

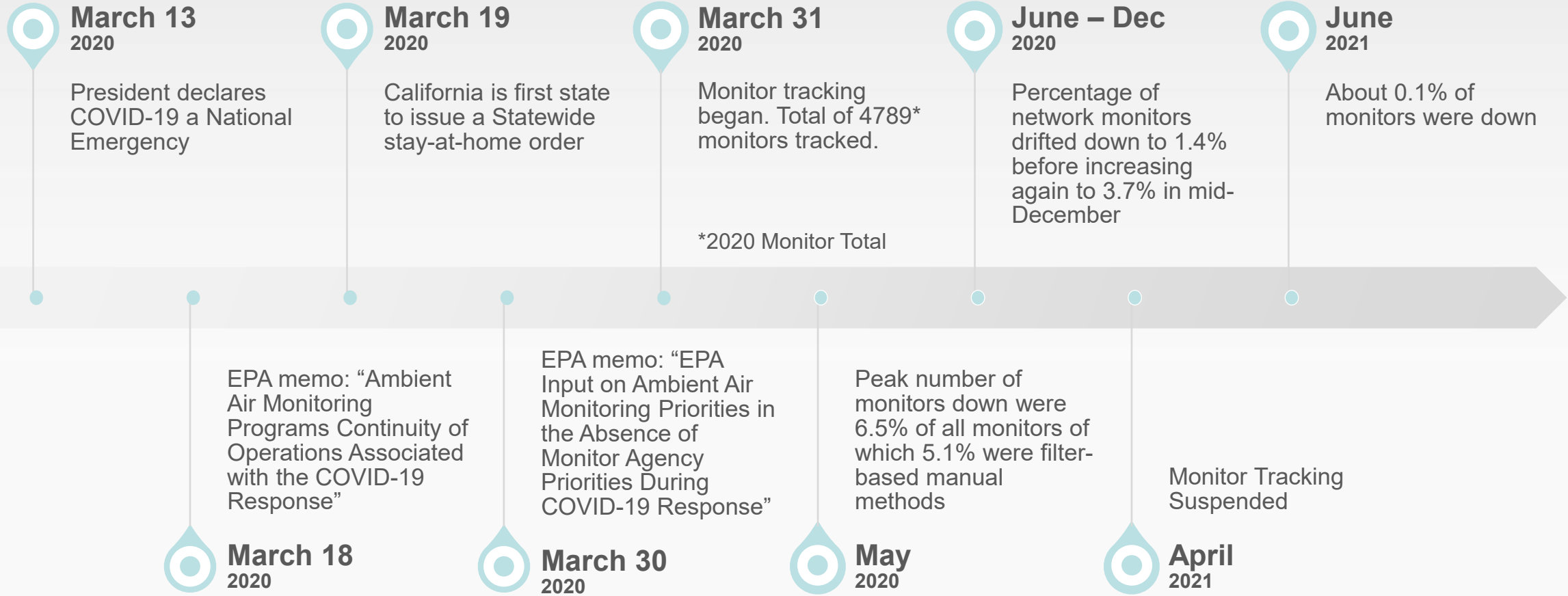
COVID-19 and Ambient Air Quality Monitoring

National Ambient Air Monitoring Conference (NAAMC)

