

Joint Agenda NADP Fall 2022 Meeting

November 15th, 13:30 - 15:00 EST

13:30 - 13:35 Welcome, Logistics, Introductions (Ryan McCammon)

13:35 - 13:50 Subcommittee Highlights-Motions Only

MELD (Rick Haeuber/Colleen Flanagan-Pritz)

TDEP/CityDep (Greg Beachley/Ryan Fulgham/Greg Wetherbee)

CLAD (Mike Bell)

AMSC (Andy Johnson)

NOS (Ryan McCammon)

EOS (Catherine Collins/Chris Rogers)

QAAG (Martin Schafer)

DMAG (Chris Rogers)

13:50 - 14:00 CASTNet Update (Melissa Puchalski)

14:00 - 14:10 New Initiatives Update

Black Carbon (David Gay)

14:10 - 14:20 Alberta Stations Joining NADP (Naomi Tam) *Virtual*

14:20 - 14:40 New CLAD Ozone Workgroup (Jeff Herrick)

14:40 - 14:45 Nomination of NADP Secretary (John Walker)

14:45 - 14:50 Spring Meeting 2023 & NADP Meeting Structure (Tim Sharac)

14:50 - 15:00 Final Discussion/Questions/Wrap-up (Ryan McCammon)

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MELD (Rick Haeuber/Colleen Flanagan-Pritz)

Pass

TDEP/CityDep (Greg Beachley/Ryan Fulgham/Greg Wetherbee)

Nothing

AMSC (Andy Johnson)

AMSC is going to engage with EPA vendors and other stakeholders to look into and propose a data management system for aeroallergen data that's being collected by any network or individual.

NOS (Ryan McCammon)

Motion to re-elect Winston Luke as NOS secretary

EOS (Catherine Collins/Chris Rogers)

One for a policy on information products, that any information product, like papers, posters, or data that is used by NADP will go through if not already peer-reviewed by another agency.

Changes to the governance document to add archiving of AIRMoN network and adding Litterfall network.

Looking for an EOS secretary, nominated Rebecca Dalton. Motion passed.

QAAG (Martin Schafer)

Three motions passed for siting criteria relaxing rules for vegetation height, herbicide, and objects within 5m.

Excel sheet online version of the audit database.

Wind rose plots – add a variance based on predominant wind direction.

CLAD (Mike Bell)

Two motions; elected Jeremy Ash as vice chair and Kris Novak as Secretary

DMAG (Chris Rogers)

Zac and Mark will act as DMAG co-chairs

13:50 - 14:00 CASTNet Update (Melissa Puchalski)

FY22 budget impacts:

- Suspended sampling at 26 monitoring locations on May 10th.
- Sampling resumed at NY22 and NY52 through April 2023 with new funding
- Sampling resumed at CO94 (NPS)
- Will need to make further cuts to the program under a flat or decreasing budgets
- IRA may result in increased funding to support CASTNET + NADP monitoring
- EPA has opened a public docket for public comment on how EPA spends its share of IRA funding

EPA CASTNET SAB

- SAB office accepted proposal for long-term rural ambient air monitoring program.

- Panelists were posted on Nov 11, 2022
- CASTNET team is preparing a background

Total Deposition Maps

- Greg finished the 2021 maps.
- New 2018+2019 data
- There will be missing data in 2022 due to mothballed sites

Addressing EPA priorities

- With potential IRA funding and/or FY23 to address multipollutant needs
- Restart mothballed CASTNET + NADP sites

Climate and Air Quality Assessments Examples

- Water soluble nitrogen – seasonal and spatial patterns
- What fraction of atm N budget is from organics
- Influence from biomass burning
- Aeroallergens – concentrations and types
- Ozone and climate change impacts

Build Tribal Monitoring Capacity

- Expanding CASTNET Tribal monitoring program
- 8th CASTNET tribal monitoring site hosted by La Posta Tribe of Diegueno Mission Indians of the La Posta Indian Reservation

Enhanced communication

- Improved CASTNET website
- User-friendly data visualization

Transitions

- WSP Global acquires Wood Environment and Infrastructure
- Kemp Howell retired, Chris Rogers took over his role

[Question from Jim Renfro], what is the timing of CASTNET Aeroallergens?

