

# AirNow Fire and Smoke Map

## Questions and Answers

**Follow the links below for questions and answers about:**

[The Fire and Smoke Map Compared to Other Sources](#)

[Using the Map to Protect Yourself from Wildfire Smoke](#)

[Key Terms on the Map](#)

[Sensors and Data Used on the Map](#)

[Fire and Smoke Information on the Map](#)

[Limitations and Disclaimers](#)

[Where to Learn More](#)

**Note:** This document includes general questions and answers, along with questions and answers for a more technical audience. More detailed or technical questions and answers are marked with this box:

Detailed/Technical

## General Questions About the Fire and Smoke Map

*Need help getting started? See our User Guide at <https://www.airnow.gov/fasm-info>*

### Why should I use the Fire and Smoke Map instead of another map?

The AirNow Fire and Smoke map brings you a variety of fire- and smoke-related information, all in one place. You can use the map to see:

- air quality data from permanent and temporary monitors that are operated by experts from air quality agencies;
- air quality data from air sensors, most of which are owned and operated by the public; and
  - The sensor data has been corrected to make it more accurate.
- recommendations for actions to take to protect yourself.
  - These recommendations were developed by EPA scientists who are experts in air quality and health.

The Map also shows fire locations, smoke plume locations and smoke forecast outlooks (where available).

## Can I use the Fire and Smoke Map to get all of my air quality information?

No. The Fire and Smoke Map shows only fine particle pollution, which is the main type of pollution in wildfire smoke. Fine particle pollution is also known as fine particulate matter or PM<sub>2.5</sub>. It also comes from sources other than fires.

You can use the Map to see fine particle pollution from any source at your location. However, the map does not show other types of pollution, including ozone (smog). To see information on ozone, enter your location on the “dial” on [www.airnow.gov](http://www.airnow.gov), or visit the [AirNow interactive map](#). AirNow shows ozone and particle pollution data that comes from official outdoor air quality air monitoring stations. It also shows larger particles that called “coarse particulate matter,” or PM<sub>10</sub>.

[<<back to top>>](#)

## [Actions to Protect Your Health](#)

### What Steps Can I Take to Protect Myself from Wildfire smoke?

#### 1 Prepare for fire season.

Here are some links that will tell you more about what to do before, during, and after a wildfire:

- Visit EPA’s interactive website about what to do before, during and after a wildfire: <https://www.airnow.gov/fires/>
- Read a brochure about how wildfire smoke affects you and what you can do: [How Smoke from Fires Can Affect Your Health](#).
- Read a selection of [Wildfire Guide Factsheets](#) on AirNow.gov. The fact sheets include information such as protecting children, filtering indoor air, and protecting animals from wildfire smoke. (En Español <https://www.airnow.gov/all-publications-en-espanol/> .)

#### 2 When wildfire smoke is near, check the Fire and Smoke Map for action recommendations for your location.

- When you click on a monitor or sensor icon on the Map, that opens a dashboard pop-up with information about that location.
- The dashboard includes recommendations based on the air quality category at that location. These recommendations were developed by EPA scientists who are experts on air quality and health.
- The recommendations tell you when it’s a good time to open windows or go outdoors, or when it’s time to change your activities or go indoors. For the full list of recommendations, click FAQ in the upper right corner of the Map, then select the “Actions to Take” tab on the pop-up.

#### 3 Pay attention in extreme heat.

- Extreme heat can lead to potentially deadly illnesses, such as heat exhaustion and heat stroke.

- If it is hot outdoors, and you feel hot indoors, go somewhere with air conditioning, if possible.
- For more tips:
  - Read about extreme heat at CDC’s Extreme Heat website: <https://www.cdc.gov/disasters/extremeheat/index.html>
  - Learn what to do indoors during extreme heat from EPA’s Indoor Quality Division at <https://www.cdc.gov/disasters/extremeheat/index.html>

**4 Stay tuned for announcements from local authorities.**

- If there is a wildfire nearby, please stay tuned to local authorities for the latest information on fire and smoke safety.

**Should I base my activities on the NowCast AQI or the trend information in the dashboard pop-up?**

- Use them both to make decisions about your activities. When you click on a monitor or sensor on the map, an information “dashboard” will pop up. That dashboard shows:
  - the color-coded NowCast AQI category;
  - information about who should take precautions to protect their health; and
  - recommended actions.
- You also can see the air quality trend information on the dashboard.
  - The trend information shows you how particle pollution levels have been changing at your location in the last 30 minutes.
  - You can use that information to guide short-term activities, such as opening or closing windows, or going outside to walk the dog.

