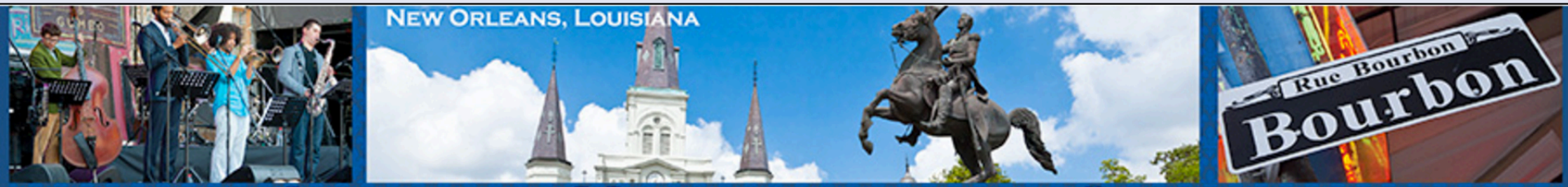
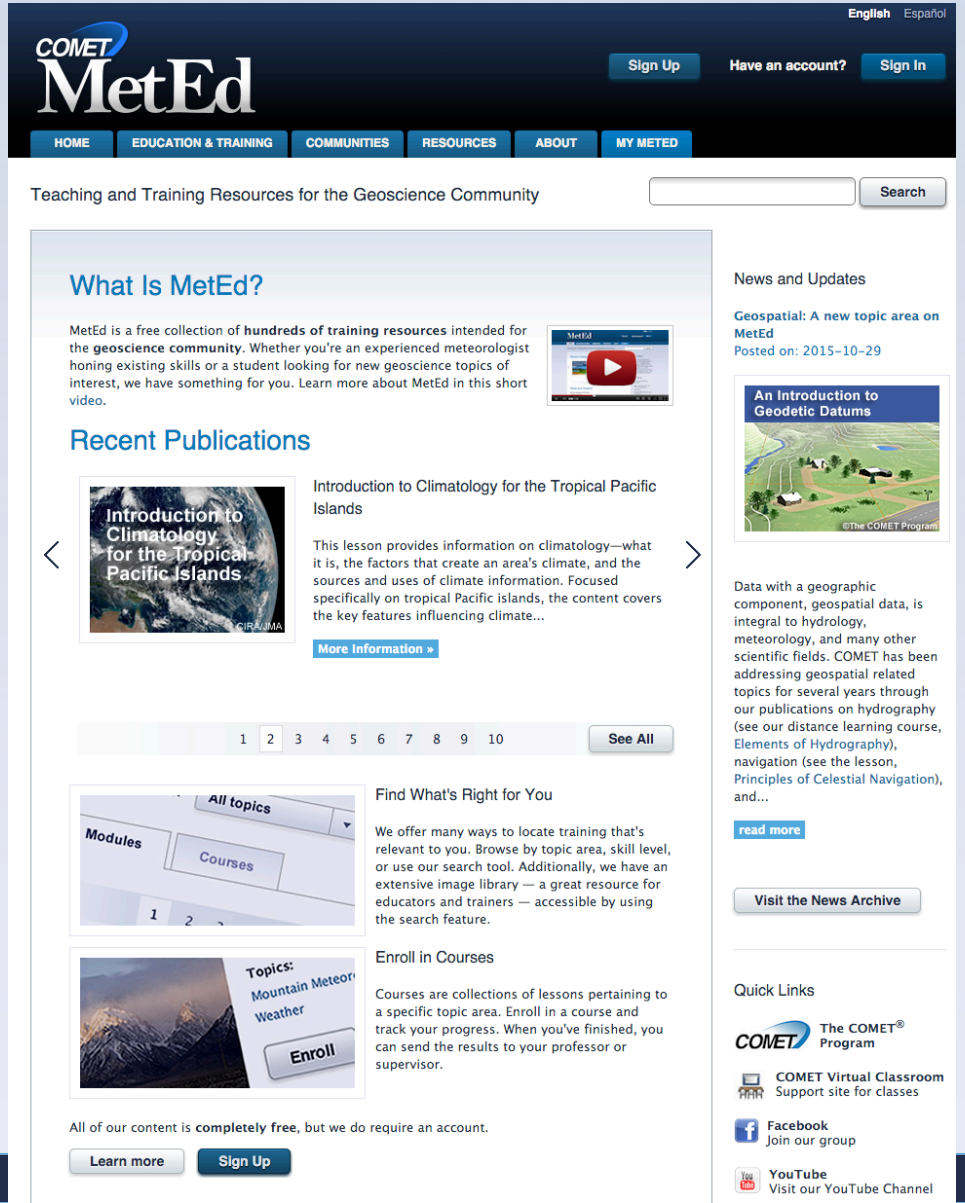
COMET Program Training Resources: Part of the Solution as User's Prepare to Embrace Environmental Satellite Advances

Wendy Schreiber-Abshire, Patrick Dills, Marianne Weingroff
UCAR's COMET Program



MetEd Website



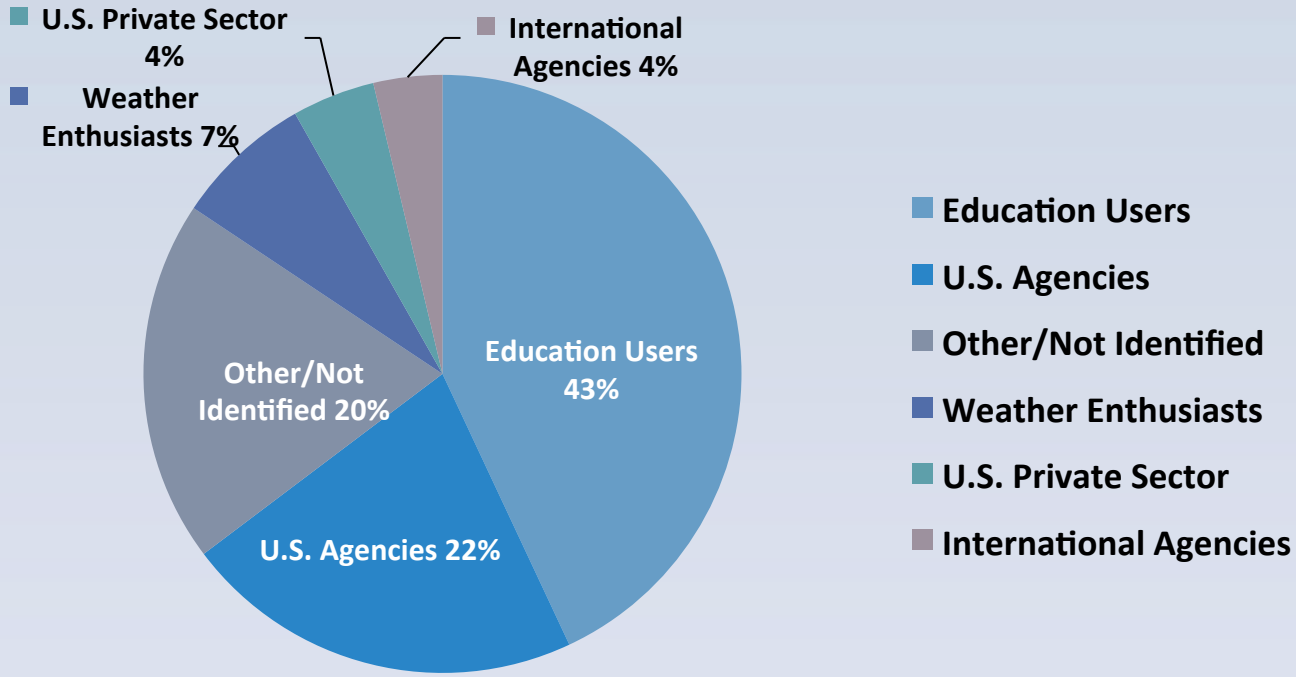
Online Lessons: ***(as of 7 Dec. 2015)***