Melissa: it all depends on whether we receive IRA funding and when

14:00 - 14:10 New Initiatives Update

Black Carbon (David Gay)

- Planning for a Black Carbon network

What are we doing again?

- At the Spring 2022 meeting
- We proposed a 1-year test of black carbon measurements in NADP samples
- We chose 13 sites across North America

Black Carbon Project

- Using excess water (water after NTN samples)
- Started in August 2022
- Currently 86 samples have been analyzed
- Finding significant concentrations

This comes on the heels of the Nov 2020 project

- Ross Edwards and Piyaporn sampled every NADP sample

Some basic Network info

- BC is present in most samples, at significant concentrations
- Still working on the question for any loss to the bags
- The equipment is a \$200k instrument
- Annual costs, without people ~ \$21.5k
- Misc pieces

Data reduction is time consuming

- David Gay and Ross have talked about basic methods to increase speed
 - o Auto sampler
 - o Data reduction software to speed up QA

If you are interested in this topic..

Both Ross and Piyaporn are here

Session 4: “Development and application of Methods for the Measurement of Black Carbon (BC) Wet Deposition for NADP”

Question: How does BC compare with against dry deposition?

Answer: Life scale, predominantly wet deposition. The modeling suggests that more than 70% is wet deposition.

Question: Are you looking at measuring Black Carbon dry deposition?

Answer: No, it’s not impossible, but it is extremely difficult, so it can be done, but not in a routine way.

14:10 - 14:20 Alberta Stations Joining NADP (Naomi Tam) *Virtual*

Long-term Deposition Monitoring (ADMP)

- Objective: measure the transfer of pollutants from the atmospheric to sensitive ecosystems from within natural regions across Alberta
- Period: 1980s – present
- Samples collected over 20 locations

Monitoring Methods:

- In 2022, consisted of 5 wet dep stations and 1 total deposition station – 6 NCON collectors and NOAA IV rain gages
- For dry deposition, have partnered with CASTNET’s filterpack measurements

Precipitation Chemistry Data

- Data QA/QC was based on the Albert Precip Chemist Data Handling Manual
- TheilSen Trend Analysis
- 2011-2020 volume-weighted concentrations
- Based on 7 selected stations
- Sulfate (decreasing) and pH (increasing) were found to have statistically significant trends from 2011-2020

Precipitation Chemistry Data

- Sulfate
 - o ADMP: -0.63 µeq/l/year or -2.7%/year (2011-2020)
 - o NADP *McHale et al., 2021*: -0.05 µeq/l/year to -1.73 µeq/l/year (2000-2017)
 - o CAPMoN *Cheng et al., 2022*: -3.4%/year to 5.9%/year (2000-2018)

SK20 (isolated) vs Cold Lake (rural) station – 270km apart

Looking Ahead:

- NTN co-location sampling at Elk Island station (AB35)
- Net-new station in the just north of Edmonton
- Addition of dry deposition monitoring
- Exploring biomonitor* as deposition indicators
- * Work in calibration with Alberta
- Contact info: AEP.RSD-AWS-ADMP@gov.ab.ca

Question: Greg Wetherbee: You said you have Yankee Collectors. When did you purchase and how do they work? And are they still working?

Answer: I was not involved with the purchase, but we have two. One was used for an oil sands study around Fort McMurray as part of a pilot study on water samples. The other is sitting on a shelf.

14:20 - 14:40 New CLAD Ozone Workgroup (Jeff Herrick)

New CLAD workgroup was formed to look at Ozone Effects.

- Formed Ozone Working Group Fall of 2021 under CLAD
- Main goal is to coordinated research on ozone effects on ecosystems in North America
- Have ~45 researchers interested across agencies, in academia and in consulting firms
- First in-person meeting earlier today
- A lot of people are interested, including a researcher from the Netherlands

Why Ozone

- Ozone has a negative impact on ecosystems similar to and in concert with acid/nitrogen deposition
- EPA, NPS, USFS, & other entities are interested in ozone effects on ecosystems
- Large network of ozone monitors in the US; some co-located with NADP
- Currently no single space for ozone researchers to interact
- - Bringing new people to NADP
- Looking at Critical Levels instead of Critical Loads

Effects of Ozone

- Since the 1950s, known that ozone causes visible leaf injury
- Causes decreased growth in sensitive tree species
- Decreased yield in sensitive crops
- Ecosystem effects (decreased productivity, altered species composition, carbon sequestration, and water cycling, etc).

