



Air Quality Assessment Division (AQAD) Overview

**Office of State Air
Partnerships in the
Office of Air and
Radiation**

**AAPCA 2026 Spring
Meeting
April 9, 2026**

Six Branches in AQAD

- Emissions Inventory Branch (EIB)
- Methods and Model Development Branch (MMDB)
- Air Quality Modeling Branch (AQMB)
- Ambient Air Monitoring Branch (AAMB)
- Air Monitoring Technology Branch (AMTB)
- Air Quality Analysis Branch (AQAB)

New Programs in AQAD

Program	Branch
Clean Air Status and Trends Network (CASTNET)	AAMB
Federal Reference Method (FRM) / Federal Equivalent Method (FEM)	AMTB
Air Sensors	
Development of Community Multiscale Air Quality (CMAQ) model	MMDB
Community Modeling and Analysis System (CMAS) Center	
Emission factors (including AP-42)	
SPECIATE	

- Source-oriented monitoring and methods work that was previously in the Measurement Technology Group is now in the Regulatory Assistance Division in the Office of Clean Air Programs (RAD/OCAP)



Ambient Air Monitoring

SPRING 2026

Recent Network Adjustments

- Approval of site moves for the National Core (NCore) and Speciation Trends Networks (STN)
 - Several site moves in the last several months
 - Worked closely with affected agencies to get approval
 - Please reach out to your Region early in the process should you anticipate loss of a site lease
- Approval of total reactive nitrogen oxides (NO_y) waiver requests at NCore Stations
 - Approvals in cases where: (1) NCore station runs nitrogen oxides (NO_x) and NO_y monitors, (2) the data meet comparability criteria, and (3) the site is not a Photochemical Assessment Monitoring Station (PAMS)
- Effective January 1, 2026, monthly field blank collection for Chemical Speciation Network (CSN) was reduced by 50% on a rotating schedule with minimal impact on data quality and resulting in cost-savings

Ambient Monitoring Technical Support



Each fall, EPA receives input from State, local, and Tribal (SLT) agencies about their plans to use national air monitoring support contracts for Air Toxics (NATTS), Chemical Speciation Network (CSN), PAMS, NAAQS Lead (Pb); quality assurance activities; filters, and sample shipments.

EPA prepares an Associated Program Costs (APS) budget to cover those needs, reflecting SLT input, contract cost increases, and other factors. Regional offices then include those APS details as part of the grants process.

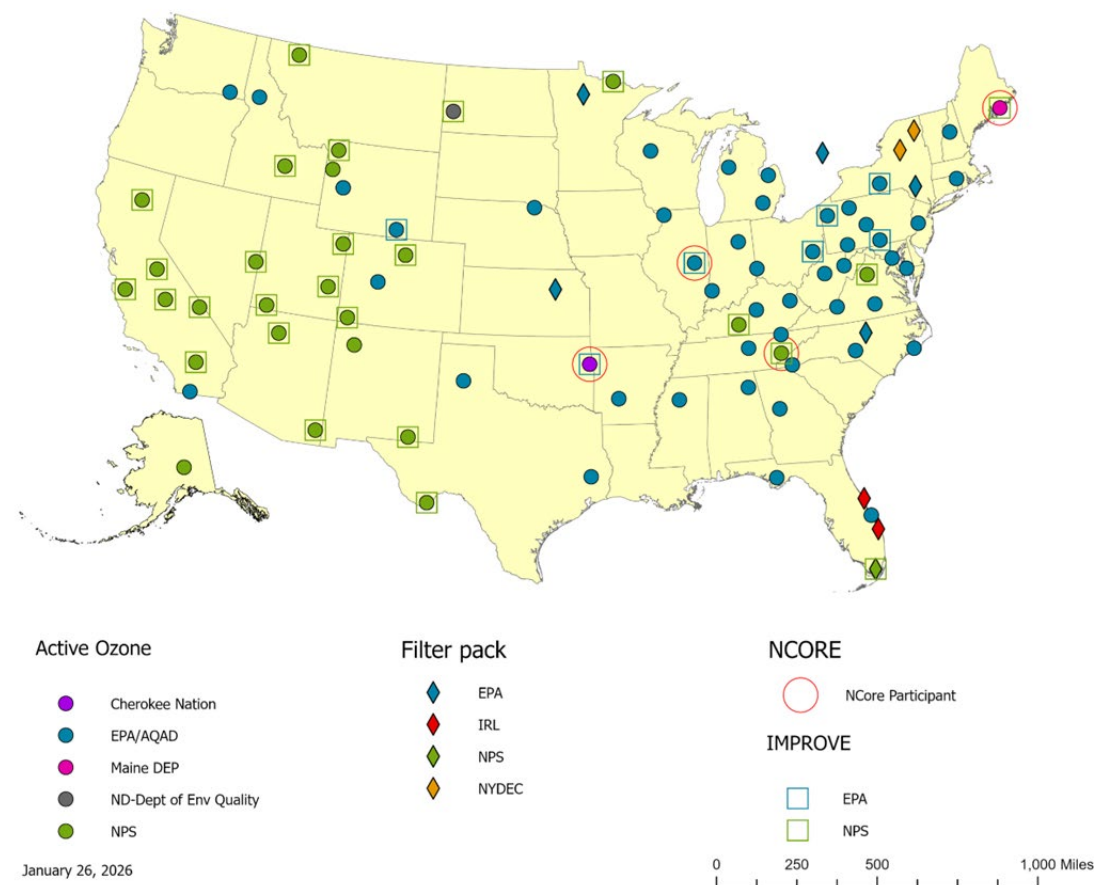
For FY 2026 we expect an APS budget consistent with last year's levels, despite large contract cost increases in select contracts (e.g., CSN).

NPAP/PEP Updates

- In February 2026, EPA/AQAD hosted our annual in-person training for the National Performance Audit Program (NPAP) and Performance Evaluation Program (PEP) at the RTP, NC facility.
 - The training included hands-on “demonstrations of capability” by the auditors, classroom lectures on program changes and issues, and quality assurance discussions led by EPA/OSAP staff.
 - There were approximately 60 attendees including EPA Regional Office staff, EPA contractors, and state/local/Tribal air agency staff.
- EPA’s PM_{2.5}-PEP audit program continues to generate approximately 600 monitor concentration comparisons across the nation every year.
 - These data provide key insights into instrument and network performance across the United States.
 - EPA anticipates returning to a previous practice of publishing national bias reports based on the PM_{2.5}-PEP data.

