Air Quality Data (Real-Time + Historical)

CPCB (India Central Pollution Control Board)

- **Type**: Real-time AQI & pollutants (PM2.5, PM10, NO_2, SO_2, O_3, CO)

- **Source**:
  🔗 https://airquality.cpcb.gov.in/AQI_India/

- **Format**: API or downloadable CSV/JSON

- **Use**: Real-time AQI display, pollution type trends

OpenAQ Platform

- **Type**: Real-time and historical global AQI data

- **Source**:
  🔗 https://openaq.org/

- **Format**: REST API

- **Use**: Fill gaps where CPCB is unavailable (supports integration with PurpleAir & others)

Kaggle Historical AQI Dataset

- **Author**: Rohan Rao

- **Type**: Historical AQI and pollutants in Indian cities (2015–2020+)

- **Source**:
  🔗 https://www.kaggle.com/datasets/rohanrao/air-quality-data-in-india

- **Use**: For training forecasting models

---

2. Meteorological / Weather Data

OpenWeatherMap API

- **Type**: Current, forecasted, and historical weather (temperature, humidity, wind, pressure)

- **Source**:
  🔗 https://openweathermap.org/api

- **Format**: JSON via API

- **Use**: Feature input for AQI prediction models

Indian Meteorological Department (IMD)

- **Type**: Temperature, rainfall, wind speed, humidity, seasonal reports

- **Source**:
  🔗 https://mausam.imd.gov.in/

- **Use**: Additional verification or alternative to OpenWeatherMap

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3. Satellite-Based Pollution Data

Sentinel-5P (TROPOMI) – ESA

- **Type**: NO_2, O_3, CO, SO_2, CH_4 concentration over time

- **Source**:
  🔗 https://scihub.copernicus.eu/
  or via APIs like Google Earth Engine

- **Use**: Fill data gaps in rural areas without ground stations

NASA MODIS (Aerosol Optical Depth)

- **Type**: AOD → proxy for PM2.5

- **Source**:
  🔗 https://modis.gsfc.nasa.gov/data/

- **Use**: Estimate PM levels in sensor-less zones

ISRO BHUVAN

- **Type**: India-specific satellite imagery and land surface data

- **Source**:
  🔗 https://bhuvan.nrsc.gov.in/

- **Use**: Spatial mapping, terrain context

---

4. Mapping & Location Data

Google Maps API

- **Type**: Location coordinates, reverse geocoding, tile maps

- **Source**:
  🔗 https://developers.google.com/maps

- **Use**: Map UI, pinning locations, drawing AQI zones

OpenStreetMap / Leaflet

- **Type**: Open-source alternative for interactive maps

- **Use**: Map rendering without licensing fees

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5. Optional Data Sources (Advanced Features)

Agricultural Burning Reports

- **Source**: NASA FIRMS or ISRO Bhuvan Fire Alert

- **Use**: Crop-burning source mapping (Punjab, Bihar, etc.)

Traffic Data

- **Source**: Google Maps traffic or third-party datasets

- **Use**: Estimating vehicular pollution zones (urban fringes)

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