Pittsburgh, PA

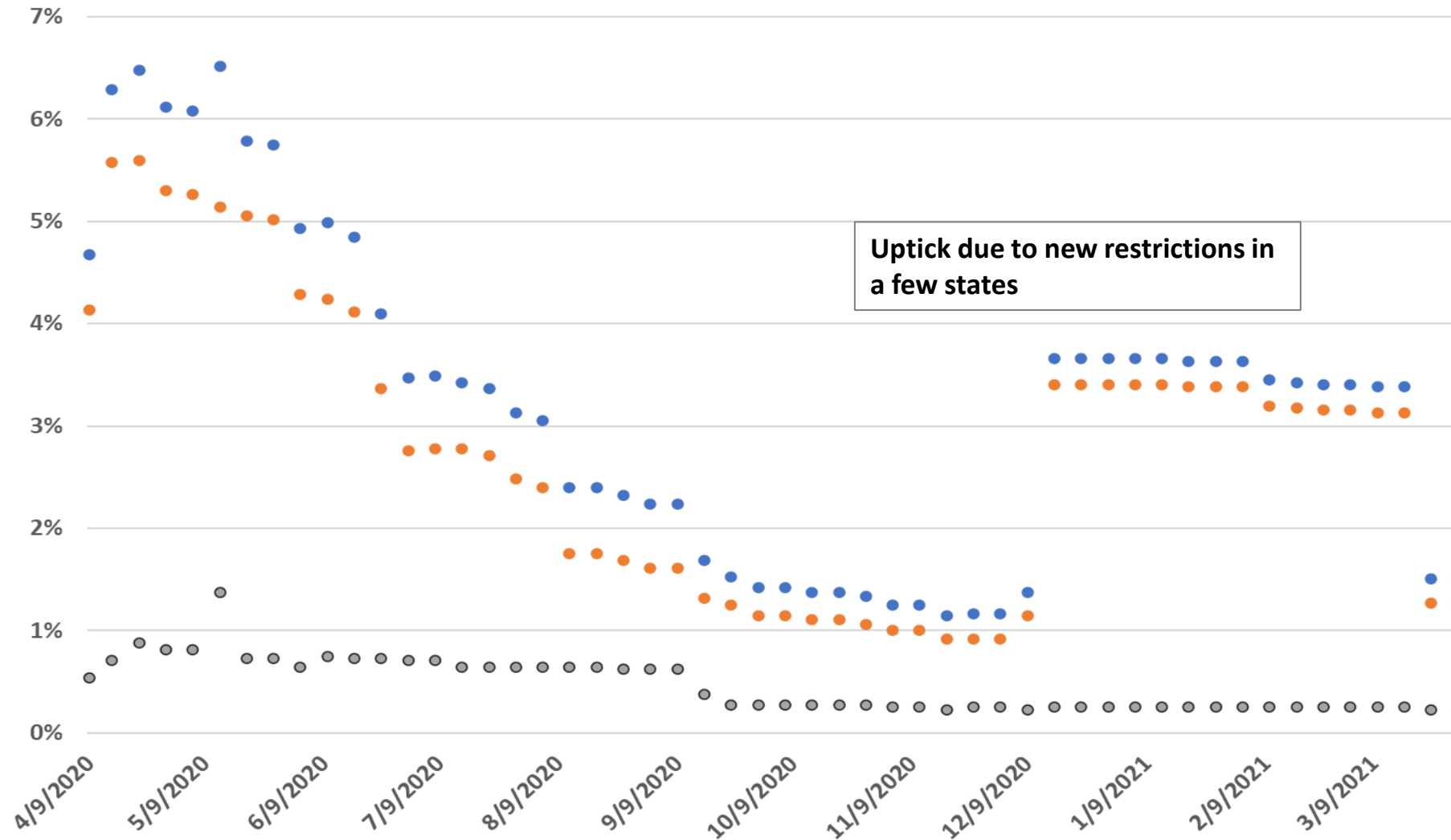
August 23, 2022

COVID-related Effects on the U.S. Ambient Air Monitoring Program



COVID Impact on Monitoring Site Operations

● Total Percentage ● Percentage Filter Based ○ Percentage Continuous



Uptick due to new restrictions in a few states

Tracking of Sites and Affected Measurements

- Calls with EPA Regional staff and compiling data on affected sites, measurements, and labs.
 - Weekly
 - Bi-weekly after first few months
 - Eventually part of regular monthly calls
- Weekly reports prepared and sent to EPA Air Program senior management.
- Best practices, responses to questions from monitoring agencies, and flexibilities on QA/QC were also prepared and distributed.
- Primary reasons for the loss of data were:
 - Inability to access sites such as closed school campuses
 - Labs down or not shipping samples
 - Staff not available (e.g., quarantining)

