U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service

NOAA Satellite Conference 2013 Summary Report

April 8-12, 2013

College Park, MD

Final Report

http://satelliteconferences.noaa.gov/2013/

FOREWORD

Forwarded herewith is a Summary Report for the **2013 NOAA Satellite Conference (NSC) for Direct Readout, GOES/POES, and GOES-R/JPSS Users**. Born out of separate past events, namely the Satellite Direct Readout Conferences and GOES Users' Conferences, this was a major and dedicated undertaking focused on NOAA/NESDIS customers and partners.

The theme of the conference was "Strengthening Partnerships to Enhance User Readiness, Reception, and Utility" – with these robust Expected Outcomes:

1. Enhanced interaction, coordination, and communication between and among environmental satellite programs.
2. Improved user access, reception and readiness for data, technology and applications from current and future polar-orbiting and geostationary environmental satellite constellations.
3. Improved use of environmental satellite data by leveraging science advances, data fusion, blended products, decision aids, advanced visualization, training, instrument and product calibration and validation, and new data assimilation techniques.
4. Recognition as the premier environmental satellite users' event in the Western Hemisphere.
5. Reduced costs of participation, travel and logistics by combining the Satellite Direct Readout, GOES and POES/JPSS communities in one conference.

Based on feedback received during the week and in the Post-Conference Survey (Appendix J), this first-ever "NSC" was clearly a success, thanks to the terrific efforts of and contributions by all involved – from the Organizing Committee (Appendix F) to everyone who attended (Appendix E).

We hope that you enjoy reading this report, which was diligently prepared by Janel Thomas and Kathryn Miretzky (AS&D) of Omitron, Inc., working for GOES-R (with contributions and editorial support from many members of the NSC-2013 Organizing Committee).

NOAA Satellite Conference 2013
Summary Report

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1 EXECUTIVE SUMMARY

The NOAA Satellite Conference (NSC) for Direct Readout, GOES/POES, and GOES-R/JPSS Users was held April 8-12, 2013 at the NOAA Center for Weather and Climate Prediction (NCWCP) in College Park, Maryland. Over 500 attendees including product developers, researchers, scientists, forecasters, engineers, and satellite data users representing government, academia, the international community and industry were present during the week. This conference was responsible for bringing together the satellite operations, science, and user communities to share knowledge and best practices in using the existing satellite systems and to prepare for the next generation of NOAA Satellites.

Most sessions included a Question and Answer section during which the audience and panel members were able to engage in dialog that encouraged everyone's participation. Most answers were provided immediately with few questions left to be answered later. All questions and respective answers are documented in this report. There were also opportunities available for interaction during dedicated user feedback and poster sessions. The level of engagement provided by attendees and conference facilitators was a contributing factor to the success of the event. Thursday evening included a No-Host dinner featuring a talk by Dan Satterfield, Chief Meteorologist at CBS Affiliate WBOC-TV in Salisbury, MD. He spoke about how satellite data is crucial and taken for granted by many in the operational meteorology community.

The next NOAA Satellite Conference is being considered for early 2015, prior to GOES-R launch.

2 SESSION 1 – Welcome/Special Guest Speakers

Session 1 kicked off the NSC with a half day of welcoming and high level strategic views from agencies contributing to and using products from NOAA satellites. The opening remarks came from Eric Madsen and Scott Rogerson (pictured). Session 1 laid a strong foundation for the rest of the week. Throughout the guest presentations, there were multiple uses of the word *partnership*, emphasizing the importance of collaboration across the organizations. It was emphasized that satellite data services and products are critical to a wide variety of organizations and industry.

Special guest speakers represented a wide range of organizations. The Acting Administrator of NOAA, Dr. Kathryn Sullivan, prepared a special video for the conference. Mary Kicza, the Assistant Administrator of NOAA's Satellite and Information Service (NESDIS), and Dr. Louis Uccellini, the Assistant Administrator of the National Weather Service (NWS), gave encouraging talks about the direction and the future of satellites in their organizations. Mary Kicza (pictured left) emphasized that our mission is to deliver more accurate, timely, and reliable satellite observations and integrated products, providing long-term stewardship for global environmental data in support of the NOAA mission. Dr. Louis Uccellini (pictured right) focused on a Weather Ready Nation and building community resilience in the face of increasing vulnerability to extreme weather. Satellite data remains critically important to the forecast and warning mission of the NWS. Data access and latency needs are driving integrated dissemination plans while Testbeds and Proving Grounds are focused on use of Low Earth Orbit (LEO) and Geostationary Earth Orbit (GEO) satellites. There is a need to work on full integration both operationally and in research. Dr. Uccellini emphasized that entering the GOES-R/JPSS era, efforts should be focused to ensure most rapid distribution of all data for use by the operational forecast community keeping in mind the need to design ground-based systems for better model-forecasts and warning applications.

Vanessa Griffin, the Director of NESDIS/Office of Satellite and Product Operations (OSPO) (pictured left) and Dr. Steve Goodman, the NESDIS/GOES-R Program Chief Scientist gave the highlights since the 2011 Satellite Direct Readout (DRO) and GOES Users' Conferences (GUC). From GOES Operations:

- GOES-15 became operational GOES-West on December 14, 2011
- GOES-11 was decommissioned on December 16, 2011
- GOES-12 continues to support the Caribbean and Central/South America.
- The GOES Variable Format (GVAR) and Low-Rate Information Transmission (LRIT)/Emergency Managers Information Network (EMWIN) transition from GOES-11 to GOES-15 was also facilitated since the 2011 Satellite DRO and GUC.
- Operational control of Suomi-National Polar-orbiting Partnership (S-NPP) was transitioned to NOAA on February 22, 2013.
- The Community Satellite Processing Package (CSPP) was also developed to support the Direct Readout community in the transition from Polar Operational Environmental Satellite (POES) to S-NPP and eventually Joint Polar Satellite System (JPSS).

Overall, there has been improved data access in World Meteorological Organization (WMO) Regional Associations III, IV, and V as well as in NWS Pacific Region. There have been updates on the implementations of the President's 2010 Broadband Initiative and improvements to the functionality of the Geostationary Operational Environmental Satellite (GOES) Data Collection System (DCS) Administration and Data Distribution System (DADDS). Below are some of the recommendations received with responses:

I. Recommendation: Provide information on the transition from GVAR to GOES-R Rebroadcast (GRB); L-Band spectrum change. When will the specs for the GRB be available and where? Vendors need this so that they can build ingest equipment.
    a. The specifications for the GRB were finalized at the Critical Design Review (CDR) and are available in the Product User's Guide (July 2012). (http://www.goes-r.gov/users/grb.html)

II. Recommendation: The GOES-R Program is encouraged to identify resources and approaches to train international users.
    a. GOES-R supports funding of GOES-R Cooperative Program for Operational Meteorology, Education and Training (COMET) modules and training through the Virtual Institute for Satellite Integration Training (VISIT) Program. The link to training resources can be found on GOES-R.gov under "User Information" and "Training."

III. Recommendation: Consider more Regional Association V (South-West Pacific) training in satellite data interpretation and assimilation by the NOAA NWS Pacific Region.
    a. The NOAA Satellite Proving Ground (PG) has become very active in Pacific Region (Japan Meteorological Agency [JMA] bilateral for Advanced Himawari Imager [AHI] access, recent installation of X-Band direct broadcast). NOAA recommends users coordinate directly with the National Weather Service's Pacific Region, Satellite PG and International Affairs Offices.

IV. Recommendation: Make GOES-R test products available, GOES-R level 2 products for research.
    a. Several GOES-R level 2 products are demonstrated in the GOES-R Proving Ground. Examples can be found on the PG blogs and through the website www.goes-r.gov.

V. Recommendation: Plan COMET monthly sessions with foreign users so the international users can start asking questions and providing feedback. Develop outreach and more information on how international users in various countries will be trained.
    a. COMET has an active international training program funded through NOAA International Affairs, Canada and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT). COMET's MetEd Online Website has over 265,000 users with over 90,000 international users. A summary of the 2012 COMET Annual Program Plan is available on request.

VI. Recommendation: Regional forecasts and nowcasts necessary for a Weather Ready Nation will have to make better use of the information content from Atmospheric Infrared Sounder (AIRS), Cross-track Infrared Sounder (CrIS), and Infrared Atmospheric Sounding Interferometer (IASI) data; Global Positioning System (GPS) data should also be included. Between LEO sounding coverage, GOES-R data should be used to monitor temporal profile (atmospheric stability, etc.) changes.
    a. Numerical Weather Prediction (NWP) readiness for GOES-R should continue to be a high priority activity.

The day wrapped up with special guest speaker Mikael Rattenborg, Director of Operations at EUMETSAT, and a keynote address by David Grimes, President of the World Meteorological Organization (WMO). Mikael Rattenborg addressed the topic of securing the low earth orbit system for the future. The EUMETSAT Polar System (EPS) Second Generation (SG) Satellites' primary mission is

to improve observational inputs to Numerical Weather Prediction models. He stated that Metop-B is 100% healthy and will become the prime satellite on April 24, 2013. The Metop-A/Metop-B operations dual feasibility will be more robust against failures with opportunities for additional benefits to users. The two satellites will run in the same orbital plane but due to the Earth's rotation, the ground track and instrument swaths will be different resulting in greater coverage. Due to the higher data rates, the transmission through meteorological X-Band (7.75 – 7.90 GHz) has been selected for EPS-SG direct broadcast.

David Grimes (pictured right) gave the keynote address on the WMO vision and priorities. Some drivers behind the WMO priorities are: rising public and stakeholder concerns, increasing temperature and precipitation extremes, and shifting demographics. The past is no longer a trustworthy indicator of the future and new paradigms are required to support adaptive decision-making. There is a growing sense of urgency as natural variations compounded by global warming may yield unprecedented extremes. Protecting society against extreme weather events in the future requires predicting climate at regional and local scales. The WMO vision is one of world class leadership, performance, and international cooperation. Some actions to achieve this vision are: developing the capability of all members especially the least developed and most vulnerable; to share weather, climate, water information and services world-wide; and fostering effective international and interdisciplinary cooperation and partnerships. One of the strategic priorities for 2016 and beyond is implementing the Global Framework for Climate Services (GFCS) offering an operational climate service at global, regional, and national levels, accessible to all. The GFCS will place new demands for climate based monitoring with respect to scale and scope as well as related satellite products in support of its priorities on food and water availability, security, health, and disaster management. Mr. Grimes also spoke to a space-based global observing system which is now essential to the world's meteorological enterprise and depends on contributions of its members.

3 SESSION 2 – Current and Future Programs and Systems

The first full day of the conference began with a weather brief by the Ocean Prediction Center (OPC) with a focus on ocean prediction and relevant satellite data/product overview. Through numerous examples, Joseph Sienkiewicz, Chief of the Ocean Applications Branch in OPC, demonstrated the value of satellite products to OPC operations. Forecasters make use of all available scatterometers and four geostationary satellites. The RGB (Red-Green-Blue) Airmass product has become a very important product in their "tool box." There were a few questions that followed the presentation. Kathy Ann Caesar asked if the OPC puts out swell warnings for storms over the Atlantic, and what is the learning curve on the products presented? Mr. Sienkiewicz replied, yes the OPC focuses on the waves associated with the storm and the swell. He then responded to the "learning curve" question by stating that the RGB Airmass product for example, does not have a steep learning curve and OPC is very impressed with the product. Another participant asked which satellite systems were used to create the products, and where was the raw input? The answer is a composite of four geostationary satellites, Metop-A/B scatterometer, OceanSat, OSCAT, and OPC is just beginning to ingest imagery from S-NPP. OPC focuses on offshore convection and did not show the Geostationary Lightning Mapper (GLM) but are anticipating it with a generated strike density product using Jason-1/2, CryoSat, and French-1. Dr. Jack Beven asked if OPC is still using any of the passive winds from SSMI, WindSat, etc. The response was that OPC is using passive remote sensing for a variety of things but not for this purpose since the scatterometers are available.

Session 2, Current and Future Programs and Systems, began with a special presentation by Dr. Wenjian Zhang, the Director of the WMO Space Programme (pictured right) on the development of architecture for climate monitoring from space. A 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 of agriculture, water, disaster risks, and health. After the presentation, there were questions about methods to distribute the information and if modern dissemination techniques such as cell phones or social media are being used. The answer was yes. Fifty years ago the bottom up approach was being used and today the top down approach is being used because the infrastructure is available.

Session 2.2, GOES/GOES-R, was moderated by the Program Chief Scientist, Dr. Steve Goodman (pictured left), and the Ground Segment Project Scientist, Jim Gurka (pictured right). Matthew Seybold, Satellite User Services Coordinator, opened the topic session with an update on GOES current operations. He addressed the normal and rapid scan schedules of GOES East and West, he reported that the GOES constellation is remarkably healthy, and announced that GOES-12 is nearing the end of its useful life for covering South America. The GOES-R update on current operations was given by Rick Pickering (NASA) for Greg Mandt, the GOES-R System Program Director. He described the progress of instrument and satellite development for GOES-R and announced that GOES-R is still on schedule for an October 2015 launch. Tim Schmit, Cooperative Research Program Advanced Satellite Products Branch Research Scientist, gave a presentation on the Advanced Baseline Imager (ABI) on GOES-R. He said every existing product from GOES-R will be better than those of today, plus many new products will be available. He showed examples of proxy and synthetic ABI products and their applications, including ABI scan scenarios, as well as a number of exciting examples of 1-minute super rapid scan loops from GOES-14 which gave the audience a taste of routine data that will be available from the ABI. Dr. Steve Goodman then closed the session with a presentation about the GLM on GOES-R. He gave an overview of the expected GLM benefits 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. There was then a discussion session for audience interaction.

Dr. Jack Beven asked about the Government Accountability Office (GAO) report and for a rundown on how all of this has affected the GOES-R budget and launch date. Rick Pickering replied that maintaining schedule is the main priority but there have been some delays. There have been some impacts but it is unclear how those will play out and an October 2015 launch is still planned. Dr. Simon Keough asked Dr. Goodman how he sees the future of the in situ based lightning mappers and how they can be best used together with the GLM. Dr. Goodman replied that those systems improve all the time and the ground based system has very high spatial accuracy. To get total lightning over the ocean, a satellite is needed. Frank Alsheimer commented that his understanding is that when GOES-R is first launched it will be put in the West position. He was wondering what Dr. Goodman had to say about the benefits to the areas that are not directly underneath the ABI, such as the East Coast. Tim Schmit explained that is the current plan because GOES-15 (current GOES-West) went into operations sooner. To get longer lead times in numerical models, upstream data is needed and having GOES-R upstream will feed into the models and allow eastward propagation. Dr. Goodman added that a decision will be made based on the health of the constellation. Carven Scott asked Dr. Goodman if there are plans for a lightning mapper on the Canadian Polar Communication and Weather mission satellite (PCW). Dr. Goodman replied that there is no plan for any kind of lightning detection on the PCW. The GLM can sense up to 52 degrees and the use of fused radar and satellite products, including lightning, can provide significant benefits.

Session 2.4, POES/JPSS, was moderated by Tom Schott, Satellite Product Manager, and the Senior Program Scientist Dr. Mitch Goldberg. The first presentation was given by Tom Schott on the Initial Joint Polar System. He briefed the status of the POES program as part of the System IJPS with NOAA-19 as the primary satellite flying in the early afternoon orbit. Next, an overview of JPSS was given by the director, Harry Cikanek (pictured right). S-NPP has been operating successfully for over a year, all JPSS-1 segments are on track to support a launch no later than the second quarter of fiscal year 2017, and the JPSS Program System Definition Review is targeted for May 2013. Air Force Colonel Dan Edwards (pictured left) presented on the status of the Department of Defense (DoD) environmental satellites. The National Polar-orbiting Environmental Satellite System (NPOESS) was cancelled in February of 2010, The Defense Weather Satellite System (DWSS) was cancelled in fiscal year 2012, and the Office of the Secretary of Defense (OSD) directed the Air Force to perform analysis of defense meteorological satellite requirements followed by an Analysis of Alternatives (AoA) to determine how to replace the current Defense Meteorological Satellite Program (DMSP). The current schedule is to complete an AoA Final Report in July 2013.

Dr. Goldberg (pictured right) then closed the session with a talk on S-NPP/JPSS operational applications. The S-NPP instruments are performing exceptionally well and JPSS is a major contributor to the global observing system. Sounding retrievals provide quantitative interpretation of satellite imagery and 3D structure of storm systems. Hyperspectral Infrared Sounders and Advanced Microwave Sounders are the top two contributors for reducing forecast errors. The Cross Track Infrared Sounder (CrIS) and Advanced Technology Microwave Sounder (ATMS) provide continuity of essential atmospheric sounding information for weather forecasting. Dr. Jack Beven began the question and answer session by stating that he is looking forward to using ATMS in terms of hurricane operations but one disturbing thing is that there is not much enthusiasm about getting microwave imagers on these satellites. It would be good to know the future of the microwave imager. Dr. Goldberg responded that there is a partnership with the Japan Aerospace Exploration Agency (JAXA) and we are processing AMSR-2 data through that and we are getting good results. Col. Edwards added that microwave imagery

is a key part of the AoA. Dr. Simon Keough said that he would like some confirmation that lessons learned from this activity will be used in planning for the JPSS mission so there will be rapid transfer of data worldwide. Dr. Goldberg responded that the dissemination is pretty good in terms of direct broadcast. The ATMS feed to National Centers for Environmental Prediction (NCEP) was getting to the systems the month after launch and took about seven months after launch to become operational. Dr. Keough continued that in referring to the sounding data with respect to ATMS and CrIS, the United Kingdon Meteorological Agency (UKMet) office assumed that they would be receiving real-time data. Dr. Goldberg reminded that MetOp-A was launched in November but data was not available until the following June unless there was access to the experimental feed. Tom Schott added that as part of the NPOESS Data Exploitation **(**NDE) project and working with EUMETSAT for 5 years on strategy to provide infrared (IR) and sounding data to EUMETSAT, there are a lot of challenges with NDE such as upgrading communications links at the NOAA Satellite Operations Facility (NSOF) and at EUMETSAT headquarters in Germany. Hopes are that communication upgrades will be completed in the fall and data feeds to Europe will improve in the next eight months. Once JPSS-1 launches, data feeds from that satellite will flow to Europe much faster than they did from NPP.

Session 2.5, Direct Readout, was moderated by Marlin Perkins (pictured left), Direct Readout Program Manager, and the Rebroadcast Services Program Manager Paul Seymour (pictured right). Marlin Perkins began the session with a presentation on the POES to JPSS transition. Automated Picture Transmission (APT) and High Resolution Picture Transmission (HRPT) service will be available until the end-of-life of POES spacecraft and High Rate Data (HRD) service will be continuous through S-NPP and JPSS-1 and 2. Steve Ambrose then spoke to the GOES to GOES-R Transition. The transition includes data from six GOES-R instruments including 16 ABI channels requiring a new antenna, receiver hardware, and processing system to handle the new data volumes. Kay Metcalf, GOES DCS Program Manager, gave a presentation on the GOES DCS Transition. No uplink frequencies will change from the GOES-N to the GOES-R satellites, only the downlinks. All other transitions are transmitter and ground system based. This session 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 High-Rate Information Transmission (HRIT)/EMWIN system; and improvements in the GOES DCS system for GOES-R.

Dave Cawley from the Remote Imaging Group (RIG) (pictured right) finished with a presentation on the RIG which is a group of private individual users of satellites. The group of approximately 1,600 members is indefinitely closing their doors after almost 30 years because there are no longer easily reproducible and/or low cost designs for direct reception of geostationary imagery. Dave thanked NOAA for its services to the private individual user and for the 45 years of direct reception that was given. There were a few minutes left for comments. Dr. Jack Beven asked Kay Metcalf (pictured left) about redundancy for the satellite itself in regards to DCS data. She responded that there are dual transponders on all the satellites and if one fails, there will be a switch to the other. GOES-R has a 3:2:2 ratios for DCS and HRIT/EMWIN (meaning there is one backup transponder shared between the three services and 2 transponders, and if one fails then it would get the backup transponder, so it has a built-in redundancy. Marlin Perkins was asked about the lifetime expectancy of the current POES system, to which he responded that they usually last about 10 years, so the current system will probably last through 2019-2021.

Session 2.6 was a panel (pictured left) on frequency matters moderated by Mark Mulholland, Senior Advisor/Program Executive for GOES-R. The panel included Beau Backus from Aerospace Corporation, Karen Dubey from SeaSpace, and Dave Lubar from Raytheon. The panel began with a short presentation on NOAA's L-Band environment followed by the discussion and comments that are provided below.

What ideas do you see to help users outside of protection zones help themselves? Any things you have seen in your experience, e.g., sharing other bands, etc.?

- Beau: Having a good understanding of the electromagnetic (EM) environment around you is necessary with mitigation so you know what you are trying to protect yourself from and what you are trying to gain. Maximize direction to satellite and block the path that would lead to the cellular telephone towers. It is not perfect but is one of the factors. I suggest we share ideas.
- David: The point that Mark made of a larger antenna will help you slightly but has a narrow beam width, it's not an ideal situation but as Beau said there are some things that you can do. Every half millisecond there will be 9 cell phones at every tower. You are dealing with these cell phones and tablets.
- Karen: Some of our customers do use L-Band but we will not be mitigating and it is not feasible for us to do so. Our company is still speaking out against the mitigations.

When people transition to X-Band there are some issues. We have dealt with that with S-NPP. Please discuss particular issues with X-Band and how to mitigate those.

- David: In the international arena, one of the agenda items was proposed by the French to uplink from the maritime mobile network. We do not know what they are trying to do but are assuming that if they are trying to uplink from a maritime ship etc., coastal users could be impacted. Talk to your spectrum regulator.
- Beau: I think it is very important to understand that we are fighting for resources. We are in a continuous push for resources, there is a lot of industry and technology that depends on spectrum and we need to be able to push for and protect that resource that we depend on. We have to be vigilant to encourage this generation of users to work together as a communicative group and know what we need to protect.
- David: There was a great deal of pushback when we started this working group. The pressure was enormous to shrink these zones down. The thing we need to figure out as spectrum people is who needs the data. Look at it in a simple manner, if you have a critical function, you need to figure out and let us know if there is any other way you can receive the data and if not, you need to voice that before the auction. It is really important that the users need to speak up. There is another element where someone is affected when they have no idea that they will be impacted. The way spectrum is managed has changed dramatically in the past year and a half and you need to be aware. Silence in this environment means agreement.

Is there opportunity to get a win-win out of this? Can we either use other satellite or cell towers to expand as we go along?

- David: An interesting idea. Laws of EM say satellites are limited in power. They routinely interfere with some ground systems. We will look at anything and any solutions. It's not practical to use cell towers. If you are interested in this topic, fill-out

sheets being passed around. We'd like to approach university partners and perhaps set up a website.

- Beau: Innovative ideas are worth exploring in a number of different ways. The broadband folks moving into this band are proposing innovative ideas where we might be able to coordinate with them. Our cell phones are multi-band devices. Innovative ideas are encouraged and worth exploring.

Session 2.7, User Feedback Session 1, was moderated by Gary McWilliams, Outreach Liaison of JPSS, and John Furgerson, User Liaison of JPSS (pictured right). There were two talks in this session given by Liam Gumley, manager of the EOS direct broadcast reception facility at the Space Science and Engineering Center, on the CSPP and by Dr. Steven Miller, Deputy Director of the Cooperative Institute for Research in the Atmosphere, on the Visible Infrared Imaging Radiometer Suite (VIIRS) Day-Night Band (DNB). CSPP is a software system for processing direct broadcast data from polar-orbiting meteorological satellites, supporting S-NPP/JPSS, POES, Metop, Terra, and Aqua, developed and supported by Cooperative Institute for Meteorological Satellite Studies (CIMSS)/Space Science and Engineering Center (SSEC) at the University of Wisconsin-Madison. The presentation included information on updates to VIIRS Sensor Data Record (SDR) Multi-processing, CrIS full spectral resolution, VIIRS Environmental Data Record (EDR) additions, CrIS, IASI, and AIRS retrievals, Clouds from Advanced Very High Resolution Radiometer (AVHRR) Extended (CLAVR-X), and VIIRS Projected Imagery. Dr. Miller finished the session with his presentation highlighting the VIIRS/DNB where the moon can act as a surrogate to the sun. Since the amount of moonlight on any given night is variable, the Lunar Reflectance Model was written. Other features such as the Aurora and "nightglow" also illuminate features such as snow cover and sea ice. In summary, VIIRS/DNB offers significant advances to legacy technology, and new research and operational applications abound. There was then a discussion for audience interaction to finish Day 2 in which many questions revolved around merging GEO and polar products. The 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). A full listing of the User Feedback Session 1 discussion can be found in Appendix E.

4 SESSION 3 – Data Access and Use

Session 3, Data Access and Use, began with a weather brief by NOAA's Climate Prediction Center giving a climate prediction and satellite data/product overview. The first presentation of the day was a VIP presentation from RA-III (South America) by Dr. Luiz Machado from the Brazilian Insituto de Nacional de Pesquisas Espaciais (INPE) (pictured right). The region needs and suggests real-time data, and practical training on how to receive the data and products, as well as how to pre-process the data and make their own products. This is particularly true for the new satellites (GOES-R and S-NPP). Dr. Machado suggested developing new group for South American users of the new satellites. Dr. Machado also suggested regular virtual meetings with the region, improving communication between users and data providers, and to advertise decisions about the main data format and products and the visualization of the system.

A suggestion came from Tim Schmit after the presentation that routine data will be available at the end of the post launch test with GOES-R. RA-III could test data flow during that time so that when the satellite is operational, the region is prepared. Dr. Steve Goodman added that some of Dr. Machado's suggestions are already in progress and they are working with South America to validate the data. During the last DRO, some RA-III and RA-IV members were offered to participate in the GOES-R Proving Ground. COMET was also suggested to possibly pull together some of the training described. Kathy-Ann-Caesar then offered to pass contact information from RA-III and RA-IV to Virtual Laboratories (VLabs). Tom Renkevens asked how challenging it is to receive GOES-12 data at high inclination. Dr. Machado replied that they have technicians that adjust their antennas twice daily so that they can receive the data. Eric Madsen then asked about the quality to which Dr. Machado replied that the quality is still good despite issues of ground navigation.

Session 3.2, Data Access, was moderated by Matthew Seybold (pictured left), with Natalia Donoho, User Services Coordinators, NESDIS/OSPO and ESPC Engineering Team Lead, and Paul Haggerty, NESDIS/OSPO. The first presentation by Dr. John Bates was on archive GOES/POES data access through the National Climatic Data Center's (NCDC) Comprehensive Large Array-data Stewardship System (CLASS). CLASS is an evolution to an enterprise archival system. The goal is to evolve the existing CLASS hardware and software infrastructure into a distributed, modular, service-oriented architecture. Donna McNamara, NESDIS/OSPO/MOD Systems Branch, then gave a presentation on Real-time GOES/POES Data Access. A new enterprise system, Product Distribution and Access (PDA) is the future of data access and distribution. It will be used for legacy GOES/POES, S-NPP, IJPS, and GOES-R data access. The plan is to be operational in October 2014. Kevin Berberich, NOAA/NESDIS/OSD gave a presentation on S-NPP Data Access. NESDIS is striving to provide more value added satellite information to the community as satellite data volumes present significant transfer challenges. NOAA's NDE scope is to serve the near real-time user community. NOAA will not monitor production on a 24x7 basis until late summer 2013 following the NDE system handover to NESDIS operations. Chris Sisko, JPSS Data Operations Manager NOAA/NESDIS/OSPO, then closed the session with a presentation on NESDIS enterprise Distribution through the PDA system. PDA represents a new paradigm shift in NESDIS' capability to deliver data to real-time users enabling them to manage their data subscriptions and provides event responders with in-depth data discovery and a powerful search capability. NESDIS is currently informing users of the system's capabilities and plans to provide user-level training in mid-2014 with a transition to operations in late 2014.

There was then a discussion session for audience interaction. Tim Schmit began by asking if they would be allowing GRIdded Binary (GRIB) 2 and Binary Universal Form for the Representation of

meteorological data (BUFR) files in Product Distribution and Access (PDA). Mr. Sisko responded that they do not anticipate doing that level of tailoring in formats because there are so many permutations, and they do not want to use the term legacy for GOES N-O-P. Russell Stringer mentioned from the perspective of WMO, he saw reference to Global Telecommunication System (GTS) but not the new WMO Information System (WIS) and wondered if these systems will serve some international exchange of data (NDE and PDA). Mr. Berberich responded from the S-NPP perspective, it has not been pursued, but it is potentially on the horizon; once the system is transitioned over they will assess getting the data to international users. Mr. Sisko answered from the PDA perspective, within the next development cycle there are plans to have a WMO capability but work still needs to be done on the interface details. Bob Allen asked if there will be a capability for subscribing through tailoring on product by spectral band; level 1b for GOES particularly. Mr. Sisko replied that it will be able to be tailored by whatever is chosen from the product list, being able to search particular products and extract what is needed. Dr. Jack Beven asked as a casual user of archive data, how can he download one image of a specific weather event that does not require downloading a large data set? Mr. Sisko stated that with the PDA, they are looking to feed real-time operational users but have not looked specifically at retrospective cases. After data becomes perishable it will only be held 4-7 days as the storage capability is not adequate and becomes a CLASS case.

