10/23/2023

AMSC Committee Meeting

Andy: Intro

Audio issues explained.

Attendees: Katie Blaydes, Rick Heuber, Selma Isil, Andy Johnson, Nichole Miller, Kevin Mishoe, Jason O'Brian, Melissa Puchalski, Chris Rogers, Jeff Serkin, Martin Schaefer, Greg Weatherbee, Kirsten Widmayer

Online: Jayde Alderman, Kulbir Banwait, Kenneth Brice, Landon Bunderson, Michael Butler, Tom Butler, Daniel Coates, Christa Dahman, David Gay, Matt Gurgiolo, April Hathcoat, Katherine Ko, Chris Lepley, Mark Olson, Peter Pityn, Marcus Stewart, Richard Tanabe, Nate Topie, Vincent Vetro, Kenny Yan, Gary Yip

1. Welcome remarks by Andy Johnson and self-introductions by participants.
2. Approval of Spring 2023 Committee Meeting Minutes: Minutes approved.
3. Recap of activities since May 2023:
    - Andy suggested science symposium session to Mike Bell, The Changing Landscape of Aeroallergens, but only got 1 abstract. So the session got combined with wildfire smoke session. Andy urged AMSC members and participants to present at upcoming symposiums.
    - Andy presented oral testimony to the Science Advisory Board (SAB) reviewing the CASTNET project to add aeroallergen monitoring at CASTNET sites.
    - Andy participated in webinar hosted by Pollen Sense (PS) for users on July 19; available on PS Youtube channel: https://www.youtube.com/watch?v=PREwfU6WVr4&t=1293s
    - Aerobiologia publication in August 2023 titled "Initial comparison of pollen counting methods using precipitation and ambient air samples and automated artificial intelligence to support national monitoring objectives".
    - Data management scheme work group (WG) meetings were held on 8/24 and 10/16. Some progress made. Wanted to present a draft version of what took place but will be upcoming in the Spring.
    - Draft of AMSC Fact Sheet: presented on screen but no comments. Comments requested by the end of year.
    - Maine DEP Updates:
        - 4 PS PS400 deployed at site in western Maine for precision testing;
        - Challenges with operational aspects; All have been sent back for one reason or another, but Landon and staff have been very responsive and working with them. Ordered 5th PS sampler;
        - Purchased 2 GRIPS 9000 samplers and analytical and support services from Aerobiology Research Labs (ARL) in Ottawa;
        - Pollen advisory group is honing in on initial site locations; meetings every 6 weeks. Have ID'ed about 25 sites and have the top 5 picks but will solicit further input via a survey;

- Would like to use the HOW132 90- foot tower for getting a vertical pollen profile;
- Maine CDC grant paying for this work;
- Mi'kmaq tribe ordering PS; already have a rotorod.

- Activity in Other States: State of Connecticut reached out to Andy for getting going with their own pollen program. Have 1 NAB site in Waterbury but either not operating or about to shut down. Greg Weatherbee wondered what other states may be taking an active interest?
  - Update from April Hathcoat: Cherokee Nation approved to buy 3 PS sensors. Waiting on the AU to be issued to order. Will be placed in Pryor, Roland and Stillwell, OK. Grant from IRA funding to run for 3 years;
  - Dan Coates working with tri states of Minnesota, Wisconsin, and Iowa. State of Iowa looking for funding;
  - Matt G from PS: State of Washington has 9 sensors, will buy 3 more. In process of this roll out. Tennessee is looking for grant money from EPA. Would like overall roll out rather than gradually. South Africa has bought 6 PS' and then another 10. Goal is to get up to 30 in next 24 months;
  - Greg W: If we get enough states to do this to get enough critical mass like AMNet with standardized protocols etc. then NADP can take leadership role. Another way is through First Nations tribes like CHE185;
  - Andy: Good collaboration with American Academy of Allergy, Asthma and Immunology (AAAIA) and want to work together to harmonize to include existing sites;
  - Greg: spatial representation and gradients: PS had a network of sites (4-5) along interstate corridor in Texas. Has anyone looked at variability along this transect? Matt: This was a trial at one point but currently no input.;
  - Yang Liu may have also done something similar. Yang's paper needs to be on the fact sheet (Selma to get reference from Greg). Andy: Yang looking to get more sensors (around 12) and also looking to get some students to help out;
  - Maine needs more money to do research type collection like variability along a transect or vertically.

