MONITORING, MODELING & EMISSION INVENTORY UPDATES

NACAA Fall Meeting

October 20, 2021

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US EPA OAQPS/AQAD

AMBIENT MONITORING

AAMG – Kristen Benedict, Group Leader

AMERICAN RESCUE PLAN

- EPA received a supplemental FY 2021 appropriation of $100 million from the ARP
- EPA's appropriation was split into two $50 million line items – one dedicated to support environmental justice (EJ) priorities, and the other dedicated to air quality monitoring priorities

AMERICAN RESCUE PLAN - CONTINUED

EPA will make $50 million in American Rescue Plan (ARP) funding available to **enhance ambient air quality monitoring in communities** across the United States.

1. Grant Competition for Community Monitoring ($20M)
    - A grant competition that will solicit proposals from community groups, state, local and tribal air agencies individually or in partnerships to conduct monitoring of pollutants of greatest concern in communities with health outcome disparities.
2. Direct Awards to Air Agencies for Continuous PM2.5 Monitoring and Other NAAQS Pollutants ($22.5M)
    - EPA Regions will distribute funds for direct awards to State, Local or Tribal air agencies (SLTs) for enhanced monitoring of PM2.5 or other NAAQS pollutants in and near communities with environmental justice concerns who face disproportionate exposure to these pollutants and health risks which are also associated with increased vulnerability to COVID-19.
3. Enhanced Regional Capacity for Short-term Community Monitoring Needs ($5M)
4. Administrative Support ($2.5M)

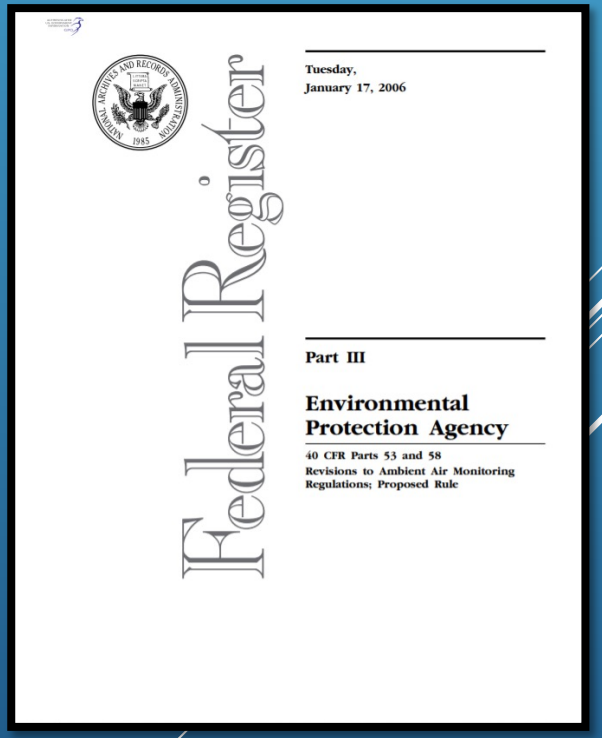
Website: https://www.epa.gov/amtic/american-rescue-plan

AMERICAN RESCUE PLAN - CONTINUED

- Timeline and next steps:
  - August 2021 – Insight & Feedback session with MJO's, Tribal programs, and Community groups.
    - EPA is incorporating feedback into the competitive grant RFA
  - Direct Awards
    - Summer/Fall - Regions communicate with SLTs and report back on priorities/needs
    - Fall 2021-Winter 2022 - EPA HQ works with Regions on addressing needs
    - Fall 2021 **-** Regional Grant Coordinators will begin the process of distributing new funds and initiating new grants
  - Competitive Grants
    - October 2021 - Grant Request for Applications (RFA) Opens
    - December 2021 - Grant RFA Closes
    - Summer 2022 - Distribution of Awards

PM NAAQS RECONSIDERATION: AMBIENT AIR MONITORING

- On June 10, 2021 EPA announced that it will reconsider the December 2020 decision to retain the particulate matter (PM) National Ambient Air Quality Standards (NAAQS).
- As part of this process our staff are working to identify useful updates to the monitoring and quality assurance requirements.
- The goal is to consider changes that can help improve the $PM_{2.5}$ monitoring requirements, data calculations, and QA/QC in terms of clarity, fixing any issues, and putting current practices into regs, where appropriate.
- Changes need to support the NAAQS, meet Administrations executive orders and EPA Administrator directives.
- Consider how changes will impact our SLT community. We plan to set up calls with organizations representing air program agencies to cover our initial thinking. (Fall/Winter).