Monitoring Site Impacts from COVID19 06192020.xlsm

Region	State	Site Name	Site Number	Issue Description	PM2.5 Filter	PM2.5 Cont
1	MA	Chicopee	25-013-0008	Access issue at an Air Force base	R	R
1	VT	Burlington	50-007-0012	Access issue to the state building		
1	VT	Rutland	50-021-0002	PM FRMs only shut down- resumed 4/23/20	R	
1	VT	Underhill	50-007-0007	PM FRMs only shut down (including NATTS)- resumed 4/23/20	R	
1	MA	Springfield	25-013-0018	Site operator was quarantined- resumed 4/13/20	R	R
1	MA	Ware	25-015-4002	Site operator was quarantined- resumed 4/13/20		R
1	MA	Worcester	25-027-0023	Site operator was quarantined- resumed 4/13/20	R	R
1	NH	Peterborough	33-011-5001	Lab not shipping		
1	NH	Londonderry	33-015-0018	Lab not shipping		
1	ME	Moosehorn	23-029-1004	Lab not shipping		
1	ME	Penobscot- Indian Island	23-019-1100	Site shutdown. Filters not changed- Resumed sampling on 5/20/20		
2	NJ	Camden	34-007-0002	Suspended		1
2	NJ	Newark	34-013-0003	Suspended		1
2	NJ	Rutgers	34-023-0011	Suspended		1
2	NJ	Chester	34-027-3001	Suspended		1
2	NJ	Elizabeth Lab	34-039-0004	Suspended		1
2	NY	Albany Co HD	36-001-0005	Suspended		1
2	NY	Bronx IS52	36-005-0110	Suspended		1
2	NY	Buffalo	36-029-0005	Never suspended		
2	NY	Whiteface	36-031-0003	Never suspended		
2	NY	Rochester Primary	36-055-1007	Never suspended		
2	NY	New York - Division Street	36-061-0134	Suspended		1
2	NY	Queens College	36-081-0124	Suspended	R	
2	NY	Pinnacle State Park	36-101-0003	Never suspended		
2	PR	Adjuntas	72-001-0002	Suspended		1
2	PR	Guayama	72-057-0008	Suspended		1
2	PR	Fajardo	72-053-0003	Suspended		1
2	PR	Guaynabo	72-061-0005	Suspended		1
2	PR	Ponce	72-113-0004	Suspended		1
2	PR	Caguas	72-025-0007	Suspended		1
2	PR	Bayamon Regional Jail	72-021-0010	Suspended		1

OAQPS COVID-19 Data Analyses

Smithsonian
MAGAZINE

SMART NEWS

Air Pollution May Make COVID-19 Symptoms Worse

Research linking air pollution to elevated death rates remains preliminary but scientists hope the pandemic spurs tighter air quality regulations



Alex Fox
Correspondent
May 7, 2020



Reduced traffic in Los Angeles reveals a clear view of the San Gabriel Mountains beyond downtown. Photo by David McNew/Getty Images