- 387 English, 131 Spanish, 47 French, several others
- ~ 800 hours of self-directed distance learning material

Registered Users:

- > 410,000, growing ~5,000/month
- ~100,000 international, representing most national met services
- ~100,000 students representing 1,500+ universities
- ~52,000 return users each year complete ~5.7 hours of instruction annually

www.meted.ucar.edu

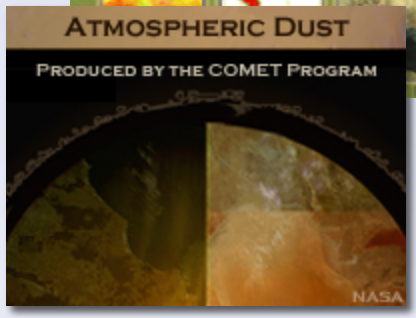


- Over 100 Satellite self-paced lessons on MetEd, and three multi-lesson courses **(Approximately 80 in English, 30 in Spanish, 21 in French)**
- Over 20,000 satellite lesson user sessions per year in English
- NESDIS satellite training activities with COMET attract additional funding and training development from both EUMETSAT and the Meteorological Service of Canada

GOES

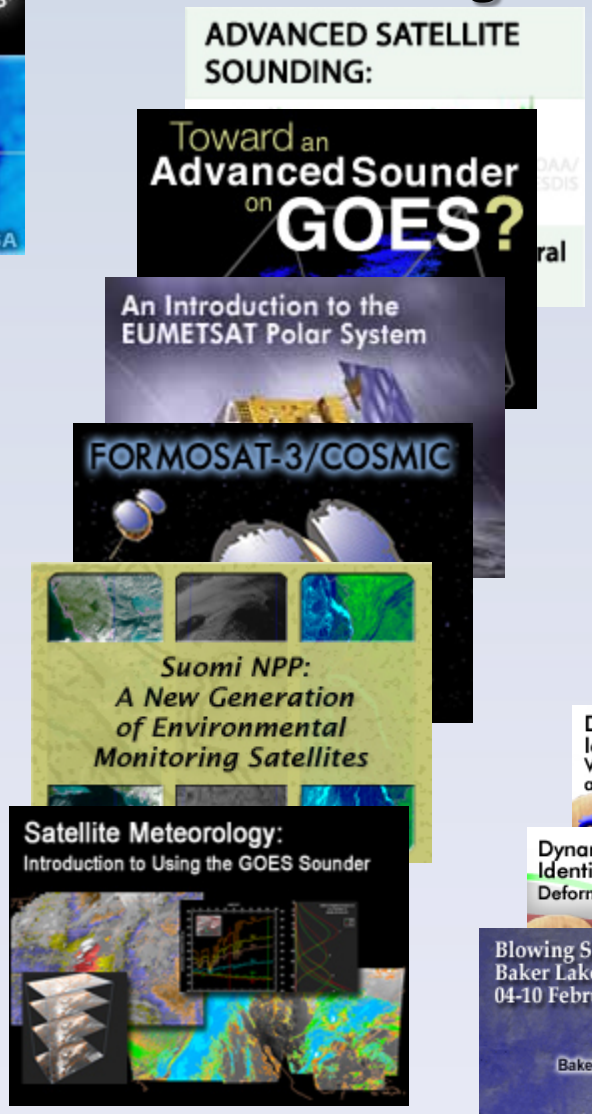
S-NPP & JPSS

Multispectral Applications

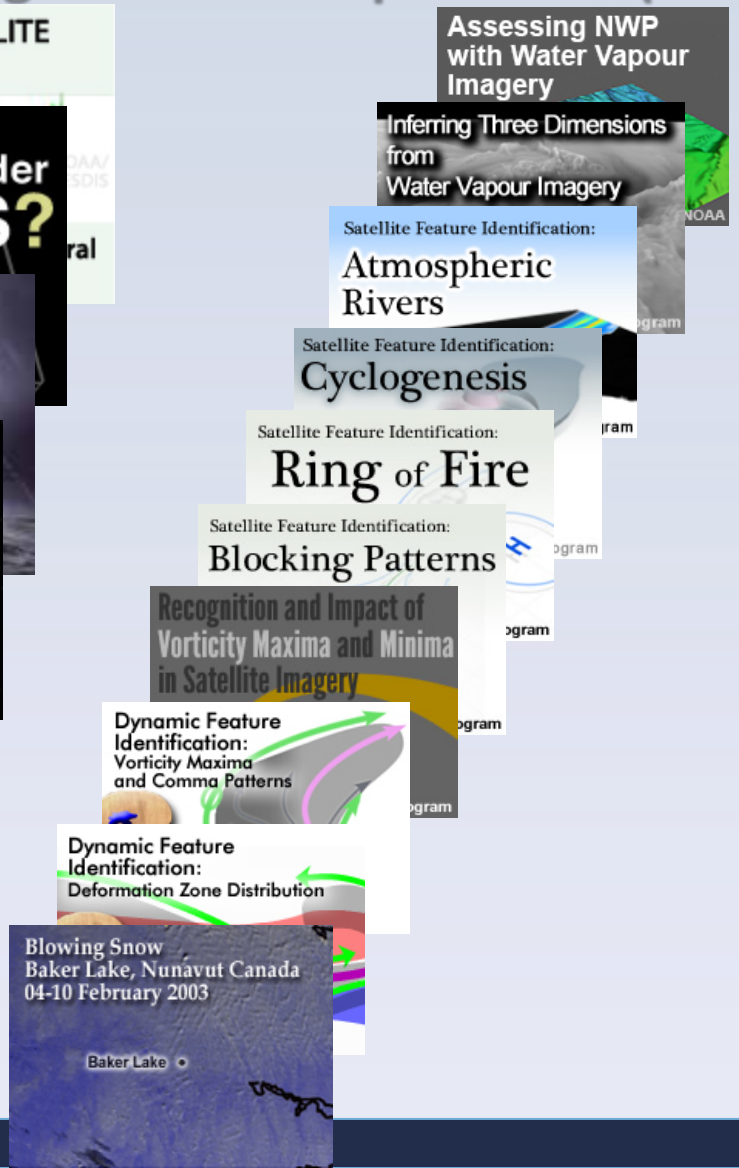


MW Remote Sensing

Atmospheric Sounding



Water Vapour Interpretation (MSC)



Imaging with VIIRS: A Convergence of Technologies and Experience, 2nd Edition

Languages: English
Publish Date: 2012-04-26
Skill Level: 1
Completion Time: .75 - 1.00 h
Includes Audio: no
Required Plugins: AdobeReader, Flash
Topics: Satellite Meteorology
Included in Courses: Multispectral Satellite Application Topics Course

Reviews: (3 reviews)
Read or add reviews

BEGIN LESSON

Add to Queue Your Queue»

Take the quiz?
Begin Quiz

Share this resource: 2

Description | Objectives | Keywords | Addendum | Media Gallery | Reviews

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 systems, VIIRS will provide consistent, high quality, and high resolution data to users. The module covers the enhanced capabilities of VIIRS by examining the systems that contributed to its development. Special attention is paid to the Day/Night Visible channel as VIIRS is the first instrument on a civilian satellite to image atmospheric and terrestrial features with and without moonlight.