**It’s been smoky for several days where I live, and the AQI has been at Code Red (Unhealthy) or higher. What should I do?**

Breathing in high levels of smoke over multiple days can lower your body’s ability to recover from smoke exposure. When smoke levels are in the unhealthy categories for several days (or even longer), the most important thing to do is to lower your exposure to smoke. You also should pay attention to the symptoms you are having.

**These symptoms are signs that you should take additional steps to lower your exposure to smoke:**

- sore or scratchy throat;
- coughing;
- shortness of breath; or
- unusual fatigue.

**If you have a pre-existing heart or lung disease,** take action to lower your exposure as much as possible during multi-day high smoke events. Some actions you may take include:

- Follow your [asthma action plan](#) or the advice of your health care professional.



- Consider using an [indoor air cleaner](#) to reduce smoke in your home.

**If symptoms of heart or lung disease worsen, consider contacting your health care professional.**

[<<back to top>>](#)

## Key Terms Used on the Map

### What is an air sensor?

Air sensors are a type of technology for measuring pollution in the air. They consist of a set of hardware and software that uses one or more “sensing elements.” You may also see the term “low-cost sensors” to describe this technology.

Compared to the regulatory monitors widely used in the U.S., air sensors are:

- lower in cost;
- more portable; and
- generally easier to operate.

EPA does not use data from air sensors for regulatory purposes.

More about sensors used on the map: <https://www.epa.gov/air-sensor-toolbox/technical-approaches-sensor-data-airnow-fire-and-smoke-map>

### What is the AQI?

The U.S. Air Quality Index (AQI) is a color-coded tool for communicating air quality. Each color category tells you about air quality in your area and the groups of people that may be affected. It also tells you steps you can take to reduce your exposure to air pollution and protect your health. The Fire and Smoke Map shows information about the AQI for particle pollution, which is the primary type of pollution in smoke.

Want more information about the AQI and particle pollution? Visit <https://www.airnow.gov/publications/activity-guides/air-quality-guide-for-particle-pollution/>

En Español <https://www.airnow.gov/publications/programa-de-banderines-sobre-la-calidad-del-aire/guia-por-particulas/>

### What is the NowCast AQI?

The NowCast AQI shows your *current* air quality using the AQI colors and scale. Want to learn more about how the NowCast works? Visit “Using the Air Quality Index” at <https://www.airnow.gov/aqi/aqi-basics/using-air-quality-index/#nowcast> .

### What are Smoke Forecast Outlooks?

The Interagency Wildland Fire Air Quality Response Program issues Smoke Forecast Outlooks to provide fire-specific information on weather, smoke and air quality. The program issues Smoke Forecast

Outlooks when Air Resource Advisors, or “ARAs” have been deployed to assist the fire response teams. ARAs analyze, summarize and communicate smoke impacts to incident management teams, air quality regulators, public health agencies and the public.

At this time, only Smoke Forecast Outlooks issued by ARAs are available on the Fire and Smoke Map. However, additional information on smoke impacts can be available at your state, tribal, or local air quality agency. [Learn more about ARAs and what they do.](#)

[<<back to top>>](#)

## Results on the Map

### **There is no monitor or sensor right at my location. Can I assume that my air quality is similar to the air quality at the nearest monitor or sensor on the map?**

The Fire and Smoke Map shows the NowCast Air Quality Index at a specific monitor or sensor location at the time you are viewing the map. Whether air quality where you are is exactly the same depends on many factors. Those include:

- how far away you are from the monitor or sensor location,
- meteorological conditions like wind speed and wind direction,
- geographic features like terrain,
- the location of sources of particle pollution (PM<sub>2.5</sub>), and
- the size and amount of the particles emitted to the air .

Your air quality may be similar to the monitor/sensor several kilometers away *if*:

- particle pollution concentrations are fairly stable,
- no significant winds are present, and
- there are no sources of particle pollution between you and the nearest monitor/sensor.

There may be differences in air quality between your location and the nearest monitor or sensor if:

- Particle pollution concentrations are changing frequently,
- Smoke plumes are in the area, or
- Particle pollution sources are nearby, and/or
- There is significant terrain like mountains/hills and valleys.

