Attachment 1, NADP NOS minutes, Fall 2002

FINAL AGENDA
NADP Fall Technical Meeting
Network Operations Subcommittee Meeting
September 10, 2002

"NOS"

Tuesday, September 10

1:00-1:20	Welcome, Introductions, and Agenda Overview Approval of NOS Spring Meeting Minutes Report from July Executive Committee Meeting	Kristi Morris/U.S. FWS
1:20-1:45	New Version of the Ott-Pluvio Precipitation Gage	Malcolm Lynch/CC Lynch and Associates
1:45-1:55	N-CON Modification #2 Mercury Collector	Mark Nilles/USGS
1:55-2:15	Ad Hoc Committee Report: Data Relay of Future Sites	Scott Dossett/NADP
2:15-2:30	Ad Hoc Committee Report: Value of Field Chemistry	Chris Lehman/NADP
2:30-2:45	Plastic Bucket Liner Study	Karen Harlin/CAL
2:45-3:00	Archive Sample Distribution	Karen Harlin/CAL
3:00-3:30	Break	
3:30-3:45	ATS External Site Survey/Audit Reports	Tom Jones/ATS
3:45-4:15	Belfort Fine Baseline Adjustment Screw Modification	Scott Dossett/NADP Tom Jones/ATS
4:15-4:30	Ad Hoc Committee Update: Review of NADP Siting Criteria	Chris Lehman/NADP
4:30-4:45	NED Report	Scott Dossett/NADP
4:45-4:55	Update on NOAA Climate Reference Network Efforts	Scott Dossett/NADP
4:55-5:10	Election of New NOS Secretary	Kristi Morris/U.S. FWS
5:10	Adjourn	

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

Attachment 2, NADP NOS minutes, Fall 2002

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

Attachment 3, NADP NOS minutes, Fall 2002

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

Moving electronic data from NADP field sites to the laboratories

Fall 2002 NADP Technical Committee Meeting

Seattle, Washington

ASSUMPTIONS

- NADP site operators will collect a physical sample of precipitation and this sample will be sent to a central lab
- Routine field sampling will take place in challenging ambient conditions
- Site operators technical access and expertise is highly variable
- Program goals for data completeness will remain constant
- Provision of uniform equipment across all sites will continue

ASSUMPTION 1- NADP site operators will collect a physical sample of precipitation and this sample will be sent to a central lab

- Routine weekly site access ,evaluation and materials shipments
- Mailing costs determined by weight and size
- Materials will be reused by sites.

Media must be moderately sized, easily transferable and economical

ASSUMPTION 2 - Routine field sampling will take place in challenging ambient conditions

- High portability
- Enable gloved use
- Temperature independent

Solid state, battery powered handheld device

ASSUMPTION 3 - Site operators technical access and expertise is highly variable

- Low reliance on operator supplies hardware or software
- Single use/one-way connection devices
- Common language instructions
- Friendly and convenient operation
- Menu driven YES/NO systems
- Minimized data entry

Preprogrammed versatile device

ASSUMPTION 4 - Program goals for data completeness will remain constant

- One sample/ one data sheet format
- Physical sample and data will be locked together
- Routine error checking with flagged communications cycles

Operator active in passing data

Attachment 3, NADP NOS minutes, Fall 2002

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

ASSUMPTION 5 - Provision of uniform equipment across all sites will continue.

- Central supply
- Customized, uniform hard and software
- Components mailable and operator connectible

No reliance on local sources of support

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

Media must be moderately sized, easily transferable and economical

Preprogrammed versatile device

Solid state, battery powered handheld device

Operator active in passing data

No reliance on local sources of support

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

DIGITAL MEMORY CARD

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

TO THE FIELD!

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

TO THE FIELD!

All field work is by stylus/check box only.

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

TO THE FIELD!

Attachment 3, NADP NOS minutes, Fall 2002

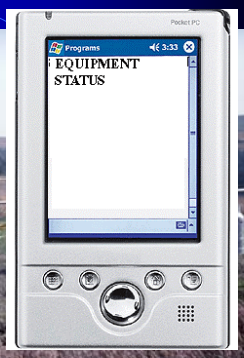
DATA RELAY IN THE BRAVE NEW WORLD-PART 2

TO THE FIELD!