Imaging with VIIRS: A Convergence of Technologies and Experience, 2nd Edition

Languages: English
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Includes Audio: no
Required Plugins: AdobeReader, Flash
Topics: Satellite Meteorology
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Reviews: (3 reviews)
Read or add reviews

BEGIN LESSON

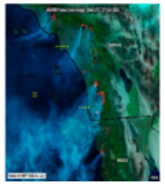
Add to Queue | Your Queue»

Your Quiz Score
Not Completed
Finish Quiz

Share this resource: 0

Description | Objectives | Keywords | Addendum | Media Gallery | Reviews

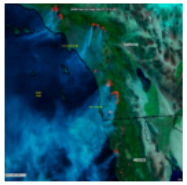
Results **1** - **9** of 125



copyright information:
COMET Standard Terms of Use

description:
AVHRR false-color image of fires over Southern California and northwestern Mexio at 2044 UTC on October 27, 2003.

More details...



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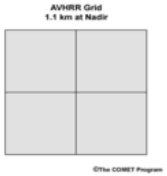

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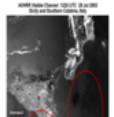
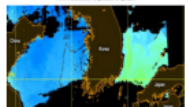
description:
NOAA AVHRR channel grid, 1.1 km at nadir viewing angles.

More details...





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Suomi NPP: A New Generation of Environmental Monitoring Satellites

Languages: English, Spanish
Publish Date: 2012-05-01
Skill Level: 1
Completion Time: .75 - 1.00 h
Includes Audio: yes
Required Plugins: Flash
Topics:
Satellite Meteorology

Reviews:
(0 reviews)
Read or add reviews

BEGIN LESSON

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Take the quiz?
Begin Quiz

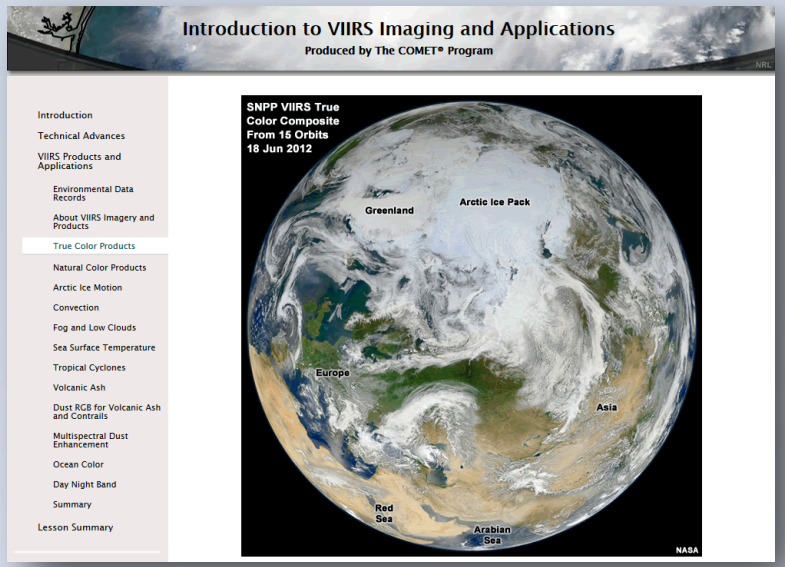
Share this resource: 4

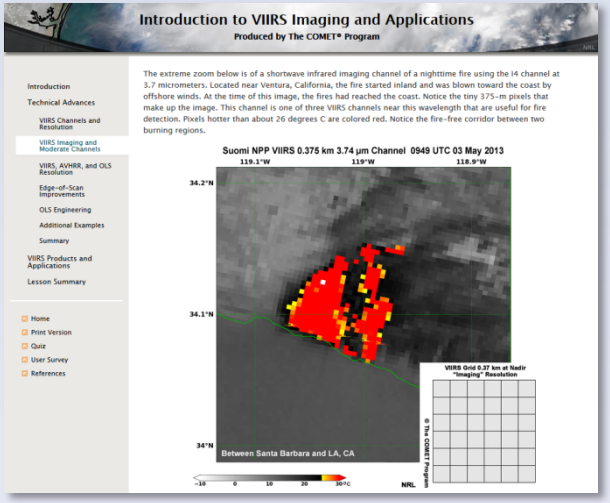
Description | Objectives | Keywords | Media Gallery | Reviews

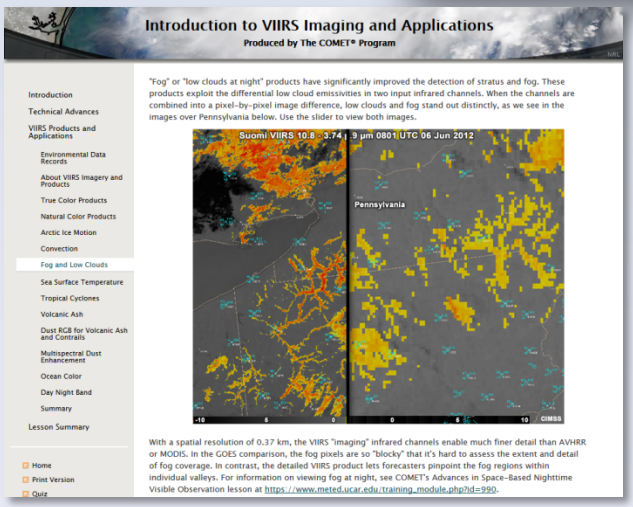
The Suomi National Polar-orbiting Partnership or Suomi NPP satellite, launched in 2011, is the first of a new series of missions under NOAA's JPSS program. Suomi NPP has two major goals: global observing of the Earth's atmosphere, land, and ocean surface; and climate monitoring. Suomi NPP observations are used to create operational forecast products and provide input to numerical weather prediction models. They also provide continuity to the satellite climate record and other environmental datasets. This module provides an overview of the Suomi NPP satellite. The first half describes its mission, products, and instruments. The second half focuses on its role in environmental monitoring, offering examples of how it detects and monitors Earth's climate, land and ocean surfaces, atmosphere, and space weather.

