



How - AIRNOW / Air Quality Indices (AQI)

Randy Strait (randy.strait@ncdenr.gov)

Chief, Planning Section

North Carolina Division of Air Quality



Air Quality Index (AQI)

- The AQI is based off the primary National Ambient Air Quality Standards (NAAQS) for five pollutants:
 - Ground-level ozone
 - Fine particle matter (PM_{2.5})
 - Carbon monoxide (CO)
 - Sulfur dioxide (SO₂)
 - Nitrogen dioxide (NO₂)
- State and Local Air Quality Agencies prepare next-day AQI forecasts for Ozone standard (seasonally) and PM_{2.5} 24-hour standard (year-round)
- AQI forecast is specific to a geographical area (forecasts may be different for different areas in a state)



AQI vs. NAAQS

- Purposes of the AQI and the NAAQS are different
- NAAQS are set by the U.S. EPA to protect the public health and are based on an averaging period (1-hour, 24-hour, annual, or 3-year average)
 - Ambient air quality monitors are used to measure compliance with the NAAQS
- AQI is used to communicate to individuals daily the quality of ambient air and potential health affects



Air Quality Index (AQI)

Air Quality Index Levels of Health Concern	Numerical Value	Meaning
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.
Very Unhealthy	201 to 300	Health alert: everyone may experience more serious health effects.
Hazardous	301 to 500	Health warnings of emergency conditions. The entire population is more likely to be affected.



Air Quality Index (AQI)

- Index for reporting daily air quality for ozone and PM2.5
- Tells you how clean or polluted your air is, and what associated health effects might be a concern for you
- The higher the AQI value, the greater the level of air pollution and the greater the health concern
- Numerical values run from 0 to 500
- AQI breakpoints are linked to the levels of the NAAQS
- NAAQS exceedance occurs when value is >100 (code **Orange** and higher)



AQI Breakpoints are Linked to Levels of the NAAQS

AQI Breakpoint Definitions								
AQI Range	1hr Ozone in ppm	8hr Ozone in ppm	8hr Carbon Monoxide in ppm	1hr Sulfur Dioxide in ppm	24hr Sulfur Dioxide in ppm	1hr Nitrogen Dioxide in ppm	24hr PM-10 in $\mu\text{g}/\text{m}^3$ (25° C)	24hr PM-2.5 in $\mu\text{g}/\text{m}^3$ LC
0 - 50	Not Defined	0 - 0.054	0 - 4.4	0 - 0.035	Not Defined	0 - 0.053	0 - 54	0 - 12.0
51 - 100	Not Defined	0.055 - 0.070	4.5 - 9.4	0.036 - 0.075	Not Defined	0.054 - 0.1	55 - 154	12.1 - 35.4
101 - 150	0.125 - 0.164	0.071 - 0.085	9.5 - 12.4	0.076 - 0.185	Not Defined	0.101 - 0.36	155 - 254	35.5 - 55.4
151 - 200	0.165 - 0.204	0.086 - 0.105	12.5 - 15.4	0.186 - 0.304	Not Defined	0.361 - 0.649	255 - 354	55.5 - 150.4
201 - 300	0.205 - 0.404	0.106 - 0.200	15.5 - 30.4	Not Defined	0.305 - 0.604	0.65 - 1.249	355 - 424	150.5 - 250.4
301 - 400	0.405 - 0.504	Not Defined	30.5 - 40.4	Not Defined	0.605 - 0.804	1.25 - 1.649	425 - 504	250.5 - 350.4
401 - 500	Not Defined	Not Defined	40.5 - 50.4	Not Defined	0.805 - 1.004	1.65 - 2.049	505 - 604	350.5 - 500.4
500+	Not Defined	Not Defined	Not Defined	Not Defined	Not Defined	Not Defined	Not Defined	Not Defined

Breakpoint References:

https://aqs.epa.gov/aqsweb/documents/codetables/aqi_breakpoints.html

<https://www3.epa.gov/airnow/aqi-technical-assistance-document-sept2018.pdf>



AQI Forecasts

- Use models to understand weather patterns/estimate pollutant levels
- Look for weather patterns/trends associated with poor air quality and air stagnation such as:
 - Calm to light and variable winds, which limit dispersion
 - Return flow, which can cause recirculation of pollutants (i.e., westerly winds in the AM, easterly in the PM)
 - High pressure overhead = subsidence (sinking air) which helps to limit vertical mixing of the air
 - Surface temperature inversions and low mixing heights (<1,000 feet) can trap contaminants at ground level
 - In the summer, warm to hot temperatures, calm to light winds, and abundant sunshine enhance the formation of ozone



