The National Atmospheric Deposition Program (NRSP-3)
Technical Committee Meeting
September 10-13, 2002, Seattle, Washington
Minutes

Wednesday, September 11, 2002
Program Chair, Kathy Tonnessen, called the Technical Committee to order, welcomed the participants, and invited attendees to introduce themselves. Meeting participants are listed at the end of this report.

Kathy Douglas presented a brief overview of the afternoon field trip to Frontier Geosciences, Inc., the Mercury Analytical Laboratory, and the field trip to Mount Rainier National Park, scheduled for Friday. She also provided directions for setting up posters and described where the poster session and reception would occur.

Kathy Tonnessen thanked the following people for assisting with the meeting and field trip arrangements: Program Office staff for meeting arrangements; Kristi Morris (Fish and Wildlife Service) and David Maxwell (National Park Service) for inviting presenters for the technical sessions; and Barbara Samora (National Park Service) for special assistance in preparing the field trip to Mount Rainier National Park.

Reports —

Executive Committee
Kathy Tonnessen, NADP Chair, National Park Service

- Reported on an Executive Committee resolution to replace the current precipitation gage and wet deposition collector with modern instruments over the next several years. The Executive Committee charged the Program Coordinator with developing a time line that identifies the actions that must occur to prepare for these replacements, which affect all three NADP networks. Actions include: equipment testing, summarizing and reporting test results to the Network Operations Subcommittee (NOS), NOS recommendations for a replacement gage (or gages) and a collector, Technical Committee approval of NOS recommendations, purchase of new instruments, and replacement of existing instruments.
- Reported that the Environmental Effects Subcommittee had contributed input for the response to the technical and administrative review of National Research Support Project #3 (NRSP-3). The Program Coordinator will prepare the final response, which will be included with the NRSP-3 renewal proposal.
- Reported that the State Agricultural Experiment Station (SAES) Directors had approved a one-year extension of NRSP-3. Regional SAES Associations will again consider a 5-year renewal during their spring 2003 meetings.
- Presented site operator awards for longevity of service. The following people were awarded 5, 10, 15, and 20-year awards for the NTN and AIRMoN networks.

5-Year Awards (paper certificate)

Site	Name	Wet Start	Agency
CA42-Tanbark Flat	Mike Oxford	011282	USDA-Forest Service
CO01-Las Animas Fish Hatchery	Nick Young	100483	USGS
MI98-Raco	Patty Ver Wiebe	050184	EPA-Clean Air Markets Division
MT00-Little Big Horn Battlefield	Wayne Not Afraid	071384	USGS
MT98-Havre Experiment Station	Jeff Whitmas	073085	USGS
OR09-Silver Lake Ranger Station	Rick Elston	082383	USGS
PA72-Milford	Lynn Dennis	122783	USDA-Forest Service
VT99-Underhill	Miriam Pendleton	061284	USGS
WI36-Trout Lake	Barbara Reinecke	012280	Wisconsin Dept. of Natural Resources

10-Year Awards (5 x 7 plaque)

Site	Name	Wet Start	Agency
AK03-Denali National Park - Mt McKinley	Andrea Blakesley	061780	NPS-Air Resources Division
CO01-Las Animas Fish Hatchery	Stan Green	100483	USGS
CO93-Buffalo Pass-Dry Lake	Cap Kuney	101486	USDA-Forest Service
MA08-Quabbin Reservoir	Daniel Pepin	030582	NESCAUM
UT01-Logan	Zane Stephens	120683	USGS
WV04-Babcock State Park	Melvin Mathes	090683	USGS
WY08-Yellowstone National Park-Tower	Colette Daigle-Berg	060580	NPS-Air Resources Division
WY99-Newcastle	Rod Randall	081181	Bureau of Land Management

15-Year Awards (8 x 10 plaque)

Site	Name	Wet Start	Agency
FL41-Verna Well Field	April Ammeson	082583	USGS
KS07-Farlington Fish Hatchery	Dan Mosier II	032784	USGS
KS31-Konza Prairie	Rosemary Ramundo	081782	SAES-Kansas State University
KY22-Lilley Cornett Woods	Robert Watts	090683	NOAA-Air Resources Laboratory
MT00-Little Big Horn Battlefield	Les Frickle	071384	USGS
NC25-Coweeta	Robert McCollum	070578	USDA-Forest Service
OH71-Wooster	Cheryl Capek	092678	USGS
TX56-LBJ National Grasslands	Clyde Schoultz	092083	USGS