Dr. Bob Iacovazzi has several teams analyzing GOES-R Cal/Val and was interested in learning how to get a group registered so those people will be ready to receive PDA data by launch. Ms. McNamara answered that temporary accounts can be given for the time period that data is needed and the account will be terminated when real-time data is no longer needed. If there is a desire for longer term access after launch, there will need to be poof that anomaly support is needed or the user will be sent to CLASS. Bryan Thomas then asked how one registers with respect to PDA. Mr. Sisko noted that the process had not started yet. Once the system is brought into operations, users will be notified to begin setting up their accounts. The outreach efforts are currently under development and at test readiness. Dr. Simon Keough spoke to the effort of having data available immediately after launch. He asked if NDE will be the system in place for future JPSS missions and what future plans were. Mr. Berberich responded that they are working on bringing online an ingest processing system and NOAA/NESDIS is planning for this activity in the future. Ms. McNamara added that the product distribution part that NDE is standing up now will be replaced by PDA.

Session 3.4, Data Use, was moderated by Ingrid Guch, NOAA/NESDIS/STAR and Ken Carey, ERT, Inc (pictured left). Ingrid Guch gave the first presentation on Science Advances and Data Fusion. There are many new sensors and measurements with increasing vertical, horizontal, spectral, and temporal resolutions, and the challenge is now to fuse and tame the "fire hose" of data. Fusion is more than just blending and merging. Experts from numerous domains must work together between satellite, radar, developer, and user. Jim Gurka gave a presentation on GOES-R and JPSS Proving Grounds. The objective is to bridge the gap between research and operations. The intended outcomes are Day-1 readiness and maximum utilization for both the developers and users of JPSS/GOES-R products and an effective transition to operations. The PG establishes its mission through sustained interaction between developers and end users, close coordination with JPSS/GOER-R Algorithm Working Groups (AWGs) and Risk Reduction programs, promoting a smooth transition to operations.

A satellite Cal/Val and data assimilation presentation was given by Dr. Fuzhong Weng, Acting Chief, Satellite Meteorology and Climatology Division, NESDIS/STAR. NOAA satellite instruments are well calibrated for operational applications and environmental data stewardship. For example, S-NPP is unique in

resolving hurricane warm core features through its high spatial oversampling and additional channels. Dave Jones, President/CEO, StormCenter Communications, Inc. (pictured right), gave a presentation on Collaborative Decision Making: Enhancing Situational Awareness with Satellite Data Use in Real-Time to Improve Readiness, Response, and Recovery. StormCenter uses real-time data sharing and collaboration, not screen sharing. It helps to facilitate collaboration since several users can be in the same collaboration session (virtually). It helps to connect NWS forecasters to emergency managers, etc.

A discussion session followed and Dr. Steve Goodman asked with regard to Hurricane Sandy, if Dr. Weng (pictured left) compared the current constellation results, and if there was something better than we could get with JPSS. Dr. Weng replied that the baseline system has all current MetOp, NOAA, and AMSU channels but they are being used too aggressively. ATMS impact study is additional on top of the current system. John Porter asked Mr. Gurka to expand about engaging other communities, media, etc. in the Proving Ground. Mr. Gurka replied that interaction with broadcast media is important. They have offered broadcasters the opportunity to sign up for the Hazardous Weather Testbed (HWT) experiment this year and only one has accepted. Ron Burke asked Jim Gurka and Dave Jones if the broadcasters using this new tool described (StormCenter) are looking at the same data and collaborating and informing the public. Mr. Jones replied that the broadcasters are in a unique position since they are great communicators, but they are beholden to the weather vendors supplying their data. They use that almost exclusively. What has been talked about is connecting with the broadcast community because they do have a problem translating evacuation routes etc. from emergency managers. It is thought that collaborative capability will close the gap, and allow NWS, FEMA, and broadcasters to have those graphics available quickly and officially so that information is communicated from the authoritative source (NWS/FEMA). This technology can be used to stay connected. Brad Pierce commented that it is nice to see collaboration between NOAA and SDR funding that managers need to pay attention to.

Session 3.5 was a special panel (pictured right) on data access and use by the international community moderated by Dr. Wenjian Zhang, the director of Observing and Information Systems Department at the WMO The panel consisted of Osvaldo Moraes, Director of the Center for Weather Forecasting and Climate Research (CPTEC) at INPE, Mike Manore, Director of Monitoring Strategies and Data Management at the Meteorological Service of Canada, and Kathy-Ann Caesar, Chief Meteorologist at the Caribbean Institute for Meteorology and Hydrology (CIMH). Each panel member gave a short presentation prior to interaction with the audience. Mike Manore began with describing how important space based monitoring is to Canada. There are two principal user groups of desk forecasters and specialized desks for aviation, defense, ice service, and volcanic ash. Some challenges for data access exist when there are interruptions in coverage from GOES, when rapid scan is invoked, and under-exploitation of data by the forecasters with roots in training and the ability to transfer Level 2 products into the forecast domain.

Kathy-Ann Caesar (pictured left) demonstrated that there are currently 16 member countries participating in the Caribbean Meteorological Organization. Some of the main concerns are: access to satellite is generally via Internet, new and affordable receiving systems are required, there are concerns about the types of new satellite data and how to access them, insufficient funds, and the need for more information and training on GOES-R. Dr. Wenjian Zhang then shared the proposal for Regional Satellite Data Requirements (SDR) Coordination Group for RA-III (South America) and RA-IV (North American, Central America, and the Caribbean). The motivation for the proposal is a

call for integrated data distribution systems in all regions and region-based definitions of user requirements. There is a lack of an integrated, affordable, and sustained data distribution system with an urgent need for preparation of users to new generation of satellites. Some of the proposed tasks of the SDR team are to establish and maintain user needs for satellite data, products, and associated training and involve satellite providers to ensure an effective user-provider dialogue and follow-up action. The discussion and comments are provided below:

For Kathy-Ann Caesar, Can you describe how the different hydrometeorological services communicate with one another in the Caribbean? How do you share your data?

- Kathy-Ann Caesar: During the hurricane season, we established two years ago an emergency group having meetings almost monthly. There is a group specifically for disaster preparedness and we formally meet online to share products, which is how we communicate. There is also an emergency backup group to disseminate products if something is to happen so we do communicate on a regular basis.

Mike Manore described user groups as forecasters and went on to other areas like decision support and NWP. Then there is an under-exploitation of satellite data to forecasters. The impression on the NWP side is that there are pretty good mechanisms to bring forth requirements but on the other side there are not. Is the issue one of access or training?

- Jim Gurka: I was going to ask the same question, but I wanted to say a little bit about how GOES-R is handling this. We already have a GOES-R benefits module, an ABI module and are about to create a GLM module. VisitView training is also accessible with GOES-R and JPSS relevant content. There is a training gap but we are trying to close it.
- Mike Manore: First, I am thankful you picked up on my key messages. In my own assessment, there is a lot of material but a low awareness of the availability and increasing challenges to the way training is handled. We are going to have to exploit the technology such as Webinars. We need to work as a region to increase the amount of venues for electronic and virtual training. Those involved need to exercise a leadership role.
- Kathy-Ann Caesar: I shared similar concerns to Mike Manore. What we have done, is worked closely with Bernie Connell on the virtual aspect for the past 9 years. It has worked in some aspects. Such as with Total Precipitable Water (TPW), we have more people using it but it is a mindset. One good issue, now with competency issue in WMO training, is our forecasters have to be proved competent. We use COMET and VisitView products. Through VisitView, forecasters are introduced to the products slowly. This is for those working on the desk. We are working with the National Hurricane Center (NHC) to have a session. We are encouraged but the hard side is the forecasters themselves, moving from what we have to what they can get out of the new products. Virtual is the way to go since it is more cost effective and they can do a lot on their own time.
- Dr. Zhang: Being responsible for the national satellite program and as part of the WMO staff, there is a need to keep thinking what is the best balance for the program? It's a big topic and also high level. At WMO, in high level policy meetings we discuss this. There is a need to understand where we need to focus the budget.

For Mike Manore, could you update us on Environment Canada on the PCW? What are the plans for sharing the data internationally?

- Mike Manore: The PCW mission is a proposed mission from the Canadian Space Agency that would provide greater coverage of the Arctic. The feasibility has been demonstrated. Looking to

close the business case and make a proposal to the government in the year; proposed mission launched in 2019-2020 time-frame.

For Kathy-Ann Caesar, there is always an issue of "well we can get it through the Internet," for Caribbean Islands. Why would you want direct readout or what about the benefits of using the Internet?

- Kathy-Ann Caesar: Initially, it's going to be cost effective. There is a growing dependency on the Internet through the islands. It is easier to get info over the Internet. But when you have a tropical storm, everything fails. A direct link might be an issue. When we get GEONETCAST that might be way too much. When forecasters are aware of the good work being done and how we can meet NOAA half way with products and what's effective, we can do things more cost effectively but need to communicate. We can't be comfortable with what we have because there are better products out there.

The final presentation of the day was by Dr. Alfred Powell, Director of NESDIS/STAR on improving the use of satellite data at NOAA's Center for Satellite Applications and Research (STAR) (pictured right). He gave an overview of S-NPP and GOES-R instruments and some carryover for GOES-R algorithm work into JPSS. He presented highlights from VIIRS-DNB, Derived Motion Vector Winds, Convective Initiation, Sea Surface Temperature (SST), and Satellite cross-calibration. The presentation also featured the NOAA Coral Reef Watch, Lightning Product Evaluation, and the new satellite synthetic aperture radar (SAR) high resolution coastal winds operational product. The evolving user needs has led to development of new decision support applications for GOES-R and JPSS, with vested interest in fused decision support products. Dr. Powell's presentation was followed by User Feedback Session 2 moderated by Tom Renkevens and Dr. Linda Stathoplos (pictured left) which can be found in Appendix I.

5 SESSION 4 – Applications

Day 4 began with a weather brief by NOAA's Weather Prediction Center (WPC) with a presentation on weather prediction and satellite data/product overview. Session 4 opened with a presentation by Dr. James Yoe, Chief Administrative Officer of NWS/NCEP, on Leveraging Satellite Data at NOAA's National Centers for Environmental Prediction. NCEP relies on satellite data to support all of its operational environmental predictions. As this continues and expands, NCEP will exploit the advanced capabilities of future satellite sensors and data to help support a Weather Ready Nation using an integrated approach, emphasizing high-impact services, and leveraging Testbeds and Proving Grounds. Following Dr. Yoe's presentation there were a few questions. Frank Alsheimer asked, "Looking forward, what is the future of producing simulated radiances from models?" Dr. Yoe's response was that it is a trivial exercise, using current radiative transfer models. The question will be whether to use it for distribution or not. Another question asked by an audience member was, "By observation type, what percent is satellite?" Dr. Yoe replied that a breakdown has never been done and care should be taken because it could be potentially misleading. The last question by an audience member asked, "Do new computing powers catch up with all the new satellite information coming in, and is resolution added for model improvement?" Dr. Yoe responded, "Hopefully, yes." He showed a model improvement chart that highlighted the end of the first phase of the current upgrade which is the computer and modeling system together and a goal to close the gap by the end of 2018.

Session 4.2, Weather Forecasting and Applications, was moderated by Joseph Sienkiewicz and Dr. Michael Folmer, Satellite Liaison at NOAA/NWS WPC/OPC/TAFB and NESDIS/SAB (pictured left). The session began with a presentation by Amanda Terborg, Satellite Liaison at the Aviation Weather Center (AWC) (pictured right), on aviation forecasting and satellite applications at the AWC. The AWC domain is global and considers all atmospheric levels where satellite data is heavily relied upon, particularly for data sparse regions like polar regions and over large bodies of water. A variety of satellite applications have been designed to address the large and broad domain: mosaics/global imagery, new tools, GOES-R and VIIRS data, demonstrations, and additional tools such as Aircraft Situation Display to Industry (ASDI) and EDR. There was remaining time for Ms. Terborg to answer a single question following the presentation, "It is obvious a lot of different types of satellite data are used for these mosaics. How are they obtained for the whole world?" She replied that they receive GOES data from their two dishes, and the rest are from NESDIS, if there is a failure the mosaic will still be created but the image shown will be an old one. Chad Gravelle, Satellite Liaison at the NWS Operations Proving Ground, gave the next presentation on the importance of satellite products within NWS forecast offices. NWS forecasters utilize legacy and demonstration (future) satellite products within real-time operations. It is important for Satellite Liaisons to continue to introduce and show/train forecasters in the field on the utility of satellite imagery and derived products.

A presentation from Bill Ward, NWS Pacific Region Environmental Science and Services Division Chief, was given by Eric Lau, NWS Pacific Region Scientific Services Meteorologist (pictured left), on Pacific Region's satellite program and requirements. Pacific Region covers a vast area void of observations, making satellite data vital to its mission. It is a unique region in the NWS in diversity of communications and variety of offices/services such as ground stations located in Hawaii and Guam. Complex resources reflect a customized and innovative approach to meeting mission requirements. The next presentation, on the NWS Alaska Region satellite program and requirements, was given by Carven Scott, NWS Alaska Region Environmental Science and Services

Division Chief and acting Meteorologist in Charge (pictured right). The Alaska Region observation density is an order of magnitude less than the continental United States. Satellite imagery is mission critical to NWS Alaska operations and helps forecasters mitigate the problem of data sparsity, because satellite imagery is more spatially-comprehensive than surface-based observation networks. Dr. Michael Folmer concluded the session with a presentation on Satellite Techniques for Marine, Precipitation, and Hazardous Weather Applications. The WPC, OPC, and SAB have progressed from using basic satellite channels to new satellite techniques with help from the Satellite Proving Ground. The main uses of satellite imagery at these centers are to compare current conditions with NWP initialization of current conditions. New GOES-R and JPSS satellite products are assisting current operations, well ahead of launch time.

Session 4.3, User Applications, was moderated by Tim Schmit (pictured left) and Gary McWilliams. The first presentation was on the Applications of GOES-SA (South America) by Dr. Daniel Alejandro Vila from CPTEC/INPE. He 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. Kathleen Strabala, UW-Madison/CIMSS/SSEC, gave a presentation titled, "The Global Impact of 10+ years of IMAPP Software in Support of Aqua and Terra." She discussed the global impact from the UW-CIMSS International MODIS/AIRS Processing Package (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 1,500 registered users in 70 countries. CSPP will enable the use of S-NPP and JPSS data. The third and final talk of this session was given by Gang Liu, NOAA/NESDIS Coral Reef Watch and Global Science and Technology, Inc., titled, "NOAA Operational Satellite SST for Monitoring Coral Bleaching Thermal Stress." The 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.

Directly following Session 4.3 was a session on Environmental Assessment Applications **(4.4)**, moderated by Kathy-Ann Caesar and Karen Moe, NASA-GSFC. Dr. Pablo Clemente-Colon, NOAA/NESDIS/NIC, gave the first presentation on the National Ice Center. Following the loss of QuikSCAT and Envisat Advanced Synthetic Aperture Radar **(**ASAR**),** operational use of the Oceansat-2 Scatterometer (OSCAT) data for sea ice products is intended for use thanks to the operational availability of the global data as part of the Indian Space Research Organization (ISRO), EUMETSAT, NOAA and NASA agreement. Launch of critical sea ice monitoring missions have been delayed. There is still a need for increased collaboration between sea ice services and research centers in the areas of remote sensing observation, data analysis, applications and validation. Dr. Nancy Searby, Capacity Building Program Manager, NASA/HQ, gave a presentation on the SERVIR (Regional Visualization and Monitoring System). It is a NASA-USAID partnership to improve environmental management and resilience to climate change by strengthening the capacity of governments and other key stakeholders to integrate earth observation information and geospatial technologies into development decision-making. One example: SERVIR developed a spatially distributed hydrologic model, CREST, as a part of a NASA Goddard Space Flight project. That effort focused on one watershed in Kenya, where the model was calibrated.

A presentation on rapid processing and distribution of satellite disaster data was given by Matthew Handy, GMSEC API Lead Engineer, NASA/GSFC. The focus of the presentation was on the Namibia Flood Dashboard Satellite Acquisition and data availability through the Namibia Flood Dashboard. The

problem is severe flooding in Namibia (south-western Africa) and existing flood warning models are not very precise. Advance warning could reduce loss of life and property damage. In this case and globally, dashboards for Sensor Webs can allow flexibility and rapid integration. Cloud technology allows huge datasets, rapid processing, and improved reliability. Sensor Webs will also continue to improve satellite tasking with global benefit for many remote sensing applications. The last presentation in this session was given by Dick Werle, Partner/Associate, AERDE Environmental Research, titled "Practical Experience with RADARSAT-2 Regarding Rapid and Detailed SAR Data Collection for the Caribbean Satellite Disaster Pilot during the 2010-2012 Atlantic Hurricane Seasons." Pre-emptive planning is essential for collecting SAR data close to event impact. Transient nature, e.g. flash floods, poses challenge for effective environmental observation (EO) data collection. Coordinated EO data planning and collection is highly desirable. Timely coverage (e.g., first 48 hours) is critical for most events and for EO success.

Dr. Jack Beven initiated the discussion session with the use of the RADARSAT data asking if it would help if there was a radar satellite with a larger radar swath and less specific targeting with less turning on and off. Would it be advantageous for the next generation to overcome this? Mr. Werle responded yes and no. The fact is that RADARSAT has a small swath width; length is not so much a problem. Some relief can be expected from the Canadian RADARSAT constellation missions that will provide 3 satellites which might help to hit a two-day window better. Another participant question to Dr. Searby asked about her visions on collaboration for NOAA/NASA and some of the SERVIR efforts/satellite products she was offering. Nancy's reply was that they already work with NOAA some, but there is room to improve that relationship. There has been a recommendation to work better with boundary organizations. There was a comment about the discussion of a science team that was started, there is also a NASA team who has invited Weather Strategic Planning Aid and NOAA scientists to the team as well, and it may be a great way to invite other agencies to that team. Dr. Searby agreed that it was a good idea. The Air Quality (AQ) meeting is in June. We should invite other agencies to that meeting. Brad Pierce continued the discussion session by asking to what extent is forecast uncertainty taken into account. Mr. Werle replied that they are really confined by the orbital patterns of the RADARSAT and can't really mess with that, the only thing they can do to improve is to cooperate with other radar satellite providers to provide useful data. Kathy-Ann Caesar asked about re-imagery from the NHC and if they were direct links or just information from the Internet. Mr. Werle's reply was that they are not getting imagery from NHC. They rely on the information that is provided over the Internet. Since it is provided in a timely manner, it is good enough to do planning for the RADARSAT tasking. That time window can be as broad as 2-3 days which gives time to determine RADARSAT coverage.

Session 4.5 on Climate Applications was moderated by Dr. John Bates, Principal Scientist for Remote Sensing at NESDIS/NCDC and Dr. Pingping Xie, Research Meteorologist at the Climate Prediction Center. The first presentation was given by Dr. John Bates on Climate Data Records (CDR) and their applications. The CDR program supports private sector applications. Interim climate data records offer many advantages over operational weather products as they are more complete in time and space, consistent over multi-satellite period of record, better ancillary inputs, and better sensor functioning knowledge. The next presentation was given by Dr. Wayne Higgins, Director of the Climate Prediction Center (CPC), on satellite products and services. Collaboration between CPC and NESDIS/STAR is strong and will help ensure improved satellite applications for climate such as next generation global OLR and SW radiation data sets, pole-to-pole global precipitation (rainfall and snowfall) analyses, and GOES-R high-resolution (2km) real-time (<= 1hr) CPC MORPHing technique (CMORPH). CPC is working with NESDIS on products from the S-NPP to pave the way for future JPSS products. There are future plans to improve delivery of tools to facilitate applications by users.

The third presentation during the session was given by Dr. Carl Schreck, Research Associate at the Cooperative Institute for Climate and Satellites – North Carolina (CICS-NC), on the use of NOAA satellite products by the energy sector. The energy industry needs 7-30 day temperature forecasts. NOAA's CDRs are critical for developing analogs. NCEP Global Forecast System (GFS) forecasts are priced into the market, but skill drops off after about a week. A business opportunity is to hedge the GFS at longer ranges. The analog approach can be used to try to hedge against other companies, and try and find a historical situation that was similar. The final presentation was given by Jenny Dissen, Director of the Summer Institute on Climate Change at CICS-NC, and Stephanie Uz, Faculty Research Assistant at CICS-Maryland, on Climate Literacy and Outreach Using Satellite Data for the General Public and the Private Sector, A CICS Perspective. The goals are broken down into three separate categories of K-12 students, general public, and the private sector. The goal is to get K-12 students as comfortable using satellite data as *YouTube* and *Instagram*. The general public goal is for an improved understanding of current climate issues, fostering stewardship and appreciation of satellite data in monitoring the Earth system. The goal for the private sector is for improved use of weather and climate data and information for managing climate risks and opportunities.

A discussion session followed where someone asked about how the 4-day course is being led. Dr. Schreck responded that his background is private sector and management consulting. He struggled with how to incorporate climate information into activities the customers would buy. He developed a program that tackled a few things at once. His 4-day program has two parts focused on climate data information and why we collect it with a wide range of climate literacy; then two parts of climate science background. Companies have started to invest in the adaptation time scale. It is more business school oriented. The audience member added that one of the things most positive about the 1-day workshop was the framework since it was business led. It was information that business managers could go to CEOs to say, "This is why we need NOAA products."

Next, Dr. Jack Beven had a question for Dr. Bates, "The Atlantic hurricane records go back to 1851. Not sure we have the consistency in that record given the changes in observations to call it a climate record. What is your opinion?" Dr. Bates' response was that the observation segment for hurricanes is a great challenge. He showed the ability to get a consistent data set, for the last 30 years. Prior to that, it becomes much more challenging, it is the aircraft era, and even farther is even more difficult. One of the more interesting approaches to get a consistent record into history is to use paleo-records of surge activities and sedimentation or coral records which offer indirect measure, but challenging because so much has to do with ship logs which make it hard to quantify and image those records. One of the great challenges is the homogeneity, and we do not have that except for the past 30 years. Dr. Schreck added that to be more specific, what Dr. Bates was showing in his talk was that he was comparing his results with Jim Kossin's and the CDR. Dr. Bates asked about one of the CDR projects at NASA Langley and Dr. Xie responded that *that* year is the gap between long term and short term climatology. Latency is an issue and we should work together to narrow down that gap so we can take advantage of that technology. Dr. Bates said he would agree that in the past there has been a gap in time scales and had heard that from several users and that is why they have come up with the term "interim" climate record to fill that gap. The idea is along the lines that there is a great need in the climate monitoring community to get consistency with the short term record that is still timely with respect to the phenomena occurring.

Session 4.6, Hurricanes and Heavy Precipitation, was moderated by Dr. Steve Goodman and Dr. Fuzhong Weng. The first presentation was by Dr. Jack Beven, Senior Hurricane Specialist at NHC (pictured right), titled, "The Use of Satellite Observations to Monitor the Evolution of Sandy." The NHC used an extensive array of the available satellite tools for its tracking and forecasting of Hurricane Sandy. The NHC often employs qualitative evaluation of satellite data in analyzing/forecasting the

track, intensity, and wind radii of a tropical cyclone. The ground-truth aircraft and surface data from Sandy offers a great chance to compare/validate satellite data and techniques. Fred Toepfer, NOAA/Hurricane Forecast Improvement Program (HFIP) Program Manager, gave an overview on HFIP. It is a 10-year program with ambitious forecast improvement goals to reduce evacuation costs with a focus on improving NWP model forecast guidance provided to the NHC. Some of the goals are to reduce numerical forecast errors in track and intensity by 20% in 5 years, 50% in 10 years, extend forecasts to 7 days, and increase probability of detecting rapid intensification at day 1 to 90% and 60% at day 5.

The Use of Observations and Data Assimilation for Operational Hurricane Weather Research and Forecasting (HWRF) was presented by Dr. Vijay Tallapragada, Hurricane Team Leader at NWS/Environmental Modeling Center. For the first time, a high-resolution hurricane model operating at cloud-permitting 3km resolution was implemented into NCEP operations; a result of multi-agency efforts supported by HFIP. Advanced high-resolution products from operations include synthetic satellite imagery, high-frequency track and intensity forecasts and additional large-scale and vortex scale diagnostics. Experimental results from fiscal year 2013 pre-implementation testing and evaluation, from a large sample of 3-season (2010-2011-2012) tests showed about 10-15% improvement in tracks and about 20-25% improvement in intensity forecasts. A presentation on heavy precipitation was given by Ralph Ferraro, Branch Chief for the NOAA/NESDIS Satellite Climate Studies Branch, to close the session. Satellites are particularly useful where ground measurements are not taken or missing. An example of merging various data sources to provide "seamless" products with limited data gaps is the blended TPW product. It combines all available data sources into a product for the NWS forecaster: ocean sources include satellite microwave imagery while the land sources include satellite microwave imagery, GOES sounder, and GPS Met. The accuracy of all the data sources is comparable. The data are biased adjusted using a histogram matching scheme. GPS is over CONUS land only.

A discussion session closed the day. One audience member asked about the successful flying of an unmanned drone in a hurricane off coast and wanted to know if they will continue to be used to obtain that sort of data. Dr. Beven responded that no formal program to use the unmanned drones continuously exists, but the Hurricane and Severe Storm Sentinel (HS3) program with two global hawks stationed at Wallops Flight Facility is taking place in August 2013 with one aircraft monitoring the environment and one monitoring over storm environments. The audience member continued by asking which satellite is more essential to predictions of hurricanes, GOES-R or JPSS? Dr. Beven's response was that would have to be asked to a numerical modeler; the NHC would say GOES-R while numerical modeling would say JPSS. Moving on, Bob Allen asked which feature Dr. Beven was looking for in the DNB, to which he replied that DNB in VIIRS will be much closer to visible imagery and will help to do a better job at intensity estimates.

Another audience member asked Mr. Toepfer regarding HFIP, "What are the target areas for the next 5 years, and what is your opinion about latency?" Mr. Toepfer thought learning how to use the GOES-R data in the models will be the most important and as far as latency, anything that improves it is a good thing and one of the highest requirements. Dr. Tallapragada added that as a modeler they prefer as much data as possible. It is important to make sure they get as much information as possible in the assimilation window. Kathy-Ann Caesar asked about TPW products. They are one of the most revolutionary products for those in the Caribbean. If there is no cloud signature, a moisture plume is visible. For modelers, can that be used in high resolution models? Dr. Weng responded that radiance assimilation includes this information. Mr. Ferraro mentioned that with a blended product, everything goes into it and sometimes the users have a problem as a new satellite comes online. Each satellite needs to be online to make it better.

An audience member transitioned into asking about ocean heat content and improvements to hurricane intensity forecasting and what the role of that field is and input into intensity prediction. Dr. Beven responded with a brief overview. The altimetry data is used operationally in a few ways, such as wave heights, it also combines with sea surface data to get ocean heat content. Forecasters also look at the SST and Ocean Heat Content (OHC) fields to get an idea of how they are changing as the storm is moving along. Mr. Toepfer said that he fought hard a few years ago to get altimetry recognized as a requirement. It is critical to what is done in ocean modeling. Dr. Simon Keough spoke to the role of human beings in the forecast process in unprecedented cases asking how the role evolves in the forecast process. Dr. Beven responded that he is not quite sure how it will evolve. There will always be room for the human being in the loop. Models are not perfect and most times they remain divergent. While models are improving, it is doubtful there will be a point where possibilities are eliminated. The models are used to see the possibilities, not eliminate them. Track guidance models are getting better. There is plenty of room to improve on intensity guidance and always room for the forecaster/analyst to look at products and say there is something wrong with what the models have, and adjust for that.

6 No Host Dinner – "Satellites and Science Literacy: A Powerful Opportunity"

Chief Meteorologist, Dan Satterfield, from CBS Affiliate WBOC in Salisbury, MD was the guest speaker at Thursday night's No-Host Dinner at the Marriott Hotel in Greenbelt, MD.

Mr. Satterfield (pictured right) grew up in Tulsa, Oklahoma and attended the University of Oklahoma to study meteorology. He became fascinated with satellite imagery after seeing his first satellite image in a weather briefing at the university. In his early broadcast meteorology days, he recalls forecasting volcanic ash over the Oklahoma City area after the Mount St. Helen's eruption, using satellite imagery.

Mr. Satterfield made several key points about the broadcast meteorology community and the current state of how satellite imagery is used in the industry.