AIR TOXICS MONITORING

- Ethylene Oxide (EtO)
  - Added as a required analyte to NATTS in 2019
  - Continued evaluation of EtO measurements by TO-15/TO-15A with ORD, national contract lab and canister manufacturers
    - Communicated current knowledge and lesson learned with monitoring community through technical webinars and technical notes on this canister-based GC/MS method
  - NATTS TAD revision to incorporate Method TO-15A
    - Final revision planned for 2022
  - Collaborate with ORD and State partners to evaluate emerging monitoring technologies

AIR TOXICS MONITORING - CONTINUED

- Underway: 3rd NATTS network assessment individual site report review with NATTS agencies
  - Include 2015-2018 new data to cover 2003-2018
  - Determine air toxics data quality and scores datasets for assessment
  - Present national and site-specific air toxics data distribution statistics and trends
- Air Toxics Monitoring Data Archive (The Archive)
  - Update data inventory
  - Evaluate uses and application
  - Increase awareness and incorporation into toxics work

OTHER AMBIENT AIR MONITORING UPDATES

- The National Ambient Air Monitoring Conference is being planned for August of 2022 in Pittsburgh, PA.
- Engagement with SLTs on two key recommendations focused on asset management and modernization in response to the GAO report (November 2020) is beginning.
- Protocol Gas Verification Program
  - The R7 lab is currently supporting the PGVP and a 2021 report will compile the results.
  - The R4 lab, which is replacing the R2 lab, is procuring equipment in preparation for training to be the second PGVP lab.
- Revised Ozone Photometer TAD Status
  - All final comments have been received and have been resolved. The final document is forthcoming in the next few months. Plan is to incorporate ozone photometer TAD in CFR by reference by 2022.
- Ozone Absorption Cross-Section Change
  - An international group was charged with recommending a consensus-based ozone absorption cross-section value for adoption in standard photometer-based instruments for ozone measurements. The task group is globally coordinating the universal implementation of the cross-section value for the measurement of ozone worldwide. **The target timeline for implementing the change is January 1, 2024.**

OTHER AMBIENT AIR MONITORING UPDATES

- PAMS Training
  - 2021 training on auto-GC operation, carbonyl sampling and PAMS data validation and reporting
  - Monthly workgroup calls with EPA and SLT monitoring staff
  - Additional training will be provided as needed and requested
- Reporting and Accessing PAMS Data
  - PAMS data can be accessed from the Air Data Website – https://www.epa.gov/outdoor-air-quality-data
  - EPA developing a data visualization tool to access PAMS data for the monitoring and QA communities – Fall/Winter timeframe
  - Monitoring agencies participating in the Unified Ceilometer Network (UCN) do not need to report hourly mixing height data to AQS. Participation in the UCN will be considered as satisfying the reporting requirement for mixing height.
- Annual Monitoring Network Plans
  - The regulatory text on AMNPs is in 40 CFR Part 58, 58.10. A key passage states that "*the annual monitoring network plan must be made available for public inspection and comment for at least 30 days prior to submission to the EPA and the submitted plan shall include and address, as appropriate, any received comments*." EPA agrees that there is an expectation for states to list the comments they receive. There is subjectivity on whether or not the state needs to respond to a comment, based on the "as appropriate" part of the regulatory text. However, in general, if the comment pertains to the network, and is substantive, there is an expectation for the state to address the comment.

AIR QUALITY MODELING

AQMG – Tyler Fox, Group Leader

REVISED DRAFT GUIDANCE FOR OZONE AND FINE PARTICULATE MATTER PERMIT MODELING

- EPA released an initial "Draft Guidance for Ozone and Fine Particulate Matter Permit Modeling" for public review and comment in February 2020.
- Upon consideration of those comments, and consistent with Executive Order 13990, EPA has revised an important aspect of that draft guidance and is seeking additional public review and comment.
  - In order to make the required demonstration that the allowable emissions increases from a source or modification would not cause or contribute to any NAAQS or PSD increment violation, sources should provide a **full accounting** of the combined impacts of their allowable precursor (and direct component, in the case of $PM_{2.5}$) emissions on ambient concentrations of the relevant NAAQS (*i.e.*, O_3 or $PM_{2.5}$) if any precursor(s) (or the direct component, in the case of $PM_{2.5}$) would be emitted in a significant amount.
- Revised draft guidance 60-day comment period runs through **November 19th**.
- Information on accessing an overview webinar *(October 14th at 3pm EDT)* and how to submit comments are available on EPA's SCRAM website:
  - https://www.epa.gov/scram/revised-draft-guidance-ozone-and-fine-particulate-matter-permit-modeling

