Fact Sheet

Air Quality Forecasts and Observations

Introduction

The U.S. Environmental Protection Agency's (EPA) AIRNow program collects city-specific smog observations and forecasts from state and local air quality agencies across the United States and Canada that issue air quality forecasts, alerts, and action days. These data provide three types of information:

1. Air quality forecasts. Similar to maximum temperature forecasts, air quality forecasts represent the maximum smog levels expected for the current day, next day, and beyond. These forecasts are issued by meteorologists in each state, collected by the AIRNow program, and distributed freely to weather service providers.

2. Current air quality conditions. Like current temperature, the current air quality values provide the highest Air Quality Index (AQI) reading observed in each city.

3. Previous day's AQI maximum. Similar to yesterday's maximum temperature, this data value provides the peak AQI reached at any monitor in each city on the previous day.

Every year, over 125 million Americans are exposed to unhealthy levels of smog, primarily ground-level ozone and particle pollution.

Air quality forecasts and current conditions enable the public to avoid exposure and alter their behavior before unhealthy air occurs. Sensitive individuals (e.g., people with asthma, the elderly, and children) can use this information to reduce or avoid adverse health effects.

Learn more at www.airnow.gov.

New This Year

AIRNow's air quality forecasting program is expanding:

- More cities and forecasts. Close to 300 cities across the United States currently forecast air quality during part of the year; even more cities forecast year-round.

- Quicker delivery. AIRNow's Data Management Center (DMC) updates forecast files at 5, 15, and 35 minutes past the hour.

About the Air Quality Index

The EPA developed the Air Quality Index (AQI) which reports levels of ozone, particle pollution, and other common air pollutants on the same scale. An AQI reading of 101 corresponds to a level that is above the national air quality standard—the higher the AQI rating, the greater the health impact.

The AQI is divided into color-coded categories, and each category is identified by a simple informative descriptor. The descriptors are intended to convey to the public information about how air quality within each category relates to public health. The table below defines the AQI categories.

AQI and Health Effects Resources:
About the AQI (www.airnow.gov/aqi_cl.pdf)
Air Quality Guide for Ozone (www.airnow.gov/aqguide.pdf)
Air Quality Guide for Particle Pollution
(www.airnow.gov/airqualityguideparticles.pdf)
Smog: Who Does It Hurt?
(www.airnow.gov/health/smog.pdf)
Ozone and Your Health (www.airnow.gov/ozone-c.pdf)
Particle Pollution and Your Health
(www.airnow.gov/particle/pm-color.pdf)

AQI Numbers	AQI Category (Descriptor)	AQI Color	Color Formulas (RGB)	(CMYK)
0 - 50	Good	Green	0,228,0	224,0,224,30
51 - 100	Moderate	Yellow	255,255,0	0,0,255,0
101 - 150	Unhealthy for Sensitive Groups	Orange	255,126,0	0,132,255,0
151 - 200	Unhealthy	Red	255,0,0	0,255,255,0
201 - 300	Very Unhealthy	Purple	153,0,76	0,153,80,102
301 - 500	Hazardous	Maroon	76,0,38	0,76,38,179

File Format Specifications

Data are stored in an ASCII file, which contains yesterday's observed maximum AQI and the latest forecasts and observations for all cities. Air quality agencies throughout the United States typically issue these forecasts once or twice a day. Agencies usually submit the forecasts in the late morning to early afternoon hours (local time) with all forecasts completed by 1700 ET (2100 UTC) each day. Current observations are updated each hour. The data file is updated at 5, 15, and 35 minutes past the hour. File specifications are as follows:

Format: *forecast.csv*

File Contents: The file contains forecasts for the current and next day. For some cities, the file contains forecasts for two to five days. It also contains the current observations for each city and the previous day's maximum AQI readings.

Location of File: The file is available at the AIRNow Data Management Center's ftp site. Please contact Alan Chan at 707-665-9900 or e-mail AIRNowDMC@sonomatech.com for details.

Field Delimiter: | (ASCII character 124)

Report Units: Air Quality Index

Issue date|Valid date|Valid time|Time zone|Record sequence|Data type|Primary|City name|State code|Latitude|Longitude|Pollutant|AQI value|AQI category|Action day|Discussion|

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For Data Field Definitions, see the table on the next page.

