

NOS Subcommittee Meeting Minutes

Hampton Inn
Pensacola Beach, FL
April 29-30, 2008

Greg Wetherbee called the meeting to order.

Boulder (Fall 2007) Minutes:

Motion to approve by Dave McTavish.

Second by Eric Hebert.

Minutes approved.

David Gay – MDN Report

110 Active Sites - Total Mercury.

Roger Claybrooke – NED Report

Question:

Should we have the NED send out the parts for the CAL (same as for the HAL)? Determined to be a PO issue, not a NOS issue.

NED is in the red - roughly collect \$38K from sites. \$32K for salaries which only leaves \$6K for parts. This is not enough.

David Gay - New Equipment Update

- Jack Beach from NCON systems wants us to evaluate an NCON for the NTN network. MDN collector guts with a bucket on top (instead of a chimney).
- Same price as Aerochem (\$3950).

Motion:

Accept a prototype NTN collector from NCON systems for testing at IL11 (Bondville). If accepted into the network as an approved collector, the unit will be purchased from NCON for continued deployment at IL11.

Motion by Matt Layden.

Second by Preston Lewis.

Motion Passed.

Current Efforts:

Aerochem Retro-fit (LO sampler).

Loda 2005.

Deep Bucket NTN Collector.

Second Chimney Modification.

Combined LO and Deep bucket.

Updates:

- 1) Retro-fit
- 2) Jerry Price (ETI) built one like this:
 - Linear Actuator Drive
 - Driven by the raingauge.
 - Radio controlled.
 - Have a copy at the ISWS
- 3) LO Drive and Deep Bucket
- 4) LODA 2005 from Jack Samford - it is dead.
- 5) Second sample train - student at U of I is working on this looking at Hg isotopes.
- 6) Building LO Drives for:
 - 5 collectors for Bruce Rodger
 - 5 collectors for Network
 - Little progress.

Bob Brunette - HAL Report

Fostering inter-connectivity between HAL and CAL:

- spare parts will now come from NED
- covering site call-ins based on timezone

Discussed response to November 2006 HAL 2006 Audit.

Prestbo initiated study on passive RGM sampler.

Passive membrane designed to establish Hg Dry dep.

Network of 6 sites.

Matt Layden - NTN Report

255 active sites.

New Lid Bags

Discussion ended with the conclusion that no action from NOS was necessary. CAL will continue using new bags.

Tracy Dombek - CAL Report

Renovations complete for the dishwasher room and ICP room.

Method Development - interesting efforts underway on resin column extraction techniques.

Resin columns have been evaluated for bulk deposition for sodium, potassium, calcium and magnesium using 1M HCl for extractions (Crabtree and Trudgill, 1981) and throughfall for sulfate, nitrate and chloride using 1M KI as an extractant (Simkin et al., 2003). A study of throughfall in pine forests (Fenn and Poth, 2002) evaluated mixed bed resins for ammonium and nitrate using 2M KCl as the extractant and colorimetric methods for analysis. There has been work done to evaluate both cations and anions using KI as an extractant. The CAL can evaluate their capabilities and reproduce results obtained by the Rachel Carson Analytical Facility, (formerly Institute of Ecosystem Study's IES Analytical Laboratory). They developed and modified an IC method for analyzing chloride, nitrate, and sulfate with 1M KCl used as an extractant.

Where to start.

Develop/Modify IC method on CAL's back-up Dionex 500 instrument.

Evaluate CAL's capabilities to prepare, extract, and analyze resin column extracts.

- Analyze excess samples previously extracted by their lab group.
- Compare columns prepared by their group with columns prepared at CAL using monthly composite with excess deposition from pre determined sites and CAL's internally prepared QC solutions.
- Use NWRI samples to analyze for TN extracted in columns.(??extract)
- Load ½ of KW group prepared columns and ½ of CAL prepared columns with CAL's in-house prepared QC solutions.
- Time frame for this work 3-4 months, goal poster at NADP Fall Meeting.
- What additional work can be done to evaluate resins as throughfall and or wet deposition collection devices.

Additional Lab studies

- Additional resins/extractants for a variety of analytes.
- Stability of resins, temperatures, moisture
- methods of extraction, i.e. sonicating shaking
- extractants more instrument friendly

Additional field studies

- Evaluate strength and stability of resins in freezing and drying conditions.
- Collector design.
- Length of collection periods.
- Comparative study between wet collectors and resin collectors.

What new things could NADP learn?

