NADP 2022 Spring Meeting

Joint Subcommittee Minutes (taken by Tim Sharac)

April 20, 2022

Welcome, Logistics, Introductions (Ryan McCammon)

Welcome Address by Dr. Jamie Schauer, WSLH Director/NADP PI

State of the NADP (David Gay)

No Covid updates

NTN – 256 sites counting Bermuda01, NTN site numbers consistent since 2003

Some new NTN sites online, but NOAA dropped MS19

Update on TNTP "Snipit"

Total phosphorous and total nitrogen (and organic N by difference)

Total P seems to be working fine; Total N and organic

MDN – starting to build new sites

AMoN – 113 sites, continuing to grow. Closed WI94 and started MD##?

New with AMoN – effort to recoat cores.

Effort has stalled; were unable to coat like Radiello – good with low concentrations, cannot replicate high concentrations

Chris W. thinks Radiello sprays coating solution, cannot replicate at lab

AMNet – NOAA closed MS12 and opened AK95. Two new GEM only sites – Mexico City. Will use NADP equipment

EEMS will now do AMNet site visits after COVID. Eric H has been trained.

Dry deposition estimates. Muge presented progress in MELD. Weekly modeled dry deposition estimates for 4 sites in her dissertation. Next step will be to make it routine. NADP will need to decide to publish onsite.

Litterfall – Sample prep will start up in August

Financial Notes – financially looking fine. Salary savings for empty employee slots, no fall meeting in 2021, supplies are good.

Future: inflation, shipping is $13k over budget, worse? Production delays, PETG bottles, tubing, etc.

USDA will redo the contract this year; currently 2019-2023, but will rework this summer 2022-2025, budget meeting this summer (usually in July).

Ellis Cowling Foundation & Student Travel Award. Memorial fund to award deserving undergrads and graduate students honoraria funds for travel to NADP Fall Meetings & Scientific Symposium

Black carbon in precipitation – Jamie and David Gay are working with Dr. Ross Edwards (UW Engineering) to measure BC in NADP weekly precipitation; ~12 sites for one year

Follows a study of NADP precipitation – special study from NTN excess ppt

Nov 2020, 422 samples from 196 locations, paper coming (0.3 ppb – 44.3 ppb, fluxes up to 1710.1 ug/m2/week)

Spending a little bit of NADP funds to support work

Mercury Passive Comparison

Ongoing and discussed in MELD. Draft plan laid out.

Operator Training Series – up and running

Planning for a live meeting in Knoxville, TN – Nov 14-18, 2022. New website was developed.

Meetings update: David Gay will go to NTA Meeting in Tulsa, OK (EPA and USGS) and the NAAMC in Pittsburgh, PA.

Donna Schwede: Hearing lots about working with Tribes for environmental justice. Is there an approach to add Tribal sites to meet this need?

David Gay: Yes, been working with David Schmeltz for adding monitoring on Tribal lands.

Cari Furiness: There are some requirements out there that for working on EJ issues, Justice 40:

https://www.whitehouse.gov/omb/briefing-room/2021/07/20/the-path-to-achieving-justice40/

Ryan McCammon: Is Univ of WI going to get Infrastructure Funding?

NADP Website Update (Richard Tanabe)

Active for the last 6 months. Developed by UW-Madison IT (DoIT). Ongoing development by Bob Larson, Kasey, and Richard Tanabe.

Issues Resolved – partial data when downloading large amounts of data; broken links; missing documents; AMoN data download, etc

Next Steps – restore site photos, add operator SOPs

DoIT work order – improve precip plots, adapt MLN for alternate data format

Website support – identify and train others in PO; test & production websites; document website procedures

PFAS Update (Martin Shafer/John Offenberg)

WI 2020 study results – frequency of PFAS detection. 22 PFAS compounds were detected in at least 2 samples.

Concentration of individual PFAS compounds in precipitation are typically <1 ng/L though levels

Manuscript of the WI 2020 Intensive study is in the works

PFAS in precipitation EPA-ORD Pilot Program; establish longer-term monitoring in wet deposition started Fall 2020. Four sites: ME96, NY98, NJ99, and NC30

Second Phase starting Oct 2021 + Mar 2022, KS97, NY06, WI06, WI31

Extensive QA: Quarterly field blanks, quarterly spikes, triplicate sampling

Co-located sampler precision: NC Duke Forest, high degree of precision.