Function test result checkboxes

Internal programmed query results

Power supply status/history



DATA RELAY IN THE BRAVE NEW WORLD-PART 2

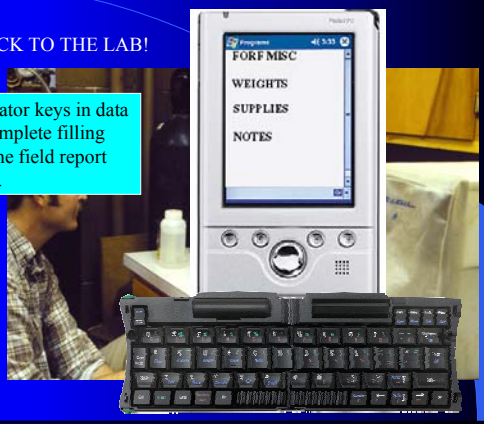
TO THE FIELD!

IrDA or wire

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

BACK TO THE LAB!

Operator keys in data to complete filling out the field report form.



DATA RELAY IN THE BRAVE NEW WORLD-PART 2

SUMMARY

Operator uses PDA to electronic report conditions of site, sample, equipment as well as for query of data system at the site and stores this data for transfer.

Operator enters data via detachable keyboard to complete report form in the lab.

PDA supplies much of the data for; times and dates, site ID, Precipitation record, condition checks.

Digital memory card and sample shipped back to lab.

DATA RELAY IN THE BRAVE NEW WORLD-PART 2

None of this precludes remote or network enabled access to data. We are simply building a handheld physical transfer of data as the first step.

Attachment 4, NADP NOS minutes, Fall 2002

Exploration of the Value of Field Chemistry Measurements to the NADP

NOS Ad-Hoc Committee Report

Scott Dossett, Natalie Latysh,
Christopher Lehmann (chair), Mark Nilles,
Jane Rothert

1

Current Field Chemistry Issue

- A motion was made at May 2002 Network Operations Subcommittee meeting to eliminate field pH and specific conductance measurements beginning in January 2003. This motion failed to pass.
- An ad hoc committee was formed to explore the value of field chemistry measurements, with plans to readdress the issue during the Fall 2002 meeting.

2

Current Field Chemistry Issue

- A motion was passed at the July Executive Committee Meeting recommending to the Technical Committee that field chemistry measurements be discontinued as of January 2003.

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Outline

- Current Field Chemistry Measurement Program
- Results of NADP Data User Survey
- Issues For and Against Continuance of Field Chemistry Measurements
- Potential Scenarios to Consider

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Field Chemistry Measurement Program: CAL Support

- CAL supplies sites with pH probes, calibration solutions, check samples, training, and instruction manuals as part of general site support
- Sites must provide pH meter, conductivity meter, and conductivity cell
- Sites requested to perform weekly field chemistry measurements, but refusal will not generally exclude them from the network
- 7 sites do not currently perform field chemistry measurements.

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Field Chemistry Measurement Program: External QA

- USGS supplies sites with verification samples to assess site measurement performance
  - Sites report measured pH & conductivity values
  - >90% of sites met pH & conductivity targets in 2001
  - USGS contacts sites that do not meet targets for follow up.
- Site Systems & Performance Surveys assess equipment performance and operator technique.

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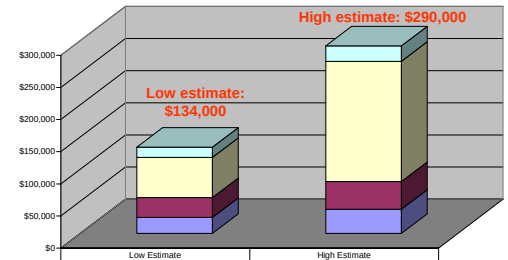
Attachment 4, NADP NOS minutes, Fall 2002

Field Chemistry Measurement Program: Estimated Costs

- Cost to CAL to provide sites with probes and supplies: ~$2.00 – 3.00 per site-wk
- Cost to sites to provide equipment: ~$2.50 - 3.50 per site-wk
- Site labor to perform field chemistry measurements: ~$5.00 - 15.00 per site-wk
- Cost for USGS intercomparison studies: ~$1.25 – 2.00 per site-wk

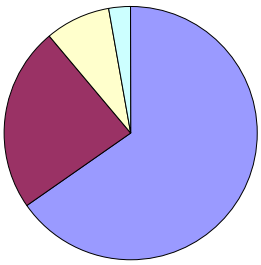
7

Estimated Field Chemistry Costs
(entire cost to NADP and funders)



	Low Estimate	High Estimate
USGS QA	$16,000	$24,000
Site Labor	$62,400	$187,200
Site Equip.	$30,857	$43,200
CAL	$24,960	$37,440

Site Operator Survey



Describe the function of your pH system

- works well most of the time--65%
- OK till probe failure--24%
- OK but takes time--8%
- unsure of data--3%

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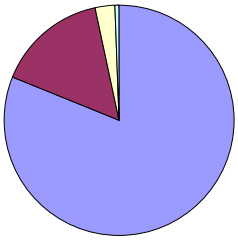
Site Operator Survey



How much time does it usually take you to perform a routine pH analysis?

