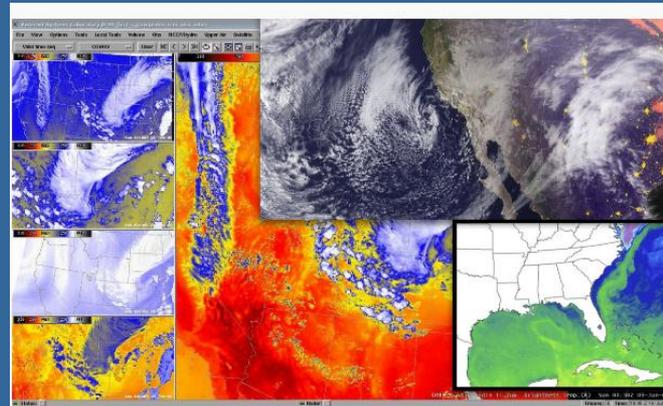


Training in NOAA Satellite Proving Ground

Anthony Mostek and LeRoy Spayd
NOAA/NWS/Training Division

With

Jim Gurka and Tim Schmit
NOAA/Satellite & Information Service



Examples of GOES-R Proving Ground images and products

GOES-R Satellite Proving Ground Mission Statement

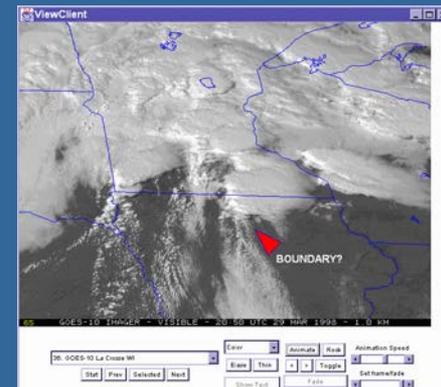
The Geostationary Operational Environmental Satellite ([GOES-R](#)) Satellite Proving Ground project engages the National Weather Service (NWS) forecast and warning community in pre-operational demonstrations of selected capabilities anticipated from the next generation of National Oceanic and Atmospheric Administration (NOAA) geostationary earth observing systems...

AMS
January 2013



Key Points for Satellite Training

- ✓ Integral to Satellite Programs/Goals
- ✓ Satellite Training Community
- ✓ Satellite (GOES-R) Proving Ground
- ✓ Polar Satellites (JPSS/NPP) Included
- ✓ Training Summary





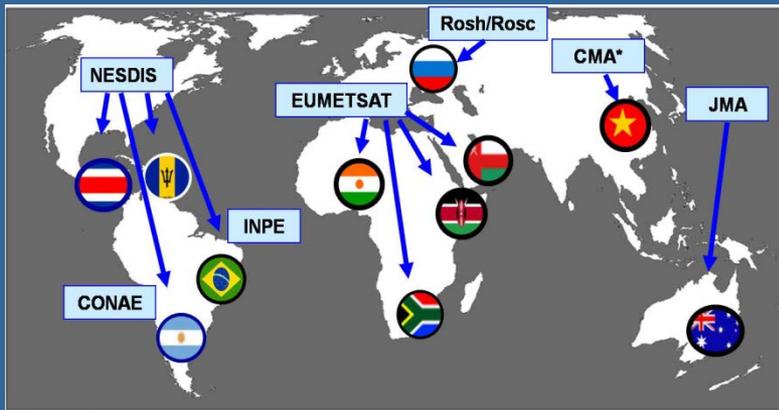
Training Community

- Dedicated NWS Training Division with 3 Branches
- Partners in NOAA - -
Cooperative Institutes & Programs
- With US Agencies (DOD, NASA, FEMA, ...)

Training Community

➤ International Collaboration

- WMO Space Programme Virtual Laboratory, Centres of Excellence (Argentina, Barbados, Brazil, Costa Rica, ...), Canada, EUMETSAT, and more...