1. The broadcast meteorology community is not ready for the fire hose of GOES-R data. They do not realize that their world is about to change.
2. There is only one, big vendor of satellite and radar imagery for broadcast meteorologists to use on-air. The satellite images are only 12km resolution because they must be shown in color to appeal to the audience.
3. The process Mr. Satterfield has to go through to show a MODIS image, for example, on television is to download it from the Internet, convert it to a TIP image because the graphics system does not accept JPEG, email it to himself, download it, and then adjust it for the graphics rendering system to show on-air. This is in addition to everything else and as a result, he does not get to show these kinds of images on a regular basis.
4. The public loves the weather, especially on the news. However, they do not understand basic concepts such as high and low pressure areas and fronts.

Mr. Satterfield then spoke about the differences between radar and satellite to the general public. He credits radar applications to cell phones and tablets as a major reason why radar technology seems to have no trouble when it comes to budget. The public has easy access to radar and it is conveyed to them on a daily basis. They understand the value in radar. Mr. Satterfield feels that meteorologists need to show the public that satellite imagery is just as valuable. People need to have a satellite application on their smart phone in addition to the radar application. If they understand that their tax money is going to a valuable cause as they do with radar, then the satellite community will have the support it needs to continue. Mr. Satterfield closed by reading Carl Sagan's piece, *Pale Blue Dot*.

7 SESSION 5 – Closing Session

The final day of the conference opened with a weather brief by NOAA/NESDIS Satellite Analysis Branch (SAB) and a satellite data and product analyses overview. Session 5 consisted of one session topic on significant events and a special panel on the importance of NOAA satellites before a conference summary/action items and closing remarks from Mary Kicza.

Session 5.1, Significant Events, was moderated by Grace Swanson, Washington Volcanic Ash Advisory Center Manager, NESDIS/OSPO and Regis Walter, NOAA Homeland Security Program Office. The first presentation was on the use of VIIRS DNB data to monitor power outages and restorations for significant weather events by Dr. Gary Jedlovec, Principal Investigator of SPoRT at NASA. DNB has the ability to sense relatively small amounts of emitted / reflected visible light at night for monitoring low clouds and fog, smoke, and even surface features. Products derived from the DNB can be used to detect lights from cities and has particular utility to monitor power loss and restoration from significant weather events. While the Hurricane Sandy example is atypical, DNB products are being developed (by NASA and the broader community) to monitor power loss for more regional and local applications. Jamie Kibler, Meteorologist at SAB, gave a presentation on wildland fire monitoring using NOAA satellites. The NOAA satellites currently used for fire and smoke detection are GOES-13 and 15, NOAA 15, 18, and 19, METOP-A and B, MODIS Aqua and Terra, and in the future will be GOES-R and JPSS. Some of the advantages of using GOES vs. POES are that the temporal resolution of GOES is 15/30 min vs. POES of 2 views per day. The temporal resolution of GOES-13 satellite imagery (IR and VIS) allows for the analyst to determine how long a fire is producing smoke and how many Hysplit points to add for the forecast. The spatial resolution for locating wildfires or any other type of fire however is 1 km for POES and 4 km for GOES. S-NPP has a 375m resolution and a much wider swath.

Dr. Kristopher Bedka, researcher at NASA Langley, presented on satellite-based detection of deep convective updrafts. Several distinct signatures often associated with hazardous weather are evident in visible and IR satellite imagery. Overshooting cloud tops (OT) are one readily detectable feature well correlated with severe weather. From 1-minute GOES-14 observations of individual convective storms it has been found that OT detections signal the beginning of storm intensification, rapid cloud top cooling is well correlated with a rapid increase in total lightning, and severe wind and hail was reported shortly after rapid cloud top cooling. Long-term regional databases of OT detections were used to develop robust OT-severe weather relationships and a severe hail risk assessment over Europe, a region where a long-term spatially unbiased severe weather report database is unavailable, thus satellite data and derived products are vital. The last presentation of the conference was on the Development of a Multi-Sensor Volcanic Cloud Monitoring System by Michael Pavolonis, Physical Scientist with NOAA/NESDIS/STAR/ASPB (pictured left). NOAA/NESDIS/STAR has developed a suite of globally applicable satellite remote sensing techniques for automatically identifying volcanic clouds in satellite imagery with a skill comparable to that of a well-trained human analyst. The NOAA algorithms also automatically estimate relevant volcanic cloud properties (height, loading, effective particle radius). These methods can be applied to virtually any satellite sensor, while taking full advantage of each sensor's capabilities, and can actually utilize combinations of satellite sensors to help ensure that they can be used to address operational problems related to volcanic clouds.

A discussion session followed. Dr. Steve Goodman began with a question for Mr. Pavolonis, "When you are looking at the eruptions do you calculate the rapid change of height and is your technique automated?" Mr. Pavolonis replied that it is fully automated and cloud object identification based. It is similar to what people are doing to monitor regular convection. An alert would go out and an analyst could look at it. Dave Furlong asked if there are alerts for toxic gas at the ground level and how many

eruptions are seen in a year. Mr. Pavolonis responded that there is not a toxic gas component. However the eruptions per year are about 50 globally, which can last from minutes to years. Mr. Kibler added that anywhere between 800-2000 advisories are put out per year, and some are more active, as far as ground based. Jim Gurka asked if there was any thought of categorizing the intensity of the overshooting tops (marginal, strong), depth, and size, or the frequency of the scans? Dr. Bedka noted that all of those parameters are put out and forecasters for example at the SAB have expressed interest in more than a binary yes or no product. Mark Cotter concluded the discussion with a question for Dr. Jedlovec to explain the difference between lunar corrections on DNB vs. near constant contrast imagery produced by S-NPP. Dr. Jedlovec responded that he did not know enough about the near constant contrast but is definitely something that should be worked towards in understanding the strengths and weaknesses.

Mary Kicza moderated the last session of the conference, a Special Panel (pictured right) on the Importance of NOAA Satellites. The panelists included(from left to right) Dr. Estela Collini, Director of Projects, National Meteorological Service and Naval Hydrologic Service of Argentina: Mary Kicza, moderator: Tom Fahey, Meteorology Manager of Delta Airlines, Inc; Dr. Jared Bales, Director of Water for U.S.G.S.; and Chris Vaughn, FEMA Geospatial Information Officer, Strategic Integration Group, and Office of Response and Recovery. Each panelist gave a short presentation about how satellites were important to their industry prior to an open discussion with the audience:

Dave Lubar: It's important for us to understand how it affects users like yourself. I think that you can help us because at the end of the day we have to justify why spectrum for meteorology is important for other uses. We need to understand costs and impacts to aviation, FEMA, and we could really use your feedback.

- Tom Fahey: We are here and willing.

Kathy Ann Caesar: Do you still have flights to the Caribbean? We have traditionally bad fog problems with no satellite information in the area. How do you handle it?

- Tom Fahey: We make plans for loading additional fuel if we have to divert and we keep in touch with Air Traffic Control.

Mark Middlebusher: Heard a lot about the models and their impacts, what computer resources and models does Delta Airlines use and how do they impact?

- Tom Fahey: We depend on investment, we purchase satellite imagery and model information from EUMETSAT, UK, NCEP GFS, and we purchase model output from Japan. We are very interested in improvement of the global model for safety.

Audience Member: Will there be plans to coordinate once there is a volcanic eruption to focus meso-scans on that region in a coordinated way for the groups?

- Dr. Estela Collini: I didn't know much about all the sensors. I would like Argentina to be a proving ground for GOES-R products. Sometimes the algorithm depends on hemisphere. In the Southern Hemisphere we have different land use and land cover and could help to develop the algorithms. Argentina has Patagonia which is interesting to verify. The Andes have a lot of different valleys and glaciers and microclimate.

- Mary Kicza: Yes, there are opportunities.

Dave Furlong: At Delta Airlines, have you calculated cost savings per year from meteorological data?

- Tom Fahey: We have done that a number of different times, and the general outcome is that we return 3-5 times the investment we make in the meteorology department.

Dr. Steve Goodman: Your presentation hits a core with us. We had a product for GOES-R that we decided not to fund called tropopause folding. Our advisory committee said it was stove piping and not to do it. How do we take tactical and strategic information on how we get from stovepipe algorithm to using NWP intelligently to provide good information for you?

- Tom Fahey: Currently from an avoidance standpoint, there still needs to be work done in that area, the main point I glossed over, through the AMS effort there are a number of broader focuses... to provide a specific solution now, no, but from a broader standpoint, we need to work collaboratively to create a holistic approach to improve the models.

Karen Dubey: I would like to mention that it's good NOAA has continued to support the DRO community with GOES-R, that's how almost all non-NOAA users will get their data. Request that you go that last 1% and help us get the algorithms so we all don't have to replicate the efforts. So that would be putting the algorithms through CSPP. That's how most polar satellite algorithms are and it would be good for GEO to be the same way.

- Mary: Thank you, we will make note of that.

Russel Stringer: Wondering as ground based centers are getting higher temporal resolution, is it forcing putting more stress on the data collection system?

- Kay Metcalf: We have been concerned for many years with the capacity of DCS and have undertaken many projects to increase the capacity. We are getting more and more requests for 15 minute repeat cycles, and 5 minute repeat cycles, especially for tsunami warnings. We are still working to make changes on the ground to work with the increasing capacity issues. We have increased the speed of the transmitters, we have decreased the required bandwidth for each channel, and we have decreased the length of each message. We will continue to make changes on the ground side to make more efficient use of the system, and maximize the capacity.

8 CONCLUSION

The NOAA Satellite Conference was deemed a tremendous success with over 500 in-person attendees and another 100 or so virtual attendees, 175 posters, more than 70 presentations, and 25 exhibits. There were also panels, weather/center briefs, tours, user feedback sessions, and additional workshops. There was a common theme throughout the week of the importance of partnerships. Dr. Kathryn Sullivan noted in her welcome video on April 8, 2013, "Combining these different conferences co-mingles scientific, engineering, and user communities, enabling a powerful cross-fertilization of ideas and experiences. Partnerships have always been key to NOAA's success, and they are especially important now with the pioneering GOES-R and JPSS systems coming closer to reality." Another common theme was the importance of user feedback. Dave Furlong commented, "There was a lot said about GOES and GOES-R and can be said about JPSS. Especially two years from now when people have the ability to exploit the data."

The decommissioning of NOAA-17 was also of importance to note. It is a significant milestone for ongoing cooperation with EUMETSAT- NOAA now relying exclusively on EUMETSAT in the mid-morning orbit. NOAA-17 retired after 11 years of service, one of NOAA's longest operating spacecraft. NOAA will continue to operate NOAA-15, NOAA-16, NOAA-18, NOAA-19, and S-NPP. The decommissioning of NOAA-17 provides a timely example of the critical value of partnerships. NOAA began the deactivation process of NOAA-17 on February 18, with the final shut down occurring Wednesday. Launched in June 2002, NOAA-17 made 55,000 orbits of the globe, traveling more than 1.5 billion miles while collecting huge amounts of valuable temperature, moisture and image data. NOAA-17's long life is a credit to the engineers who built and operated it and the technology that sustained it. Although we say farewell to NOAA-17, we still operate a dependable fleet of satellites that continue to provide crucial data. Presentations and posters can be found on the NSC website http://satelliteconferences.noaa.gov/2013/.

In closing, big thanks was given to all who attended the conference and the people who helped to make it a success:

Interpreters: Multilingual Experts

On-site catering: Kloud Kafe

Mobile caterer: Smoking Swine

Conference Hotel and Shuttle: Greenbelt Marriott and Dotty Beverly (Account Executive)

Sponsors and Exhibitors

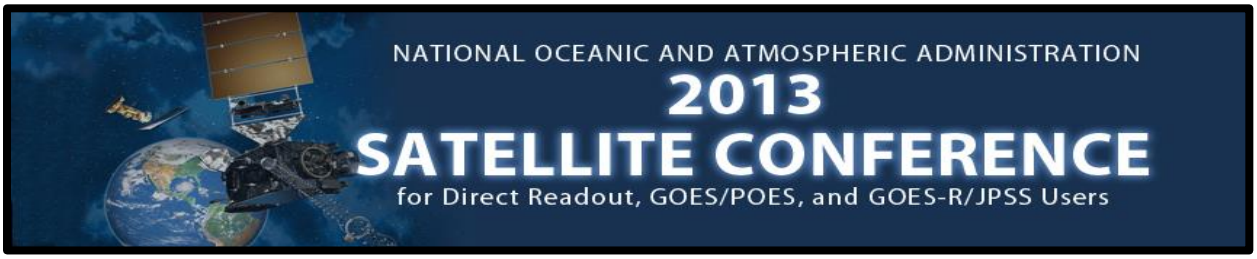
NCWCP Facilities/Engineering/Janitorial/Security

NCWCP Tenant Board

Volunteers

Organizing Committee (listed in Appendix G)

APPENDIX A 2013 NOAA Satellite Conference Agenda



NOAA Center for Weather and Climate Prediction College Park, Maryland April 8-12, 2013			
"Strengthening Partnerships to Enhance User Readiness, Reception, and Utility"			**Organizer** Presenter
Saturday/Sunday April 6-7		**"Train the Trainer" Workshop**	
9:30am - 4:00pm		**"Train the Trainer" Workshop (NCWCP Conference Center)**	
Monday, April 8	**Session**	**Registration / Pre-Meetings / Opening Session**	
7:30am - 12:45pm		**Registration; Sign-up for NCWCP Tours (Wed/Fri) and Dinner (Thu)**	
8:30am - 12:00pm		**GSICS Users' Workshop (Auditorium)**	
8:30am - 12:00pm		**WMO RA-III and RA-IV Meeting (NCWCP Conference Room 4552/53)**	
12:00pm - 12:45pm		**Lunch**	
1:00pm	**1.0**	**Opening Remarks**	**Eric Madsen (NESDIS/IIA; NSC Co-Chair) Scott Rogerson (Argos DCS Program Manager, NESDIS/OSPO; NSC Co-Chair)**
1:20pm	**1.1**	**Special Guest Speaker - NOAA**	Kathryn Sullivan (Acting Administrator, NOAA)
1:30pm	**1.2**	**Special Guest Speaker - NESDIS**	Mary Kicza (Assistant Administrator, National Environmental Satellite, Data & Information Service (NESDIS), NOAA)
1:50pm	**1.3**	**Special Guest Speaker - NWS**	Louis Uccellini (Assistant Administrator, National Weather Service (NWS), NOAA)
2:10pm	**1.4**	**Highlights since the 2011 Satellite Direct Readout and GOES Users' Conferences - OSPO/GOES-R**	Vanessa Griffin (Director, NESDIS/OSPO) Dr. Steve Goodman (Program Chief Scientist, NESDIS/GOES-R)
2:30pm		**Break**	
3:00pm	**1.5**	**Special Guest Speaker - EUMETSAT**	Mikael Rattenborg (Director of Operations, EUMETSAT)
3:20pm	**1.6**	**Keynote Address - WMO**	David Grimes (President, WMO)
3:50pm	**1.7**	**Wrap-up / End of Day 1**	
5:30pm		**Icebreaker/Social (Hotel)**	
Tuesday, April 9		**Current and Future Programs and Systems**	
8:00am		**Ocean Prediction and Satellite Data/Product Overview**	**NOAA's Ocean Prediction Center**
8:25am	**2.0**	**Opening Remarks**	Eric Madsen (NSC Co-Chair) Scott Rogerson (NSC Co-Chair)
8:30am	**2.1**	**Development of an Architecture for Climate Monitoring from Space**	Dr. Wenjian Zhang (Director, WMO Space Programme)
9:00am - 10:15am	**2.2**	**GOES/GOES-R**	**Dr. Steve Goodman (Program Chief Scientist, NESDIS/GOES-R; NSC Co-Chair) Jim Gurka (Ground Segment Project Scientist, NESDIS/GOES-R; NSC Co-Chair)**
9:00am	**2.2a**	GOES - Update on Current Operations	Matthew Seybold (Satellite User Services Coordinator, NESDIS/OSPO/SPSD)
9:15am	**2.2b**	GOES-R - Update on Future Operations	Rick Pickering (Deputy System Program Director, GOES-R)
9:30am	**2.2c**	The ABI on GOES-R	Tim Schmit (NESDIS/STAR Advanced Satellite Products Branch)
9:45am	**2.2d**	The GLM on GOES-R	Dr. Steve Goodman (Program Chief Scientist, NESDIS/GOES-R)
10:00am		Discussion	
10:15am	**2.3**	**Intro to Posters, Break, and Poster Session 1**	**Tim Schmit (Advanced Satellite Products Branch, NESDIS/STAR)**

			Gary McWilliams (Outreach Liaison, NESDIS/JPSS)
11:30am - 12:45pm	**2.4**	**POES/JPSS**	**Tom Schott (Satelite Product Manager, NESDIS/OSD)** **Mitch Goldberg (Senior Program Scientist, NESDIS/JPSS; NSC Co-Chair)**
11:30am	**2.4a**	Initial Joint Polar System (IJPS)	Tom Schott (Satellite Product Manager, NESDIS/OSD)
11:45am	**2.4b**	Overview of JPSS	Harry Cikanek (Director, NESDIS/JPSS)
12:00pm	**2.4c**	Suomi-NPP/JPSS Operational Applications	Mitch Goldberg (Senior Program Scientist, NESDIS/JPSS)
12:15pm	**2.4d**	Status of DoD Environmental Satellites	Colonel Dan Edwards (Chief, Integration, Plans & Requirements, HQ USAF/A3O-W)
12:30pm		Discussion	
12:45pm		**Lunch / Exhibits / Posters**	
1:55pm - 3:15pm	**2.5**	**Direct Readout**	**Marlin Perkins (Direct Readout Program Manager, NESDIS/OSPO)** **Paul Seymour (Rebroadcast Services Program Manager, NESDIS/OSPO)**
1:55pm	**2.5a**	POES to JPSS Transition	Marlin Perkins (Direct Readout Program Manager, NESDIS/OSPO)
2:15pm	**2.5b**	GOES to GOES-R Transition	Steve Ambrose (NESDIS/OSPO)
2:40pm	**2.5c**	GOES DCS Transition	Kay Metcalf (GOES DCS Program Manager, NESDIS/OSPO)
2:55pm	**2.5d**	Private Individual Users of Weather Satellites	Dave Cawley (Remote Imaging Group)
3:15pm		**Break**	
3:45pm	**2.6**	**Frequency Matters**	**Mark Mulholland (Senior Advisor/Program Executive, NESDIS AA)**
		Mark Mulholland (NESDIS) - Moderator Beau Backus (Aerospace) Karen Dubey (SeaSpace) David Lubar (Raytheon)	
4:30pm - 5:30pm	**2.7**	**User Feedback Session 1**	**Gary McWilliams (Outreach Liaison, NESDIS/JPSS)** **John Furgerson (User Liasion, NESDIS/JPSS)**
4:30pm	**2.7a**	Community Satellite Processing Package (CSPP)	Liam Gumley (Cooperative Institute for Meteorological Satellite Studies)
4:40pm	**2.7b**	VIIRS Day-Night Band (DNB)	Steven Miller (Deputy Director, Cooperative Institute for Research in the Atmosphere)
4:50pm		Discussion	
5:30pm	**2.8**	**Wrap-up / End of Day 2**	
Wednesday, April 10		**Data Access and Use**	
8:00am		**Climate Prediction and Satellite Data/Product Overview**	**NOAA's Climate Prediction Center**
8:25am	**3.0**	**Opening Remarks**	Eric Madsen (NSC Co-Chair) Scott Rogerson (NSC Co-Chair)
8:30am	**3.1**	**VIP Presentation - RA-III**	Luiz Machado (INPE - Instituto de Nacional de Pesquisas Espaciais)
9:00am - 10:15am	**3.2**	**Data Access**	**Matthew Seybold and Natalia Donoho (User Services Coordinators, NESDIS/OSPO)** **Paul Haggerty (ESPC Engineering Team Lead, NESDIS/OSPO)**
9:00am	**3.2a**	Archive GOES/POES Data Access through NCDC	Dr. John Bates (Principal Scientist, NESDIS/NCDC)
9:15am	**3.2b**	Real-time GOES/POES Data Access	Donna McNamara (ESPC Distribution & Scheduling Team Lead, NESDIS/OSPO)
9:30am	**3.2c**	Suomi NPP Data Access	Kevin Berberich (Products & System Integration Coordinator, NESDIS/OSD)
9:45am	**3.2d**	NESDIS Enterprise Distribution through the PDA System	Chris Sisko (JPSS Data Operations Manager, NESDIS/OSPO)
10:00am		Discussion	
10:15am	**3.3**	**Intro to Posters, Break, and Poster Session 2**	**Tim Schmit (Advanced Satellite Products Branch, NESDIS/STAR)** **Gary McWilliams (Outreach Liaison, NESDIS/JPSS)**
11:30am - 12:45pm	**3.4**	**Data Use**	**Ingrid Guch (Director, Cooperative Research Program, NESDIS/STAR)** **Ken Carey (Director of Strategic Solutions, Earth Resources Technology, Inc.; NSC Co-Chair)**
11:30am	**3.4a**	Science Advances and Data Fusion	Ingrid Guch (Director, Cooperative Research Program, NESDIS/STAR)
11:45am	**3.4b**	GOES-R and JPSS Proving Grounds	James Gurka (Program Office Scientist, NESDIS/GOES-R)

12:00pm	**3.4c**	Satellite Cal/Val and Data Assimilation	Dr. Fuzhong Weng (Acting Chief, Satellite Meteorology and Climatology Division, NESDIS/STAR; NSC Co-Chair)
12:15pm	**3.4d**	Collaborative Decision Making: Enhancing Situational Awareness with Satellite Data Use in Real-Time to Improve Readiness, Response and Recovery	Dave Jones (President/CEO, StormCenter Communications, Inc.)
12:30pm		Discussion	
12:45pm		**Lunch / Exhibits / Posters**	
2:00pm	**3.5**	**Special Panel on Data Access and Use by International Community**	**Eric Madsen (NESDIS/IIA; NSC Co-Chair)**
		Dr. Wenjian Zhang (Director, WMO Space Programme) - Moderator	
		Osvaldo Moraes (Director, Center for Weather Forecasting and Climate Research, INPE)	
		Mike Manore (Director, Monitoring Strategies and Data Management, Meteorological Service of Canada)	
		Kathy-Ann Caesar (Chief Meteorologist, Caribbean Institute for Meteorology and Hydrology)	
3:00pm		**Break**	
3:30pm	**3.6**	**Improving the Use of Satellite Data at NOAA's Center for Satellite Applications and Research**	Al Powell (Director, NESDIS/STAR)
4:00pm	**3.7**	**User Feedback Session 2**	**Tom Renkevens (Deputy, Satellite Products and Services Division, NESDIS/OSPO)** **Dr. Linda Stathoplos (Deputy, Mission Operations Division, NESDIS/OSPO)**
5:00pm	**3.8**	**Wrap-up / End of Day 3**	
5:15pm - 6:00pm		**NCWCP Tours**	
6:30pm		**GOES-R Proving Ground Sidebar/Social (Hotel)**	
Thursday, April 11		**Applications**	
8:00am		**Weather Prediction and Satellite Data/Product Overview**	**NOAA's Weather Prediction Center**
8:25am	**4.0**	**Opening Remarks**	Eric Madsen (NSC Co-Chair) Scott Rogerson (NSC Co-Chair)
8:30am	**4.1**	**Leveraging Satellite Data at NOAA's National Centers for Environmental Prediction**	Dr. James Yoe (Chief Administrative Officer, NWS National Centers for Environmental Prediction)
9:00am - 10:15am	**4.2**	**Weather Forecasting Applications**	**Joseph Sienkiewicz (Chief, Ocean Applications Branch, NWS Ocean Prediction Center)** **Dr. Michael Folmer (Satellite Liaison at NOAA/NWS HPC/OPC/TAFB and NOAA/NESDIS SAB)**
9:00am	**4.2a**	A Perspective from the Skies: Aviation Forecasting and Satellite Applications at the AWC	Amanda Terborg (Aviation Support Branch, Aviation Weather Center)
9:15am	**4.2b**	The Importance of Satellite Products within National Weather Service Forecast Offices	Chad Gravelle (Integrated Services Division, NWS Central Region)
9:30am	**4.2c**	Pacific Region's Satellite Products, Programs and Requirements	Eric Lau (Environmental Scientific and Services Division, NWS Pacific Region)
9:45am	**4.2d**	NWS Alaska Region Satellite Program and Requirements	Carven Scott (Chief, Environmental and Scientific Services, NWS Alaska Region)

9:00am - 10:15am	**2.2**	**GOES/GOES-R**	**Dr. Steve Goodman (Program Chief Scientist, NESDIS/GOES-R; NSC Co-Chair)** **Jim Gurka (Ground Segment Project Scientist, NESDIS/GOES-R; NSC Co-Chair)**
10:15am		**Break**	
10:30am - 3:15pm		**HRIT/EMWIN/GOES DCS Workshop (ESSICS Building)**	
10:45am - 11:30am	**4.3**	**User Applications**	**Tim Schmit (Advanced Satellite Products Branch, NESDIS/STAR)** **Gary McWilliams (Outreach Liaison, NESDIS/JPSS)**
10:45am	**4.3a**	Applications of GOES-SA (South America)	Daniel Alejandro Vila (DSA/CPTEC/INPE)
11:00am	**4.3b**	The Global Impact of 10+ Years of IMAPP Software in Support of Aqua and Terra	Kathleen Strabala (UW-Madison, CIMSS)
11:15am	**4.3c**	NOAA Operational Satellite SST for Monitoring Coral Bleaching Thermal Stress: Coral Reef Watch's Satellite Decision Support System for Coral Reef Managers	Gang Liu (NESDIS/STAR)
11:30am - 12:45pm	**4.4**	**Environmental Assessment Applications**	**Kathy-Ann Caesar (Chief Meteorologist, Caribbean Institute for Meteorology and Hydrology)** **Karen Moe (Technology Leader, NASA Goddard Space Flight Center)**

11:30am	**4.4a**	National Ice Center	Pablo Clemente-Colon (Chief Scientist, U.S. National Ice Center)
11:45am	**4.4b**	From Space to Village: The SERVIR Regional Visualization and Monitoring System	Nancy Searby (Capacity Building Program Manager, NASA/HQ)
12:00pm	**4.4c**	Rapid Processing and Distribution of Satellite Disaster Data	Matthew Handy (GMSEC API Lead Engineer, NASA/GSFC)
12:15pm	**4.4d**	Practical Experience with RADARSAT-2 Regarding Rapid and Detailed SAR Data Collection for the Caribbean Satellite Disaster Pilot (CSDP) During the 2010-2012 Atlantic Hurricane Seasons	Dirk Werle (Partner/Associate, AERDE Environmental Research)
12:30pm		Discussion	
12:45pm		**Lunch / Exhibits / Posters**	
2:00pm - 3:15pm	**4.5**	**Climate Applications**	**Dr. John Bates (Principal Scientist for Remote Sensing, NESDIS/NCDC)** **Pingping Xie (Research Meteorologist, Climate Prediction Center, NCEP/NWS/NOAA)**
2:00pm	**4.5a**	Climate Data Records and Their Applications	Dr. John Bates (Principal Scientist for Remote Sensing, NESDIS/NCDC)
2:15pm	**4.5b**	Climate Prediction Center Satellite Products and Services	Wayne Higgins (Director, NWS/Climate Prediction Center; Acting Director, NWS National Centers for Environmental Prediction)
2:30pm	**4.5c**	Use of NOAA Satellite Products by the Energy Sector	Carl Schreck (Research Associate, NOAA's Cooperative Institute for Climate and Satellites)
2:45pm	**4.5d**	Climate Literacy and Outreach: Using Satellite Data for the General Public and the Private Sector - a CICS Perspective	Jenny Dissen (Director of Literacy and Outreach, NOAA's Cooperative Institute for Climate and Satellites) Stephanie Uz (Faculty Research Assistant, NOAA's Cooperative Institute for Climate and Satellites)
3:00pm		Discussion	
3:15pm		**Break**	
3:45pm	**4.6**	**Hurricanes and Heavy Precipitation**	**Dr. Steve Goodman (Senior Program Scientist, NESDIS/GOES-R; NSC Co-Chair)** **Dr. Fuzhong Weng (Acting Director, Satellite Meteorology and Climatology Division, NESDIS/STAR; NSC Co-Chair)** **Mark DeMaria (NESDIS/STAR)**
3:45pm	**4.6a**	Use of Satellite Observations to Monitor the Evolution of Sandy	Dr. Jack Beven (NWS National Hurricane Center)
4:00pm	**4.6b**	HFIP Overview	Fred Toepfer (NWS Office of Science and Technology)
4:15pm	**4.6c**	Use of Observations and Data Assimilation for Operational HWRF	Dr. Vijay Tallapragada (NWS Environmental Modeling Center)
4:30pm	**4.6d**	Heavy Precipitation	Ralph Ferraro (NESDIS/STAR)
4:45pm		Discussion	
5:00pm	**4.7**	**Wrap-up / End of Day 4**	
6:00pm		**No Host Dinner (Hotel):** **"Satellites and Science Literacy: A Powerful Opportunity"**	Dan Satterfield (Chief Meteorologist, WBOC-CBS)
9:00am - 10:15am	**2.2**	**GOES/GOES-R**	**Dr. Steve Goodman (Program Chief Scientist, NESDIS/GOES-R; NSC Co-Chair)** **Jim Gurka (Ground Segment Project Scientist, NESDIS/GOES-R; NSC Co-Chair)**
Friday, April 12		**Closing Session**	
7:00am - 8:15am		**Shuttles from Conference Hotel; approximately every 20 mins**	
8:00am		**Satellite Data and Product Analyses Overview**	**NOAA/NESDIS Satellite Analysis Branch**
8:25am	**5.0**	**Opening Remarks**	Eric Madsen (NSC Co-Chair) Scott Rogerson (NSC Co-Chair)
8:30am - 9:30am	**5.1**	**Significant Events (Wildfires, Drought, etc.)**	**Grace Swanson (Washington Volcanic Ash Advisory Center Manager, NESDIS/OSPO)** **Regis Walter (NOAA Homeland Security Program Office)**
8:30am	**5.1a**	Use of VIIRS DNB Data to Monitor Power Outages and Restorations for Significant Weather Events	Gary Jedlovec (Earth Science Office, NASA/Marshall Space Flight Center)
8:40am	**5.1b**	Wildland Fire Monitoring Using NOAA Satellites	Jamie Kibler (Meteorologist, NESDIS/OSPO Satellite Analysis Branch)
8:50am	**5.1c**	Satellite-Based Detection of Deep Convective Updrafts: From 1-Minute Observations to Climate Applications	Kristopher Bedka (Senior Research Scientist-Climate Science Branch, Science Systems & Applications, Inc.)
9:00am	**5.1d**	Development of a Multi-Sensor Volcanic Cloud Monitoring System	Michael Pavolonis (Physical Scientist, NESDIS/STAR)

