

# 5.3

## Conference Summary and Action Items

Vanessa Griffin (OSPO)

# Highlights - Saturday/Sunday

WMO/NOAA Train the Trainer Workshop:

Introduction to GEONETCast (GNC) as a low cost receiving system - GNC-Americas and EUMETCast;

GNC as system for use of disaster mitigation and training products;

Expanded the satellite data needs of the RA III/RA IV;

Initiated dialog on expanding GNC to transfer future satellite products;

Including the training needs into acquisition and use of GOES-R data

# Highlights - Monday AM

GSICS Users' Workshop: Focus on impacts of uses of hyperspectral IR data for cross-calibration of GEO and LEO instruments. Many GSICS products and algorithms are developed and shared within the partner. NOAA offers an excellent coordination for WMO GSICS community. Some GSICS algorithms are used to produce the climate data record such as MSU and SSU. The workshop is attended by 60+ people from WMO GSICS partners.

RA-III / RA-IV Meeting:

The creation of a Coordination Group on Satellite Data Requirements for RA III and RA IV is being proposed. Satellite data is very important for all countries in the Americas.

Executive Luncheon / NCWCP Tour

# Highlights - Monday PM

NOAA (Dr. Sullivan) and NESDIS (M. Kicza): Importance of Partnerships and User Feedback - thus this week!

NWS (Dr. Uccellini): A Weather-Ready Nation requires NOAA Satellites!

OSPO/GOES-R: Accomplishments since 2011 conferences (SDRC/GUC). User Feedback is Critical!

EUMETSAT: Current & Future Satellite Operations (Metop-A/B/C, EPS-SG, ADA, etc.)

WMO (D. Grimes): Steady improvement in NWP, thanks in large part to satellites. Lots of opportunities...and challenges.

# Highlights - Tuesday

## Ocean Prediction Center Briefing / Overview: Joe Sienkiewicz (NOAA/OPC)

Through numerous examples Joe Sienkiewicz demonstrated the value of satellite products to OPC operations. They make use of all available Scatterometers and 4 geostationary satellites. The airmass RGB product has become a very important product in their "tool box".

## Dr. Zhang - Development of an Architecture for Climate Monitoring from Space

The Development of a space architecture for climate monitoring will be a key contribution to global climate services. A Global Framework for Climate Services (GFCS) will allow society to better manage risks from climate variability and change. Climate services must be available; dependable; usable; and credible with the highest priority application areas agriculture, water, disaster risks, and health.

# Highlights - Tuesday

## GOES/GOES-R:

### **Update on Current Operations (Matthew Seybold)**

Matt addressed the normal and rapid scan schedules of GOES East and West, reported that the health of the GOES constellation is in good health, and announced that GOES-12 is nearing the end of its useful life for covering South America

### **GOES-R Update on Future Operations (Rick Pickering)**

Rick described the progress of instrument and satellite development for GOES-R and announced that GOES-R still on schedule for an Oct. 2015 launch

### **The ABI on GOES-R (Tim Schmit)**

Tim said every product from GOES-R will be better than today plus many new products. He showed examples of proxy and synthetic ABI products and their applications, ABI scan scenarios, and a number of exciting examples of 1-min super rapid scan loops from GOES-14 giving the audience a taste of routine data that will be available from the ABI.

### **The GLM on GOES-R (Steve Goodman)**

Steve gave an overview of the expected GLM benefits from the first operational lightning detection instrument in Geostationary orbit providing near continuous hemispheric coverage over land and ocean. He described research, applications, and decision aids for severe storms and hurricanes being demonstrated with forecasters in the GOES-R Proving Ground.

# Highlights - Tuesday

## POES/JPSS:

- Tom Schott briefed the status of the Polar-orbiting Operational Environmental Satellite (POES) program as part of the Initial Joint Polar-orbiting System (JPSS) with NOAA-19 as the primary satellite flying in the early afternoon orbit.
- Col Dan Edwards briefed the status of the Department of Defense (DoD) meteorological satellites. The DoD is currently conducting an Analysis of determine how to replace the current Defense Meteorological Satellite Program.
- Harry Cikanek briefed the status of the Suomi National Polar-orbiting partnership (S-NPP) and Joint Polar Satellite System (JPSS) satellites. NOAA is responsible for the overall program and uses NASA as the acquisition agent. The JPSS program remains on budget and on track to support a JPSS-1 launch no later than the 2nd quarter of FY2017.
- Mitch Goldberg briefed the operational applications of Suomi NPP and JPSS. The JPSS instruments support each of the four mission areas for NOAA - climate, weather-ready nation, resilient coasts, and health oceans with each of instruments representing a significant improvement over its legacy counterparts.

# Highlights - Tuesday

## Direct Readout:

- Provided information to transition from POES to JPSS including cost estimates for the receive terminals; the characteristics of the GRB downlink, antenna sizes, data rate and polarization; updates on the development of the HRIT/EMWIN system; and improvements in the GOES DCS system for GOES-R. Also, long time faithful and dedicated direct readout users thanked NOAA for the wonderful years of direct readout service since this (may be) his final direct readout conference before retirement.

