OAQPS Technical Updates: Monitoring, Modeling & Emissions

AAPCA Fall Meeting
September 8, 2020

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Ambient Monitoring Updates
Acting Group Leader: Angie Shatas

COVID-19 Ambient Air Monitoring Update

- COVID-19 related impacts: monitoring and lab operations
  - Tracking of suspended monitors began March 2020.
  - Early in the COVID-19 response: about 6% of all monitors (and about 4% of regulatory monitors) were offline.
  - August: 2.2% of all monitors (1.7% of regulatory monitors) were offline.
  - August: all labs are operating, but some have limited operations.
- EPA Memos on Ambient Air Monitoring as Mission Essential
  - Ambient Air Monitoring Programs and Continuity of Operations
  - Ambient Air Monitoring Priorities
  - Resuming Operations of National QA Programs
- Evaluation of Air Quality During COVID - ongoing
  - Air quality impacts, emission inventory changes, etc.
  - Exceptional Events
  - Interest in analyses going on elsewhere

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Ambient Air - Protocol Gas Verification Program (AA-PGVP)

- Traceability of NAAQS gas standards
  - Independent EPA verification of calibration Gas Standards
  - Specialty Gas Producers follow EPA's traceability "Protocol"
  - Allows SLTs to make informed decisions when procuring Gas Standards
- AA-PGVP results from CY2018 and CY2019
  - 2018: 31 verifications (10 exceeded the $\pm$2% Acid Rain Program criteria; one was -17.76% of the certified concentration)
  - 2019: 16 verifications (3 exceeded the $\pm$2% Acid Rain Program criteria; one was +15.68% of the certified concentration.)
- Updates
  - EPA Regional lab shifts: R7 remains in program; R2 to be replaced by R4
  - Assess funding (for both annual and one-time equipment expenditures)
  - Follow-up: Further discussions on funding

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Revised Ozone TAD Status

- ## EPA Review
  - Completed review of the Technical Assistance Document
  - Currently addressing EPA comments
  - Finalizing tools associated with the TAD

- ## Monitoring Organization Review
  - TAD will be distributed to the monitoring organizations this month
  - 6 months will be given to test the new TAD and provide comment
  - Address any comments

- ## Incorporate Ozone TAD in CFR by Reference

Community Scale Air Toxics Air Monitoring (CSATAM) Grants

- 2020 grant competition
  - RFA announced February 13, 2020 and extended (due to COVID-19) until May 1, 2020.
  - Total funding: $5M.
  - Projects to assist S/L/T air agencies in identifying and characterizing air toxics.
  - Received 24 eligible applications.
  - Selected 11 for award.
  - Notifications are underway.

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Air Toxics Monitoring

- National Air Toxics Trends Site (NATTS) Network
  - Total number of active NATTS sites: 26, including 2 new sites
    - Tulsa, OK
    - Pittsburgh, PA
  - Underway: 3rd NATTS network assessment
    - Include 2015-2018 new data to cover 2003-2018
    - Determine air toxics trends and data quality
    - Includes individual site evaluation and report
- Ethylene Oxide (EtO)
  - Added as a required analyte to NATTS in 2019
  - Improve ability to measure EtO
  - Method TO-15A - Develop and test new method; communicate via webinar
  - OIG report

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On The Horizon

- Government Accountability Office (GAO) engagement on ambient air monitoring
  - 2018 - Project began after receiving a request from
    - Ranking Member Thomas Carper, Senate Committee on Environment and Public Works;
    - Ranking Member Sheldon Whitehouse, Subcommittee on Clean Air and Nuclear Safety, Senate Committee on Environment and Public Works; and
    - Senator Susan Collins
  - GAO staff have communicated extensively with EPA HQ staff, regional offices, 14 state and local air agencies, as well as AAPCA, NACAA, and most of the MJO's
  - Final report expected in November 2020
- OAQPS Air Toxics Strategy
  - Under development - A comprehensive strategy that recognizes the central role that air toxics plays in air quality management activities
  - Late fall – Likely timeframe for beginning outreach to the states, after the strategy receives a thorough regional review and OAR management approval