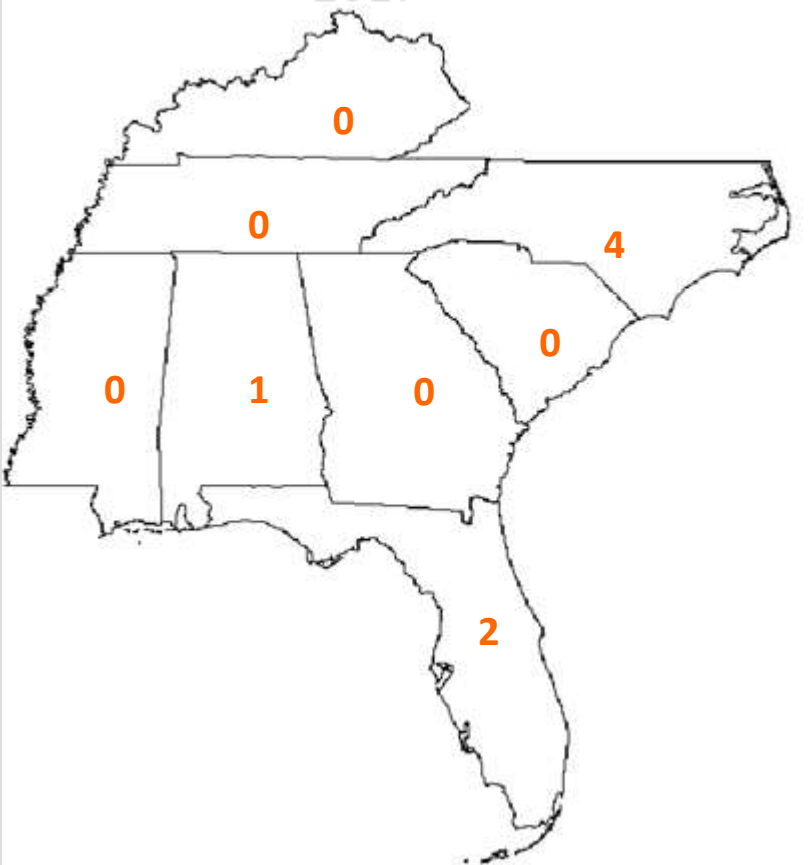
Use of AQI in Burn / No-Burn Decisions?

- Am I allowed to prescribe burn in areas for which the AQI forecast is code **Orange** or higher (Air Quality Action Days)?
 - Depends on state and local agency policies or rules
 - Examples:
 - FL and NC have policies to discourage prescribe burning during code Orange and above days
 - GA has a rule prohibiting prescribe burning on code Orange and above days in certain areas (Rule 391-3-1-.02(5))

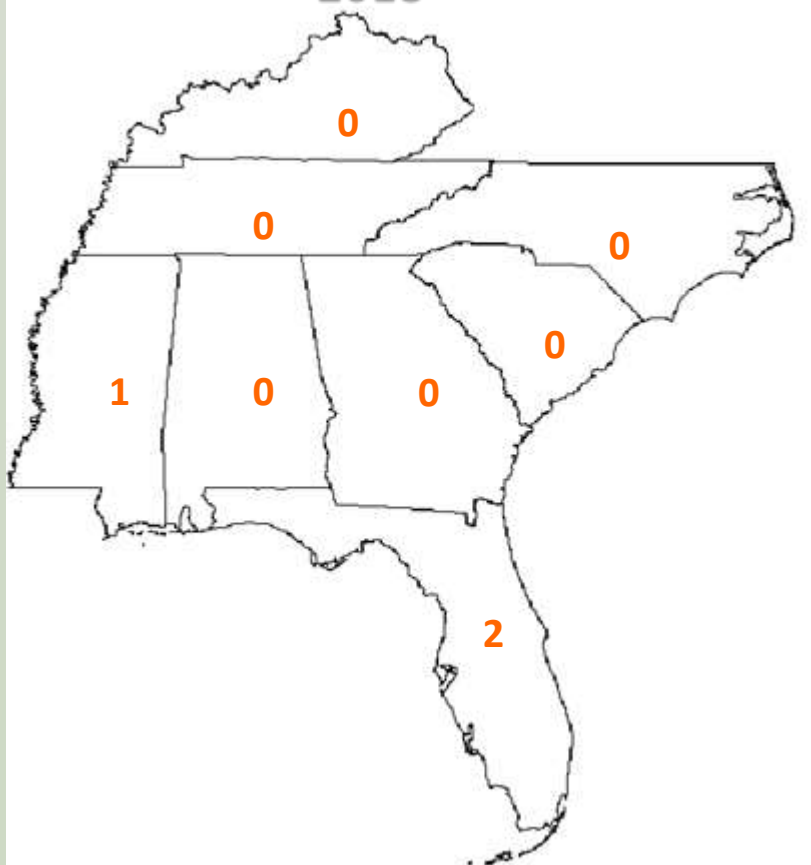


Code Orange or Higher Days Forecasted (PM2.5 Only)