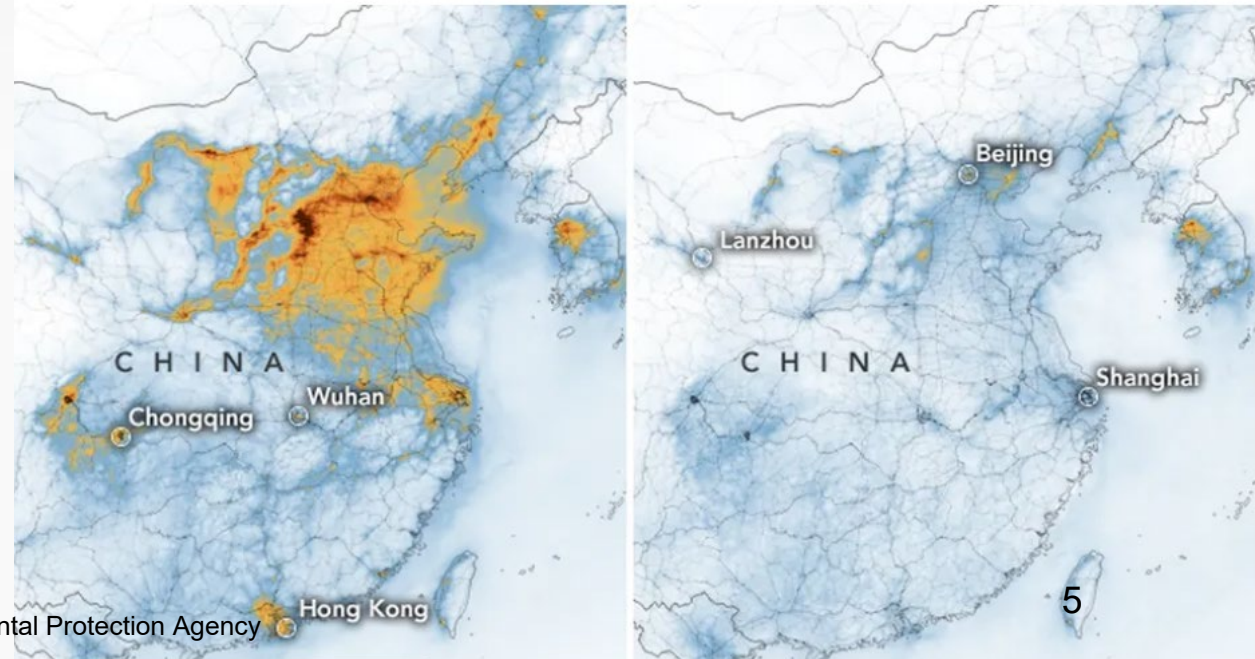
SCIENCE | HEALTH | ENVIRONMENT

Maps show drastic drop in China's air pollution after coronavirus quarantine

Restricting travel means less tailpipe emissions

By Justine Calma | @justcalma | Mar 2, 2020, 12:00pm EST

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Environmental Protection Agency

Daily Air Quality Tracker

<https://www.epa.gov/outdoor-air-quality-data>



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Air Data: Air Quality Data Collected at Outdoor Monitors Across the US

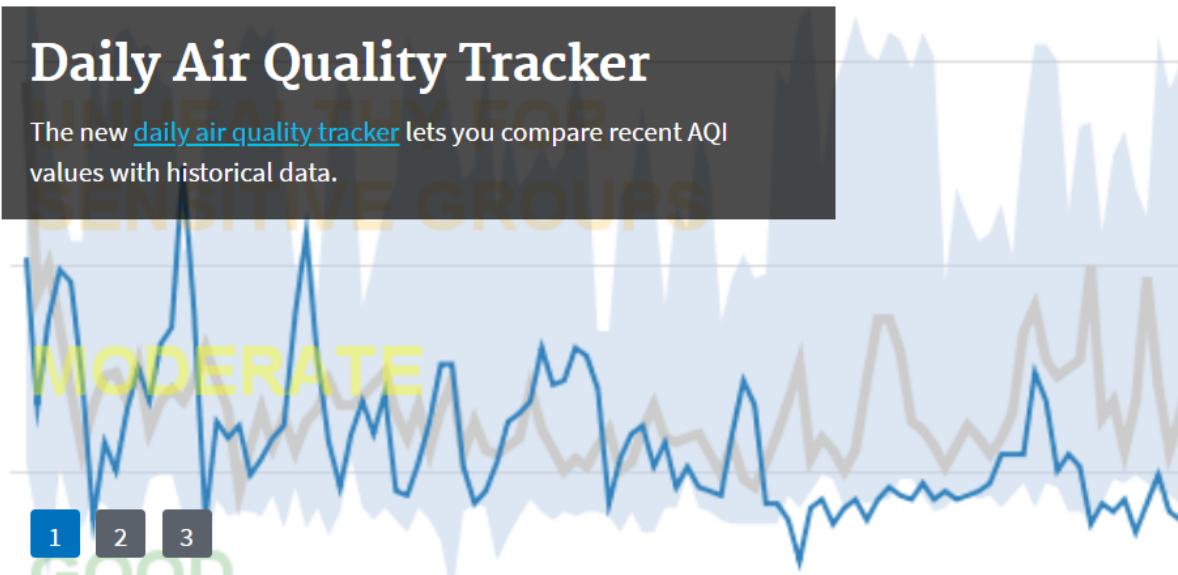
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Daily Air Quality Tracker

The new [daily air quality tracker](#) lets you compare recent AQI values with historical data.



Real-time Data

Get real-time data at [AirNow.gov](#).

Use the [Fire and Smoke map](#) during fire events.