4. Stakeholder Updates:
   - **CSTE:** Lingwall – Not participating in meeting and no update. Andy thinks they have moved on from the allergy front to urban air quality etc. We need to have conversation with them to see if they still want to be involved.
   - **CDC:** No representativeness from CDC are on. Andy mentioned that they have had a reorganization and pollen people are working on other areas/priorities. Ari Manangan was part of CASTNET SAB review panel. CDC has interest in getting any pollen data to put on web -based product; may have worked with Yang Liu.
   - **NAB:** Peter Pityn – NAB is an organization that belongs to AAAIA. It started off in 1944 and currently has 114 centers that are certified to classify and count pollen and fungal spores. NAB performs certification of analysts and offers training. Not all of these centers are active. Most of the centers belong to and are run by members of the Academy; most associated with hospitals, clinics, etc. Analysts are recertified every few

years by the NAB.

- 2/3 of stations use Burkhardts and the other 1/3 use rotorods; a few others use volumetric type spore traps and palm samplers;
- Reporting is different from station to station. Usually published daily (spring to fall or year- round) on NAB web site but data belong to the individual centers.
- The number of stations have declined in the past two decades. NAB would like to bring the numbers back up and are interested in following new technologies. However, they see hurdles with standardization, validation, and accurate identification of pollen;
- Machines have to be held to same standards of accuracy as human analysts before NAB would rely on them;
- Peter presenting at poster session. Poster is a summary of review paper titled "Aeroallergen Monitoring by the NAB: A Review of the Past and a Look into the Future". This paper was published beginning of this year in the Journal of Allergy and Clinical Immunology (JACI);
- Andy: Data group will work on QA/validation schemes for data coming in that are collected with different methods in order to have comparability between data sets.

- **ARL:** Dan Coates - ARL has been around for over 30 years operating a national network in Canada with 30 stations. There is a centralized lab where the personnel have a combined 70 years of experience in counting pollen. There are detailed QA/QC procedures and weekly QC checks are conducted on everybody's counts.
  - Conducted huge study with Canadian pharmaceutical company on evidence based pollen testing for allergies. Extremely well received by Canadian allergists;
  - Still developing GRIPS 2009 pollen and spore rotation impaction samplers but also working with PS and some other folks in Canada to improve real time identification of pollen. ARL has been a part of AMSC for 6-7 years now and looking forward to assisting and developing a good network in the US.
  - ARL forecasting has been proven to be from 78 to 82% accurate on any given year due to the large quantity of data and use of many variables in their forecasting;
  - Andy: Would ARL/Dan be willing to give presentation on work with pharmaceutical company? Dan was very interested. Have presented to allergists already and well received. Pharma owns data.
- **PollenSense:** Matt Gurgiolo – Yang Liu of Emory is working with PS on new pollen and modeling project. More details on this in the future.
  - Have closed another round of investment and will therefore be ramping up on new AI identification improvement projects;
  - New network in South Africa currently with 6 sensors and plans to ramp up to 30 sensors over the next 24 months;
  - PS doing a Fall webinar (November) on microplastics. They will be getting an email invite out for this once date is set;
  - Trying to gauge interest in a new tool called Pollen Hunter which is the tool used for training custom identification models. This is how pollen, mold, and other

particle identification models are created and improved. Landon wondering if this group would be interested in having access to this type of tool to help increase the accuracy of the overall device and models moving forward? This will benefit all who have a device. The more people looking at the data to improve the accuracy the more reliable the data will be in the future. Andy said State of Maine will participate. Greg W: if we could get Eric Uram's time he would be good participant on pollen hunter group. He is gung- ho on PS. Up to David and Jamie. David to reach out to gauge Eric's interest. Terri Williams might be interested as well.

