

NOAA/NWS Training for User Readiness for GOES-R and JPSS



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NOAA/National Weather Service Office of Chief Learning Officer (OCLO)

AMS Annual Meeting

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Training Stages

- Prerequisites overall basics
- Foundation satellite specifics
- Application operational setting
- Exercise simulations, practice
- Making it Stick multi-situational, sharing
- Continuous Learning evolve and update



Satellite Training Advisory Team Report





STAT - <u>Satellite Training and Advisory Team</u>

- Brian Carcione Huntsville, AL
- Frank Alsheimer Columbia, SC
- Dan Nietfeld Omaha, NE / Boulder, CO
- Mike Stavish Medford, OR
- Nat Eckstein Anchorage, AK
- Mike DeWeese Chanhassen, MN
- NCEP SOOs Bruce Entwistle (AWC)/Chris Landsea (NHC)
- Field connection provide the team with ops perspective and input.
- STAT prepared plan and is reviewing modules in Foundational Course

Satellite Foundational Course - GOES-R

Advanced Baseline Imager



Faster coverage (5-minute full disk vs. 25-minute) More spectral bands (16 on ABI vs. 5 on current imager)

GOES-R will send about 1 terabyte of data daily!! ~60-fold increase

(2 km IR vs. 4 km)

Improved spatial

resolution





- GOESR Introduction and SatMet Background Track (240 minutes)
 - Basic principles of radiation (15 minutes)
 - Basic operation of the GOES-R satellites (15 minutes)
 - Spectral bands (90 minutes)
 - Multichannel interpretation approaches (30 minutes)
 - Baseline products (90 minutes)
- Geostationary Lightning Mapper Track (40 minutes)
- Mesoscale/Convection Track (120 minutes)
- Synoptic Features Track (80 minutes)
- NWP/Data Assimilation Track (30 minutes)
- Interactive Lessons and Simulations Provide an opportunity to view & interact with the GOES- R imagery & products to firmly establish understanding and interpretation.

Foundational Course

- NWS Training & Forecaster Certification status for WFOs, RFCs, NCEP Centers, Regional Centers
 - Foundational Course being developed for 2000+ Operational Forecasters
 - Course is self-paced, distance learning with short 10-15 minute lessons
 - Lessons have quizzes to complete and progress is tracked on Commerce Learning Center
 - Course is 8.5 hours and contains 39 lessons + 2 Cases
 - Forecasters will be expected to complete course before data available operationally on NWS AWIPS and N-AWIPS systems (IOC - Launch + ~180 days)

GOES-R Timeline



- Launch date is November 4, 2016
- Upon successful launch and orbit, Foundational Course is announced.
- There will be about <u>4 months to complete course prior to actual data</u> feed and test period starting in March 2017.
- Initial GOES-R Data at WFO's = March 2017 all 16 ABI Channels
- GLM & Derived Products will take longer up to 6 months.
- Operational test & evaluation phase begins March until September ??
 While GOES-R is at Central Position.