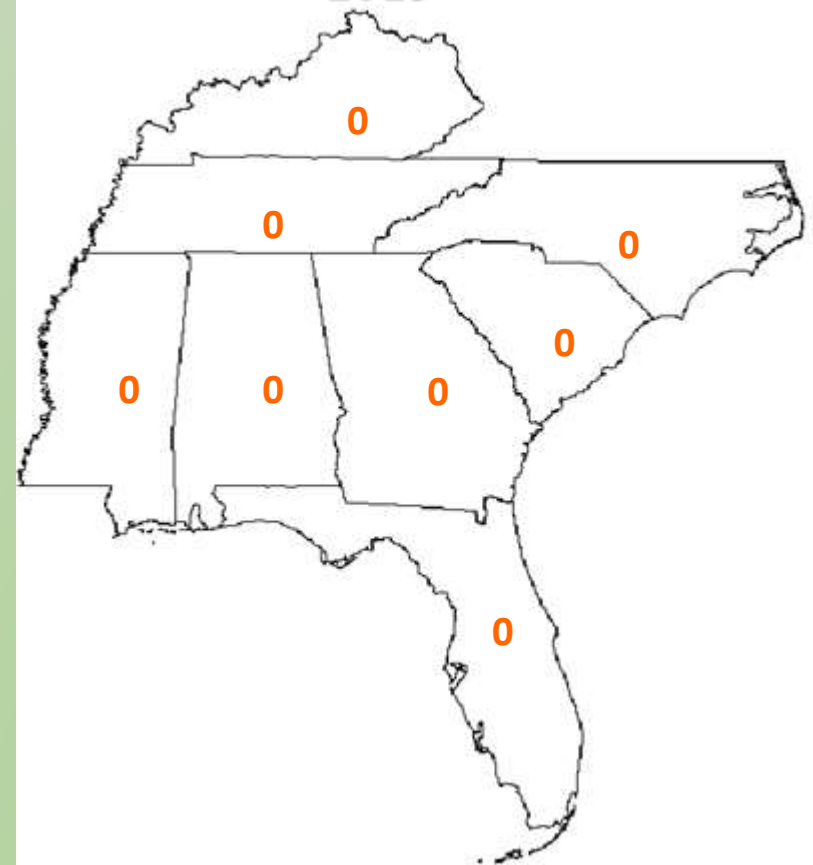
2017



2018



2019



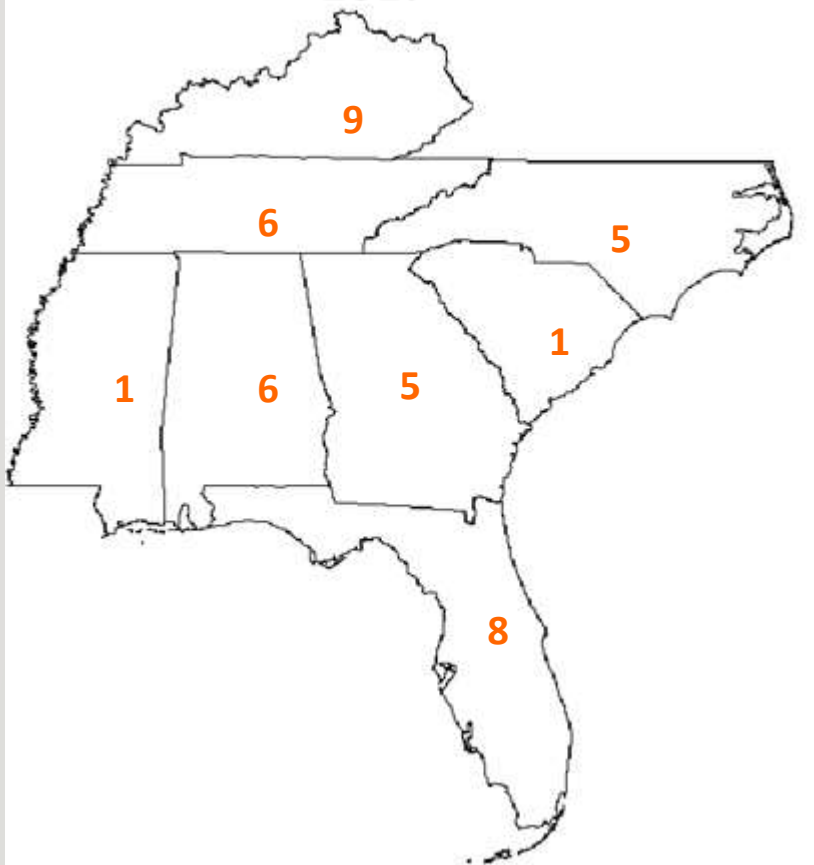
Data courtesy of AirNowTech Forecast Verification Statistics.