9:10am		Discussion	
9:30am-10:30am	**5.2**	**Special Panel on the Importance of NOAA Satellites**	**Ken Carey (Director of Strategic Solutions, ERT, Inc.; NSC Co-Chair)** **Marlin Perkins (Direct Readout Program Manager, NESDIS/OSPO)**
		Mary Kicza (Assistant Administrator, NESDIS) - Moderator	
		Chris Vaughan (FEMA Geospatial Information Officer, Strategic Integration Group, Office of Response and Recovery)	
		Tom Fahey (Meteorology Manager, Delta Air Lines, Inc.)	
		Dr. Estela Collini (Director of Projects, National Meteorological Service and Naval Hydrographic Service of Argentina)	
		Jerad Bales (Acting Associate Director for Water, USGS)	
10:30am		**Break**	
11:00am	**5.3**	**Conference Summary / Action Items**	Vanessa Griffin (Director, NESDIS/OSPO)
11:45am	**5.4**	**Closing Remarks / End of Conference**	Mary Kicza (Assistant Administrator, NESDIS)
12:00pm		**Lunch**	
12:00pm - 2:00pm		**Shuttles to Conference Hotel; approximately every 20 mins**	
12:30pm - 2:00pm		**Take down Exhibits**	
1:00pm - 1:45pm		**NCWCP Tours**	

APPENDIX B List of Posters

Poster #	Title	Author(s)	Affiliation(s)
T-1	GOES-R Program Calibration and Validation (Cal/Val)	Robert A. Iacovazzi, Jr. (1), Edward C. Grigsby (2), Changyong Cao (3), Jaime Daniels (3), Kathleen McIntyre (2), Joe Zajic (1)	NOAA/NESDIS/GOES-R (1), NASAGSFC (2), NOAA/NESDIS/STAR (3)
T-2	A Near Real-Time Assimilation and Forecasting System for Tropical Cyclone Application of NPP/JPSS Sounding Measurements	Jun Li(1), Tim Schmit(2), Mitch Goldberg(3), Jinlong Li(1), Pei Wang(1), and John L. Beven(4)	CIMSS/UW-Madison (1), ASPB/NOAA/NESDIS/STAR (2), JPSS/NOAA/NESDIS (3), NHC/NOAA/NWS (4)
T-3	Study of textural variation of Ocean features of satellite SAR image using ANN technique	T. Karthikeya Sharma, Y. N. Mamatha	R. V. Vidyanikethan Post
T-4	Global Navigation Satellite System (GNSS) Radio Occultation (RO) Mission and Ground System Planning	Daniel M. Mamula, Peter Wilczynski, Mike Wenkel	NOAA/NESDIS/OSD
T-5	The Future of the Argos Data Collection and Location System	Scott Rogerson	NOAA/NESDIS/OSPO/SPSD/DSB
T-6	Large Wildfire Growth in the United States Influenced by Dry Slots: A Case For More Consistent and Accurate Wildland Fire Nowcasting and Forecasting Utilizing Satellite Water Vapor Imagery	Fred J. Schoeffler	U.S. Forest Service
T-7	GOES Imager IR Channel to Channel Co-Registration Correction Algorithm in the GOES Ground System	Zhenping Li(1), Michael Grotenhuis(2), Timothy J. Schmit(3), Xiangqian Wu(2), Tony Schreiner(4) , J.P. Nelson(4), Fangfang Yu(2), Hyre Bysal(5)	(1) SGT Inc, (2) ERT Inc/NOAA/NESDIS/STAR, (3) ASPD/NOAA/NESDIS/ STAR, (4) CIMSS/SSEC/ UW-Madison, (5) NOAA/NESDIS/OSPO
T-8	Incremental Regression SST Algorithm for NPP VIIRS within the ACSPO	Boris Petrenko (1), Alex Ignatov (2), Yury Kihai (1), John Stroup (3), XingMing Liang (2)	GST, Inc. (1), NOAA/NESDIS/STAR/ OSB (2), STG (3), CIRA (4)
T-9	A Rapid Cloud Mask Algorithm for Suomi NPP VIIRS Imagery EDRs	Mark Piper	Exelis Visual Information Solutions
T-10	Preparing for JPSS-1/ATMS Direct Readout Readiness	Nikisa S. George (1), Kent Anderson (1)	Northrop Grumman Electronic Systems
T-11	Radiometric Accuracy of IASI and AATSR IR Channels	Manik Bali Jonathan Mittaz	CICS/ESSIC, University of Maryland

T-12	Preparing the Direct Broadcast Community for GOES-R	Karen Friedman Dubey (1), Eric Baptiste (1), Kota Prasad (1), Hae-Yong Shin (1)	SeaSpace Corporation (1)
T-13	Cloud-Top Pressure Estimation from VIIRS using Statistically Reconstructed 13.3 micron channel	Irina Gladkova (1), James Cross (2), Andrew Heidinger (3), Paul Menzel (4), Michael Grossberg (1)	CREST (1), The Graduate Center, CUNY (2), NOAA/NESDIS/ OSAR (3), CIMSS (4)
T-14	The Development of Polar Orbiting Satellite Processing Packages in Support of International Direct Broadcast Community	Allen Huang (1), Liam Gumley (1), Kathy Strabala (1), Mitch Goldberg (2)	CIMSS/SSEC (1), NOAA Suomi NPP/JPSS Program (2)
T-15	Migrating from Metop-A/IASI to Metop-B/IASI as GSICS inter-calibration reference for Geostationary IR Imagers	Tim J. Hewison	EUMETSAT
T-16	The ingredients for sustaining success in NOAA R2O for GOES-R	Jordan Gerth	CIMSS/SSEC/Univ. of Wisconsin
T-17	VIIRS Imagery in NinJo	Katja Hungershoefer (1), David Hoese (2), William Straka III (2), Ray K. Garcia (2), Eva Schiffer (2), Kathleen Strabala (2)	Deutscher Wetterdienst (DWD), Central Development Division (1), CIMSS/SSEC (2)
T-18	The Utilization of Data from Suomi NPP at the Met Office (UK)	Simon J. Keogh, Nigel C. Atkinson, William Bell, Ian D. Brown, Brett Candy, Andy Doherty, John Eyre, Bridget George, Paul Odams, Roger Saunders, Andrew Smith	UK Met Office
T-19	Developing Climate Data Records from AMSU-B and MHS Channels	Isaac Moradi (1), Huan Meng (2), Ralph Ferraro (2)	(1) ESSIC, University of Maryland (2) NOAA
T-20	Chemical data assimilation with CMAQ and MODIS aerosol optical depth observations	Tianfeng Chai (1,2), Hyun-Cheol Kim (1,2), Pius Lee (1), Li Pan (1,2)	NOAA Air Resource Laboratory (1), Cooperative Institute for Climate and Satellites, University of Maryland (2)
T-21	Estimating Sea Surface Salinity in the Chesapeake Bay From Ocean Color Radiometry Measurements	Christopher W. Brown (1), Ronald L. Vogel (2)	NESDIS/STAR/CoRP/ SCSB (1), NESDIS/STAR/ SOCD/SMRC (2)
T-22	Sensor Calibration Inter-comparison Using the Sonoran Desert	A. Angal (1), X. Xiong (2), A. Wu (3), G. Chander (4), and T. Choic (3)	(1) SSAI, Lanham, (2) NASA GSFC, (3) Sigma Space Co., (4) USGS EROS, Sioux Falls, SD
T-23	Inter-Calibration of AMSU-A Window Channels	Wenze Yang (1) and Huan Meng (2), and Ralph Ferraro (2)	(1) ESSIC/Cooperative Institute for Climate and Satellites (CICS-MD) (2) NOAA/NESDIS

T-24	Snowfall Rate Retrieval Using Passive Microwave Measurements	Huan Meng (1), Banghua Yan (2), Ralph Ferraro (1), Cezar Kongoli (3), Limin Zhao (2)	NESDIS/STAR (1), NESDIS/OSPO (2), UMCP/ESSIC (3)
T-25	Suomi NPP (SNPP) Visible Infrared Imager Radiometer Suite (VIIRS) Active Fire Data for Fire Management and Fire Weather Applications	Evan Ellicott (1), Ivan Csiszar (2), Wilfrid Schroeder (1), Peter Roohr (3), Brad Quayle (4), Louis Giglio (1), Chris Justice (1)	1. Department of Geographical Sciences, University of Maryland(1), NOAA/NESDIS (2), National Weather Service (3), USDA Forest Service Remote Sensing Applications Center (4)
T-26	On-orbit characterization of the GOES Imager channel-to-channel co-registration and correction algorithm evaluation	Michael G. Grotenhuis (1), Xiangqian Wu (2), Zhenping Li (3), Timothy J. Schmit (4), Fangfang Yu (1), Scott Lindstrom (5), and Changyong Cao (2)	ERT, Inc. @ NOAA/NESDIS/STAR (1), NOAA/NESDIS/STAR (2), SGT, Inc. (3), NOAA/NESDIS/ASPB (4), UW–Madison/SSEC (5)
T-27	NOAA Operational Satellite SST for Monitoring Coral Bleaching Thermal Stress: Coral Reef Watch's Satellite Decision Support System for Coral Reef Managers	Gang Liu (1,3), C. Mark. Eakin (1), Jacqueline L. Rauenzahn (1,3) Jianke Li (1,3), Scott F. Heron (2,3), William J. Skirving (2,3), Alan E. Strong (1,3)	(1) NOAA/NESDIS/STAR Coral Reef Watch (1), NOAA/NESDIS/STAR Coral Reef Watch-ReefSense (2), Global Science and Technology (3)
T-28	Overview of the GOES-R Proving Ground Activities at the National Hurricane Center	Christopher Velden (1), Mark DeMaria (2), John Knaff (2), Mike Brennan (3), Jack Beven (3), Hugh Cobb (3), Jessica Schauer (3), Kevin Fuell (4), Jason Dunion (5), Michael Folmer (6)	(1) CIMSS (2) NOAA/NESDIS/RAMMB (3) NHC (4) NASA SPoRT (5) CIMAS (6) CICS
T-29	Enhanced data access and retrieval for analysis and validation of ABI and VIIRS land data and products	Kevin Gallo (1), Calli Jenkerson (2), Greg Stensaas (3), Gyanesh Chander (2), John Dwyer (3)	NOAA/NESDIS visiting scientist at USGS EROS Center (1), TSSC, USGS EROS Center (2), USGS EROS Center (3)
T-30	Assimilation of water vapor sensitive infrared brightness temperatures during a cool season high impact weather event	Jason Otkin	UW-Madison/CIMSS
T-31	Overview of the NOAA GCOM AMSR2 Algorithm Software Processor (GAASP)	Letitia Soulliard(1), Thomas King(1), Elizabeth McMichael(1), Zorana Jelenak(2), Walter Wolf(3), Paul Chang(3), and Ralph Ferraro(3)	(1) 1. I.M. Systems Group, Inc. (2) 2. UCAR (3) NOAA/NESDIS/STAR
T-32	NRL Ocean Surface Flux (NFLUX) System	Neil Van de Voorde(1), Clark Rowley(2), Jackie May(1), James Hawkins(1)	Qinetiq-North America (1), Naval Research Laboratory (2)
T-33	NOAA Ocean Color Operational Product System	B. Yan, I. Simpson, E. Rodriguez, E. Ladd, D. Zbesheski, D. Vanpelt, H. Gu, P. Keegstra, S. Ramachandran, M. Soracco, and K. Hughes	NOAA/OSPO/SPB

T-34	The GRB Simulator: A Testing System for GOES Rebroadcast (GRB) Receivers	Kevin Gibbons (1), R. Race (2), C. Miller (1), K. Barnes (1), and G. Dittberner (3)	Harris Corporation, Melbourne (1) CTSI, NASA/GSFC (2) Harris Corporation, Greenbelt (3)
T-35	Algorithm Development Library for Environmental Satellite Missions	Kerry D Grant(1), Shawn W Miller(1), Michael Jamilkowski(1)	(1) Raytheon Intelligence and Information Systems
T-36	Suomi National Polar-orbiting Partnership (NPP) Environmental Products	Kerry D Grant (1), Shawn W Miller (1), Michael Jamilkowski (1)	(1) Raytheon Intelligence and Information Systems
T-36	Suomi National Polar-orbiting Partnership (Suomi NPP) Ground System Performance	Kerry Grant (1), Craig Bergeron (1)	(1) Raytheon Intelligence and Information Systems
T-37	Monitoring of Sugarcane Fields in Brazilian Southeast Region using AVHRR/NOAA Multitemporal Images	Jurandir Zullo Junior (1), Luciana Alvim Santos Romani (2), Renata Ribeiro do Valle Gonçalves (1)	(1) University of Campinas-Campinas – São Paulo – Brasil, (2) Embrapa– Brazilian Company for Agricultural Research
T-38	AMSU-A Atmospheric Temperature TCDRs	Wenhui Wang (1) and Cheng-Zhi Zou (2)	(1) M. Systems Group (2) Center for Satellite Applications and Research, NESDIS/NOAA
T-39	Forecasting Hurricane Intensity and Severe Convective Storms Satellite Sounding Pairs	William Smith Sr. (1,2), Elisabeth Weisz (2), Nadia Smith (2), Henry Revercomb (3), Allen Larar(3)	(1) UW-Madison (2) Hampton University (3) NASA/LaRC
T-40	Integrating JPSS Algorithms with Efficiency and Ease: STAR Algorithm Integration Team (AIT)	Bigyani Das (1), Walter Wolf (2), Valerie Mikles (1),Youhua Tang (1), Marina Tsidulko (1), Shanna Sampson (1), Kristina Sprietzer (1), Yunhui Zhao (1), Weizhong Chen (1)	IMSG & NOAA/NESDIS/STAR (1) NOAA/NESDIS/STAR, (2)
T-41	Application of NOAA Coral Reef Watch's Near-Real-Time Satellite Decision Support System to Local Coral Reef Management	Jacqueline L. Rauenzahn (1,3), C. Mark. Eakin (1), Gang Liu (1,3), Jianke Li (1,3), Scott F. Heron (2,3), William J. Skirving (2,3), Alan E. Strong (1,3)	NOAA/NESDIS/STAR Coral Reef Watch (1) NOAA/NESDIS/STAR Coral Reef Watch-ReefSense, (2), Global Science and Technology (3)
T-42	What can satellite data tell about times with no satellites?	Thomas M Smith (1,2), Phillip A Arkin (2), Li Ren (2), Sam Shen(3)	(1) NOAA/STAR/SCSB (2) CICS/ESSIC/University of Maryland (3) San Diego State University
T-43	End-to-End Design, Development and Testing of GOES-R Level 1 and 2 Algorithms	Alex Werbos, Eric Steinfelt, Paul Van Rompey, Scott Zaccheo	Atmospheric and Environmental Research, Inc.
T-44	Design and Development of the GOES-R Inspect and Analyze Client Visualization Application	Jordan Bentley, Ryan Feather, Barry O'Reilly, Michael Sze and T. Scott Zaccheo	Atmospheric and Environmental Research, Inc.

T-45	Analysis of GOES Imager Infrared Radiometric Calibration Accuracy toward Long-term Climate Data Record	Fangfang Yu (1), Xiangqian Wu (2), Scott Lindstrom(3), Mat Gunshor (3), and Mitch Goldberg (2)	ERT, Inc (1), NOAA/NESDIS (2), University of Wisconsin (3)
T-46	VIIRS in AWIPS: Supporting Operational Forecasters	Kathleen Strabala(1), Scott Bachmeier(1), Dayne Broderson(2), Ray Garcia(1), Jordan Gerth(1), Liam Gumley(1), Tom Heinrichs(2), David Hoese(1), Allen Huang(1), Scott Macfarlane(2), Eva Schiffer(1)	(1) UW-Madison, SSEC/CIMSS (2) University of Alaska Fairbanks, Geographic Information Network of Alaska (GINA)
T-47	Investigating the use of Deep Convective Clouds (DCCT) to monitor on-orbit performance of the Geostationary Lightning Mapper (GLM) using Lightning Imaging Sensor (LIS) measurements	D.E. Buechler (1), H.J. Christian (1), W.J. Koshak (2), and S.J. Goodman (3)	University of Alabama Huntsville, (1) NASA Marshall Space Flight Center (2) NOAA/NESDIS/GOES-R Program Office (3)
T-48	Assessment of the Suomi NPP VIIRS Land Surface Temperature Product-Beta to Provisional Maturity	Yuling Liu (1), Yunyue Yu (2), Zhuo Wang (3), Dan Tarpley (4)	(1) CICS of University of Maryland (2) STAR/NESDIS, NOAA (3) IMSG Inc (4) Short & Associates, Camp Spring
T-49	Application of satellite data for monitoring and prediction of weather systems in Indian region.	Suman Goyal	India Meteorological Department
T-50	Inter-calibration of the SEVIRI VIS0.6 channel with MODIS Aqua, using Deep Convective Clouds as transfer targets	Sébastien C. Wagner (1), Tim Hewison (1)	(1) EUMETSAT
T-51	IR Multichannels and Lightning a contribution to GOES-R and Nowcasting - The CHUVA Project	Luiz A. T. Machado, Rachel Albrech, Wagner F. A. Lima, Renato G. Negri and Enrique Matos	Center for Weather Forecast and Climate Studies-CPTEC, National Institute for Space Research-INPE Rodovia Presidente Dutra, km 40, 12630-000, Cachoeira Paulista, São Paulo, Brazil
T-52	Application of satellite data for monitoring and prediction of weather systems in Indian region	Suman Goyal	India Meteorological Department
T-53	JOINT POLAR SATELLITE SYSTEM (JPSS) COMMON GROUND SYSTEM (CGS) MULTIMISSION SUPPORT	Michael Jamilkowski (1), Shawn W. Miller (2), Kerry Grant (2)	Raytheon Intelligence and Information Systems, Greenbelt MD (1) Raytheon Intelligence and Information Systems, Aurora CO (2)
T-54	Near-Real-Time validation of simulated GOES-R ABI radiances and derived products, using the WRF-Chem model forecast over CONUS for all 16 ABI bands.	Marek Rogal (1), Kaba Bah (1), Tom Greenwald (1), Brad Pierce (2), Allen Lenzen (1), Jim Nelson (1), Jason Otkin (1), Todd Schaack (1), Jim Davies (1), Eva Borbas (1), Justin Sieglaff (1) and Hung-Lung Huang (1)	(1) NOAA/NESDIS/ASPB (2) CIMSS/SSEC/UW-Madison

T-55	Sensitivity of CRTM coefficients towards quantitative cross-platform consistency analysis in MICROS	XingMing Liang (1), Yong Chen (1), Tiejun Chang (2), Alexander Ignatov (3)	NOAA/NESDIS & CSU/CIRA (1) NOAA/NESDIS & ERT Inc. (2) NOAA/NESDIS (3)
T-56	Near-real-time VIIRS Aerosol Imagery over CONUS for Air Quality Monitoring and Forecasting Applications	Hai Zhang(1), Shobha Kondragunta(2), Hongqing Liu(1), Pubu Ciren(1)	IMSG (1), STAR/NOAA (2)
T-57	GRAFIIR and JAFIIR – Efficient End-to-End Semi-Automated Algorithm Performance Analysis and Implementation Verification Systems	Mathew Gunshor, Hong Zhang, Eva Schiffer, Ray Garcia, and Allen Huang	CIMSS/SSEC/UW-Madison
T-58	VIIRS Imagery: Applications and Outreach at CIRA	Curtis Seaman (1), Don Hillger (2), Steve Miller (1)	CSU/CIRA (1), NOAA/NESDIS/STAR (2)
T-59	Suomi NPP VIIRS Imagery after 1 Year	Don Hillger (1), Tom Kopp (2), Steven Miller (3), Daniel Lindsey (1), Curtis Seaman (3)	(1) NOAA/NESDIS/STAR (2) The Aerospace Corporation (3) CIRA, Colorado State University
T-60	Evaluation of Decadal SSM/I-based Rainfall Products over Central US	Seyed Hamed Alemohammad, Dara Entekhabi, Dennis McLaughlin	Department of Civil and Environmental Engineering Massachusetts Institute of Technology
T-61	SUOMI NATIONAL POLAR-ORBITING PARTNERSHIP: OZONE MAPPING AND PROFILER SUITE PRODUCT CALIBRATION, VALIDATION AND PERFORMANCE	L. Flynn (1), C. Seftor (2), W. Yu (3), D. Rault ()2, I. Petropavlovskikh (4), G. Jaross (5), J. Niu (3), Z. Zhang (6), C. Long (1), Y. Hao (6), C Pan (7), E. Beach (6), X. Wu (1)	(1) NOAA NCWCP (2) SSAI (3) ERT (4) NOAA ESRL/CIRES (5) NASA GSFC (6) IMSG (7) CICSUMD
T-62	A Combined Calibration Method for GOES Imager Visible Channel	Fangfang Yu (1) and Xiangqian Wu (2)	(1) ERT, Inc, (2) NOAA/NESDIS
T-63	Ground-Based Radiation Budget and Aerosol Validation of GOES-R Products Using a NOAA Mobile SURFRAD Station	K. Lantz(1,2), J. Michalsky(1), G. Hodges(1,2), J. Wendell(1), E. Hall(1,2), D. Longnecker(1,2), J. Augustine(1)	(1) NOAA (2) Cooperative Institute for Research in Environmental Sciences, University of Colorado
T-64	The Community Satellite Processing Package (CSPP) for real-time processing of data received by direct broadcast from Suomi NPP, POES, Metop, and FY-3.	Liam Gumley, Allen Huang, Kathleen Strabala, Scott Mindock, Ray Garcia, Geoff Cureton, Graeme Martin, Nadia Smith, and Elisabeth Weisz.	CIMSS/SSEC/UW-Madison
T-65	Near-Real-Time Proxy ABI Products for GOES-R User Readiness	Tom Greenwald(1), Brad Pierce(2), Todd Schaack(1), Jason Otkin(1), Kaba Bah(1), Jim Davies(1), Justin Sieglaff(1), Allen Lenzen(1), Jim Nelson(1), Marek Rogal (1), Allen Huang(1)	CIMSS/UW-Madison(1), NOAA/NESDIS(2)
T-66	VIIRS NPP Ocean Color Products at NOAA CoastWatch - A First Look	Kent Hughes(1), Heng Gu(1,2), Phillip Keegstra(1,3), Yong Sung Kim(1,2), Sathyadev Ramachandran(1,3), Michael Soracco(1,2), Ronald Vogel(1,2)	NOAA/NESDIS/STAR/SOCD (1) SMRC (2) SP Systems (3)

T-67	Thinking inside the grid: from multi-instrument satellite data to uniform space-time information	Nadia Smith, Paul Menzel, Elisabeth Weisz, Bryan Baum	CIMSS
T-68	NOAA's Transition to Operations of S-NPP and Multi-satellite Blended Satellite Products	Kevin Berberich (1), Tom Schott (1), Stacy Bunin (2)	(1) NESDIS, (2) Noblis
T-69	Towards improved ACSPO SST imagery	Marouan Bouali (1),(2) Alexander Ignatov (1)	NOAA/NESDIS/STAR (1) CIRA (2)
T-70	A processing and validation system to collocate GOES-R and JPSS products to support combined GEO/LEO product development and validation activities using advanced physical collocation techniques.	Robert Holz, Greg Quinn, Ralph Kuehn, Fred Nagle (1) Walter Wolf, Haibing Sun (2)	(1) SSEC (2) NOAA
T-71	Application of DCC targets with GOME-2 observation for vicarious calibration of visible channels of NOAA GOES instruments	Haifeng Qian(1), Xiangqian Wu(2), Fangfang Yu(3) and Trevor Beck(2)	1: I.M. Systems Group, Inc. 2: NOAA/NESDIS/STAR 3: ERT, Inc.
T-72	Satellite Training Activities: What's new and what's being recycled? VISIT, SHyMet and WMO VLab	Bernadette Connell (1), D. Bikos (1), E. Szoke (1), S. Bachmeier (2), S. Lindstrom (2), A. Mostek (3), M. Davison (4), K. Caesar (5), V. Castro (6), L. Veeck (1)	CIRA (1), CIMSS (2) NOAA/NWS Training Division (3) NOAA/NWS/NCEP (4), CIMH (5) UCR (6)
T-73	Sending Training Videos Through GEONETCast? What Will They Think of Next!	B. Connell (1), P. Seymour (2), K. Caesar (3), and L. Veeck (1)	CIRA (1) NESDIS/OSPO/SPSD/DSB (2) CIMH (3)
T-74	McIDAS-V, visualization and data analysis for Suomi National Polar-orbiting Partnership	William Straka (1), Tommy Jasimin (1), Thomas Rink (1), Dan Lindsey (2), Don Hillger (2), Steve Miller (3), Thomas Achtor(1)	CIMSS/SSEC/UW-Maison (1) NOAA, RAMMB (2) CIRA (3)
T-75	Application and Impacts of SSMIS on NRL COAMPS data Assimilation System	Song Yang, Bill Campbell, Nancy Baker, Steve Swadley	NRL-Monterey
T-76	CSPP VIIRS SDR - Acquisition, Production, Verification and Quality Control	Scott Mindock, Geoff Cureton, Ray Garcia, Liam Gumley, Graeme Martin, Kathy Strabala	SSEC, CIMSS
T-77	Communicating Satellite Data via NOAA's Science On a Sphere: The EarthNow Project	Patrick Rowley (1), Steven Ackerman (1), Phil Arkin (2), Dan Pisut (3), Rick Kohrs (1), Margaret Mooney (1), Stephanie Schollaert Uz (2)	CIMSS/SSEC/UW-Madison (1), CICS-MD/ESSIC/ University of Maryland (2), NOAA (3)
T-78	Coastal Diurnal Warming Study through In-situ and Satellite data	Xiaofang Zhu(1), Peter Minnett(1), J. Hendee(2), C. Manfrino(3) and R. Berkelmans(4),Helen Beggs(5)	University of Miami (1), NOAA/AOML (2) Central Caribbean Marine Institute(3) Australian Institute of Marine Science (4) Bureau of Meteorology,Australia (5)

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T-80	Community Satellite Processing Package (CSPP) Cross-track Infrared Sounder (CrIS) Dual-Regression Retrievals and Applications	Elisabeth Weisz (1), William L. Smith Sr. (1), Nadia Smith (1)	CIMSS/SSEC/UW-Madison (1)
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T-85	Current and Future Direct Readout Services	Marlin Perkins	NOAA/NESDIS/OSPO/SPSD/DSB
T-86	The role of DSA/CPTEC/INPE in the dissemination of POES/GOES products	Osvaldo Moraes (1) , Nelson Ferreira (1), Daniel Vila (1,2), Luiz A. Machado (1)	Environmental Satellites and Systems Division, Center for Weather Forecasting and Climate Studies, National Space Research Institute (1) CICS/ESSIC/ University of Maryland (2)
T-87	Brazilian Contribution for the GeonetCast System	Nelson Ferreira (1), Daniel Vila (1,2), Luiz A. Machado (1)	Environmental Satellites and Systems Division, Center for Weather Forecasting and Climate Studies, National Space Research Institute (1) ICS/ESSIC/University of Maryland (2)
T-88	Ice Water Path (IWP) Retrievals and Life Cycle Stage of Convective Clouds	Ramon Braga (1), Daniel Vila (1,2)	Environmental Satellites and Systems Division, Center for Weather Forecasting and Climate Studies, National Space Research Institute (1) CICS/ESSIC/ University of Maryland (2)