Example Records:

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05/01/05|05/01/05|17:00|EDT|0|O|Y|Columbus|OH|39.9890|-82.9870|PM2.5|49|Good|No||
05/01/05|05/01/05|17:00|EDT|0|O|N|Columbus|OH|39.9890|-82.9870|OZONE|33|Good|No||
05/01/05|04/30/05||EDT|-1|Y|Y|Columbus|OH|39.9890|-82.9870|PM2.5|70|Moderate|No|An upper-level trough...
05/01/05|04/30/05||EDT|-1|Y|N|Columbus|OH|39.9890|-82.9870|OZONE|35|Good|No|An upper-level trough...
05/01/05|04/30/05||EDT|-1|Y|N|Columbus|OH|39.9890|-82.9870|PM10|17|Good|No|An upper-level trough...
05/01/05|05/01/05||EDT|0|F|Y|Columbus|OH|39.9890|-82.9870|PM2.5|49|Good|No|An upper-level trough...
05/01/05|05/01/05||EDT|0|F|N|Columbus|OH|39.9890|-82.9870|OZONE|33|Good|No|An upper-level trough...
05/01/05|05/02/05||EDT|1|F|Y|Columbus|OH|39.9890|-82.9870|PM2.5|42|Good|No|An upper-level trough...
05/01/05|05/02/05||EDT|1|F|N|Columbus|OH|39.9890|-82.9870|OZONE|35|Good|No|An upper-level trough...
05/01/05|05/03/05||EDT|2|F|Y|Columbus|OH|39.9890|-82.9870|PM2.5||Moderate|No|An upper-level trough...
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Data Field Definitions

Field Name	Length	Units/Format	Description	Sample
Issue date	8	mm/dd/yy	Local date that forecast is issued. Note that for current and yesterday's AQI, this field is always today's date.	05/01/05
Valid date	8	mm/dd/yy	Local date that forecast is valid for or local date that an observation is made.	05/01/05
Valid time [1]	5	hh:mm	Time that a record is valid. Note that for forecasts and yesterday's AQI, this field will be blank.	17:00
Time zone	3	Text	Time zone for report observations. Note that for forecasts and yesterday's AQI, this field will be blank.	EDT
Record sequence	3	Numeric	Indicates day number of a forecast or whether it is an observation. For example, -1 – Yesterday's observed maximum AQI 0 – Same-day forecast or hourly AQI observation 1 – Next-day forecast Note that this is not always correct for forecasts. Always refer to the "Valid date" field to determine when a forecast is valid for.	-1
Data type	1	Text	F – Forecast Y – Yesterday's AQI O – Hourly AQI Observation	O
Primary [2]	1	Text	Y – primary pollutant (i.e., highest AQI reading) N – not primary	N
City name	45	Text	City	Columbus
State code	2	Text	State	OH
Latitude	7	Numeric	Latitude of a city (decimal degrees)	39.9890
Longitude	9	Numeric	Longitude of a city (decimal degrees)	-82.9870
Pollutant	20	Text	Pollutant: OZONE = Ozone PM10 = Coarse Particles (10 µm) PM2.5 = Fine Particles (2.5 µm) CO = Carbon monoxide NO2 = Nitrogen dioxide SO2 = Sulfur dioxide	OZONE
AQI value [3]	3	Numeric	0 to 500	33
AQI category	40	Text	Good Moderate Unhealthy for Sensitive Groups Unhealthy Very Unhealthy Hazardous	Good
Action Day	3	Yes/No	Air quality action day	Yes
Discussion	4000	Text	Forecast discussion. Note that for hourly AQI observations and cities without forecast discussions, this field will be blank.	An upper-level trough...

[1] Valid time is blank for forecasts and previous day's AQI.
[2] Primary indicates that different pollutant forecasts for the same city on the same day exist. This field indicates whether a given forecast is for the primary pollutant (i.e., maximum AQI) for that day. This should be N for all but one record for a given city and day.
[3] AQI value is blank for cities with only AQI categorical forecasts.

Guidelines for the Use of AIRNow Data, Forecasts, and Advisories

- Credit should be given to the appropriate source, either EPA AIRNow or a state/local air quality agency, if known.

- Air quality data, forecast values, and advisory statements should not be altered in any way and should be disseminated as received.

- Air quality observed and forecast values should be disseminated in accordance with the Air Quality Index (AQI) and corresponding RGB colors as follows:

AQI Level	Color	R	G	B
Good	Green	0	228	0
Moderate	Yellow	255	255	0
Unhealthy for Sensitive Groups	Orange	255	126	0
Unhealthy	Red	255	0	0
Very Unhealthy	Purple	153	0	76
Hazardous	Maroon	76	0	38

- All end users who receive these data should be updated with the most current data available when possible, and, in particular, when advisories are issued by the state/local air quality agencies. The AIRNow program updates all data hourly.

- AIRNow observational data are not fully verified or validated and should be considered preliminary. As such, they should not be used to formulate or support regulation, guidance, or any other government or public decision.

- Questions regarding AIRNow data, forecasts, and advisories should be directed to AIRNowDMC@sonomatech.com and white.johne@epa.gov.

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