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 under-standing 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.

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, visual-ization, and examples of data usage.

### 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 pro-cess, data products, and their use in air quality applications. This train-ing 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.

HEALTH & AIR QUALITY

HIGH TEMPORAL RESOLUTION AIR QUALITY OBSERVATIONS FROM SPACE
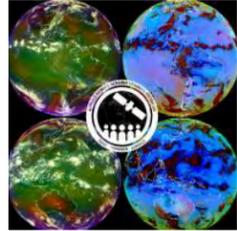
For certain applications, some satellites take too long to revisit the same spot. Some satellites are capable of consistent monitoring of the same area. This webinar series will cover satellites with a high temporal resolution for air quality applications. Attendees will learn about new and upcoming 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.

### AN INSIDE LOOK AT HOW NASA MEASURES AIR POLLUTION
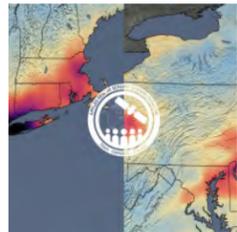
This training is tailored to those interested in learning how to access and visualize NASA satellite imagery. With the world's eyes and media coverage turned to recent global changes in air pollution, this two-part webinar series provides a primer for the novice and a good refresher course for all others. 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.

### SATELLITE DERIVED ANNUAL PM2.5 DATASETS IN SUPPORT OF UN SDGs

Recently, annual mean PM2.5 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 PM2.5 over cities using satellite observations. This training covers data access, analyzing long-term trends, and combining PM2.5 and population datasets to understand long-term exposure.

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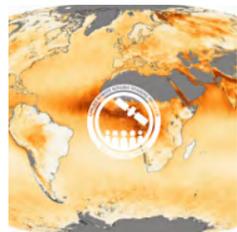
Through a combination of presentations from experts in the field and hands on exercises, this advanced webinar series will cover specific details on the data sets, available tools, and various methods used to address particulate matter air quality.

METHODS IN USING NASA REMOTE SENSING FOR HEALTH APPLICATIONS
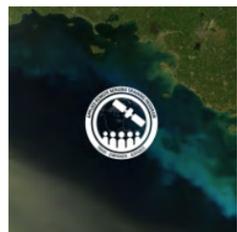
In this advanced webinar, participants learn how to access and apply NASA data relevant to public health. The webinar includes a presentation on tools available for evaluating the relationship between environmental conditions and health outcomes, followed by lectures on pollen dispersal and heat stress mitigation. Two homework assignments will give participants an opportunity to review and practice what they have learned during the presentations.

HEALTH & AIR QUALITY

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.

HIGH RESOLUTION NO2 MONITORING FROM SPACE WITH TROPOMI
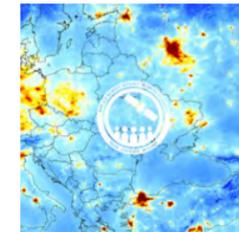
The TROPOMI instrument onboard Sentinel-5P, launched in 2017, represents a significant improvement in spatial resolution over OMI. It will be better-suited for many applications currently using OMI data, including monitoring air pollution. In this advanced webinar, attendees will learn how to access and analyze TROPOMI data and learn about its applications.

### 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.

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.

TOOLS FOR ANALYZING NASA AIR QUALITY MODEL OUTPUT
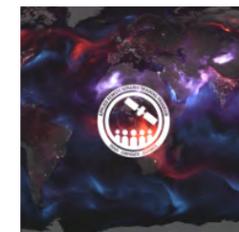
This advanced webinar series will build the capacity to apply Python codes and other online tools to read, map, and analyze datasets from NASA Goddard Earth Observing System (GEOS) air quality forecasts as well as products from the second Modern-Era Retrospective analysis for Research and Application (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.