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W-2	Exporting VIIRS and MODIS Products for Visualization using Polar2Grid	R.K.Garcia (1), K.I.Strabala (1), D.J.Hoese (1), E.N.Schiffer (1), W.C.Straka III (1)	CIMSS/SSEC/UW-Madison (1)
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W-4	First year of VIIRS SST in SQUAM: Evaluation and comparison with other satellite SSTs	Prasanjit Dash (1,2), Sasha Ignatov (1), Yury Kihai (1,3), John Stroup (1,4), Xingming Liang (1,2), John Sapper (1), Feng Xu (1,3)	NOAA (1) CSU/CIRA (2) GST, Inc, (3) STG, Inc, (4)
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W-10	GENERATING REAL-TIME AND CLIMATE PRODUCTS IN SUPPORT OF SOLAR ENERGY APPLICATIONS	Andrew Heidinger(1), Christine Molling(2), Willliam Straka III(2), and Michael Foster(2)	NESDIS (1) UW/CIMSS(2)
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W-29	Applications Of A Satellite-Based Objective Overshooting Convective Cloud Top Detection Product	Kristopher Bedka (1) Richard Dworak (2) Cecilia Fleeger (1) Wayne Feltz (2) Larry Carey (3)	(1) Science Systems and Applications, Inc. at NASA Langley Research Center (2) SSEC/CIMSS, UW-Madison (3) Earth System Science Center, University of Alabama in Huntsville

W-30	Improving precipitation retrieval using total lightning data: A multi-sensor and multi-platform synergy between GOES-R and GPM	Nai-Yu Wang(1) Kaushik Gopalan (1) Rachel Albrecht(2)	(1)University of Maryland ESSIC (2) Instituto Nacional de Pesquisas Espacias (INPE)
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W-32	Estimation of Surface Velocity from Geostationary Satellite Multiband Imagery	Wei Chen and Richard P. Mied	U. S. Naval Research Laboratory, Remote Sensing Division
W-33	Coastal Optical Characterization Experiment (COCE) Activities at STAR.	Michael Ondrusek (1) Eric Stengel (1)	(1) NOAA/NESDIS/STAR/SOCD, College Park, MD
W-34	Extension of the GOES-R Nighttime Cloud Optical and Microphysical Properties algorithm to other instruments.	Patrick W. Heck (1), Patrick Minnis (2), Gang Hong (3), Robert F. Arduini (3), J. Kirk Ayers (3)	CIMSS/SSEC/UW-Madison (1), Science Directorate, NASA Langley Research Center (2), Science Systems and Applications, Inc (3)
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W-37	ENVI Services Engine: Earth and Planetary Image Processing for the Cloud	Thomas Harris (1), Amanda O'Connor (1), Kevin Lausten (1), Bill Okubo (1)	(1) Exelis Visual Information Solutions
W-38	NESDIS Operational Oceanic Heat Content Products (N. Atlantic and Pacific Basins)	Eileen Maturi (1), David Donahue (2), Nick Shay (3), Jodi Brewster (3) , Jerry Guo (2)	NESDIS/STAR (1), NESDIS/OSPO (2), RSMAS,University of Miami (3)
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W-41	Satellite Observations of Mid-upper Tropospheric Methane using CrIS and its comparison with AIRS and IASI	Xiaozhen Xiong(1,2), Chris Barnet(2), Antonia Gambacorta(1,2), Eric S. Maddy(3,2), Thomas.S.King(1,2)	I.M.Systems Group (1) National Environmental Satellite, Data, and Information Service, NOAA, USA(2) Science and Technology Corporation, Langley, VA(3)

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W-46	NPP/VIIRS Long Term Instrument Monitoring System	Xiuqing (Scott) Hu(1), Fuzhong Weng(2), Tiejun Chang(1), Peter Wang(3), Ninghai Sun(3)	(1) Earth Resource Technology, Int., Laurel, MD ,USA. (2) NOAA/NESDIS/STAR, College Park, MD ,USA. (3) UMD/ESSIC/CICS, College Park, MD, USA.
W-47	Applications of ATMS/AMSU Humidity Sounders for Hurricane Study	Xiaolei Zou (1), Qi Shi (1), Zhengkun Qin (2) , Fuzhong Weng (3)	Florida State University (1) Center of Data Assimilation for Research and Application, Nanjing University of Information Science and Technology (2) Center for Satellite Applications and Research,NOAA/NESDIS (3)
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W-50	A comparison of ground-based lightning networks against satellite-based lightning measurements	Kelsey Thompson (1) Monte Bateman (2)	(1) The University of Alabama, Huntsville (2) USRA/NASA/MSFC
W-51	Assessment of S-NPP CrIS Radiometric and Spectral Accuracy using Community Radiative Transfer Model	Yong Chen (1,2), Yong Han (3), and Fuzhong Weng (3)	CSU/CIRA (1) Joint Center for Satellite Data Assimilation (2) Center for Satellite Applications and Research, NOAA/NESDIS (3).
W-52	Detection of Earth-rotation Doppler Shift from S-NPP Cross-track Infrared Sounder	Yong Chen (1,2), Yong Han (3), and Fuzhong Weng (3)	CSU/CIRA (1) Joint Center for Satellite Data Assimilation (2) Center for Satellite Applications and Research, NOAA/NESDIS (3).

W-53	GOES-R Geostationary Lightning Mapper (GLM)	Karen M. Gheno, S. Edgington	Lockheed Martin Space Systems Company
W-54	Performance validation of candidate operational sounding retrievals from Suomi-NPP	Tony Reale1, Bomin Sun2, Michael Pettey2, Frank Tilley2, Charles Brown2, Nick Nalli2, Antonia Gambacorta2, Dave Tobin3 and Chris Barnet1	(1) NOAA/STAR (2) I.M. Systems Group, Inc. (3) Space Science and Engineering Center, Madison, Wi.
W-55	Relationship between clouds,temperature and humidity in NOAA IASI retrievals	Bomin Sun (1), Tony Reale(2), Eric Maddy(3), Antonia Gambacorta(1), and Chris Barnet(2)	I.M. Systems Group, Inc. (1) NOAA/NESDIS/STAR (2) Science and Technology Corp. (3)
W-56	Improve hurricane Sandy forecasts with hyperspectral infrared sounder data	Pei Wang (1), Jun Li (1), Tim Schmit (2), Jinlong Li (1), Zhenglong Li (1), Wenguang Bai (1)	CIMSS/UW- Madison (1), NOAA/NESDIS/Center for Satellite Applications and Research/Advanced Satellite Products Team (2),
W-57	Efforts for the Readiness of the Operational NPP-CrIS SDR Products: Status Monitoring and Anomaly Handling	Xin Jin (1), Yong Han (2), Denis Tremblay (3), Likun Wang (4)	ERT Inc., (1) NOAA/STAR/SMCD/SPB (2) Science Data Processing, Inc. (3) CICS, UM-College Park (4)
W-58	Satellite-Observed Signatures Associated With Moderate to Severe Turbulence Events	Amanda M. Terborg (1), Kristopher Bedka (2), Wayne Feltz (3)	(1) Aviation Weather Center, CIMSS/SSEC/UW-Madison (2) Science Systems and Applications, Inc. NASA LaRC (3) CIMSS/SSEC/UW-Madison
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W-60	Atmospheric Motion Vectors Derived via a New Nested Tracking Algorithm Developed for the GOES-R Advanced Baseline Imager (ABI)	Jaime Daniels (1), Wayne Bresky (2), Steve Wanzong (3), Andrew Bailey (2), Chris Velden (3)	NOAA/NESDIS Center for Satellite Applications and Research (1) IMSG Inc (2) UW-Madison/CIMSS (3)
W-61	Quantifying Power Outages after Severe Storms using the S-NPP/VIIRS Day Night Band Radiances	Changyong Cao (1), Xi Shao (2), Sirish Uprety (3)	NOAA/NESDIS/STAR (1) University of Maryland (2) CIRA/CSU (3)
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W-63	Absolute Calibration of ATMS Upper Level Temperature Sounding Channels Using GPS RO Observations	Xiaolei Zou (1), Lin Lin (2), Fuzhong Weng (3)	Center of Data Assimilation for Research and Application, Nanjing University of Information and Science & Technology, Florida State University, USA (1) Joint Center for Satellite Data Assimilation, Earth Resources Technology, Inc. (2) NOAA/NESDIS (3)
W-64	Real-time Access to Weather Satellite Data and Products on Mobile Devices	David Santek, Dave Parker, Russ Dengel, Sam Batzli, Nick Bearson	Space Science & Engineering Center UW-Madison
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W-70	Continuity of VIIRS/MODIS Radiometric Measurements: Simultaneous Nadir Overpass Comparisons for Reflective Solar Bands	Slawomir Blonski (1), Changyong Cao (2), Sirish Uprety (3), and Xi Shao (1)	University of Maryland ESSIC/CICS (1) NOAA NESDIS STAR (2) Colorado State University CIRA (3)
W-71	Validation of Environmental Data Records (EDRs) from the Cross-track Infrared Microwave Sounder Suite (CrIMSS)	N. R. Nalli (1), C. D. Barnet (1), T. Reale (1), D. Tobin (2), M. Divakarla (1), M. Wilson (1), C. Tan (1), X. Xiong (1), A. Gambacorta (1), E. Maddy (1), L. Borg (2), E. Joseph (3), V. Morris (3), T. King (1), X. Liu (4), S. Kizer (4), D. Gu (5), D. Hagan (5)	(1) NOAA/NESDIS Center for Satellite Applications and Research (2) CIMSS/UW-Madison (3) NCAS, Howard University (4) NASA LaRC (5) Northup Grumman Aerospace Systems

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W-74	Atmospheric Motion Vectors Derived via a New Nested Tracking Algorithm Developed for the GOES-R Advanced Baseline Imager (ABI)	Jaime Daniels (1), Wayne Bresky (2), Steven Wanzong (3), Andrew Bailey (2), Chris Velden (3)	(1) NOAA/NESDIS/OAR, (2) IMSG, (3) CIMSS/SSEC
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W-77	Design and Implementation of a Next-Generation Ground System for Jason/OSTM Mission	Abhishek Agarwal (1), Shahram Tehranian (1), Subir Vasanth (1), Ye Men (1), Inderjeet Saggu (1), Mark Sears (1), Desmond Smith (1), Angelo Wade (2)	(1) Avaya Government Solution, (2) NOAA/NESDIS/OSD/GSD
W-78	Sustaining Ground System Operations for GOES-NOP Mission with GOES Enterprise Managed System (GEMS)	Shahram Tehranian (1), Abhishek Agarwal (1), Subir Vasanth (1), Keith McKenzie (2)	(1) Avaya Government Solution, (2) NOAA/NESDIS/OSD
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W-80	Training in the NOAA Satellite Proving Ground – Getting Users Ready for Rapid Changes	LeRoy Spayd (1), Anthony Mostek (1), Brian Motta (1), James Gurka (2), Mark DeMaria (2), Tim Schmit (2)	(1) NOAA/NWS/OCWWS/Training Division, (2) NOAA Satellite and Information Service
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W-82	SPoRT Participation in the GOES-R and JPSS Proving Grounds	Gary Jedlovec (1), Kevin Fuell (2), Matthew Smith (3)	(1) NASA/MSFC/Earth Science Office, (2) Earth System Science Center UAHuntsville, (3) Information Technology Science Center UAHuntsville
W-83	GOES-R Communication Subsystem	H. Silverman and T. Milbourne	Lockheed Martin Space Systems Company
W-84	On-orbit Testing of MetOp-B AVHRR	Tiejun Chang (1,2), Xingqian Wu (1), Fuzhong Weng (1), Wei Guo (1,3), Felix Kogan (1), Xingming Liang (1,4), Alexander Ignatov (1)	(1) NOAA/NESDIS/STAR, (2) ERT, Inc., (3) I.M. Systems Group, (4) CIRA
W-85	Operational Ozone Products Available from NOAA/NESDIS	Vaishali Kapoor	NOAA/NESDIS
W-86	NOAA/NESDIS SOUNDING SYSTEMS DATA PRODUCTS AND SERVICES	Awdhesh Sharma	NOAA/NESDIS/OSPO/SPSD/ SPB
W-87	A Dynamic Enhancement Background Reduction Algorithm (DEBRA) Applicable to GOES-R ABI	Steven D. Miller	CSU/CIRA
W-88	Developing a compositing algorithm for retrieval of green vegetation fraction from the Suomi NPP satellite	Zhangyan Jiang, Junchang Ju, Marco Vargas, Ivan Csiszar	NOAA/NESDIS /STAR

APPENDIX C List of Exhibitors

NOAA/NWS
NOAA/NESDIS
NOAA/NESDIS/STAR
ERT, Inc.
University of Wisconsin Space Science and Engineering Center
Vaisala
Orbital Systems, LTD (Silver Sponsor)
Stevens Water Monitoring Systems, Inc.
Sutron Corporation
SeaSpace Corporation
EMC Corporation
Global Imaging, Inc.
Lockheed Martin Space Systems Company
ASRC Federal Space & Defense
Hydrological Services USA
Design Analysis Associates
NOAA/NESDIS/OSPO/GEONETCast Americas
NOAA/NESDIS/OSPO/HRIT/EMWIN
Microcom Design
Harris Corporation
Kongsberg Spacetec
IM Systems Group, Inc.
Avaya Government Solutions
Global Science and Technologies (GST)
Morcom (Sponsor)

APPENDIX D NSC-2013 Recommendations/Questions/Suggestions

This appendix lists the recommendations and unanswered questions gathered at the conference. It contains the responses obtained by the publication date of the Final Report. A document containing current Action Item responses will be available on the web page and will contain additional responses as they become available. For reference purposes, each recommendation and suggestion was given an identifier i.e. "NSC 2013-00".

NSC 2013-01 Can NOAA provide regular virtual meetings with the region to improve training for the new satellite data?

Response: Yes, Steve Goodman presented a virtual lecture on GOES-R at the WMO T-NOTE Nowcasting Training for Argentina on August 6, 2013.

NSC 2013-02 Can NOAA provide information and training on using and maintaining the new satellite received terminals?

Response: Response pending.

NSC 2013-03 Can NOAA encourage and provide more participation of Vlab, Comet, Regional Focus Group and Centers-of Excellance (CoEs) in RA III?

Response: Yes, GOES-R has increased support for COMET and continues RA III content development through Bernie Connell of CIRA.

NSC 2013-04 What will be the GOES-R position after launch and what will be the impact on the user timetable of preparation?

Response: The current fly out schedule calls for GOES-R launching into the west postion. That is the current plan because GOES-15 went into operation sooner. Preparation will be the same for users of the east and west satellites. NOAA will decide the operation of GOES-R based on the health of the constealltion and NWS requirements following post-launch testing.

NSC 2013-05 What are the possibilities of having GOES-R in an easterly position? GOES-R is more important in easterly position considerating: more population and users, severe weather events, etc.

Response: The current fly out schedule calls for GOES-R launching into the west position because GOES-15 went into operation sooner. For the longer lead time desired in Numerical Weather Prediction (NWP) models, the models need more upstream data. Having GOES-R upstream will feed into the models and allow to propogate east. A final decision will be made based on health of constellation. Current plan is to go West but it could change. We will see when it gets up there.

NSC 2013-06 Will Geonetcast be an operational system that users can base their operations on?

Response: Response pending.

NSC 2013-07	**Will users have pre-process software to convert raw data to Level-1b? If so, will this software be available for free?**

Response: Response pending.

NSC 2013-08	**Can NOAA, in coordination with RA III, create a Satellite Application Partners (SAP) team to address the following applications: lightning, winds, sounding, cloud classification, precipitation estimation etc.?**

Response: Yes, increased coordination with RA III is possible and will need to be pursued virtually.

NSC 2013-09	**Can NOAA, in coordination with RA III, create a Satellite Validation Partners (SVP) team to address product validation?**

Response: Yes, some of this is already planned in cooperation with Brazil and Argentina research laboratories and universities.

NSC 2013-10	**Can NOAA, in coordination with RA III, create a Satellite Archive and Dissemination Partners (SADP) team to mirror data access and historical data dissemination for the users mainly interested in products?**

Response: Response Pending.

NSC 2013-11	**Can NOAA start the concentrated effort of acquisition, processing and training in the use of S-NPP with Region III?**

Response: Response Pending.

NSC 2013-12	**Can NOAA provide a better definition (use and planned use) of the Geonetcast system?**

Response: Response Pending.

NSC 2013-13	**NOAA is asked to advertise (make more readily available and more public) the decisions about main data format(s), products, as well as the analysis and visualization systems. Can this information or some part be made available in Spanish?**

Response: Response Pending.

NSC 2013-14	**In oder for RA III to make the transition and use of the new systems more effective, can NOAA provide training in the basic Systems to meet the RA III opertional needs?**

Response: Response Pending.

NSC 2013-15	**Can NOAA stimulate a new group at the U.S. NWS South American desk dedicated to work with the new generation satellites?**

Response: At the NCEP facility located in College Park, MD. NOAA already has a satellite liaison, Michael Folmer, supporting GOES-R and JPSS Proving Ground and training activities.

NSC 2013-16 Can NOAA assist in improving communications between users and data providers? NOAA is asked to encourage and provide an open Line for information exchange between users and data producers.

Response: See GOER-R.gov website.

NSC 2013-17 Can NOAA make available the JPSS products via website for user prioritization?

Response: Response pending.

NSC 2013-18 There are algorithms that NOAA cannot test on the user's current operational system(s). Is there a way we can test these algorithms?

Response: There are opportunities depending on how the scenarios are presented; there are lots of opportunities to verify.

NSC 2013-19 How do you see the future of your in situ based lightning network and how can it be best used together with the GLM?

Response: Ground-based commercial networks are viewed as complementary to the satellite total lightning measurement. An effort is underway in NESDIS and NWS to develop applications and training for total lightning using the information from ground based networks and GLM together. To increase forecast accuracy, you need total lightning and to get total lightning over the ocean you need GLM.

NSC 2013-20 With the understanding that when GOES-R is first launched, it will be put in the West position. What do you have to say about the benefits to the folks who aren't directly underneath the ABI...folks on the East Coast?

Response: That is the current plan because GOES-15 went into operation sooner. The longer lead time desired in Numerical Weather Prediction (NWP) models, the models need more upstream data. Having GOES-R upstream will feed into the models and allow propagation east. A final decision will be made based on health of constellation. Current plan is to go West but it could change. We will see when it gets up there.

NSC 2013-21 We know there are Lightning mapping limitations, are you aware the capability of lightning mapper on Canadian PCW?

Response: Regarding PCW, no plans right now for any kind of lightning detection. GLM can see up to 52 degrees. One thing that could be useful when we have algorithms to combine ABI channels and ground-based lightning networks and available radar...some proxies with precip type and lightning. PCW is Canadian satellite which could put instruments in a high eccentricity orbit to get a more constant view of the poles.

NSC 2013-22 **What is the difference between the current CLASS capabilities and the new Enterprise Archival Storage architecture?**

Response: Response pending.

NSC 2013-23 **When will the new Enterprise Archival Storage architecture be available?**

Response: Response pending.

NSC 2013-24 **How will users, external to NOAA, use the Product Distribution and Access (PDA) system?**

Response: Response pending.

NSC 2013-25 **How soon will products be available in the PDA after data acquisition? Will NOAA provide a schedule of product availablity? If so, how will the customers be notified?**

Response: Response pending.

NSC 2013-26 **Training and data access are major issues for members of the satellite community. In some cases, the internet is used for general distribution. The system has proven unreliable in critical weather situations. Does NOAA plan to provide a reliable and cost efficient method to obtain their products and data? How does NOAA plan to support/improve the international community's user readiness for GOES-R and JPSS?**

Response: GOES-R and JPSS support funding of COMET modules and training (Delete-VISIT since it is not funded in FY14- GOES-R is increasing funding to COMET in FY14). COMET has an active international training program funded through NOAA International Affairs, Canada, and EUMETSAT. COMET's MetEd Online Website has over 265,000 users with over 90,000 international users.

NSC 2013-27 **What is the format(s) of the data from the NDE? Will the user need to convert the data before use?**

Response: Response pending.

NSC 2013-28 **How does NOAA plan to manage large data sets (i.e., compression, transmission, distribution, etc.)?**

Response: Response pending.

NSC 2013-29 **Has there been any dialog with the international community of the effect of the "US presidential Broadband Initiative?"**

Response: Response pending.

NSC 2013-30 **How can direct readout users and vendors get involved in the frequency reallocations discussion groups?**

Response: Response pending.

NSC 2013-31 **Regarding the continuation of LEO and GEO with CSPP, having a common algorithm to apply to other satellites is important. Does NOAA plan to include sensors from other international polar-orbiting satellites (i.e., ESA, Chinese, Russian, JAXA, etc,)? If so, what is the timeframe?**

Response: Response pending.

NSC 2013-32 **Recommendation to include a broad segment of users, especially weather broadcasters, in satellite Proving Ground activities at the earliest possible time.**

Response: Through coordination with AMS and broadcaster Dan Satterfield, a member of the GOES-R Independent Advisory Committee, broadcasters will participate in the satellite PG activities at the HWT spring experiment in Norman OK in 2014.

APPENDIX E 2013 NOAA Satellite Conference Attendance Summary

Last Name:	First Name:	Organization/Company:
Agarwal	Abhishek	Avaya Gov/NOAA-NESDIS
Alfaro	Rosario	UCAR/NOAA
Alfheim	**Arne**	**Environment Canada**
Allegretti	Phil	Vaisala Oyj
Allegrino	Americo	I.M. Systems Group, Inc
Allen	Robert	Northrop Grumman Corporation (Air Force Weather Agency)
Alvarez	David	Colombian Air Force
Ambrose	Stephen	NOAA, NESDIS, OSPO, SPSD
Anne	venkata	NESDIS/OSPO/SPSD/SGTinc
Augenbaum	Jeffrey	NOAA/NESDIS, SGT/NOAA/NESDIS
Backus	Beau	Aerospace Corporation, NOAA/NESDIS
Bah	Kaba	UW-Madison (CIMSS)
Bajpai	Shyam	NOAA/NESDIS/OSD
Baker	Rich	Solers, Inc.
Bali	Manik	ESSIC/UMD
Barr	Debora	Office of Satellite Products and Operations
Beach	Eric	I. M. Systems Group, Inc
Bedka	Kristopher	Science Systems and Applications, Inc. NASA Langley Research Center
Benner	David	NOAA/NESDIS/OSPO
Bentley	Jordan	Atmospheric Environmental Research
Berberich	Kevin	NOAA/NESDIS/OSD
Berbery	Hugo	ESSIC/CICS, University of Maryland
Bethune	Brandon	NOAA/IDS
Betsill	Brett	Microcom
Beven	John L.	National Hurricane Center
Bierma	Melissa	Air Force/50 OG/Det 1
Blazek	Thomas	DoD (OSD AT&L)
Bodden	Lee	NESDIS/OSPO/SPSD - SSAI Contractor
Boland	Ed	Larry Roelefs attended in Ed's place
Boori	**Mukesh**	**National Research Council (NRC) Visiting Scientist NOAA/NESDIS/STAR/ Satellite Climate Studies Branch and CICS/ESSIC**
Bouali	Marouan	NOAA/CIRA
Boukabara	Sid	NOAA/NESDIS
Bove	Stephen	SSAI (Science Systems and Applications)
Bowman	Arthur	Raytheon / Navy
Bradley	**David**	**Environment Canada**
Breen	Kelly	NESDIS/OSPO, ASRC Federal Space & Defense
Brigham	Thomas	NOAA / IDS
Brooks	Barbara	DOC/NOAA/NESDIS
Brown	Christopher	NOAA/NESDIS/STAR/CoRP
Buchner	Chris	Sutron
Buckmon	Denise	NOAA, NESDIS, OSPO, SPSD, DSB
Bunin	Stacy	NOAA/NESDIS,Noblis
Burns	**Sean**	**EUMETSAT**
Byrnes	Shaun	US Government Accountability Office

Bysal	Hyre	NOAA/NESDIS/OSPO
Caesar	**Kathy-Ann**	**Caribbean Institute for Meteorology and Hydrology**
Callis	Susan	NWS/STC
Campbell	William	GDIT/NOAA
Carey	Kenneth	ERT, Inc. (NOAA)
Carr	James	Carr Astronautics
Case	Dave	NGA
Cawley	**Dave**	**Remote Imaging Group**
Chai	Tianfeng	NOAA/OAR/ARL, CICS-University of Maryland, College Park, MD, USA
Chang	Tiejun	ERT Inc
Chen	Wei	Remote Sensing Division, NRL, Washington, DC 20375, USA
Chen	Weizhong	IMSG Inc. @ NOAA/NESDIS/STAR
Chen	Yong	CIRA-Colorado State University, Fort Collins, Colorado, USA
Cheney	**Karl**	**Meteorological Service of Canada Environment Canada**
Cheng	Chieh-san	Global Science & Technology, Inc.
Cheng	Zhaohui	NESDIS/OSPO/SPSD/SPB
Chettri	Samir	Global Science and Technology (NESDIS/NOAA/STAR)
Choi	Heesu	Air Resources Laboratory, NOAA
Choy	Alan	The Aerospace Corporation
Christel	Lynne	US Navy, Riverside Research
Chung	**Kwok**	**Environment Canada**
Cikanek	Harry	NOAA NESDIS/JPSS
Clemente-Colon	Pablo	NOAA/NESDIS/NIC
Clouatre	Lyndsey	OSD, Innovim Defense Services
Coakley	Monica	MIT - Lincoln Laboratory
Collini	**Estela**	**Servicio de Hidrografia Naval/ Servicio Meteorologico Nacional**
Connell	Bernadette	CIRA-Colorado State University
Conner	Mark	Atmospheric & Environmental Research, Inc. Air Force Weather Agency
Conrad	Tony	NOAA/NESDIS/OSPO/SGT, Inc.
Cox	Ross	NOAA-OSD/AS&D
Cruz Lopez	**Maria Isabel**	**National Commission for Knowledge and Use of Biodiversity CONABIO**
Csiszar	Ivan	NOAA/NESDIS Center for Satellite Applications and Research
Cureton	**Geoff**	**CIMSS/SSEC/University of Wisconsin – Madison Wisconsin, U.S.A**
Dahlia	John	Global Science & Technology, Inc.
Daniel	Philip	Air Force/50 OG/Det 1
Daniels	Jaime	NOAA/NESDIS
Das	Bigyani	NOAA/NESDIS/STAR/IMSG
Dash	Prasanjit	NOAA/ NESDIS/CIRA-Colorado State Univ
Daughtrey	Chris	NOAA NESDIS/Omitron
Davenport	Clay	SGT (NOAA/NESDIS)
Denig	William	NOAA National Geophysical Data Center
Dittberner	Gerald	Harris Corporation NOAA - GOES-R Ground Segment
Divakarla	Murty	IMSG, Inc. Rockville, MD
Donahue	David	NOAA/NESDIS/OSPO/SPSD/SPB
Dong	Jason	NESDIS/OSPO/SPSD/DSB
Donoho	Natalia	NOAA
Downes	Michael	OSPO/MOD

Dubey	Karen	SeaSpace Corporation
Eagan	Steve	Microcom
Ellicott	Evan	Department of Geographical Sciences, University of Maryland
Espedido	Ronalynn	US GAO
Evans	John	Global Science & Technology, Inc. (GST)
Fahey	Tom	Delta Air Lines
Fallek	Hank	Sutron Corporation
Feeley	Janna	The Aerospace Corporation, JPSS Ground DPA
Feldmann	Jeffrey	EMC Corporation
Feltz	Wayne	SSEC/CIMSS UW-Madison
Fernández	**Luis**	**National Institute of Meteorology and Hydrology (INAMEH)**
Ferraro	Ralph	NOAA/NESDIS/STAR
Ferrell	Dan	Sutron
Flynn	Lawrence	NOAA
Folmer	Michael	University of Maryland, ESSIC, CICS
Fontaine	Kathleen	NASA
Foti	Gregg	ESSIC, University of Maryland in collaboration with NODC, NOAA.
Furgerson	John	NESDIS/JPSSO
Gaches	Lauren	NESDIS, Communications for GOES-R and JPSS satellite programs.
Gallo	Kevin	NOAA/NESDIS
Gambacorta	Antonia	NOAA/NESDIS/STAR IMSG
Gao	Jingsi	SSAI NOAA(DOD)
Garcia	Ray	UW Space Science & Engineering Center
George	Nikisa	Northrop Grumman
Gerstman	Ari	UCAR
Gerth	Jordan	CIMSS/SSEC University of Wisconsin-Madison
Gladkova	Irina	City College of New York, NOAA/CREST
Glassberg	Robert	NESDIS/OSPO/SPSD/SGT
Goldberg	Mitch	NOAA NESDIS/JPSS
Goodman	Steven	NOAA/NESDIS
Graham	Tyna	NOAA/NESDIS/OSPO
Grant	Kerry	Raytheon, NASA
Gravelle	Chad	NWS Operations Proving Ground / UW-CIMSS
Green	Joseph	NOAA
Green	Russ	Northern Video Graphics, Inc.
Greenwald	Tom	University of Wisconsin, CIMSS
Griffin	Sean	National Geospatial-Intelligence Agency
Griffin	Vanessa	NESDIS/NOAA/OSPO
Grigsby	Edward	NASA
Grimes	**David**	**Environment Canada and President of the WMO**
Gross	Marilyn	SGT/NOAA
Grotenhuis	Michael	NOAA/STAR/ERT Inc.
Guberek	Michael	Global Imaging, Inc.
Guch	Ingrid	NOAA/NESDIS/STAR
Gumley	Liam	CIMSS/SSEC University of Wisconsin-Madison
Gunshor	Mathew	CIMSS / UW-Madison
Gurka	James	NOAA/ NESDIS/ GOES-R Program
Guthrie	Jason	AccuWeather, Inc

