



JPSS Proving Ground and Risk Reduction Update 5 May 2014



Important Topics

- JPSS Program Status
- SNPP Initiatives of Interest
- JPSS Science Seminars
- Conferences and Meetings



JPSS Program Status

S-NPP is producing outstanding data

- Satellite healthy; data availability high (~99.99%)
- Operations transitioned to OSPO in February 2013
- Significant progress in cal/val and operational use of instruments
- S-NPP declared as the primary operational polar orbiting satellite on 1 May

Successful JPSS MCDR held 22-25 Apr

JPSS-1 is executing as planned

- Instruments and spacecraft proceeding well
- All instruments assembled and in test
- Spacecraft is in assembly and integration



JPSS-1 Spacecraft integration and testing
courtesy of Ball Aerospace & Technologies Corp.

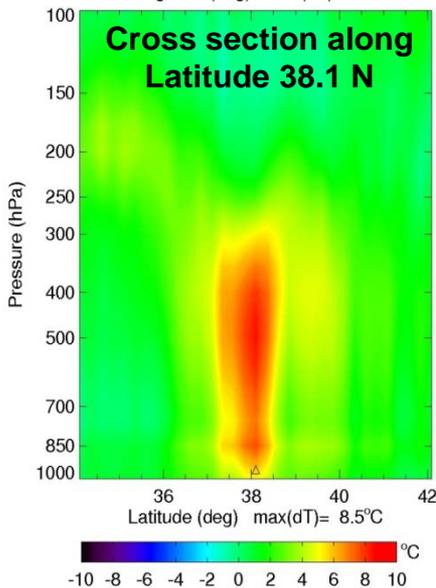
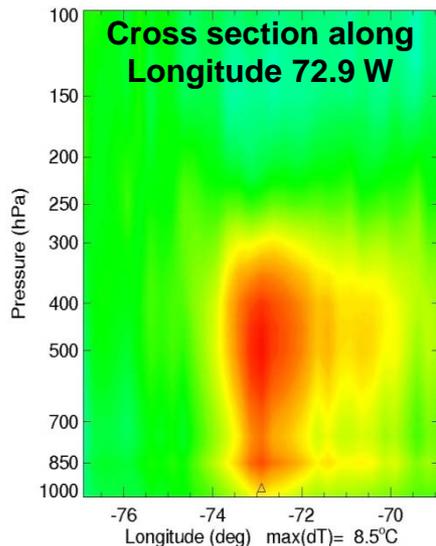