Total for a state represents the number of days with forecast of code Orange or higher anywhere in the state.

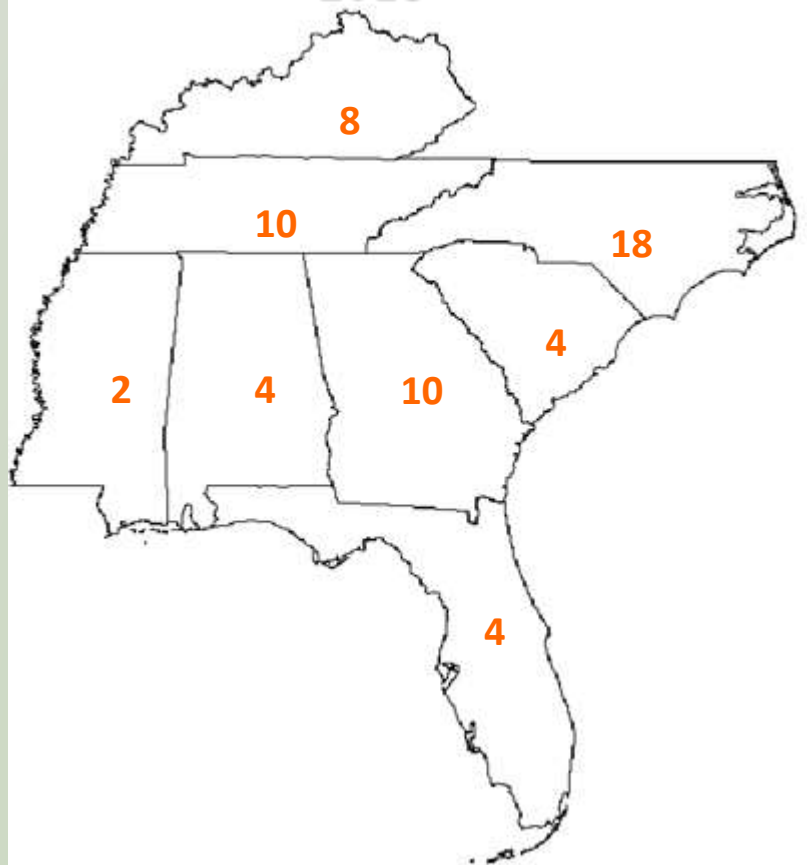


Code Orange or Higher Days Forecasted (Ozone Only)

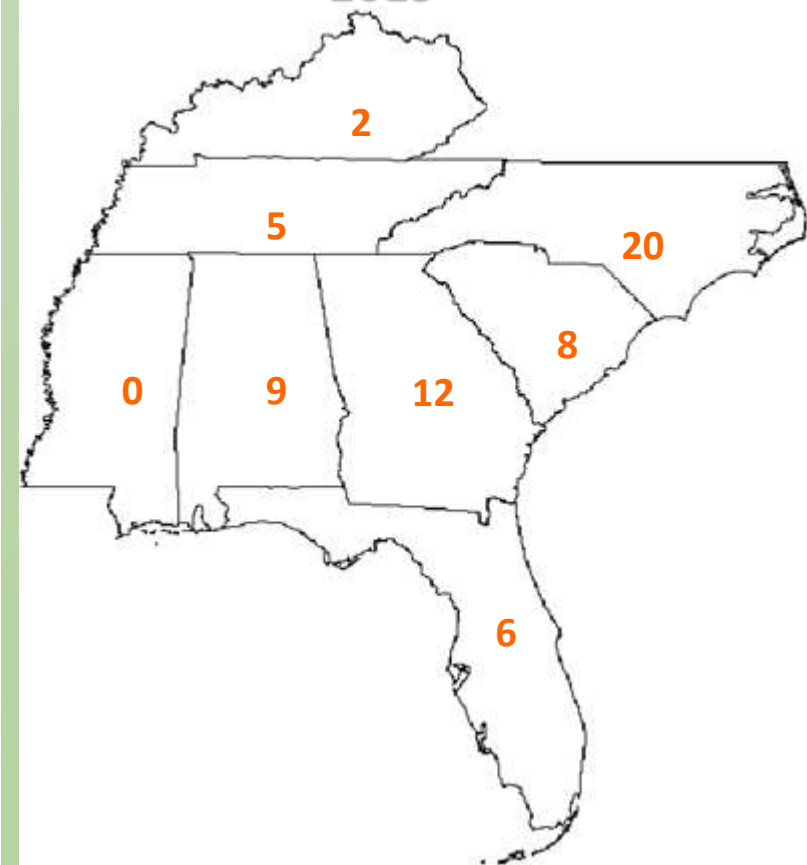
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2018