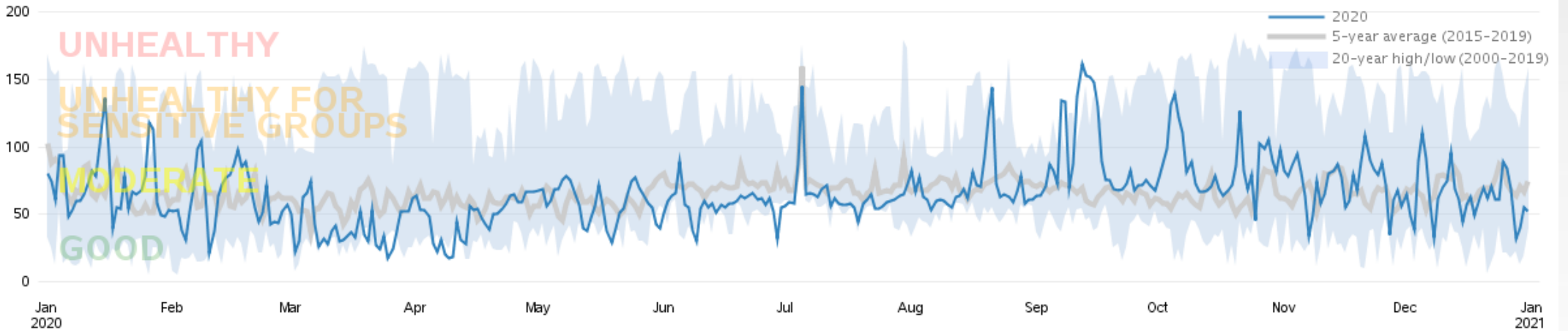
This website provides access to outdoor air quality data collected from state, local and tribal monitoring agencies across the United States.

Daily Air Quality Tracker

<https://www.epa.gov/outdoor-air-quality-data>

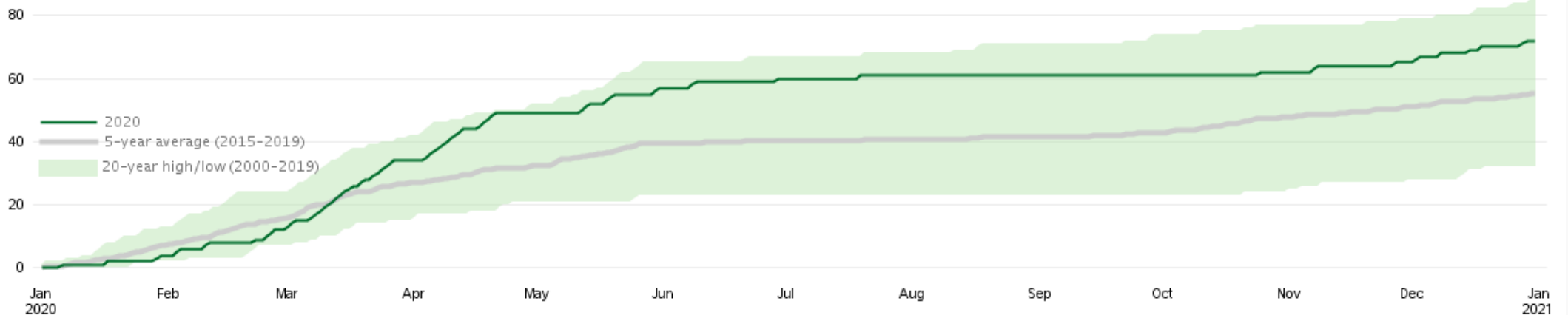
PM2.5 Daily AQI Values

Riverside-San Bernardino-Ontario, CA



Cumulative Number of Good PM2.5 AQI Days (AQI<50)