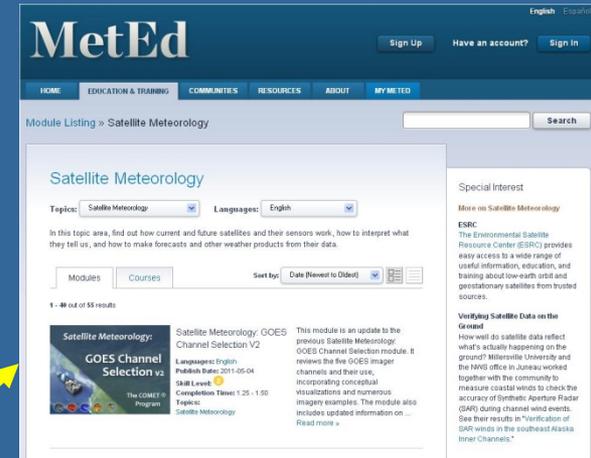


Working Together for Satellite Training



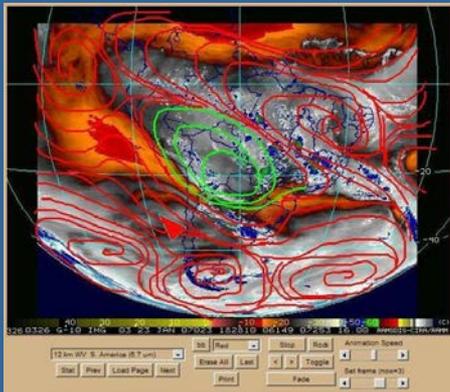
VISIT (CIRA/CIMSS)

NOAA Partners
EUMETSAT, DOD,
NASA, Canada,...



UCAR/COMET

Satellite
Proving
Ground



WMO (Virtual Lab)

Users & Developers



NWS Training
Division

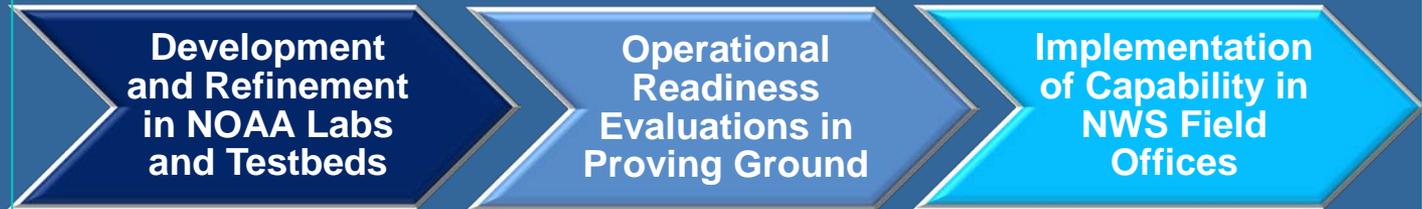
Training in GOES-R Proving Ground (PG)

- PG is both a source and sink for training
 - Participants must be trained in order to provide a meaningful evaluation of products
 - The PG provides a rich source of new training material



NWS Operations Proving Ground Mission

To advance the processes and skill sets needed to generate, deliver, and communicate weather information by evaluating end-to-end service delivery in a realistic operational setting.



To authenticate candidate capabilities, it is essential to involve core partners; test local, regional, and national linkages; assess impact on workload, workflow, and other human factors; and obtain objective validation of our DSS effectiveness and associated risk communication messaging.



Proving Ground CIMSS

UW/CIMSS NOAA Proving Ground Decision Support Products								
Product	Contact	Training		AWIPS Setup	Web Quicklooks	Satellite Platform	WFO Testbed Feedback	Product Type
		VISIT	PPT					
Convective Initiation(UWCI)	Wayne Feltz	X	X			GOES Imager	HWT , AWC, PR	Product Variant
Overshooting Top (OTTC) and Enhanced-V	Wayne Feltz Kris Bedka	X	X	X	X	GOES Imager, MODIS/AVHRR	HWT , HLT	AWG Proxy
WRF Simulated Radiances (ABI Simulated Radiances)	Justin Sieglaff		pdf		X		HWT	Risk Reduction
WildFire ABBA (WFABBA)	Chris Schmidt				X	GOES Imager	HWT	AWG Proxy
NearCast	Ralph Petersen	X	X	X	X	GOES Imager, GOES Sounder	HWT	Risk Reduction
Cloud Mask	Andrew Heidinger		X		X	GOES Imager, MODIS (Adaptable to any imager)	AAWU, AWC, HLT, PR, OPC	AWG Proxy
Cloud Height	Andrew Heidinger		X	Contact Researcher	X	GOES Imager, AVHRR (Adaptable to any imager)	AAWU, AWC, HLT, PR, OPC	AWG Proxy
Volcanic Ash	Mike Pavolonis	X	X			MODIS, SEVIRI	AAWU, AWC, HLT, PR	AWG Proxy
Low Clouds, Cloud Type, Fog	Mike Pavolonis		X Quick Facts	Contact Researcher		MODIS-Alaska, GOES-CONUS	AAWU, AWC, HLT, HWT	AWG Proxy
SO ₂	Mike Pavolonis					MODIS	AAWU, AWC	AWG Proxy