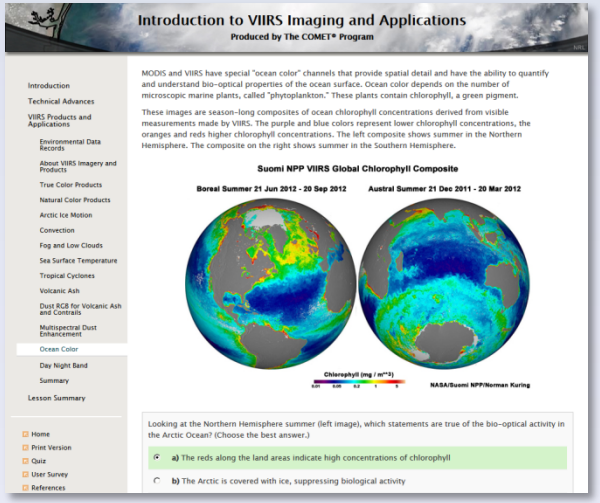
Introduction to VIIRS Imaging and Applications

- VIIRS capabilities vs. earlier imagers
- Imaging strategy, 22 bands, resolution
- Key applications
- Introduction to the Day-Night Band



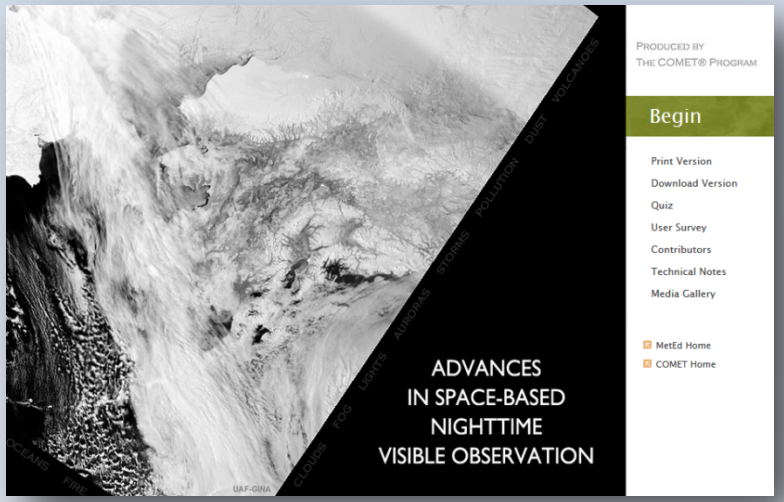


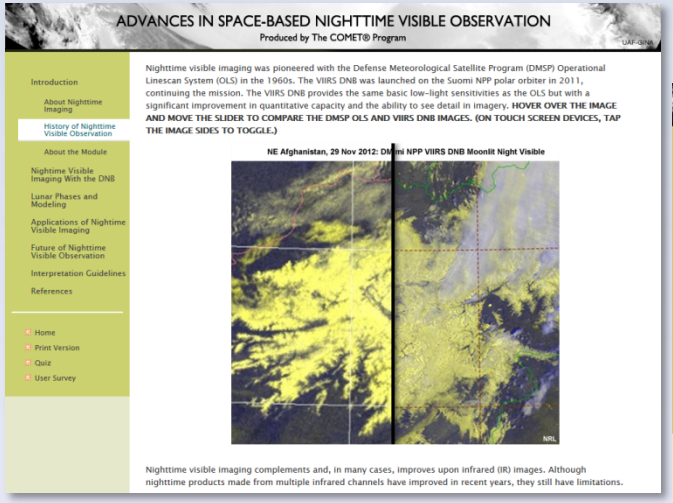


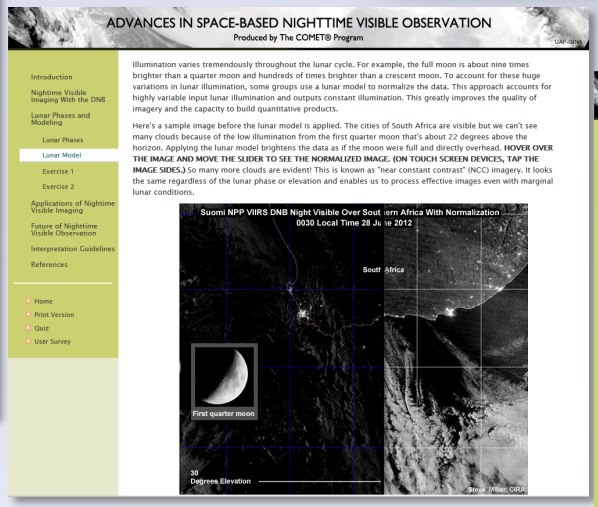


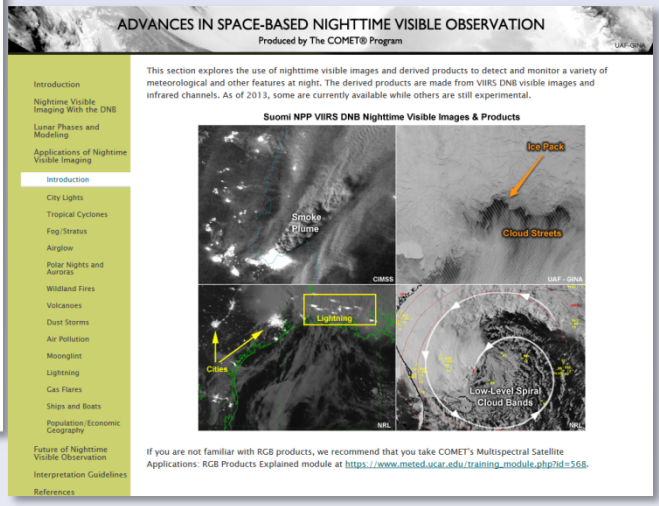
Advances in Space-Based Nighttime Visible Observation

- Technical Improvements with Suomi NPP VIIRS Day-Night Band
- Lunar cycle & modeling, constant contrast techniques for normalized imagery
- Meteorological and other applications
- Future improvements in NT visible imaging