You may even see this type of difference when comparing two sensors that are near each other.

### **Why are no sensors shown for my area?**

There are several possible reasons why no sensors appear on the map for your area, including:

- There may be no publicly available sensors in your area;
- The sensors in your area may have failed to meet the quality control screening criteria developed for the Fire and Smoke Map, or
- The sensor data is temporarily unavailable or offline.

Newly registered sensors also may not appear on the map for up to 48 hours.

In addition, if state, local, or tribal agencies identify a sensor as problematic, it may be removed from the Fire and Smoke Map. This could occur for sensors that:

- are strongly influenced by local pollution sources;
- have shown erroneous data for a long time compared to other nearby sensors;
- are likely mis-labeled (for example, labeled as outdoors, when the sensor is indoors); or
- are marked as being at the wrong location (sometimes far away from the sensor's actual location.)

### **Why do sensors and monitors in an area sometimes show different trends?**

Each sensor and monitor can reflect only the conditions at its specific location. However, smoke can vary considerably, even over small distances and short periods of time. This is particularly true when smoke plumes move in and out of an area. As a result, sensors or monitors in the same area may show different trends. They may show air quality in different NowCast AQI categories, too.

Note: If all sensors in a region show a different AQI category than monitors, it may suggest that the particle pollution is coming from a source that monitors can measure more accurately than sensors. For example, sensors typically underestimate dust and regional dust events like Saharan dust storms. In these situations, all sensors in a region may underestimate the amount of particle pollution in the air, while the monitors in a region show higher levels.

### **How is the PM2.5 trend calculated?**

Detailed/Technical

#### ***For permanent and temporary monitors***

For **monitors**, the Fire and Smoke Map uses recent data available from up to three of the nearest low-cost sensors to calculate the trend, provided the sensors are within 10 kilometers of the monitor. When there is no low-cost sensor nearby, the map uses the last available hourly measurement from the monitor itself is used, provided it is no more than an hour old.

#### ***For low-cost sensors***

For a **low-cost sensor**, the Fire and Smoke Map uses only data from that sensor to determine a trend. Here's how it works:

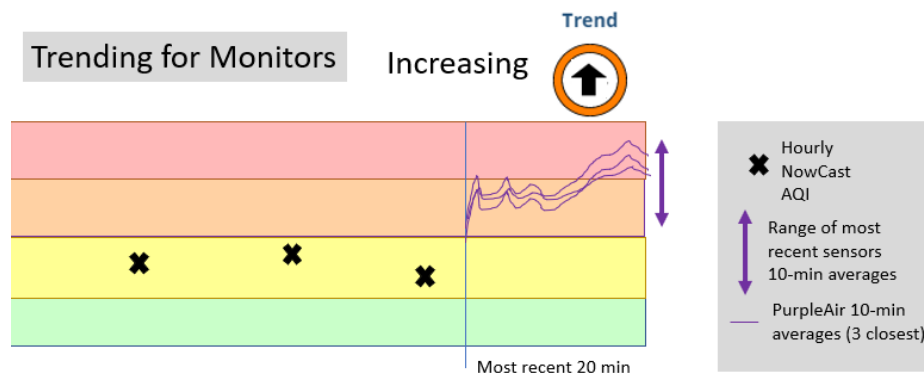
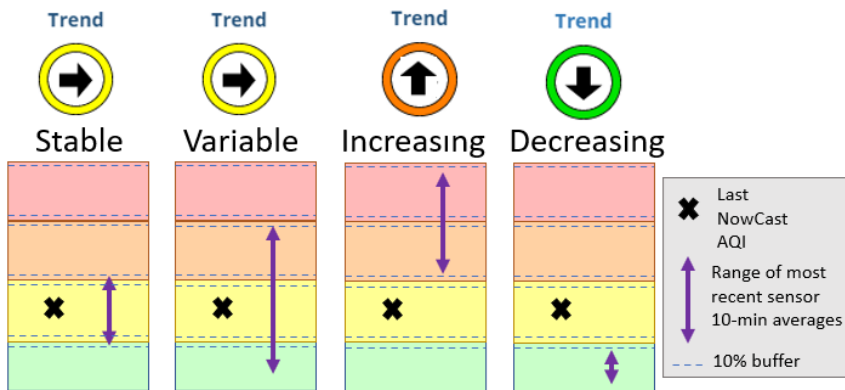
- All 10-minute rolling averages received in the past 20 minutes from PurpleAir are recorded.\*
- Each 10-minute average is converted into the corresponding AQI category.
- The range of these 10-min AQI categories is then used to evaluate the PM2.5 trend.