Proving Ground CIRA

Product	Contact	Related Training	Data Display	WFO / Testbed Feedback	Product Type	Usage
GeoColor Imagery	Steve Miller	Product Description	AWIPS web	WFO	New Imagery / Visualization Technique	Visualization
MODIS Simulated True Color Imagery	Steve Miller	Product Description	web	WFO	New Product	Visualization
GOES Low Cloud / Fog Imagery	Don Hillger	Product Description COMET	AWIPS web	WFO	Product Variant	Cloud determination
MODIS Cirrus Detection	Steve Miller	Product Description	AWIPS web	WFO	New Product	Cloud determination
Orographic Rain Index (ORI)	Steve Miller	Product Description	AWIPS web	HWT	New Product	Rainfall
Marine Stratus Cloud Climatology	Cindy Combs	Product Description VISIT student guide		WFO	New Product	Cloud determination
GOES Blowing Dust	Don Hillger	Product Description COMET COMET EUMETSAT training	AWIPS web	HWT	Product Variant	Volcanic Emissions / Dust
MODIS Based Blowing Dust	Steve Miller	Product Description COMET COMET EUMETSAT training	AWIPS web	HWT	Product Variant	Volcanic Emissions / Dust
MODIS Cloud / Snow Discriminator	Steve Miller	Product Description COMET	AWIPS web	WFO	Product Variant	Snow / Cloud determination
MODIS Cloud Layers & Snow Cover Discriminator	Steve Miller	Product Description COMET	AWIPS web	WFO	Product Variant	Snow / Cloud determination
GOES Snow / Cloud Discriminator (3-color technique)	Don Hillger	Product Description COMET	web	WFO	Product Variant	Snow / Cloud determination
GOES Volcanic Ash (PCI)	Don Hillger	Product Description VISIT student guide EUMETSAT training	web	HWT	Product Variant	Volcanic Emissions / Dust
MODIS Volcanic Ash	Steve Miller	Product Description VISIT student guide EUMETSAT training	web	HWT, AWC	Product Variant	Volcanic Emissions / Dust
MODIS Vegetation (NDVI)	Steve Miller	Product Description EUMETSAT training	web	WFO	New Product	Vegetation
SPC Hail Probability	Dan Lindsey	Product Description	N-AWIPS web	SPC Spring Experiment	New Product	Severe Thunderstorm

COMET METED

English Español

MetEd

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HOME EDUCATION & TRAINING COMMUNITIES RESOURCES ABOUT MY METED

Module Listing » Satellite Meteorology

Search

Satellite Meteorology

Topics: Satellite Meteorology Languages: English

In this topic area, find out how current and future satellites and their sensors work, how to interpret what they tell us, and how to make forecasts and other weather products from their data.

Modules Courses Sort by: Date (Newest to Oldest)

1 - 40 out of 55 results



Satellite Meteorology: GOES Channel Selection V2

Languages: English
Publish Date: 2011-05-04
Skill Level: 1
Completion Time: 1:25 - 1:50
Topics: Satellite Meteorology

This module is an update to the previous Satellite Meteorology: GOES Channel Selection module. It reviews the five GOES imager channels and their use, incorporating conceptual visualizations and numerous imagery examples. The module also includes updated information on ...
[Read more »](#)

English Español

MetEd

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HOME EDUCATION & TRAINING COMMUNITIES RESOURCES ABOUT MY METED

Module Listing » Satellite Meteorology

Search

Satellite Meteorology

Topics: Satellite Meteorology Languages: English

In this topic area, find out how current and future satellites and their sensors work, how to interpret what they tell us, and how to make forecasts and other weather products from their data.

