



Remote Sensing Basics

Fundamentals of Remote Sensing



Participants will become familiar with satellite orbits, types, resolutions, sensors, and processing levels. In addition to a conceptual understanding of remote sensing, attendees will also be able to articulate its advantages and disadvantages. Participants will also have a basic understanding of NASA satellites, sensors, data, tools, portals, and applications to environmental monitoring and management.



[ARSET Website](#)

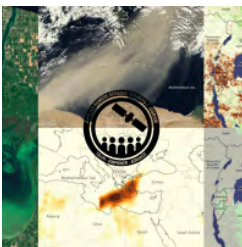
NASA'S Earth Observing Fleet



Get familiar with Earth observing satellites in NASA's fleet, sensors that collect data you can use in ARSET trainings, and their potential applications.

Health & Air Quality

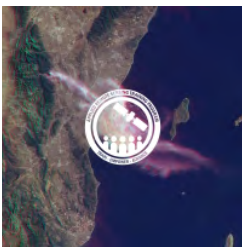
Fundamentals of Satellite Remote Sensing for Health Monitoring



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

**Introductory
2016**

Introduction to Satellite Remote Sensing for Air Quality Applications

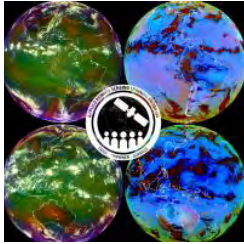


This introductory webinar series provides a brief overview of some of the fundamentals essential to understanding the remote sensing process, data products, and their use in air quality applications. This training was specifically targeted at participants of the in-person workshops at the 17th IUAPPA 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**



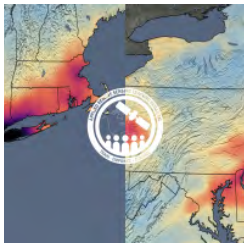
High Temporal Resolution Air Quality Observations from Space



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

Introductory
2018

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 webinar series provides a primer for the novice and a good refresher course for all others. Participants will 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
2020

Satellite Derived Annual PM_{2.5} Datasets in Support of UN SDGs



Recently, annual mean PM_{2.5} maps have been developed using MODIS, MISR, and SeaWiFS observations from 1998-2015 and have been used by organizations, such as the World Health Organization (WHO) and Greenpeace, to assess global air quality and health impacts. In this webinar, participants learn how to use this database to analyze PM_{2.5} over cities using satellite observations. This training covers data access, analyzing long-term trends, and combining PM_{2.5} and population datasets to understand long-term exposure.

Intermediate
2017

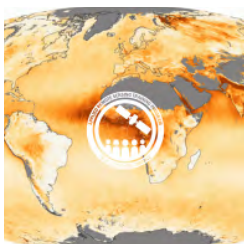
Accessing and Analyzing Air Quality Data from Geostationary Satellites



This three-part webinar 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

Satellite Remote Sensing of Particulate Matter Air Quality



Through a combination of presentations from experts in the field and hands on exercises, this advanced webinar series will cover specific details on the data sets, available tools, and various methods used to address particulate matter air quality.

Advanced
2015



Methods in Using NASA Remote Sensing for Health Applications



In this advanced webinar, participants learn how to access and apply NASA data relevant to public health. The webinar 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. Two homework assignments will give participants an opportunity to review and practice what they have learned during the presentations.

**Advanced
2017**

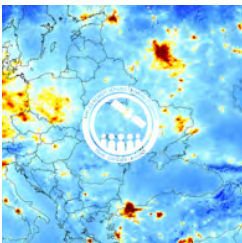
Data Analysis Tools for High Resolution Air Quality Satellite Datasets



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

**Advanced
2018**

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 will be better-suited for many applications currently using OMI data, including monitoring air pollution. In this advanced webinar, attendees will learn how to access and analyze TROPOMI data and learn about its applications.

**Advanced
2019**

MODIS to VIIRS Transition for Air Quality Applications



This training will teach 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**

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 will discuss the basics of AQ forecasting and will teach 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**



Tools for Analyzing NASA Air Quality Model Output



This advanced webinar series will build the capacity 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 will run three sessions, with each session two hours long. The sessions will include lectures and hands-on activities, including exercises, interacting with web-based and offline python tools, and time to perform analyses.

Advanced
2022