

COMMISSION FOR BASIC SYSTEMS  
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

EXPERT TEAM ON SATELLITE UTILIZATION AND PRODUCTS

ITEM: 13.4

EIGHTH SESSION

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## **TRAINING AND EDUCATION: COMET Program Update & New Training**

*(Submitted by Anthony Mostek, NOAA/NWS)*

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### **Summary and Purpose of Document**

This document reports on the latest plans and activities of COMET program.

This report is provided in response to request for updated information in support of ET-SUP-8 meeting.

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### **ACTION PROPOSED**

The eighth session is invited to:

- (a) Take note of the rapid improvement in the status of COMET program thanks to improved budgets in the U.S. and in other countries.
  - (b) Note the significant changes in NOAA Satellite Training Plans in preparation for GOES-R launch (late in 2015) with specific focus on operational forecasters.
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### **Appendix:**

Agenda (Draft) Satellite Proving Ground and User-Readiness Meeting 2-6 June 2014

## DISCUSSION: COMET Program Update & New Satellite Training

### 1. Introduction

This report (taken from COMET's Semi-Annual report dated March 2014) provides a review of the current status of UCAR COMET program with a summary of recent satellite related training and plans for the next year (2014 into 2015). A key take away is that COMET is recovering quickly from significant budget cuts in 2012 and 2013 that led to some staff layoffs and reduction in training development and delivery. The summary of recent COMET training delivery and the increase in training development is a **major success and COMET management and their sponsors** (in the U.S. and around the world) need to be commended for their tremendous support. A reason for COMET's turnaround is due in part to sustained support received from satellite programs in the U.S. (GOES-R and JPSS) and from other programs including Canada, EUMETSAT and others.

### 2. COMET Program – Recent Training Deliverables

COMET has worked closely with NESDIS since 1996 to support geostationary and polar-orbiting environmental satellite training needs. COMET incorporates both satellite and radar imagery and products into its modules whenever and wherever appropriate. COMET continues to highlight satellite activities at professional conferences and meetings around the world.

COMET continues to support the Environmental Satellite Resource Center (ESRC), which is a searchable, database-driven website that provides easy access to a wide range of useful information and training materials on environmental satellites. The ESRC is available in English, French and Spanish. Links to the ESRC are found on the WMO Space Programme Virtual Laboratory page at: <http://www.wmo-sat.info/vlab/virtual-resource-library/>

Over the last six months, the satellite team had two oral presentations at the AMS Annual meeting in Atlanta and submitted an abstract for the next EUMETSAT conference scheduled for September, 2014. COMET finalized plans for a recent focus meeting with their sponsors and training partners on 3-4 March 2014. In addition, COMET continued developing or published the following products, primarily focused on satellite meteorology applications (Note that all modules are available at the MetEd library – [www.meted.ucar.edu](http://www.meted.ucar.edu)):

- Work continued on the module on the GOES-R GLM (Geostationary Lightning Mapper).
  - Efforts to update the content in the 2008 module, “Microwave Remote Sensing: Land and Ocean Surface Applications” was completed. The update addresses changes and developments that have taken place over the last several years in space-based microwave instruments, their capabilities and derived products.
  - Planning was completed for the EUMETSAT/NESDIS module on using altimeter and scatterometer data in marine forecasting, with scriptwriting expected to begin shortly.
  - Work continued on the outline and design of the COSMIC 2 module, with scriptwriting expected to begin in April.
  - The script for the much anticipated module, “How Satellite Observations Impact NWP”, was finished in January and the module development was primarily completed in February. The module was published in March.
  - The module Satellite Feature Identification: Conveyor Belts, funded primarily by the Meteorological Service of Canada was scripted and development was completed in February.
- Several remote sensing resources from EUMeTrain were added to the MetEd Website:
    - o Synoptic Textbook
    - o Manual of Synoptic Satellite Meteorology
  - Several EUMETSAT funded modules were published:
    - o ASMET 7: Convective Weather and Aviation in West and Central Africa
    - o ASMET 7: Detecting Clear Air Turbulence: South African Case Study

- o ASMET 7: Forecasting Fog for Aviation: Kenya Case Study, and
- o Foundational content from ASMET1, was saved and published to MetEd as a module entitled, Basics of Visible and Infrared Remote Sensing.