Clean Air Status and Trends Network (CASTNET)

- EPA continues to manage CASTNET in partnership with the National Park Service (NPS), Tribes, other federal and state agencies, universities and other organizations
- **Ongoing efforts and highlights**
 - In 2026, EPA expects to upgrade regulatory ozone monitoring equipment to complete the CASTNET modernization effort
 - Particulate matter (PM) sensors installed to address data gaps in rural communities
 - Renovated shelters and replaced aging equipment
 - Decommissioned sites that no longer met Agency priorities or data needs
 - In Spring 2026, Choctaw Nation is adding the 9th CASTNET Tribal site near Durant, OK
 - Collaborated with internal and external partners to address monitoring priorities



Federal Reference and Equivalent Methods (FRM/FEM) Program

- EPA continues to process FRM/FEM applications
- Working to ensure that the FRM/FEM program is effectively accomplishing its statutory objectives
- Ongoing efforts and highlights
 - EPA has streamlined the communication process by creating a single point of contact (FRMFEM@epa.gov)
 - EPA intends to complete an independent audit of the program by the end of 2026

Request for Correction – Teledyne PM_{2.5} Monitor Data

- On January 6, 2026, EPA received a Request for Correction (RFC) under the Information Quality Act from the NAAQS Regulatory Review & Rulemaking Coalition (NR3 Coalition) regarding:
 1. EPA's approval of four modification requests for the T640 and T640x PM Federal Equivalent Method Monitors
 2. EPA's retroactive application of the approved modification of the T640 and T640X monitors to concentration data for PM_{2.5} in EPA's Air Quality System
- EPA continues to review the RFC and anticipates responding later in 2026

Standard Reference Photometer Program

- The National Institute for Standards and Technology (NIST) Standard Reference Photometer (SRP) is the reference standard to which all ozone (O_3) measurements are traceable
- The purpose of EPA's SRP Program is to provide a verification program to establish and ensure the traceability of all O_3 measurements to the NIST standard
 - For example, traceability is passed from an EPA SRP to the state and local air agency transfer standards, then onto the site calibrators, and then to over 1,000 SLT analyzers taking direct O_3 measurements
- Following the recent EPA reorganization, AQAD is transitioning from an in-house verification process to an external process where we send all EPA SRPs to NIST for verification
- Recognizing the aging fleet of EPA SRPs, EPA is also actively exploring the possibility of instrument upgrades



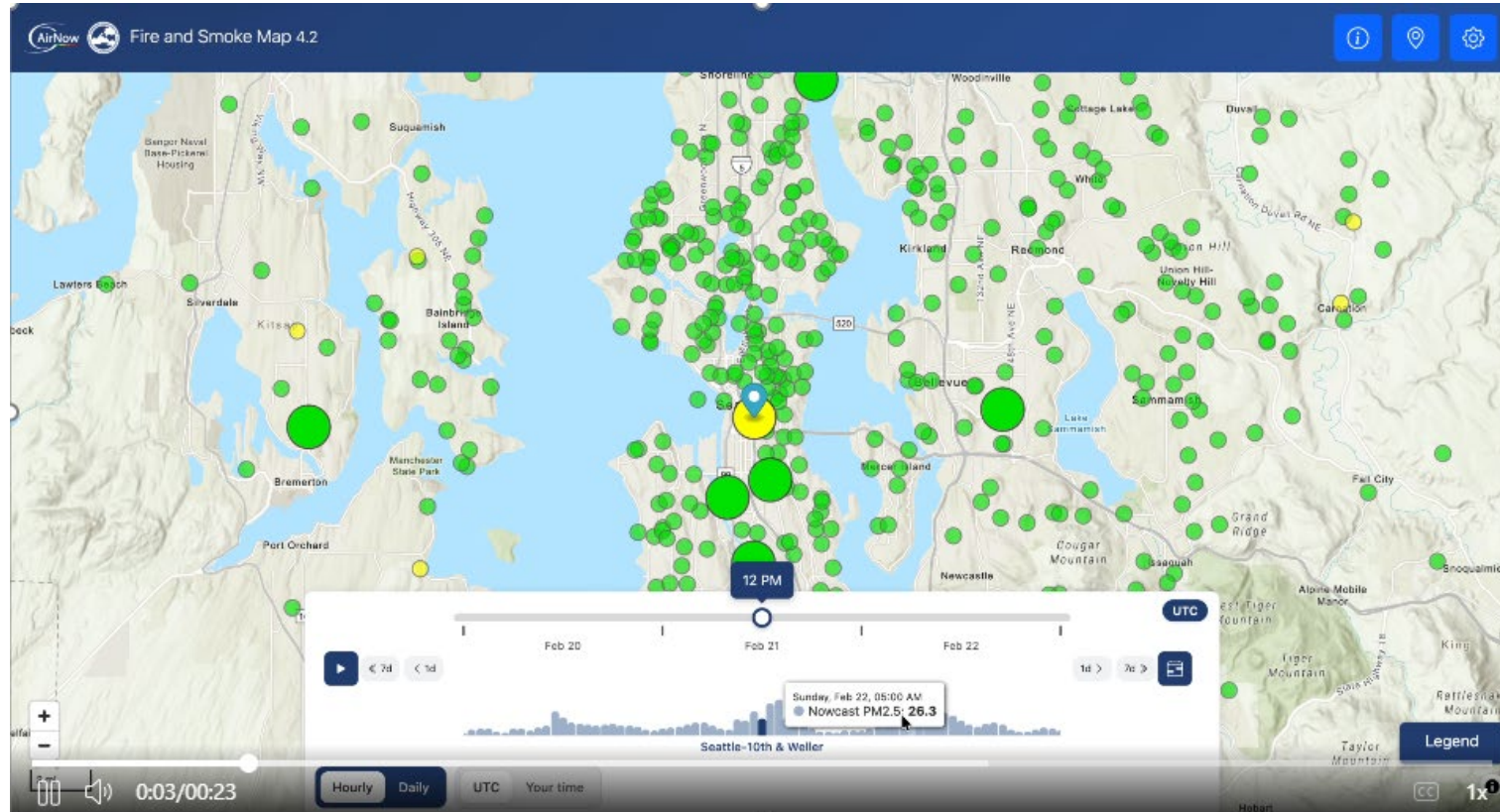
Fires and Exceptional Events

2021-2025 Fire Seasons

- **2021:** Fairly active fire season in the Western US – impacts seen from US wildfires
- **2022:** Fairly low fire activity during Apr-Sep (higher ozone season)
- **2023:** Canadian wildfires had major impacts across many areas of the US
- **2024:** Mexican fire influence evident during spring; Active US wildfire season in the Western US
- **2025:** Moderate fire year with a mix of springtime Mexican fire impacts, Canadian wildfires, and some Western US wildfires