\*Note: The short-term trend covers a 30-minute period. We use the 10-minute average from 20 minutes ago, because it represents the time period from 30 to 20 minutes ago.

## Does the trend reflect even small changes in air quality?

Detailed/Technical

To minimize the possibility that small fluctuations in air quality are misinterpreted as an increasing or decreasing trend, we use a 10 percent “buffer” around each NowCast AQI breakpoint. This means we do not label a trend as increasing or decreasing until data show PM<sub>2.5</sub> concentrations are 10 percent higher than the concentration breakpoint between two adjacent NowCast AQI categories.



## In the written description of the trend, how is the PM<sub>2.5</sub> trend range of AQI categories determined?

Detailed/Technical

The written trend description states the full range of AQI categories observed in the past 30 minutes. It is possible that rapid changes in air quality may result in 30 minutes of data that span several AQI categories. If this happens, the PM<sub>2.5</sub> trend description will list the full range of categories observed, such as “Good-Moderate.” The PM<sub>2.5</sub> trend icon circle color will always represent the category in this range that is the closest to the current NowCast AQI category at that sensor or monitor. This may be the same as the current NowCast AQI if that category was observed in the recent data.

[<<back to top>>](#)

## Sensors and Sensor Data Used on the Map

### **Does EPA use air sensor data for regulatory compliance?**

EPA does not use air sensor data for regulatory purposes. EPA uses data from regulatory monitors, which have been exhaustively tested. These monitors also must meet standards for location and operation.

### **Is sensor data as good as data from regulatory monitors?**

Air sensors have a number of limitations:

- Sensors may occasionally report questionable data;
- Sensors have a bias, which means they regularly report a higher or lower amount of pollution than actually is in the air; and
- Most sensors are not located or operated by air monitoring experts.

Despite these limitations, air sensors can be valuable for providing general information about air quality.

Note: Before we show air sensor data on the Fire and Smoke Map, EPA and the Forest Service take a number of quality control steps and apply a scientific correction equation that reduces the bias in the sensor data. These steps make the sensor data more comparable to data from monitors operated by experts.

### **Is sensor data used on other AirNow maps?**

No. USFS and EPA are providing the sensor data only on the Fire and Smoke Map to provide additional information you can use to make decisions to protect your health when particle pollution levels are high, such as during smoke events. The data on the map is not used for regulatory purposes.

### **Are state, local, or tribal air agencies responsible for the sensors on the Map?**

The majority of the sensors that appear on the Fire and Smoke Map are owned by individuals. State, local, and tribal air agencies are not responsible for the accuracy and performance of the sensor data.

### **Where does the sensor data on the map come from?**

The sensor data comes from PurpleAir. PurpleAir crowdsources data from its particle pollution sensors and makes that data publicly available

*Note: Mention of trade names or commercial products does not mean that EPA or USFS endorse or recommend that product.*

### **Does EPA have plans to add other sensors to the Fire and Smoke Map?**

EPA is developing a process to partner with additional organizations and expand the public sensor data feeds included in the AirNow Fire and Smoke map.



## I'm a sensor manufacturer. I'd like to have my sensors added to the Fire and Smoke Map. Is that possible?

Detailed/Technical

EPA is currently working to develop a process to partner with additional organizations and expand the public sensor data feeds included on the map. While that work is underway, it would be advantageous for manufacturers and others to continue collecting data side-by-side with highly robust and accurate regulatory monitors (known as collocated data), to demonstrate performance and comparability.

Because the Fire and Smoke Map is most widely used during wildfire and smoke events, it is imperative that collocation data be collected during smoke impacted times when concentrations may be very high. However, the map is always available, so collocations capturing typical ambient conditions throughout the U.S. are also valuable. EPA's [Performance Testing Protocols, Metrics, and Target Values for Fine Particulate Matter Air Sensors Report](#) provides guidance for setup and reporting of sensor performance by collocation and additional considerations are discussed in our recent webinar "[How to Evaluate Air Sensors for Smoke Monitoring.](#)"

Sensors are most valuable when they can fill in data gaps which could mean deployments in rural or remote locations and in locations without readily available or intermittent power or cellular connectivity. Sensor manufacturers may wish to consider these issues when designing sensor devices or data quality assurance or correction methodologies.