Modules Courses Sort by: Date (Newest to Oldest)

1 - 40 out of 51 results



ASMET Satellite Precipitation Products for Hydrological Management in Southern Africa

Languages: English
Publish Date: 2011-10-27
Skill Level: 1
Completion Time: .75 - 1.00 h
Topics: Hydrology/Flooding, Satellite Meteorology

This module introduces a variety of meteorological and hydrological products that can improve the quality of heavy rainfall forecasts and assist with hydrological management during extensive precipitation events in Southern Africa. Among the products are the satellite-based ...
[Read more »](#)

Special Interest

More on Satellite Meteorology



ESRC
The Environmental Satellite Resource Center (ESRC) provides easy access to a wide range of useful information, education, and training about low-earth orbit and geostationary satellites from trusted sources.

Verifying Satellite Data on the Ground
How well do satellite data reflect what's actually happening on the ground? Millersville University and the NWS office in Juneau worked together with the community to measure coastal winds to check the accuracy of Synthetic Aperture Radar (SAR) during channel wind events. See their results in "Verification of SAR winds in the southeast Alaska Inner Channels."

GOES-R:

Benefits of Next-Generation
Environmental Monitoring

Hurricanes



Volcanoes



Severe
Thunderstorms



Lightning



Cloud Icing



Fires



Precipitation &
Floods



Low Clouds & Fog



Coastal & Marine



Land Cover



Air Quality



Climate



Space Weather





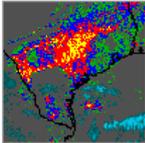
Training and Education

Online Training Modules

- GOES-R: Benefits of Next-Generation Environmental Monitoring (COMET)
- GOES-R 101
- Satellite Hydrology and Meteorology for Forecasters (SHyMet)
- SPoRT product training modules
- Commerce Learning Center



TRAINING



GOES Fog Depth
[Download](#) (for NWS users)
[Launch](#) in browser
[\(user guide\)](#)

This training module focuses on the use of the Fog Depth product within the GOES Aviation suite provided through a collaboration between SPoRT and NESDIS. The use of this product along with the Low Cloud Base product is demonstrated in support of aviation forecasts of ceiling and visibility. This module takes 16 minutes to complete and requires the flash plug-in. (May 2008)

Printed Materials

- GOES-R Fact Sheets (17)
- GOES-R Tri-fold

Outreach Projects (with NWSFOs)

- COMET will reach out to the GOES-R Proving Ground Partners and connect them with university faculty to use current and prototype data products for the purpose of building a bridge from products that are currently available to those that will become available when GOES-R is launched.

GOES-R 101





Bernie Connell¹, Timothy J. Schmit^{2,3}, Jim Gurka⁴,
 Steve Goodman⁵, Don Hillger^{2,4}, Steven Hill⁶,
 And many other contributors

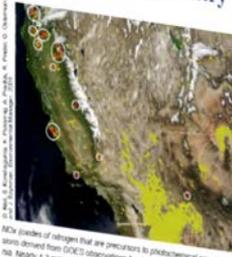
GOES-R Program in cooperation with
 Satellite Hydrology and Meteorology (SHyMet) Forecasters Course

¹ Cooperative Institute for Research in the Atmosphere, Colorado State University
² NOAA/NESDIS Satellite Applications Research
³ Advanced Satellite Products Branch
⁴ Regional and Mesoscale Meteorology Branch
⁵ NOAA/NESDIS/OSD GOES-R Program Office
⁶ NOAA/NWS Space Weather Prediction Center
⁷ Cooperative Institute for Meteorological Satellite Studies, University of Wisconsin-Madison

June 2011

GOES-R Aerosols/Air Quality/Atmospheric Chemistry

What is GOES-R?
 The Geostationary Operational Environmental Satellite - R Series (GOES-R) is the next generation of National Oceanic and Atmospheric Administration (NOAA) geostationary Earth-observing systems. Superior spacecraft and instrument technology will support expanded detection of environmental phenomena, resulting in more timely and accurate forecasts and warnings. The Advanced Baseline Imager (ABI), a sixteen channel imager with two visible channels, four near-infrared channels, and ten infrared channels, will provide three times more spectral than five times the temporal coverage than the current system. Other advancements over current GOES capabilities include total lightning detection (in-cloud and cloud-to-ground flashes) and mapping from the Geostationary