Haar	Audrey	NASA Goddard Space Flight Center/Telophase Corporation
Han	Jing	NOAA/NESDIS/OSPO
Handy	Matthew	NASA
Hansen	Dennis	Harris Corp. GCSD NOAA GOES-R Ground System Project Office
Harris	Andy	CICS-UMD
Harris	Thomas	Exelis Visual Information Solutions
Hart	Caitlin	Exelis, inc
Hartzell	David	NOAA N-Wave, NOAA contractor at Boulder, CO with CSG, Inc.
Hawkins	Jamison	Lockheed Martin
Heggli	Anne	Hydrological Services America
Heidinger	Andrew	NOAA/NESDIS/STAR/CoRP/ASPB
Heil	James	NOAA National Weather Service
Helfrich	Sean	NOAA/NESDIS/OSPO National Ice Center
Hellstern	Brandt	Design Analysis Associates
Hewison	**Tim**	**EUMETSAT + GSICS**
Hodge	**Bryan**	**Australian Bureau of Meteorology**
Holz	Robert	UW SSEC
Howell	Kelly	NESDIS (Contracting Agency: SGT, Inc.)
Huang	Jingfeng	NOAA/NESDIS/STAR/CICS/ESSIC University of Maryland
Hughes	Brian	Unisys Corporation
Hungershoefer	**Katja**	**Deutscher Wetterdienst, Germany**
Iacovazzi Jr.	Robert	Riverside Technology, Inc. supporting NESDIS/GOES-R Program
Islam	Tanvir	NOAA/NESDIS/STAR
Jackson	Nina	NOAA/NESDIS Chief of Staff Office (HDQ)
Jairam	Laura	Exelis, Inc. Geospatial Systems
Jamilkowski	Michael	Raytheon IIS (Under contract to NASA for JPSS)
Jankot	Josh	NESDIS/Satellite Analysis Branch
Jeffries	Alan	Jeffries Technology Solutions, Inc.
Jin	Xin	NOAA/STAR/SMCD/SPB and ERT, Inc.
Johnson	Melissa	Innovim Defense Services
Johnson	Mike	Office of Science and Technology (NWS)
Jones	Dave	StormCenter Communications, Inc.
Kalb	Mike	NOAA/NESDIS/STAR
Kapoor	Vaishali	NOAA/NESDIS/OSPO
Karlson	Daniel	NOAA/NESDIS/GOES-R Program
Kelley	Judy	ATK
Keogh	**Simon**	**Met Office**
Kianicka	**Jan**	**GeoModel Solar s.r.o.**
Kibler	Jamie	NESDIS/OSPO/SPSD/Satellite Analysis Branch
Kicza	Mary	NOAA/NESDIS
Kim	Hyun	Air Resources Laboratory/NOAA
Kim	Wonkook	NOAA/NESDIS/STAR/SMCD University of Maryland
Kondragunta	Shobha	NOAA
Koner	Prabhat	ESSIC, UMD
Kong	Kwan-yin	Weather Prediction Center
Korose	Marsha	TASC, Inc
Kosaka	**Yuki**	**Japan Meteorological Agency**
Kujawa	Brian	OSD ESPDS PMO for IDS

Kuligowski	Robert	NOAA/NESDIS/Center for Satellite Applications and Research
Kumar	Vadlamani	Climate Prediction Center and WYLE, Inc.
Kusselson	Sheldon	NOAA/NESDIS/OSPO/SPSD/Satellite Analysis Branch
Lan	George	NOAA NSOF/STG Inc
Lantz	Kathleen	NOAA/ESRL, CU CIRES (Cooperative Institute for Environmental Science)
Lau	Eric	NOAA - National Weather Service
Laufer	Michael	NOAA/NESDIS/OSD/GSD Columbus Technologies & Service Inc.
Lee	Pius	Air Resources Lab / NOAA
Leiling	Joshua	GAO
Leslie	John	NOAA/Office of Public and Constituent Affairs
Leuliette	Eric	NOAA/Laboratory for Satellite Altimetry
Levitski	Stephen	NASA GSFC
Lewis	Jennifer	NOAA- NWS- International Activities Office
Li	Aiwu	IMSG Inc.
Li	Jian	NESDIS/STAR/SMCD George Mason University
Li	Jianke	Global Science & Technology, Inc. Coral Reef Watch, NOAA
Li	Juan	Florida State University
Li	Jun	University of Wisconsin-Madison
Li	Xiaofan	NOAA NESDIS STAR
Li	Zhenping	SGT Inc, NOAA/NESDIS/OSPO
Liang	Ding	IMSG
Liang	Ellen	NOAA/NESDIS/Center for Satellite Applications and Research
Lillibridge	John	NOAA/NESDIS/STAR Laboratory for Satellite Altimetry
Lin	Haidao	CIRA/CSU and NOAA/ESRL/GSD
Lin	Lin	NESDIS/STAR/SMCD/SCDAB
Lipscy	Sarah	Ball Aerospace & Technologies Corp. NASA
Liu	Gang	NOAA/NESDIS Coral Reef Watch, Global Science and Technology, Inc.
Liu	Jicheng	NOAA/NESDIS/STAR, George Mason University
Liu	Yuling	CICS/University of Maryland, College Park
Loesch	**Martin**	**Astrium Services GmbH**
Lopes	**Edwina**	**Environment Canada, Meteorological Service of Canada Weather and Environmental Operations - Ontario**
Lubar	David G	NASA/Raytheon Company
Ludlum	Kevin	NOAA/NESDIS/OSPO
Ma	Liqun	NOAA/NESIDIS/OSPO/SPB
Ma	Zaizhong	ESSIC/UMD
MacKenzie	Wayne	NOAA/NESDIS/STAR Science & Technology Corp.
Madani	Houria	Carr Astronautics
Madsen	Eric	NOAA/NESDIS/IIA
Maeland	**Ole Jorgen**	**Kongsberg Spacetec AS**
Mainelli	Michelle	NWS NCEP Central Operations
Malay	Jonathan	Lockheed Martin Corp.
Manore	**Michael**	**Environment Canada**
Marley	Stephen	NOAA/NESDIS Harris Corporation
Martin	Graeme	University of Wisconsin - SSEC
Maturi	Eileen	NOAA/NESDIS/STAR/SOCD/MECB
McCoy	Steve	Stevens Water
McHenry	Ronald	Stinger Ghaffarian Technologies, Inc.
McMichael	Elizabeth	IMSG at NOAA/NESDIS/STAR/SMCD

McMillan	Patrick	GSA Lockheed Martin
McNamara	Donna	NESDIS/OSPO/MOD Systems Branch
McWilliams	Gary	JPSS Program Office/ARL
Medina	Martin	NOAA NESDIS-IIA
Mehra	Avichal	NCEP/NWS
Meng	Huan	NOAA/NESDIS/STAR
Meny	Frederick	Department of Commerce, OIG
Merckle	Nancy	NOAA/NESDIS/OSPO
Metcalf	Kay	NESDIS/OSPO/SPSD/DSB
Metcalf	Laura	NOAA/NESDIS/OSPO
Meyers	Patrick	CICS-MD/ESSIC
Michalsky	Joseph	NOAA, Earth System Research Laboratory
Middlebusher	Mark	QinetiQ North America Contractor to Naval Oceanographic Office
Miglin	Matt	NESDIS/OSPO/SPSD/DSB
Mikles	Valerie	NOAA/NESDIS/STAR/IMSG
Miller	Shawn	Raytheon
Miller	Steven	CIRA - Colorado State University
Min	**Min**	**National Satellite Meteorological Center (NSMC), China Meteorological Administration (CMA) Joint Center for Earth Systems Technology, University of Maryland Baltimore County, Department of Physics**
Mindock	Scott	SSEC
Mischel	Brian	IM Systems Group Inc.
Mitchell	Dennis (Mitch)	Alion Science and Technology
Mittaz	Jonathan	CICS/ESSIC University of Maryland
Mix	Marilyn	Omitron Inc.
Modlin	Norman	Aerospace Corporation (NRO/SED)
Moe	Karen	NASA GSFC Earth Science Technology Office
Mooney	Margaret	CIMSS University of Wisconsin-Madison
Moradi	Issac	ESSIC University of Maryland,
Moraes	**Osvaldo**	**Center for Weather Forecast and Climatic Studies**
Moren	Chirs	Global Science & Technology, Inc.
Morgenstern	Robert	NASA
Mozer	Kathryn	ASRC Federal Space and Defense (AS&D)
Mulholland	Mark	NOAA NESDIS AA
Munoz	Gustavo Berrio	Empresas Publicas of Medellin E.S.P.
Myrvoll	**Lotte Kroer**	**Kongsberg Spacetec**
Nalli	Nicholas	IMSG, Inc. NOAA/NESDIS/STAR
Neale	**Henry**	**Remote Imaging Group**
Nemiroff	Russell	NOAA/NESDIS/OSD/GSD Innovim Defense Services
Ngan	Fong	NOAA/Air Resources Laboratory and CICS University of Maryland
Ngo	David	NESDIS/OSPO/MOD/ITSB
Nguyen	thanh-truc	SSAI
Niemann	Ron	Solers, Inc.
Novak	David	Weather Prediction Center
O'Connors	Christopher	NOAA/NESDIS/OSPO/SPSD
Ogburn	Stephanie	ClimateWire/E&E Publishing
Ojeda	Manuel	Morcom International, Inc.
Olaisen	Romy	Harris Corporation
Padar	Stephen	Stephen C. Padar, MDPA

Pan	chunhui	University of Maryland
Pan	Li	NOAA/OAR/ARL
Paquette	John	NOAA/NESDIS/OSPO
Park	Jun	NOAA/NESDIS/STAR Univ. of Maryland/ESSIC
Pavolonis	Michael	NOAA/NESDIS/STAR
Perkins	Marlin	NESDIS/OSPO
Pejsa	Jessica	NESDIS/OSPO/SPSD
Petersen	Ralph	CIMSS/SSEC University of Wisconsin-Madison
Petheram	John	Lockheed Martin Space Systems Company
Petrenko	Boris	NOAA/NESDIS/STAR
Pickering	Rick	NASA/Goddard Space Flight Center
Pierce	R. Bradley	NOAA/NESDIS/STAR/ASPB
Piper	Mark	Exelis Visual Information Solutions
Pirone	Maria	Harris Corporation (NOAA/NESDIS)
Pitter	Shanna	NOAA /OAR/ Office of Policy, Planning, and Evaluation
Porter	Jonathan	AccuWeather, Inc
Posthumus	Dale	NESDIS/NOS/NWS/OCIO Systems Integrations & Development, Inc.
Potash	Robert	NOAA/NESDIS/OSDPD/OSPO/SSAI
Pototski	Anton	ASRC Federal
Powell	Alfred	NOAA/NESDIS/STAR
Preble	Duane	Microcom Design
Pryor	Kenneth	NOAA/NESDIS/STAR
Qi	Hongming	NESDIS/OSPO/SPSD
Qiu	Shuang	NOAA/NESDIS/OSPO
Ramachandran	Sathyadev	NOAA/NESDIS/STAR/SOCD/CoastWatch SP Systems Inc.
Ramierez Benjumea	**Oscar**	**Corporación Autónoma regional del Valle del Cauca CVC- Colombia**
Rauenzahn	Jacqueline	Contracted to NOAA Coral Reef Watch by Global Science and Technology (GST)
Raymond	Meredith	Government Accountability Office
Redder	Christopher	SSAI - OSPO/NESDIS
Reed	Bonnie	JPSS/DPA Science and Technology Corporation
Reeves	Letecia	NOAA/NESDIS/OSPO/SPSD
Renkevens	Tom	NOAA / NESDIS / OSPO
Repoff	Krystal	NESDIS/OSPO/SGT, Inc.
Reynolds	Dick	GOES-R Science Office, M2 Strategy
Robaidek	Jerrold	University of Wisconsin SSEC
Robinson	Diane	NOAA/NESDIS/OSPO
Rodriguez	**Cristian**	**Morcom International Inc,**
Rodriguez	Santos	NOAA National Weather Service
Roelofs	Larry	GST
Rogal	Marek	UW-Madison (CIMSS/AOS)
Rogerson	Scott	NOAA/NESDIS/OSPO/SPSD/DSB
Rokke	Laurie	DOC/NOAA/NESDIS/STAR
Ross	Steven	Weatherscience.net
Rowley	Patrick	CIMSS/SSEC, UW-Madison
Roy	Priyanka	STAR / IMSG
Saha	Korak	NOAA/NESDIS/STAR
Salerno	Lecia	NOAA/NESDIS/SOCD

Samii	Mina	ERT, Inc
Sampson	Shanna	IMSG/NOAA/NESDIS/STAR
Sandersfeld	Michelle	National Geospatial-Intelligence Agency
Sandusky	Frederick	Raytheon
Sanjume	Elia	NGA/SOW, MCR Federal LLC
Sanks	Julius	NOAA/NESDIS Riverside Technology, inc.
Santek	David	CIMSS University of Wisconsin-Madison
Sapper	John	NOAA/NESDIS/OSPO/SPSD/SPB
Sato	**Fabio**	**Instituto Tecnologico SIMEPAR - Brazil**
Saunders	Leesha	NESDIS/COS
Scarino	Benjamin	Science Systems and Applications, Inc.
Schiffer	Eva	Madison/CIMSS/SSEC
Schmit	Tim	NOAA NESDIS STAR
Schoeffler	Fred	US Forest Service - Coconino N.F. - Flagstaff, AZ
Schott	Tom	NA
Schrab	Kevin	NWS
Schreck	Carl	NOAA/NCDC, CICS - North Carolina State University
Schroeder	Wilfrid	University of Maryland
Scott	Carven	NOAA/NWS Alaska Region
Scott	William (Bill)	General Dynamics Information Technology
Searby	Nancy	NASA, HQ
Seybold	Matthew	NOAA Satellite Operations
Seymour	Paul	NOAA/NESDIS/OSPO/SPSD/DSB/DST
Shanks	Adam	Vaisala Oyj
Sharma	Awdhesh	NOAA/NESDIS/OSPO/SPSD/Satellite Products Branch
Sheffler	Dustin	NOAA/NESDIS
Sherwood	Clinton	NESDIS/OSPO/SPSD/DSB
Shontz	Kathryn	Noblis for NOAA/JPSS
Shrestha	Sudhir	NOAA Climate Prediction Center/ WYLE ST & E
Shugrue	Mary	SGT/NOAA
Sienkiewicz	Joseph	NOAA/NWS Ocean Prediction Center
Sindic-Rancic	Gordana	NOAA/NESDIS/OSPO/SPSD/SPB/SSAI
Sisko	Christopher	NOAA/NESDIS/OSPO
Sjoberg	Bill	NESDIS/JPSSO
Skirving	William	NOAA/NESDIS Coral Reef Watch, GST, ReefSense
Smith	Michelle	NESDIS/GOESPO
Smith	**Nadia**	**CIMSS/SSEC/UW-Madison**
Smith	Thomas	NOAA/STAR/SCSB & CICS/ESSIC
Smith	William	U. of Wisconsin / Hampton U. / SSAI
Snell	Ned	Atmospheric and Environmental Research (AER)
Soisuvarn	Seubson	UCAR
Soracco	Michael	NOAA CoastWatch, SMRC, Inc.
Soulliard	Letitia	NOAA/NESDIS/STAR/SMCD/IMSG
Spayd	Leroy	NWS/NOAA
Sponberg	Kelly	NOAA/NWS UCAR/JOSS/IEPAS
Sprietzer	Kristina	IMSG/NOAA/STAR/JPSS-AIT
Springer	Cory	Ball Aerospace and Technologies Corp
St. Pe	Alexandra	University of Maryland Baltimore County

Staelens	Christian	Morcom International, Inc.
Stathoplos	Linda	NOAA/NESDIS/OSPO/MOD
Staude	Jessica	NOAA/NESDIS/OSPO/SSAI
Steinson	Martin	NWS-IA
Sterckx	**Sindy**	**VITO**
Stoyanova	Silvia	NASA Goddard
Strabala	Kathleen	UW-Madison/CIMSS/SSEC
Straka III	William	SSEC/CIMSS
Stringer	Russell	Observations and Engineering Branch, Australian Bureau of Meteorology
Strong	Alan	GST - Coral Reef Watch STAR/SOCD
Sun	Bomin	IMSG & NOAA/NESDIS/STAR
Sun	Ninghai	NOAA/NESDIS/STAR
Sutherlun	Jacob	NOAA Satellite and Information Service
Swanson	Grace	NOAA-NESDIS- Satellite Analysis Branch
Tallapragada	Vijay	DOC/NOAA/NWS/NCEP/EMC
Tehranian	Shahram	Avaya Government Solutions
Terborg	Amanda	UW CIMSS/AWC
Thomas	**Bryan**	**Trinidad and Tobago Meteorological Services**
Thomas	Janel	Omitron Inc.
Thompson	Segayle	ORAU/ NGA
Toepfer	Fred	NWS Office of Science and Technology
Tsidulko	Marina	NOAA/NESDIS/STAR (IMSG)
Turner-Valle	Jennifer	Ball Aerospace & Technologies Corp.
Uprety	Sirish	CIRA, Colorado State University
Uz	Stephanie	NOAA's Cooperative Institute for Climate and Satellite
Valles	Esteban	The Aerospace Corporation, El Segundo, CA
Vander Woude	Andrea	Cooperative Institute for Limnology and Ecosystem Research - University of Michigan with NOAA's Great Lakes Environmental Research Laboratory
Vargas	Marco	NOAA/NESDIS/STAR
Vaughn	Chris	FEMA/Stratesgic
Velden	Chris	University of Wisconsin-CIMSS
Vereau	**Roger**	**Morcom International, Inc.**
Verner	**Gilles**	**Environment Canada, Meteorological Service of Canada, CMC**
Vila	Daniel	CICS-MD/ESSIC/UMD, CPTEC/INPE
Vinnikov	Konstantin	University of Maryland
Vogel	Ronald	NOAA/NESDIS/STAR, SM Resources Corp.
Vogt	Jennifer	NESDIS/NOAA/SAB/OSPO/SSAI
Wagner	Robert	National Weather Service
Wales	Carl	NASA
Walker	James	NASA/ASRC
Walsh	Steve	Solers, Inc.
Walter	Regis	NOAA's Homeland Security Program Office
Wang	Jian-Jian	ESSIC, University of Maryland College Park
Wang	Kunghwa	NOAA/NESDIS/STAR@UMD/ESSIC
Wang	Nai-Yu	ESSIC/CICS University of Maryland
Wang	Wenhui	IMSG@NOAA/NESDIS/STAR
Wang	Zhuo	NOAA/NESDIS/STAR/IMSG
Wannop	**Sally**	**EUMETSAT**
Ward	Stephen	ITT – Exelis Information Systems, NWS

Warren	Danette	NESDIS/STAR/SMCD
Watkins	Benjamin	NOAA/NESDIS/OSO/GSD/IDS
Weisz	Elisabeth	SSEC/CIMSS University of Wisconsin-Madison
Weisz	Emma	SSEC/CIMSS University of Wisconsin-Madison
Weng	Fuzhong	NOAA/NESDIS Center for Satellite Applications and Research
Werbos	Alexander	AER, NOAA
Werle	**Dirk**	**Ærde Environmental Research**
West	Susan	National Weather Service/International Office
Wimmers	Anthony	CIMSS University of Wisconsin - Madison
Wolf	Walter	NOAA/NESDIS/STAR
Wolff	Lisa	Next Phase Solutions and Services, Inc. (NPSS)
Wooldridge	Charles	NOAA/NESDIS
Woolever	Gerald	CACI International
Wu	Helen	NOAA/NESDIS (Volunteer)
Xie	Pingping	NCEP/NWS/NOAA
Yan	Banghua	NESDIS/OSPO/SPB
Yang	Jingli	ERT, Inc.
Yang	Wenze	ESSIC/CICS/UMD
Yapur	Martin	NESDIS/NOAA Technology, Planing and Integration for Observation (TPIO)
Yoe	Jim	NWS/NCEP
Yoshida	**Ryo**	**Japan Meteorological Agency**
Yu	Fangfang	ERT, Inc.@NOAA/NESDIS
Yu	Wei	IMSG
Zaccheo	T Scott	Atmospheric and Environmental Research, Inc
Zhan	Xiwu	NOAA-NESDIS-STAR
Zhang	Hai	IMSG
Zhang	Hong	SSEC, University of Wisconsin-Madison
Zhang	**Peng**	**National Satellite Meteorological Center China Meteorological Administration**
Zhang	**Wenjian**	**WMO Space Programme**
Zhao	Hongmei	NOAA/ARL, Northeast Institute of Geography and Agroecology, Chinese Academy of Sciences
Zhao	limin	NOAA/NESDIS/OSPO/SPSD
Zhao	Xuepeng	NOAA/NESDIS/NCDC & JPSS
zhou	xinjia	NOAA/NESDIS/STAR/SOCD
Zhu	Tong	CIRA/CSU@NOAA/NESDIS/JCSDA
Zhu	Xiaofang	University of Miami
Zou	Cheng-Zhi	NOAA/NESDIS/STAR
Zou	Xiaolei	Florida State University

International attendees indicated by bold print.

APPENDIX F The Organizing Committee

Co-Chairs: Ken Carey, John Furgerson, Dr. Steve Goodman, Jim Gurka, Eric Madsen, Dr. Mitch Goldberg, Scott Rogerson, Dr. Fuzhong Weng

GOES-R: Chris Daughtrey, Marilyn Mix, Kathryn Mozer, Michelle Smith, Janel Thomas

JPSS: Gary McWilliams, Bill Sjoberg

NESDIS: Leesha Saunders

NWS: Dr. Mike Johnson, Jennifer Lewis, Dr. Jim Yoe

OSPO: Denise Buckmon, Jason Dong, Natalia Donoho, Kay Metcalf, Matt Miglin, David Ngo, Jess Pejsa, Marlin Perkins, Letecia Reeves, Tom Renkevens, Matt Seybold, Paul Seymour, Clint Sherwood

STAR: Lin Lin, Tim Schmit, Danette Warren, Fangfang Yu

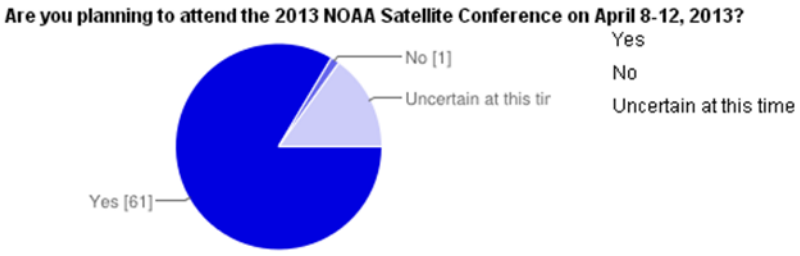
International: Kathy-Ann Caesar

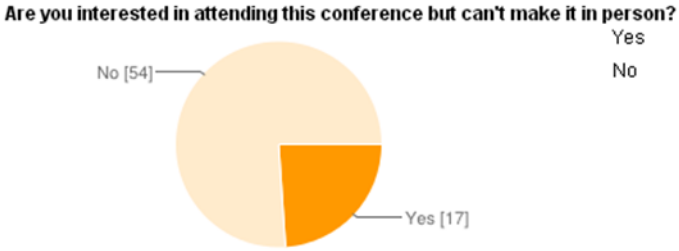
APPENDIX G Pre-Conference Survey Summary

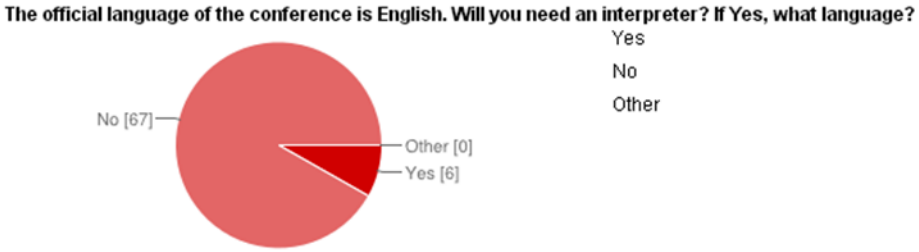
The purpose of the pre-conference survey was to gather feedback from invited 2013 NOAA Satellite Conference attendees on potential agenda components and areas of emphasis. The survey was organized in two main sections: logistics information and interest in the specific threads/sessions. There were 73 total responses to the survey.

The pre-conference survey indicated that the vast majority of respondents were planning to attend the conference in person, and didn't need an interpreter (Chart G-1).

Chart G-1. Conference Logistics

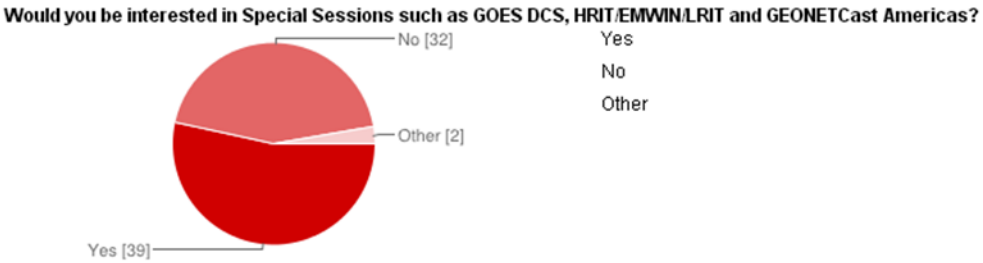


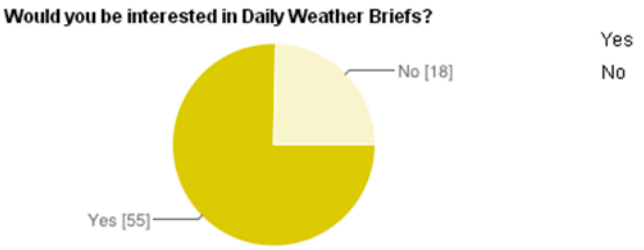


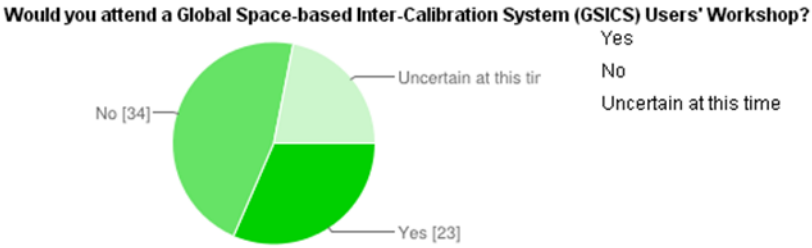


More than a half of individuals (53%) also noted that they would be interested in Special Sessions such as GOES DCS, HRIT/EMWIN/LRIT and GEONETCast Americas (Chart G-2).

Chart G-2. Interest in special briefings:



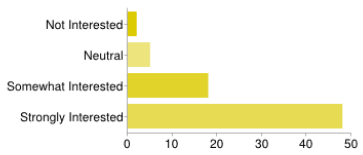




Nearly three-fourths of the respondents (74%) indicated a strong interest in Future Programs and Systems session (Chart G-3).

