Fact Sheet

Hourly Data File

Introduction

The U.S. Environmental Protection Agency's (EPA) nationwide, voluntary program, AirNow (www.airnow.gov), provides real-time air quality data and forecasts to protect public health across the United States, Canada, and parts of Mexico. AirNow receives real-time ozone and $PM_{2.5}$ data from over 2,500 monitors and collects air quality forecasts for more than 500 cities.

As part of the Global Earth Observation System of Systems (GEOSS) program, the AirNow API system broadens access to AirNow data and data products. AirNow API produces data products in several standard data formats and makes them available via FTP and web services. This document describes the hourly data file format.

All data provided by AirNow API are made possible by the efforts of more than 150 local, state, tribal, provincial, and federal government agencies (https://www.airnow.gov/partners/). These data are not fully verified or validated; they should be considered preliminary and are subject to change. Data and information reported to AirNow from federal, state, local, and tribal agencies are for the express purpose of reporting and forecasting the Air Quality Index (AQI). Therefore, they should not be used to formulate or support regulation, trends, guidance, or any other government or public decision making. Official regulatory air quality data must be obtained from EPA's Air Quality System (AQS) (https://www.epa.gov/aqs). See the AirNow Data Exchange Guidelines at http://airnowapi.org/docs/DataUseGuidelines.pdf.

About the Air Quality Index

The EPA developed the 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 information to the public about how air quality within each category relates to public health. The table below defines the AQI categories.

AQI Numbers	AQI Category (Descriptor)	AQI Color	Color Formulas (RGB)	(CMYK)
0 - 50	Good	Green	0,228,0	40,0,100,0
51 - 100	Moderate	Yellow	255,255,0	0,0,100,0
101 - 150	Unhealthy for Sensitive Groups	Orange	255,126,0	0,52,100,0
151 - 200	Unhealthy	Red	255,0,0	0,100,100,0
201 - 300	Very Unhealthy	Purple	143,63,151	51,89,0,0
301 - 500	Hazardous	Maroon	126,0,35	30,100,100,30

File Format Specifications

Data are stored in an ASCII file that contains one hour of data from all publicly approved monitoring sites in AirNow. Only valid data are reported in the data file. The data file is updated twice per hour (at 25 and 55 minutes past the hour) or more frequently if possible. All hourly files for the preceding 48 hours will be updated every hour to ensure data completeness and quality. The date and hour specification in the filename and within the file is in GMT and marks the beginning of the measurement period. File specifications are as follows:

File name format:	**HourlyData_yyyymmddhh.dat**
Update frequency:	**sub-hourly (:25 and :55 minutes past the hour)**
Field delimiter:	**| (ASCII character 124)**
Field specifications:	**see table on the next page**

Location of files: The latest available file can be found in the today directory

Address:	https://files.airnowtech.org
Directory:	/?prefix=airnow/today/

The files are available in each day's directory at the following URL

Address:	https://files.airnowtech.org
Directory:	/?prefix=airnow/YYYY/YYYYMMDD/

Report units: Various. See the table on the next page.

Sample record:

Valid date|valid time|AQSID|sitename|GMT offset|parameter name|reporting units|value|data source

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

Sample records:

05/30/19|22:00|060410001|San Rafael|-8|OZONE|PPB|22|San Francisco Bay Area AQMD

05/30/19|22:00|040191001|South Tucson|-7|PM10|UG/M3|12|Pima County Department of Environmental Quality

05/30/19|22:00|271453052|St. Cloud|-6|PM2.5|UG/M3|11|Minnesota Pollution Control Agency

05/30/19|22:00|250213003|E. Milton - Blue Hil|-5|BARPR|MILLIBAR|983.8|Massachusetts Dept. of Environmental Protection

5/30/19|22:00|000030310|SYDNEY|-4|NO|PPB|1|Environment Canada

05/30/19|22:00|UB1010001|Ulaanbaatar|8|PM2.5|UG/M3|5|U.S. Department of State Mongolia - Ulaanbaatar