20-Year Awards (lucite trophy)

Site	Name	Wet Start	Agency
MO05-University Forest	Jim and Sandy Joiner	102781	USGS

AIRMoN 10-Year Awards (5 x7 plaque)

Site	Name	Agency
IL11-Bondville	Mike Snider	NOAA-Air Resources Laboratory
NY67-Ithaca	Tom Butler	NOAA-Air Resources Laboratory
TN00-Walker Branch Watershed	Mark Brewer	NOAA-Air Resources Laboratory

Regional SAES Administrative Advisors

Wayne Banwart, Lead Administrative Advisor, North Central Region

- Reported that the NRSP-3 had been extended for one year and that the proposal for a 5-year renewal would be re-submitted for SAES Directors consideration. The Program Coordinator will finalize the response to the NRSP-3 review panel's recommendations and include it with the updated renewal proposal. The

Southern and Northeastern Regional SAES Directors have approved the renewal and the Western and North Cental regions are awaiting the response to the NRSP-3 review panel's recommendations before making their decision.

Don Snyder, Administrative Advisor, Western Region

- Reported that the Western Regional Directors approved the one-year extension. Although there is no apparent lack of commitment to NRSP-3 renewal in the West, the Directors will await the response to the review panel's recommendations before making any further decisions. It's good to note that NRSP-3 is the first national project to be considered for renewal in the new system.

Gerald Arkin, Administrative Advisor, Southern Region

- Reflected on his involvement with NRSP-3 as the Southern Regional Administrative Advisor ten years ago. He returns as the Southern Regional Advisor.
- Reported that NADP communications have grown enormously over the last ten years. The Informational and educational materials available on the Web site and in reports and brochures are excellent.
- Urged NADP to continue to emphasize communications to policy makers at federal agencies and to private sector (power company) representatives. These contacts need continuous attention.
- Offered a number of suggestions for the future:
  -consider how NADP might contribute to defense needs.
  -continue to seek long-term funding commitments that can sustain the program.
  -explore the establishment of a tax-free institute that could "partner" with the current program and receive monies from non-governmental organizations; these funds might be for new equipment or sustaining the program.

NTN Advisor, Mark Nilles, US Geological Survey (USGS)

- Discussed the growth of NADP (NTN and MDN) and the successes of the cooperative effort involving federal agencies, SAES, universities, states, and others. The future success of NADP depends on
  - co-location with other programs (e.g., Clean Air Status and Trends Network, National Dioxin Monitoring Network, climate network, USGS benchmark watershed monitoring program, National Park Service integrated monitoring program, etc.).
  - sub-sampling, which expands the value of the network by leveraging new research opportunities for NADP's active and archival samples.
  - continue to provide high-quality data in support of research on nitrogen species, reduced and oxidized, on estuaries, unmanaged forests, and pristine environments.
  - provide data in support of animal agriculture issues and federal initiatives, such as the current Clear Skies Initiative, which proposes emissions reductions in

sulfur oxides, nitrogen oxides, and mercury.
- continue to emphasize communications with our user base; continued demonstration that NADP data are used to address contemporary scientific and policy issues is a key to long-term success.

AIRMoN Advisor, Rick Artz, National Oceanic & Atmospheric Administration (NOAA)

- NOAA support of AIRMoN-wet has remained stable for the last 10 years and the agency continues to be interested in wet and dry deposition measurements and in expanding deposition research efforts. Monies have not been adequate for increased research and some dry deposition sites have been terminated, leaving CASTNet fill the need for dry deposition measurements.
- Research on relaxed eddy accumulation methods for measuring dry deposition and on methods for dry deposition of mercury continues with the NOAA group at Oak Ridge.
- NOAA continues to be interested in source-receptor work and hopes to exploit the AIRMoN database for this in the future.
- The Florida Department of Natural Resources has decided to restore the monies for support of the Tampa Bay AIRMoN site. The reliability, quality, and accessibility of NADP data were key considerations in this decision.

