CASTNET: MODERNIZATION PLAN (2024-2028)

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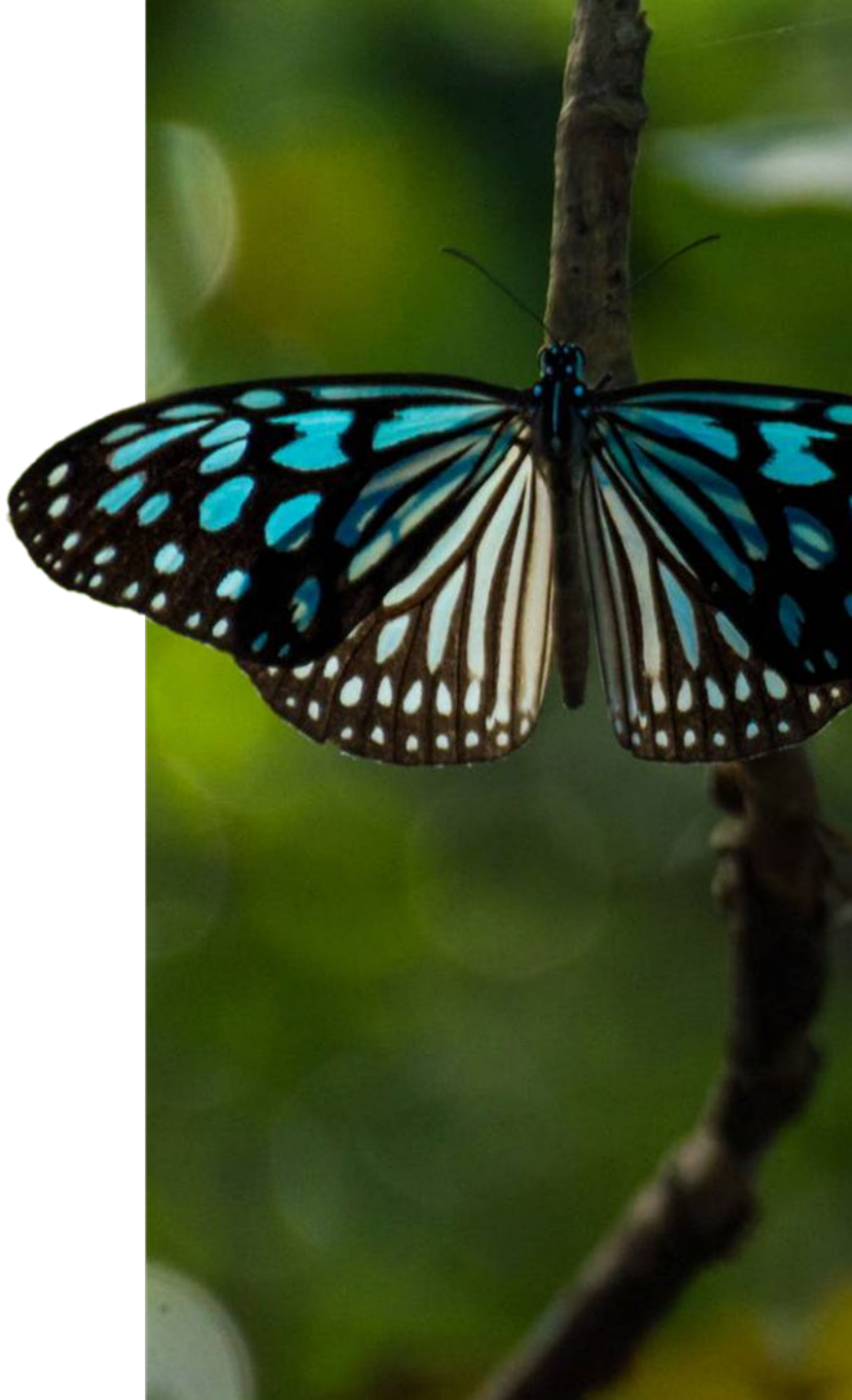
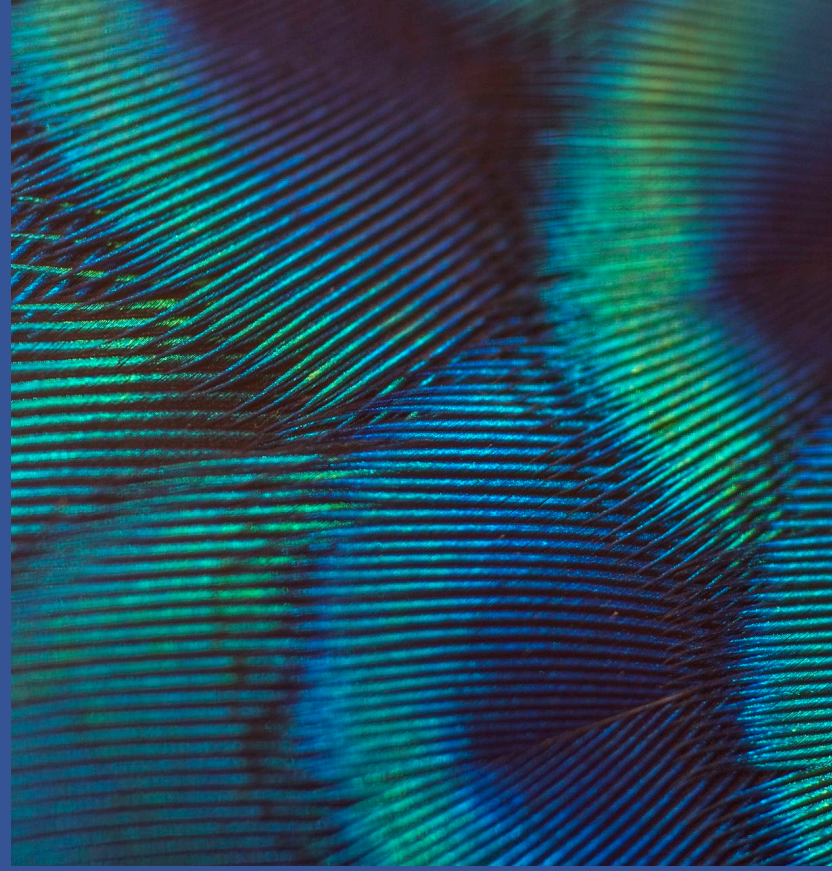