Quantifying multi-media loading of PFAS into the Great Lakes Basin using targeted and non-targeted analyses – new research, 3-year project funded by USGS.

Analytical Initiatives – "Total", "Transformable", and Volatile PFAS – in progress

New research focused laboratory sited at WSLH Henry Mall; enhanced capacity for new initiatives;

Aeroallergens Monitoring Methods Comparison Study (Greg Wetherbee, Eric Uram, Terri Williams):

Rotating rods that spin for 24 hours, then pollen sampled at Duke Forest.

Looking at pollen in rain and pollen in air. Can we use NADP sampling infrastructure to study pollen.

Currently a methods comparison study.

PollenSense Tree Pollen vs ARL rotating impactor daily total pollent; Pearson correlation of 0.76 at NC30

Grass (Pearson correlation = 0.70); weed pollen (Pearson correlation = -0.24)

Comparison between NADP samples and PollenSense for total pollen, good agreement.

Also looking at how pollen season is getting longer due to climate change; plots generated by Muge in R.

Strategic Planning & MDN Network Viability Update (Greg Wetherbee/David Gay)

Consideration for a 2-week sample, this would reduce sampling costs. Maybe reduce cost and increase network sites.

Jamie Schauer: We need to look at a mercury monitoring portfolio instead of modifying MDN to encourage other involvement – adding Litterfall or Passive.

Christa Dahman: Suggests that a thinly expanding network will not be better. Expanding the network using 2-week samples would expand MDN coverage.

Saving Sites in Jeopardy. (David Gay, Greg Wetherbee, Winston Luke, Linda Geiser, All)

Working with Program Office. It's a great deal of work to keep sites operating. Contracting for new site operators may take around 6 months to recruit and get a contract in place. Greg called the town library and got a call within an hour; around 15 people volunteered to be site operators – bulletin board at library in Clancy. Sometimes an offer of $100/hour for a commitment for a new site operator is highly fruitful.

David Gay has had good luck with Universities – teachers and students.

Donna Schwede: sometimes difficulty paying site operators through a contract, any tips?

Greg Wetherbee: the program office doesn't have the bandwidth to do this;

Jamie Schauer: Has a great capacity to receive funds, but no authority to send funds.

Catherine Collins: One mechanism is through credit cards, below $5k is an easier method.

Kristi Morris: Can use their monitoring subcontractor, ARS, for payment of site operators.

Catherine Collins: Advice for shipping labels?

Joint Day 2 – April 21, 2022

Science and Subcommittee Highlights - Motions Only

MELD (Rick Haeuber/Colleen Flanagan-Pritz) – Award to Pam Padgett –

NOS – Three motions approved:

Summary of Adopted Motions:

1) **Motion:** The NADP shall discontinue analysis of MeHg as an optional analyses for the MDN on May 1, 2022. Participating sites shall be informed immediately.

2) **Motion:** The NADP shall accept PET bottles as a conditionally acceptable sampling container for MDN. NADP shall conduct QA/QC comparisons to further validate the acceptability for adding PET by the Fall Meeting 2022.

3) **Motion:** Greg Wetherbee, Wyatt Sherlock and Richard Tanabe will make a plan to test the variability between old and new ACM sensors.
   Mike McHale made the motion
   Second: Dana Grabowski

DMAG – Most data up to date on the web except for AMoN, due to findings from the External QA Review

Bob Larson retiring this year. Needs to continue training Casey.

Consideration of a DMAG working group to tackle ongoing issues each quarter.

QAAG and QA Report (Camille Danielson)

Working on updating the laboratory QA plan

QA Updates from QAAG were presented yesterday on NOS

2021 External NADP HAL/CAL Lab Review

Lab findings:

Review the flagging and qualifiers (c, d, and e) for AMoN.

AMoN data posted on the website with null values for NH4+ and extract volume – when should be -9 or 0.

