Satellite Observations and Tools for Fire Risk, Detection, and Analysis

May 11, 13, 18, 20, 25, & 27, 2021

English Session: 11:00 - 13:00 EDT (UTC-4), Spanish Session: 15:00 - 17:00 EDT (UTC-4)

NASA satellite data are a valuable resource for monitoring and assessing fire risk and the associated impacts on vegetation, soils, and air quality. This 6-part, intermediate training will provide lectures and case studies on the use of satellite remote sensing for fire monitoring pre-, during-, and post-event. Specific topics will include monitoring of weather and climate conditions, fuel characterization, fire risk, smoke detection, fire behavior, and assessing post-fire landscape dynamics such as burn severity and vegetation regrowth.

Part 1: Satellites, Sensors, and Models for Climate and Hydrologic-Based Applications (Pre-Fire)

- Overview of fires, types of fires, and the three components (pre, during, post)
- Weather and climate conditions
- Temperature anomalies
- Soil moisture
- Case Study
- Fire danger rating
- Question & Answer Session

Part 2: Satellites and Sensors for Vegetation-Based Wildfire Applications (Pre-Fire)

- Satellites and sensors for vegetation fire monitoring
- Overview of fire risk and fuels mapping
- Pre-fire landscape monitoring and pre-fire mapping tools
- Demonstration and case study
- Question & Answer Session

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Part 3: Satellites and Sensors for Active Fire Monitoring (During-Fire)

- Overview of satellite observations of active fires
- Satellite observations of smoke
- Available sensors
- Available smoke datasets
- NOAA's Smoke Detection Product
- Case Studies
- Question & Answer Session

Part 4: Smoke Modeling and Forecasting (During-Fire)

- Satellite-based emissions datasets
- U.S. - Smoke and air quality forecasting
- Global - Smoke and air quality forecasting
- Case Studies
- Question & Answer Session

Part 5: Satellites, Sensors, and Earth System Models for Climate and Hydrology-Based Applications (Post-Fire)

- Precipitation and Runoff
- Terrain
- Soil Moisture
- Burned Area
- Landslides
- Case Study
- Question & Answer Session

Part 6: Satellites and Sensors for Vegetation-Based Wildfire Applications (Post-Fire)

- Review of the fire lifecycle dynamics
- Burned area and burn severity mapping
- Post-fire vegetation regrowth
- Demonstration and case study
- Question & Answer Session

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