Riverside-San Bernardino-Ontario, CA



Multiyear Tile Plot

<https://www.epa.gov/outdoor-air-quality-data>



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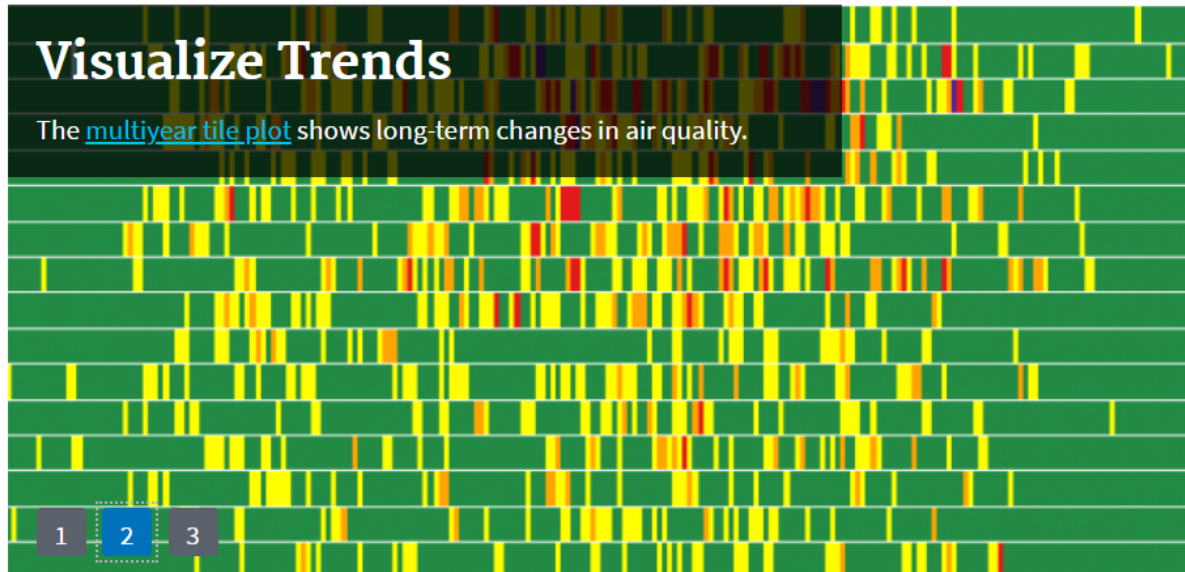
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Visualize Trends

The [multiyear tile plot](#) shows long-term changes in air quality.



Real-time Data

Get real-time data at [AirNow.gov](https://www.airnow.gov).

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Multiyear Tile Plot

<https://www.epa.gov/outdoor-air-quality-data>

New York PM_{2.5}
2010-2022



Los Angeles O₃
2010-2022



2021 AirTrends Report Spotlight Section

<https://gispub.epa.gov/air/trendsreport/2021>

EPA Intro Growth NAAQS Visibility Toxics **Spotlight** Summary

Air Quality Impacts From The COVID-19 Restrictions

Select a pollutant to view concentration changes

Ozone (Daily Max 8-hour)

Ozone 8-hour Concentration

Day: 3/1/2020

Concentration (ppm)

Most Recent National Standard

3/1/2020 3/21/2020 4/10/2020 4/30/2020 5/20/2020

90%ile - 10%ile Average (2010-2019) 90%ile - 10%ile (2020)
Average (2020) Selected Site (2020)

Source: U.S. EPA Air Quality System

Starting in mid-March 2020, many areas across the United States implemented stay-at-home restrictions in response to the COVID-19 pandemic that closed schools, workplaces, and businesses. As a result, vehicle travel significantly dropped, and we saw lower ambient concentrations of several pollutants including nitrogen dioxide (NO₂) and ozone (O₃). This graph shows the daily concentrations of NO₂ and O₃ in the spring of 2020 compared with historical values from 2010-2019.

[MORE WAYS TO EXPLORE 2020 AIR QUALITY](#)

Ozone 8-hour Concentration

3/1/2020 3/21/2020 4/10/2020 4/30/2020 5/20/2020

Legend: <= 0.04, 0.041 - 0.054, 0.055 - 0.07, >= 0.071

Select a state

Source: U.S. EPA Air Quality System

Charts The play/pause button controls animation, or manually change the year by dragging the yellow circle in the chart or the slider's gray square.

Map Click any point to display daily concentration data. Double click the map to zoom in and click the home button to reset. Please be patient with map exports.