outline

- Priorities
- Network Budget Alignment
- Modernization
- Engagement and Tools



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Priorities

Continue to provide high-quality, valuable data that addresses the most important Agency data needs

La Posta Band of Diegueño Mission Indians CASTNET site (LPO010, CA)

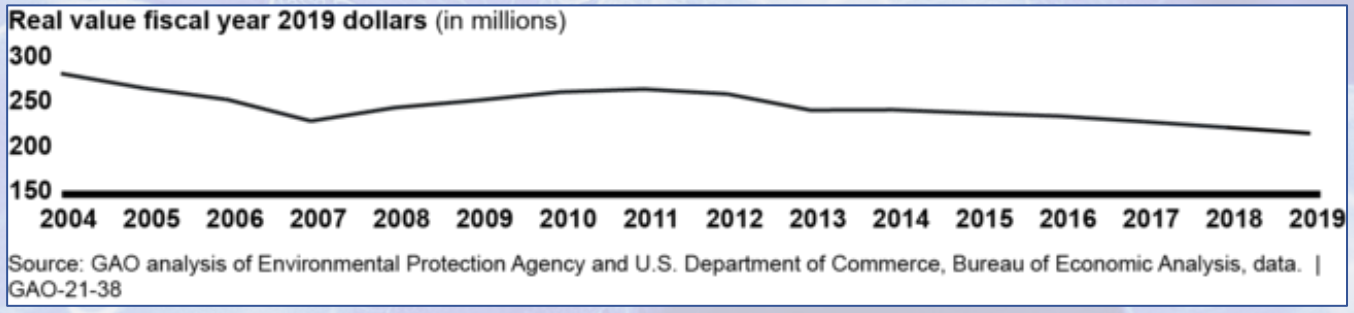
EPA requested that the SAB review the CASTNET program and provide their perspectives on future network configurations and priorities

Use the SAB recommendations and input from key stakeholders to develop a plan that:

- Maintains the long-term data record at key locations
- Remains viable for the next 10-years even under increasing pressure on monitoring budgets
- Modernizes the program in a way that provides data to protect public health and develop effective programs
- Minimizes inconsistencies across the network with sites in 43 states, 7 tribal lands and Canada

EPA has and will continue to engage with stakeholders and partners as the network evolves

Annual Inflation-Adjusted EPA Funding for State and Local Air Quality Management Grants



Source: GAO analysis of Environmental Protection Agency and U.S. Department of Commerce, Bureau of Economic Analysis, data. | GAO-21-38

In 2020 the GAO reported that from 2004-2019, federal funding for state and local monitoring programs declined by nearly 20% after adjusting for inflation. While CASTNET was not included in the GAO's report, the network has faced similar challenges in sustaining the monitoring system.

Network Budget Realignment

Continue to operate the program by providing high quality valuable data under resource constraints

Optimization of the Existing Network Size

SAB Recommendation: maintain as many long-term multipollutant monitoring sites as possible with emphasis on value of long-term consistent measurements

SAB also noted they understand the limitations of shifting budgets and priorities and provided metrics to assist the Agency in strategizing possible approaches to achieve cost-savings.

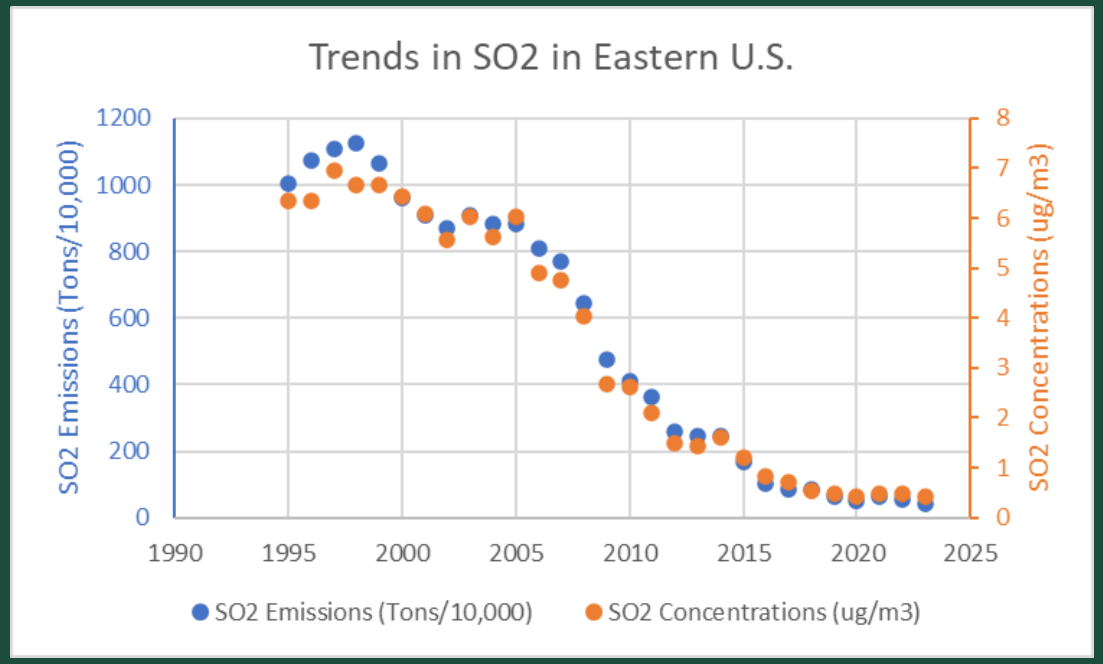
Used the criteria provided by the SAB report to evaluate each site and weigh a number of options/adjustments

Plan to continue to permanently close CASTNET and NADP sites that do meet the objectives (unless partners provide resources to keep the sites operating)

Working with partners and stakeholders to reduce costs at certain high-value, high-cost sites

Strategic Plan Goal	Metrics (summarized)
Air Quality	Most recent design value meets the NAAQS
	Represents > 500km
	Co-located with other networks
	Active research
Climate	Length of data record
	Long-term stability
Environmental Justice	Tribal or disadvantaged community

