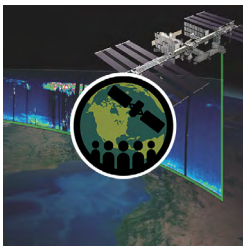
Air Quality & Health

Air Quality

Lidar Profiling Satellite Observations for Air Quality Applications

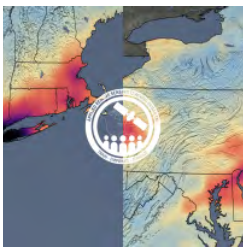


This training introduces data-users to the fundamentals of lidar remote sensing, highlighting strengths, limitations and differences when compared to passive remote sensors. Case studies are used to demonstrate how to interpret lidar imagery from a variety of past and current spaceborne lidars, including CALIOP, CATS, ICESat-2, and EarthCARE, and provides instruction on how to acquire lidar data for analysis by the user.

Introductory

2025

An Inside Look at How NASA Measures Air Pollution



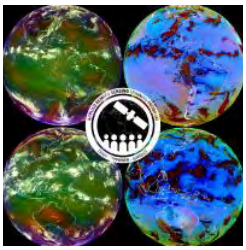
This training is tailored to those interested in learning how to access and visualize NASA satellite imagery. With the world's eyes and media coverage turned to recent global changes in air pollution, this two-part training series provides a primer for the novice and a good refresher course for all others. Participants learn which pollutants can be measured from space, how satellites make these measurements, the do's and don'ts of interpreting satellite data, and how to download and create your own visualizations.

Introductory

Bilingual (Spansih)

2020

High Temporal Resolution Air Quality Observations from Space



For certain applications, some satellites take too long to revisit the same spot. Some satellites are capable of continuous monitoring of the same area. This webinar series covers satellites with a high temporal resolution for air quality applications. Attendees learn about new and upcoming geostationary satellites, what data is available, and how to access them. The training covers satellites over the Americas, Asia, and Africa, and features speakers from NOAA, Yonsei University, and the Indian Institute of Remote Sensing.

Introductory

2018

Introduction to Satellite Remote Sensing for Air Quality Applications

This introductory training series provides a brief overview of some of the fundamentals essential to understanding the remote sensing process, data products, and their use in air quality applications. This training is specifically targeted at participants of the in-person workshops at the 17th IUAPPA World Clean Air Congress and the 9th CAA Better Air Quality Conference and the Atmospheric Optics: Aerosols, Visibility, and the Radiative Balance Conference.

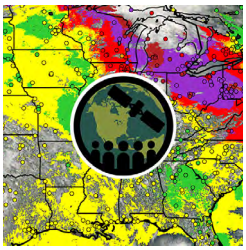
Introductory

2016

Air Quality & Health

Air Quality

Geostationary Remote Sensing of Aerosols for Air Quality Applications in North America

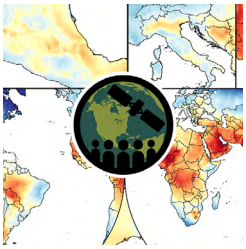


This training provides an overview of TEMPO capabilities and available NOAA aerosol products generated using synergistic TEMPO and ABI observations. Instructors demonstrate how to access near real-time and archived TEMPO aerosol products imagery on the NOAA AerosolWatch website.

Intermediate

2026

Estimating Surface PM2.5 Using Satellite Data and Other Information Sources



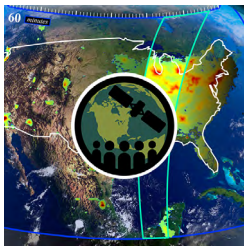
This training covers the theoretical approaches and key datasets for estimating the near-surface concentration of particulate matter smaller than 2.5 micrometers in diameter (PM2.5) by using satellite aerosol optical depth (AOD) and other data sources (including ground-based monitors and model estimates).

Intermediate

Bilingual (Spanish)

2026

Geostationary Remote Sensing of Trace Gases for Air Quality Applications in North America

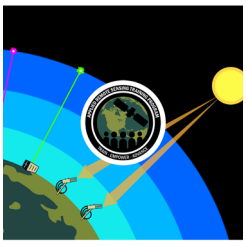


This training, led by NASA's Applied Remote Sensing Training Program (ARSET), provides an overview of TEMPO capabilities and available trace gas data products, and illustrates how TEMPO data can be visualized using NASA Worldview online. These capabilities are demonstrated through hands-on exercises where participants look at TEMPO data events and learn how to interpret TEMPO observations to better understand the scope and potential air quality impact of these types of hazards.