Air Quality and Meteorological Parameter	Parameter Name	Units	Reporting Units	Hourly	Daily
NO (nitric oxide)	NO	ppb	PPB	X	
NO_2 (nitrogen dioxide), true measure	NO2T	ppb	PPB	X	
NO_2 computed, NO_x-NO	NO2	ppb	PPB	X	
NO_2 computed, NO_y-NO	NO2Y	ppb	PPB	X	
NO_x (nitrogen oxides)	NOX	ppb	PPB	X	
NO_y (total reactive nitrogen)	NOY	ppb	PPB	X	
NO_3 ion (nitrate, not adjusted for ammonium ion)	NO3	µg/m^3	UG/M3	X	
SO_4 ion (sulfate, not adjusted for ammonium ion)	SO4	µg/m^3	UG/M3	X	
SO_2 (sulfur dioxide), conventional	SO2	ppb	PPB	X	
SO_2 24-hr average (midnight to midnight)	SO2-24HR	ppb	PPB		X
SO_2 trace levels	SO2T	ppb	PPB	X	
CO (carbon monoxide), conventional	CO	ppm	PPM	X	
Peak CO 8-hr average (midnight to midnight)	CO-8HR	ppm	PPM		X
CO trace levels	COT	ppb	PPB	X	
EC (elemental carbon) – $PM_{2.5}$	EC	µg/m^3	UG/M3	X	
OC (organic carbon, not adjusted for oxygen and hydrogen) – $PM_{2.5}$	OC	µg/m^3	UG/M3	X	
BC (black carbon at 880 nm)	BC	µg/m^3	UG/M3	X	
UV-AETH (second channel of Aethalometer at 370 nm)	UV-AETH	µg/m^3	UG/M3	X	
$PM_{2.5}$ mass	PM2.5	µg/m^3	UG/M3	X	
PM_{10} mass	PM10	µg/m^3	UG/M3	X	
Ozone	OZONE	ppb	PPB	X	
Peak ozone 8-hr average (midnight to midnight)	OZONE-8HR	ppb	PPB		X
Peak ozone 1-hr maximum (midnight to midnight)	OZONE-1HR	ppb	PPB		X
$PM_{2.5}$ mass 24-hr average (midnight to midnight)	PM2.5-24HR	µg/m^3	UG/M3		X
PM_{10} mass 24-hr average (midnight to midnight)	PM10-24HR	µg/m^3	UG/M3		X
Ambient temperature	TEMP	^{o}C	C	X	
Wind speed	WS	m/s	M/S	X	
Wind direction	WD	degrees	DEGREES	X	
Relative humidity	RHUM	%	PERCENT	X	
Barometric pressure	BARPR	mb	MILLIBAR	X	
Solar radiation	SRAD	Watts/m^2	WATTS/M2	X	
Precipitation	PRECIP	mm	MM	X	

Field Specifications

Field Name	Characters	Units/Format	Description	Sample
Valid date	8	mm/dd/yy	Local date for which the data are valid. Date is in GMT.	05/30/19
Valid time	5	hh:mm GMT	Time of the measured data value. Note that time is reported in GMT and corresponds to the beginning of the measurement period. For example, a data value with a time of 17:00 represents a sample measured from 17:00 to 17:59 GMT.	22:00
AQSID	9	Numeric	Nine-digit EPA AQS identifier.	060410001
Sitename	20	Text	Name of the monitoring site.	San Rafael
GMT offset	3	Numeric	Number of hours to add to the time to convert to the local, standard time zone. For example: ET=-5, CT=-6, MT=-7, PT=-8.	-8
Parameter name	10	Text	Name of the parameter reported in that record. See table on the previous page for a list of valid parameter names.	OZONE
Reporting units	8	Text	Units of data value reported in the record. See table on the previous page for list of units.	PPB
Value	6	Numeric	Data value for the site.	22
Data Source	100	Text	Name of the agency reporting the data.	San Francisco Bay Area AQMD

Contacts

U.S. Environmental Protection Agency

	Phone	Email
John White, AirNow Program Manager	(919) 541-2306	white.johne@epa.gov
Susan Stone, Health Effects	(919) 541-1146	stone.susan@epa.gov

Data Management Center – Tantus Technologies, Inc.

AirNow Data Management Center (DMC) dmc@airnowtech.org