Fire and Smoke Map (FASM) – Historical Version

- Developing an initial version of FASM with historical data
 - Access to air quality maps for a past date/time (Jan 2025 to present)
 - Map view + optional time series data from one location
 - Hourly or daily averaging features
- May assist air agencies in preparing exceptional events demonstrations
- Anticipating spring 2026 release



Screenshot of the responsive, interactive user interface under development – subject to change.

FASM – Sensor Network Data Acceptance Protocol

- EPA is developing a streamlined process to qualify additional PM_{2.5} sensor data for inclusion on the map
 - Goal is to ensure accurate, timely, and quality controlled data on the map
 - Guidance targeted at sensor data providers (e.g., manufacturers and data aggregators)
 - Data providers asked to show data quality through sensor and network performance evaluation
- Anticipating summer 2026 release

STEP 1: Express Interest and Initial Discussion

STEP 2: Approve Data Feed and Sign Material Transfer Agreement (MTA)

STEP 3: Submit a Complete Application

STEP 4: Display on FASM Sandbox for Testing

STEP 5: Public Documentation and Display on FASM Professional

STEP 6: Periodic Review Including Documentation Updates

STEP 7: Sensor Network Displayed on Public FASM

Exceptional Events (EE) Tools

Existing Tools

- **PM_{2.5} Tiering Tool**
Displays daily PM_{2.5} concentrations with tier levels based on the methodology in the PM_{2.5} Wildland Fire Exceptional Events Tiering Document
- **EE Design Value Tool**
Allows SLTs to determine the regulatory significance of ozone and PM_{2.5} concentrations potentially impacted by EE by excluding certain concentrations from the design value

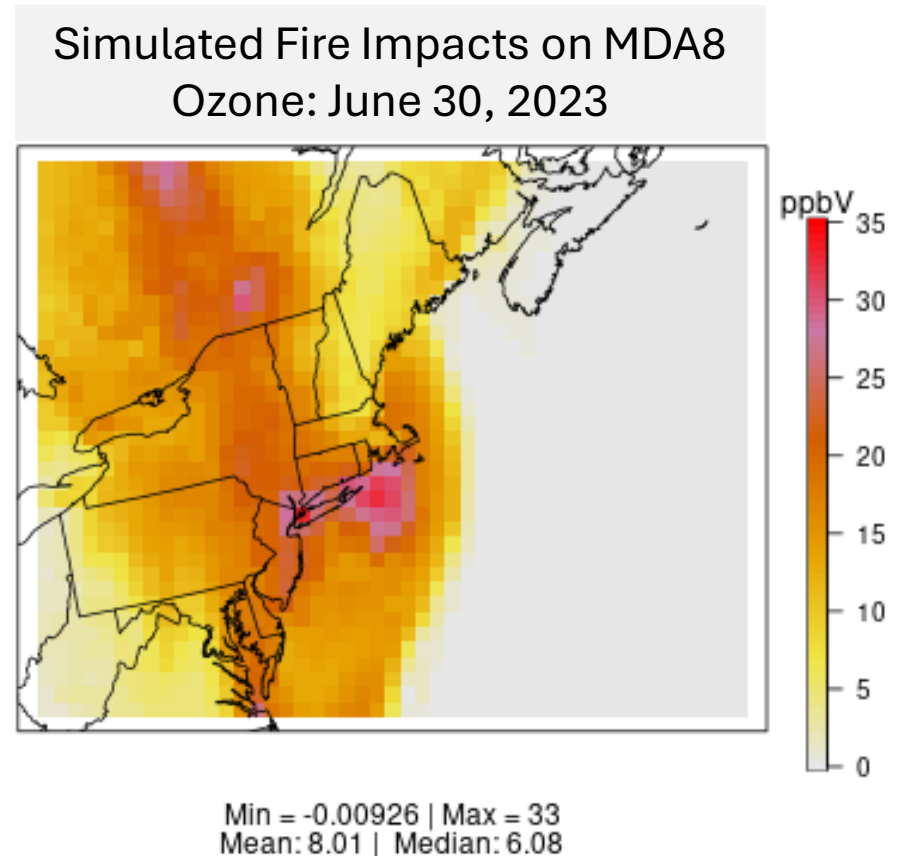
Under Development

- **Update to Expedited Modeling of Burn Events Results (EMBER)**
 - Release spring/summer 2026
- **HYSPLIT trajectories for EE**
 - Release spring 2026
- **EE Demonstration Data Tool**
 - For ozone and PM
 - Release this calendar year

<https://www.epa.gov/air-quality-analysis/exceptional-events-analysis-and-visualization-tools>

EMBER

- EMBER is a modeling-based dataset that provide screening level data to characterize wildfire impacts on ozone in the US
 - Results from CMAQ modeling with 36-km grid covering North America
 - Uses simulations in which wildfire emissions have been zeroed out
 - Some simplified model inputs used to provide faster results
 - Useful for the general magnitude impacts (none, some, large)
- Website application provides readily usable information to screen for days and locations that have substantial fire ozone contributions
 - Tabulated results, maps, and timeseries plots
- Releases and updates
 - EMBER 2023 dataset released January of 2025
 - 2021, 2022, 2024, and 2025 datasets coming spring/summer of 2026
 - Website application updates planned in the next year
- <https://www.epa.gov/air-quality-analysis/expedited-modeling-burn-events-results-ember>