Intermediate

2026

NASA Atmospheric Composition Ground Networks Supporting Air Quality and Climate Applications



This online training provides a basic understanding of aerosol and trace gas measurements using both active and passive techniques for ground based remote sensing. It also teaches users how to select, access, and incorporate relevant data from these ground networks into their work. Finally, it demonstrates an application comparing ground-based and satellite remote sensing products.

Intermediate

2024

Air Quality & Health

Air Quality

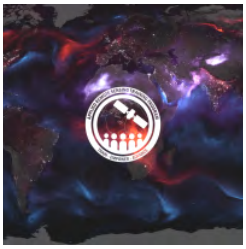
Accessing and Analyzing Air Quality Data from Geostationary Satellites

This three-part training series a) provides an overview of geostationary capabilities for monitoring air quality around the world; b) introduces geostationary aerosol datasets from GOES-East, GOES-West, Himawari 8, and the Geostationary Environment Monitoring Spectrometer (GEMS); and 3) presents data access and python tools to read and analyze the datasets.

Intermediate

2022

Tools for Analyzing NASA Air Quality Model Output



This advanced training series shows how to apply Python codes and other online tools to read, map, and analyze datasets from NASA Goddard Earth Observing System (GEOS) air quality forecasts as well as products from the second Modern-Era Retrospective analysis for Research and Application (MERRA-2) reanalysis. The training includes three sessions, with each session being two hours long. The sessions include lectures and hands-on activities, including exercises, interacting with web-based and offline Python tools, and time to perform analyses.

Advanced

2022

Introduction and Access to Global Air Quality Forecasting Data and Tools

This first-of-its-kind ARSET training focuses on NASA and European Center for Medium-Range Weather Forecasts (ECMWF) global air quality (AQ) forecasting capabilities. Delivered in collaboration with the Copernicus Atmosphere Monitoring Service (CAMS), this training discusses the basics of AQ forecasting and teaches users how to access and interpret global air quality forecasts. Anyone who is interested in learning about AQ forecasting will benefit from this training.

Advanced

2021

MODIS to VIIRS Transition for Air Quality Applications

This training teaches users how to access VIIRS data products, the differences involved in using VIIRS as opposed to MODIS, and how to apply VIIRS aerosol optical depth observations for air quality applications.

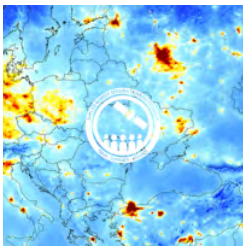
Advanced

2020

Air Quality & Health

Air Quality

High Resolution NO2 Monitoring From Space with TROPOMI



The TROPOMI instrument onboard Sentinel-5P, launched in 2017, represents a significant improvement in spatial resolution over OMI. It is better-suited for many applications currently using OMI data, including monitoring air pollution. In this advanced training, attendees learn how to access and analyze TROPOMI data and learn about its applications.

Advanced

2019

Data Analysis Tools for High Resolution Air Quality Satellite Datasets

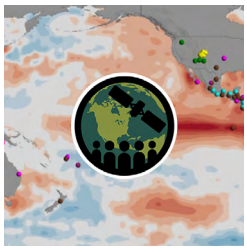
High resolution air quality data is helpful for monitoring urban air pollution. In this training, participants learn how to use Python scripts to map and analyze air quality data through hands-on exercises. The training covers MODIS aerosol optical depth data and OMI NO2 and SO2 data.

Advanced

2018

Health

Remote Sensing for Climate-Sensitive Infectious Diseases

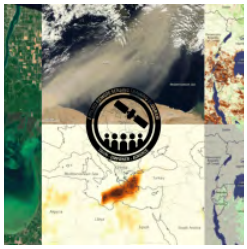


In this two-part training, participants learn the basic principles of how satellite remote sensing data can be applied to track climate-sensitive vector-borne disease outbreaks and provide early warnings for potential outbreaks.

Introductory

2025

Fundamentals of Satellite Remote Sensing for Health Monitoring



This introductory training provides an overview of environmental parameters available from NASA Earth Science that are useful for monitoring and predicting health for decision support. There are many different data sources from different satellite missions, sensors, and models, and sessions outline their features, strengths, and limitations. It also covers easily-accessible NASA data, web-based tools, analysis, visualization, and examples of data usage.

Introductory

2016

Air Quality & Health

Health

Methods in Using NASA Remote Sensing for Health Applications

In this advanced training, participants learn how to access and apply NASA data relevant to public health. The training includes a presentation on tools available for evaluating the relationship between environmental conditions and health outcomes, followed by lectures on pollen dispersal and heat stress mitigation.

Advanced

2017