A great deal of effort was invested in planning and supporting the “NOAA Satellite Science Week” virtual meeting conducted 10–13 March, 2014 in Madison, WI. COMET’s role is to co-organize, house the registration and meeting website and facilitate the event. Preparatory work is underway for another satellite meeting on 2 - 6 June 2014 in Kansas City which will focus on the needs of operational staff using Satellite products. This workshop is named the “Satellite Proving Ground/User-Readiness Meeting.” The meeting will be held as an onsite event for many National Weather Service (NWS) operational staff and managers. Many other participants will include NESDIS managers, and training partners from the NOAA Cooperative Institutes (CIRA and CIMSS) and NASA SPoRT programs. For participants that cannot travel, webinar access will be provided.

### **3. International Activities (Includes Translations)**

COMET materials are used worldwide, and approximately 33% of the 330,000 registered users are from outside the U.S. This percentage has remained consistent during the rapid growth of registered users on the MetEd website over the last four years. COMET’s NOAA funded international activities were primarily suspended through this period of performance but are now underway again, as new funding for activities was provided. Many modules are now being translated into Spanish including several that are satellite related.

### **4. New Satellite Training Plans – Getting Ready for GOES-R**

NOAA is developing and then revising new satellite training plans in preparation for the launch of GOES-R late in 2015. These plans call for developing and conducting a new course called GOES-R Operations Warning (GROW) course. The GROW course is modeled on the successful training done as new Dual-Pol radars were installed across the U.S. in 2012 and 2013. The Dual-Pol course include over 20 hours of materials and led to over 2000 operational scientists, forecasters and managers being trained in less than 18 months.

Current plans for the GROW course include:

Target Audience:

Primary focus is on operational NOAA Forecasters.

Secondary focus – forecasters in other agencies in U.S. and other countries

Resources:

Staff in the NWS Training Division along with their partners at NOAA Cooperative Institutes (CIRA and CIMSS), COMET, NASA SPoRT and assistance from the GOES-R PG Satellite Liaisons.

Collaboration with the International Community is anticipated and welcome especially from WMO Space Programme, Japanese Met Agency (JMA), EUMETSAT, Canada (MSC), Korean Met Agency (KMA), Chinese Met Agency (CMA), Brazil, and many others.

The first phase of GROW course consists of two stages with tracked and reported completions

1. “Core” modules to set baseline understanding (est. 8 -12 hours)
2. Service specific training (Fire weather (wx), winter wx, aviation, marine & coastal, hydrology, convective wx, space wx, etc.) including Weather Event Simulation (WES) cases

The next phase is a one or two-week residence course for SOOs/DOHs and Satellite Focal Points.

The keys to the success of the residence course component are:

- Focus impact warning forecast process
- GOES-R/Models/Impact Events/Services
- Regular Follow ups –

The course does not end but continues when the SOOs and satellite scientists are back at their operational offices by using various methods including those described next.

Last phase (after completion of post launch checkout) is Just-In-Time Training (JITT) including “Storm of the Day” webinars, a GOES-R Helpdesk with 24 by 7 day support done using blogs and chat.

Another component of “training” actually relies on continued collaboration between scientists and forecasters at NOAA Testbeds and Proving Grounds done through existing seasonal experiments such those conducted at the Hazardous Weather Testbed, Aviation Weather Testbed and Tropical Hurricane Testbed and others. These interactions are coordinated by the Satellite Proving Ground with support from both GOES-R and JPSS to work closely with NOAA Testbeds. Once the products and algorithms are ready, then operational implementation is done through the new NWS Operations Proving Ground. All these activities require that the necessary training be developed along with the products and algorithms and that the training is updated as changes are made. The close coordination between the NESDIS product developers, the NOAA Testbeds, Satellite Proving Ground, Training Program and Operations Proving Ground will be critical in the post launch checkout and initial operations of the new GOES-R satellite.