For additional information, visit [Air Sensor Performance Targets and Testing Protocols](#).

## What are limitations of the sensor data on the Map?

Detailed/Technical

Sensor data limitations include:

- *Measurement technology* -- Sensors, including the PurpleAir sensor, typically measure particles using light scatter, operate at lower flowrates, and do not dry the sampled particles like permanent and temporary monitors. This can lead to inaccuracies compared to permanent and temporary monitors.
- *Dust* – Dust particles are larger than smoke or typical particle pollution (PM<sub>2.5</sub>) in the U.S. These larger particles are not well captured by PurpleAir sensors. This leads to underestimates of PM<sub>2.5</sub> concentrations from dust. This can be especially visible during regional dust events (e.g., Saharan dust).
- *Bias and inaccuracy* -- EPA scientists have found that air sensors often report data that overestimates or underestimates pollutant concentrations compared to the permanent or temporary instruments that are operated in the same location. PurpleAir sensors, without the use of the EPA correction equation, measure the same trends in PM<sub>2.5</sub> concentrations as collocated monitors, but they tend to overestimate the PM<sub>2.5</sub> mass concentrations and respond nonlinearity at high smoke concentration (>200 µg/m<sup>3</sup>).

For the sensor data used in the Fire and Smoke Map, EPA has applied an extended U.S.-wide correction equation, developed by EPA scientists, that reduces the bias in the sensor data correcting for the overestimation. This corrected data is more comparable to the permanent

and temporary monitor data giving the public a more consistent picture of air quality with additional information especially in areas where there are no regulatory monitors.

- *Sensor failure* -- Sensor failure is often indicated by the sensor not reporting, or a large disagreement between the independent measurements made by two internal sensors within the PurpleAir device, labeled channels A and B. EPA and USFS take [quality control steps](#) to compare the data from the A and B channels to check for disagreement. These steps will likely remove data from failed sensors or those that are influenced by inlet debris or insects.
- *Siting and crowdsourcing unknowns*. For most low-cost air sensors, little is known about where a sensor is placed including how accurate the reported locations is, if it was appropriately labeled as an outdoor sensor, how close a sensor is to localized sources of pollution (such as a fire pit) or other interferences. Air sensors may be operated by anyone, and we lack information about their maintenance or operation.

To learn more about how to best site and install your air sensor, visit the air sensor toolbox (<https://www.epa.gov/air-sensor-toolbox/guide-siting-and-installing-air-sensors>).

### How are the sensor data on the map processed?

Detailed/Technical

USFS and EPA take several steps before sensor data appear on the Fire and Smoke Map:

1. Remove some sensors or data
  - a. Remove sensors labeled as “indoors”
  - b. Remove questionable data from when the two internal sensors, labeled channels A and B, disagree
2. Correct the sensor data to make it comparable to the data from the regulatory monitors
  - a. Aggregate sensor data to an hourly average;
  - b. Apply a [correction equation](#) to the data to reduce the bias in the sensor data; and
  - c. Apply the [NowCast](#), the calculation EPA uses to show data in the context of the Air Quality Index, which is a 24-hour index.

#### More detail:

- a) For 10-min averaged data
  1. 10-minute rolling averages of PM<sub>2.5</sub> (from both the A and B channel sensors) and relative humidity are received from PurpleAir’s application programming interface (API)
  2. The data point is valid if the A and B channel PM<sub>2.5</sub> measurements are within either 5 micrograms per cubic meter or 70% relative percent difference
  3. The A and B channels are averaged
  4. The extended U.S.-wide correction equation is applied (see question below)
- b) For 1-hr averaged data

1. 10-minute rolling averages of PM<sub>2.5</sub> (from both the A and B channel sensors) and relative humidity are received from PurpleAir's API
2. The measurements are averaged up to an hour
3. The hour is considered complete if at least four of the six 10-minute windows in an hour are reported by the sensor and the sensor reported within the last 20 minutes.
4. The data point is valid if the A and B channel PM<sub>2.5</sub> measurements are within either 5 micrograms per cubic meter or 70% relative percent difference
5. The A and B channels are averaged
6. The extended U.S.-wide correction equation is applied (see question below)

c) For NowCast-averaged data

1. The last 12 hours of corrected PurpleAir hourly averaged data are used (methods described in b above)
2. A weighted average is generated based on the [NowCast](#) algorithm