STAT Tracking Doc

| 1 | Foundational Sat Training Topic | Run Time | Material to be covered | Lead | SME | Partners | Development Time (Hours) | Content Draft for Review | Content Reviewed by SMEs | Beta Draft for External Review | Initial External Review Complete | After final review, Make edits, Ready for LMS | Upload to LMS, Test, Publish | Progress R/G/Y/B |
|----|--|-------------|---|----------------------------|-------------------------------------|---|-----------------------------|--------------------------------|--------------------------------|---|---|---|------------------------------------|---------------------|
| 2 | No later than | | | | | | | 7/20/2016 | 8/5/2016 | 8/21/2016 | 9/5/2016 | 9/16/2016 | 9/30/2016 | |
| 3 | and the second | | | | | GOE | -R Introduction | nd SatMet b | ackeround | | | | | |
| 4 | Orientation | 10 min | About the course | WDTD: Jim Ladue | Bill Ward | FDTD: Tony Mostek; CICS: Jim Gurka | 138 | 7/19/2016 | 8/2/2016 | 8/16/2016 | 8/30/2016 | 9/13/2016 | 9/27/2016 | |
| 5 | Basic principles of radiation | 15 min | Background information essential to understand remote sensing from satellites | COMET: Wendy Abshire | Paul Menzel | CIMSS: Scott Lindstrom | 206 | 4/5/2016 | 4/19/2016 | 5/3/2016 | 5/17/2016 | 5/31/2016 | 6/14/2016 | |
| 6 | Basic operation of GOES-R Satellites | 15 min | Scan strategy and temporal refresh; Bands overview; Spatial resolution; Parallax; Bit depth; Operation of GOES-R and current GOES simultaneously | NESDIS: Tim Schmit | Steve Goodman, Mat Gunshor | CIMSS: Scott Lindstrom | 206 | 4/5/2016 | 4/19/2016 | 5/3/2016 | 5/17/2016 | 5/31/2016 | 6/14/2016 | |
| 7 | | | | | | | ARI (cul | hartion | | | | | | |
| 8 | Spectral bands: Visible bands & Near IR (0.47, 0.64, and 0.865 micrometers) | 15 min | How to ID meteorological and surface features with each spectral band | COMET: Wendy Abshire | Tim Schmit, Jordan Gerth | CIRA: Dan Bikos | 138 | 6/3/2016 | 6/17/2016 | 7/7/2016 | 7/21/2016 | 8/4/2016 | 8/18/2016 | |
| 9 | Spectral bands: Near IR (1.378, 1.61, and 2.25 micrometers) | 15 min | How to ID meteorological and surface features with each spectral band | COMET: Wendy Abshire | Tim Schmit, Jordan Gerth | CIRA: Dan Bikos | 275 | 7/20/2016 | 8/3/2016 | 8/17/2016 | 8/31/2016 | 9/14/2016 | 9/28/2016 | |
| 10 | Spectral bands: IR, excluding water vapor (3.90, 8.5, 9.61, 10.35, 11.2, 12.3, and 13.3 micrometers) | 30 min | How to ID meteorological and surface features with each spectral band | COMET: Wendy Abshire | Tim Schmit, Jordan Gerth | CIRA: Dan Bikos | 413 | 7/20/2016 | 8/3/2016 | 8/17/2016 | 8/31/2016 | 9/14/2016 | 9/28/2016 | |
| 11 | Spectral bands: IR Water Vapor bands (6.19, 6.95, and 7.34 micrometers) | 30 min | Stress 3-D representation of Mid/Upper tropospheric water vapor Band differences (fog product and cloud | CIRA: Dan Bikos | Tim Schmit, Jordan Gerth | CIMSS: Scott Lindstrom CIRA: Bernie | 413 | 4/27/2016 | 5/11/2016 | 5/25/2016 | 6/8/2016 | 6/22/2016 | 7/6/2016 | |

Development of Satellite Foundational Course - GOES-R

- 39 modules + 2 cases
- Each 10-15 min
- Total time 8.5 hrs.
- Called "GOES-R Satellite Foundational" in CLC/LMS



Where to Find Training Now







- VISIT Chats (Fire WX, Lightning, ...)
- Satellite Blogs
- Webinars
- COMET MetEd

Current Satellite Training on CLC/LMS

GOES-R & SNPP Training



Tracking the Elevated Mixed Layer with a new GOES-R Water

Vapor Band

Event | VISIT/SHYMET

This teletraining session describes a technique to track the elevated mixed layer (EML) that can be an important ingredient for severe thunderstorm events. Currently, a blend of soundings and GOES sounder 7.4 um band is utilized, however with GOES-R the 7.34 um band will be available at much higher spatial and temporal resolution, making this techn...

Use of GOES/RSO Imagery with other Remote Sensor Data for Diagnosing Severe Weather across the CONUS (RSO 3)

Online Class | VISIT/SHyMet ***** (0)

This is the third in a series of VISIT teletraining sessions on GOES Rapid Scan Operations (RSO) Imagery. The first session is titled Using GOES Rapid Scan Operations (RSO) Imagery in AWIPS and concentrated on what RSO is and how to call it. The second session is titled Mesoanalysis of convective weather using GOES RSO imagery and concentrated on i...



Pseudo Geostationary Lightning Mapper Training

Online Class | NASA/SPoRT ***** (0)

This module introduces SPoRT's Pseudo Geostationary Lightning Mapper Flash Extent Density product and variants for use in the GOES-R Proving Ground. The Pseudo GLM is intended as a training product for forecasters ahead of the GOES-R era and to prepare forecasters for the more robust GLM Proxy product under development by the Algorithm Working Grou...