JPSS PGRR Project Accomplishments

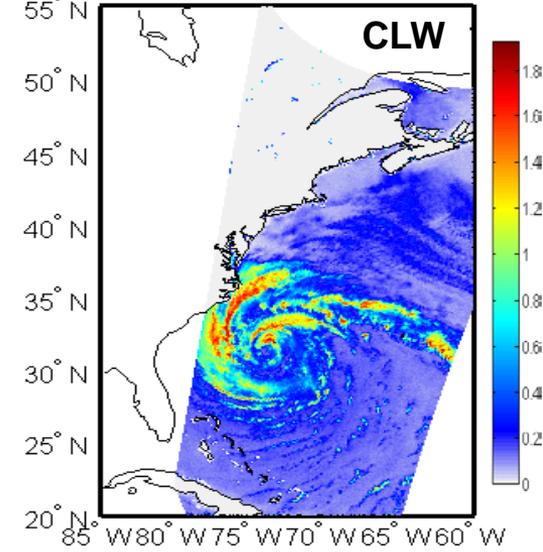
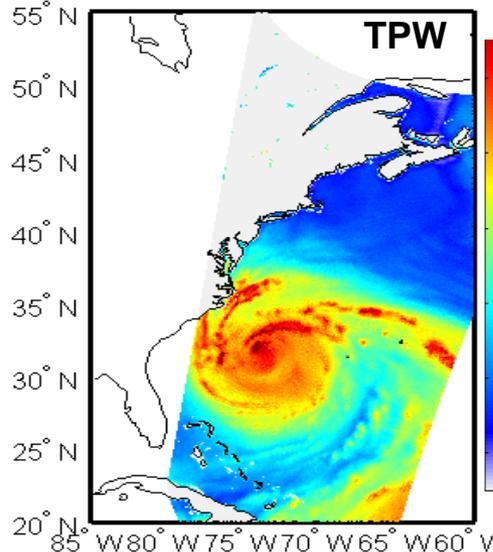
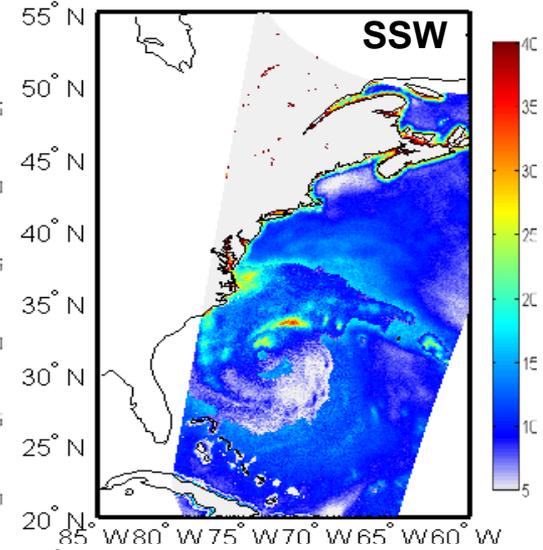
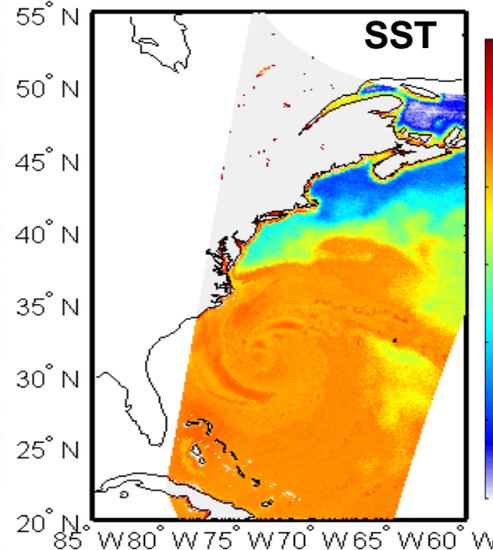
- **JPSS Algorithm Work:** The Aerosol Detection, Aerosol Optical Depth, Cloud Phase, Cloud Height, Daytime Cloud Optical Properties and Nighttime Cloud Optical Properties algorithms have been delivered to the STAR Algorithm Scientific Software Integration and System Transition Team (ASSISTT) for integration into the STAR ASSISTT Processing Framework (SAPF). Integrated the Cloud Height algorithm into the SAPF. (Wolf)
- **Hurricane Structure Monitoring:** Developed the Advanced Radiance Transformation System (ARTS) to routinely generate the ATMS re-sampled data at 2.2 degree resolution. Examined the use of the ATMS retrieved temperatures to monitor the hurricane warm core. (Weng)
- **JPSS Sounders for use in TC Track and Intensity Work:** Successfully adopted the recently-developed global version of SHIPS/LGEM/RII code for use with ATMS input. The global version of the code now allows to run Logistic Growth Equation Model (LGEM) for West Pacific Basin using Maximum Potential Intensity calculated from ATMS profiles. (DeMaria)
- **VIIRS imagery products over Alaska:** Created a website to depict "live" VIIRS imagery. Website: http://rammb.cira.colostate.edu/ramsd/online/npp_viirs.asp#Alaska-Centered Image Products The "Flash Loops" cover the last few days at relatively lower resolution and the "Latest Image" shows the highest resolution version, which you can also access through the "4 Week Archive". (Miller)
- **Chesapeake Bay Work:** Assembled a two year time series dataset, which consists of atmospheric and water optical properties derived from coastal AERONET-OC; in-situ measurements obtained during the VIIRS overpass time of the site locations; and environmental conditions such as wind speed and surface pressure (Gilerson)
- **Agricultural Drought Monitoring:** St up a series of simulation experiments to assess the impact of insertion of NPP/JPSS albedo and GVF on NLDAS/GLDAS SM simulations. (Zhan)
- **Advanced Satellite Data Assimilation Techniques:** Code and science review have been completed. These software changes have been merged into the GSI and are ready for the various NWP centers to test/use/implement. (Jung)
- **WMO Virtual Lab:** Mitch Goldberg and Liam Gumley briefed the WMO Virtual Laboratory Regional Focus Group of the Americas and Caribbean , on 8 Apr and 9 Apr respectively. Focus was on JPSS capabilities and direct broadcast (Connell)