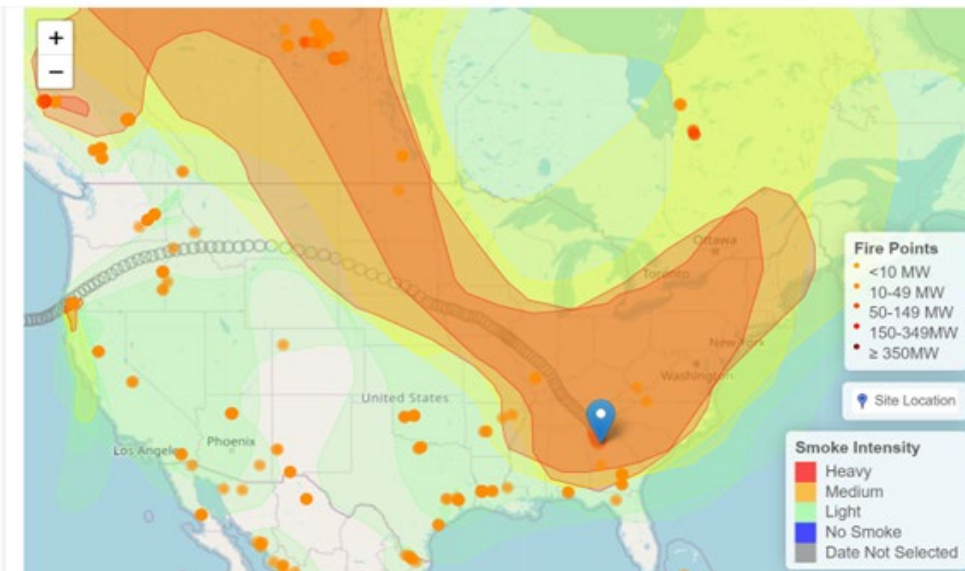
HYSPLIT Trajectories for Exceptional Events

- This spring, HYSPLIT trajectories will provide:
 - 5-day backward trajectories from all PM and ozone ambient monitoring sites for 2023-2025
 - Modeled smoke and fire intercepts along trajectory paths (left image)
 - Hazard Mapping System (HMS) fire and smoke overlays (right image)

Hysplit Smoke Trajectories

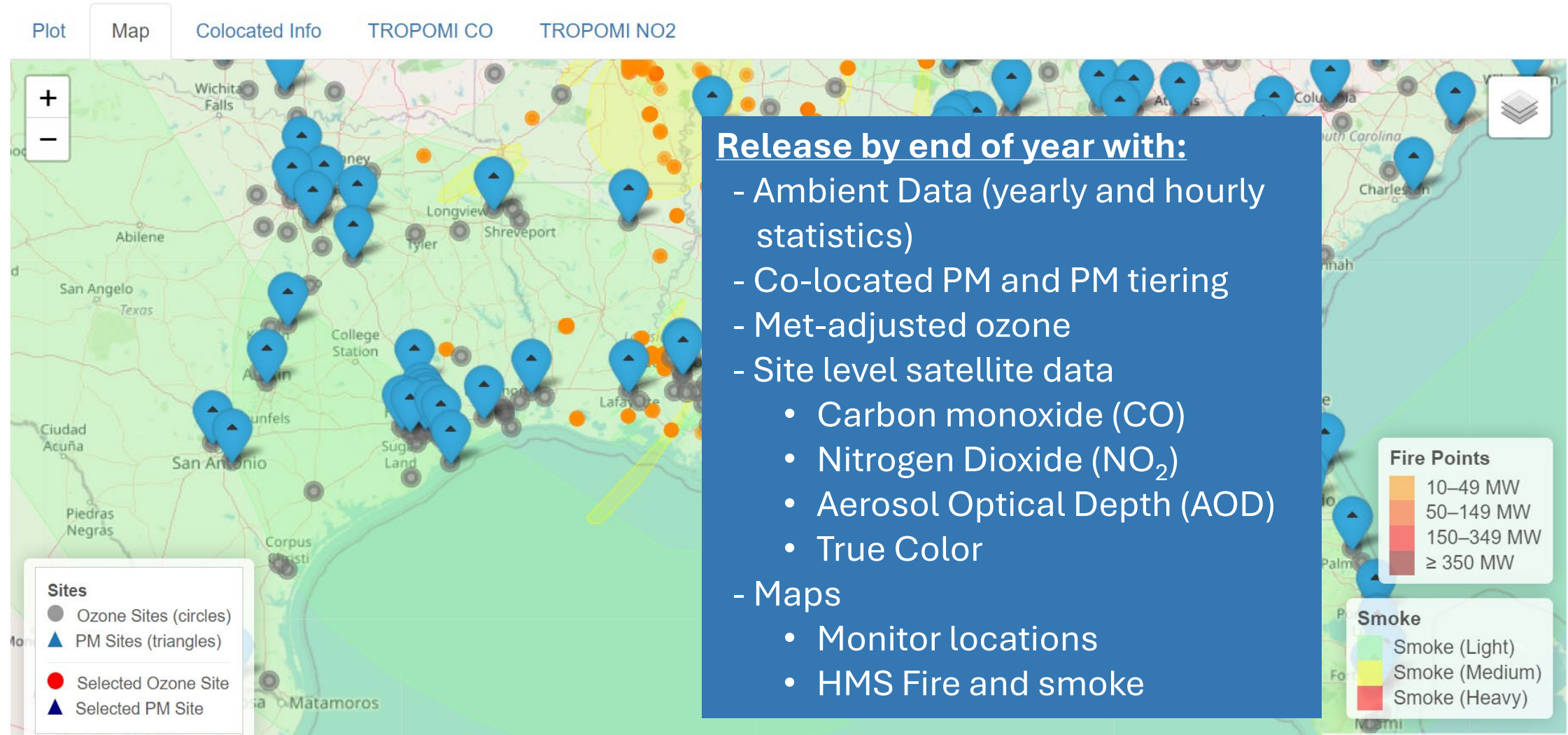


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Ozone and PM Exceptional Event Data Tool