Mesoscale Analysis of Convective Weather Using GOES RSO

Imagery

***** (0) Online Class | VISIT/SHyMet

The material in this session is designed to increase the forecasters skill in incorporating satellite data in the short-range forecast, nowcasting, and warning decision making processes. The primary focus is on severe thunderstorms but principles can be applied to most convective weather.

GOES-R: Benefits of Next-Generation Environmental

Monitoring

Online Class | The COMET Program ***** (0)

This module is an introduction to NOAA's next generation Geostationary Operational Environmental Satellite-R (GOES-R) series, focusing on the value and anticipated benefits derived from an enhanced suite of instruments for improved monitoring of meteorological, environmental, climate, and space weather phenomena and related hazards. An extensive se...

1-minute Visible Satellite Imagery Applications for Severe Thunderstorms

Online Class | VISIT/SHyMet ***** (0)

Use of VIIRS Imagery for Tropical Cyclone Forecasting

Online Class | VISIT/SHyMet ***** (0) This training session focuses on VIIRS imagery applications for tropical cyclone forecasting. There is an emphasis on the VIIRS Day/Night Band Channel (DNB).



Introduction to VIIRS Imaging and Applications

Online Class | The COMET Program ***** (0)

This lesson introduces the VIIRS imager that operates on the current U.S. Suomi NPP satellite and is planned for future JPSS environmental satellites. VIIRS has many advanced features that improve both spectral and spatial resolution and enable the delivery of consistent, high quality, and high resolution data to users worldwide. The lesson covers ...

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naging with VIIRS: A Convergence of Technologies and perience, 2nd Edition

Online Class | The COMET Program ***** (0)

This module introduces the VIIRS imager that was launched on the Suomi NPP (National Polar-orbiting Partnership) satellite in October 2011 and will fly on future U.S. JPSS weather satellites. The VIIRS imager has many advanced features that improve both spectral and spatial resolution. Together with modernized data communication and processing syst...

Introduction to NCC DNB VIIRS Imagery in AWIPS

Online Class | VISIT/SHyMet

***** (0) This VISIT training session is a introduction to the Near Constant Contrast (NCC) Day/Night Band (DNB) Visible Infrared Imaging Radiometer Suite (VIIRS) on the Suomi/NPP satellite as displayed in AWIPS. The imagery is introduced, along with various applications and limitations to be aware of.



RGB Imagery for Cloud and Fog Analysis: Southern U.S.

Aviation Applications

***** (0) Online Class | NASA/SPoRT

This micro-lesson reviews some specific utilities of the Nighttime Microphysics RGB, the Hybrid LEO/GEO Fog and Low Cloud product, and the VIIRS Day-Night Band RGB relative to Aviation Weather Forecasting. Included are a review of each of the products, as well as examples on their use individually and in tandem to help improve fog and low cloud for.

Advances in Space-Based Nighttime Visible Observation ***** (0) Online Class | The COMET Program

This one-hour module explores the types of atmospheric and surface features that can be observed at night. It describes recent technical improvements in nighttime visible imaging with the Suomi NPP VIIRS Day/Night Band and the lunar phases and other conditions that are necessary for effective nighttime visible imaging. This lays the foundation for ...



Online Class | NASA/SPoRT ***** (0) Alaska has a large percentage of nighttime during winter months. Several RGB products from MODIS and VIIRS are



- ABI Band quick–guides are available now.
- http://www.goes-r.gov/education/outreach.html#FS
- On OCLO and TOWR-S VLAB pages.



Resources -> Fact sheets

INSTRUMENTS

- Advanced Baseline Imager (ABI)
- ABI Bands Quick Information Guides
- Geostationary Lightning Mapper (GLM)
- GOES-R Space Weather Instruments
- JMA Advanced Himawari Imager (AHI) 0.5 µm Band

Summary

- NWS Training is on-track to get Forecasters Ready to use GOES-R data when operationally ready on AWIPS (WFOs, RFCs, CWSUs) and N-AWIPS (National Centers) at Launch + 180 days.
- Foundational Course materials will be complete by September 30.
- Formal Course roll-out will occur right after launch.
- Forecasters will be expected to complete course before data is available operationally at IOC (Launch + 180 days).
- Individual progress through the modules will be tracked through the Commerce Learning Center and weekly progress reports sent to Office Managers and Regional and Center Directors.