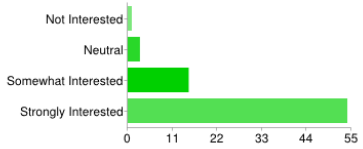
Chart G-3. Interest in specific threads/sessions:

Please rate your interest in these possible threads/sessions - Current Programs and Systems



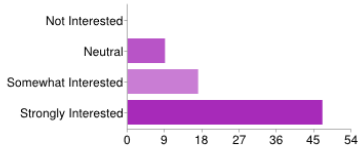
Not Interested	**2**	3%
Neutral	**5**	7%
Somewhat Interested	**18**	25%
Strongly Interested	**48**	66%

Please rate your interest in these possible threads/sessions - Future Programs and Systems



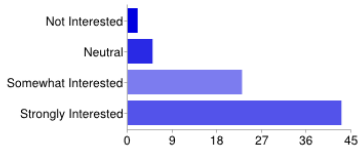
Not Interested	**1**	1%
Neutral	**3**	4%
Somewhat Interested	**15**	21%
Strongly Interested	**54**	74%

Please rate your interest in these possible threads/sessions - Data Access and Use



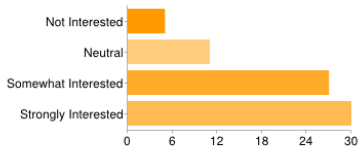
Not Interested	**0**	0%
Neutral	**9**	12%
Somewhat Interested	**17**	23%
Strongly Interested	**47**	64%

Please rate your interest in these possible threads/sessions - Applications



Not Interested	**2**	3%
Neutral	**5**	7%
Somewhat Interested	**23**	32%
Strongly Interested	**43**	59%

Please rate your interest in these possible threads/sessions - User Feedback Sessions



Not Interested	**5**	7%
Neutral	**11**	15%
Somewhat Interested	**27**	37%
Strongly Interested	**30**	41%

Specific questions and suggestions for the conference agenda (provided verbatim in the table below) were addressed before the conference (Table G-1).

Table G-1. Response to specific suggestions for the conference agenda

Date	Name	Specific suggestions for the conference agenda	Response
12/10/2012	Anonymous	Please provide student travel grants!	Travel grants are not available for this conference. All sessions offer Remote Participation.
12/11/2012	Anonymous	Suggest a separate session for calibration of satellite sensors using invariant targets	We encourage you to attend the Monday morning (April 8) GSICS session where Cal Val will be the focus.
12/11/2012	Anonymous	Ensure that the poster sessions are long enough so that it is worth the presenter's time to create the poster.	Done
12/12/2012	L. F.	We need to know about the budget we are going to need to use the new GOES Generation	Your comment is appreciated and was forwarded to GOES-R Program Office. They are working with the vendors to develop the equipment, and communicate with the user community regarding the cost and availability.
12/12/2012	M. M.	Include a track on international programs and what they're planning - re: EUMETSAT, ESA, Korea, Japan, ISRO, China, Russia, etc.	Your comment is appreciated. There will be updates from EUMETSAT and CMA.
2/13/2012	D. B.	Important is preparation for GOES-R as it is on the planning horizon for DB infrastructure upgrade.	Your comment is appreciated and was forwarded to GOES-R Program Office.
12/23/2012	M.	Please talk about direct readout spectrum relocation, and JPSS-n direct readout road-map, future of replacement of APT (LRPT, LRD) and future use of VHF band once all APT capable birds are decommissioned.	Your comment is appreciated and was forwarded to chairs of Direct Readout Session for consideration.
1/2/2013	M. G.	Although English is the official language of the Conference, I strongly recommend a Spanish-language overview of the impact of GOES-R transition.	English to Spanish Translation & Interpreting services are planned, subject to available funding.
1/17/2013	M. M.	Education sessions?	Your comment is appreciated and was forwarded to NESDIS Educational Council for consideration.
1/28/2013	J. D.	Would it be possible to have a program or session on the NOAA CLASS system on how NOAA plans on utilizing / maintaining the huge amounts of environmental data being ingested daily and in the future?	Planned
1/29/2013	D. N.	Forecaster interaction and feedback of satellite products/techniques.	Your comment is appreciated. We encourage you to attend the User Feedback sessions.
2/2/2013	M. O.	Prepare a special session for Latin American and Caribbean users highlighting the changes that have occurred in the WAFS dissemination methods and the upcoming changes with GOES-R	Your comment is appreciated and was forwarded to the International & Interagency Affairs Office for consideration.
2/4/2013	B. C.	The question [about remote attendance] is confusing	Your comment is appreciated and was forwarded to Conference Logistics Committee.

APPENDIX H User Feedback Session I Discussion

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.

Steven Ross: My concern is what's in store for people in 3rd world nations who don't have access to technology and Internet like we have (direct readout) and is there a way for my organization to help them?

> Marlin Perkins: As far as developing world countries and low rate users, several satellite operators are looking at re-broadcast services, similar to EUMETCast and CNACast. Also, the satellite operators plan to have some sort of sharing mechanism where they can redistribute the data between them. This would allow data from different agencies to be distributed by the various satellites operators. There are ideas of a possible subscription service. The users would have to set up or acquire a low cost receive terminal for the receipt of data. As of right now, nothing definite has been done. These are just considerations on the table for discussion. There is a desire to move these communities forward and commercial companies, such as yourself, can play a role in providing data to those countries.

Gary McWilliams: When will planning begin for the JPSS-2 follow-on program?

> Mitch Goldberg: Generally planning starts approximately 10 years prior to the launch. Guess we need to start soon, 2014?

Gary McWilliams: Liam, how and where can users access CSPP data products? I know there is a website.

> Liam Gumley: You are correct, we place all of our products on an ftp server and a number of people get them, NRL Monterrey for example. We provide the software, not the policy for distributing the data.

Gary McWilliams: How will you merge current GOES products with GOES-R? Is that a big challenge?

> Jim Gurka: It won't really present a challenge but we will have to find the optimal way to do it. We already combine the GOES-E and W.

Gary McWilliams: I also heard that GOES-12 service will discontinue this year. Is there a plan to replace it?

> Jim Gurka: It is being looked at.

Gary McWilliams: Do you plan upgrades on subsequent launches?

> Jim Gurka: R-S-T and U will be identical satellites.

Karen Dubey: If anyone has a direct readout system, they NEED it.

Dr. Mitch Goldberg: For GOES-R and JPSS we have a long product list so it would be good to get from the community a prioritization on what products are applicable. Most of our data will be available by

CLASS but there is six hour latency with that. Maybe we can have a workshop from users to get prioritize from DRO users.

> Marlin Perkins: We can probably send out a survey or questionnaire, post it to the website and see what we get.

Audience Member: Once GOES-R is launched, what do you expect to be the overlap between becoming operational and the decommissioning of GVAR?

> Jim Gurka: When GOES-R is operational and last GVAR is decommissioned? It will be at least a few years.
>
> Tom Renkevens: GOES-R and -15 cannot operate at the same location. There will be approximately a 1 year check out period. Check it out and store or check it out and use it? How long will GVAR be around while you have GOES-R and it will be for a while, likely it will possibly be used for some South American or something that cannot be easily transitioned? It is a delicate problem.

Brad Pierce: Regarding continuation of LEO and GEO with CSPP, I think you are right to prioritize the most important products but having that common algorithm to apply to other satellite is important. Liam, will you add OMPS to the suite?

Liam Gumley: Sure, given sufficient funding and access to the product generation. I believe it is transmitted on direct broadcast with NPP we just aren't doing anything with it right now.

Dr. Mitch Goldberg: Nice thing about CSPP is built upon the ADL library with the code.

Brad Pierce: To follow-up on that, again particularly for ozone, working on trying to combine IR retrieval with ozone retrieval and pulling those together.

Dr. Mitch Goldberg: It's cost effective too. You can put in demonstration mode first.

Liam Gumley: Like to think that maybe in 5-7 years, we are also supporting Chinese sensors and Russian sensors on polar orbiters.

Dr. Mitch Goldberg: Working through the WMO with CMA to consider using two polar satellites and encourage them to use it in the early morning. They will use hyperspectral sounder and advanced microwave sounder which will help with coverage.

Carven Scott: Is there any way that given the GOES-R specifications, you could shut down the imaging but still run the sounder (on current GOES)?

Jim Gurka: I think that could be possible if desired by the user. It's a good suggestion. We will have 3 water vapor channels and the studies show with that and the legacy products, it will be just as good as the current sounder products as we use today.

Dr. Mitch Goldberg: I was part of that study with Tim Schmit and we concluded that using the ABI with the WV channels will be as good as the current generation GOES sounder.

Dr. Mike Johnson: For Steve, I liked the briefing. In operations we underestimated how valuable the DNB would be. You said under different moon phases and lighting, you have expectations that you can derive cloud properties at night and they will show a similar result from night to night?

Dr. Steve Miller: Yes that is correct; the model we developed is a normalization factor. The moonlight is varying but reflectance is not. The hope is to truly turn it into a quantitative measurement like you use during the day.

APPENDIX I User Feedback Session II Discussion

Beau Backus: Working on frequency matter and spectrum use, if you have questions we will be happy to answer.

Mark Mulholland: Reference spectrum issues as well, we are happy to address any questions you didn't get a chance to ask yesterday, we got many responses who would like to be involved in discussion groups. We have asked one of our co-ops to post a website forum and hoping to have that up and running within a few weeks.

Eric Madsen: Number one thing people ask me about is training and it is very important to those outside of the US.

Donna McNamara: The biggest challenge is keeping current things going out the door while working on future things and keeping security up to date, meanwhile we have NDE system and the PDA system coming, so we are trying to get the data needed out there but it is difficult to be timely with all the requests we have.

Dave Jones: For the users there is a need to develop real-time sharing and focus on delivering the last mile, what is the value and how can it help us make decisions, we don't come from a platform perspective, it's all about bringing it together and how each one of the platforms can make a better decision. We need integrated ways to bring people together that are not in the same place. It gets pretty surprising how the people who make decisions do not know that there are data sets available.

John Bates: Challenges of big data, we want to hear from the users, how do you want the data, how much do you want, how do you want to get it? Easier? More quickly?

Susan Callis: Chris, formatting- can you tell me what the result of the investigation of the importance of NDE? The WMO metadata standard, will be done in NDE also? Is there going to be a NDE 2.0? What is the schedule?

- Chris Sisko: At this point they are still looking at different options but NDE will still be delivered in netCDF format for AWIPS. Others need BUFR files. We know we have to deliver those specific data formats to you. The WMO header routings capability is being developed. We don't control that but the user controls those headings for routing. It is still evolving as we look at the different development schedules and how they are defining those. Looks like an NDE 2.0.

Dave Jones: From an NWS perspective, in a collaborative environment, a new capability called KML exporter in AWIPS; this will be good for emergency managers and such.

Audience Member: John, good work on the CLASS side, do you intend to support commercial sector in the future?

- John Bates: That is the exact thing that we hoped to hear, it's a challenge in the future because the data rate continues to rise, it will be a challenge how we go back through large volumes of data after it goes through, we have the will so there will be a way and we definitely support the commercial sector and as it gets larger, we will experiment with different ways on how to handle that and will continue to work the problem. We want to give the users the archive data they want.

Frank Alshiemer: For Dave, concerning collaboration in general, one of the fears that I have through using even Twitter and Facebook, is we are still losing some of the communication when we aren't showing the non-verbal communication. Have you looked or have any ideas on thing like web cameras where the person on the other end has a more personal connection to the one giving the message? Might be better received or understood.

- Dave Jones: We have worked over the years with different types of relationship building before the remote communication. Collaborative technologies can be used to impact emergency operations. We did not integrate VoIP or webcam due to network restrictions but the benefits far outweigh the costs of not having those built in.

Linda Stathoplos: Does that mean that you have to have the connections in place before you start the collaborative process?

- Dave Jones: Yes, and by trusted partners, we've been told many times that FEMA doesn't want to make a decision based on a graduate student's model data from their laptop. They want to know the data is coming from NOAA and NWS.

Mark Mulholland: We are learning in the spectrum world that there is a lot of analysis that needs to take place to understand how bad adjacent spectrum sharing will be. Geographic separation requirements are in place for operations that run in the same frequency, with sharing bandwidth those will not be in place aside from restricted zones. We will need to figure out mitigation techniques as well.

Beau Backus: It depends, to start off with we are facing a challenge we have not been faced with before, federal and nonfederal have operated in different bands. It is harder when you deal between federal and nonfederal with different needs. The differences make coordinated more challenging. Innovative solutions are needed, we need to continue the dialog where we met with that hopes to win the auction and build in the relationship to create innovative solutions. Protection zones which is the traditional way, but we do not have that kind of separation in the bandwidth. We need to be working for mitigation solutions and how we coordinate the new people operating within the band.

Mark Mulholland: When the interference occurs is important too. By examples, most interference analysis is forensics. For a satellite operator, you want to fix the satellite and it's far down the road that you realize it might not have been your fault. After you do forensics sometimes you don't know where the interference came from.

Dr. Jack Beven: Chris and Donna, could you give us an update on how you intend to increase the bandwidth at the source with the upgrade in data coming from NPP, JPSS, and GOES-R?

- Donna McNamara: One of the things that we are pushing on my side is ensuring users only pull the data once. Sometimes we catch people doing that. We are ensuring that if we give access to a user they are only pulling it once, making sure a place pulls it once and distributes it to their groups.
- Mike Manore: simple answer, the architecture of the internal NOAA system will go to 10MB to assist in the data flow. It is a project that we will be starting soon; we are looking into innovative methodologies to deliver the data.

- Jamie Hawkins: PM for PDA, one of the things relative to bandwidth is that the intelligence of the requirement of the system requires us to build selectivity that we have never had. People are afraid because they hear TB range of data per day. We try to project what they are for users. Only a small subset of users actually will pull that. The selectivity is the best part of the system. You can turn your subscriptions on and off, bundling, etc. will help control that bandwidth. You have to look at the use pattern.

Ron Burke: John, Chris, and Dave, as there are an increasing number of users; share your plans for using web services?

- Chris Sisko: with PDA we will have different product families within different groups and you will be able to select. We plan on having a GIS interface to grab and process the data and help facilitate some of the data transfers.
- John Bates: CLASS is working on a machine-to- machine interface and we hope to have that out in the next few months which will start the whole conversation as to how we work with users and how to be responsive with the products. If anyone is interested in the machine to machine interface send an email to get involved.
- Dave Jones: we are already working to share in real-time. The ability to interact GIS with a Flex system, etc. is possible. You have the high resolution when you need it but you don't have to use it when you don't need it but you have already processed it so it is available.

John Porter: Accuweather is asking similar questions. From industry perspective, how will we filter what we need, when we need it, in a cost effective manner. How will this affect the typical industry ways of gathering data? How is NOAA going to message that information out to industry users and international users? Need to make decisions on investing in ground systems etc.

- Linda Stathoplos: strongly recommend you get on the twitter feed of the users recommended services. That is one of the functions that they will help facilitate.
- Tom Renkevens: They plan to continue but have not made decisions as to which channels and which imagery will be. Yes, there is a big question whether to invest and continue to receive or fill out a data access form and get selected data from a piped network. The Weather Service is struggling with the same question. We do not have all of the answer. We have to do a better job messaging about how we can outreach, and go to conferences.
- Linda Stathoplos: One more piece of factual information. The PDA is going to be deployed first at NSOF. The timing of deploying remote backup is not identical. There will be a time lag between operational and backup.
- Tom Renkevens: Good news is that there will be a backup
- Jamie Hawkins: But there is no source of GOES-R data at backup to feed PDA.
- Linda Stathoplos: GOES-R program does have a well vetted plan but not everything will be available on PDA from the backup facility.
- Dave Jones: my impression is that it probably doesn't make a whole lot of sense to distribute to the broadcasters, but to the vendors that disseminate the product.

Audience Member: Tom or Mark, there is a lot of data exchange, there are satellites that will be affected by spectrum, has there been any international dialog, to say what is going to happen "if" once this moves beyond the US.

- Eric Madsen: I do not think we have. They know about the issue but I do not cover the Euro portfolio, they may know about it but not sure what they are doing about it.

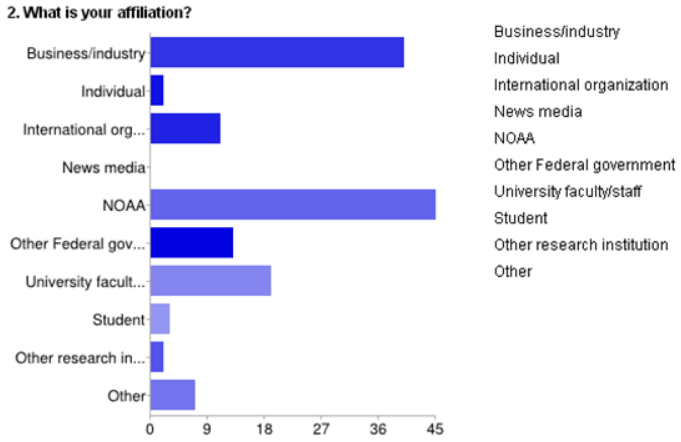
- Mark Mulholland: I have learned just how separated the satellite operators are from the spectrum world. There will be potential interference between satellites, we need to be prepared for satellite crossings but the probability of the interference is very low.

APPENDIX J Post-Conference Survey Summary

The post-conference evaluation survey was divided into three main sections: questions aimed at rating conference logistics and organization, questions aimed at eliciting qualitative assessments related to conference goals and objectives, and a section with conference specific feedback (respondents provided extended answers). There were 142 total responses to the post-conference survey.

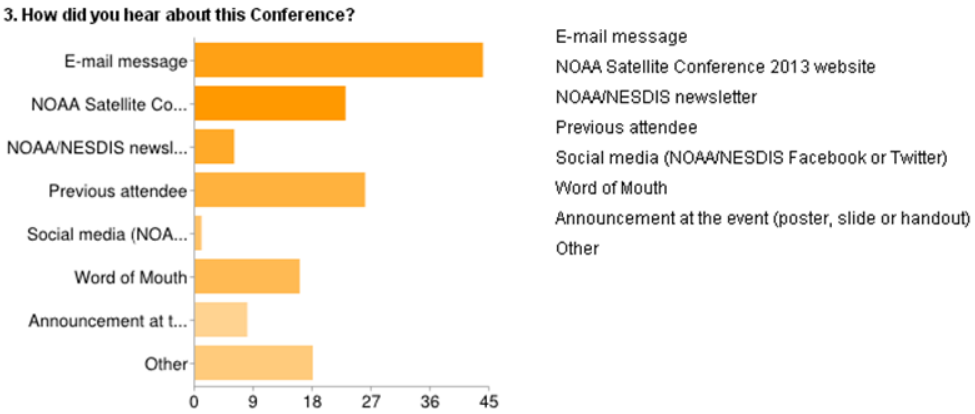
The evaluation survey (Chart J-1) indicated that participants generally represented a broad spectrum of organizations, including, for example, international interests and academia, but with a significant number of attendees representing NOAA (32%) and business/industry (28%).

Chart G-1. Participants' affiliation:



Responses were split (Chart J-2) in terms of how participants heard about the conference. The breakdown below demonstrates that most of the conference attendees received an e-mail message (32%), were previous attendees (18%) or visited NOAA Satellite Conference 2013 website (16%).

Chart J-2. How participants heard about the conference:



In general, participants indicated fairly agreement that meeting logistics (registration, hotel reservations, participant packets, etc) was handled E*xceedingly Well* (66%) (Chart J-3).

Chart J-3. Meeting logistics evaluation:

Participants were also asked to rate overall conference organization (Chart J-4). Most of the ratings indicate that attendees generally were *Extremely Satisfied* and *Satisfied* with overall logistics, including conference dates, location, website, guest speakers, special sessions/training, and assistance on site. A few illustrative comments are shown below (all participants' responses can be found in Appendix K)

"Thanks to everyone who did a great job putting together and planning this event."

"The team did a first rate job!"

"This was an extremely useful conference. The topics seemed to flow and were all pertinent to our uses."

"…would like to thank you all for the great conference and also for NOAA's cooperation and support to international users."

"The combination of three conferences: GOES-R, Polarmax and Direct Readout is an excellent idea and it worked well."

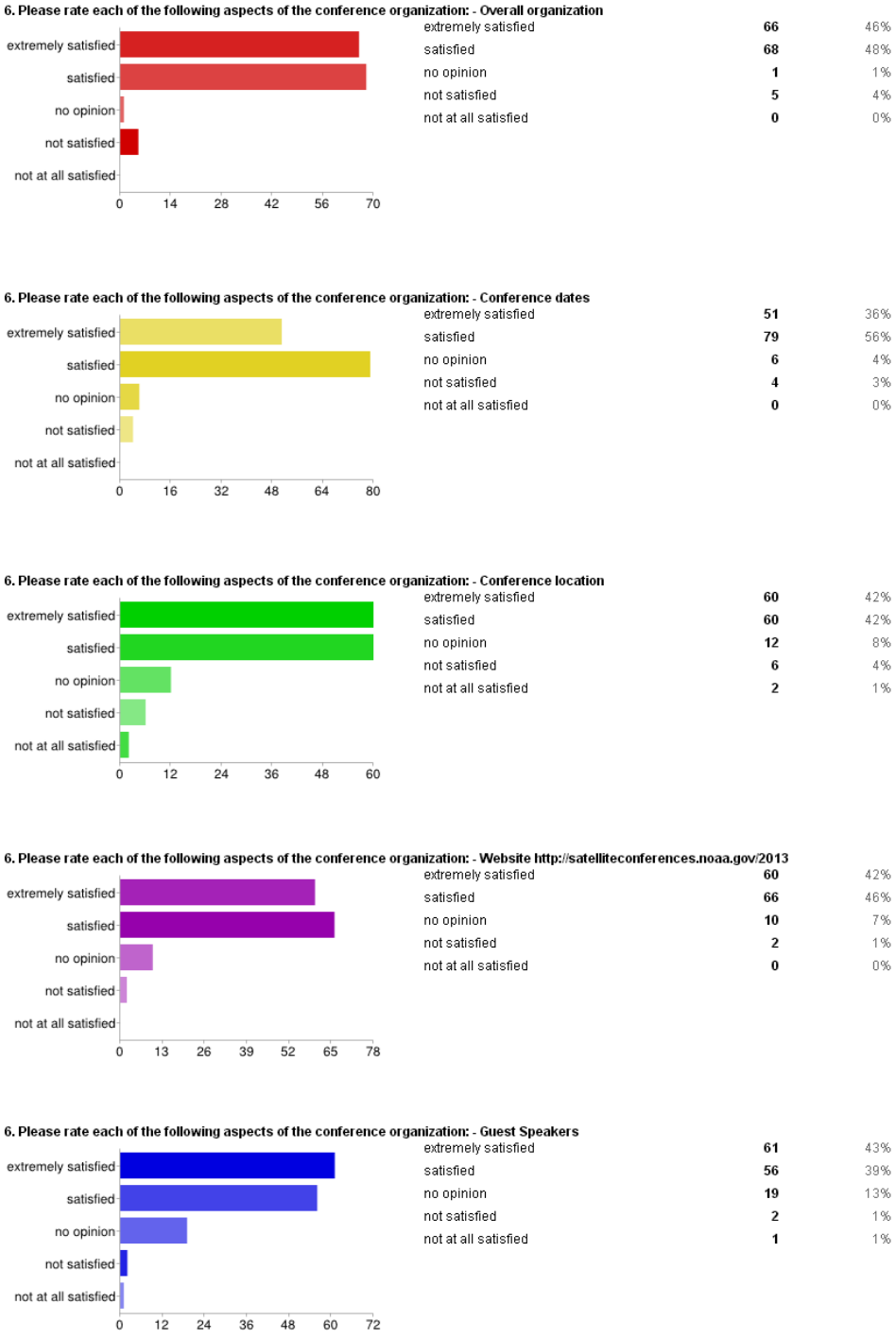
"Staff were great, can't say enough about how well they rolled with all the challenges. No complaints at all about the organization of this conference, awesome job! Made us all feel very welcome."

"The conference was very good, never heard of any conference where the presenters were kept on time or very close at least."

"The conference had provided participants a very nice location and comfort ambiance for our discussions of issues and our exchanges of information. I would like to see the next conference to be held here [at NCWCP] *again."*

"Thank you!!! I appreciate that there were lots of constraints (e.g. finance) that made it hard to organize this conference so all things considered I'd have to say that everyone did a great job. Well done!"

Chart G-4. Evaluation of conference organization:



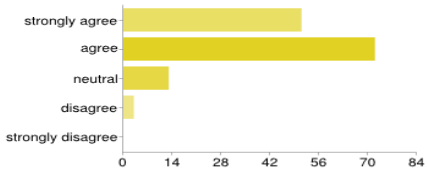
Participants were also asked in a variety of ways to assess specific goals (outcomes) and overall effectiveness in terms of their personal experience at the conference (Chart J-5).

Nearly every participant identified that this conference improved their knowledge about user access, reception and readiness for data, technology and applications from current and future environmental satellite constellations (46% *Strongly Agree*, 45 % *Agree*).

With respect to networking, participants expressed significant appreciation for the opportunity to "share expertise with others" and "discovered new ideas or people related to their work with environmental satellite products and/or services".

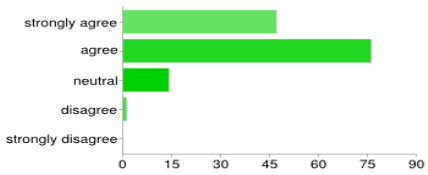
Chart J-5. Conference outcomes:

5. Please rate your level of agreement with the following statements regarding the overall effectiveness of the conference: - I found this conference to be helpful for improving the effectiveness of my work with environmental satellite products and/or services



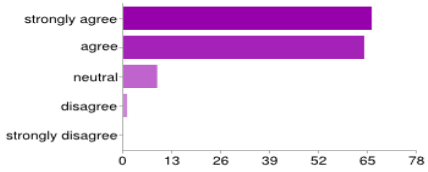
strongly agree	51	36%
agree	72	51%
neutral	13	9%
disagree	3	2%
strongly disagree	0	0%

5. Please rate your level of agreement with the following statements regarding the overall effectiveness of the conference: - The conference aided in increasing the cohesiveness and collaborative nature between and among environmental satellite programs



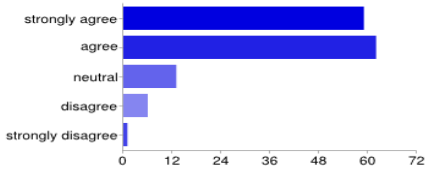
strongly agree	47	33%
agree	76	54%
neutral	14	10%
disagree	1	1%
strongly disagree	0	0%

5. Please rate your level of agreement with the following statements regarding the overall effectiveness of the conference: - The conference improved my knowledge about user access, reception and readiness for data, technology and applications from current and future environmental satellite constellations



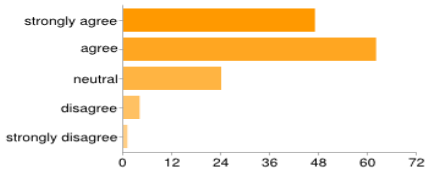
strongly agree	66	46%
agree	64	45%
neutral	9	6%
disagree	1	1%
strongly disagree	0	0%

5. Please rate your level of agreement with the following statements regarding the overall effectiveness of the conference: - I discovered new ideas or people related to my work with environmental satellite products and/or services



strongly agree	59	42%
agree	62	44%
neutral	13	9%
disagree	6	4%
strongly disagree	1	1%

5. Please rate your level of agreement with the following statements regarding the overall effectiveness of the conference: - The conference provided an opportunity for me to share my expertise with others

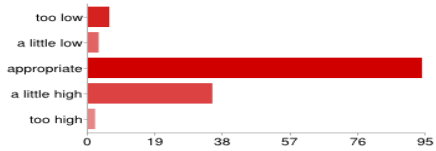


strongly agree	47	33%
agree	62	44%
neutral	24	17%
disagree	4	3%
strongly disagree	1	1%

Participants were clear that the overall length of the conference (5 days), the amount of time available for Poster and other sessions were appropriate (Chart J-6).

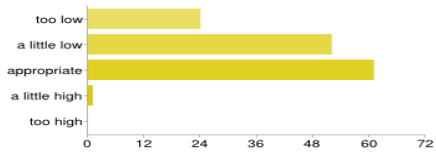
Chart J-6. Assessment of the amount of time dedicated:

8. Please provide your assessment of the amount of time dedicated to each of the following agenda items relative to the goals and objectives of the conference. - The overall length of the conference (5 days) was:



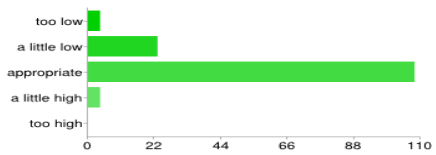
too low	6	4%
a little low	3	2%
appropriate	94	66%
a little high	35	25%
too high	2	1%

8. Please provide your assessment of the amount of time dedicated to each of the following agenda items relative to the goals and objectives of the conference. - The amount of time available for Poster Sessions and networking was:



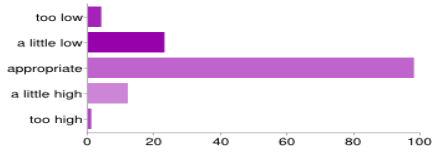
too low	24	17%
a little low	52	37%
appropriate	61	43%
a little high	1	1%
too high	0	0%

8. Please provide your assessment of the amount of time dedicated to each of the following agenda items relative to the goals and objectives of the conference. - The amount of time allotted for the Current and Future Programs and Systems was:



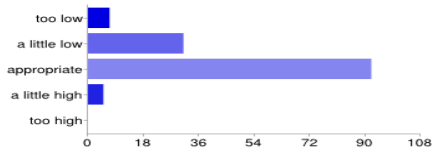
too low	4	3%
a little low	23	16%
appropriate	108	76%
a little high	4	3%
too high	0	0%

8. Please provide your assessment of the amount of time dedicated to each of the following agenda items relative to the goals and objectives of the conference. - The amount of time allotted for the Data Access and Use was:



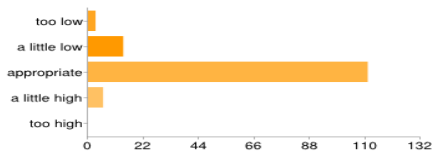
too low	4	3%
a little low	23	16%
appropriate	98	69%
a little high	12	8%
too high	1	1%

8. Please provide your assessment of the amount of time dedicated to each of the following agenda items relative to the goals and objectives of the conference. - The amount of time allotted for the Applications was:



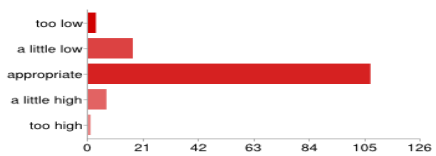
too low	7	5%
a little low	31	22%
appropriate	92	65%
a little high	5	4%
too high	0	0%

8. Please provide your assessment of the amount of time dedicated to each of the following agenda items relative to the goals and objectives of the conference. - The time devoted for special sessions was:



too low	3	2%
a little low	14	10%
appropriate	111	78%
a little high	6	4%
too high	0	0%

8. Please provide your assessment of the amount of time dedicated to each of the following agenda items relative to the goals and objectives of the conference. - The amount of time allotted for the exhibits was:



too low	3	2%
a little low	17	12%
appropriate	107	75%
a little high	7	5%
too high	1	1%

APPENDIX K Post-Conference Survey: Subset of Extended Participant Responses

Question: What are the most important follow-up items/actions you hope will take place following the conference?