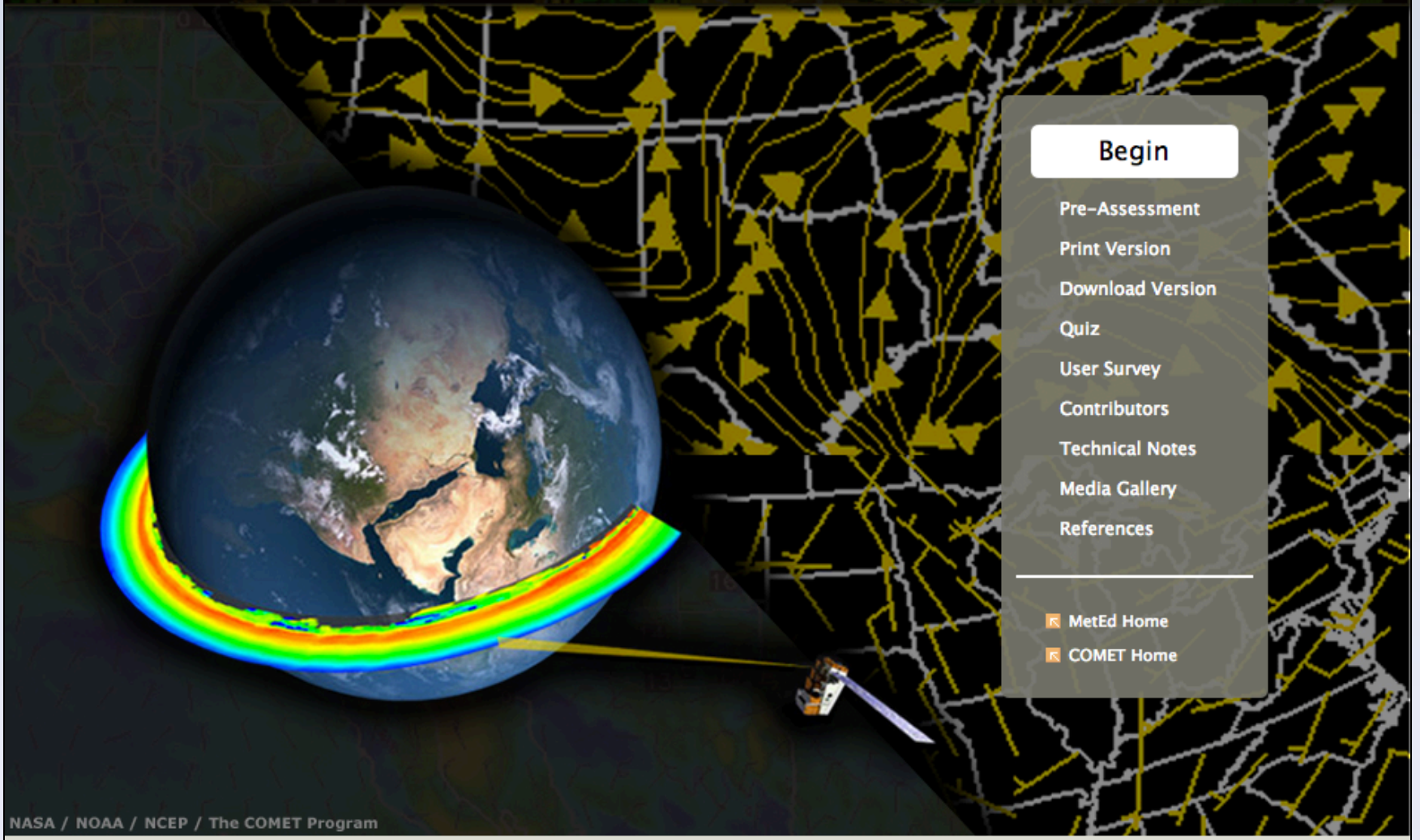






How Satellite Observations Impact NWP

Produced by The COMET® Program



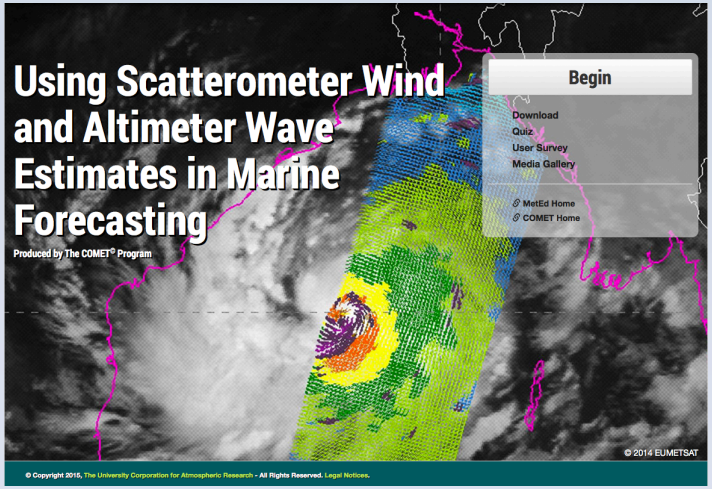
How Satellite Observations Impact NWP
90-120 minute interactive lesson

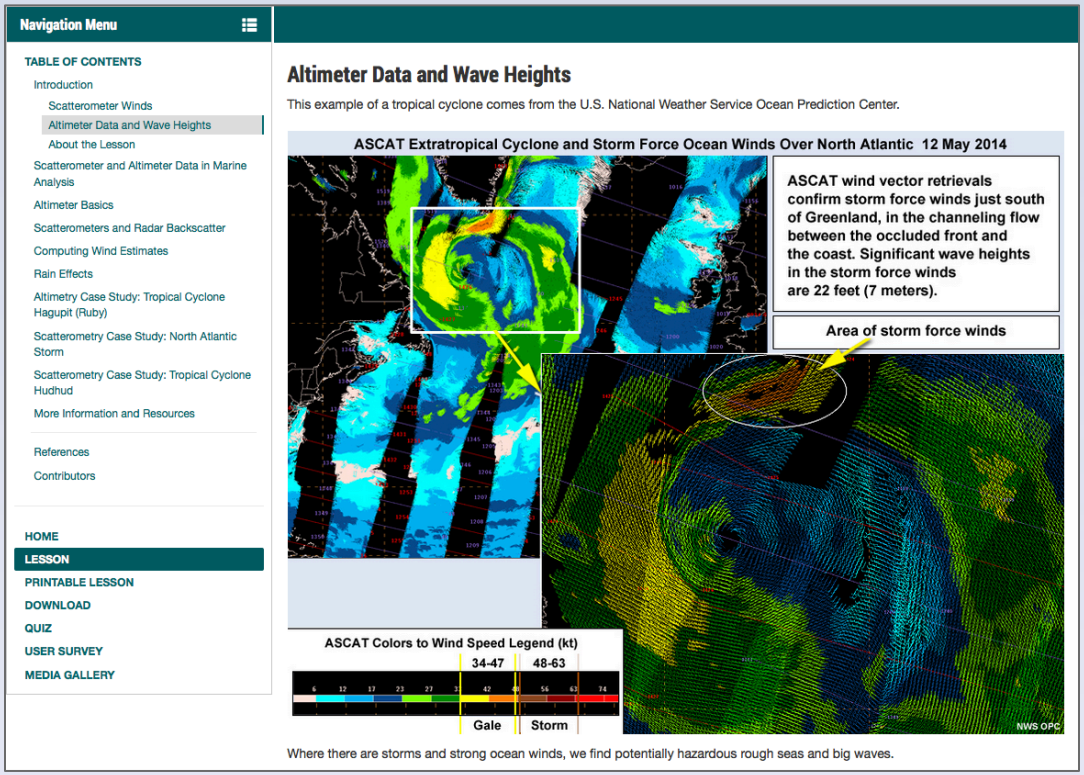
Description | Objectives | Keywords | Media Gallery | Reviews

By the end of the lesson, users should be able to:

- Describe the impact of satellite observations on numerical weather prediction (NWP) model analyses and forecasts
- Identify the primary types of environmental satellites that provide observations to data assimilation (DA) systems and NWP models
- Describe the major components of forecast models and how they forecast atmospheric processes
- Describe how observations from new satellite instruments are vetted for use in DA systems
- Describe the process of assimilating satellite observations and retrievals once they have been accepted for use in DA systems
- Provide examples of how model limitations can impact the assimilation and use of satellite observations in NWP
- Describe expected developments in satellite, DA, and NWP systems that will address current challenges and improve NWP forecast quality

NEW! Using Scatterometer Wind and Altimeter Wave Estimates in Marine Forecasting *(sponsored by EUMETSAT & NESDIS)*





Advanced level lesson. Just over 1-hr long. Includes:

- Scatterometer & Altimeter Basics
- Computing Wind Estimates
- Rain Effects
- Key Applications
- Case Studies

Topics: Satellite Meteorology

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.