Rural Ozone Monitors

- Highly dependent on CASTNET's rural ozone monitoring for this work
- EPA has 1000s of ozone monitors, but most are located in urban areas and will not help to estimate ozone exposure in rural areas

Ozone group make-up

- People interested from Academia, EPA, NPS ,USFS, NASA, USFWS, National Labs, independent consultants, and non-profit groups
- Created an online Google sheet of contacts
- Sub-groups of interests
 - o Ozone effects on plants and critical levels
 - o Discussion of ozone metrics (W126, AOT40, means, flux/deposition)
 - o Ozone exposure & deposition modeling (TDep connection)
 - o Iterations with climate and wildfire
 - o Community outreach – there's an ozone garden study where people plant ozone-sensitive plants

Critical Levels

- Critical levels are extensively used in Europe
- Critical levels for vegetation are the “concentration, cumulative exposure or cumulative stomatal flux of atmospheric pollutants above which direct adverse effects on sensitive vegetation may occur according to the present knowledge”
- Two types of critical levels for crops, forest trees, and (semi) natural plants

Potential work with TDep

- Using TDep modeling to estimate ozone exposure and deposition where modeling is limited

Projects

- Tree seedling exposure-response functions
- Protect for 5% biomass loss
- 3-month 12-h W126 estimated:

- 2.5-9.2 ppm-h for sensitive trees
- 20.8 – 25.2 ppm-h for intermediate
- 8 sensitive species
- Manuscript in the works

Projects (cont)

- Ozone critical levels using FIA tree growth and survival
- Upcoming manuscript: Effects of ozone on herbaceous plants in California
- Visible foliar injury
- Exploring wildfire and ozone exposures

Next steps for O3 work group

- Establish regular monthly meetings for interested researchers
 - Contact Jeff Herrick and Kris Novak; Emmi-Felker Quinn is out on maternity leave
- Refine steps for Identifying
- TDep collaboration on O3 exposure estimates
- Continue work on current and new projects
 - Link up with O3 garden network
 - Link with project on O3 Flux and W126 in Yellowstone area (Huiting Mao and Barkley Sive, USFS, NPS, GYCC)
 - Wildfire effects on ozone exposure downwind

Question: Doug Burns. How does the Critical Levels compare with the ozone NAAQS secondary standards.

Answer: We're going to look at the ecosystem effects. Looking at these Critical Levels, it won't box EPA into a secondary standard. The secondary standards will have to undergo the CASAC review.

Comment: Rick Haeuber: this Critical Levels will not be a regulatory product, like the NAAQS review. This would be more of an indicator to assess ecologic perspective, in a scientific perspective instead of a regulatory aspect.

Comment - One of the projects I did in the 1980s – we discovered that trace metal deficiencies can show the same thing as ozone damage so you might want to do soil sampling or plant analysis to tease out whether it's actually micronutrients that's limiting.

Question – Ryan McCammon: Are we going to look at ozone impacts at the National Parks – impact to vegetation – thinking about quaking aspen trees.

Question: Are there plans for site specific things in Rocky Mountain National Park?

Answer – Mike Bell. We have a poster on ozone foliar injury surveys at Rocky Mountain National Park form this year.

14:40 - 14:45 Nomination of NADP Secretary (John Walker)

We nominate a past-chair and a new chair.

We nominate Melissa Puchalski as NADP Secretary.

14:45 - 14:50 Spring Meeting 2023 & NADP Meeting Structure (Tim Sharac)

Spring Conference – May 1-5, 2022. UW-Madison. Pyle Center.

14:50 - 15:00 Final Discussion/Questions/Wrap-up (Ryan McCammon)

Motion to adjourn by Ryan McCammon.

Seconded by Kristi Morris.

2:36PM session ended.