MDN, Clyde Sweet, NADP Program Office

- Reported on new and proposed MDN sites and on the network status:
  - eastern third of the U.S. has much better coverage than elsewhere.
  - MDN has several urban sites and data from urban and rural sites have been compared.
  - two sites collect samples on a daily basis, following the AIRMoN sample collection schedule.
  - 2001 data are available on the NADP Internet site and the HAL has delivered data through the first quarter of 2002 to the Program Office.
- A manuscript that summarizes the first five years of MDN data has been completed and will be submitted to the journal *Atmospheric Environment*.
- An audit of the MDN analytical laboratory, HAL, and an MDN training course are planned for 2003.
- The Program Office provided advice and assistance to the National Park Service and Tennessee Valley Authority on installing a DC-powered mercury collector at Clingman's Dome, a high-elevation site in Great Smoky Mountain National Park. This site will operate only during the warm season and data will be compared with data from the low-elevation MDN site at Elkmont, TN, also in the Park.
- The Council for Environmental Cooperation, a North American Free Trade Agreement-related group, and the MDN are cooperating with the Mexican government to establish two prototype MDN and NTN sites in Mexico. Although these sites will not join the NADP, the protocols for sampling and analysis will closely match those used in these NADP networks.

Network Operations Subcommittee (NOS)

Kristi Morris, NOS Chair, U.S. Fish & Wildlife Service

- Approved minutes of the Spring 2002 meeting.
- Assigned the NOS chair to oversee the Mercury Analytical Laboratory (HAL) audit in 2003 and every three years thereafter.
- Charged the Program Coordinator with pursuing the testing of PDA/Palm Pilot technology for data transfer from field sites to the CAL and HAL.
- Approved Carol Kendall's request to use NTN archival samples for nitrogen and oxygen isotope studies.
- Approved modification to the zero balance fine adjustment screw on the Belfort raingage.
- Elected Karen Harlin, CAL Director, as NOS secretary. 2002/2003 NOS officers are Mark Nilles, Chair, Natalie Latysh, Vice-Chair, and Karen Harlin, Secretary.
- Reported on actions and deliberations at the Spring 2002 meeting. At that meeting, there was a motion to terminate field pH and conductivity measurements. This motion failed by a narrow vote. The NOS Chair appointed an ad hoc committee, chaired by Chris Lehmann, to report on the value of field chemistry measurements. Chris presented the ad hoc committee's report to the NOS, and several additional motions followed. These are NOS motions that were made in relation to field chemistry:
  - Move/Second/Pass - The Program Office shall produce a report that summarizes 25 years of field measurements for site operators and supervisors.
  - Move/Second/Fail - Eliminate field chemistry measurements in January 2003.
  - Move/Second/Pass - Do not eliminate field chemistry measurements for the AIRMoN.

Motion: Gary Lear moved to eliminate NTN field chemistry measurements effective January 2003. Scott Dossett seconded.
Discussion: There was a question and discussion about differences between field and laboratory pH and conductance measurements. The discussion ranged from how pH differences varied by region to possible causes of the regional differences. In general, lab pH measurements tend to be higher than field measurements and so free acidity is lost. There was the suggestion that field chemistry measurements be continued at selected long-term(core) sites rather than at all sites. Related to this was the suggestion that the measurements be optional, so that long-term sites with an interest in continuing the measurements could do so. There was discussion about discontinuing the measurements so that monies spent on field chemistry could be re-directed to other more important activities. Questions were raised about the actual savings and there was a reminder that the NOS ad hoc committee had attempted to address many of these issues in its deliberations. There was a question about what data users are doing with the paired field and lab measurements. A survey indicated that 20 percent of people use only field chemistry measurements and that 45 percent use both measurements. Some respondents said they used the size of the differences to gauge the integrity or quality of the chemical concentrations for particular samples. It was pointed out that the