Adjustment to the Pollutants Reported



- Discontinued SO2 at all EPA-sponsored CASTNET sites in July 2024
  - Reinvest resources
  - SO2 concentrations are expected to continue to decrease
  - Can use modeled concentrations to estimate dry and total deposition in sensitive ecosystems
  - NPS discontinued SO2 in 2022; some individual sponsors may choose to continue monitoring SO2 (NY DEC, Tribes)
- Reduce frequency of AMoN measurements at low-concentration sites
  - Value of AMoN remains high for trends, satellite validation and source contributions to PM
  - Cost-savings will allow OAP to maintain existing sites and re-invest to address SAB recommendation to expand NH3 sites in upper Midwest/Central US
- Discontinued NO/NOy measurements at 4 CASTNET sites in July 2024
  - Re-purpose equipment to address special research projects related to ozone precursor measurements at CASTNET sites
  - Agency/States support ~15 rural NCore sites

Modernization

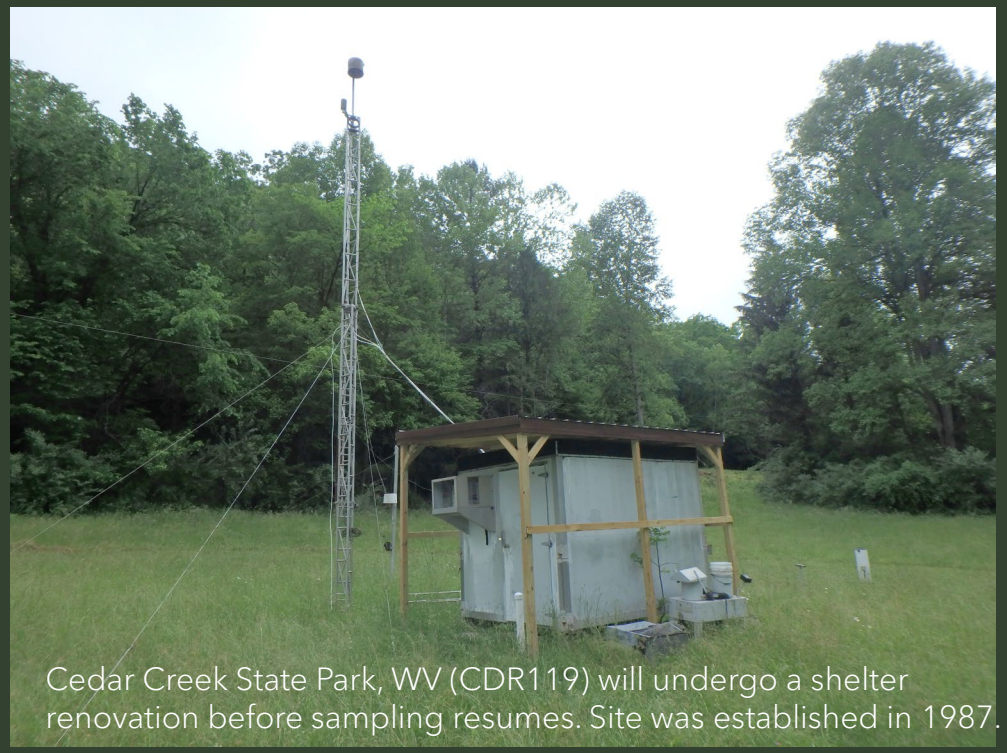
- A moderate amount of IRA MultiPollutant funds were directed to CASTNET to replace, repair, operate, and maintain existing sites and add new multipollutant monitoring sites
- OAP prioritized sites and measurements using the SAB recommendations and metrics provided
- Phased modernization of CASTNET will take place over the next 3 years while continuing to evaluate new monitoring technologies

Modernization: Repair and replace aging infrastructure and equipment

Follows recommendations from the GAO Report (2020): Air Pollution – Opportunities to Sustain and Modernize the National Air Quality Monitoring System

CASTNET shelters are being refurbished (e.g., replace roofs, floors)

CASTNET is evaluating new ozone analyzers. After evaluation CASTNET will replace 49i's with new systems



Cedar Creek State Park, WV (CDR119) will undergo a shelter renovation before sampling resumes. Site was established in 1987.