- Monitoring in remote/heterogeneous terrain where saturation density is low so better resolution.
- May improve evaluation of nitrogen deposition (better ammonium stability)
- May allow expansion of analytes in future, pesticides, trace species.
- May allow for increased sampling duration.

Mike Kolian - Site Audit Program

EEMS is new contractor.

Held workshop in August 2007.

Set survey schedule through first year (June 2008).

QAPP/SOPs submitted.

Started surveys in December 2007.

Preliminary results from first 37 surveys were presented.

Site Closures

Do we need to have a site audit team check the equipment after this occurs? No action taken.

Belfort/electronic Raingage Configuration

Electronic gage should be primary gage for record collection. Co-located Belforts will be backup.

Sample Change-out Issue for MDN Sites

For MDN, need to have extra set of glassware sent to sites that will be audited on non-Tuesdays. Frontier will analyze at no additional cost.

Also, possibility of incorporating into USGS field audit program for NTN.

Mark Rhodes - Siting Criteria

Mark will review the siting criteria (again) and will use EEMS as necessary.

Review of siting criteria referred to QAAG.

Mark Rhodes - QA Report

Site Audits: Want to provide feedback to site supervisors and site operators more quickly.

Next 6 months:

- Re-visit siting criteria.
- Provide clarification of items to survey team
- NED calibrations.
- Survey team provides calibration documentation of their test equipment
- With equipment returned to the NED for repair, there have been discrepancies between what is reported by the Survey Team and what is measured at the NED.
- NED should have calibration documentation for equipment used to test/repair field equipment. This should include voltmeters, and the thermister used to verify operation of the grid sensors.
- Finalize lab reviews. - Working with CAL and HAL to finalize reports from their last lab reviews.
- CAL review this summer. - Last 2 weeks of July identified as possible times for CAL review.
- Network QAP. - Former QA Manager provided a draft outline for the Network QAP.
- Network QAP to cover 3 existing networks, as well as future networks.
- Version control: Implement version control software for NADP website, and all software written by the CAL, HAL, and PO. This includes software used to analyze data, and software written for use with the electronic gages.
- Close the loop: In the past, site surveys identified problems, but there is no documentation as to if/when those problems were resolved.
- Development, Test, Production, and TDD: Establish a mechanism for hardware and software changes. Prior to pushing changes to the field, those changes should be tested rigorously in-house. Easier to troubleshoot problems in-house than when the product has been deployed to the field.

Mark Rhodes - High Altitude Monitoring Preview

Showed results in series from CO97. Mark R says it does not indicate that we are seeing significant improvement from catch efficiency from using 7 gallon bucket.

Kristi Morris reported that NO3 and SO4 were significantly lower at 98CO, which has the deep bucket collector.

Rick Artz recommended that for sites above 2000m we relax Criteria 4 and move towards using ETI optical sensor (or other) to open collector.

Motion:

NOS chair appoint Ad Hoc committee to investigate whether or not there is any evidence to relax Criteria 4 for high altitude sites. Report back to NOS chair in 30 days. NOS comes to Fall meeting with proposal for relaxing Criteria 4 (or sooner).

Motion by David Gay.

Second by Mike Kolian.

Passed.

Committee as of 6/23/08: Wetherbee, Latysh, Rhodes, Rothert, Kolian, and Morris

Mark Rhodes - Bondville Collector Study

Collectors proposed to be included:

- 1) NCON
- 2) Existing ACM Collector
- 3) Dumb ACM Collector - ETI (linear actuator with wireless communication)
- 4) Dumb ACM Collector - Ott or Pluvio2 (linear actuator with wired communication)

Raingauges proposed to be included:

- 1) Stickgage with and without shield.
- 2) HCN with shield.
- 3) Geonor with shield.
- 4) Comparison with Theis sensor and optical sensor.
- 5) Optical sensor sensitivity settings will vary.
- 6) NTN heater experiment.

Bob Larson - OTT uses changes in weight to measure ppt depth, ETI use optical sensor to eliminate false positives.

Marty Risch - need confirmation that wireless signal received and that the collector has opened.

Mark Nilles proposed that we treat each site as having three components:

- 1) collector
- 2) precip gage
- 3) precip detector

Bob Larson - Optical Sensor evaluation

Examined three sensors:

- Grid Sensor (AeroChem)
- NCON (evaluated with ETI sensor then switched to Theis sensor, which has not been evaluated)
- ETI integrated sensor

Seeing large difference – differences that are greater than our criteria for dry exposure.

