# **Important Links: Air Quality Data Processing Resources**

## **Government Air Quality APIs & Data Sources**

**EPA AirNow API**<https://docs.airnowapi.org/> Official U.S. EPA real-time air quality data API with current conditions and forecasts

**EPA Air Quality System (AQS) API**<https://aqs.epa.gov/aqsweb/documents/data_api.html> Comprehensive historical air quality data from EPA monitoring stations

**Virginia Department of Environmental Quality**<https://www.deq.virginia.gov/air/monitoring> State-level air quality monitoring data and station information

**World Air Quality Index Project API**<https://aqicn.org/api/> Global air quality data aggregation service with international coverage

**IQAir Visual Crossing API**<https://www.iqair.com/air-pollution-data-api> Commercial air quality API with global coverage and historical data

## **Technical Documentation & Standards**

**EPA Air Quality Index Guide**<https://www.epa.gov/air-quality-index/technical-assistance-document-reporting-daily-air-quality> Official technical documentation for AQI calculation and interpretation

**World Health Organization Air Quality Guidelines**<https://www.who.int/news-room/feature-stories/detail/what-are-the-who-air-quality-guidelines> International health-based air quality standards and recommendations

**OpenAQ Platform**<https://openaq.org/> Open-source platform aggregating global air quality data from government monitoring stations

**JSON Schema Documentation**<https://json-schema.org/> Technical specification for validating JSON data structures

## **Python Libraries & Tools**

**Pandas Documentation**<https://pandas.pydata.org/docs/> Comprehensive guide to pandas data analysis library used in the code examples

**Python Requests Library**<https://docs.python-requests.org/> HTTP library for making API calls to environmental data services

**Matplotlib Documentation**<https://matplotlib.org/stable/contents.html> Python plotting library for visualizing air quality data and trends

**Seaborn Documentation**<https://seaborn.pydata.org/> Statistical data visualization library built on matplotlib

**Python DateTime Module**<https://docs.python.org/3/library/datetime.html> Built-in Python library for handling timestamps and time zone conversions

## **Data Visualization & Analysis Tools**

**Plotly Python**<https://plotly.com/python/> Interactive plotting library for creating dynamic air quality visualizations

**Jupyter Notebook**<https://jupyter.org/> Web-based interactive development environment for data analysis and visualization

**Apache Superset**<https://superset.apache.org/> Open-source data visualization platform for creating air quality dashboards

**Grafana**<https://grafana.com/> Monitoring and observability platform suitable for real-time air quality displays

## **Related Research & Case Studies**

**EPA Air Sensor Toolbox**<https://www.epa.gov/air-sensor-toolbox> Resources for air sensor data collection, evaluation, and application

**Berkeley Earth Air Quality Analysis**<http://berkeleyearth.org/air-quality-real-time-map/> Real-time global air quality monitoring and analysis project

**PurpleAir Network**<https://www2.purpleair.com/> Citizen science air quality monitoring network with public API access

**Environmental Data Science Handbook**<https://the-environmental-ds-book.netlify.app/> Comprehensive guide to environmental data science methods and applications

## **Code Repositories & Examples**

**EPA Air Quality Data Processing Examples**<https://github.com/USEPA/AirSensor> R package for working with air quality sensor data

**OpenAQ Python SDK**<https://github.com/dhhagan/py-openaq> Python wrapper for accessing OpenAQ air quality data

**Air Quality Analysis Notebooks**<https://github.com/betatim/air-quality> Collection of Jupyter notebooks for air quality data analysis

**Environmental Data Science Examples**<https://github.com/earth-env-data-science/earth-env-data-science-book> Educational resources for environmental data analysis with Python

## **Professional Development & Communities**

**Environmental Data Science Community**<https://discourse.pangeo.io/> Discussion forum for environmental data science practitioners

**Python in Environmental Science**<https://earthpy.org/> Resources and tutorials for using Python in environmental applications

**Air Quality Research Community**<https://www.researchgate.net/topic/Air-Quality> Academic research community focused on air quality monitoring and analysis

**Data Science for Social Good**<https://www.dssg.io/> Organization applying data science to environmental and social challenges

## **Mobile Apps & Public Interfaces**

**AirNow Mobile App**<https://www.airnow.gov/airnow-mobile-app/> Official EPA mobile application for current air quality conditions

**IQAir AirVisual**<https://www.iqair.com/air-quality-app> Global air quality monitoring mobile application

**PurpleAir Map**<https://map.purpleair.com/> Real-time air quality map from citizen science sensor network

**EPA AirNow Website**<https://www.airnow.gov/> Public interface for current U.S. air quality conditions and forecasts

## **Additional Resources**

**Climate Data Online**<https://www.ncdc.noaa.gov/cdo-web/> NOAA's comprehensive climate and environmental data archive

**NASA Air Quality Data**<https://www.earthdata.nasa.gov/earth-observation-data/near-real-time/hazards-and-disasters/air-quality> Satellite-based air quality monitoring data and analysis tools

**Environmental Protection Agency APIs**<https://www.epa.gov/enviro/web-services> Central listing of EPA environmental data APIs and web services

**International Air Quality Standards**<https://www.unep.org/explore-topics/air/what-we-do/monitoring-air-quality> United Nations Environment Programme air quality monitoring resource