New Satellites, New Sensors, New Products: COMET’S MetEd Training Resources to Assist with User Readiness

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UCAR’s COMET Program
23 January 2017

13th Annual Symposium on New Generation Operational Environmental Satellite Systems
Seattle, WA
Presentation Roadmap

- MetEd highlights, activity
- NWS GOES-R Satellite Foundations Course
- Meted GOES-R lesson updates ("Benefits", "ABI", "GLM")
- GOES-R Launch Workshop for Broadcast Mets (9 recorded presentations)
- JPSS Specific Lessons
  - JPSS River Ice and Flood Products
  - JPSS Distances Learning Course
  - In progress: "SatFC-J" (Satellite Foundational Course for JPSS) lessons
- New lessons on the COSMIC Mission, MSC: Forecasting Sensible Weather Water Vapor Imagery
- Ongoing and future activities...
Distance Learning via the MetEd Website

- Over 400 lessons in over 20 Earth science topic areas
- Some available in other languages including:
  - Spanish (173)
  - French (73)
  - Portuguese (5)
  - and others recently added in German, Chinese, Indonesian
➤ Over 90 Satellite-specific lessons on MetEd, and four multi-lesson courses, one on GOES-R, another on JPSS (94 ENG, 34 SPA, 30 FRA, 3 POR)

➤ Over 20,000 English satellite lesson user sessions per year

➤ Sponsors: NESDIS satellite training activities with the COMET Program attract additional funding specifically in the satellite topic area from both EUMETSAT and the Meteorological Service of Canada

2007-2016 English Lesson Quiz Completions (Eng) by Affiliation

- **Education**, 228185, 33%
- **U.S. State or Local Gov.**, 114971, 16%
- **Other**, 99929, 14%
- **DOD (U.S. Department of Defense)**, 57831, 8%
- **USDA (U.S. Dept of Agriculture)**, 21303, 3%
- **U.S. Private Sector**, 28857, 4%
- **NOAA**, 37602, 5%
- **Weather enthusiast**, 50060, 7%
- **Int'l Met or Hydro Service (govt or private)**, 16650, 2%
- **USDA (U.S. Dept of Agriculture)**, 21303, 3%
- **DHS (U.S. Dept of Homeland Security)**, 1864, 0%
- **DOT (U.S. Dept of Transportation)**, 307, 0%
- **DOE (U.S. Dept of Energy)**, 2656, 0%
- **DOI (U.S. Dept of Interior)**, 13797, 2%
- **Other U.S. Government**, 12866, 2%
- **Env And Climate Change Canada**, 9086, 1%
- **UCAR**, 4449, 1%
- **Bureau of Meteorology (Australia)**, 4017, 1%
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Lesson and Course Highlights...
GOES-R learning resources...
COMET responsible for 8 of the 37 elements in the Satellite Foundational GOES-R Course
On MetEd, in the NOAA LMS, and linked from CIRA’s SHyMet Course Website
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
The short movies from the first introductory lesson are also available on our YouTube Channel [https://www.youtube.com/user/cometmeted](https://www.youtube.com/user/cometmeted).

These 3 lessons, and others were reprogrammed to remove Flash and replace with COMET’s HTML 5 responsive design that is platform independent.
GOES-R Launch Workshop for Broadcast Meteorologists, Nov 2016

- 9 presentations by professionals from NOAA and NASA
- Workshop offered by StormCenter Communications, Inc. for broadcast mets
- Presentations cover:
  - Key features and capabilities of GOES-R instruments
  - Improvements to forecasting
  - Data characteristics and delivery
- Students who pass quiz can receive education credits toward AMS CBM
JPSS and related satellite learning resources...
JPSS Specific Lessons:

- Newest lesson: JPSS River Ice and Flood Products
- In Progress: MetEd resources in support of DB and CSPP products
- In Progress: “SatFC-J” (Satellite Foundations Course for JPSS) lessons
Optional lesson in JPSS course, pub. 2016

Introduces JPSS capabilities and products for monitoring river ice and flooding

Cases demonstrate product use and value

- 2013 Galena, AK spring ice jam flood
- Ice formation in the Upper Mississippi River affecting navigation
- 2014 springtime flooding event in the Upper Midwest along Red River of the North

JPSS MetEd course link
New MetEd JPSS Distance Learning Course

- 4 core lessons (3 to 4 hours total completion time)
- 8 optional lessons on various aspects of JPSS science & application
Core Lesson Highlights

- Suomi NPP: A New Generation of Environmental Monitoring Satellites
- Introduction to VIIRS Imaging and Applications
- Advances in Space-Based Nighttime Visible Observation

Optional Lessons (8)

- Provide more in-depth information on benefits and applications of JPSS observations for various topics of interest
- Includes overview of EUMETSAT’s Metop polar (orbiting satellite) system
Other recent satellite publications...
Forecaster nowcasting at the synoptic scale is prediction models. However, there are plenty on those forecasts with simple comparisons of analyses. The goal of this lesson is to improve evaluate the three-dimensionality of the atmosphere better. This is the capstone for the entire Satellite.
The Science of Radio Occultation and the COSMIC Mission

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The lesson provides an overview of radio occultation and its contributions to our understanding of Earth's atmosphere as demonstrated by the COSMIC mission launched in 2006. The lesson is divided into three chapters: Chapter 1 describes the science of radio occultation and how atmospheric profiles are obtained. Chapter 2 focuses on the benefits of radio occultation and COSMIC observations for numerous applications related to meteorology, climate, and space weather. Chapter 3 describes the COSMIC–2/FORMOSAT–7 mission and its expected improvements to further inform meteorology, climate, and ionospheric applications. Each chapter contains optional In-Depth materials providing a more advanced look at that topic. Proceeding through these materials will add to the time required to complete the lesson but will result in a greater understanding of radio occultation technology and its applications.
Coming Soon/Future Work:

- Support for a GOES-R college faculty virtual course
- Ongoing support for SatFC-G (NWS Foundational Course for GOES-R+ satellites)
- Support for NWS Level-2 GOES-R Applications Course
- Updates to key MetEd JPSS lessons
- Several lessons specific to the SatFC-J (NWS Foundational Course for JPSS)
- New lesson on the Community Satellite Processing Package (CSPP)
- New lessons on Meteosat imagery basics and rapid scan applications

Other Satellite Training Activities:

- MetEd content inventory for WMO Satellite Enabling Skills definition effort
- Participating in NWS Satellite Training Advisory Team meeting (March)
- Participating in NOAA Satellite Conference (July)
- Supporting and participating in NOAA Satellite Proving Ground/User Readiness Meeting (August)
Thank you!

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