

“AI Applications Using Environmental Satellite Remote Sensing Data”

Sponsored by the AMS Committee on Satellite Meteorology, Oceanography, and Climatology

Registration for the short course is available [here](#).

The American Meteorological Society (AMS) Committee on Satellite Meteorology, Oceanography, and Climatology (SatMOC) is pleased to offer a short course titled “AI (Artificial Intelligence) Applications Using Environmental Satellite Remote Sensing Data” during June 2026. This short course will consist of four 4-hour virtual training sessions described below. The training sessions are scheduled for 9:00 AM to 1:00 PM ET on June 16, 18, 23, and 25, 2026. These four training sessions will collectively demonstrate the use of artificial intelligence and machine learning in developing new and improved environmental satellite data applications. The short course will begin with a training session introducing environmental satellite capabilities with a focus on accessing open-source and machine-learning products. Follow-on sessions then will address creating AI-ready datasets and demonstrate the use of AI and machine learning in both land and atmospheric applications. Embedded hands-on exercises will give the students an opportunity to apply the training. Certificates of completion will be issued to students who participate in a minimum of 3 training sessions and their participation in each session exceeds one hour. The short course is primarily designed for undergraduate and graduate college students but others who are changing careers or moving to a position requiring increased environmental satellite knowledge will benefit from the course.

~~~Training Session 1: An Introduction to Environmental Satellite Remote Sensing ~~~ June 16, 2026, 9 AM - 1 PM EDT

Session Description: This session will provide a general introduction of environmental remote sensing. The basics of remote sensing, along with current geostationary and low-earth orbiting capabilities, will be discussed. There will be a focus on accessing open-source data and machine-learning driven products, serving as an introduction to the broader Artificial Intelligence training theme.

Instructor:



Christopher Smith, Faculty Specialist Cooperative Institute for Satellite Earth System Studies (CISESS), Earth System Science Interdisciplinary Center (ESSIC), University of Maryland

Christopher Smith is the GOES-R Satellite Liaison for the National Weather Service’s Weather Prediction Center and Ocean Prediction Center. He provides training on new satellite products to meteorologists and delivers feedback to developers to maximize the capabilities of satellites for weather forecasting. Chris received both his B.S. and M.S. in

Atmospheric & Oceanic Science from the University of Maryland.

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~~~**Training Session 2: Creating AI-Ready Datasets** ~~~  
**June 18, 2025, 9 AM - 1 PM EDT**

**Session Description:** In this session, we will discuss the standards for AI-ready datasets developed by the Earth Science Information Partners (ESIP) Data Readiness Cluster, and why they are important and provide an example of an AI-ready dataset that is centered around satellite passive microwave observations of tropical cyclones. Then, we will go over two examples of pre-processing satellite data for machine learning applications, using data available in a few community-standard file formats. We will present these examples in the form of Python-based Jupyter notebooks, which attendees can run during the session.

**Instructors:**



**Naufal Razin, Research Scientist, Cooperative Institute for Research in the Atmosphere, Colorado State University**

Naufal Razin is a research scientist at the Cooperative Institute for Research in the Atmosphere (CIRA) at Colorado State University. His research centers around applications of satellite data towards understanding tropical cyclone structure and improving tropical cyclone forecasts, often using machine learning approaches. He also generates machine learning tutorials in the form of Jupyter notebook Learning Journeys through the NOAA Center for Artificial Intelligence (NCAI). He is the co-developer of the first NOAA-branded AI-ready dataset,

the Tropical Cyclone Precipitation, Infrared, Microwave, and Environmental Dataset (TC PRIMED).

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**Yongzhen Fan, Associate Research Scientist Cooperative Institute for Satellite Earth System Studies (CISESS) Earth System Science Interdisciplinary Center (ESSIC) University of Maryland**

Yongzhen Fan is an associate research scientist at the Cooperative Institute for Satellite Earth System Studies (CISESS), University of Maryland, College Park. He is an expert in radiative transfer theory and machine learning. His research focuses on the application of machine learning models in satellite remote sensing. He is the lead scientist for the NOAA operational snowfall product

developing machine learning snowfall detection and snowfall rate estimation algorithms. He also developed a multi-sensor data analysis platform, the Ocean Color - Simultaneous Marine and

Aerosol Retrieval Tool (OC-SMART), based on multilayer neural networks driven by extensive radiative transfer simulations of the coupled Earth atmosphere and ocean system.

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**~~~Training Session 3: Forest for the Trees: Understanding Machine Learning in Land Cover Classification ~~~**  
**June 23, 2026, 9 AM - 1 PM EDT**

**Session Description:** This session introduces supervised and unsupervised machine learning approaches for land cover classification using Python and HLS satellite data. Participants will discuss and implement select models to classify land cover, assess change, and evaluate accuracy metrics. The training employs simplified "toy" examples to support a conceptual understanding of how these models classify features on the landscape. Participants will leave with both a mental model of machine learning for land cover classification and a reproducible Python workflow that is ready to be expanded to real-world classification problems.

**Instructor:**



**Justin Fain, Research Scientist, Bay Area Environmental Research Institute, NASA Ames Research Center**

Justin Fain is helping NASA teach and apply geospatial data science to their remote sensing imagery. He works as the Data Analysis Lead for NASA FireSense, a trainer in Ecological Conservation with the Applied Remote Sensing Training (ARSET) program, and researcher building operational data pipelines for other NASA projects that explore topics around fire, land cover change, and human-ecosystem dynamics. He focuses on helping connect people to data and turning data into actionable insights in a way that is easy to understand for practitioners across various disciplines.

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**~~~Training Session 4: From Random Forests to Foundation Models: AI for Atmospheric Applications ~~~**

**June 25, 2026, 9 AM - 1 PM EDT**

**Session Description:** Our session will highlight how artificial intelligence is being applied to atmospheric and air-quality research, with examples including surface air-quality gap filling, aerosol optical depth retrieval, gapless ozone products, and emerging deep learning and foundation-model approaches.

**Instructor:**



**Dr. Meng Zhou, Assistant Research Scientist, Iowa Technology Institute - The University of Iowa, Iowa City, IA**

Dr. Meng Zhou is an Assistant Research Scientist at the Iowa Technology Institute at the University of Iowa. His research focuses on the development of satellite-based wildfire detection and biomass-burning emissions algorithms in support of the GEOS Earth System Model (GEOS-ESM), NASA's FireSense Technology program, and related field campaigns. He holds an M.S. in Information and Communication Engineering, an M.S. in Informatics, and a Ph.D. in Geoinformatics from the University of

Iowa.

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