AIRNow Update
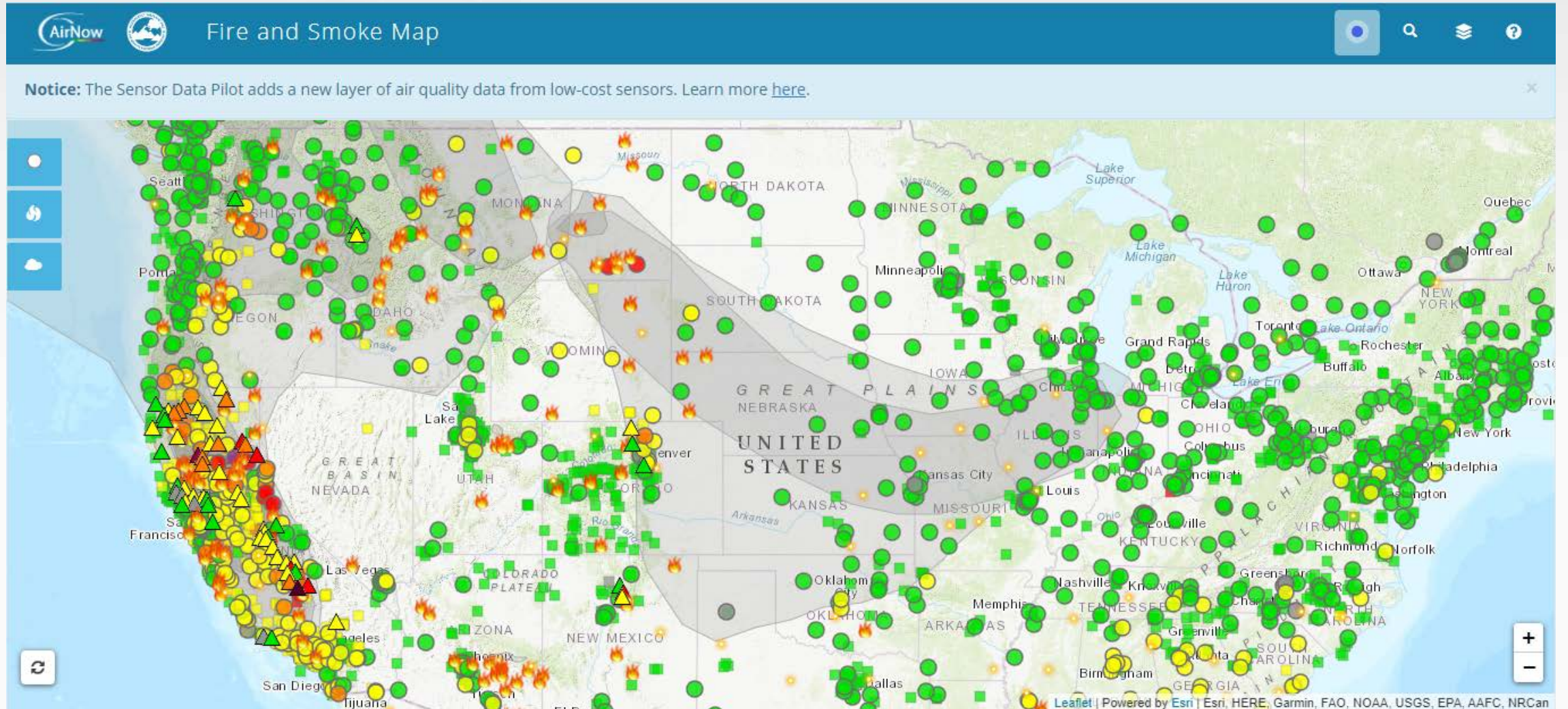
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Permit Modeling Updates
Group Leader Tyler Fox

Modeling Guidance and Clarifications

- Guidance on Ozone and Fine Particulate Matter Permit Modeling
  (O_3 & $PM_{2.5}$ Permit Modeling Guidance)
  - Draft version released on February 10, 2020 with informal comment period through April 17, 2020
  - Currently processing comments from the draft version of guidance
    https://www3.epa.gov/ttn/scram/guidance/guide/Draft_Guidance_for_O3_PM25_Permit_Modeling.pdf
  - Vast majority of the comments received were supportive, providing grammatical suggestions, or asking for additional clarification
  - Briefing senior management on revisions and aiming for final guidance release as soon as possible
- 2010 General Conformity Rule Clarification – NO_2, O_3, and $PM_{2.5}$ Modeling Techniques
  - Rule only contains specific modeling requirements or recommendations for directly emitted pollutants
  - Preamble language in the 2010 rule conflicts with more recent regulation and modeling guidance
  - 2017 revisions to the *Guideline on Air Quality Models* provides recommendations for use of chemical transport models to assess O_3 and the $PM_{2.5}$ precursors and has screening approaches for NO_2
  - The clarification memo will address these inconsistencies and highlight the rule requirements to conduct conformity demonstration modeling consistent with the most recent version of the *Guideline*.

Model Clearinghouse (MCH)

- MCH Operational Plan
  - Most recently updated in association with the 2017 revisions to the *Guideline on Air Quality Models*

    https://www3.epa.gov/ttn/scram/guidance/guide/MCH_Operational_Plan-2016_Version.pdf
  - Ongoing effort to revise the MCH Operational Plan to incorporate Checklists/SOPs developed during the MCH Lean initiative to provide a better framework for the holistic alternative model approval process
  - There will also be training for the state/local air agencies on the alternative model approval process at the next Regional, State, and Local Modelers' Workshop tentatively scheduled (virtual?) for May / June 2021 in Minneapolis, MN

- Most recent MCH Action (19-VI-01) in late 2019 was related to use of the COARE bulk flux algorithm with AERMOD for an offshore oil/gas project
  - Additional interest in offshore modeling projects with pseudo-Big Calls happening with companies in EPA Regions 1, 4, and 6.