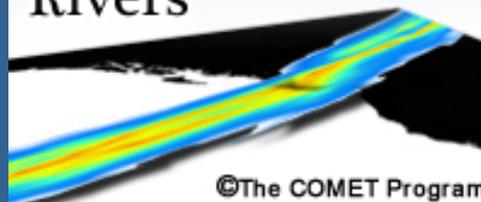
Atmospheric gradients of nitrogen that are precursors to photochemical smog were seen derived from GOES-R observations for July 2008 forest fires in California. Nearly 1.3 million acres of forest land burned in June and July 2008. July 2008. SO2 emissions in northern California were as high as 325 tons daily below 10 km for regions where fires occurred. Emissions less than 40 km are shown in yellow and emissions greater than 40 km in red.

MONITORING THE CLIMATE SYSTEM WITH SATELLITES



Satellite Feature Identification:

Atmospheric Rivers



FY12 Satellite-specific Training Modules by COMET with complete or partial NESDIS funding

Funding also supports conference participation to promote the materials and interact with experts

- **GOES-R ABI.... 2nd quarter FY13**
- **Monitoring the Climate System with Satellites (with EUMETSAT)**
- **Satellite Feature Identification: Atmospheric Rivers (with MSC)**
- **Atmospheric Dust**
- **Microwave Remote Sensing: Overview, 2nd Edition**
- **Remote Sensing Using Satellites, 2nd Edition, fall 2012**
- **Polar-Orbiting Nighttime Applications, work underway**
- **Monitoring Atmospheric Composition with Satellites (with EUMETSAT) fall 2012**
- **Imaging with VIIRS: A Convergence of Technologies and Experience, 2nd Edition**
- **Suomi NPP: A New Generation of Environmental Monitoring Satellites**
- **The Environmental Satellite Resource Center Website**



VISIT & Satellite HydroMeteorology (SHyMet) Courses



VISIT - Virtual Institute for Satellite Integration Training - Mozilla Firefox

File Edit View History Bookmarks Tools Help

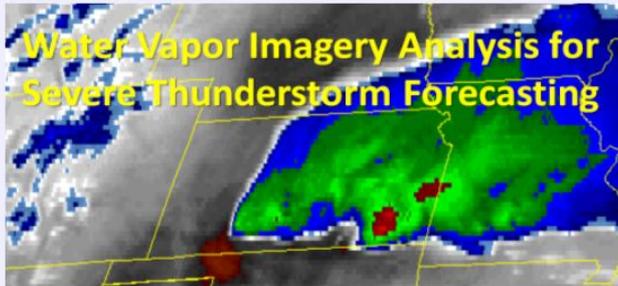
http://rammb.cira.colostate.edu/training/visit/

VISIT

Virtual Institute for Satellite Integration Training

- VISIT Home
- Training Sessions
- Training Calendar
- Blog Sites
- The VISIT Program
- VISIT People
- VISIT FAQ
- Links / Tutorials
- RAMSDIS Online

VISIT Home



Water Vapor Imagery Analysis for Severe Thunderstorm Forecasting

VISIT is a joint effort involving NOAA-NESDIS Cooperative Institutes, the National Environmental Satellite Data and Information Service (NESDIS), and the National Weather Service (NWS). The primary mission of VISIT is to accelerate the transfer of research results based on atmospheric remote sensing data into NWS operations using distance education techniques.





VISIT

Virtual Institute for Satellite Integration Training

FY11-12 Live Training Sessions

Synthetic Imagery in Forecasting Orographic Cirrus (January 2011)

Synthetic Imagery in Forecasting Severe Weather (February 2011)

Objective Satellite-Based Overshooting Top and Enhanced-V Anvil Thermal Couplet

Signature Detection (February 2011)

Volcanoes and Volcanic Ash Part 2 (March 2011)

GOES-15 Becomes GOES-West (December 2011)

VISIT Satellite Chats (short, interactive discussions, Q&A, monthly since February 2012)

Topics:

Fog and Low-Cloud Detection from Satellite (2-22-2012)

Water Vapor Imagery (3-21-2012)

Satellite Related Severe Weather Products (4-25-2012)

Fire Weather Imagery and Products (5-23-2012)