## Frequency Matters Moderator Mark Mulholland

Discussed the NOAA L-band environment focusing on key issues evolving from 2011:

- GOES and Polar bands might be auctioned, 2013- polar band will be auctioned;
- sharing within 5 years (NTIA report), 2013- within 3 years (US Law);
- non-federal users unprotected by zones- not changed in 2013;
- little known about broadband plans, 2013- much more known about broadband plans;
- 18 exclusion zones, 2013-27 coordination zones;
- NOAA satellite options to be studied, 2013- most studies complete and modifications made;
- unknown international impacts, 2013- World Radio Conference 2015 agenda item.

# Highlights - Tuesday

## Frequency Matters (cont'd)

o Panel discussion key questions:

- Is my site in one of the Top 100 markets?
- Can I get polar data via a terrestrial connection?
- What is my future in L-Band?
- Would I convert to X-Band?

## User Feedback (1):

Many questions revolved around merging geo and polar products. The Community Satellite Processing Package (CSPP) may be a good platform for this. The CSPP currently serves polar satellites, but is available for geostationary data and in the coming years hopes to ingest Chinese and Russian polar data (the main limit is funding).

Recommendation: JPSS and OSPO were requested to generate and post a survey to determine user product priorities so that research efforts could be focused on the most useful products.

# Highlights - Wednesday

Climate Prediction Ctr Briefing / Overview: Jon Gottschalck (NOAA/CPC)

3.1 VIP Presentation: Dr. L. Machado - RA-III

- o Provided an overview on the use of satellite data in RA III including data access, data requirements, training and a look at the challenges for the use of the new generation of satellites. Dr. Machado provided information on what the region needs and suggestions to overcome these obstacles.

Data Access: Excellent presentations by John Bates (NCDC), Donna McNamara (OSPO), Kevin Berberich (OSD), and Chris Sisko (OSPO).

Data Use: Recommendation to include a broad segment of users, especially weather broadcasters, in satellite Proving Ground activities at the earliest possible time (e.g., in experimental mode).

# Highlights - Wednesday

**Int'l Panel: Diverse applications by international customers, partners, and users --- all require NOAA satellite data/imagery/products.**

**SNPP instruments are well calibrated and data have been used in NWP models and show positive impacts.**

**Dr. Powell - STAR: Overview of STAR applications, innovations, projects, research, and processes.**

User Feedback (2):

Q: Describe how NOAA coordinates with and informs Weather Industry, esp wrt HW and format changes, GOES-R (new) ground station costs: A: SPSD User Services, Web Site, via programs like GOES-R, User Conferences; other?

Q: Describe how CLASS plans to serve large backlog volumes; A: machine-to-machine interface prototype in calendar 2013

Q: How bad will the new challenge of bandwidth/spectrum interference be? A: We don't know yet; continued engagement key; are there novel solutions to explore? Maybe engage cooperative institutes to put up receive sites?

Q: For the commercial services like Dave Jones provides, are there prerequisites for data providers? A: Yes, input must be verified as coming from a trusted source, e.g., from NOAA/NESDIS Operations, not "some grad student"

Q: What are NOAA/NESDIS plans to serve larger volumes of data? A: For real-time users, we are in the process of upgrading from 10 Gbps to 100 Gbps infrastructure, and are now looking at additional enterprise solutions for future like Internet-2, high-speed R&D infrastructure

Many diverse questions... seemed to be focused around large volumes of data via landline (i.e., can PDA support? Do networks exist? and RF interference issues on L Band. Of concern/question (AccuWeather) is how NOAA keeps industry informed, what are the plans to do so, etc.

# Highlights - Thursday

Weather Prediction Center Briefing / Overview: Andrew Orrison (NOAA/WPC)

Dr. Yoe - NCEP: Excellent overview of NCEP

Weather Forecasting Applications: Aviation Weather Center, NWS Forecast Offices, Pacific & Alaska Regions, Satellite Techniques for Marine, Precip, Haz Wx Apps.

HRIT/EMWIN/GOES DCS Workshop: 22 people attended.

Environmental Assessment Applications: Interesting presentations on U.S. National Ice Center, SERVIR, Namibia Flood Monitoring, and Caribbean Satellite Disaster Pilot (Radarsat-2).

# Highlights - Thursday

## User Applications:

Dr. Daniel Vila described how CPTEC/INPE uses GOES-12 and GOES-13 data to generate 9 data products such as lightning propagation and fire monitoring. GOES-12 is especially important to many of these products because of its 15-minute temporal resolution.

Dr. Kathleen Strabala discussed the global impact from the UW-CIMSS IMAPP software and how it can ingest direct broadcast data from MODIS and AIRS, and archived AMSR-E data to generate a host of products that can be configured to user needs. The IMAPP software is free to users and there are currently 1500 registered users in 70 countries. CSPP will enable the use of S-NPP and JPSS data.