Twelfth Conference on Air Quality Models

- Twelfth Conference on Air Quality Models or 12th Modeling Conference
  - Formal triennial public hearing required by Section 320 of the CAA
  - Held October 2-3, 2019 on the EPA RTP NC, Campus
  - Approximately 225 participants from the regulated, regulating (federal/state/local/tribal), academic, and environmental communities
  - The main focus was on model development and included 6 expert panels focused on the AERMOD Development White Papers.
  - The panelist were chosen from the external stakeholder community and academia.
  - 9 public presentations given during the open portion of the public hearing. Additionally, 4 public comment packages were submitted to the conference docket: ID No. EPA-HQ-OAR-2019-0454.
  - All of the conference proceedings, audio recordings, transcripts, etc… are available on the EPA's SCRAM website and posted in the conference docket: https://www.epa.gov/scram/12th-conference-air-quality-modeling

12th Modeling Conference Expert Panels

- **Low Wind Conditions**
  - Rick Gillam, EPA Region 4
  - Bob Paine, AECOM
  - Akula Venkatram, Univ. of California

- **Overwater Modeling**
  - Bart Brashers, Ramboll
  - Holli Ensz, BOEM
  - Jay McAlpine, EPA Region 10
  - Akula Venkatram, Univ. of California

- **Mobile Source Modeling**
  - David Heist, EPA/ORD
  - Michelle Snyder, Wood
  - Chris Voigt, VA DOT/AASHTO

- **Building Downwash**
  - Steve Perry, EPA/ORD
  - Sergio Guerra,
  - K. Max Zhang, Cornell University

- **Prognostic Meteorology**
  - Bret Anderson, US Forest Service
  - Bart Brashers, Ramboll
  - Ashley Mohr, EPA Region 6

- **Model Evaluation**
  - Bret Anderson, US Forest Service
  - Mark Garrison, ERM
  - Erik Snyder, EPA Region 6

- **Focused Presentations:** NO2 modeling techniques, plume rise, and deposition

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AERMOD Development: Short Term

- Current version: 19191
  - RLINE (BETA) and RLINEEXT (ALPHA) source types for mobile sources
  - ORD and AWMA PRIME downwash options; both ALPHA options
  - Method 2 particle and gas deposition algorithms changed to ALPHA options
  - Bug fixes/enhancements to AERMET and AERMOD
- Next release: Early 2021
  - Bug fixes/enhancements to AERMET and AERMOD

ALPHA: experimental; not ready for regulatory use
BETA: peer-reviewed options potentially ready for consideration as alternative model(s)

AERMOD Development: Long Term

- Model development over next 2-3 years focused on several key areas as defined by the AERMOD White Papers and focus of expert panels at 12th Modeling Conference

  – Building downwash

  – Overwater modeling

  – Low wind conditions

  – NO_2 modeling techniques

  – Mobile source modeling

  – Deposition

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Prognostic Meteorology

Use of modeled meteorology now allowed under the Guideline

- Ability to provide meteorological data in complex terrain or in areas where observed meteorological data is either cost-prohibitive or not representative
- Hierarchy of meteorological inputs as follows:
  - Site-Specific/Site-Representative
  - National Weather Service
  - Prognostic Meteorological Data
- Generated several years of 12km prognostic data for entire country
  - 2013-2018 available soon through the Intermountain West Data Warehouse (IWDW)
- Recent applications from R10 (PacWest), R6 (Future Fuels/SO2), R1 (Vineyard Wind), etc.
- WRF/MMIF workgroup established with RO reps to assist with and discuss issues with respect to prognostic meteorological issues

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Revised AERSURFACE

- AERSURFACE v.20060 released April 7, 2020
  - Replaced versions13016 and 19039_DRFT

- Supports NLCD 1992, 2001, 2006, 2011, and 2016
  - NLCD 2001-2016 can be supplemented with percent tree canopy and percent impervious products, where available

- Characterize individual wind sectors as airport/non-airport
  - Based on dominant land cover/land use patterns in an individual sector

- Multiple sources for NLCD data files that are AERSURFACE-ready
  - Multi-Resolution Land Characteristics (MRLC) Consortium
  - EPA FTP Server

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Emission Inventory Updates
Group Leader Marc Houyoux