MULTI-POLLUTANT PLATFORM AND ANNUAL AIR TOXICS DATA UPDATE

- Under the OAQPS Air Toxics Strategy, we have committed to providing an annual "Air Toxics Data Update"
  - Includes HAP emissions inventories and associated air quality modeling and risk calculations for contiguous U.S., Alaska, Hawaii, Puerto Rico and Virgin Islands
  - Replacement of triennial National Air Toxics Assessment (NATA)
- AQAD is developing a Multi-Pollutant Platform to inform this annual release leveraging ongoing CDC collaboration
  - Inventories for point, nonpoint, and mobile sectors; fires and biogenics
  - CMAQ (12-km) and AERMOD modeling
    - Contiguous U.S., Alaska, Hawaii and Puerto Rico/Virgin Islands
    - Combine model outputs via hybrid equation
  - Process includes state/local/tribal review of emissions prioritizing facility risk estimates during inventory development

MULTI-POLLUTANT PLATFORM AND ANNUAL AIR TOXICS DATA UPDATE (CONT)

- Schedule for MP Platform efforts and annual data releases
  - Emissions year 2017 modeling: Completed
    - SLT review completed on August 31, 2021
    - Updated model results based on comments
    - Release to OEJ for EJSCREEN by end of 2021
  - Emissions year 2018 modeling: Underway
    - SLT review completed on September 30, 2021
    - Updating model results based on comments
    - Release to OEJ for EJSCREEN in early 2022
  - Emissions year 2019 modeling: To begin in FY22
    - SLT review completed on September 30, 2021
    - Incorporating SLT changes prior to modeling
    - Public release via Air Trends Report in early 2023
  - Emissions year 2020 modeling: To begin in FY23
    - Public release in 2024 with full SLT review as part of NEI process

EMISSION INVENTORY

EIAG – Marc Houyoux, Group Leader

AIR EMISSIONS REPORTING RULE

- EPA is planning to update the AERR for the 2023 inventory reporting cycle. Current focuses are:
  - Improving air toxics emissions data
  - Improving fires emissions data for prescribed fires
  - Improving emissions from intermittent sources (e.g., backup generators)
  - Updating the nonpoint emissions requirements to use current best practices and meet transparency and quality assurance goals
  - Administrative updates
    - Ensure that AERR requirements are consistent with the latest emissions documentation available to data reporting agencies
- Two listening sessions with state/local/tribal agencies were held in April
  - Additional input can be sent to the POCs listed below

CAERS UPDATE

- CAERS (Combined Air Emissions Reporting System):
  - Participating State/Local/Tribal (SLT) agencies & inventory year: GA (2019), DC, & Pima AZ (2020), RI (2021), AZ, MT, MN (2022)
  - Several more SLTs have expressed interest and have test accounts
  - CAERS V3 will focus on new features that meet more SLT needs
- We are recruiting SLTs on an ongoing basis:
  - "Paper" SLTs who want to adopt CAERS "as-is" can onboard any time
  - EPA is developing CAERS as open source, to allow SLTs to develop their own modules to accommodate additional SLT requirements
  - Interested SLTs who aren't on our Product Design Team (PDT) can join any time to provide input towards the continued development of CAERS

2016 MODELING PLATFORM

- Release of 2016v2 for state/local/MJO comment - **9/21/21**
  - Mobile uses MOVES3 approach with emissions factors released June-July
  - Updates to base year include more data based on 2017 NEI
  - Future year emissions for 2023, 2026, 2032. Updates also based on:
    - 2017 NEI
    - Comments on Revised Cross-state Air Pollution Rule Update
    - Projection methods from 2016v1 platform, but based on Annual Energy Outlook 2021
- Comments on 2016v2 requested by December 17, 2021