# Highlights - Thursday

## User Applications:

Dr. Gang Liu discussed how the NOAA/NESDIS Coral Reef Watch (CRW) program is applying operational satellite SST data to monitor coral reef environments. The health of coral reefs is very sensitive to SST. Satellites can uniquely monitor SST in remote areas as well as provide global coverage, and data access in near real-time. CRW is currently developing a 5-km SST product that blends geostationary and polar-orbiting satellite data.

# Highlights - Thursday

Climate Applications: Emphasis on the importance of Interim Climate Data Records, with latency of a few hours to a few days, for climate monitoring and applications of a few weeks to a few months. Need for more user outreach particularly focused on session led by users.

Hurricanes & Heavy Precip: Evolution of Sandy, HFIP, HWRF, and Heavy Precip. Questions pertained to data latency, use of Geo vs. Polar satellites through radiance assimilation and vortex initialization, use of drones, future of forecasting by humans vs. computers.

# Highlights - Thursday

Jack Beven, senior hurricane specialist at NHC, gave illustrative examples of the use of GOES, S-NPP, passive microwave, and OSCAT as he took us through the timeline of Sandy's evolution. Jack said regarding the talk of data fusion at the conference "the most important data fusion is that which takes place in the head of the forecaster."

Fred Toepfer, Hurricane Forecast Improvement Program manager at NWS, described the progress and future plans for HFIP. He said better use of satellite data is needed to describe the core structure and environment of the storm and believes the assimilation of high density AMVs from GOES-R, scatterometer surface winds, and microwave soundings will lead to better forecasts of intensity.

Vijay Tallaparaga, NCEP Hurricane Team Lead, he presented 2013 hurricane Modeling implementation plan. He showed some impacts from improved modeling physics and highlighted the collaboration with NESDIS/STAR through JPSS PG to use satellite microwave sounding data to construct the vortex in HWRF model initialization. The direct radiance assimilation of satellite data from SNPP ATMS in HWRF model shows large positive impact on Sandy forecasts

Ralph Ferraro, STAR/Satellite Climate Studies Branch Chief. He presented the current and future POES and GOES precip products and presented a plan for blending all the products to better serve the community.

# Highlights - Friday

Satellite Analysis Branch Briefing / Overview:  
NOAA/NESDIS/OSPO/SAB: Jamie Kibler

Significant Events:  
(As just discussed)



Panel on Importance of NOAA Satellites:  
(As just discussed)



# Additional Highlights...

Icebreaker / Social (Mon)

Poster Sessions (Tue/Wed)

- Lots to see, not enough time, a little crowded at tip

Exhibits / Vendors

- Great vendors & demos, especially given the space

NCWCP Tours (Wed / Fri)

- Formal tours to about 100; great interest & questions; thanks to all who participated!

GOES-R Proving Ground Sidebar / Social (Wed)

- Over 40 attendees attended the informal gathering; discussed future demonstrations, partnerships, and improvements in sharing information learned from the product demonstrations and forecaster feedback.

Dinner (Thu)

- Truly wonderful evening, fellowship, stories, etc.



# Key Recommendations and ?s...

Provide regular virtual meetings with the regions to improve training for new satellite data.

Encourage more participation of Vlab, COMET, Regional Focus Group, CoE in RAs.

What will be the GOES-R position after launch and what will be the impact on the user timetable of preparation considering that Geostationary – weather forecast and Leo – assimilation? What are the possibilities of having GOES-R in an easterly position? GOES-R is more important in easterly position considering: more population and users, severe events, etc.; If GOES-R in west position will GOES 15 be made available for Micronesia?

# Key Recommendations and ?s...

Will Geonetcast be an operational system so that users can build their operations based on this system?

Will users have pre-process software, to convert raw data to Level-1b, available for free?

Can NOAA, in coordination with RA III, create a Satellite Application Partners (SAP) to include the following applications: lightning, winds, sounding, cloud classification, precipitation estimation etc.?

# Key Recommendations and ?s

Can NOAA start the concentrated effort in the use of S-NPP with Region III?

Can NOAA provide a better definition (use and planned use) about Geonetcast system?

NOAA is asked to advertise (make more readily available and more public) the decisions about main data format and products and the analysis and visualization systems? Can this information or some part be made available in Spanish?

# Key Recommendations and ?s

Can NOAA assist in improving communications between users and data providers?

Can NOAA make available the JPSS products via website for user prioritization?

Seek feedback on requirements to continue the LRD capability on JPSS-2.

# Key Recommendations and ?s

NOAA needs to know that Island meteorological services use the internet to receive weather products but this method is not a replacement for NOAA Direct Readout Data delivery. In severe weather, internet service is usually lost and forecasters rely on information delivered directly from NOAA satellites.

Pending Post-Conference Survey Results, an internal "hot-wash," USG/DOC/NOAA policy, and available funding/resources, host next **NOAA Satellite Conference** in Spring 2015 (location & exact dates TBD)