Modernization: Fill spatial gaps in the national ambient air monitoring network

Following the recommendations from the SAB report, EPA plans to:

Leverage IRA funds to purchase equipment to support new monitoring locations. Leverage cost-sharing relationships to fill in spatial gaps in the monitoring landscape.

Load CASTNET filter pack data into EPA's AQS for one-stop access

Explore new partnerships with existing networks/sites (e.g. ASCENT, NEON) with high-time resolution measurements

Look Rock CASTNET site (GRS420, TN) co-located with IMPROVE and Atmospheric Science and Chemistry Measurement Network (ASCENT). ASCENT will provide high-time resolution measurements of black/brown carbon, PM speciation, metals and PM sizes at 3 CASTNET sites.

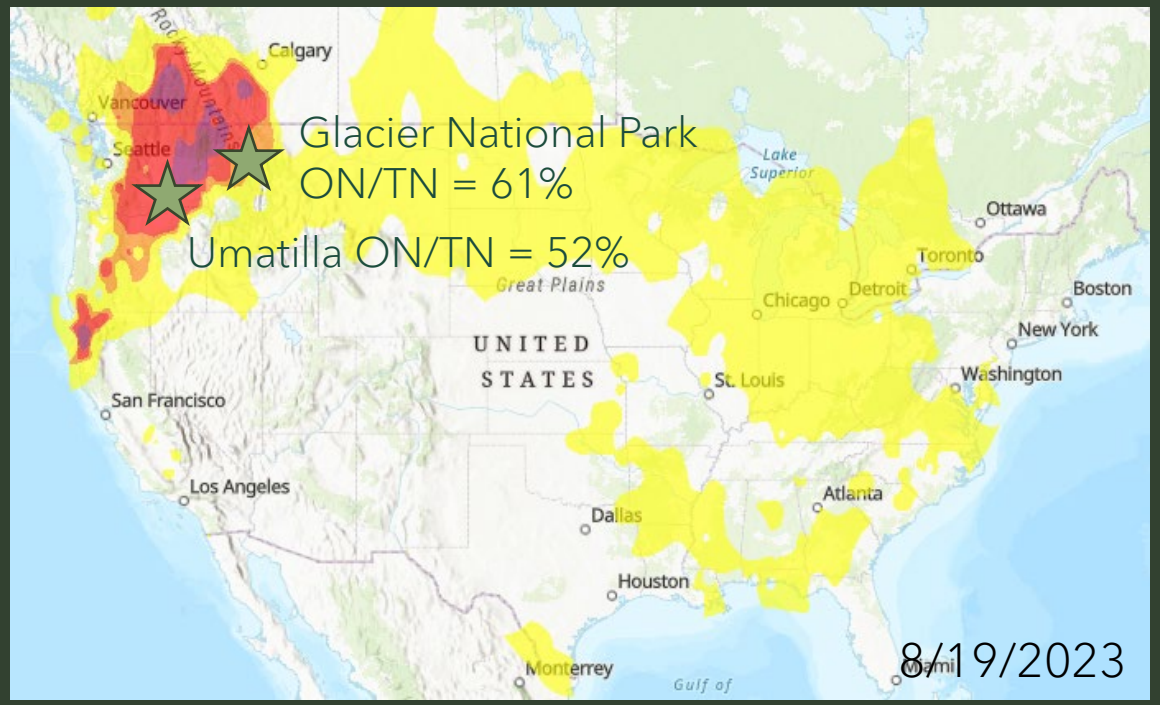
Modernization: Leverage infrastructure and sample media to provide data to help address Agency priorities

CASTNET is evaluating PM sensors to support need for understanding wildfire and dust impacts on air quality in rural communities

Plan to deploy sensors at EPA sponsored CASTNET sites

Leverage long-term data record to explore relationships between pollutants during smoke and non-smoke impacted events to evaluate how trends may change over time