2020 NATIONAL EMISSIONS INVENTORY PLANS

- **March 8, 2021:** CAERS opened for 2020 emissions reporting
- **Ongoing:** Virtual trainings (POC: Snyder.Jennifer@epa.gov)
  - List of planned trainings: https://www.epa.gov/air-emissions-inventories/air-emissions-inventory-training
  - New trainings related to 2020 NEI available through https://epaapti.csod.com/client/epaapti/default.aspx
- **Now through 2022:** State, local, tribal (SLT) collaboration on emissions methods development - provides great value to the process
- **July 6, 2021:** EIS opened for reporting 2020 emissions using updated schema for improved emissions controls reporting
- **Dec. 31, 2021:** Reporting deadline to EPA for most data (2-week grace period extends until January 15, 2022)
- **Feb/March 2022:** Point source review for air toxics (and all pollutants) for Air Toxics Data Update
- **April 2022:** Final feedback reports sent to Air Directors
- **Fall 2022:** Releases of data categories as they are completed
- **March 2023:** Full public release including documentation, summaries, and query tools

AIR QUALITY ANALYSIS

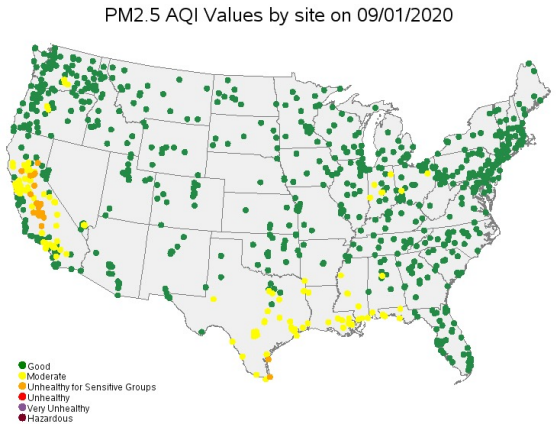
AQAG – Liz Naess, Group Leader

AirData Fast Facts

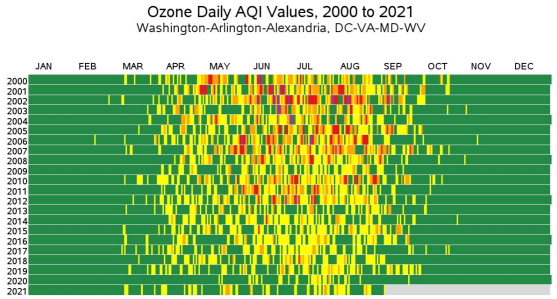
www.epa.gov/outdoor-air-quality-data

- Tools for accessing and visualizing ambient air quality data
- AirNow and AQS data show recent air quality with historical context
- Broad user community – SLTs, EPA, public, research agencies, students
- 50,000 pageviews per month