differences observed in pH very likely are occurring in other constituents (e.g., ammonium) but that we don't "see" the impact of sample aging on these other constituents because we don't measure them. There also was discussion about how pH differences have changed over time in part because of improvements in sample handling procedures. One sponsoring agency representative suggested that continuing to spend monies on field chemistry measurements reduces sponsors' flexibility to devote resources to cost increases (e.g., higher mailing costs or operator expenses). This could jeopardize support for some existing sites. One researcher described how field pH measurements at a western site are used to document recent pH decreases. It was suggested that researchers could continue to remove sub-samples for this work, even if mandatory field pH measurements were discontinued. One researcher argued that field measurements must be continued because they document differences in field and laboratory measurements and scientists have not identified definitively the causes of these differences.
Motion: Gary Lear amended his original motion by stating that researchers at sites could continue to remove a sub-sample for field chemistry measurements but that the CAL would no longer support field measurements (i.e., no longer provide electrodes or calibration and QC solutions and no longer manage field chemistry data).
Discussion: There was clarification that the original motion had set January 2003 as the data when field chemistry measurements would be discontinued. Further discussion ensued that this allowed too little time to ensure that protocol changes could be written, approved, and communicated. The Chair closed the discussion and called for a clarification of the motion.
Final Motion: Gary Lear moved that support for NTN field chemistry measurements be discontinued as of October 1, 2003, and that site operators be permitted to remove a sub-sample for field chemistry measurements in support of on-site research. Scott Dossett seconded this new motion. This motion superseded the original motion.
Motion Failed.

Environmental Effects Subcommittee (EES)

John Sherwell, EES Chair, Maryland Department of Natural Resources

- Reported on several outreach ideas discussed during the EES meetings:
  - a mercury brochure, similar to the *Nitrogen in the Nation's Rain* brochure, is being planned; the Associate Coordinator for Toxics, Clyde Sweet, will prepare an outline and EES members will draft and review text.
  - host a workshop that addresses long-term monitoring programs at a large national meeting, such as the American Chemical Society meeting.
  - host an on-line forum, where atmospheric deposition data users and producers can exchange ideas, request information or assistance, and express data needs.
- The EES discussed various network issues:
  - total nitrogen is not routinely measured in regional or national networks and information on the wet deposition of organic nitrogen is sketchy, yet it may be important in affecting eutrophication in fresh and estuarine waters; similarly, total phosphorus is not routinely measured but may be important in fresh water systems. AIRMoN samples, which are refrigerated but not filtered, may be useful

in determining the amount of total nitrogen and phosphorus in wet deposition.
- the number of investigators taking archival samples for isotopic measurements and the interest in deuterium and oxygen-18 measurements continue to grow; it may be time for NADP to consider making these measurements available as additions to the suite of inorganic measurements now reported.
- the EES is encouraged by efforts to identify *Bacillus anthracis* spores in NTN samples; measuring these spores in aerosol samples, for example at CASTNet or IMPROVE sites co-located with NTN sites, may help identify the source of this bacterium.
- the EES discussed improvements in MDN site coverage so that mercury isopleth maps could be generated; what's needed is a statistical design that would show where sites are most needed to reduce uncertainty in mercury concentration or deposition maps.
- a long-term goal is to develop spatially allocated total deposition, combining wet and dry deposition.

- Reported that EES members had some additional comments for the response to the NRSP-3 review panel's recommendations. Members were asked to send their comments to the Program Office in the next two weeks.

Data Management and Analysis Subcommittee (DMAS)

Bob Larson, DMAS Chair, NADP Program Office

- officer structure of the DMAS was changed to include a chair and vice-chair/secretary positions. For 2002/2003, Bob Larson is Chair and Chris Rogers is the Vice-chair/Secretary.
- discussed data audits and recommended that these become a routine part of the CAL and HAL audits, beginning with the HAL audit scheduled for 2003. The DMAS moved that the QA Manager audit recent MDN data by taking 5% of the fourth quarter 2002 and first quarter 2003 data, randomly selected, and track the data from field to the HAL to the Web; findings will be reported at the fall 2003 meeting. In addition, it was decided that 1996-2002 MDN data would be audited by performing a keystroke verification of data on the field form and checking these data against the MDN database.
- the HAL has not been entering and key-stroke verifying data from the field form, a practice routinely followed by the CAL. It was decided that the HAL should begin doing this by the fourth quarter of 2002. Computer programs necessary to do this will be prepared by the Program Office Data Manager, Bob Larson.
- NADP QA Manager Chris Lehmann gave a presentation on minimum reporting limits (MRLs). The DMAS tasked Chris with making a more detailed presentation on MRL criteria at its next meeting and recommending what criteria NADP should follow in setting MRLs.