- 30 or < minutes--81%
- 30 to 45 minutes--15%
- 45 to 60 minutes--3%
- >60 minutes--1%

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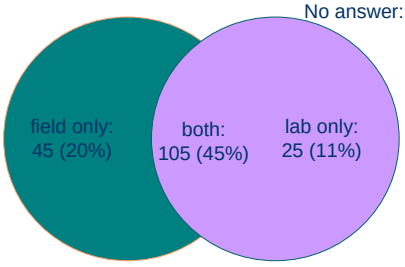
Which NADP-reported pH results do you use?

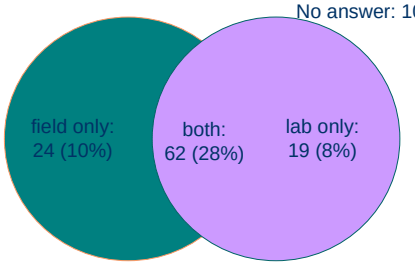
None: 50 (22%)
No answer: 5 (2%)



11

Which NADP-reported conductivity results do you use?

None: 115 (50%)
No answer: 10 (4%)



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Issues Supporting Continuance of Field Chemistry Measurements

- Field chemistry data is utilized by data users.
- Up to 24 year data record for sites would be broken if measurements are discontinued.
- Field measurements are not as potentially "biased" by handling and transport, and are made closer in time to actual precipitation conditions.

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Issues Supporting Continuance of Field Chemistry Measurements

- Differences between field and laboratory measurements still exist.
- Field measurements are a QC tool to assess sample chemistry changes between the field and lab.
- Field measurements are a QC tool to ensure samples are not switched, misplaced, etc. during shipment or analysis.

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Issues Supporting Continuance of Field Chemistry Measurements

- Field measurement data are quality verified through the measurement of standards, quality control samples, and external QA programs.
- Protocol and equipment changes are planned for NADP. Field chemistry measurements would provide a continued QC resource during these changes.

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Issues Against Continuance of Field Chemistry Measurements

- Quality control criteria for laboratory measurements are more stringent than field measurements.
- Lab measurements are given priority over field measurements for low volume samples.
- Data quality can be irregular, due to the experience of operators, equipment condition, etc.

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Some Questions Remain….

- Do resources committed to field chemistry measurements exceed value of data to program and data users?
- Would financial resources be better spent elsewhere in support of program?
- Are field measurements redundant with laboratory measurements?
- Can new information be provided by continued field chemistry measurements?
- Does performing field chemistry improve data quality?

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Recommendations from Committee

- NTN & AIRMoN should be considered as separate issues
  - Focus of AIRMoN as research network
  - Different sampling protocols between NTN & AIRMoN

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Potential Scenarios to Consider

- End all field chemistry measurements effective January 2003 as originally proposed at NOS.
  - NTN only
  - NTN and AIRMoN
- Reduce number of sites that do field chemistry measurements
  - Maintain a core group of sites (mandatory measurements)
  - Random sites maintained (optional measurements)
- Take no action.

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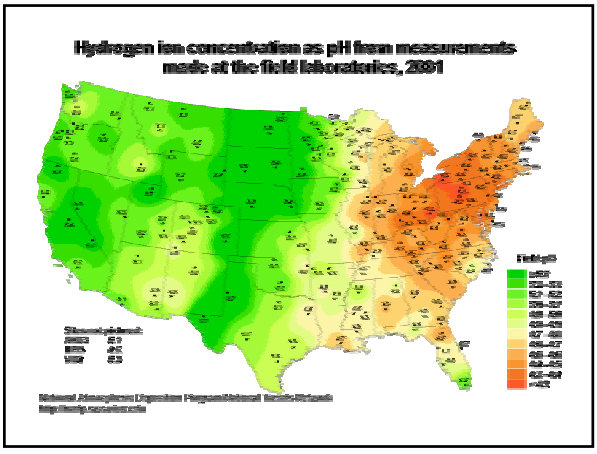