Concentration Map



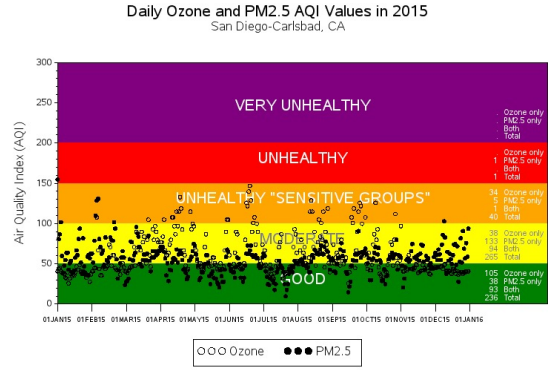
Multiyear Tile Plot



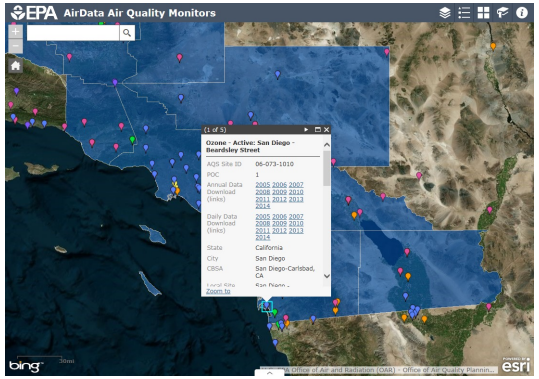
Air Quality Index Daily Values Report

Date	Overall AQI Value	Main Pollutant	Ozone AQI Value	PM2.5 AQI Value	SO2 AQI Value	NO2 AQI Value	PM10 AQI Value	CO AQI Value
01/01/2010	27	PM2.5	25	27	26	17	6	3
01/02/2010	26	Ozone	26	23	21	8	13	3
01/03/2010	30	SO2	25	26	30	10	6	3
01/04/2010	49	SO2	18	29	49	19	8	3
01/05/2010	36	PM2.5	22	36	21	19	10	3
01/06/2010	39	PM2.5	21	39	30	33	13	3
01/07/2010	40	PM2.5	17	40	24	40	13	6
01/08/2010	45	PM2.5	22	45	34	12	17	3
01/09/2010	39	PM2.5	20	39	4	13	10	3
01/10/2010	46	PM2.5	21	46	13	28	12	3
01/11/2010	50	NO2	28	44	6	50	13	5
01/12/2010	43	NO2	18	36	17	43	13	5
01/13/2010	69	PM2.5	17	69	10	47	30	9
01/14/2010	99	PM2.5	15	99	47	73	47	24
01/15/2010	87	PM2.5	20	87	57	58	43	22
01/16/2010	66	PM2.5	19	66	3	46	21	18
01/17/2010	20	Ozone	20	13	1	10	5	3
01/18/2010	42	NO2	22	33	24	42	7	7
01/19/2010	48	PM2.5	29	48	6	36	13	10
01/20/2010	47	PM2.5	23	47	3	32	16	10