Air Quality Analysis

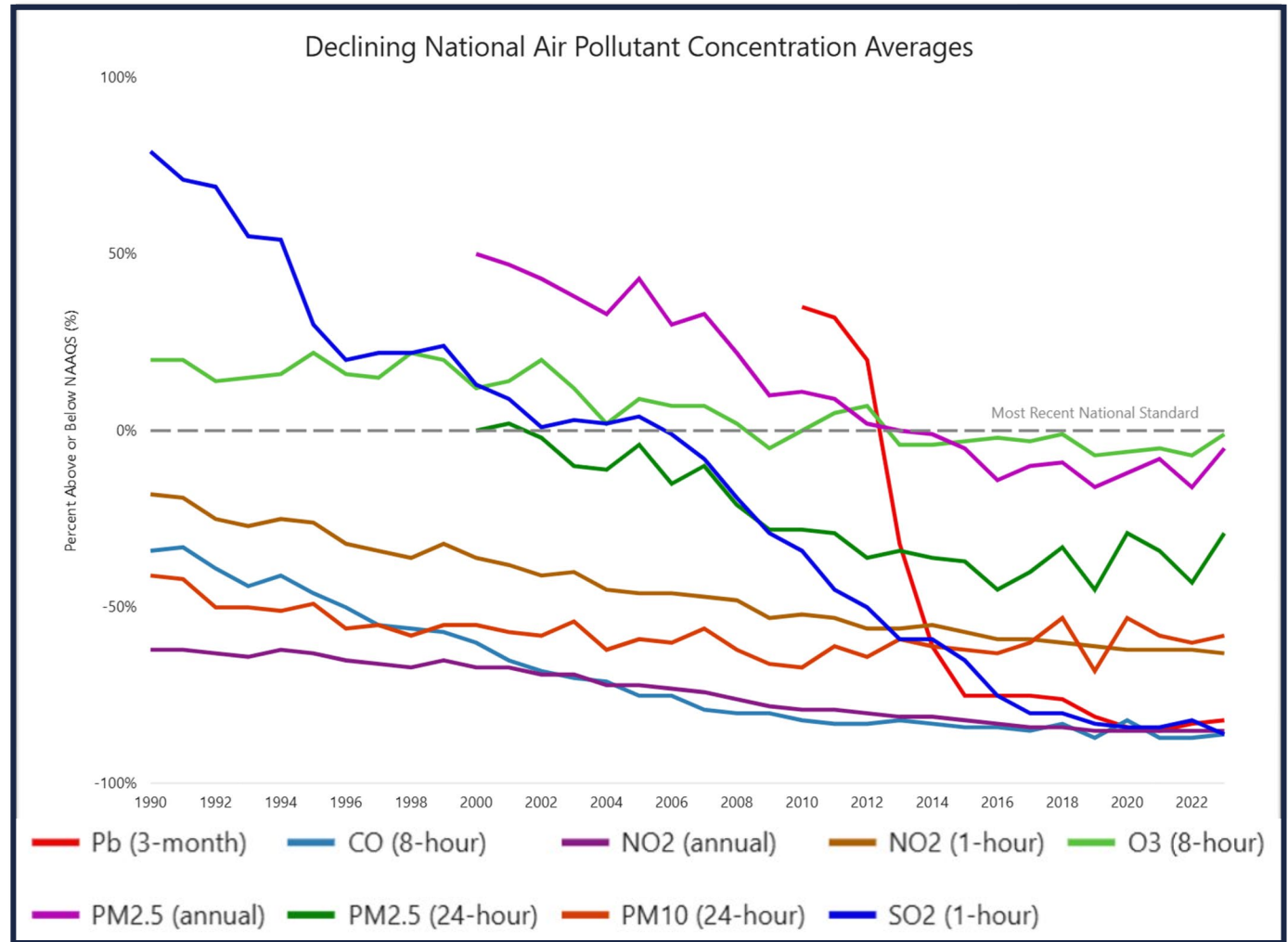
Design Value Process



Air Trends Report

- EPA released the 2024 Air Trends report in February 2026
 - Emissions generally continue to trend down
 - Spotlight story focused on the IMPROVE program
- The interactive annual report summarizes the nation's air quality status and trends
 - Emissions data, criteria pollutant concentrations, visibility, air toxics
- EPA is working to release the 2025 Air Trends Report in 2026

<https://www.epa.gov/air-trends>



AQI Reports – Annual Table

Retrieve A Dataset

Select a Year:

2024

Select a Geography Type:

- ☒ County
- ☐ CBSA

Select a County:

California, Orange Cc

Get this data

Display the Dataset

Select a Display:

Annual Table

County	# Days with AQI	# Days Good	# Days Moderate	# Days Unhealthy For Sensitive Groups	# Days Unhealthy	AQI Max	AQI 90th %ile	AQI Median	# Days NO2	# Days O3
Orange	366	129	230	13	3	172	84	54	12	115

06-059-0007 (Anaheim)
Parameter: PM2.5 - Local Conditions (88101)
Standard: PM25 24-hour 2024
POC: 3

Daily Data – AQI Tile Plot



AirData

Daily Data – Monitor Location Map

Display the Dataset

Choose a display:

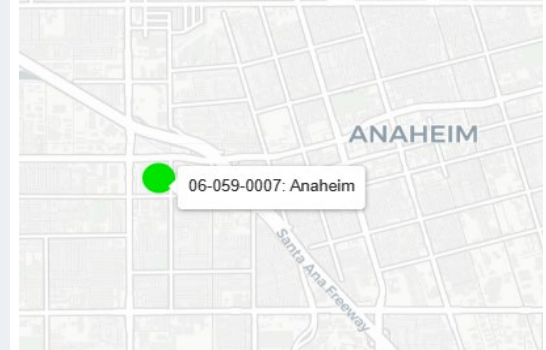
Monitor Location Map

Animate the daily AQI colors

2024-06-04

2025-12-31

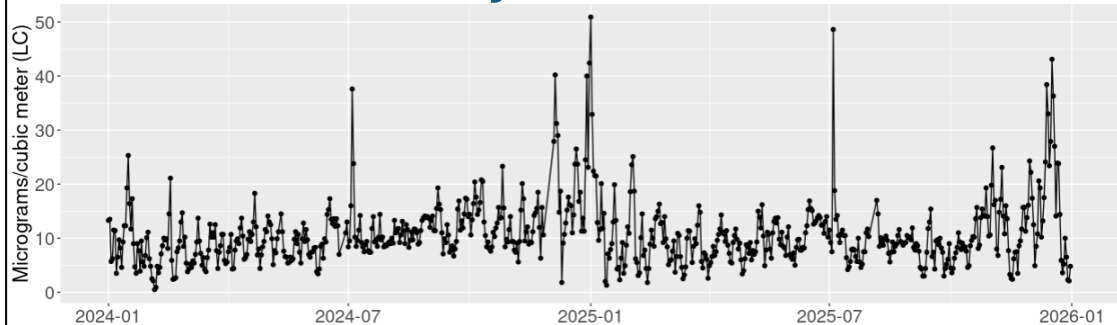
2024-01-012024-10-192025-08-07



Annual Monitor Statistics

06-059-0007 (Anaheim)
Parameter: PM2.5 - Local Conditions (88101)
Standard: PM25 24-hour 2024
POC: 3