Lessons/Resources | Courses

Sort by: Title (A - Z)

1 - 4 out of 4 results

Curso de orientación sobre los satélites GOES-R

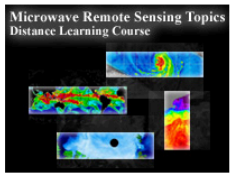
Languages: Spanish, English
Time to Complete: 3-5 h
Topics:

Este curso a distancia brinda a cualquier pronosticador, estudiante, investigador u otra persona interesada la oportunidad de explorar a su propio ritmo las prestaciones, los productos y las aplicaciones que los satélites GOES-R de próxima generación pondrán a nuestra ...
Read more »

GOES-R Satellites Orientation Course

Languages: English, Spanish
Time to Complete: 3-4 h
Topics:
Satellite Meteorology

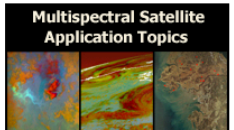
This self-paced distance learning course introduces forecasters, students, researchers, and other interested learners to the capabilities, products, and applications anticipated with the next-generation GOES-R satellites.The three core lessons in this course are: GOES-R: ...
Read more »



Microwave Remote Sensing Topics Distance Learning Course

Languages: English
Time to Complete: 4-6 hrs
Topics:
Satellite Meteorology

This self-paced distance learning course provides forecasters, students, researchers, developers, and other interested learners with a foundation in the science, products, and applications of space-based satellite microwave remote sensing. The three core modules that ... Read more »



Multispectral Satellite Application Topics Course

Languages: English
Time to Complete: 6 to 8 hrs
Topics:
Satellite Meteorology, Satellite

This self-paced distance learning course provides forecasters, students, researchers, and other interested learners with a foundation in the products and applications from multispectral satellite observations and various

Special Interest

More on Satellite Meteorology

Did you know that our individual GOES-R+ lessons are organized into their own distance learning course? Learn more on the GOES-R Satellites Orientation Course page.

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About Our Training Resources

Our training consists of lessons and courses. A **lesson** is targeted toward one focused subject, whereas a **course** is a collection of lessons that pertain to a broader subject area. You can receive certificates of completion for both lessons and courses. Courses are entirely self-paced and available for open enrollment. We also list a select set of **resources** that are not hosted on MetEd that are of high quailty and of interest to our community./p>

Virtual Classroom

The COMET® Program's virtual classroom provides access to material in support of our **residence** and **virtual courses**. These courses are generally available by invitation only and are hosted at our UCAR facility in beautiful Boulder, Colorado.

Languages: English
Completion Time: 3–4 h
Topics:
Satellite Meteorology

Enrollment Information:

Enroll

Description | Objectives | Overview | Additional Resources

Description

This self-paced distance learning course introduces forecasters, students, researchers, and other interested learners to the capabilities, products, and applications anticipated with the next-generation GOES-R satellites.

The three core lessons in this course are:

- GOES-R: Benefits of Next-Generation Environmental Monitoring
- GOES-R ABI: Next Generation Satellite Imaging
- GOES-R GLM: Introduction to the Geostationary Lightning Mapper

Course Outline

Core Topics/Modules

GOES-R: Benefits of Next-Generation Environmental Monitoring	**Languages:** English, Spanish **Publish Date:** 2008-12-19 **Last Updated On:** 2013-04-18 **Skill Level:** 1	**Topics:** Emergency Management, Satellite Meteorology (2 reviews)
GOES-R ABI: Next Generation Satellite Imaging	**Languages:** English, Spanish **Publish Date:** 2013-02-19 **Skill Level:** 1	**Topics:** Satellite Meteorology (0 reviews)
GOES-R GLM: Introduction to the Geostationary Lightning Mapper	**Languages:** English, Spanish **Publish Date:** 2014-09-05 **Skill Level:** 1	**Topics:** Mesoscale Meteorology, Satellite Meteorology (1 review)

Optional Topics/Modules

Multispectral Satellite Applications: RGB Products Explained Optional	**Languages:** English, Spanish **Publish Date:** 2013-07-08 **Last Updated On:** 2013-07-22 **Skill Level:** 2	**Topics:** Satellite Meteorology (6 reviews)
Multispectral Satellite Applications: Monitoring the Wildland Fire Cycle, 2nd Edition Optional	**Languages:** English **Publish Date:** 2013-06-11 **Skill Level:** 2	**Topics:** Fire Weather, Satellite Meteorology (0 reviews)
How Satellite Observations Impact NWP Optional	**Languages:** English **Publish Date:** 2014-03-12 **Last Updated On:** 2013-06-14 **Skill Level:** 2	**Topics:** Numerical Modeling (NWP), Satellite Meteorology (2 reviews)
Satellite Meteorology: GOES Channel Selection V2 Optional	**Languages:** English, Spanish **Publish Date:** 2011-05-04 **Skill Level:** 2	**Topics:** Satellite Meteorology (0 reviews)
Advanced Himawari Imager (AHI): What's Different from the GOES-R Advanced Baseline Imager (ABI) Optional	**Languages:** English **Publish Date:** 2015-01-27 **Skill Level:** 1	**Topics:** Satellite Meteorology (1 review)

MetEd courses consist of a selection of lessons in a particular area of interest. When all lessons in a course have been completed, a printable course completion certificate is offered.