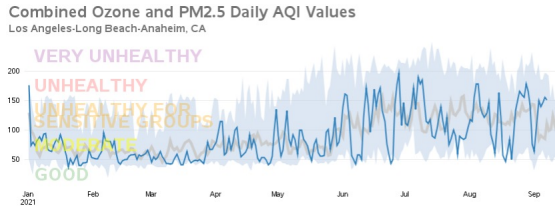
AQI Plot



Interactive Map of Air Quality Monitors



Daily Air Quality Tracker



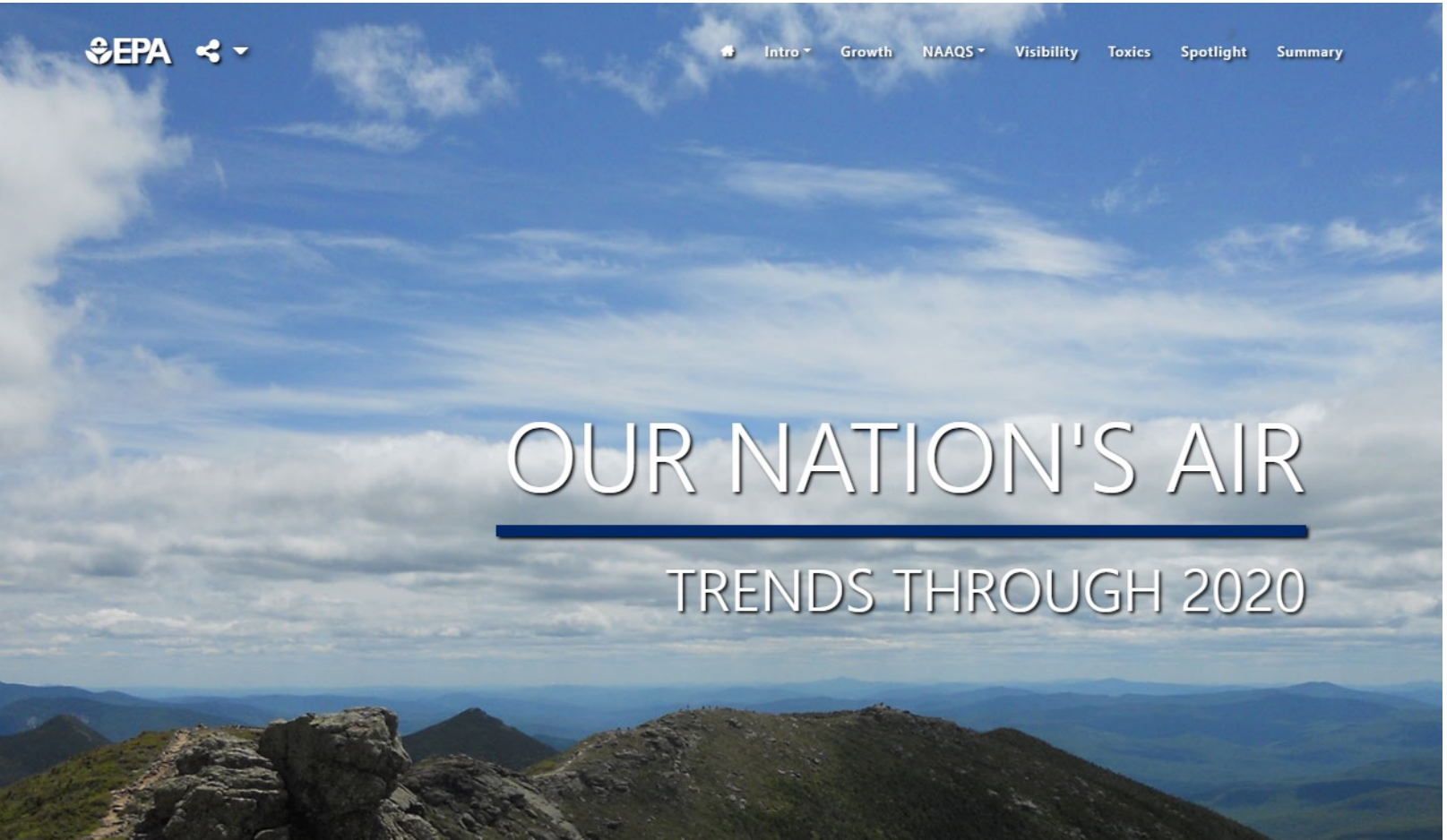
AirData

Sample Output

www.epa.gov/outdoor-air-quality-data

AirTrends Fast Facts

www.epa.gov/air-trends
Direct link to most recent report:
gispub.epa.gov/air/trendsreport/2021/



Dynamic report features

- Interactive charts
- Zoomable maps
- Data download
- Satellite animation

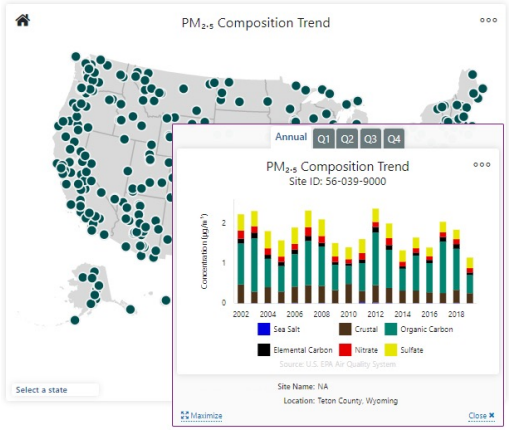
Topics include

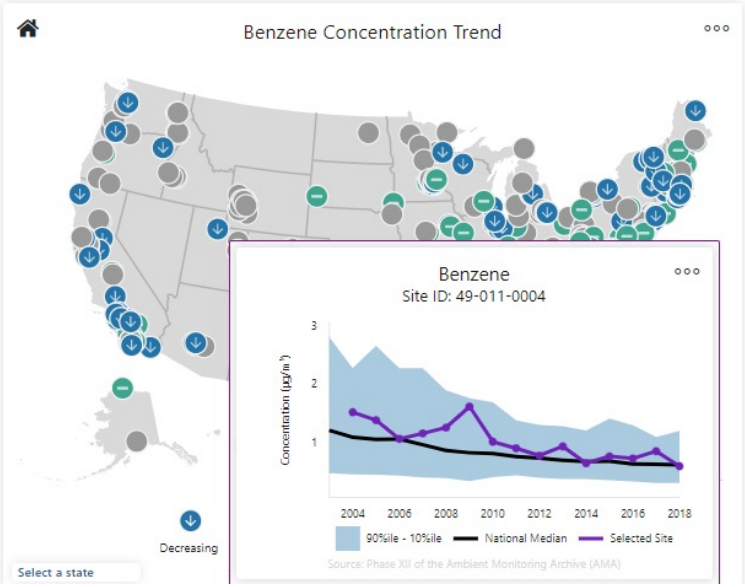
- Criteria pollutants
- $PM_{2.5}$ speciation
- Air Quality Index
- Nonattainment areas
- Visibility
- Air Toxics
- Spotlight section featuring 2020 air quality impacts from COVID restrictions and prolific wildfires

