The Applied Remote Sensing Training (ARSET) program empowers the global community through remote sensing training. Participants learn how to use NASA Earth data and models for environmental management and decision support through online and in person training. Trainings are intended primarily for policymakers, NGOs, and other applied science professionals seeking to incorporate NASA remote sensing into their daily activities.

ARSET hosts both introductory and advanced webinars each delivered in a series consisting of multiple parts. Check the individual webinar page for its level and more information. Most webinars have materials available in English and Spanish.

Introductory Webinars: Trainings are appropriate for applied professionals with no remote sensing experience.

Advanced Webinars: Trainings are are appropriate for professionals with experience in remote sensing or NASA data and resources. Advanced topics will detail specific data or applications by region or discipline. These advanced trainings have case studies and hands-on exercises for participants on data access and processing.

Materials associated with any of the ARSET In-Person trainings can be considered Advanced in scope and content.

Suggested Sequence of Online Resources

Fundamentals of Remote Sensing: These sessions provide a basic overview of remote sensing, common applications, data portals and data formats. Some ARSET courses use them as prerequisites.

Learning Objectives: 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.

Audience: These trainings are appropriate for professionals with no previous experience in remote sensing.

Registration Information: These webinar sessions are free, but you must register for each session before viewing the recording.

[Start with the following two interactive on-demand courses]

Fundamentals [Session 1](link) is a general overview of the Basics of Remote Sensing, applicable for all thematic areas.

Fundamentals [NASA's Earth Observing Fleet](link): Get familiar with Earth observing satellites in NASA's fleet, sensors that collect data you can use in ARSET trainings, and potential applications.

[Then take the path depending on the thematic area of interest]

- **Land Applications**
- **Health & Air Quality**
- **Water Resource Management**
- **Disaster Management**

Each Training webpage will contain all materials associated with the series (e.g. presentations, exercises, assignments, data, and a link to *View the recordings »*

[Remote Sensing Training for Land Applications](link)

Trainings focus on accessing, interpreting, and processing NASA Earth Observation data for a variety of terrestrial applications and natural resources management. Topics include land cover mapping, conducting change detection, processing vegetation

indices, degradation, deforestation, desertification, fire monitoring, and fire management. Trainings aid participants in the areas of conservation, animal movement, phenology, carbon monitoring, wildfire monitoring, and near-shore land and ocean processes.

After Land Fundamentals, any Introductory and Advanced Series can be taken dependent upon topic and interest.

1. **Fundamentals Session 2A: Satellites, Sensors, Data and Tools for Land Management and Wildfire Applications**
2. **Fundamentals Session 2C: Fundamentals of Aquatic Remote Sensing**

3. **Introductory**

   Remote Sensing of Forest Cover and Change Assessment for Carbon Monitoring

   Satellites, Sensors, Data and Tools for Land Management and Wildfire Applications

   Remote Sensing for Conservation & Biodiversity

   Introduction to Remote Sensing for Scenario-Based Ecoforecasting

   Introduction to Remote Sensing for Coastal and Ocean Applications

   Earth Observations for Indigenous-Led Land Management

   Remote Sensing for Freshwater Habitats

   Introduction to Synthetic Aperture Radar

   Using the UN Biodiversity Lab to Support National Conservation and Sustainable Development Goals

   New Sensor Highlight: ECOSTRESS

4. **Advanced**

Advanced Webinar: Land Cover Classification with Satellite Imagery

Advanced Webinar: Accuracy Assessment of a Land Cover Classification

Advanced Webinar: Change Detection for Land Cover Mapping

Advanced Webinar: Investigating Time Series of Satellite Imagery

Advanced Webinar: Remote Sensing for Monitoring Land Degradation and Sustainable Cities SDGs

Advanced Webinar: Techniques for Wildfire Detection and Monitoring

Advanced Webinar: SAR for Landcover Applications

Advanced Webinar: Forest Mapping and Monitoring with SAR Data

Remote Sensing Training for Water Resource Management

In person and online trainings focus on accessing, interpreting, and processing NASA Earth Observation data for a variety of water availability and quality parameters. Topics can include: rainfall, soil moisture, evapotranspiration, groundwater, harmful algal blooms, and water temperature.