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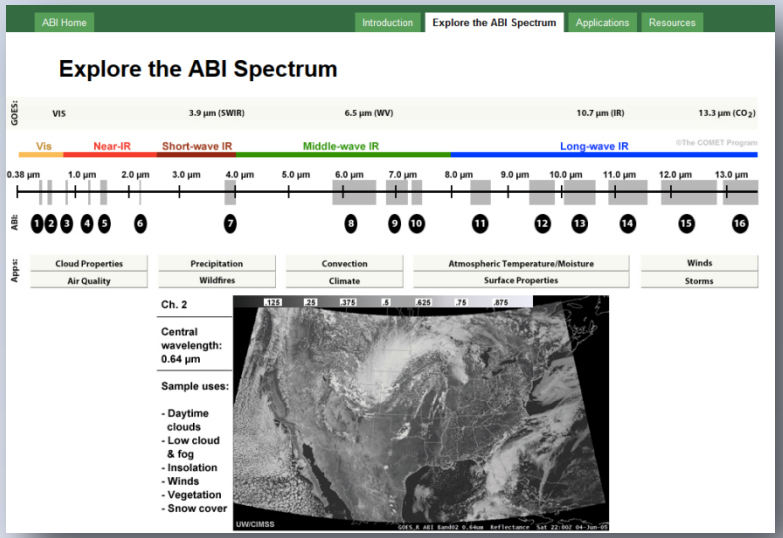
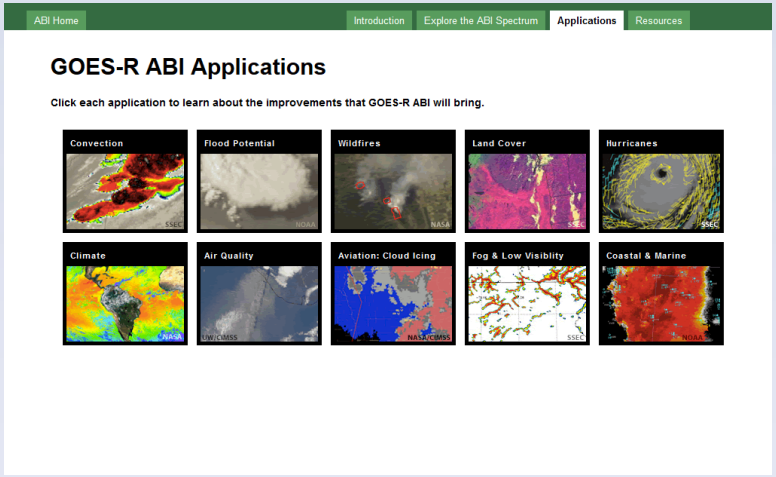
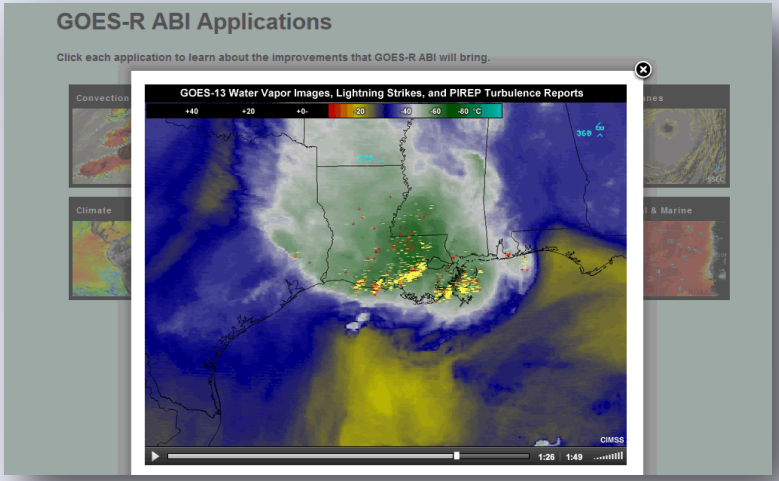
GOES-R ABI: Next Generation Satellite Imaging

- Interactive exploration of ABI's 16 bands, linking bands to observable phenomena
- Movies describing advancements in ten application areas (e.g. analysis, forecasting, NWP, climate and environmental monitoring)

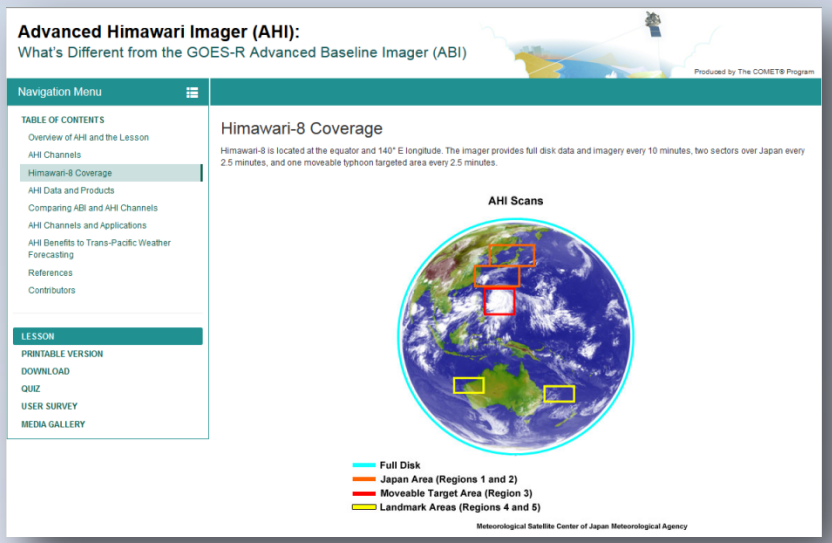


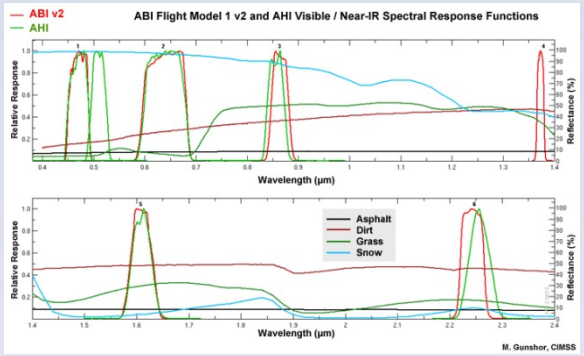


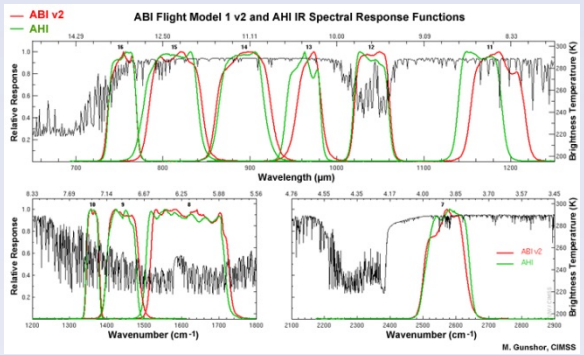


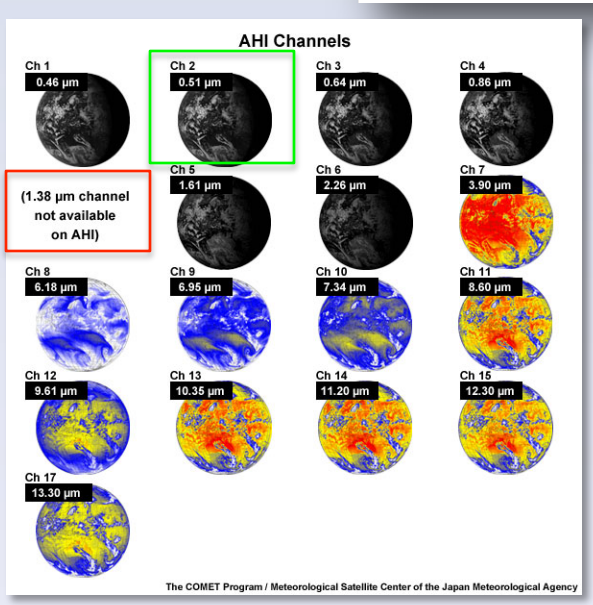
Advanced Himawari Imager (AHI)