Motion: All laboratory audits will include a data systems audit. Laboratory review teams will include two data system auditors, two analytical laboratory auditors, a team leader, and the QA manager. Van Bowersox seconded.
Discussion: There was a question about whether the data systems audit would include

data operations at the Program Office. The scope of the audit will include data management, analytical laboratory operations, and associated Program Office operations. Data review team members would be selected by the DMAS Chair and analytical team members by the NOS Chair. Each subcommittee would vote to accept the audit reports. This ne procedure will commence with the MDN 2003 audit.
Motion carried.

New Business —

Nominating Committee

Kathy Tonnessen, 2001/2002 NADP Chair, reported that the nominating committee (Kathy Tonnessen and Gary Lear) had recommended Cari Furiness, North Carolina State University, as 2002/2003 NADP Secretary. Cari agreed to accept this position, if elected. There were no additional nominees from the floor.
Motion: The nominating committee moved that Cari Furiness be 2002/2003 NADP Secretary.
Motion carried.

2003 Technical Committee Meeting

Gary Lear, 2002/2003 NADP Vice Chair, U.S. Environmental Protection Agency.

- 2003 marks 25 years of NADP precipitation chemistry network operations, so the meeting will commemorate the long-term success of this cooperative program.
- A 3-day meeting that addresses how NADP and other long-term environmental measurement programs support policy decisions is being planned for Washington, D.C.; additional days may be added for an ammonia workshop.
- Scientists from the Hubbard Brook Experimental Forest, which celebrates its 40th anniversary, have been invited to participate.

Presentation by Ellis Cowling

Ellis was Chair of the NADP from 1978 through 1983. He thanked and congratulated the NADP for its participation in the *2nd International Nitrogen Conference*, which was held in Potomac, MD, in October 2001. He urged the group to pay special attention to Cari Furiness' presentation on the findings and recommendations from this conference. He recalled the Technical Committee meeting in St. Petersburg, FL, where he gave the presentation entitled *Twenty Years Down and a Century to Go.* Ellis urged the group to find a way to keep this program in existence. The NADP is extraordinarily important for this country because it provides the database that can help us understand how we affect our atmosphere, our oceans, and the nitrogen cycle. It is important for us to know what contributions agriculture makes to the reactive forms of nitrogen, which are growing in importance all over the world. The NADP is vitally important to the continuing awareness of the changes that humans are inducing in this continent and in other places around the world. Ellis praised NADP for running the most outstanding precipitation chemistry network in the world. He urged the group individually and collectively to examine

everything that it does to find ways to make the program as stable as possible financially. He asked each person to be an ambassador for the NADP by taking the opportunity to advertise the program, its successes, and the many uses and users of the data. He reiterated the need for a rainy day fund and for designated state representatives that count it their business to ensure that there are plenty of satisfied customers all over the country that use these data to better understand what's happening and how it affects the ecosystems on which the quality of our lives depends.

Presentation by Van Bowersox

Van Bowersox, NADP Coordinator, gave a presentation on NADP's vision statement. These are major points from his presentation.

- Remain one of the nation's premier research support projects.
- Sustain the long-term commitment of sponsors and operators and maintain and extend the high-quality data record. NADP is a cooperative research support project that receives support from federal, state, local, and tribal governments, universities, State Agricultural Experiment Stations, and non-governmental organizations.
- Serve scientists and educators by providing high-quality data and continue to do so in ways that meet user needs. The NADP Internet site has been enormously successful and now has more than a million hits per year. Users come from every state in the nation and every continent on earth except Antarctica. Sixty-two percent of the data users are using the data in support of research and the remainder is for educational purposes.
- Foster continued growth in use of the data; examples are
  - *Inside Rain*, a curriculum based on NADP data and targeted for students in grades 9 to 12.
  - 4 new college textbooks (ecosystems, geology, meteorology, chemistry) that use NADP data.
  - 2 recent special issues of the journal Atmospheric Environment.
  - approximately 50 journal articles per year that use NADP data.
- Support informed decisions on air quality issues and atmospheric chemistry, for example the administration's Clear Skies Initiative (which cites NADP data).
- Respond to emerging issues such as
  - stable isotope research using NTN archival samples.
  - mercury deposition.
  - total nitrogen and coastal eutrophication.
  - national security (biological agents, chemicals or radionuclides in precipitation).
- Update the NADP measurement system by replacing the precipitation gage and wet deposition collector with modern instruments.
- Better define the NADP data quality objectives.
- Continue to develop products that **meet user needs**.

