

**Using GOES-R and JPSS Remote Sensing Capabilities to Enhance
Weather, Climate, Water and Environmental Security**

2022 AMS Sponsored Virtual Short Course

Wednesday, February 16 and Thursday February 17, 2022

11:00AM - 3:00PM Eastern Time each day (10AM-2PM Central time)

Upon the completion of the short course, early to mid-career academia, researchers, forecasters, and broadcasters will have a working knowledge of the precipitation and flooding, fire and smoke satellite data and products used in weather forecasting, prediction, monitoring and/or research.

DAY 1 of 2, February 16, 2022

Time ET	Session Title	Instructor(s)
11:00 AM	Introductions of students and presenters, Summary of Planned Activities, discussing both GEO and Polar	Sherrie Morris, STC at GOES-R Program Office Gary McWilliams, STC at JPSS Program Office
11:10 AM	NOAA's role in optimizing the use of satellite information	Mitch Goldberg, NESDIS Chief Scientist
12:00 PM	Introduction to Heavy Precipitation and Flooding Products, Diagnoses and Effects	Topic Chair: William Straka, CIMSS/University of Wisconsin – Madison
12:40 PM	10 minute Break	
12:50 PM	Hands On exercises of Heavy Precipitation and Flooding Products (includes a 10 minute break)	Scott Lindstrom, CIMSS at the University of Wisconsin-Madison
1:50 PM	10 minutes break	
2:00 PM	Hands-On Guided Analyses of Case Study	Scott Lindstrom, CIMSS at the University of Wisconsin-Madison
2:50 PM	Question & Answer, preparation for Day 2	Gary McWilliams/Sherrie Morris
3:00 PM	End of Day 1	

DAY 2 of 2, February 17, 2022

Time ET	Session Title	Instructors
11:00 AM	Detection and Characterization of Fires & Smoke from ABI and VIIRS	Topic Chair: Ivan Csiszar, Branch Chief, Satellite Meteorology and Climatology Division, NOAA/NESDIS/STAR
12:00 PM	10 Minute Break	

Hands-On Exercises with Python: Tracking the Explosive Growth of the Caldor Fire on 16-17 Aug 2021 using ABI and VIIRS Level 2 Fire Products		Amy Huff, Senior Research Scientist, IMMSG at NOAA/NESDIS/STAR
12:10 PM	Introduction to ABI and VIIRS Level 2 Data Files	Amy Huff, IMMSG at NOAA/NESDIS/STAR
12:30 PM	Download ABI Level 2 Data Files from AWS (Hands-on with Python)	Amy Huff, IMMSG at NOAA/NESDIS/STAR
1:00 PM	Open and Explore the Contents of ABI and VIIRS Level 2 Data Files (Hands-On with Python)	Amy Huff, IMMSG at NOAA/NESDIS/STAR
1:40 PM	10 minute break	
1:50 PM	Process and Visualize ABI and VIIRS Level 2 Fire Products for the Caldor Fire (Hands-On with Python)	Amy Huff, IMMSG at NOAA/NESDIS/STAR
2:30 PM	Linking the topics - flash flooding from burn scars, how to mitigate different scales of data	All instructors
2:50 PM	Satellite launches, wrap up and evaluation	Gary McWilliams & Sherrie Morris
3:00 PM	End of Course	

Acronyms in order of appearance:

GOES-R: Geostationary Operational Environmental Satellites-R Series

JPSS: Joint Polar Satellite System

STC: Science and Technology Corporation

NOAA: National Oceanic and Atmospheric Administration

NESDIS: National Environmental Satellite Data and Information Service

CIMSS: Cooperative Institute for Meteorological Satellite Studies

ABI: Advanced Baseline Imager instrument on GOES-R satellites

VIIRS: Visible Infrared Imaging Radiometer Suite instrument on JPSS

Level 2 products: derived from one or more products (ex. Radiances, Numerical Weather Prediction, radiative transfer model, etc.) to produce value added information.

STAR: NOAA's Center for Satellite Applications and Research

IMMSG: I. M. System Group, Inc.

AWS: Amazon Web Services

Short Course Description for Announcement:

This satellite training course will provide participants an opportunity to access, use and apply GOES-R and JPSS satellite data and products in two hands-on training exercises of operational scenarios to address forecasting challenges and improve data driven decision making to mitigate the impact of environmental disasters. Satellite subject matter experts will provide instruction and demonstration on how to use readily available tools to process, display, and analyze GOES-R, JPSS, and other environmental satellite data and products to address (1) precipitation and flooding and (2) fire and smoke effects on society's environmental security. Hands-on exercises will utilize satellite data to focus on the impact of predicting and communicating events from each topic while addressing the environmental security influences.

Hands-on activities for heavy precipitation and flooding will include both ABI and VIIRS products to anticipate the possibility of heavy precipitation, and to diagnose precipitation (and its effects) as inundation and flooding occurs.

Participants will use data from websites that display real-time or near-real-time imagery to create documents as might be provided to decision makers.

Hands-on exercises will demonstrate the use of ABI and VIIRS level 2 fire products to monitor and track the explosive growth of the Caldor Fire over a 24-hour period in August 2021. Participants will use Python to 1) download ABI data files from the NOAA archive on Amazon Web Services (AWS), 2) open and read the contents of ABI and VIIRS data files, and 3) process ABI and VIIRS level 2 fire data and visualize the data on professional quality maps. Prior experience with Python is helpful but not required.

As of February 1, 2022