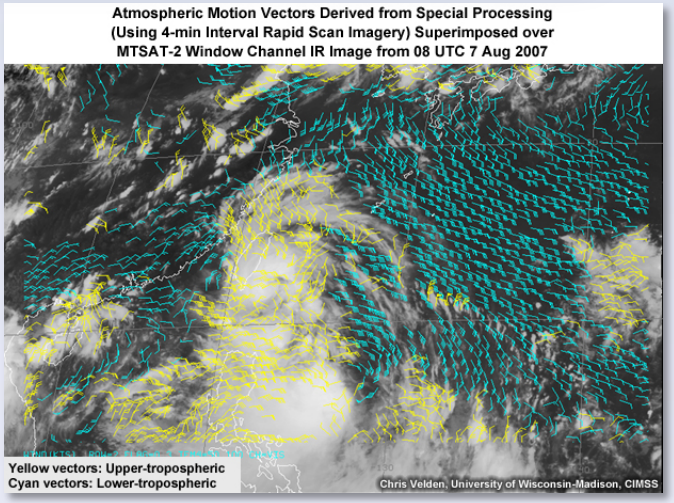
- Brief overview of the Himawari-8 AHI
- Highlights differences from GOES-R ABI
- Spectral bands and scan strategies
- Benefits of data and products for users over the Pacific and Americas





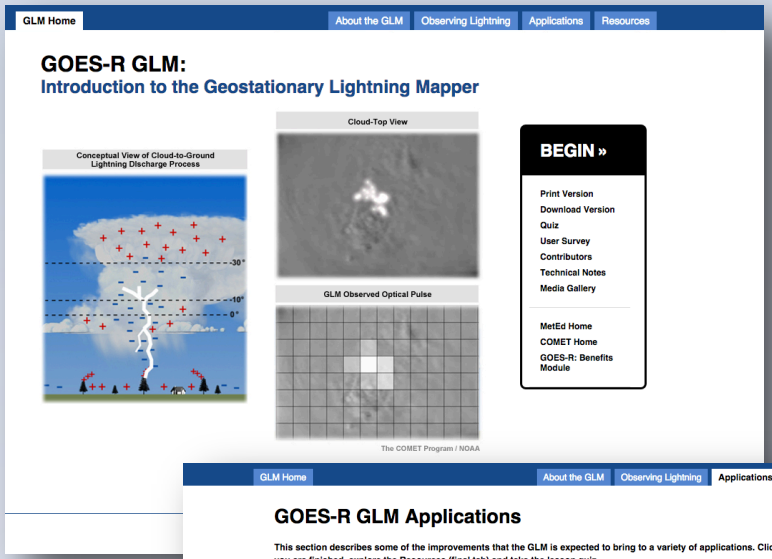


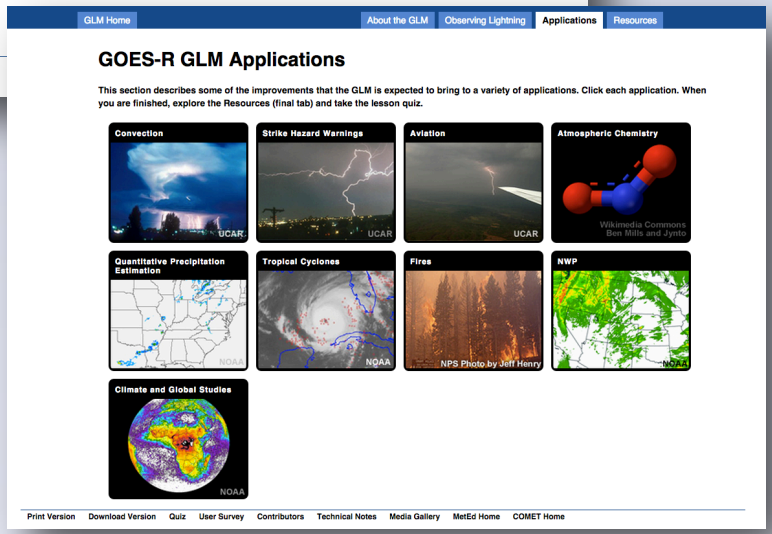


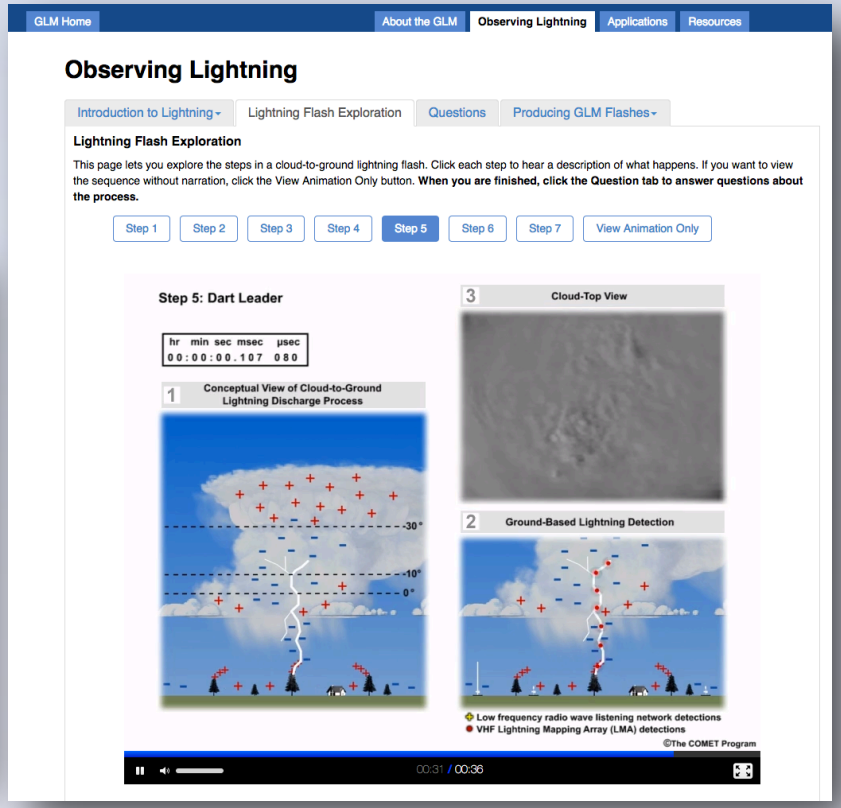


GOES-R GLM: Introduction to the Geostationary Lightning Mapper

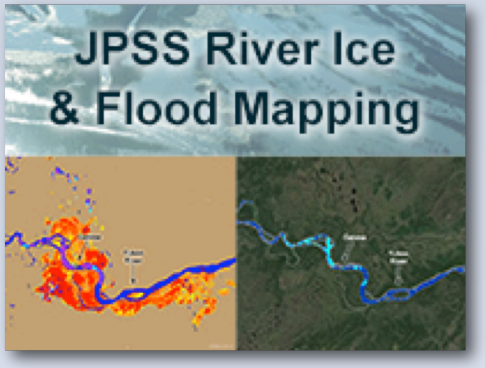
- Conceptual exploration of lighting and detection
- Movies describing improvements that the GLM is expected to bring to a variety of applications







In Progress / Coming Soon



- Lesson on COSMIC-2
- Lesson on SNPP/JPSS River Ice and Flooding Products
- Condensed and Updated versions of many lessons in support of user readiness for GOES-R
- Portuguese versions of elements from the GOES-R lessons
- French versions of:
  - Assessing NWP with Water Vapour Imagery
  - Using Scatterometer Wind and Altimeter Wave Estimates in Marine Forecasting
  - Four newest ASMET Lessons

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