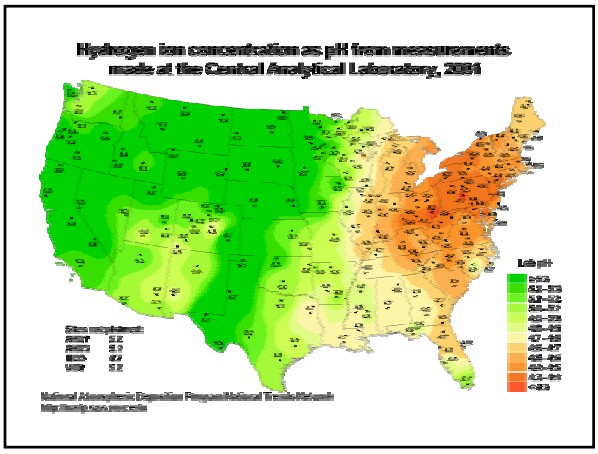

NADP Data User Survey

- Survey sent to 2000+ registered NADP data users June 21, 2002
  - Invitation to take survey emailed to users
  - Web site: http://nadp.sws.uiuc.edu/survey/
  - Survey covered use of various NADP data, including field chemistry
- 230 survey responses received as of August 21, 2002
  - http://nadp.sws.uiuc.edu/survey/results.asp

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OPTIONAL: Please provide additional comments regarding your use of NADP field chemistry data

- Comparison with own data (12 responses)
- Annual reports (2)
- Watershed loading studies (2)
- Reported to news agencies to provide current information on acid rain status

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Use of Both Field & Lab Chemistry Data

- Data comparison of field vs. lab data; consistency check; Quality Control (11)
- Comparison with EPA models
- Study pH patterns
- Compare NTN & AIRMoN data
- Use most complete record of data

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Attachment 4, NADP NOS minutes, Fall 2002

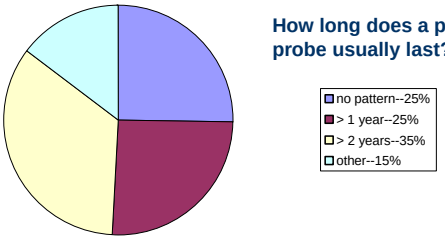
Differences Between Field & Lab pH for AIRMoN

		Mean		Median	
Site	**n**	**Field**	**Lab**	**Field**	**Lab**
DE02	78	4.26	4.28	4.35	4.40
DE99	38	4.26	4.30	4.36	4.39
FL18	54	4.33	4.33	4.43	4.43
IL11	78	4.38	4.44	4.50	4.57
MD15	78	4.26	4.26	4.31	4.31
NY67	97	4.31	4.34	4.38	4.41
PA15	84	4.18	4.18	4.23	4.23
TN00	85	4.23	4.28	4.29	4.38
VT99	106	4.35	4.37	4.43	4.45
WV99	92	4.29	4.32	4.41	4.45

Sample Reanalysis and Field Chemistry, 2002

Month	Number of reanalysis samples	Total number of edits	Number of edits based on field chem
Jan	29	6	1
Feb	25	12	6
Mar	31	18	9
Apr	17	17	6
May	28	26	9
Jun	49	46	7
Jul	87	20	1
Aug	95	10	4
TOTAL	**361**	**155**	**43**

Site Operator Survey



How long does a pH probe usually last?

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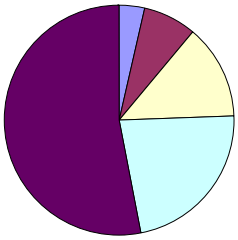
Site Operator Survey



How would you rate the CAL's response when you experience problems? (10=excellent, 1=poor)

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Attachment 5, NADP NOS minutes, Fall 2002

ATS External Site Survey Audit Reports

Tom Jones
Field Team Leader

ATS has audited as of today 52 sites

37 NTN

13 MDN

2 AIRMoN

Geographic locations of these sites

USA

California, Hawaii, Illinois, Iowa, Maine
Missouri, New Hampshire, Nevada,
Vermont, and Washington

Canada

Newfoundland
New Brunswick
Nova Scotia
Quebec

This effort has taken the following to accomplish

9,933 Driving miles

27,690 Flying miles

551 Gallons of gasoline

Plans for the remaining audits include

Alaska, Delaware, Kentucky, Maryland,
New Jersey, New York, Pennsylvania,
Virginia, Washington, and West Virginia

British Columbia

Attachment 5, NADP NOS minutes, Fall 2002

Data to the Program office is in the process of catching up.

Issues for the delay were a complete redesign of the audit survey, and the addition of surveys for the MDN and AIRMoN programs.

98 % of the issues have been resolved and hopefully by the end of September 2002 ATS should be on schedule.

Of the 37 NTN sites 8 audits were new sites that have not been visited for this program.