The GROW training plan is being reviewed and vetted through several groups within NOAA and throughout the satellite training community. A key step in this review process will be accomplished at the Proving Ground and User-Readiness meeting held 2-6 June 2014 at the NWS Training Center in Kansas City. Several international participants are invited and others are welcome to listen in via Webinar during the 5 days of the workshop (see Appendix for draft agenda).

## **5. Conclusion**

In preparation for the launch of the GOES-R series, NOAA established a Proving Ground dedicated to user readiness for GOES-R to include product assessment, training and feedback between developers and users (Research-to-Operations – R2O). COMET Program budget and resulting training development and delivery are improving, especially with a focus on new satellites. NOAA Satellite training plans are evolving with the latest plans calling for GOES-R Operations Warning (GROW) course to be ready by launch (later in 2015).

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Appendix A:  
Agenda for Proving Ground and User-Readiness Meeting 2-6 June 2014 (Attached)

PG/User-Readiness 2-6 June 2014 Draft Agenda - Operations/Training Focus

Time (CDT)	Duration	Topic/Title
1:00 PM	<b>0:10:00</b>	<b>Logistics</b>
1:10 PM	0:20:00	Opening Keynote - Louis Uccellini?
1:30 PM	0:15:00	GOES-R Keynote (Mandt?)
1:45 PM	0:15:00	JPSS Keynote (Cicanek?)
2:00 PM	0:15:00	Broadcaster Intro (Satterfield - confirmed/remote)
2:15 PM	0:30:00	What products will be available and when in the WFO during check-out and after
<b>2:45 PM</b>	<b>0:20:00</b>	<b>Break</b>
3:05 PM	0:30:00	New NWS Office of Training/Learning (LeRoy)
<b>3:35 PM</b>		User Readiness/TOWR-G
3:35 PM	0:30:00	Presentation and Discussion by Joe Zajic and Eric Guillot
4:05 PM	0:15:00	Matt Seybold
4:20 PM	0:15:00	Natalia Donoho
4:35 PM	0:25:00	Final Discussion
<b>5:00 PM</b>		End of Day 1
<b>5:00 PM</b>		
<b>Liaison Presentations - Current State of Proving Ground User Readiness</b>		
9:00 AM	0:05:00	Intro
9:05 AM	0:10:00	Presentation 1 - Amanda Terborg (AWC)
9:15 AM	0:10:00	Q&A
9:25 AM	0:10:00	Presentation 2 - Michael Folmer (WPC/OPC/SAB/TAFB)
9:35 AM	0:10:00	Q&A
9:45 AM	0:10:00	Presentation 3 - Bill Line (SPC/HWT)
9:55 AM	0:10:00	Q&A
10:05 AM	0:10:00	Presentation 4 - Andrea Schumacher / Mark DeMaria (NHC)
10:15 AM	0:10:00	Q&A
<b>10:25 AM</b>	<b>0:20:00</b>	<b>Break</b>
10:45 AM	0:10:00	Presentation 5 - Chad Gravelle (NWS OPG)
10:55 AM	0:10:00	Q&A
11:05 AM	0:10:00	Presentation 6 - Jordan Gerth (Pac Region)
11:15 AM	0:10:00	Q&A
11:25 AM	0:10:00	Presentation 7 - Eric Stevens (AK Region)
11:35 AM	0:10:00	Q&A
11:45 AM	0:15:00	Open Discussion
<b>12:00 PM</b>	1:00:00	Lunch
<b>Training 1 (Conceptual Overview for NWS)</b>		
1:00 PM	0:15:00	Approved NWS GOES-R Training Plan - Jan 2014 (LeRoy)
1:15 PM	0:15:00	Proposed Modifications to GOES-R Training Plan (SSD Chiefs)
1:30 PM	1:00:00	Presentations? Panel Discussion?
<b>2:30 PM</b>	<b>0:20:00</b>	<b>Break</b>
<b>Himawari</b>		
2:50 PM	0:15:00	Presentation 1 (Bill Ward or Bob Ballard?)
3:05 PM	0:15:00	Presentation 2 (JMA Rep?)
3:20 PM	1:00:00	Panel Discussion
4:20 PM		<b>End of Day 2</b>
<b>AWIPS II</b>		
9:00 AM	0:15:00	AWIPS Program Manager Update (TBD)
9:15 AM	0:15:00	AWIPS Data Access and Delivery (TBD)
9:30 AM	0:15:00	EPDT Presentation
9:45 AM	0:45:00	Panel Discussion (Matt Foster? Dan Nietfeld?)
10:30 AM	<b>0:20:00</b>	<b>Break</b>
<b>NWS Operations Proving Ground</b>		
10:50 AM	0:30:00	Presentation (Kim Runk)
11:20 AM	0:15:00	Presentation (Chad Gravelle)
11:35 AM	0:45:00	Panel Discussion (R2O/O2R) with Kim and Chad
12:20 PM	<b>1:00:00</b>	<b>Lunch</b>
<b>Operational Presentations (presenters are currently placeholders)</b>		
1:20 PM	0:15:00	Intro Presentation - Chad Gravelle (OPG) and Dave Radell (ERH)