Presentations and Posters [Available at http://satelliteconferences.noaa.gov/2013]

Posting of presentations and posters.
Easy access to the charts presented.
The availability of the slides on the website.
Please remind us the website where we can find presentation slides to review.
Access to presentation material for download.

GOES-R Topics

I would like to see a plan for whether GOES-R will be GOES-East or GOES-West, and the future scan strategies for GOES-R in light of that selection.
It will be interesting whether GOES-R will become WEST or EAST.
Finally placement of GOES-R satellite (West or East?) to determine the institutional planning to get access or not to the data.
Resolving uncertainties in future satellite programs as early as possible is in everyone's interest. For the Pacific, resolving the undercurrent of uncertainty about whether GOES-R will go west (as now planned) or east will help clarify the planning in this region for future reception/access systems and applications.
Planning hardware and software changes necessary for next generation satellites.
More discussion between stakeholders-- it was troubling to hear the person from Delta said that an important product to him was deleted from GOES-R. Just because there may be other products higher priority to scientists, operational needs should be high priority. GOES is an operational satellite first and a science satellite second.
I will continue work with GOES-R and JPSS proving ground partner's in evaluating products for NWS operations in my forecast office.
User's feedback and their inputs to the future programs.
[translated from Spanish] Users need information on the practical aspects of the advances in meeting requirements that present themselves during the development of new satellite systems like GOES-R related to criteria established by the NOAA DCS program, vendors, users and others. Also, detailing the efforts of other solutions developed in the U.S. by organizations such as the U.S. corps of engineers, NWS and USGS.

International Topics

How to maintain coverage of South America once GOES-12 is decommissioned.
A sustained interaction with the users from the Region III and Region IV would be a great issue. In addition, to look for the possibility to establish a proving ground network over the Region III and Region IV to test and improve the quality of the satellite products. One of the most important subjects to highlight is that GOES R should cover the domain of the VAAC Buenos Aires. Also, to provide the availability of images with frequency and coverage, that allows an efficient monitoring of VAAC Buenos Aires (10°S-90°S and 90°W-10°W)
Something that was not discussed in the forum, but maybe a web based discussion forum would make it easier for international users to communicate with NOAA and exchange information between them. For outsiders it takes a little bit longer to understand how NOAA is organized and who or which department should be contacted in each case (operations, data access, etc.).
JMA's plan to disseminate Himawari.
Discuss the outcomes with EUMETSAT in order that they better represent our (UK) views at bilateral meetings with NOAA.
I hope to make a cooperation Project with NOAA, WMO, and AR4 and AR3 countries

Data Access

Follow up on User access to the new data (SNPP)
I hope that OSPO's PDA system is scaled large enough to handle the large amounts of data it will receive.
For us raw data delivery systems and data archives are most important. Thus we need to know and meet people from this field. The good point was that there were also users and companies providing different ground bases solutions.

Conference Logistics

Repeat the Satellite Conference in 2015!
I hope there will be enough feedback from these surveys to warrant doing another event in two years. If not, then I will wonder what the point was, and what was really accomplished from everyone's hard work.
Expansion of Wi-Fi connections in NCWCP
List of contact information from the presenters
Would like to attain a list of attendees
Take note on how well the conference was run.
Consider creating GOES version of the Community Satellite Processing Package.
It would be nice to offer a discussion location for presentations/presenters to answer questions that were not asked during the conference. If people had questions for speakers, it would be nice to have a forum where the presentation could be viewed then questions asked of the presenter. This could start excellent dialogues and generate new collaborations.
The two items of concern -- the length of time for the conference and the parking / unloading / loading. The conference should have been no longer than three days. It would also have been helpful if there were more evening activities that would encourage more networking. Parking was adequate, but we were not permitted to unload or load close to the facility. This made it very difficult.

Data Topics

I hope the dialog among the users regarding data fusion and the value of data from all of the satellites to forecasters will continue.
Evaluation of data
Begin utilizing the GOES data products

GOES DCS

More information about the DCS GOES program.

Question: If you were a presenter in a session, and you have suggestions on how to improve your experience planning for and giving your presentation, please provide them.

Facilitation of presentations was fabulous!
As a presenter, I want to highlight the excellent media provided by the Conference organization.
Better instructions for when presentations are due and where (online locations, etc) would have helped.
Despite the smaller screen in front of presenters some of them still turned to the large screen. When that happened I could not hear what they were saying. Also, some people put just too much stuff and small text in each slide. They should be invited to use large text with bullet points.
If there is 15 minutes for each presenter there should be a mandatory number of slides (like no more than 20 slides for a 15 minute presentation). Scientists always seem to think they can get through 60 slides in 15 minutes which makes it very uncomfortable for the audience to digest. The speakers are not defending a thesis; they are communicating the benefits of their work to the audience.
It was very difficult dealing with security to get in and out of the poster area. Security was not particularly friendly and they did not seem to operate under consistent protocol.
Try not to repeat information
More time for posters
More time for posters, possibly a bit more time for questions.
Translated from Spanish: I have no suggestions as presenter. I think it was very good presenters and presentations.
Posters should have been placed outside the security so that people could have better access.
Too many posters all at once in a crowded area. It would have been better to have 2 poster-viewing times each day, with only 1/2 of the posters being 'presented' at each time.

Question: Were there any topics you did not feel were discussed in enough detail or should have been included in the agenda at the conference? If so, what were they?

In my opinion it was enough material considering the extent of the Conference.
I think you should include the international desk in this conference, because the Latin American users use this product very frequently.
We should have heard more the international participants, and perhaps a bit more from the National Weather Service. It seems like there were too many agency heads and program managers there, especially early in the conference that did not have much to add with respect to satellites.
A little bit more on the international context (the full global satellite constellation) might have been interesting.
A quick synopsis of the environment satellites in use today by other nations.
A session from the Japan Meteorological Agency on the future of Himawari. How our international

partners obtain and utilize satellite data and how it is transported in remote locations with low bandwidth.
We should have focused on applications of the data with more time for discussing future user needs. I really liked hearing from NWS Pacific Region. They seemed to articulate their needs very well. I hope they are invited back for the next conference.
A full update on the POES on-orbit satellites. And a full update on ESPC's non-NOAA satellite data acquisition & distribution.
Industry/private ventures in Environmental sensing.
Future Programs!
No avenue for research. EUMETSAT meetings have special sessions for more in-depth subjects. NSC should consider this.
Maybe more on validation plans.
I feel the conference was too short on end users. By end users I mean users of the data where they use the data to make decisions. GOES & POES are first an operational series and research is important but second. We did not hear from the operational ends users that much. We heard from intermediate users but not end users.
End User's easy access/use of data and relevant issues, not discussed in depth. How would weather satellite data play a role in people's day-to-day life? How would we improve the communications with the public on uncertainties?
A session on views and uses of data from the commercial non-NOAA community. For example, Delta Airlines, Accuweather, and the Weather Channel.
It would be nice to have a satellite-oriented conference that would cater to limnologists or aquatic ecologists who would like to learn more about the technologies for monitoring water resources without needing to focus so much on operational and technical details of satellite platforms.
Recent advances in the benefits of the data since the last conference would be beneficial.
Wildland Fire Weather forecasting and nowcasting, using satellite imagery for fire weather forecasting and NOT fire detection and /or tracking smoke.
I would have liked to see more specifics on accessing data from the OSPO DDS or CLASS.
Products and Services, Product Are Leads should have given talks to present their products and services. What existing products including on the web are available for the users.
The topic of NOAA data center consolidation was also not discussed. If this happens, it would affect how all data is processed and distributed. Please include in next year's topics.
Learning more about downstream satellite product consumption, and the status of AWIPS-II would have been good to see.
[translated from Spanish] Latin American users, in general, do not have continuity in attendance at meetings. So, it is very necessary to add special sessions about operations, maintenance and management of hydro-meteorological information systems with Geostationary Environmental Satellites.
I'd be interested in actually how various sensors on the satellites worked to gather all the data presented; a technical forum. (Why 16 IR channels on GOES-R? I'd like to hear how/why these channels will detect various elements etc…)
A history of environmental satellites to supplement the current and future satellites presentations.
More on space weather! In particular I would have been willing to provide an update on the GOES-R space weather instruments.
Maybe a little more about the topic of radiance data assimilation.
I have missed a bit some overall idea or map of raw data systems and organizations involved in ground segment development.
Mainly "Presenting options (with pros and cons) for getting the data from the satellite and into the hands of users as fast as possible after launch (e.g. Geonetcast, EUMETCast, Internet, GTS, Direct Broadcast, WIS etc)". Benefits can't be "leveraged" until the data is actually being used operationally by national

weather services, private companies and academia.
I would have liked to see more outreach components related to all areas of NOAA / NESDIS. Also would have wanted more information on the NOAA / NESDIS CLASS Enterprise System.
There was a lot of information given out to the conference participants on what we are doing and what products but not enough information on how to use the products and apply these products to prediction, management of their organizations.

Questions: Additional thoughts

General Comments

I would like to thank you all for the great conference and also for NOAA's cooperation and support to international users.
Thanks for a great conference!
This was an extremely useful conference. The topics seemed to flow and were all pertinent to our uses. While I've not attended the two conferences in the past, I felt that having one conference worked well.
I look forward to attending in person next time. (I attended remotely this time due to a scheduling conflict.)
The team did a first rate job. Please consider allowing other parts of NOAA to obtain daily webinar briefings from NCEP centers. (NOAA is a potential host for the 2014 Space Frequency Working Group), assuming it can be done on a very low cost basis. Adding those daily briefings to the SFCG for some of their 10 days would be a real hit.
Staff were great, can't say enough about how well they rolled with all the challenges. No complaints at all about the organization of this conference, awesome job! Made us all feel very welcome.
Thank you!!! I appreciate that there were lots of constraints (e.g. finance) that made it hard to organize this conference so all things considered I'd have to say that everyone did a great job. Well done!
The conference organizers deserve credit for making the best of a bad situation. While this was better than no conference, it did not provide anywhere near the information exchange as in past conferences. For example, with trying to cram too much into one week, there were no breakout sessions. Because of travel limitations there were not enough NWS forecasters present. It is critical to have the true end users present to talk to product developers and to participate in poster sessions and breakout sessions. While the venue in the D.C. metro area allowed for many local participants, it also allowed for the local participants to go back to their offices (note the many empty seats). Recommend: go back to the hotel Miami for the DRO, and have separate conferences for GOES and JPSS preferably in locations away from the D.C. area. Also, the internet access (rather the lack of access) was the worst I have ever seen at a conference. One more thing.... to not allow water bottles in the auditorium is ridiculous!
It would be helpful to avoid National Space Symposium, which was same week. That limits access to resources which may be committed to the symposium - for example I know Raytheon had a nice historical video or photos of the evolution of weather satellite products which was displayed at the Space Symposium. That could have been provided at this conference, but the people and equipment were at the other symposium.
The conference was very good, never heard of any conference where the presenters were kept on time or very close at least.
Consider publishing a participant's contact list and any news articles generated by the press from the conference.
Very much like combining GUC and DRO. Having it in DC is fine, I know I was looking forward to Miami but given distribution of attendees DC makes a lot of sense.

Logistics and Organization

Thanks to everyone who did a great job putting together and planning this event. There needs to be a registration fee for the next conference to cover the cost of break food. I could not be reimbursed for any break food that I purchased due to travel regulations, but I would have been reimbursed a registration fee. Also, please allow water in the meeting room.
There should have been a small registration fee charged even if it was only $25.00. This would have covered the cost of the breaks for food and drinks.
I would never cut off registration…
I was told that I could no longer register my post-doc but there were other people that were registered after my request was denied. I was very disappointed that he was not allowed to attend even though he works in this building.
I know the logistics of the venue prevented this to some extent, but there wasn't enough time for people to engage each other or for chance encounters in front of posters. The Exhibit area was too small to be inviting for many people to get in there and converse.
Hotel seems too far from meeting facility; Nearby supporting business is still too sparse to give people more opportunities to interact.
Exhibit loading and unloading was difficult at the facility due to security restrictions.
While I liked the facility itself and the low cost associated with using a Gov facility, I think NCWCP facility is hard pressed to host a conference of this size. If everyone showed who had registered, I don't think the crowd could have been handled. I think having to commit to at least a nominal conference fee (say $50 to cover breakfast/snack/beverage) would have given a better idea of who would actually come.
I recommend strongly that future conferences should continue to be held at NWCPC, College Park. Attendees have opportunity to listen to all satellite systems and the users in the same hall.
Also, it would be nice to hold the conference at a venue where security restrictions were less of a problem for conference activities than those at the NCWCP.
The location was very good in my opinion, providing an excellent opportunity for local NOAA staff to participate. Joining the 3 events into one is also an excellent idea, and I gathered information from each component. I would suggest maintaining the format and location.
In terms of supporting other aspects of a conference, there are numerous areas where improvements could be made. The meeting area outside the NCWCP was far too small a space for the number of attendees and was very hard to navigate and network in. The placement of the poster sessions inside the turnstiles was not conducive to attendees being able to fully browse them at their leisure. The time allowed for poster access was insufficient. The facility is beautiful, but unfortunately, has not been designed practically speaking to support this size of conference. Further, it is unreasonable to expect that people will not bring water bottles into the auditorium; water is a basic human need and conferences go on for hours. It is not easy for everyone to get up and go outside every time a person needs a drink of water. I also was not able to get online using the guest Wi-Fi -- clearly that system was overwhelmed and that was a limiting factor to how many days I could attend since I cannot be unreachable for more than a day. Thank you for considering my comments.
The set up of the registration desk was poor. It was not clear where the registration desk was at. The people who sat at the registration did not appear to engage the participants in acquiring their badges. There were several badges that were not picked up yet the conference attendees were also there.
Consider having companies sponsor the break time snacks again. That worked our quite well.
The Satellite Science Week material should be combined into this conference. This conference should grow to the American Satellite Remote Sensing Conference.
Pay as you go lunch worked quite well.
Lunches were excellent, but seating was too limited. Got very lucky on weather. If it had been cold

or raining, I think it would have been a disaster. Maybe a temporary tent out front?
The location was remote. Miami is a better location.
If held again at NCWCP, set aside one of the outer rooms with tables/chairs for discussion rather than all for exhibits. The Conference Center lobby is not very big and was congested between sessions. Consider adding tables and chairs outside the front entrance if the weather is forecast to be good.
The main suggestion I have is that NOAA should work through a meeting planning company. I know you feel you did the conference for free, but you did not. You had a lot of people in many different departments working on it. Things like the pre-paid meals weren't advertised until a few days before. That should have been set up at registration. About two weeks before, I had to email asking for some sort of exhibitor packet that gave me shipping directions. These types of things may just be inexperience, but should every person in your building have to learn their own lessons each time there is an event? One common person or company would have all this knowledge, and be able to cut down on the time NOAA needs to plan the event.
The conference had provided participants a very nice location and comfort ambiance for our discussions of issues and our exchanges of information. I would like to see the next conference to be held here again.
I hope that the problems associated with holding a conference of this size at the new site (e.g., lack of internet access) will be resolved before the next meeting.
I didn't attend the whole conference - it was too long! Maybe three days (Tuesday thru Thursday) next time.
Could condense to 3 days. The specific use data (after Wed) was not applicable to the group at large, resulting in attendance decline the last few days.
I would appreciate more room in near neighborhood with easy internet access and possibility to meet with people and work with someone on my own laptop. In the conference we had to entreat some people from exhibitors to borrow us a table for a while.
In regards to the conference location and lodging: The conference center and the hotel were both fine. However, neither one had restaurants nor other food options within walking distance - a big problem when faced with a travel budget that didn't permit a rental car. The next conference needs to remedy this.
I believe the conference should be in Miami, FL. I really noticed the lack of attendance from GOES Users in Latin America in particular. As an exhibitor I mainly attend the conferences to find new customers as well as improve my relationship with current customers. There were very few Latin America or other users of the GOES DCS network at the conference.

Poster Session

Keeping a conference of this size in a single session format meant that most of the interesting details were squeezed out into the poster session. Unfortunately these were far too short and hampered by access limitations. I suggest in future conferences, the poster sessions are extended to 3 two hour sessions, with all posters being displayed - and accessible - throughout the week.
I had to pull out due to budget issues and withdrew my poster. It would have been nice to be able to 'display' my poster electronically and perhaps get some feedback on the work.
The poster sessions were invaluable to me, and I wish they could have been longer in duration. It was difficult to view all the posters and talk with the presenters in the time allowed.
Poster area too crowded, too cumbersome with security.
The security issues around the poster session were a little tough to navigate.
Having and open poster space would be helpful.

Suggestion: have posters in the same area as the conference.
Given current budget situation, may programs/projects are still redundant /duplicate especially viewing from posters. Hard to find a focal point for a special domain knowledge.
Even though the posters were up for a couple of days, it was difficult to view due to security.
Poster presentations were good but more talks on the products and services would have been nice.
The NOAA building did not lend itself to conferences; the poster area being in high security was very bad planning.
The security at NCWCP was bordering on ridiculous. Having to ring a buzzer to simply open the front door is silly. Having to constantly show a badge to get to the posters was very annoying. The amount of time for posters (1 hr 15 min sessions) was far too short and made poster presenters feel like second class citizens. There should have been a 2nd poster session in the afternoon. No one will go to the posters at lunch which was the other advertised poster slot.

Agenda

Too many administrative review presentations by the directors and chiefs, which should be put as posters. This conference needs more technique presentations, which is more helpful to users.
Many of the talks were on pertinent topics, but were not interesting enough to be worth having. I'm not sure what was said in the first 1.5 hours by upper level NOAA folks that couldn't have been all in one condensed talk, leaving more room for talks with science and more from the users. The keynote address was not engaging. In general, too many talks by managers giving overviews of things that I suspect most people in the room already are familiar with. People either already understand these things at the overview level or they're not interested in the topic. There are a lot of scientists in the room but instead we got a talk on science advances from a manager. Then most of the managers aren't around the rest of the time to interact with anyone or to learn anything.
Need more breakout sessions and in-depth exchanges, rather than getting all people into the auditorium regardless of relevance for all most all oral presentations.
The previous format of NOAA Direct Readout Conferences with parallel sessions and much more time for group discussion (fewer presentations, more group discussions) was more appropriate to hear the user's needs and foster discussion among participants and satellite program managers.
Besides hearing from users already using the data, I'd like to hear what work was done to develop the particular sensors, why they work, what we can expect to accomplish with them and a session(s) with a more technical nitty-gritty focus, included within the next conference. Thanks!
For the organizers of future Conferences, to consider the possibility to add some practical workshop oriented to the use of image processing software.
This is my first time that I attended. The combination of three conferences: GOES-R, Polarmax and Direct Readout is an excellent idea and it worked well.
Firstly, let me say I think the concept of this conference is great, i.e. combining GOES/POES User conferences so the full satellite community can get together. I enjoyed the presentations and thought the agenda was very informative.
There were very few South American Delegates. In fact bearing in mind there were three conferences in one, the actual attendance was very low.
GOES-R Program needs to have a focused meeting or information on GRB and PDA connections for GOES-R data in the near future (cannot wait 2 years). With launch in 2 years, users need DETAILED and SPECIFIC information NOW so users can make informed decisions on if to upgrade to GRB, or to access PDA for product information.
Although I may be alone from industry in saying this, I really enjoyed the fact that there were no industry presentations and we were able to hear from the user community in their own words. This really provided me with a valuable perspective on the needs that exist among the users and how well

(or poorly) some of those needs may currently be met. In general the speakers were of very high quality-- you folks did a nice job of organizing everything! Thanks.
Thank you for allowing the updates on the spectrum issues.

IT Services

NCWCP facility has serious cell phone signal attenuation. This probably caused the high usage of Wi-Fi - if people had 3G/4G access they probably would not use the Wi-Fi as much. Most Android phones will connect to open Wi-Fi automatically now unless set otherwise. Either expand Wi-Fi capability to more IP addresses or install a 3G/4G active/passive repeater to cover inside the auditorium. Bandwidth seemed adequate but number of IPs seemed to be the limiting factor.
The NOAA building could not support the conference Internet service as it was maxed-out within minutes of the conference opening each day.

Remote Attendance

The dial-in capability was good. I thought the agenda was laid out well, though there were some presenters who provided more political platform than worthy information exchange.
Please provide a sound channel with the Webinar Internet Video service. It only needs to be a one way link. Questions could be sent in by email.
How could remote participants see posters or ask questions?
It is important to assure that the sound quality for remote attendance be excellent. We had some troubles with the conference call sound because some speakers talked too low or too far from microphone. The sound must be taken out directly from the amplification source and transmitted through the webinar session / call conference. For offshore attendees would be easier to listen to sessions directly from internet and not making a long-distance call.
Audio was a problem with the webinar. Because it wasn't working through the webinar platform, people had to call in on the 888 number. At least 1-2 people did not have their phone on mute, which made it difficult to hear the presentations. It would be nice to have a work around for this type of problem. I definitely appreciated the opportunity to join in via webinar, thanks for offering this option!
The location was excellent and the LIVE webinar format worked well. It would be good to support more than 100 on-line participants. This is the way of the future so refining the on-line presence is critical.
For future meetings, I would recommend looking into audio capabilities to "broadcast" and not receive audio from attendees. This issue was less disruptive later in the week, but was highly disruptive in the beginning of the week, especially with the keynote and other featured speakers. Also providing a recorded session with the slides afterward would be appreciated!

APPENDIX L Acronym Glossary

ABI	Advanced Baseline Imager
AHI	Advanced Himawari Imager
AIRS	Atmospheric Infrared Sounder
AMSU	Advanced Microwave Sounding Unit
AoA	Analysis of Alternatives
APT	Automated Picture Transmission
AQ	Air Quality
Aqua	NASA Earth Satellite mission named for the large amount of information being obtained about water in the Earth system
ASAR	Advanced Synthetic Aperture Radar
ASDI	Aircraft Situation Display to Industry
ATMS	Advanced Technology Microwave Sounder
AVHRR	Advanced Very High Resolution Radiometer
AWC	Aviation Weather Center
AWG	Algorithm Working Group
BUFR	Binary Universal Form for the Representation of Meteorological Data
Cal/Val	Calibration/Validation
CDR	Critical Design Review
CDR	Climate Data Record
CICS	Cooperative Institute for Climatic Studies
CIMH	Caribbean Institute for Meteorology and Hydrology
CIMSS	Cooperative Institute for Meteorological Satellite Studies
CIRA	Cooperative Institute for Research in the Atmosphere
CLASS	Comprehensive Large Array-data Stewardship System
CLAVR-X	Clouds from AVHRR Extended
COMET	Cooperative Program for Operational Meteorology, Education, and Training
CONUS	CONtinental United States
CPC	Climate Prediction Center
CPCMORPH	CPC Morphing Technique
CPTEC	Center for Weather Forecasting and Climate Research
CrIS	Cross-track Infrared Sounder
CRW	Coral Reef Watch
CSPP	Community Satellite Processing Package
DCS	Data Collection System
DADDS	DCS Administration and Data Distribution System
DMSP	Defense Meteorological Satellite Program
DNB	Day Night Band
DoD	Department of Defense
DRO	Direct Readout
DWSS	Defense Weather Satellite System
EDR	Environmental Data Record
EM	Electromagnetic
EMWIN	Emergency Managers Weather Information Network
EO	Environmental Observation
EPS	EUMETSAT Polar System
ESPC	Earth System Prediction Capability
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
FEMA	Federal Emergency Management Agency

GAO	Government Accountability Office
GEO	Geostationary Earth Orbit
GFCS	Global Framework for Climate Services
GLM	Geostationary Lightning Mapper
GOES	Geostationary Operational Environmental Satellite
GOES-R	GOES-R series
GPO	GOES-R Program Office
GPS	Global Positioning System
GRIB	Gridded Binary
GRB	GOES-R Rebroadcast
GTS	Global Telecommunications System
GUC	GOES Users' Conference
GVAR	GOES Variable Format
HFIP	Hurricane Forecast Improvement Program
HRD	High Rate Data
HRIT	High-Rate Information Transmission
HRPT	High Resolution Picture Transmission
HWRF	Hurricane Weather Research and Forecasting
HWT	Hazardous Weather Testbed
IASI	Infrared Atmospheric Sounding Interferometer
IJPS	Initial Joint Polar System
IMAPP	International MODIS/AIRS Processing Package
INPE	Brazilian Instituto de Nacional de Pesquisas Espaciais
IR	InfraRed
JAXA	Japan Aerospace Exploration Agency
JMA	Japan Meteorological Agency
JPSS	Joint Polar Satellite System
LEO	Low Earth Orbit
LRIT	Low Rate Information Transmission
METEOSAT	Geostationary meteorological satellites operated by EUMETSAT
MODIS	MODerate-resolution Imaging Spectroradiometer
NASA	National Aeronautics and Space Administration
NCAR	National Center for Atmospheric Research
NCDC	National Climatic Data Center
NCEP	National Centers for Environmental Prediction
NCWCP	NOAA Center for Weather and Climate Prediction
NDE	NPOESS Data Exploitation
NESDIS	National Environmental Satellite, Data, and Information Service
NHC	National Hurricane Center
NOAA	National Oceanic and Atmospheric Administration
NPOESS	National Polar-orbiting Operational Environmental Satellite System
NPP	NPOESS Preparatory Project
NSC	NOAA Satellite Conference
NSOF	National Satellite Operations Facility
NWP	Numerical Weather Prediction
NWS	National Weather Service
OHC	Ocean Heat Content
OLR	Outgoing Longwave Radiation
OPC	Ocean Prediction Center
OSD	Office of the Secretary of Defense
OSPO	Office of Satellite & Product Operations

OT	Overshooting Cloud Tops
PCW	Canadian Polar Communication and Weather Mission Satellite
PDA	Product Distribution and Access
PG	Proving Ground
PGLM	Pseudo GOES-R Lightning Mapper
POES	Polar Operational Environmental Satellite
RADARSAT	Canadian Remote Sensing Satellite Constellation
RIG	Remote Imaging Group
RGB	Red-Green-Blue
SAB	Satellite Analysis Branch
SAR	Synthetic Aperture Radar
SDR	Sensor Data Record
SDR	Satellite Data Requirements
SERVIR	Joint venture between NASA and U.S. Agency for International Development which provides satellite-based Earth observation data and science applications to help developing nations improve their environmental decision making.
SG	Second Generation
S-NPP	Suomi-National Polar-Orbiting Partnership
SPoRT	Short-Term Prediction Research and Transition Center
SSEC	Space Science and Engineering Center
SST	Sea Surface Temperature
STAR	Center for Satellite Applications and Research
SW	Shortwave Radiation
Terra	The EOS flagship satellite (EOS AM)
TPW	Total Precipitable Water
UKMET	United Kingdom Meteorological Agency
VIIRS	Visible/Infrared Imager/Radiometer Suite
VLabs	Virtual Laboratories
VISIT	Virtual Institute for Satellite Integration Training
WFO	Weather Forecast Office
WIS	WMO Information System
WMO	World Meteorological Organization
WPC	Weather Prediction System

APPENDIX M Sponsors

WORLD METEOROLOGICAL ORGANIZATION (WMO)

GOLD LEVEL: TRAVEL FOR SOME PARTICIPANTS

ORBITAL SYSTEMS, INC

SILVER LEVEL: BREAKS FOR TUESDAY AND WEDNESDAY

MORCOM, INC

BOTTLED WATER FOR THE WEEK