



# LiDAR Profiling Satellite Observations for Air Quality Applications

June 4 & 11, 2025

10:00-11:30 (Session A) or 14:00-15:30 (Session B) EDT (UTC-4)

Active remote sensing observations, like those from LiDAR (Light Detection And Ranging), can provide information on the vertical structure of atmospheric trace gases, aerosols, and clouds, complementing passive remote sensors. Lidars transmit laser pulses and measure laser light scattered back to determine the altitude of gases, aerosols, and clouds with high accuracy. 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 will be used to demonstrate how to interpret lidar imagery from a variety of past and current spaceborne lidars, including the Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP), the Cloud-Aerosol Transport System (CATS), the Ice, Cloud, and Elevation Satellite, version 2 (ICESat-2), and the Earth Cloud Aerosol Radiation Experiment (EarthCARE) and provide instruction on how to acquire lidar data for analysis by the user.

## Part 1: Introduction to LiDAR Measurements and Missions

Trainers: Ed Nowottnick

- Use of Lidar in Atmospheric Sciences
- How do lidars work?
- Past and Existing Lidar Missions

## Part 2: Observations to Feature Type – Theory and Real World Examples

Trainers: Ed Nowottnick

- Observations to Feature Type – Theory
- Observations to Feature Type – Real World Example
- Finding and Using Lidar Data



ARSET empowers the global community through remote sensing training.