Of the 13 MDN sites 6 audits were new sites that have not been visited for this program.

The 2 AIRMoN sites have not been visited for this program.

Recurring problems for revisited sites:

Replacement operator training

Vegetation control

Maintenance of backup batteries

ATS recommendations for corrective actions

Offer two training schedules and include all three programs

Have site liaison contact replacement operators to discuss protocol.

Discuss with operator if there is REAL need for having battery backup

Attachment 5, NADP NOS minutes, Fall 2002

Vegetation control

Trimming or removal of trees from older sites.

Recurring issues with new sites

Site set up

Operation of site

Operation of Belfort rain gage

New sites for the program

Have a representative from the program **GO** to the site to aid in site setup

Have representative train operator for collecting of sample, processing of sample, and operation of collector and Belfort rain gage.

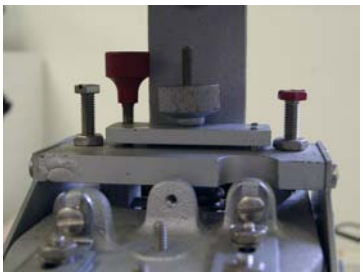
Check operation of collector and if necessary calibrate the Belfort rain gage.

Attachment 6, NADP NOS minutes, Fall 2002

Belfort Fine Baseline Adjustment Screw

Proposed Modification

"The **RED** Knob"



Scott Dossett and Tom Jones

During the IL11 audit struck upon an idea!

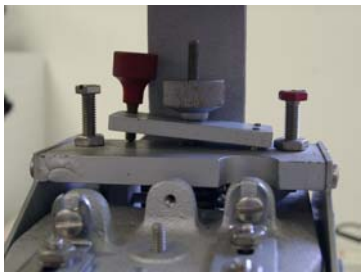
During field audits for the last four and one half years

We have discovered another or specific problem with the Belfort Rain gage

ATS has been finding a lot of gages out of calibration that was perceived to be operator induced.

Thus we come to you with our saga of the RED knob

We have found the RED knob adjusted as such



Or adjusted the other way

Has caused a lot of Belfort gages to go out of

calibration.

Glad you asked

What is the function for the RED knob

From the Belfort instrument manual
The RED knob is designed to be a FINE zero adjust.

The problem with the design of this gage is when looking thru the door of the housing the only adjustment that is visible to the operator is the RED knob.

We have discovered that over adjusting the red knob tends to degrade the calibration of the gage.

Attachment 6, NADP NOS minutes, Fall 2002

The gages that we encounter that are over adjusted will come back into specifications when the fine adjustment is returned to a normal position.

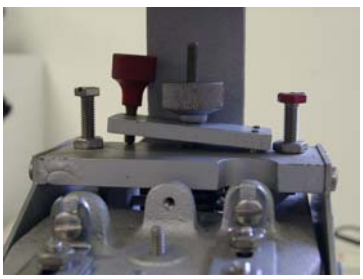
Operators are not aware that over compensation of the red knob will cause the gage to go out of specifications.

Reality is the red knob will not cause the gage to lose calibration when over adjusted.

Through bench tests of a gage we have discovered
that the problem lies here.

The ball and socket design of the coarse adjustment. Over time tends to bind and does not allow the design to function as a ball and socket fitting.

Thus when the RED knob is adjusted like this



Attachment 6, NADP NOS minutes, Fall 2002

The Z axis of the main spring will go off center.

Thus changing the linearity of the spring.

And the gage will go out of calibration

From the minds of Dossett and Jones comes a Proposal to modify the Belfort rain gage.

Our proposal is to eliminate the RED knob and replace it with a torx head set screw and a lock nut.

Set this screw to the OEM designed position and lock it in place.

Thus when an operator thinks it is necessary to adjust the zero of the gage. His or her only option will be to adjust the silver or course adjustment knob of the gage.

The main spring will remain in the proper vertical Position and the calibration will not change.

We have observed over the last four plus years that the zero adjustment of the gage can be accomplished with the silver or course adjustment knob.

ATS has attempted to instruct operators not to adjust the ZERO with the RED adjustment knob.

However with operator turn over this information does not get passed on.

And we are back into gages needlessly going out of calibration.

Attachment 6, NADP NOS minutes, Fall 2002

Glad you asked that again !

What is the cost to the program to make this change?

We estimate the material cost to be around 50 dollars.

The labor will be provided by ATS when we visit a site for an audit.

Our proposal will only take away an adjustment to the gage.

It will NOT change the function of the gage.