- **EPA:** Melissa Puchalski - SAB not interested in pollen monitoring thru IRA funding. Draft report was posted in late September.
  - Do not want new measurements to take away from existing parameters. They recognized the importance of pollen and that pollen is an EPA climate indicator but not regulated under Clean Air Act Amendments (CAAA);
  - Also, CASTNET in rural environments. SAB thinks Pollen sensors should be in urban and environmental justice (EJ) communities;
  - SAB wanted more QA on PS before big deployment. PS on loan to WSP and WSP has worked on automated script to capture the data. May need to rethink;
  - Jason Lynch and Melissa participating in new data WG. Scope of group has narrowed down to AQS type system. AIRNOW is a better fit for displaying real time data with caveat that data are not fully quality assured.
  - Will likely not purchase 100 PS over next year. But will work with what they have. Thinking through how to bring all the data together as some PS deployment will support the SAB panel recommendation that the CASTNET infrastructure is used going forward. Will explore locations where sensors would be deployed, probably the more suburban sites where there may be interested partners.
  - Link to the SAB report: https://sab.epa.gov/ords/sab/r/sab_apex/sab/advisoryactivitydetail?p18_id=2626&clear=18&session=24071576019461

5. Publication Update and Where To Go from Here: Greg Weatherbee - The intention of the publication is to bring scientists to the table to participate and cooperate. Fantastic that NAB is here with poster. Hopefully we can foster more involvement by talking about this work and the Emory work. Another purpose of publication is to bring visibility to this network. UW has done something that has never been done before: using standard air quality measurements, for both dry and wet deposition, using HVAS. There are samplers all over the world. There are correlations that are interesting. Where to go from here? EPA? Can we use NADP precipitation samples? Sort of. For health implications – NO. Can add on maybe for climate studies and things of this nature. Maybe for onset and senescence of season. Expanding automated monitoring at NADP? CASTNET would be better since sensors can be installed on towers. Best data in study came from a tower from CASTNET site DUK008. Terri Williams did great job in looking at data with Dan Coates' help. PS was great. Awesome team effort. Collaboration with Emory would be great as well. Lots of places to take this work from here.

6. Discussion: Jamie: We are in a very good place. The Wisconsin State Lab hosted the CDC director. A lot on CDCs plate. Maine moving ahead with case study will push other states. Answer will be to work with states. The state lab is very involved with disparities, etc. NADP can be clearing house of data for states. Invest more in Maine model than trying to work clinicians, researchers, etc. Share the Maine experience. CSTE will not start program from scratch. But using Maine as a model will be great.
    - Greg: The fact that the Maine model includes both traditional and automated methods is awesome. You need both to move ahead. QA, ground truthing, correlation of both methods. Back to EPA – good collaborator with USGS. NTN moving to some CASTNET sites. Perhaps we need to look at grant opportunities for instrumentation and place them at CASTNET sites since infrastructure already there. CASTNET sites being in rural communities is huge. UW struck out on getting a USDA Sustainable Agricultural Systems (SAS) grant but got other people on board (UW and University of Iowa) to develop agricultural early warning system for pathogens which was David Gay's idea. USDA does not like to give grants for existing networks; would have to be proposed as a new network. Need a university to get money, not USGS or other gov entities. USDA has grant money to put pollen sensors out. Need to leverage CASTNET infrastructure.

    Melissa P: What do Maine and Cherokee plan to do with the data? April: their health dept would like to put data out there to share but have to figure out how to do this. If data are good and if successful running the sensors then data can be put on clinic web sites.

    Andy: Maine CDC has someone that will develop specific web page for sharing the data. Andy's group will link to this webpage from their website to share pollen counts, etc.

7. Open Forum:
    - David Gay: SAB nixed buying 100 samplers but what about building the database anyway since data are out there?
        - Rick Heuber: I don't think it was ever intended that this would be an EPA network or program. Then it becomes the federal government's program. Needs to be broader multi-stake holder program with data housed by NADP or some other neutral third party. Melissa: Data workgroup is a good start for this.
        - Rick: Infrastructure available for people who can get grant money, etc.
    - David G: Have had a lot of luck getting APHL fellows. Possible to get fellow to help WSP build database structure for pollen data. Martin S: APHL (Association of Public Health Laboratories) has extensive fellowship program; will fund up to 2 years for a fellow. Sketch out project in mind and see who applies. An opportunity to plug an intern into. We have some staff members who know how to get these fellows.
    - Greg: Anthony Chen (UNLV) collected in Las Vegas. Wondering if anyone has been in

contact with him? Anthony is also the operator of the Las Vegas NAB site.

- Martin: There is a viral surveillance program, and one colleague was successful in getting grant. Using aerosol samplers and building large proposal of 35 million. Check and see if match of interest. Doing viral aerosol counts at schools and they could be interested in pollen counts as well.
- Janice Braney may also be coming out with something soon on related work.

8. Meeting Adjourned