Humanitarian Applications Using NASA Earth Observations

June 14, 16, 21, & 23, 2022

11:00-13:00 or 15:00-17:00 EDT (UTC-4)

This 4-part, introductory training will focus on using NASA data products for monitoring human settlements and landscapes during armed conflict and forced displacement. This ARSET training is the first dedicated to humanitarian applications of NASA satellite imagery with topics including monitoring urban damage, mapping refugee settlement dynamics, and gauging climate hazards at refugee settlements. For each topic, we will discuss relevant satellite sensors and methodologies, data access and analysis using Google Earth Engine, as well as assumptions, opportunities, and limitations of various remote sensing-based approaches in humanitarian applications. This training supports quantitative and visual understanding of short- and long-term conflict effects that are evident in satellite imagery, complements analysis of georeferenced humanitarian data, and builds on previous ARSET trainings associated with cropland monitoring, human settlement detection, disaster risk assessment, nighttime lights, and Google Earth Engine.

ARSET empowers the global community through remote sensing training.

appliedsciences.nasa.gov/arset

Part 1: Monitoring Urban Damage with Multi-Sensor Satellite Imagery

Speakers: Jamon Van Den Hoek & Corey Scher

- Detect locations of urban change during armed conflict
- Understand different strengths and limitations of optical, radar, and nighttime lights data for monitoring acute urban changes
- Leverage full time series of satellite data for long-term analysis

Part 2: Mapping Refugee Settlement Growth and Population Change

Speakers: Jamon Van Den Hoek & Hannah Friedrich

- Examine built-up land cover changes associated with refugee settlement establishment
- Map rapid expansion of refugee settlements using time series data
- Analyze satellite data-informed demographic products and compare to official population estimates

Part 3: Detecting Agricultural and Vegetation Changes In and Surrounding Refugee Settlements

Speakers: Jamon Van Den Hoek & Hannah Friedrich

- Map vegetation conversions within and surrounding refugee settlements
- Visualize and measure changes in agricultural conditions over time
- Measure changes in land degradation metrics before and following settlement establishment

Part 4: Assessing Climate Hazards at Refugee Camps

Speakers: Jamon Van Den Hoek, Michael Owen, & Andrew Kruczkiewicz

- Use multi-criteria hazard analysis to estimate climate hazard potential across multiple sites
- Evaluate how different satellite products influence climate hazard assessment
- Compare climate hazard profiles to known hazard events

ARSET empowers the global community through remote sensing training.

appliedsciences.nasa.gov/arset