There are situations where site might have all "B" coded data where there's no electronic gage data. (Will be discussed later).

No written SOPs for data review and editing of CAL and HAL data by the PO

Significant amount of AMoN data from 2017 were missing from the web – due to transfer of data from IL to WI.

Data for a given year are not actually final until after the Annual Summary for that year is published – need a change log file for the website.

Documentation of the LIMS and the databases, must be completed by Summer 2022 at latest.

LIMS is coded in VB.NET, which is a dead, unsupported language. Long term plan is to switch to C Sharp.

PDAs need to be phased out sooner rather than later.

Major Occurrences/Nonconformity since Fall 2021

Occurrence = deviation from established methods/practices.

Outstanding since 2019 – due to Br interference – provide 1 year of valid bromide data.

QAAG decided the bromide raw data would be securely stored by the lab and available upon request

NTN daily filter blanks showing contamination

Calcium, sodium, and a few potassium high exceedances

AMoN glass jar failures – covered in NOS

Corning 1L PETG for MDN not fitting well to thistle tubes – supply issue

Necessary to use 1L PET

Network Notes Codes – Qualifiers

Improved, changed, and created

Updated the NTN, AMoN, MDN, and MLN notes and QR codes

2022 Method Detection Limits – most are network-based

Decreased Mg to 0.004 mg/L, the rest remain the same.

AMoN's MDL increased to 0.08 mg/L NH4 due to slightly higher travel blank

Suggested NADP Web data presentation – update the column headers and include units

CASTNET Update (Melissa Puchalski)

CASTNET Updates:

Carlsbad Caverns, NM is a new site since last Spring NADP meeting (March 2021).

CAPMON – Egbert, ON – no sampling since June 2021 due to site construction

New CASTNET site – La Posta site in San Diego county – Oct 2022

New (possible) CASTNET site – Sandia NL – 2023

Petrified Forest NP site – equipment is on archeological site. Decommission or move to IMPROVE site.

Wood lab is moving and filterpack analysis should not be impacted

Updates to CASTNET Dry and Total Deposition Maps:

Updating measurement-model fusion technique

Completed script conversion – ArcPy – Greg Beachley

CMAQ 5.3 EQUATES timeseries 2013-2017

CASTNET ozone design values (preliminary) map – 4 sites exceeding the 2015 NAAQS for 2019-2021.

Research and Network Updates (NPS + BLM)

Carlsbad Caverns, NM – ozone, VOCs, CH4, CO2, NOx, PM, Hg

Intensive field study in summer 2021

Another paper coming out on Wintertime haze and ozone at Dinosaur NM – (Prenni et al., 2022)

NPS will release a ground-level smoke forecast map

ORD Funded Water Soluble Organic Nitrogen Study

Goal : develop a robust method to quantify bulk WSON from Teflon filters

Understanding chemistry, transport, and fate of air pollution.

PANDORA and Nitrotrain NO2 measurements at Duke Forest, NC

CASTNET EPA Budget

Likely facing a significant budget cut for FY22, but no numbers yet.

CASTNET group submitting 6 abstracts for presentations at the National Ambient Air Monitoring Conference in Pittsburgh, PA – Aug 2022.

EPA's Data Analytics and Visualization Challenge

EPA employees invited to propose environmental or missing

CAPMON Update (Anne Marie Macdonald)

CAPMON network updates:

24 monitoring sites measuring precipitation and chemistry

16 sites for aerosols and related gases

16 sites for ground level ozone

1 site for PM2.5 and PM10 mass

1 site for continuous PM2.5

5 sites for Mercury in precip

3 sites for total gaseous mercury

2 sites for continuous N and S

Collocated NADP sites:

3 AMoN, 5 MDN, and 1 NTN

Key updates:

Analytical lab working close to full capacity. Prioritizing incoming samples and clearing backlog.

Planning for full field audit/maintenance season in 2022/2023

Lab updates

Lab analysis resumed July 2021 < 100% capacity, close to full capacity in March 2022.

Backlog for precip: Mar 2020 – Jun 2021, estimated completion Dec 2023.

