Fact Sheet

Recent Trends - Site 24-hour JSON Files

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 recent trends JSON files for monitoring sites, which include the last 24 hours of hourly NowCast AQI and concentration readings for ozone, PM2.5, and PM10.

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 JSON files that contains the last 24 hours of hourly NowCast AQI and concentration readings from monitoring sites in AirNow. Only valid data are reported in the data file. The data files are updated twice per hour (:25 and :40 past the hour). File specifications are as follows:

File name format: **SITEID.JSON (ex: "000010102.json") – Site IDs will either be 9 or 12 digits**
Update frequency: **Twice hourly** (:25 and :40 past the hour)
Field specifications: **see table on the next page**

Location of files: The site files can be found in the recent-trends directory
Address: https://files.airnowtech.org
Directory: /?prefix=airnow/recenttrends/Sites/
File URL Example:
https://files.airnowtech.org/airnow/recenttrends/Sites/000010102.json

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

Parameters included: Ozone, PM2.5, PM10

Sample record:


```
{
    "siteName": "St. John's",
    "stationID": "000010102",
    "fullAQSCode": "000010102",
    "intlCode": "124000010102",
    "coordinates": [-52.8167, 47.6528],
    "monitors": [{
            "parameterName": "O3",
            "parameterDisplayName": "O3 - 44201",
            "concUnit": "PPB",
            "aqi": [33.0, 33.0, 32.0, 32.0, 34.0, 34.0, 34.0, 35.0, 33.0, 31.0,
31.0, 31.0, 30.0, 31.0, 30.0, 31.0, 30.0, 29.0, 28.0, 27.0, 27.0, 25.0, 23.0, 24.0],
            "conc": [35.0, 36.0, 36.0, 37.0, 37.0, 37.0, 37.0, 38.0, 37.0, 35.0,
34.0, 34.0, 32.0, 33.0, 31.0, 33.0, 32.0, 31.0, 28.0, 27.0, 28.0, 24.0, 22.0, 25.0]
        }
    ],
    "utcOffset": -3.0,
    "startTimeUTC": "2021-03-17 11:00:00",
    "endTimeUTC": "2021-03-18 10:00:00",
    "utcDateTimes": ["2021-03-17 11:00:00", "2021-03-17 12:00:00", "2021-03-17
13:00:00", "2021-03-17 14:00:00", "2021-03-17 15:00:00", "2021-03-17 16:00:00",
"2021-03-17 17:00:00", "2021-03-17 18:00:00", "2021-03-17 19:00:00", "2021-03-17
20:00:00", "2021-03-17 21:00:00", "2021-03-17 22:00:00", "2021-03-17 23:00:00",
"2021-03-18 00:00:00", "2021-03-18 01:00:00", "2021-03-18 02:00:00", "2021-03-18
03:00:00", "2021-03-18 04:00:00", "2021-03-18 05:00:00", "2021-03-18 06:00:00",
"2021-03-18 07:00:00", "2021-03-18 08:00:00", "2021-03-18 09:00:00", "2021-03-18
10:00:00"],
    "fileWrittenDateTime": "20210318T112801Z"
}
```

Field Specifications

Field Name	JSON type	Units/Format	Description	Sample
siteName	String	Text	The name of the monitoring site	"siteName": "St. John's"
stationID	String	9 or 12 characters	The stations identifier. This code can be either length 9 or length 12, depending on the site.	"stationID": "840530499998"
fullAQSCode	String	9 characters	The stations identifier without the length 3 country code. This will always be length 9.	"fullAQSCode": "530499998"
intlCode	String	12 characters	The stations identifier with the length 3 country code. This will always be length 12	"intlCode": "840530499998"
Coordinates	Array	[Latitude,Longitude]	Latitude and Longitude coordinates for the monitoring site.	"coordinates": [-123.731766, 46.688217]
Monitors	Array	n/a	Array containing concentration and NowCast AQI information for PM2.5, PM10, and Ozone.	"monitors": [{}]
parameterName	String	Text	Name of the parameter being measured.	"parameterName": "O3"
parameterDisplayName	String	Text	Additional parameter name field with short parameter name/ID appended to the end of the string.	"parameterDisplayName": "O3 - 44201"
concUnit	String	Text	Unit corresponding to the parameter	"concUnit": "PPB"
aqi	Array	Numeric	Array of length 24 containing the past 24 hours of NowCast AQI readings for the given parameter. Readings go from oldest to newest, corresponding with the utcDateTimes array	"aqi": [19.0, 19.0, 22.0, 25.0, 23.0, 22.0, 23.0, 24.0, 24.0, 23.0, 23.0, 19.0, 21.0, 21.0, 22.0, 25.0, 26.0, 21.0, 21.0, 23.0, 21.0, 21.0, 21.0, 19.0],
Conc	Array	Numeric	Array of length 24 containing the past 24 hours of hourly concentration readings for the given parameter. Readings go from oldest to newest, corresponding with the utcDateTimes array	"conc": [19.0, 21.0, 25.0, 26.0, 26.0, 25.0, 26.0, 27.0, 27.0, 27.0, 28.0, 21.0, 23.0, 23.0, 24.0, 25.0, 27.0, 24.0, 23.0, 24.0, 21.0, -999.0, -999.0, 15.0]

Field Specifications (cont'd)

Field Name	JSON type	Units/Format	Description	Sample
utcOffset	Number	Numeric	The number of hours from UTC time the site is in (positive or negative). Applying this offset to the utcDateTimes will provide the user with the local timestamp.	"utcOffset": -4.0
startTimeUTC	String	YYYY-MM-DD HH:mm:ss	Time of the first timestamp in the utcDateTimes array, signifying the beginning of the 24 hour period	"startTimeUTC": "2021-03-17 12:00:00"
endTimeUTC	String	YYYY-MM-DD HH:mm:ss	Time of the last timestamp in the utcDateTimes array, signifying the end of the 24 hour period	"endTimeUTC": "2021-03-18 11:00:00"
utcDateTimes	Array	YYYY-MM-DD HH:mm:ss	Array of length 24 containing the hourly timestamps in UTC corresponding to the data in the aqi and conc arrays. **Note: timestamps are labelled in "begin hour"** I.e., a reading for 2021-03-17 12:00:00 UTC is an observation measured between 12:00-13:00 UTC	"utcDateTimes": ["2021-03-17 12:00:00", "2021-03-17 13:00:00", "2021-03-17 14:00:00", "2021-03-17 15:00:00", "2021-03-17 16:00:00", "2021-03-17 17:00:00", "2021-03-17 18:00:00", "2021-03-17 19:00:00", "2021-03-17 20:00:00", "2021-03-17 21:00:00", "2021-03-17 22:00:00", "2021-03-17 23:00:00", "2021-03-18 00:00:00", "2021-03-18 01:00:00", "2021-03-18 02:00:00", "2021-03-18 03:00:00", "2021-03-18 04:00:00", "2021-03-18 05:00:00", "2021-03-18 06:00:00", "2021-03-18 07:00:00", "2021-03-18 08:00:00", "2021-03-18 09:00:00", "2021-03-18 10:00:00", "2021-03-18 11:00:00"]
fileWrittenDateTime	String	YYYYMMDDTHHMMSSZ	Time the file was last updated. Not necessarily the day the AQI readings correspond to.	"fileWrittenDateTime": "20210318T122610Z"

Contacts

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Data Management Center

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