Mesoscale Convective Vortices (6-27-2012)

Synthetic Imagery in Forecasting Low Clouds and Fog (April 2012)

Pseudo GOES Lightning Mapper (May 2012)

Tropical Cyclone Intensity Model Guidance Used by NHC (June 2012, updated)

Tropical Cyclone Track Model Guidance Used by NHC (June 2012, updated)

Convective Cloud Top Cooling, UW Convective Initiation Algorithm (July 2012)



VISIT

Additional Live VISIT Training Sessions in 2011, 2012

TROWAL Identification (winter weather satellite application)

UW Nearcasting Product (for severe weather)

Morphed Total Precipitable Water Detection (MIMIC)

POES and AVHRR Data in AWIPS

UW Convective Initiation Products (GOES-based CI Algorithm)

Convective Downbursts

GOES Imagery for Forecasting Severe Weather

Water Vapor Imagery Analysis for Severe Weather

Mesoscale Convective Vortices

Basic Satellite Interpretation in the Tropics

Basic Satellite Principles

Interpreting Satellite Signatures

Satellite Interpretation of Orographic Clouds

Utilizing GOES Imagery to Forecast Winter Storms – Part 1, 2

CIMSS Regional Assimilation System – Forecast Satellite Imagery in AWIPS

Cyclogenesis: Analysis Using Geostationary Satellite Imagery



SHyMet

- **Course dedicated to operational satellite meteorology**
- **Consists of 14 lessons mostly via Web modules and teletraining**
- **Utilizes training resources available through COMET**
- **NOAA LMS provides structure to organize components into cohesive lessons**
- **Course funded by NESDIS**



Satellite Hydrology and Meteorology (SHyMet)

A new course dedicated to operational satellite meteorology

Main Objective

To prepare National Oceanic and Atmospheric Administration (NOAA) and National Weather Service (NWS) users for the latest polar orbiting and geostationary satellite data and products in the warning and forecast programs with direct links to Government Performance Results Act (GPRA) goals.

Completes end-to-end program cycle for space-based remote sensing as part of NOAA's Strategic Plan for an Integrated Global Environmental Observation and Data Management System and Global Earth Observation System of Systems (GEOSS).

NEW

[Click here to take the VISIT / SHyMet New Topics Survey](#)

[SHyMet Home](#)

[SHyMet Intern Course](#)

[Overall SHyMet Distance Training](#)

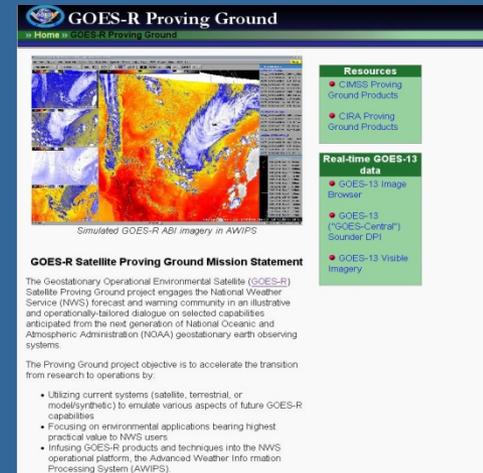
- [Introduction](#)
- [Target Audience](#)
- [Training Topics](#)

[Key Contributors](#)

[Sponsors](#)

Proving Ground Advanced Training

- Commerce Learning Center, VISIT, SHyMet and COMET/METED
- Include Quizzes & Evaluations
- Cases (**Weather Event Simulator - WES**)
- Focus on Human Performance
- For All NOAA Staff
- Expand to **International Users**



The screenshot shows the 'GOES-R Proving Ground' website. At the top, there is a navigation bar with 'Home' and 'GOES-R Proving Ground'. Below the navigation bar is a large satellite image of a weather system, with the caption 'Simulated GOES-R ABI imagery in AWIPS'. To the right of the image is a 'Resources' section with links to 'CIMSS Proving Ground Products' and 'CIIRA Proving Ground Products'. Below that is a 'Real-time GOES-13 data' section with links to 'GOES-13 Image Browser', 'GOES-13 (\"GOES-Central\") Sounder DPI', and 'GOES-13 Visible Imagery'. At the bottom, there is a 'GOES-R Satellite Proving Ground Mission Statement' section, followed by a paragraph about the project's objective and a bulleted list of goals.