Daily Data – Concentration Plot



Create a Report

Select a Pollutant Category:

- ☒ Criteria Pollutants
- ☐ Hazardous Air Pollutants

Select a Pollutant:

PM2.5

Select a Year:

2024

Select a Geography Type:

- ☐ State
- ☒ County
- ☐ CBSA

Select a County:

North Carolina, Wake

Download this data

Show 100 entries

Search:

Site ID	POC	NAAQS	State	County	City	Address	Exceptional Events	Obs	Days > Std	Required Days	Valid Days
371830014	5	24-hour	North Carolina	Wake	Raleigh	3801 SPRING FOREST RD.	No Events	359	0	366	3
371830021	3	24-hour	North Carolina	Wake		2826 TRIPLE OAK DRIVE	No Events	357	0	366	3
371830014	1	24-hour	North Carolina	Wake	Raleigh	3801 SPRING FOREST RD.	No Events	118	0	122	1

Other Air Quality Analysis Programs

- **Design Value Products**

- **Reports**

- Spreadsheets that provide design values and other supporting information
 - Currently working on 2025 design value reports for early summer 2026 release

- **Design Value Interactive Tool and Map**

- Allows users to filter on geographic areas and pollutants and download data and view maps of monitor locations

- For more information: <https://www.epa.gov/air-trends/air-quality-design-values>

- **AirData Website – updates coming in 2026**

- **Qlik Archive Data Retrieval Tool for Ambient Hazardous Air Pollutants – released January 2026**

- Available at: <https://www.epa.gov/amtic/amtic-ambient-monitoring-archive-haps>



Emissions Inventories, Methods, and Factors

National Emissions Inventory (NEI)

■ **Full 2023 NEI Public Release – Spring 2026**

- Will include all technical support documentation, data queries and summaries, data retrieval tool, and air emission trends
- Ongoing work supporting SLTs to review and complete 2023 submissions
 - SLT 4-week review of draft 2023 NEI Nonpoint starting by March 16th
 - Final onroad and nonroad mobile emissions data available via the Emissions Inventory System (EIS) in March
 - Point emissions review window closed – final point source data available via EIS by April 2026

■ **Other NEI happenings**

- 2024 NEI reporting windows EIS for point sources closed
- 2026 NEI Plan coming later this year
- NEI and EIS newsletter updates to stakeholders every 3-4 weeks

2023 NEI Emissions Science and Methods Updates

New National Methods

- Oil & gas abandoned wells
- Residential cooking, roofing asphalt
- Pile & ditch burns, campfires, structural fires (including Maui fire from 2023), and motor vehicle fires
- Non-agriculture ammonia (NH₃) emissions

