

GOES-R SERIES: FORECASTING APPLICATIONS
AMS COMMITTEE ON SATELLITE METEOROLOGY AND OCEANOGRAPHY
SUNDAY, JANUARY 6, 2019 (8:00 AM - 3:45 PM)
Room: 222AB

Time	Topic	Speaker
8:00 AM	OPENING, INTRODUCTIONS, PROGRAM INTRO	Steve Goodman, TGA/GOES-R Program Senior Advisor, Huntsville, AL
8:30 AM	ADVANCED BASELINE IMAGER (ABI) OVERVIEW	Mathew Gunshor, UW-Madison CIMSS/SSEC, Madison, WI
9:15 AM	GLM OVERVIEW	Geoffrey Stano, NASA SpOoRT, Huntsville, AL
10:00 AM	COFFEE BREAK	
10:30 AM	DATA ACCESS	Scott Lindstrom, UW-Madison CIMSS/SSEC, Madison, WI
11:00 AM	FIRE MONITORING APPLICATIONS*	Chris Schmidt, UW-Madison CIMSS/SSEC, Madison, WI
12:30 PM	LUNCH (INCLUDED) SPECIAL TOPICS: GOOGLE CLOUD'S PUBLIC DATASET PROGRAM	Lak Lakshmanan, Google, Seattle, WA
1:45 PM	CONVECTIVE WEATHER APPLICATIONS*	Scott Lindstrom, UW-Madison CIMSS/SSEC, Madison, WI
3:15 PM	SUMMARY, ADDITIONAL TRAINING RESOURCES, EVALUATION	Mathew Gunshor, UW-Madison CIMSS/SSEC, Madison, WI
3:45 PM	COURSE END	

*Topic areas broken down into: presentation of products used, case studies, follow-up questions/discussion.

ADVANCED BASELINE IMAGER (ABI)

We will explore the ABI instrument and discuss the utility of the 16 spectral channels available along with examples from each of the channels. Both GOES-16 and GOES-17 ABI imagery will be shown. Online tools will also be shown.

GLM OVERVIEW

The Geostationary Lightning Mapper (GLM) is the first ever lightning imager available in geostationary orbit. From its vantage point, the GLM offers unique opportunities and challenges for operational end users. With the observations of GLM soon to become available, this session will focus on what the GLM instrument is and the way it observes lightning. More importantly, this will focus on real-world examples of GLM demonstrating the instrument's capabilities in comparison to ground-based networks, for use in warning decision support, and for lightning safety. The session will be conducted in a presentation style, but in an informal manner to promote questions and discussions from attendees.

DATA ACCESS

The GOES-R Series Data Access lesson will provide information about the GOES-R series Direct Broadcast capabilities, terrestrial data access points at NOAA, Cloud access through the NOAA Big Data Project, access to the Comprehensive Large Array-data Stewardship System (CLASS), and GEONETCast Americas (GNC-A). Detailed information about websites will be provided.

SPECIAL LUNCH TOPIC/DEMONSTRATION: GOOGLE CLOUD'S PUBLIC DATASET PROGRAM

Talk will discuss developing a nowcasting algorithm to predict lightning events 30 minutes in the future using a modern computing and machine learning approach. The data comes from the GOES-16 satellite infrared channels and GLM channels. All the work is carried out on a Jupyter notebook on a low-cost compute environment, with scaling delegated to powerful cloud-based components. It is hoped that, beyond this single example, the general approach will provide a template for a plethora of other applications involving remotely sensed imagery and numerical weather model outputs.

FIRE MONITORING APPLICATIONS

With fire detection and characterization from GOES-16 and GOES-17 we can detect and monitor the progression of wildfires and any kind of burning that produces a large enough signal. This session will educate users on how satellites detect fires, what the Advanced Baseline Imager (ABI) can and cannot see, and present examples from fire events in 2018 that illustrate what can be learned from this fire data. The examples include, but are not limited to, small scale prescribed burning, flares from natural gas operations, and large events from the Great Plains and forest fires in the mountains. This segment includes hands-on exercises designed to help you use the fire detection and characterization data.

CONVECTIVE WEATHER APPLICATIONS

GOES-R Advanced Baseline Imager (ABI) data has revolutionized satellite observations of weather. In this hands-on activity, you will learn how to use ABI data to diagnose where convection is most likely to occur -- before there is even a cloud in the sky. In another case, GOES-R infrared imagery will help you diagnose the evolution of a near-record-breaking snow event over Erie, PA, a region where radar is ineffective.