2019

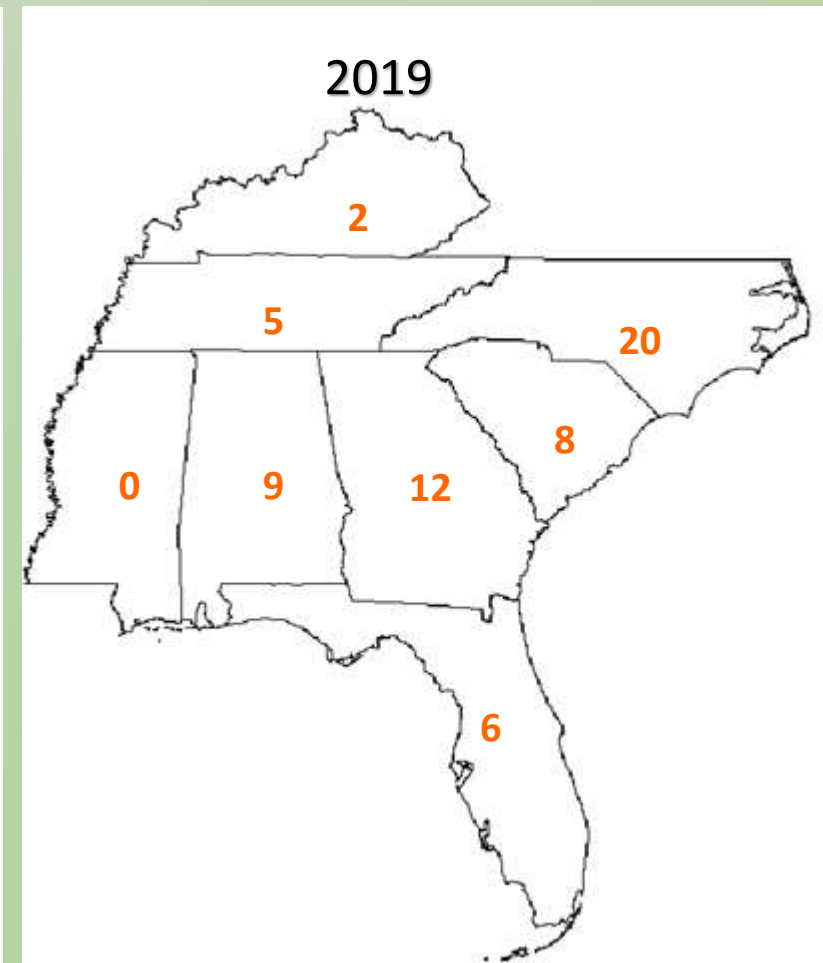
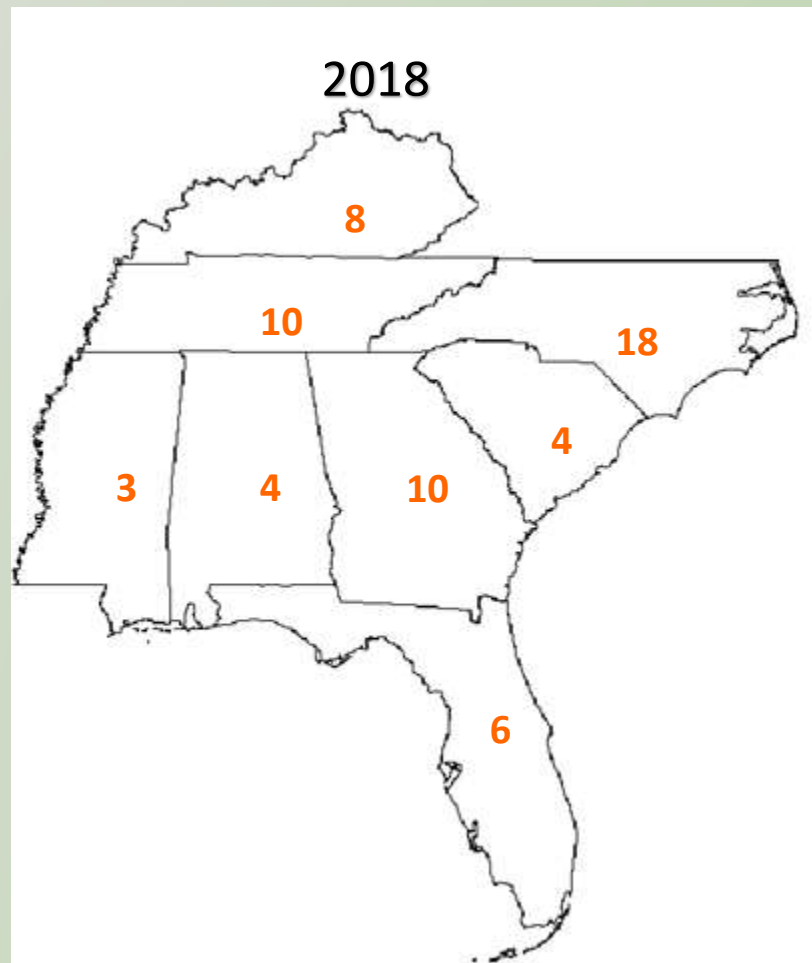
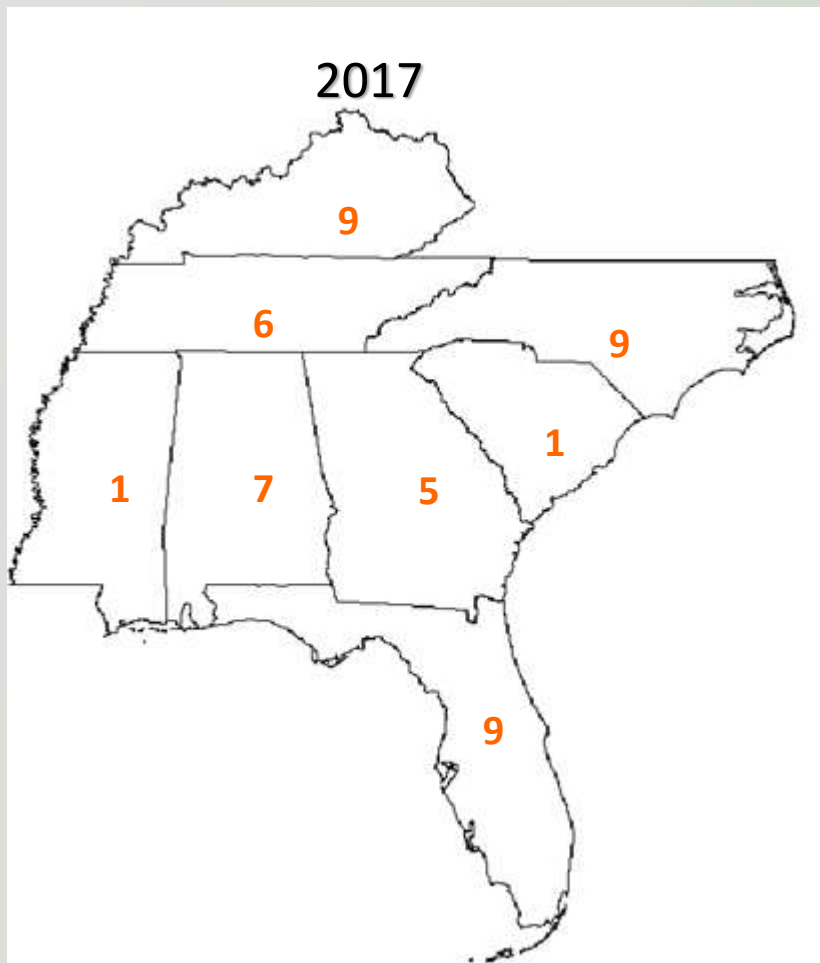