When does dry dep end and wet dep start (threshold precipitation rate)?

Does it make sense to keep a collector open for hours of exposure to collect a few snowflakes.

Rick Artz – what is the amount of evaporation due to collector being open all this extra time?

Need to define dry exposure criteria for collectors driven by optical sensor.

Proposal: Drive collector from the optical sensor in raingage or standalone optical sensor.

Marty Risch – What about the shielding? Belfort catches less than OTT when shielded.

What is the difference between using optical sensor that is shielded and using optical sensor that is NOT shielded to open collector.

Bob Larson – commented that he would like to play around with settings of sensors and see if he can get them to behave similarly. Bob will show results next spring.

DMAS - MDL/MRL issue

Publish number (whatever it is).

Report values that are < MDL as MDL with a flag and allow data users to retrieve actual results using an "advanced query" option.

Bob Larson will get presentation and proposal together for fall meeting.

Greg Wetherbee - Shielded ACM Collector

Preliminary results indicate shielded collector catch > unshielded, and shield excludes more blown dust from samples as well. Need to collect better data next winter to make final conclusions.

Rick Artz - Geonor collector

At Exec, Rick will be discussing integration of Historical Climate Network Modernization (HCN-M) with NADP.

HCN-M interested in collocating with NADP stations. HCN-M vitals:

- 1000 stations.
- Operated by NWS.
- Standard gage is 3-wire Geonor linked to Campbell datalogger.

If they want to collocate at our sites, can we use their data and do we want it?

Bias of Geonor gage is within NADP requirements for electronic raingages.

Algorithm:

Look at each wire independently and determine which of the 3 to use. Then use an average of the good wires. Visala leaf wetness sensor used to eliminate false positives.

Bob Brunette - are there any issues with wind shake since the measurements are based on the vibration of a wire?

Gives NADP a linkage to climate change issues. Future is bright for climate change monitoring.

HCN-M sites also include "Climate Reference Network (CRN) lite" type meteorological set-up.

Does EPA want to be included as encouraging collocation? Yes, from Mike Kolian. CASTNET may offer another platform for collocation.

Motion:

NOS endorses collocation of HCN-M sites including Geonor electronic raingages with current NADP site locations effective immediately.

Motion by Mark Nilles.

Second by Marty Risch.

Motion Passed.

David Gay - Training proposal.

Proposal: Train at the spring and fall Meetings instead of at CAL or HAL.

NTN and MDN together.

Regional participation from site operators.

Huge turnover with NADP operators (average 70 new operators a year).

Only training 25-30 operators a year. Begs question of whether resources are best used to train operators when turnover is so great.

Current cost: \$700-\$1000 per person. Airfare represents majority of costs. Approx \$25K per year.

Logistically, it adds lots of paperwork and support requirements for the PO (like a small meeting).

Greg Wetherbee – suggestion to have meetings near collocated NTN/MDN sites so that they could be used for training.

Mark Nilles – provides justification for continuation of spring and fall meetings because they would include a training component.

David Gay – PO will move forward with the planning for this.

David Gay - NED e-gage spare parts

PO assuming that the NED needs to be able to handle the repair of the e-gages as they break.

Sites pay \$2 per week into the NED. How long since this has been increased?

What is warranty on new equipment? 1-year warranties on raingauges. 90 days on datalogger.

David Gay proposes that the NED provides "rental" and puts defective gage into triage.

Mark N - do we know yet what breaks and if it can be fixed in a "NED-like" fashion?

Can ETI use a molded plastic bucket? PO will talk to Jerry Price about making the switch. Ott uses a plastic bucket. Plastic bucket is less likely to damage load cell if accidentally dropped.

Greg W – USGS QA Report

Data meeting DQOs for both NTN and MDN.

HAL blanks look clean. HAL interlab data on target with slight low bias.

CAL interlab data on target as well.

Contamination levels determined from Field Blanks and System Blanks do not indicate any appreciable change over past 3 years, but Hg contamination in System Blanks appears to be creeping upward.

Not sure yet if Hg contamination is real or result of how samples are prepared by USGS. USGS and HAL to evaluate. Still some System Blank issues whereby control samples have [Hg]>samples rinsed through sample trains.

Co-located monitoring showing some bias between e-gages and Belforts at AZ03, WI98, and VT99 as would be expected. However, e-gages not always catching more than Belfort.

Meeting adjourned.