1:35 PM	0:15:00 Presentation 1 - Nathan Eckstein (AR/AAWU)
1:50 PM	0:15:00 Presentation 2 - Bob Ballard (PR/HFO)
2:05 PM	0:45:00 Panel Discussion with Presenters 1 and 2
2:50 PM	<b>0:20:00 Break</b>
3:10 PM	0:15:00 Presentation 3 - Mel Nordquist (WR/EKA)
3:25 PM	0:15:00 Presentation 4 - Jonathan Blaes (ER/RAH)
3:40 PM	0:45:00 Panel Discussion with Presenters 3 and 4
4:25 PM	<b>End of Day 3</b>
4:25 PM	<b>0:35:00</b> Side Meetings
5:00 PM	

<b>9:00 AM</b>	Operational Presentations (continued)
9:00 AM	0:15:00 Presentation 5 - Paul Iniguez (WR/HNX)
9:15 AM	0:15:00 Presentation 6 - Dan Neitfeld (CR/OAX)
9:30 AM	0:45:00 Panel Discussion with Presenters 5 and 6
<b>10:15 AM</b>	<b>0:15:00 Break</b>
10:30 AM	0:15:00 Presentation 7 - Al Pietrycha (CR/EAX)
10:45 AM	0:15:00 Presentation 8 - Kris White (SR/HUN)
11:00 AM	0:45:00 Panel Discussion with Presenters 7 and 8
<b>11:45 AM</b>	<b>0:15:00 Break</b>
12:00 PM	0:15:00 Presentation 9 - Brian Guyer (SR/ABQ)
12:15 PM	0:15:00 Presentation 10 - Kevin Skow (CR/DMX)
12:30 PM	0:45:00 Panel Discussion with Presenters 9 and 10
<b>1:15 PM</b>	<b>1:00:00 Lunch</b>
2:15 PM	0:15:00 Presentation 11 - David Bright / Bruce Entwistle (NCEP/AWC)
2:30 PM	0:15:00 Presentation 12 - Jaime Kibler (NESDIS/SAB)
2:45 PM	0:15:00 Presentation 13 - James Clark (OPC)
3:00 PM	0:45:00 Panel Discussion with Presenters 11, 12, and 13
3:45 PM	<b>0:15:00 Break</b>
4:00 PM	0:15:00 Presentation 14 - Frank Alsheimer (ER/CHX)
4:15 PM	0:15:00 Presentation 15 - Dave Radell (ERH) NWS Regional Perspective
4:30 PM	0:45:00 Panel Discussion with Presenters 14 and 15
<b>5:15 PM</b>	<b>End of Day 4</b>

<b>9:00 AM</b>	Training 2 (Planned Training Approaches)
9:00 AM	1:30:00 Common Ground between Training Division & Partners (COMET, CIRA, CIMSS, SSDs, GOES-R program)
<b>10:30 AM</b>	<b>0:20:00 Break</b>
10:50 AM	0:30:00 NOAT Perspective/Comment
11:20 AM	0:30:00 Key Actions/Take Aways (Steve Goodman, Ming Ji?)
11:50 AM	0:10:00 Final Discussion and Closing Remarks
<b>12:00 PM</b>	<b>END OF MEETING</b>