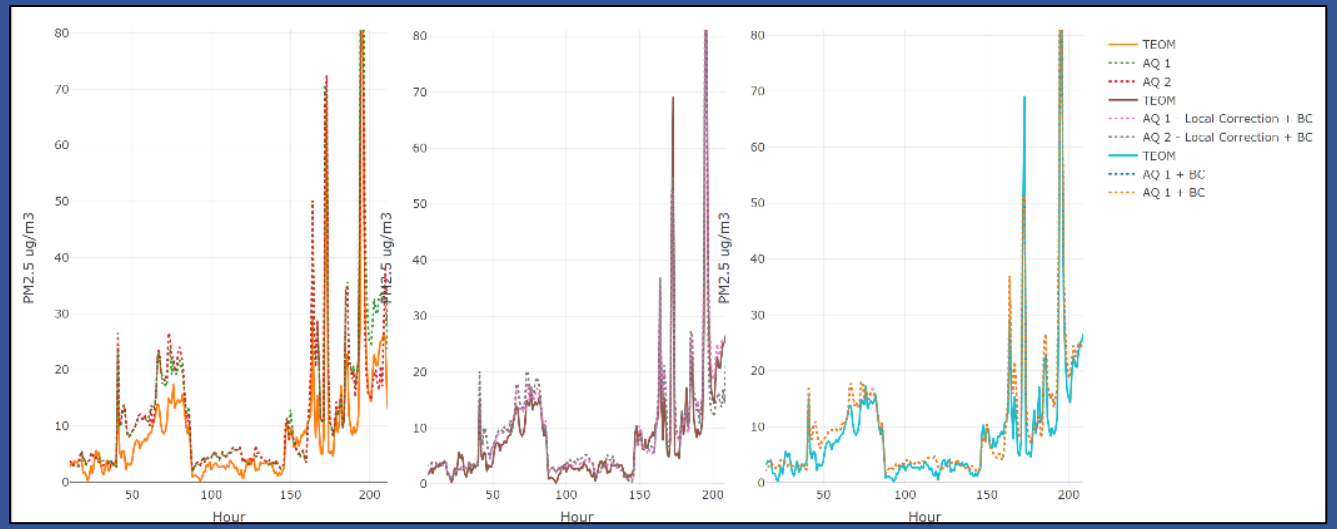
Expand the analysis using existing samples to detect wildfire tracers (black carbon, LG, organic nitrogen)



TOOLS AND PUBLIC ENGAGEMENT

Examples of Communicating Air Quality Impacts on Public Health and the Environment

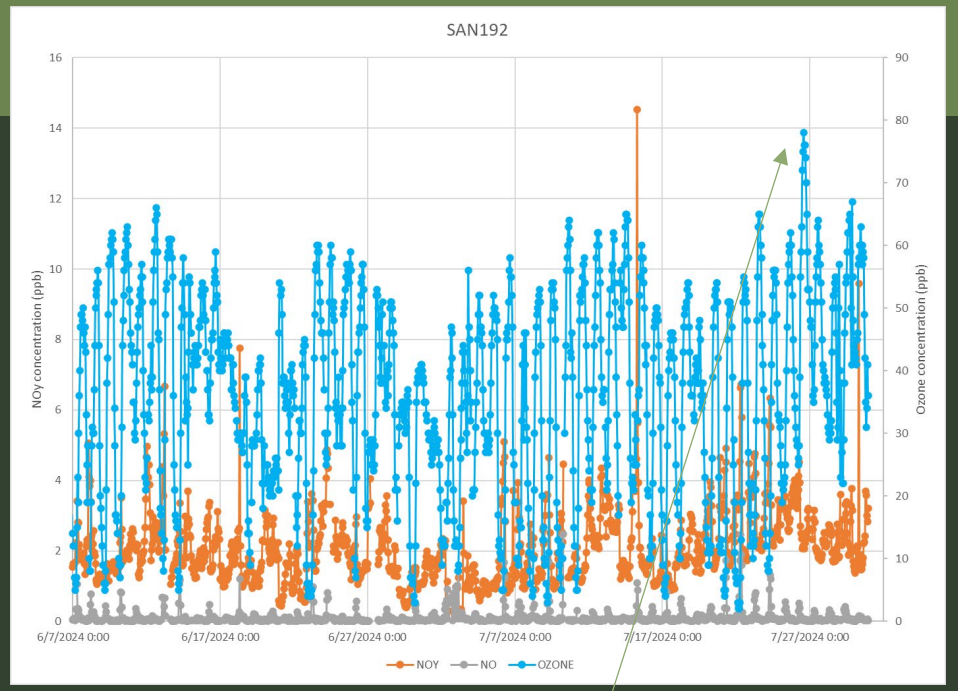
- CASTNET geostatistical analysis will provide site-specific airshed information that can be used to communicate air quality results with communities
- Engagement with CDC to establish relationships between CASTNET data and rural public health data
- Collaboration with GA Tech to determine air quality impacts from prescribed burns and communication materials for the public