Backlog for air samples (particles/gases) – Jan 2020 – present; estimated completion Dec 2024.

QA study underway to assess stability of stored samples. Initial results are promising except for pH.

Testing of new instrumentation (FIA for NH4 and TN, ICP-OES for metals in summer).

Except some special studies to resume late 2022/early 2023 (first to support operations)..

Field updates:

Sites remained > 90% operational 2020-2021

Some limited field travel resumed in summer/fall 2021; planned for a full field season in 2022.

Restricted field lab access increased challenges for site support. Required innovative solutions, increased reliance on and new training for site operators.

Ozone remote audit procedures, instrument swaps with additional calibrations

CAPMoN sample bag – new material/bonding, cost reduction.

Continued upgrades to the D400 precipitation collector (improved actuator, covers, and testing)

Data updates:

CAPMoN data sets available on the Open Government Portal – https://open.canada.ca/en/open_data (hint: Search “CAPMoN”)

Latest fully completed year for air and precip is 2018 (published)

2019 data used in wet deposition

Upcoming Publications:

New paper on modeled gridded dry deposition velocities for 45 gaseous species and three particle size ranges (Zhang et al., in review).

Manuscript describing trends in total deposition (wet and dry) from 2000 – 2018 at CAPMoN sites (Cheng et al)

Manuscript updating the comparison between NADP and CAPMoN precipitation data from the collocated Penn State site.

CLAD Products and Papers (Emmi Felker-Quinn)

National Critical Load Database – hopefully next version (3.2) will be available on the NADP website in May 2022. Additions include:

Aquatic acidification critical loads.

Critical Load Video Series (7 videos)

Air pollution effects on ecosystems – What is a critical load and why does it matter

CL – Lichens

CL – Herbaceous Plants

CL – Trees

CL – Surface Waters – Part 1

Air Quality Awareness Week (May 2-6, 2022)

EPA has a website and social media campaign to promote AQ literacy

Using Tree Critical Loads

Horn 2018 dataset using 94 common tree species and their growth and survival response to N and S deposition

Interpreting this dataset can be overwhelming

Clark et al., 2021 Air pollution effects on forests.

Tree CL General Technical Report – like having your own ecologist at your desk

Re-analysis of the herb dataset using TITAN creates change points for vegetation associations

Herb dataset of graminoid and forb species

Threshold Indicator Taxa Analysis (TITAN) identifies change points for decreasing and increasing species

Wilkins et al., 2021 – Ecological thresholds under atmospheric N deposition for 1200 herbaceous species

CLAD projects in development

NCLD database upcoming next month

Forest Service CL assessment by Site (CLAS) website will map critical loads, deposition, exceedances and automated reports – will include written narratives of N and S CLs within protected areas

Herbaceous species on CL general technical report and lichen species general technical report

Now moving into ozone effects on ecosystems.

Working group 6:

Tree seedling exposure-response functions

Ozone critical levels using FIA data

As these projects conclude, the workgroup will expand to include the larger ozone community. Will plan on including W126 data and other products.

Program Office Review – Summer 2022 (Camille Danielson + Gregory Wetherbee)

Looking for volunteers for PO review

In the future Lab and PO reviews will be combined

Time commitment: start review after budget meeting; maybe remain a few days extra in Madison. Should also include QA managers – Camille and Martin. Richard and Bob.

Budget Meeting – summer, exact dates unclear. Doug Burns will create a date soon.

Fall 2022 Meeting Update. (Linda Geiser and David Gay)

To be held at the Univ of TN – Conference Center. Hyatt Place Knoxville, TN

Nov 14-18, 2022.

60 day advance notice – for make or break for reservation.

Likely to be a hybrid meeting.

Linda Geiser will be managing this meeting.

NADP Fall 2022 – Scientific Symposium – Monitoring For a Sustainable Future.

7 Sessions. Looking for a key note speaker.

Field trip to Great Smoky Mountains National Park.

Spring Conference 2023 – (Tim Sharac)

Meeting in Madison – likely May

Hybrid of in-person and virtual

Motion to Adjourn – Greg Wetherbee.

Seconded by Donna Schwede.