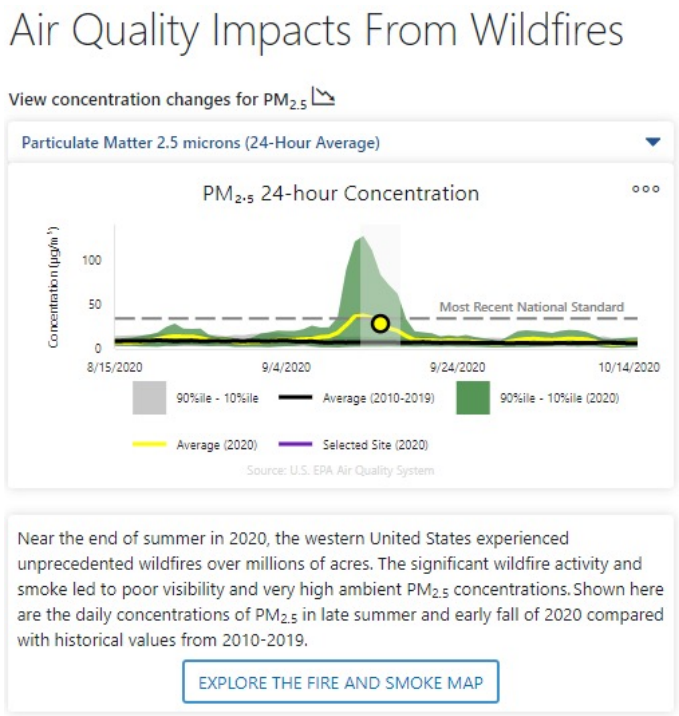
AirTrends

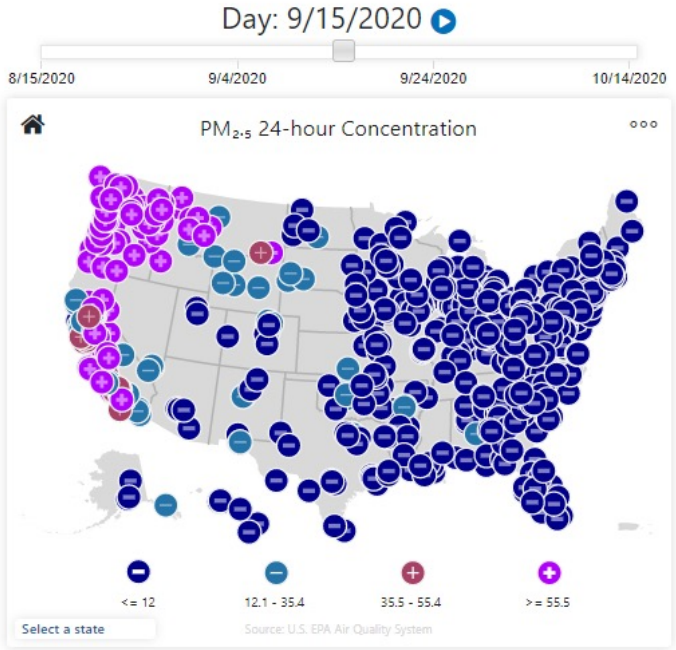
Sample Images

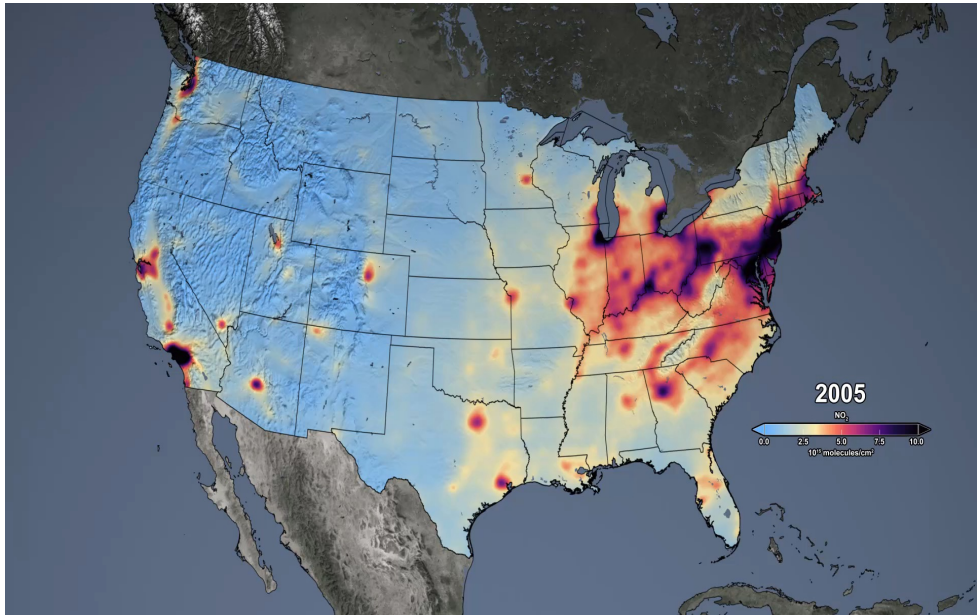
www.epa.gov/air-trends
Direct link to most recent report:
gispub.epa.gov/air/trendsreport/2021/