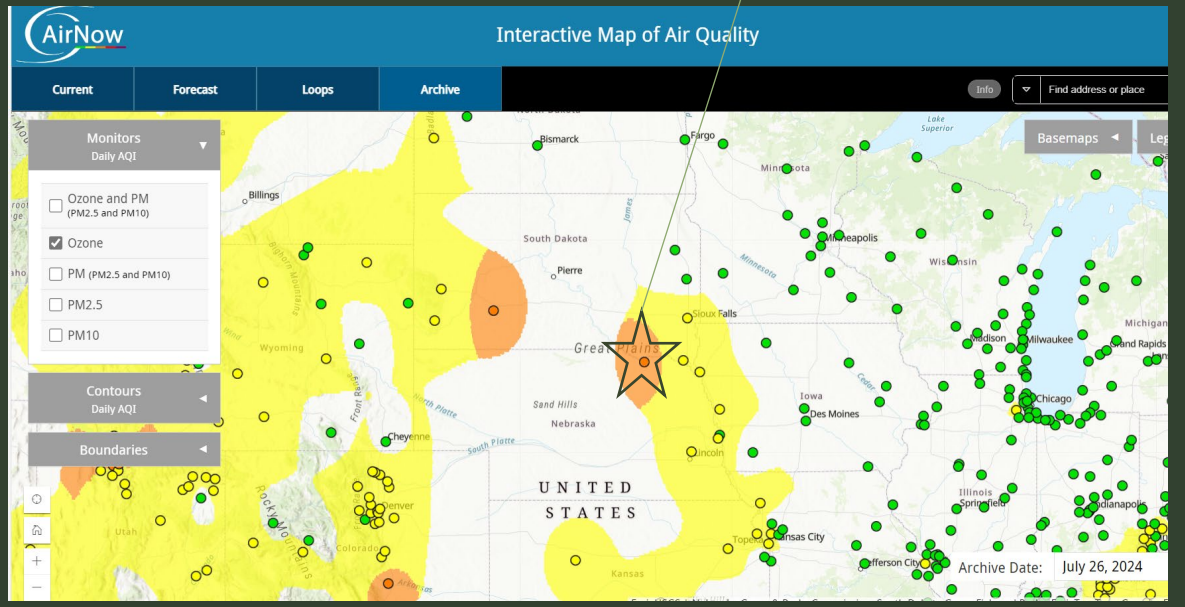


Georgia Station air quality study: Comparison between data with no correction equation, the EPA correction, and an equation that uses the EPA correction in addition to a BC factor

Data and Infrastructure to Advance Science and Policy

1. Characterizing Relationship between Regional Transport and Persistent Elevated O3 in Upper Midwest (EPA/ORD)
2. Air Quality and Deposition Impacts from Biomass Burning in the Western US (EPA/ORD, Region 8, NPS, CSU)
3. PFAS in Precipitation (EPA/ORD, Tribes, States, Federal Agencies, NADP, WSLH)
4. Integrating urban speciation monitoring data into TDEP maps to improve representation and spatial coverage (NADP, OAQPS)
5. Utilize CASTNET sites to support NASA and EPA's need to validate TEMPO – expansion of the PANDORA network to fill gaps on agricultural lands





Growing Network Partnerships

- Continued value and benefit to partnering with existing air quality monitoring network
- Ministry of Environment & Protected Areas of Alberta
- New sites (Canaveral National Seashore, FL and Martin County, FL) sponsored by Indian River Lagoon Council and St John's River Management District
- New site at Haskell Indian Nations University, KS

Canaveral National Seashore site installation during a rocket launch, 2024

contact info

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