Data courtesy of AirNowTech Forecast Verification Statistics.

Total for a state represents the number of days with forecast of code Orange or higher anywhere in the state.



Code Orange or Higher Days Forecasted (PM2.5 & Ozone)



Data courtesy of AirNowTech Forecast Verification Statistics.

Total for a state represents the number of days with forecast of code Orange or higher anywhere in the state.



How do you get the Air Quality Forecast?

1 EPA: www.airnow.gov



2 Your State or Local Agency Air Quality Forecast for the Next Day

3 [EnviroFlash](http://EnviroFlash.com)
Air quality forecast to your inbox



4 Get an app!
mobile solutions





Current AQI – AirNow Website

(<https://airnow.gov/>)

- View Current AQI
 - Value based off of most recent monitored values
- Find information for your area by clicking the map, entering your zip code, or selecting your state.

Local Air Quality Conditions

Zip Code: Zip Code Go State: Go

Current AQI Forecast AQI Loop More Maps

Today's AQI Forecast
Thursday, January 30, 2020

Canada

Alaska Hawaii Mexico Puerto Rico

Generated: 2020-01-30 15:08:14Z

Good Moderate USC Unhealthy Very Unhealthy Hazardous ! Action Day

Highest 5:
[About the Highest 5](#)

Current AQI	Today's Forecasts	Tomorrow's Forecasts
Portola, CA		118
Phoenix, AZ		97

Fires: Current Conditions

[Click to see map](#)

[Wildfire Guide and Factsheets](#)

[U.S. Embassies and Consulates](#)
Data from air quality monitors at select U.S. embassies and consulates around the world

Announcements

The potential for significant wildland fires in California continues through December. Some air monitors may be down due to power outages. If you see or smell smoke, protect your health by checking [Wildfire Guide Factsheets](#).
[Smoke advisories and forecasts for local air agencies.](#)

[more announcements](#)

Air Quality Basics

[Air Quality Index](#) | [Ozone](#) | [Particle Pollution](#) | [Smoke from fires](#) | [What You Can Do](#)

Health

Learning Center

Apps EnviroFlash

Facebook Widgets

Webcams RSS

Videos Twitter



Today's Forecast – AirNow Website

(<https://airnow.gov/>)

- View Today's Forecast
 - Submitted to AirNow by local and state agencies
- Find the next-day forecast by clicking the map, entering your zip code, or selecting your state.

