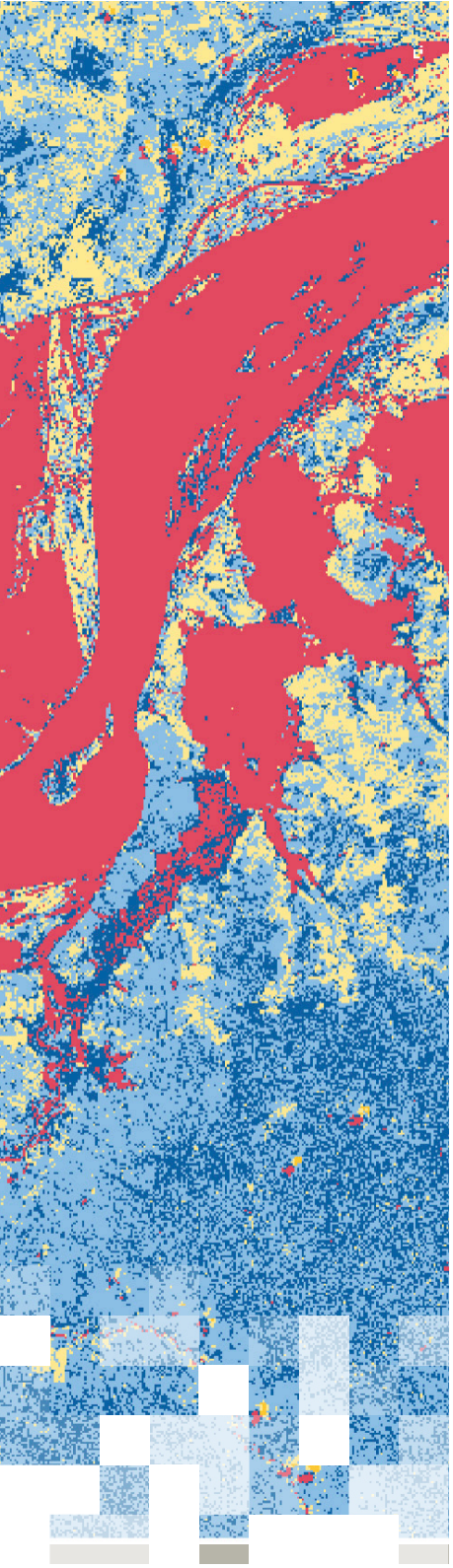

National Aeronautics and Space Administration

Visualizing Land Cover and Land Use Change with NASA Satellite Imagery

February 24 & 26, 2026

11:00-13:00 or 14:00-16:00 EST (UTC-5)

Land cover and land use change (LCLUC) describes the myriad of ways our world changes around us. Every new building, each vacant lot, the expansion and retreat of forests or wetlands, are all examples of LCLUC. These changes may be slow or sudden, but understanding the ways in which our landscape is changing gives us the opportunity to better anticipate and avoid problems which may arise. This training covers some of the ways that we can use NASA data to determine what is happening on the ground and how that changes over time. Participants will see examples of supervised and unsupervised classification models implemented in the R statistical coding language, and improve their understanding of how these models can be used to produce maps and metrics of LCLUC.

Part 1: Classification Methods for Land Cover

ARSET Instructor: Justin Fain

- Why LCLU Matters
- Drivers of LCLU Change
- LCLUC Examples
- Spectral Profiles and Training Data
- Supervised and Unsupervised Classification
- Overview of Selected Classification Methods
- Accessing HLS Imagery with Earthdata Search
- Building a K-Means Clustering Model
- Interpreting Model Results
- Building a K-Nearest Neighbor Model
- Interpreting Model Results

Part 2: Visualizing Land Cover Change

ARSET Instructor: Justin Fain

- Review of Selected Classification Methods
- How Random Forest Models Work
- Building a Random Forest Model
- Interpreting Model Results
- Applying Models Across Dates
- Creating a Change Matrix
- Mapping Changes in LCLU

ARSET empowers the global community through remote sensing training.

earthdata.nasa.gov