### What is the extended U.S.-wide correction equation?

Detailed/Technical

The extended U.S.-wide correction is a mathematical equation, developed by EPA scientists, that reduces the bias in the sensor data so that sensor data is more comparable with data from permanent and temporary monitors. This correction was built based from comparisons between sensors and permanent/temporary monitors across the U.S. during typical ambient time, smoke impacted times, and during extreme smoke episodes during the 2020 wildfire season. You can learn more about EPA's work to update the U.S.-wide correction here: <https://www.epa.gov/air-sensor-toolbox/technical-approaches-sensor-data-airnow-fire-and-smoke-map>

*More details:*

The extended correction is a piecewise regression that corrects for bias and relative humidity at low concentration and the nonlinearity of PurpleAir response at higher concentration. Although originally developed on the cf\_1 data it is being implemented on the cf\_atm data since 10-minute averages are not currently available for the cf\_1 data. Additional details on the correction can be found on the air sensor toolbox (<https://www.epa.gov/air-sensor-toolbox/technical-approaches-sensor-data-airnow-fire-and-smoke-map>).

PA<sub>cf1</sub> = the average of the A and B channel PurpleAir cf\_1 PM<sub>2.5</sub> data

PA<sub>cfatm</sub> = the average of the A and B channel PurpleAir cf\_atm PM<sub>2.5</sub> data

The PA<sub>cf1</sub> and PA<sub>cfatm</sub> data have a 1:1 relationship <25 µg/m<sup>3</sup> (as measured by the sensors) and then transition to a 3:2 relationship above 100 µg/m<sup>3</sup> (as measured by the cf\_1).

Date Implemented (version)	Equation	Description of change
Apr 2020 (Eq.1)	PM <sub>2.5</sub> = 0.534*PA <sub>cf1</sub> – 0.0844*RH + 5.604	Original – incorrectly applied to the cf_atm data

		<ul style="list-style-type: none"> <li>Applicable <b>0-250 <math>\mu\text{g}/\text{m}^3</math></b></li> </ul>
Sept 2020 (Eq.2)	$PA_{cfatm} < 50:$ $PM_{2.5} = [0.524 \times PA_{cfatm}] - [0.0852 \times RH] + 5.72$  $PA_{cfatm} \geq 50:$ $PM_{2.5} = [0.786 \times PA_{cfatm}] - [0.0852 \times RH] + 5.72$	Updated to be applied to the cf_atm data since 10-minute averaged cf_1 data were not available from the PurpleAir API <ul style="list-style-type: none"> <li>Applicable <b>0-250 <math>\mu\text{g}/\text{m}^3</math></b> where cf_1 is unavailable</li> </ul>
June 2021 (Eq.3)	$PA_{cfatm} < 50:$ $PM_{2.5} = [0.52 \times PA_{cfatm}] - [0.086 \times RH] + 5.75$  $50 \leq PA_{cfatm} < 229:$ $PM_{2.5} = [0.786 \times PA_{cfatm}] - [0.086 \times RH] + 5.75$  $PA_{cfatm} > 229:$ $PM_{2.5} = [0.69 \times PA_{cfatm}] + [8.84 \times 10^{-4} \times (PA_{cf\_atm})^2] + 2.97$	Updated to account for nonlinearity at high concentration <ul style="list-style-type: none"> <li>Applicable <b>0-1500 <math>\mu\text{g}/\text{m}^3</math></b></li> </ul>
Oct 2021 (Eq.4)	$PA_{cfatm} < 30:$ $PM_{2.5} = [0.524 \times PA_{cfatm}] - [0.0862 \times RH] + 5.75$  $30 \leq PA_{cfatm} < 50:$ $PM_{2.5} = [0.786 \times (PA_{cfatm}/20 - 3/2) + 0.524 \times (1 - (PA_{cfatm}/20 - 3/2))] \times PA_{cfatm} - [0.0862 \times RH] + 5.75$  $50 \leq PA_{cfatm} < 210:$ $PM_{2.5} = [0.786 \times PA_{cfatm}] - [0.0862 \times RH] + 5.75$  $210 \leq PA_{cfatm} < 260:$ $PM_{2.5} = [0.69 \times (PA_{cfatm}/50 - 21/5) + 0.786 \times (1 - (PA_{cfatm}/50 - 21/5))] \times PA_{cfatm}$	Added transitions between equation breakpoints so to remove discontinuity <ul style="list-style-type: none"> <li>Applicable <b>0-1500 <math>\mu\text{g}/\text{m}^3</math></b> (more accurate than Eq.3)</li> </ul>