And should allow gages to remain in calibration even with operators input.

Attachment 7, NADP NOS minutes, Fall 2002

Review of NADP Siting Criteria

Ad Hoc Committee Update

Rick Artz, Natalie Latysh, Chris Lehmann, Preston Lewis, Gary Stensland (chair)

Purpose of Committee

We have taken as our charge to review and comment on the scientific foundation for the NADP siting criteria

Progress

1. Looked at development of NADP criteria since 1978
2. Considered scientific foundation of NADP criteria
   - Made distinction between criteria and operating procedures
   - Noted some criteria only relevant to select analytes

Progress

3. Articulated *NADP Site Selection & Installation Manual* into 33 separate criteria.
   - A Criteria - To Minimize Influence of Anthropogenic Emission Sources to Air: Regional Requirements, > 10 km
   - B Criteria - To Minimize Influence of Anthropogenic Emission Sources to Air: Local Requirements, < 10 k
   - C Criteria - On-site Requirements, < 30 m, To Minimize Splash and Wind Flow Alterations
   - D Criteria - Other Criteria Affecting Sample Representativeness

Progress

4. Reviewed 33 criteria
   (a) for changes in wording
   (b) to omit some of the 33 from the list
   (c) changing the names of the 33 items from siting criteria
   - siting rules
   - siting guidelines

Siting Rules vs. Siting Guidelines

RULE –Features that must be adhered to by the sites. NADP may decide to report exceptions to data users and implement remedial actions.

GUIDELINE - Siting guidelines are features that are desirable and should be adhered to if possible. NADP may decide to report exceptions to data users.