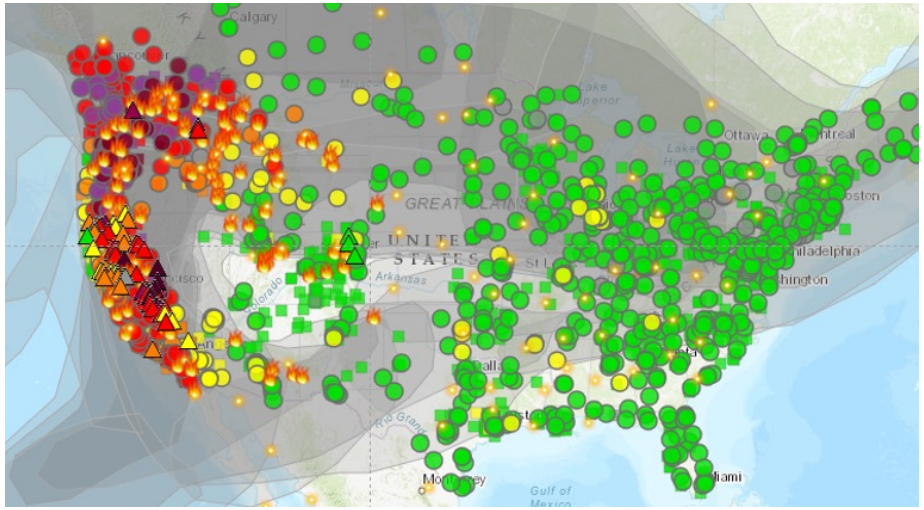


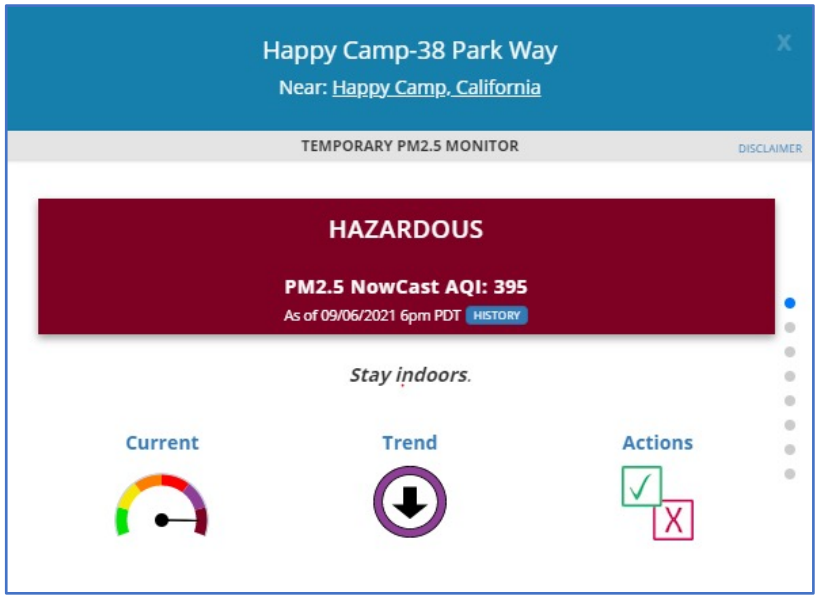






AirNow Fire and Smoke Map





- Joint project between EPA and U.S. Forest Service
- Provides information from permanent monitors that regularly report to AirNow, temporary monitors, and crowd-sourced data from nearly 10,000 low-cost sensors that measure fine particle pollution, the major harmful pollutant in smoke.
  - Sensors – added as a pilot in 2020 -- provide information in areas where permanent and temporary monitors do not exist
  - Map also provides easy access to fire location information, smoke plumes, and Forest Service smoke forecast outlooks
- Updates in 2021 include a pop-up “dashboard” (see example at left) with information on current conditions, how air quality is changing at a location, and recommended protective actions.
- The map also is now available in the AirNow app for iOS and Android phones
- Public reaction has been positive, with more than 10 million views since the updates launched July 19.