For more information or address corrections relating to this newsletter, or for assistance in correcting operational site problems, please contact:



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## NPS Ambient Air Quality Monitoring Network



|                                 |                                |
|---------------------------------|--------------------------------|
| Acadia NP (ACAD)                | Hawaii Volcanoes NP (HAVO)     |
| Big Bend NP (BIBE)              | Joshua Tree NP (JOTR)          |
| Canyonlands NP (CANY)           | Lassen Volcanic NP (LAVO)      |
| Cape Cod NS (CACO)              | Mammoth Cave NP (MACA)         |
| Chamizal NM (CHAM)              | Mesa Verde NP (MEVE)           |
| Chiricahua NM (CHIR)            | Mount Rainier NP (MORA)        |
| Congaree Swamp NP (COSW)        | North Cascades NP (NOCA)       |
| Cowpens NB (COWP)               | Olympic NP (OLYM)              |
| Craters of the Moon NM (CRMO)   | Pinnacles NM (PINN)            |
| Death Valley NP (DEVA)          | Rocky Mountains NP (ROMO)      |
| Denali NP (DENA)                | Saguaro NM (SAGU)              |
| Everglades NP (EVER)            | Sequoia-Kings Canyon NP (SEKI) |
| Glacier NP (GLAC)               | Shenandoah NP (SHEN)           |
| Grand Canyon NP (GRCA)          | Theodore Roosevelt NP (THRO)   |
| Great Basin NP (GRBA)           | Voyageurs NP (VOYA)            |
| Great Smoky Mountains NP (GRSM) | Yellowstone NP (YELL)          |
|                                 | Yosemite NP (YOSE)             |

### Meet the staff continued from page 1....

The IMC database design was guided by John Ray and Dave Joseph of the NPS ARD, and Edie Pope, Computer Specialist Don Mussard, and Database Developer Betsy Davis of ARS. Their goal was to retain validation concepts previously developed by the NPS ARD staff and their contractors, but modernize the operating environment to allow greater flexibility and efficiency. Don manages the IMC, developed the polling, plotting, and reporting programs, assisted in the database design, and keeps the computer hardware humming along. Betsy programmed the database and the operator input/output screens, and continues to make enhancements as needed.

Technically speaking, the database is coded in Oracle 7, with Powerbuilder interface devices. It resides on its own Local Area Network with a Compaq Pentium/90 file server, an 8 gigabyte hard drive, and a read/write optical disk drive. Each of the networked workstations are Pentium processor computers running with a Windows 95 operating system and 32 megabytes of memory.

If you have questions regarding validation procedures or reporting output, please contact any one of these individuals. They will be happy to discuss your questions.