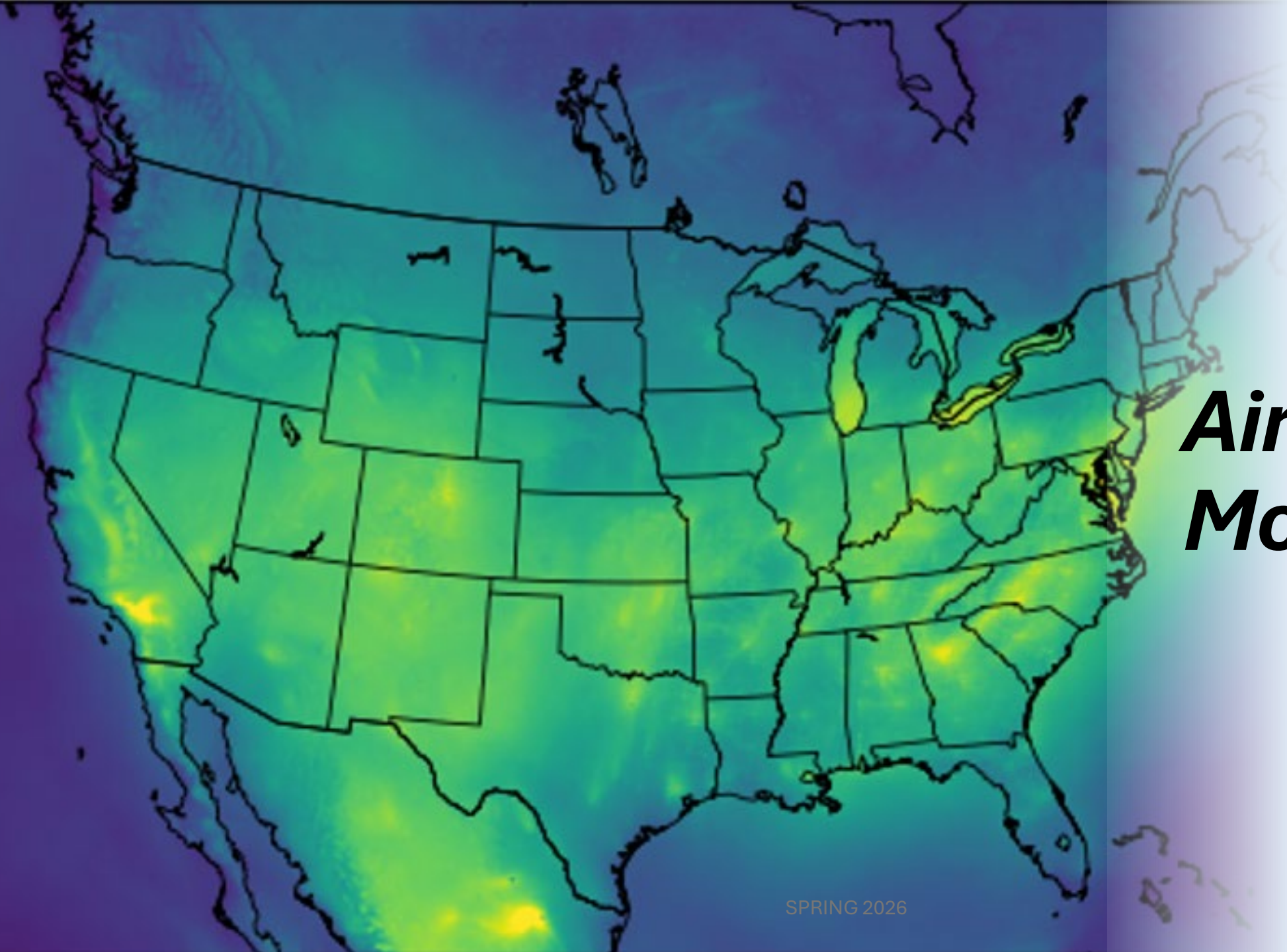
Method Improvements

- Commercial cooking
- Residential wood combustion, including emissions factors and spatial distribution
- Road Dust
- Livestock Waste survey data
- Fire emissions factor and other updates
- SPECIATE additions and improvements

SLTs had the opportunity to review and comment on new and revised methods by participating in the 2023 NEI process; some were included in 2022 platform v2 inventories

Updates to AP-42 Emissions Factors

- Finalized: AP-42 Section 11.7 - Ceramic Clay Manufacturing
 - Finalized May 2025
 - SCCs were updated
 - 22 new/revised emission factors
 - 20 revised factors for tunnel kiln – natural gas fired (SCC 30500850)
 - Hydrogen Chloride, Mercury and 18 dioxin/furans
 - 2 new factors for tunnel kiln – natural gas fired (SCC 30500850)
 - PM, Filterable and Hydrogen Flouride
- In Process:
 - AP-42 Chapter 2, Section 4 – Municipal Solid Waste Landfills
 - AP-42 Chapter 4, Section 12 – Manufacture of Rubber Products
 - ICR data update
 - AP-42 Chapter 9, Section 7 – Cotton Ginning
 - AP-42 Chapter 11, Section 3 – Bricks and Related Clay Products



Air Quality Models

SPRING 2026

CMAQ Development now in AQAD

- The responsibility for developing and maintaining the CMAQ photochemical air quality model has transitioned from ORD to AQAD/MMDB as part of the recent reorganization
- CMAQ version 6 is planned for release in Fall 2026
- Documentation and opportunities for state engagement will accompany the release, with expectations of a CMAS conference this Fall that emphasizes State air partnerships
- CMAQ development priorities going forward will be focused on SLT needs for CAA purposes

CMAQ v6 Developments: Summary

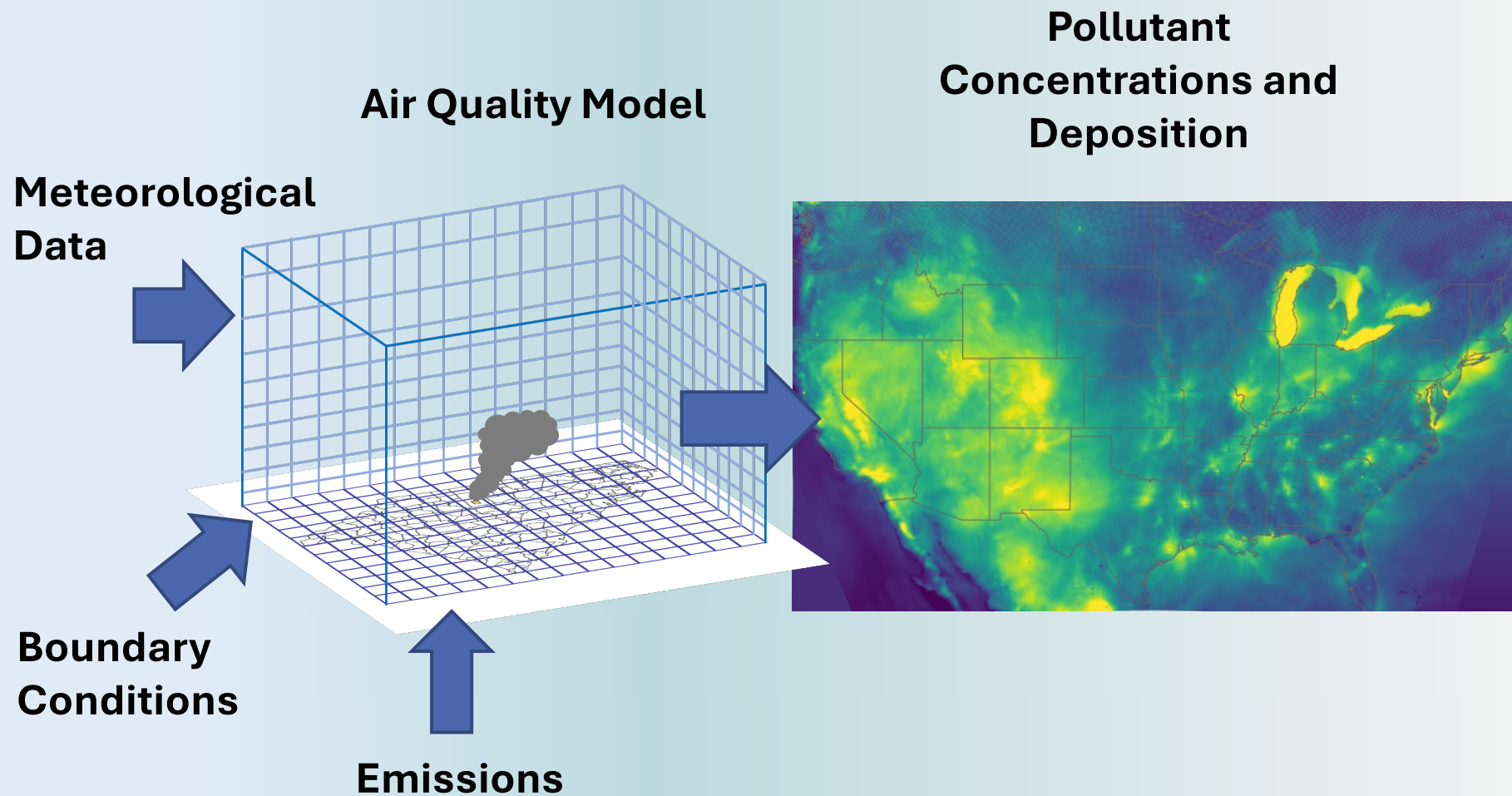
- Key developments in CMAQ version 6 include
 - Natural Emissions: improved representations of **Soil NO emissions**, **Lightning NO emissions**, and **Windblown Dust emissions** to better reflect the impacts of natural processes
 - Chemistry:
 - New parameterization of **Aerosol Nitrate Photolysis** to represent nitrate feedbacks on ozone chemistry of importance to background ozone prediction (recently used in AZ 179B demonstration)
 - New parameterization of **Heterogeneous Sulfur Chemistry** to better reflect chemistry processes under cold, dark conditions (recently used in Fairbanks PM SIP)
 - Deposition: scientific updates to **deposition resistances** for gases
 - Meteorology and infrastructure: updated **mixing options** for stable conditions and streamlined **output variables** (e.g., direct reporting of summed PM_{2.5} in addition to component species)