The screenshot shows the AirNow website interface. At the top, there is a search bar for 'Local Air Quality Conditions' with fields for 'Zip Code' and 'State' (set to Alabama). Below this is a navigation menu with 'Forecast' highlighted in a yellow box. The main content area displays 'Today's AQI Forecast' for Thursday, January 30, 2020, with a map of the United States showing AQI levels. A legend at the bottom indicates AQI categories: Good (green), Moderate (yellow), USG (orange), Unhealthy (red), Very Unhealthy (purple), and Hazardous (dark red). A 'Highest 5' section lists current AQI values for Portola, CA (114) and Phoenix, AZ (92). The right sidebar contains sections for 'Fires: Current Conditions', 'U.S. Embassies and Consulates', 'Announcements', 'Air Quality Basics', 'Health', and 'Learning Center'. At the bottom right, there are links to various mobile apps and services like EnviroFlash, Facebook, Webcams, Videos, Widgets, RSS, and Twitter.



AQI Forecast – AirNow Website

(<https://airnow.gov/>)

- Current and next-day forecast is provided
 - Time at which forecast is submitted and available varies by agency
- Current AQI is provided for locations that have a monitor

Local Air Quality Conditions

Zip Code: Zip Code State:

AirNow Home >> North Carolina

Data and Forecasts courtesy of:
North Carolina Department of Environment and Natural Resources

Current AQI Forecast AQI Loop More Maps

Today's AQI Forecast
Thursday, January 30, 2020

Knoxville Charlotte Atlanta

0 15 30 60 Miles
Generated: 2020-01-30 14:15:11Z

National Parks/Monuments

Good Moderate USG Unhealthy Very Unhealthy Hazardous ! Action Day

Data and Forecasts courtesy of:
North Carolina Department of Environment and Natural Resources

Click on the city name for more detailed information.
[printable summary](#)

	FORECAST		CURRENT AQI
	Thu Jan 30	Fri Jan 31	
Alexander County	40	50	7
Alleghany County	40	40	n/a
Anson County	45	45	n/a
Ashe County	40	40	n/a
Avery County	40	40	24
Beaufort County	40	40	n/a
Bertie County	40	40	n/a
Bladen County	40	40	n/a
Brunswick County	40	40	n/a
Buncombe County	40	40	n/a
Burke County	45	50	n/a



AQI Forecast – Enviroflash Website

(<http://www.enviroflash.info/>)

AirNow Environmental

Air Quality Notifications

[Subscribe to EnviroFlash](#) [Manage Your Account](#)

Welcome to EnviroFlash! Air quality affects how you live and breathe. Like the weather, it can change from day to day, or even hour to hour. Up-to-date information allows you to make decisions based on air quality forecasts. EnviroFlash comes to you through a partnership between the US EPA and your state or local air quality agency - notifying you about air quality so you don't have to go searching for it!

Map Satellite

United States

Today's Forecast

- Good
- Moderate
- Unhealthy for Sensitive Groups
- Unhealthy
- Very Unhealthy
- Hazardous
- Unavailable