Attachment 8, NADP NOS Minutes, Fall 2002

NTN & AIRMoN Siting Rules/Guidelines(R/Gs) (Using the word "rules" in place of "criteria")									Does a s	
Later some committee will need to revisit the R/Gs when considering MDN, urban sites, coastal sites, special sites									pub. support	
and likely will make modification specific to these networks.										
A items - **To Minimize Influence of** Anthropogenic Emission Sources to Air: Regional Requirements, > 10 km									the rule or guideline?	
B items - **To Minimize Influence of** Anthropogenic Emission Sources to Air: Local Requirements, < 10 km			NTN/AIRMoN							Comment
C items - **On-site Requirements, < 30 m, To Minimize Splash and Wind Flow Alterations**		Original	Rule or					Qualitatively, science		
D items - Other Criteria Affecting Sample Representativeness		text: should	guideline or					supports the rule?		
		or must?	procedure.			List				
List	Number	*Summary of Original Wording of Siting Rule/Guideline*			*Summary of Suggested Word Changes of Siting Rule/Guidelines*	Number				
A1-a	1	Industrial Operations, not in general upwind direction, then > 10 km	Should	**omit**	**omit (in fact wind rose data has not been used)**	1	A1-a	Yes	Yes	
A1-b	2	Industrial Operations, in general upwind direction, then > 20 km	Should	**guideline**	Major Industrial Operations should be > 20 km	2	A1-b			
A2-a	3	Suburban/Urban,approx. 10,000, not in general upwind direction, then > 10 km	Should	**omit**	**omit (in fact wind rose data has not been used)**	3	A2-a			
A2-b	4	Suburban/Urban,approx. 10,000, in general upwind direction, then > 20 km	Should	**guideline**	Suburban/Urban,approx. 10,000, should be > 20 km	4	A2-b			
A2-c	5	Suburban/Urban > 75,000, not in general upwind direction, then > 20 km	Should	**omit**	**omit (in fact wind rose data has not been used)**	5	A2-c			
A2-d	6	Suburban/Urban > 75,000, in general upwind direction, then > 40 km	Should	**guideline**	Suburban/Urban > 75,000 should be > 40 km	6	A2-d			
B1-a	7	No mobile pollution sources closer than 100 meters	Should	**rule**	No public roadways closer than 100 meters (need to add words about paved vs unpaved, and traffic volume)	7	B1-a			
B1-b	8	Consider traffic volume on the local road net	Should	**omit**	**omit(maybe discuss more later; ?have guideline, not rule for intermediate distance from sight)**	8	B1-b			
B2	9	No large feedlots,dairy barns closer than 500 meters	Should	**?rule**	No large feedlots,dairy barns etc. closer than 500 meters (large is > 200 cattle, 400 pigs, 2000 chickens)	9	B2			
B3	10	No grazing animals and pasture closer than 20 meters	Should	**guideline**	No grazing animals and pasture closer than 20 meters	10	B3			
B4	11	No surface storage of source materials (fuel, ag products) closer than 100 meters	Should	**guideline**	No uncovered surface storage of source materials (e.g. ag products) closer than 100 meters	11	B4			
B5	12	No parking lots or maintainance yards closer than 100 meters.	?Should	**guideline**	No frequently used parking lots (6 or more vehicles) or maintainance yards closer than 100 meters.	12	B5			
C1-a	13	Aerochem should be over undisturbed land	Should	**rule**	Aerochem should not be over disturbed land (e.g. concrete, asphalt, or gravel).	13	C1-a			
C1-b	14	Aerochem should be on its standard 1 meter base	Should	**rule**	Aerochem should be on its standard aluminum base	14	C1-b			
C1-c	15	Grassed cover (anthropogenic) tolerated; slopes up to +/- 15 % tolerated.	Should/Must	**under review**	under review	15	C1-c			% or degrees? Turn into 2 rules
C1-d	16	Avoid sudden changes in slope with 30 meters	Should	**under review**	under review	16	C1-d			
C1-e	17	Gound cover(natural or grass) must extend out at least 30 meters	Must	**under review**	under review	17	C1-e			
C2	18	Annual vegetation, within the site, should be kept less than 2 feet in height	Should	**guideline**	Annual vegetation, within 5 meters of the collector and raingage, should be kept less than 60 cm in height	18	C2			
C3-b	19	Angle to any object must be less than 45 degrees or less (less than 30 is considered optimal).	Must	**rule**	Angle to any object must be less than 45 degrees or less (less than 30 is considered optimal)(bucket top is ref.).	19	C3-b			
C3-a	20	For #19, pay particular attention to overhead wires and anemometer towers.	?Must	**rule**	For #19, pay particular attention to overhead wires and anemometer towers.	20	C3-a			
C4	21	Except, angle to a house must be less than 30 degrees.	Should	**under review**	under review	21	C4			
C5-b	22	The base of the Aerochem should not be enclosed.	Should	**under review**	under review	22	C5-b			
C5-a	23	No object higher than 1 meter, that can deflect wind, within 5 meters.	Should	**under review**	under review	23	C5-a			Excep:Alter shields & open fences.
C6-a	24	Raingage should be located within 5-30 meters of the collector.	Should	**under review**	under review	24	C6-a			
C6-b	25	Raingage orifice should be within 1 foot of plane or collector	Should	**under review**	under review	25	C6-b			Horizontal plane?
C7	26	If more than 20% of annual ppt is snow, then alter wind shield on raingage is required.	Must	**under review**	under review	26	C7			
C8	27	Platforms for collector and raingage allowed if over .5 meter of snow accumulates.	May/Should	**under review**	under review	27	C8			Platform should be less than max. snowpack.
C9	28	If site normally gets snow, snow roof on collector is allowed if open/close is a problem.	Should	**rule**	If site normally gets snow, snow roof on collector is allowed only if open/close is a problem.	28	C9			Snow roof to be left on year round.
D1	29	Industrial and urban sources blend in to regional pattern when > 50 km from a site	N/A	**omit**	**omit**	29	D1			
D2	30	Consider identifying alternate sites for future when land development compromises site.	Should	**omit**	**omit**	30	D2			
D3-a	31	The site should be accessible in both winter and summer.	Should	**rule**	The site should be accessible in both winter and summer.	31	D3-a			
D3-b	32	The site should be a low risk to vandalism	Should	**guideline**	The site should be a low risk to vandalism	32	D3-b			
D4	33	Changes to a site must be submitted to CO before implementation.	Must	**omit**	**omit**	33	D4			
General: To judge the science the committee should take into account the details of how the CO,CAL,HAL and ATS apply/interpret the rules.										
E.g. how is the mean wind determined?										
Collector refers to precipitation chemistry collector, e.g. the Aerochem.										
9/4/02 Suggestion to consider seasonality. Maybe do on second pass through the list. This is more of an item about getting info from sites.										
9/4/02 Suggestion that sites be querried about **major changes** that might have occurred at the site. Maybe annually.										

Attachment 9, NADP NOS minutes, Fall 2002

Network Equipment Depot Update to NOS
Seattle 2002

- Parts status
- Shipping
- News Items

Parts Status

PART	AVAILABLE	REPLACED (12 mos)
motor boxes	42	96
sensors	58	99
event recorders	52	55
gage clocks	72	121
gages	65	20
		====
		391

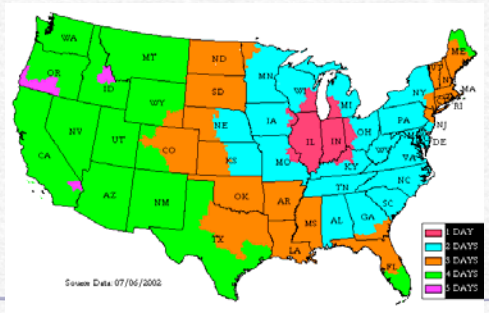
SHIPPING CHANGE

- We were severely over budget last year.
- The system has been changed.
- Prior shipping protocol was 2nd Day UPS for every failure.