NADP Chair, Kathy Tonnessen, adjourned the meeting at 10:00 a.m.

PARTICIPANT LIST

Cort Anastasio	University of California-Davis
Gerald Arkin	University of Georgia
Richard Artz	NOAA-Air Resources Laboratory
Bill Baccus	National Park Service- Olympic National Park
Robert Bachman	USDA Forest Service
Sue Bachman	Illinois State Water Survey
Wayne L. Banwart	University of Illinois
William Bauman III	Yankee Environmental Systems
Jack Beach	Con Systems Co. Inc.
Tamara Blett	National Park Service
Van C. Bowersox	Illinois State Water Survey
Steven Brown	Sonoma Technology Inc
Bob Brunette	Frontier Geosciences
Tom Butler	Cornell University
Cara Casten	Wyoming Department of Environmental Quality
Daniel Corcoran	Frontier Geosciences
Ellis Cowling	North Carolina State University
Brigita Demir	Illinois State Water Survey
Scott Dossett	Illinois State Water Survey
Kathy Douglas	Illinois State Water Survey
Rebecca Doyle	National Park Service - Mount Rainier National Park
John Drese	Dynamac Corp
Mark Dziadosz	Grand Traverse Band of Ottawa & Chippewa Indians
Scott Faller	U.S. Environmental Protection Agency
Hans Friedli	National Center of Atmospheric Research
Cari Furiness	North Carolina State University
Richard Haeuber	U.S. Environmental Protection Agency
Karen Harlin	Illinois State Water Survey
Eric Hebert	Harding ESE Inc
Bruce Heise	National Park Service
Kemp Howell	Harding ESE Inc
Dan Jaffe	University of Washington, Bothell
Andrew Johnson	Maine Department of Environmental Protection
Tom Jones	Advanced Technology Systems, Inc
Carol Kendall	U.S. Geological Survey
Dennis Lamb	Penn State University
Bob Larson	Illinois State Survey
Natalie Latysh	U.S. Geological Survey
Gary Lear	U.S. Environmental Protection Agency
Christopher Lehmann	Illinois State Water Survey
Kirsi Longley	Frontier Geosciences
Amy Ludtke	U.S. Geological Survey
Malcolm Lynch	C.C. Lynch & Associates, Inc.
Madhav Machavaram	Lawrence Berkeley National Laboratory
Dave MacTavish	Environment Canada
Lee Maull	Dynamac Corporation
David Maxwell	National Park Service
Stephanie McAfee	University of Washington
Mike McHale	U.S. Geological Survey
Mark A. Mesarch	University of Nebraska - Lincoln
Kristi Morris	U.S. Fish & Wildlife Service
Mark Nilles	U.S. Geological Survey
Susan O'Neill	USDA Forest Service
Sylvia Oliva	Mesa Verde National Park

Steve Osborn	City of San Jose
Anthony Paulson	U.S. Geological Survey
Jake Peters	U.S. Geological Survey
Ellen Porter	Nation Park Service
Eric Prestbo	Frontier Geosciences
Lawrence Radke	National Center for Atmospheric Research
John Ray	National Park Service
Martin Risch	U.S. Geological Survey
Chul-Un Ro	Meteorological Service of Canada
Jane Rothert	Illinois State Water Survey
David Schmeltz	U.S. Environmental Protection Agency
Janea Scott	Environmental Defense
John Sherwell	Maryland Department of Natural Resources
Luther Smith	ManTech Environmental Technology, Inc.
Don Snyder	Utah State University
Ariel F. Stein	Penn State University
Phillip Swartzendruber	Frontier Geosciences
Clyde Sweet	Illinois State Water Survey
Kathy Tonnessen	National Park Service
Robert Tordon	Environment Canada
Mary Tumbusch	U.S. Geological Survey
Manfred van Afferden	Instituto Mexicano de Technologia del Aqua
Gerard Van Der Jagt	Frontier Geosciences
John Walker	U.S. Environmental Protection Agency
Peter Weiss	University of Washington, Bothell
Jeff Welker	Colorado State University