After Water Resources Fundamentals, any Introductory and Advanced Series can be taken dependent upon topic and interest.

1. **Fundamentals Session 2B: Satellites, Sensors, and Earth Systems Models for Water Resources Management**

2. **Introductory**

   Water Resource Management Using NASA Earth Science Data

   Introduction to Global Precipitation Measurement (GPM) Data and Applications

Applications of Remote Sensing to Soil Moisture and Evapotranspiration

Introduction to Remote Sensing of Harmful Algal Blooms

Introduction to Using the VIC Hydrologic Model with NASA Earth Observations

Introductory Webinar: Using Earth Observations to Monitor Water Budgets for River Basin Management

Introductory Webinar: River Basin Delineation Based on NASA Digital Elevation Data

Introductory Webinar: Satellite Remote Sensing for Agricultural Applications

3. **Advanced**

Advanced Webinar: Remote Sensing of Drought

Advanced Webinar: Processing Satellite Imagery for Monitoring Water Quality

Advanced Webinar: Integrating Remote Sensing into a Water Quality Monitoring Program

Advanced Webinar: Applications of GPM IMERG Reanalysis for Assessing Extreme Dry and Wet Periods

Remote Sensing Training for Disaster Management

In person and online trainings focus on accessing, interpreting, and processing NASA Earth Observation data for disaster management. The trainings are aimed at facilitating disaster monitoring, preparedness, and relief activities by using remote sensing observations. Topics can include: extreme rainfall, drought, floods, landslides, hurricanes, storm surge, earthquakes, and oil slicks.

Any Introductory and Advanced Series can be taken dependent upon topic and interest.

1. **Introductory**

    Overview of the Global Disaster Alert and Coordination System (GDACS)

    Introduction to Global Precipitation Measurement (GPM) Data and Applications

    Introduction to Remote Sensing for Wildfire Applications

    Using NASA Remote Sensing for Disaster Management

    NASA Remote Sensing Observations for Flood Management

    Introduction to Synthetic Aperture Radar

    Monitoring Tropical Storms for Emergency Preparedness

    Monitoring Urban Floods Using Remote Sensing

    Earth Observations for Disaster Risk Assessment & Resilience

    Remote Sensing for Disasters Scenarios

2. **Advanced**

    Advanced Webinar: Using NASA Remote Sensing for Flood Monitoring and Management

    Advanced Webinar: Remote Sensing of Drought

    Advanced Webinar: Radar Remote Sensing for Land, Water, & Disaster Applications

    Advanced Webinar: SAR for Landcover Applications

    Advanced Webinar: SAR for Disasters and Hydrological Applications

Health & Air Quality Trainings

In-person and online trainings focus on assessing, interpreting, and processing NASA Earth observation data for a variety of health and air quality applications. Topics include observations of aerosols and trace gases; data access and applications; smoke and dust detection and monitoring; satellite-based surface particulate matter data sets; long range transport of atmospheric aerosols and trace gases; surface and satellite data inter-comparisons; comparisons between regional and global air quality models and satellite data; and long term air quality trends.

Any Introductory and Advanced Series can be taken dependent upon topic and interest.

1. **Introductory**

   Fundamentals of Satellite Remote Sensing for Health Monitoring

   Introduction to Satellite Remote Sensing for Air Quality Applications

   Satellite Derived Annual PM2.5 Datasets in Support of United Nations Sustainable Development Goals

   High Temporal Resolution Air Quality Observations from Space

2. **Advanced**

   Advanced Webinar: Satellite Remote Sensing of Particulate Matter Air Quality

   Advanced Webinar: Methods in Using NASA Remote Sensing for Health Applications

   Advanced Webinar: Data Analysis Tools for High Resolution Air Quality Satellite Datasets

Advanced Webinar: High Resolution NO2 Monitoring From Space with TROPOMI