American Lung Association
Something in the Air

Something in the Air

Bridging the Air Quality Data Gap with Satellite Technology

"Something in the Air" is an extension of the insights provided by the "State of the Air" report, focused on bridging the gaps in air quality data through innovative solutions. This report examines the opportunities to improve monitoring air pollution, particularly in areas lacking official monitors, and highlights the role that satellite technology has in enhancing the understanding of air quality.

The report uses satellite observations to quantify fine particulate matter, or $PM_{2.5}$, the most dangerous air pollutant impacting human health.

Key Findings

Regulatory air quality monitors have long been the backbone of understanding air pollution, providing accurate, ground-based data essential for air quality management and public health decisions. Satellites offer a newer source of air pollution data, which has had decades of advancement in the research community with promising results. Already this technology may be used to identify areas where new regulatory monitors are needed, support the validation of existing air quality models and offer additional tools for real-time air quality alerts, giving populations access to timely information that they might not have had before.

Satellite data provides finer resolution capabilities that can capture community-level variations in air quality, offering insights into local pollution issues that might be missed by the regulatory monitoring network.

EPA County Design Values

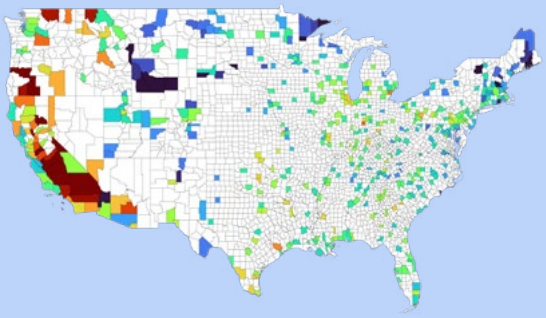

Figure 1a: A map of the contiguous United States with county-level annual design values from 2020-2022 and sourced from the 2022 EPA design value report for fine particulate matter.

Average Concentrations of $PM_{2.5}$

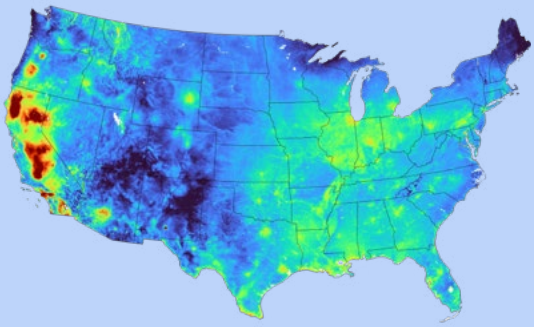

Figure 1b: A map of the contiguous United States showing estimates for the 3-year (2020-2022) averaged fine particulate matter based on satellite-derived data, V5.GL.04, developed by Washington University at 0.01° by 0.01° spatial resolution.

More than two-thirds of the 3,143 counties and equivalent subdivisions in the U.S. lack regulatory monitors. However, the lack of monitoring does not necessarily mean the absence of pollution. Preliminary estimates suggest that as many as 300 of the unmonitored counties in the U.S. might have earned a failing grade in the "State of the Air" report. This estimate is based on satellite-derived, annual levels of $PM_{2.5}$ in the years 2020, 2021 and 2022, and could be interpreted as areas that would have registered high pollution if ground- level monitors had been in place. Millions of people are likely living in areas with unhealthy air but lack the official monitoring data on their exposure and risk.

To put a face on these unmonitored communities, "Something in the Air" spotlights six counties: Collin County, Texas; Forsyth County, Georgia; Marion County, Oregon; Mohave County, Arizona; St. Charles County, Missouri; and St. Tammany Parish, Louisiana.

Satellite-derived data shows that these spotlight counties are among the most polluted 2% of unmonitored counties in the U.S. The six counties were selected to represent geographic and demographic diversity as well as the range of broader issues faced by many unmonitored regions across the country.

To learn more about the American Lung Association's work using emerging technology to understand local air quality, visit **Lung.org/something-in-the-air**.

Select Policy Recommendations

"*Something in the Air Bridging the Air Quality Data Gap with Satellite Technology*" calls for various actions from EPA, states, and individuals, including:

- **EPA and states** must fully implement the updated annual $PM_{2.5}$ standard.
- Because health-protective NAAQS are the basis for both cleanup and for communities' understanding of local air quality, **EPA** must also set strong, science-based standards for all criteria pollutants, including ozone and NO_2.
- **States** should explore the use of satellite technology to supplement monitoring and modeling when developing State Implementation Plans for $PM_{2.5}$ that ensure clean-up plans maximize benefits for health, particularly in environmental justice communities.
- **States** should embrace the opportunity to integrate supplemental data sources into non-regulatory air quality advisory and alert systems for public health protection.
- **Individuals** should use resources such as the EPA's AirNow website (airnow.gov) to stay current on air quality conditions in their area that might affect their health.
- **Individuals** can become an advocate in support of local and national policies that aim to improve air quality and reduce pollution by joining the American Lung Association's Lung Action Network.