AERMOD Modeling System: Current Activities

- EPA is currently working on improvements based on stakeholder interests:
 - Shoreline Fumigation and Offshore Platform Downwash (Replacement of OCD with AERMOD)
 - Building Characterization for Downwash (PRIME, BPIPPRM)
 - Surface Characteristics (Refinements)
 - Buoyant Lines (Harmonization of BUOYLINE Source Type with AERMOD)
 - Roadside Barrier Algorithms (Solid and Vegetative)
 - Vehicle Induced Turbulence
 - Aircraft Plume Rise
- Additionally, AERMOD code is being overhauled to facilitate updates in the future

Guideline on Air Quality Models

- The most recent regulatory revision of the *Guideline on Air Quality Models* was finalized in November 2024
 - The *Guideline on Air Quality Models* is published as Appendix W to 40 CFR Part 51
 - The *Guideline* has been incorporated into the EPA's regulations
 - The *Guideline* provides EPA-preferred models and other recommended techniques, as well as guidance for their use in predicting ambient concentrations of air pollutants
 - EPA's SCRAM webpage for final rule: <https://www.epa.gov/scram/2024-appendix-w-final-rule>
- EPA is planning for the 14th Conference on Air Quality Models sometime in mid to late 2027
 - The triennial Conferences on Air Quality Models are statutorily mandated in Section 320 of the Clean Air Act
 - Formal public hearing that informs potential regulatory update to the *Guideline on Air Quality Models* and any regulatory science updates to the preferred models, e.g., AERMOD
 - Based on projected timelines, EPA is targeting 2030 for the next proposed regulatory update to the *Guideline* and AERMOD



***2022
National
Modeling
Platform***

Emissions Modeling Platform Update

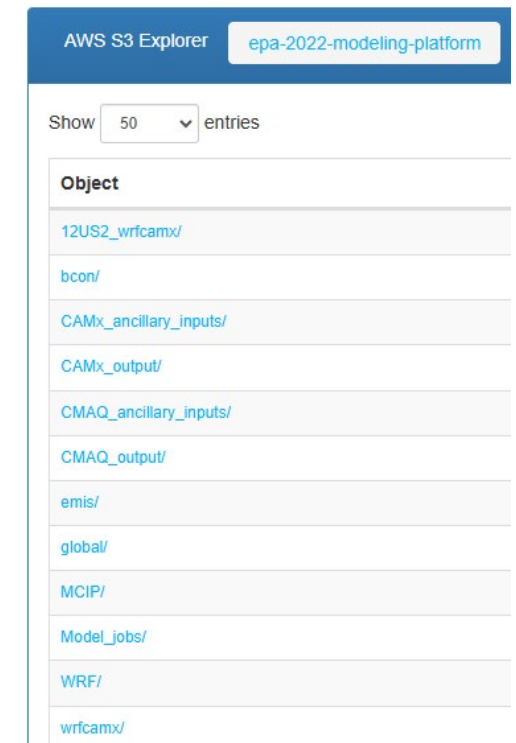
- 2022 Modeling Platform
 - 2022v1 base year released late 2024
 - 2026 analytic year using 2022v1 as the base year released early 2025
 - 2022v2 base year released summer 2025
 - Publicly releasing 2022v2 base year emissions for GEOS-Chem soon
- Initial work on 2023 Emissions Modeling Platform is starting
- Working towards the release of a 2032 projected emissions modeling platform for release in 2027

Air Quality Modeling Platform Update

- Updated to a 2022v2 boundary conditions
- Updated emissions to 2022v2 (he) version
- Interest in evaluating regional air quality models with alternative model configurations
 - CMAQ v5.5
 - CAMx v7.20
- Working on technical support document (TSD) for 2022 air quality modeling platform v2
- Expected Next Steps:
 - Upload 2022v2 CMAQ and CAMx base runs site comparison files to AWS
 - Release 2022v2 air quality modeling TSD

Cloud Data Distribution and Modeling

- **AQAD is making datasets easily accessible through the cloud**
 - Cloud data distribution enables faster and more reliable data delivery
 - 2022 Air Quality Modeling Platform
<https://registry.opendata.aws/epa-2022-modeling-platform/>
 - Hourly Prognostic Meteorological Data to support PSD Permitting
<https://registry.opendata.aws/epa-hourly-prognostic-meteorology/>
 - EPA is evaluating datasets for possible future release in support of state regulatory obligations
- **EPA has been testing and evaluating use of CMAQ in the cloud**
 - In 2020, developed cloud workgroup and testing with MJOs/SLTs
 - Partnered with CMAS to develop tutorials on building and running CMAQ in cloud computing environments
(see <https://pcluster-cmaq.readthedocs.io/en/latest/index.html>)
 - Continue to engage with stakeholders regularly to support and improve air quality modeling in the cloud





Questions?