SHIPPING CHANGE

- Actual equipment shipment Tracking Numbers were traced point-to-point.
- We learned that many sites within the Midwest and East did not require this.
- The NEW system.

Regular UPS ground to red and blue
Third Day select to rest



SHIPPING CHANGE
COST SAVINGS

~ $25/part shipped X 391 =

$9775

Attachment 9, NADP NOS minutes, Fall 2002

NEWS ITEMS

HYBRID CLOCKS GOING OUT TO ALL SITES REQUESTING CLOCKS

- 29 finished (goal of 50 this year)
- 100 battery packs finished

TO DATE

- 20 to sites
- 4 of these returned
- expanded instructions

NEWS ITEMS

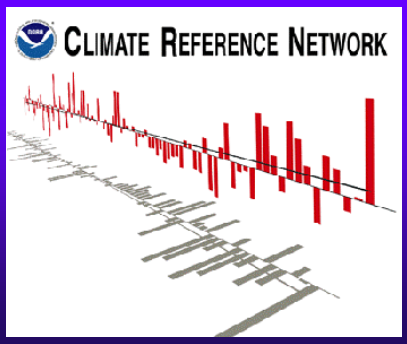
- We are holding our own with provision of motor boxes and sensors to sites.
- We are not gaining ground due to attempted improvements in repair technique.

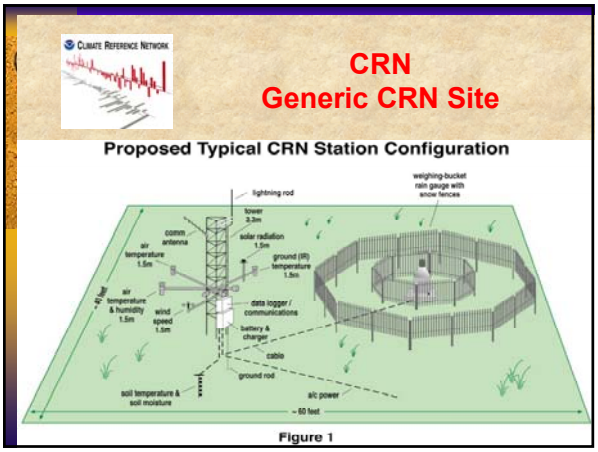
NEWS ITEMS

- It would be wise to anticipate increasing cost of repair of components.
- Current system tries to keep sites operational at a cost of ~ $2/week or $104 /year/site.

Attachment 10, NADP NOS minutes, Fall 2002

Climate Reference Network

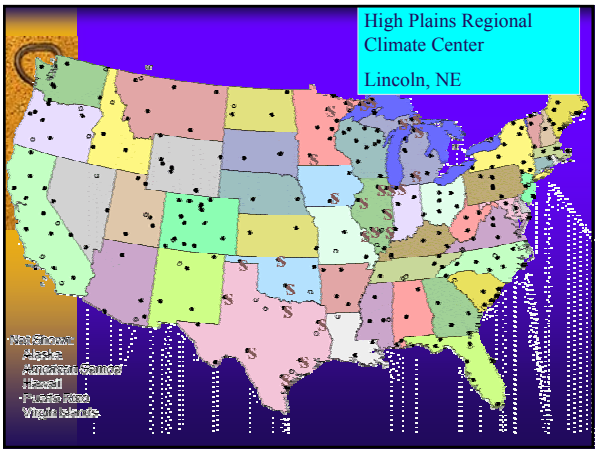




They want to use the NADP network if possible to help find suitable Climate Reference Network sites.

- Long term monitoring
- Well buffered sites, minimize landscape changes
- Good operational history
- SURFRAD, NWS, CASTNET?

First request from Regional Climate Center in Nebraska



Program Office Action

USEPA/NDAMN MODEL USED

- Get site specific list from interested party, formal request
- Mail letters to site funder, supervisor and operator
- Wait ~7 days
- Provide information to interested party.

27 sites data (SITEDATA printout only) during 3rd week of July

Attachment 10, NADP NOS minutes, Fall 2002