GOES-R Proving Ground

Home GOES-R Proving Ground

Simulated GOES-R ABI imagery in AWIPS

Resources

- CIMSS Proving Ground Products
- CIIRA Proving Ground Products

Real-time GOES-13 data

- GOES-13 Image Browser
- GOES-13 (\"GOES-Central\") Sounder DPI
- GOES-13 Visible Imagery

GOES-R Satellite Proving Ground Mission Statement

The Geostationary Operational Environmental Satellite (GOES-R) Satellite Proving Ground project engages the National Weather Service (NWS) forecast and warning community in an illustrative and operationally-tailored dialogue on selected capabilities anticipated from the next generation of National Oceanic and Atmospheric Administration (NOAA) geostationary earth observing systems.

The Proving Ground project objective is to accelerate the transition from research to operations by:

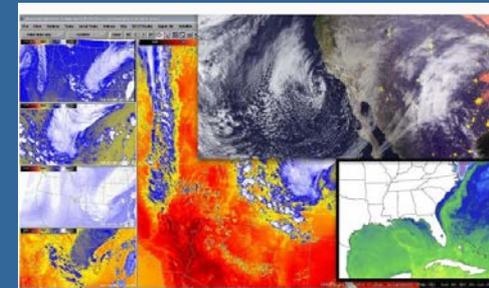
- Utilizing current systems (satellite, terrestrial, or model/synthetic) to emulate various aspects of future GOES-R capabilities
- Focusing on environmental applications bearing highest practical value to NWS users
- Infusing GOES-R products and techniques into the NWS operational platform, the Advanced Weather Information Processing System (AWIPS)

Summary – Training Take Away

- ✓ Collaborative International Training Community
- ✓ Helps NOAA & Partners Meet Their Goals
- ✓ Integral to Proving Ground and GOES-R Success
- ✓ Include Polar Satellites (JPSS/NPP)



VISIT is a joint effort involving NOAA-NESDIS Cooperative Institutes, the National Environmental Satellite Data and Information Service (NESDIS), and the National Weather Service (NWS). The primary mission of VISIT is to accelerate the transfer of research results based on atmospheric remote sensing data into NWS operations using distance education techniques.



Examples of GOES-R Proving Ground images and products

GOES-R Satellite Proving Ground Mission Statement

The Geostationary Operational Environmental Satellite (GOES-R) Satellite Proving Ground project engages the National Weather Service (NWS) forecast and warning community in pre-operational demonstrations of selected capabilities anticipated from the next generation of National Oceanic and Atmospheric Administration (NOAA) geostationary earth observing systems...

Contact Information

James.Gurka@noaa.gov

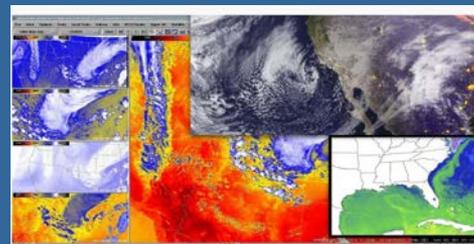
VISIT - rammb.cira.colostate.edu/visit/visithome.asp

COMET METED - meted.ucar.edu

Proving Ground –

cimss.ssec.wisc.edu/goes_r/proving-ground.html

Welcome to the National Weather Service Learning Center! This website provides information on various weather-related topics, including training opportunities, research, and public information. The page features a navigation menu on the left, a main content area with a "Getting Started" section, and a "My Training Calendar" on the right.



Examples of GOES-R Proving Ground images and products

GOES-R Satellite Proving Ground Mission Statement

The Geostationary Operational Environmental Satellite (GOES-R) Satellite Proving Ground project engages the National Weather Service (NWS) forecast and warning community in pre-operational demonstrations of selected capabilities anticipated from the next generation of National Oceanic and Atmospheric Administration (NOAA) geostationary earth observing systems...

MetEd website interface showing navigation tabs for TOPICS, COMMUNITIES, and COURSES. The TOPICS tab is active, displaying a list of subjects such as Aviation Weather, Coastal Weather, and Emergency Response. The COURSES tab shows various training modules, including "Introduction to the National Weather Service" and "Weather and Society". The page also features a "What's New?" section and a "Recent Publications" section.