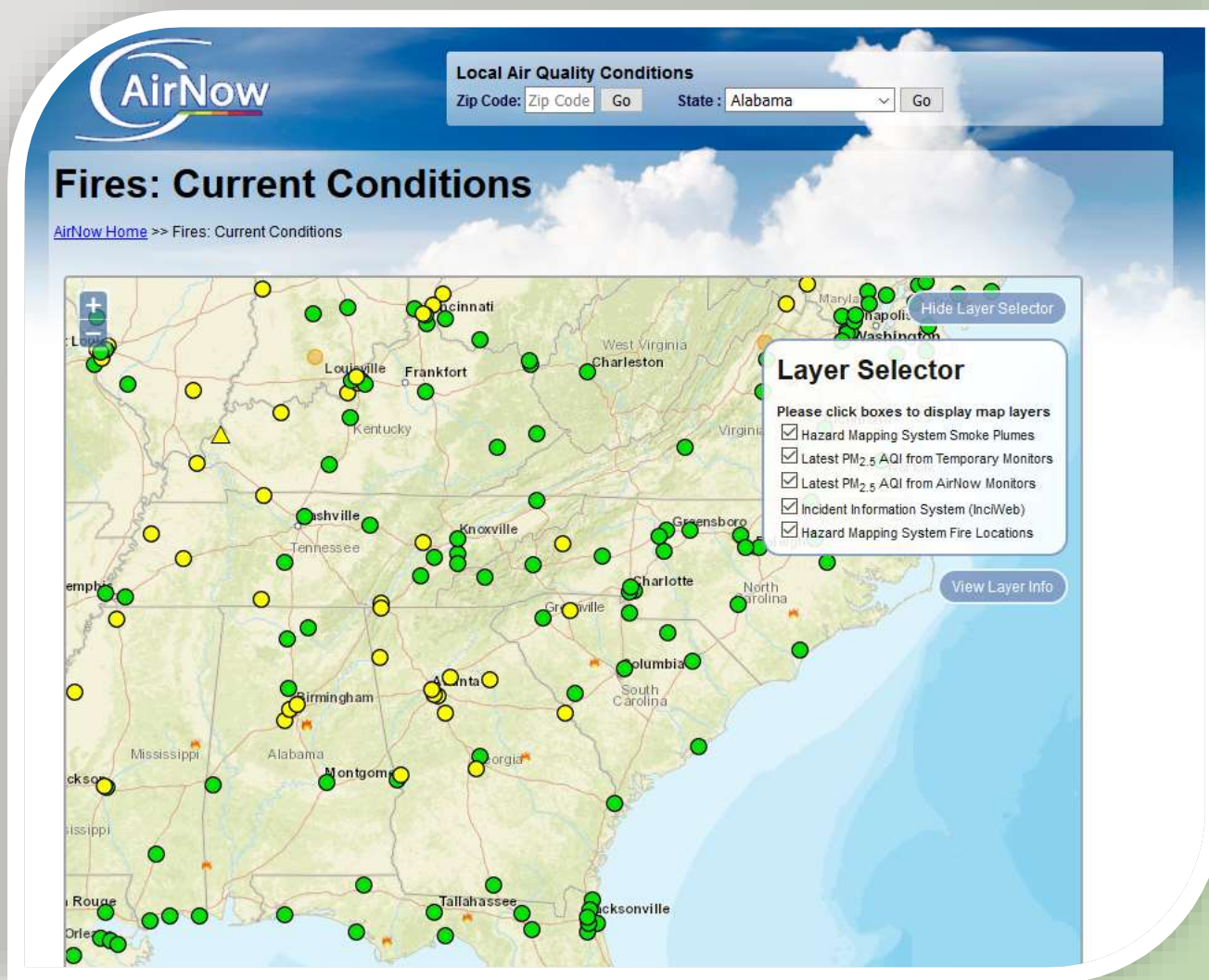
An [on-line subscription page](#) allows you to sign up, edit your profile, or cancel the service. After you choose the type and frequency of service you want, EnviroFlash will be sent to your email or cell phone as specified.

- Sign up for email notifications:
 - Daily Forecast
 - Action Days
 - Current Conditions
- Can select minimum AQI level at which to receive emails during sign up



Fire Information – AirNow Website

(<https://airnow.gov/>)



- Monitor locations
 - Indicated by filled/outlined circles ● ○
 - Temporary monitors indicated by triangles ▲
 - Colors represent Current AQI
- Satellite-derived fires indicated by small fire icon 🔥
- Wildfires/Prescribed Burns indicated by shaded orange circles (data from inciweb.nwcg.gov) 🌞
- Clicking a point will provide detailed information:
 - Current AQI Value
 - Fire Attributes (satellite, method of detection)
 - Information regarding wildfire or prescribed burn (location, impacted areas, containment info, etc)



- Air Quality Forecasts/Information

- Alabama: <http://www.adem.state.al.us/programs/air/airquality.cnt>
- Florida*: <https://floridadep.gov/air/air-monitoring/content/air-quality-today>
- Georgia: <https://airgeorgia.org/>
- Kentucky*: <http://eppcapp.ky.gov/daq/>, <https://louisvilleky.gov/government/air-pollution-control-district/air-quality-forecasts>
- Tennessee*: <https://www.tn.gov/environment/program-areas/apc-air-pollution-control-home/apc/air-quality-forecasting.html>
- North Carolina: <https://xapps.ncdenr.org/aq/ForecastCenterEnvista>
- South Carolina: <https://apps.dhec.sc.gov/Environment/OzoneForecast/>
- Virginia: <https://www.deq.virginia.gov/Programs/Air/AirQualityMonitoringData.aspx>
- West Virginia*: <https://dep.wv.gov/daq/air-monitoring/Pages/AirQualityIndex.aspx>

**Forecast only found via the AirNow Website, <http://www.airnow.gov>*

- Weather Forecasts/Information

- National Weather Service: <https://www.weather.gov/>
 - Enter zip code for point forecasts
 - Point location “Hourly Weather Forecast” provides graphs to visualize upcoming weather, including mixing heights and shifts in wind speed/direction, with ease.