2020 National Emissions Inventory (NEI)

- 2020 plan released for next triennial NEI
  - Detailed schedule, best practices, and key 2020 NEI changes
  - Will build on the "one version" approach used for 2017 nonpoint
  - See https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-documentation
- Key activities and timeframes
  - **Spring 2021:** Trainings planned (maybe via a virtual conference)
  - **Now through 2022:** State, local, tribal (SLT) collaboration provides great value to the process (e.g., "NOMAD" committee, MOVES workgroup)
  - **Dec. 31, 2021:** Reporting deadline to EPA for most data (2-week grace period)
  - **February and April 2022:** Feedback reports sent
  - **Fall 2022:** Releases of data categories as they are completed
  - **March 2023**: Full public release

Changes for 2020 Emissions Cycle

- Changes for reporting to the Emissions Inventory System (EIS)
  - Completeness feedback to SLTs, Regional Offices, and Air Directors
  - Consolidated Emissions Reporting Schema (CERS) changes
  - New reporting codes (e.g., source classification codes)
  - Adding several per- and polyfluoroalkyl (PFAS) compounds (for voluntary reporting)
- Key changes for NEI data
  - Focus on reflecting 2020 activity levels due to COVID-19
  - New nonpoint methods: solvents, abandoned oil & gas wells, and agricultural silage VOC emissions
  - MOVES3 expected to be used
- Key change for modeling
  - Focus on reflecting 2020 activity temporal and spatial patterns due to COVID-19

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Combined Air Emissions Reporting (CAER)

- CAER Goal: streamline air emissions reporting
- **This year:** CAER System (CAERS) version 1 completed
  - Georgia's sources have reported 2019 air emissions
  - Georgia staff are now reviewing data in CAERS to report to NEI
  - System is flexible and modular to more <u>readily support different SLT needs</u>
- **Fall 2020 and 2021**:
  - DC currently onboarding and planning to use for 2020 emissions
  - We are reviewing "must have" requirements with several other states
  - Considering working with SLEIS system developer on a SLEIS-CAERS interface
- We want to work with you to reduce effort for industry and SLT staff, and obtain high quality data in less time:
  https://www.epa.gov/e-enterprise/e-enterprise-combined-air-emissions-reporting-caer

Proposed New Methods for Solvent Sectors

- Volatile Chemical Product (VCP) emissions: recent literature suggests the NEI might be low by a factor of 2-3x

- Office of Research and Development is developing a new VCP framework called VCPy (Karl Seltzer, Havala Pye)

- See documentation in 2020 NEI plan

- **Now**: Working to refine methods with some states, industry and other groups

- **Sept. 2020**: Communication via NOMAD committee

- **Fall 2020**: Planned emissions method manuscript submission

- **May 2021**: Nonpoint method document (a.k.a. "NEMO") complete
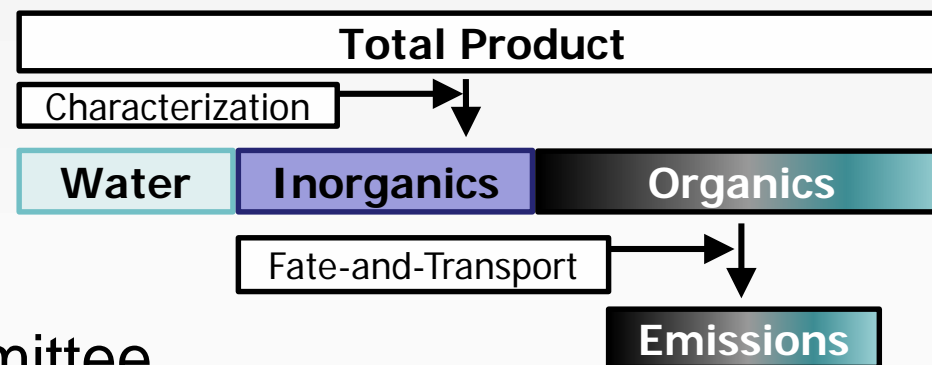
Source Measurement Updates
Group Leader Stef Johnson

Wood and Hydronic Heater Test Method Work

Leveraging NYSERDA/NESCAUM IDC Protocol

- Waiting for NYSERDA data to be publicly released
- Contracting with a West coast laboratory for IDC method tests
  - Wood heaters burning cord wood fuel
  - TEOM as the basis for PM measurement
- Intend to conduct TEOM precision & ruggedness study in RTP
- Project scope: 3 years of lab testing to collect supporting data
  - IDC method for wood heaters, hydronic heaters and forced-air furnaces

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Emissions Testing and Monitoring - Training

CMS and Stack Test Material Review and Updates

- Multi-partner workgroup recently developed new CMS training materials to update APTI 474; now live.

- Curriculum developed to support updating of APTI 450 for source measurement training. Workgroup forming soon.

- Checklists for regulators observing source tests and reviewing test reports are in development – Due out by January 2021.

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