Air Quality Impacts from the COVID-19 Restrictions Across the United States

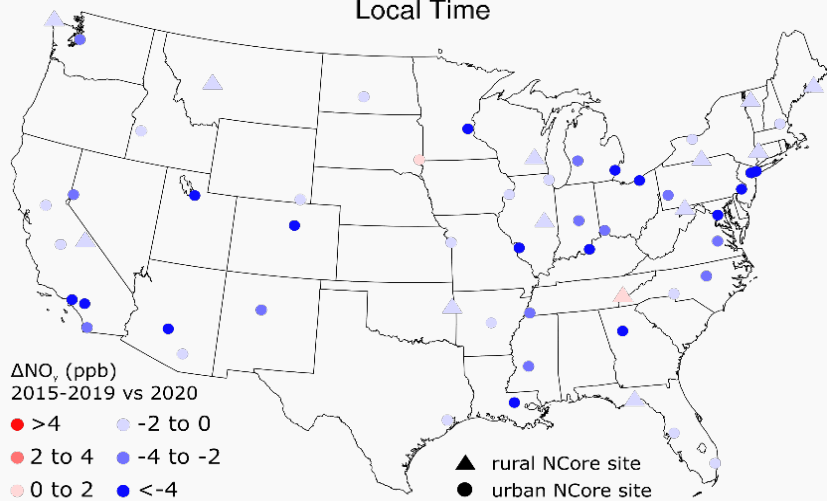
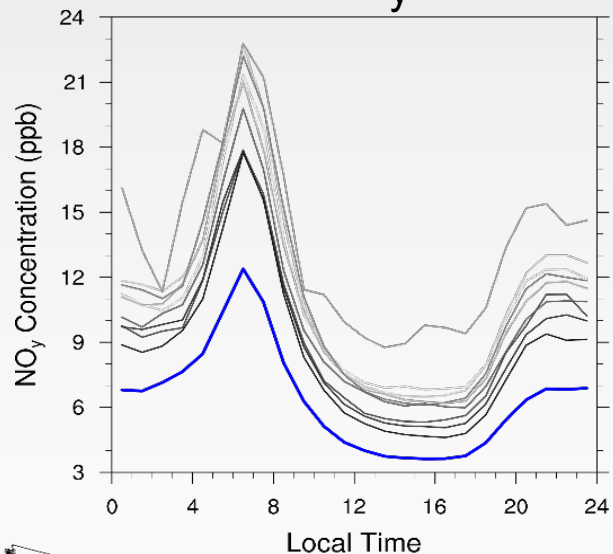
by Brett Gantt, Joe Mangino, David Mintz, and Liz Naess

An overview of the impacts on air quality data as a result of the U.S. government-mandated restrictions imposed during the height of the COVID-19 pandemic.

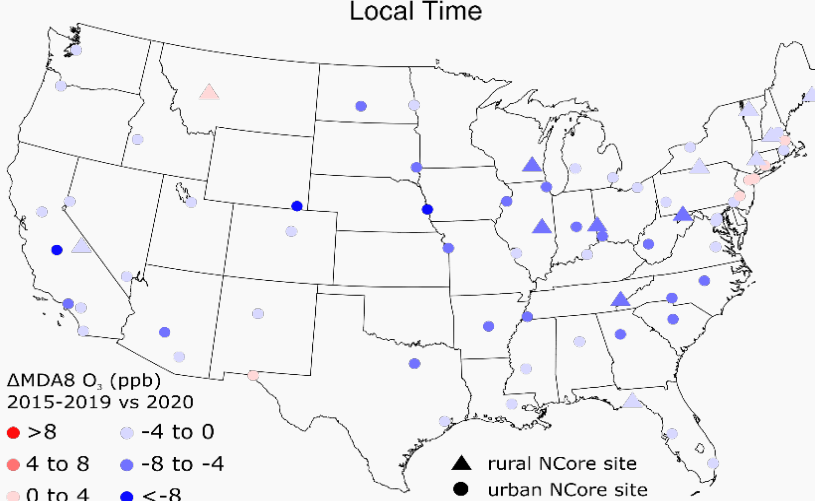
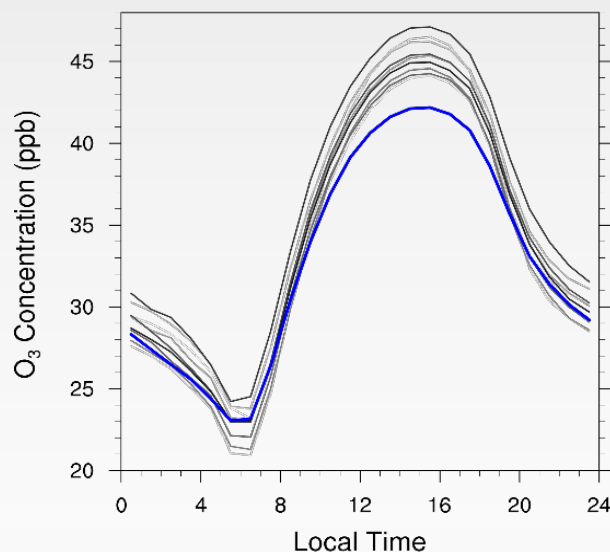