$$\begin{aligned}
& - [0.0862 \times RH \times (1 - (PA_{cfatm}/50 - 21/5))] \\
& + [2.966 \times (PA_{cfatm}/50 - 21/5)] + [5.75 \times (1 - \\
& (PA_{cfatm}/50 - 21/5))] \\
& + [8.84 \times (10^{-4}) \times PA_{cfatm}^2 \times (PA_{cfatm}/50 - 21/5)]
\end{aligned}$$

$260 \leq PA_{cfatm}$ :

$$PM_{2.5} = 2.966 + [0.69 \times PA_{cfatm}] + [8.84 \times 10^{-4} \times PA_{cfatm}^2]$$

### Want more details about how sensor data is used on the map?



- Visit [Technical Approaches for the Sensor Data on the AirNow Fire and Smoke Map](#) to read detailed information on:
  - the Fire and Smoke Map,
  - how the map compares to other data sources; and
  - how air sensor data is processed before it appears on the map.

[<<back to top>>](#)

## Fire and Smoke Information on the Map

Detailed/Technical

### What is the data source for the large fire incidents on the map?

Active large fire incidents from the U.S. National Interagency Fire Center’s active incident feed are shown as fire icons (shown as  for large incidents and  for satellite-detected fires). Clicking on a fire icon displays information about the fire. Note that these incidents may not have updated for several days due to the nature of the reporting systems used. Additional information on these incidents is available through the InciWeb system (<https://inciweb.nwcg.gov>). While the information presented by this feed can be several days old, it does provide important management information, including the fire name, overall fire size, and containment.

### How are fire and smoke plumes detected in my area?

Fire and smoke plume detections are from the NOAA’s Hazard Mapping System Fire and Smoke Products. Trained analysts manually integrate data from various automated fire detection algorithms

with information from satellite instruments, including NASA's Geostationary Operational Environmental Satellite (GOES) Imager, NOAA's Advanced Very High Resolution Radiometer (AVHRR) and NASA's Moderate Resolution Imaging Spectroradiometer (MODIS). The analyst outlines smoke plumes that are detected by the satellites, resulting in a quality-controlled display of fire locations and smoke plumes. The smoke plumes are updated every few hours.

Both the fire detections and the smoke plume data are generated by the Hazard Mapping System. Note that the information on fire position should be used as general guidance and for strategic planning, not for tactical decisions, such as the activation of a response to fight these fires and evacuation efforts, without other information to corroborate the fire's existence and location.

[<<back to top>>](#)

## Limitations and Disclaimers

- EPA will not use the sensor data on the MAP to make regulatory decisions.
- Mention of trade names or commercial products does not constitute EPA or USFS endorsement or recommendation for use.
- Data may be delayed, unavailable, or in error due to measurement problems, data transmission issues, and/or data aggregation system timing and issues.
- For the Fire and Smoke Map, low-cost sensor data is provided by PurpleAir and is subject to the capabilities and limitations of that system.
- For the Fire and Smoke Map, the sensor data has been corrected. It should be used for informational purposes only.
- Use of any data provider or system does not constitute endorsement or recommendation of that system. The data are being provided for informational purposes and are released on the condition that neither the EPA, USFS, nor the U.S. Government may be held liable for any damages resulting from authorized or unauthorized use of the information.
- Both the satellite fire detections and the smoke plume data generated by the National Oceanic and Atmospheric Administration's Hazard Mapping System (HMS) systems which notes that *"The information on fire position should be used as general guidance and for strategic planning. Tactical decisions, such as the activation of a response to fight these fires and evacuation efforts, should not be made without other information to corroborate the fire's existence and location."*

[<<back to top>>](#)

## Have more questions?

Click FAQ on the map to see more or email us at [firesmokemap@epa.gov](mailto:firesmokemap@epa.gov)

[<<back to top>>](#)