EM Magazine: COVID-19 Issue (July 2021), The Best of EM (January 2022)

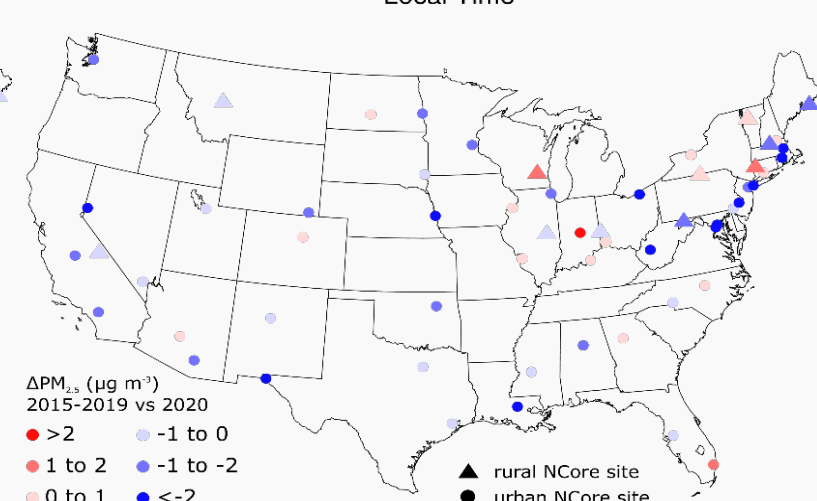
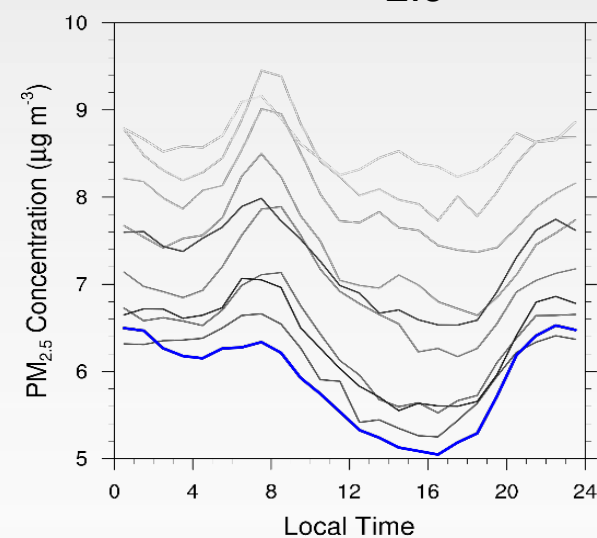
NO_y



O₃



PM_{2.5}



EM Magazine: COVID-19 Issue (July 2021), The Best of EM (January 2022)

- Pollutants directly affected by vehicular emissions (NO_2 , CO) had widespread lower concentrations
- Pollutants of greater regulatory significance (O_3 and $\text{PM}_{2.5}$) had concentration impacts that were a function of meteorology and atmospheric chemistry in addition to emission changes
- Locational (urban vs. rural) and geographic setting played a large role in the magnitude of the impact from the restrictions
 - The largest urban areas in the U.S. tended to experience small O_3 impacts and modest $\text{PM}_{2.5}$ reductions
 - Rural areas experienced larger O_3 reductions and little change to $\text{PM}_{2.5}$