Key Results/Accomplishments

Retrieval from ATMS



Retrievals from AMSR2

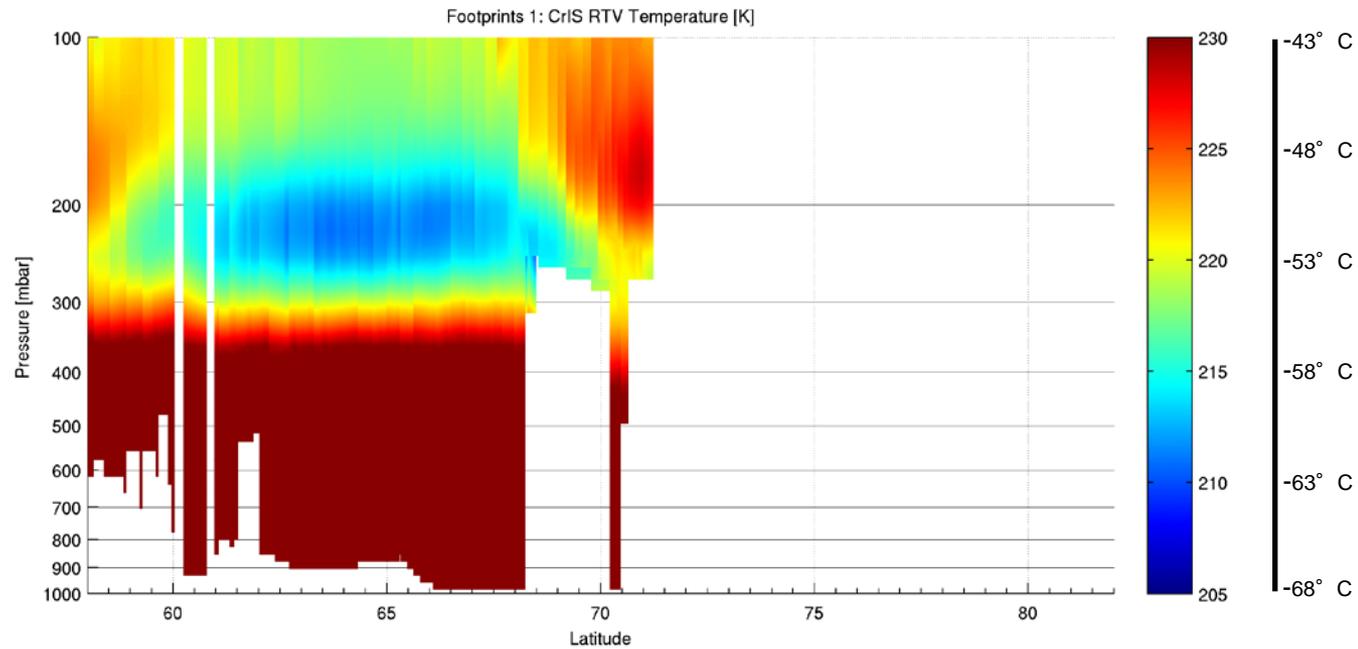
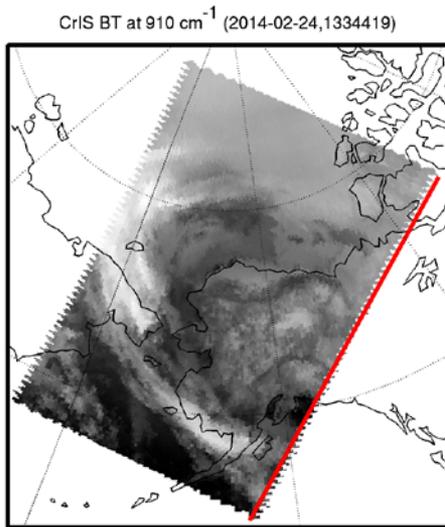


➤ High resolution ATMS temperatures depicted very clear warm core

➤ AMSR2 SST, SSW, TPW and CLW retrievals provided good information of the hurricane

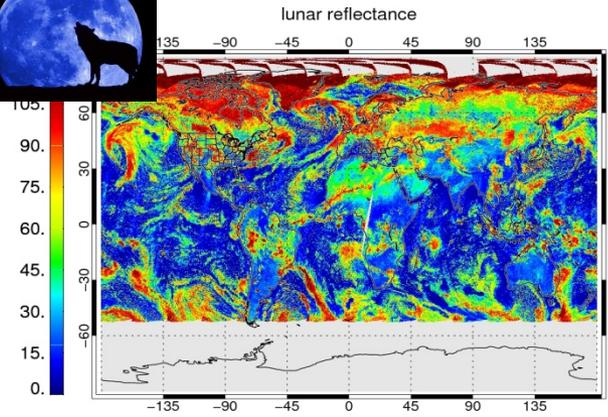
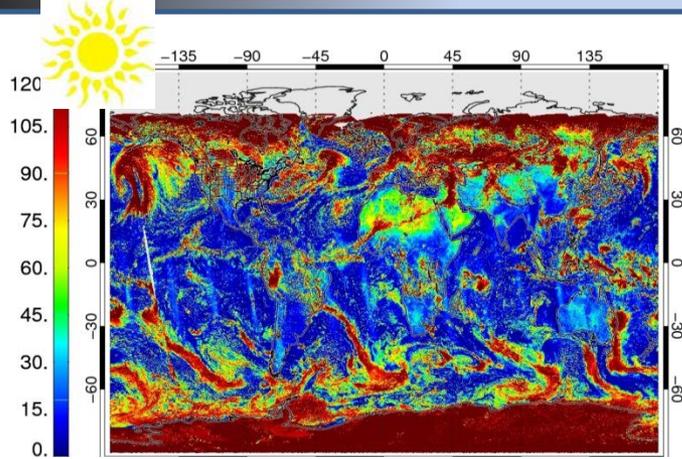
Key Results/Accomplishments

Detection of Cold Air Threat to Transpolar Flight Safety (i.e., Fuel Freezing and Engine Fuel Starvation)

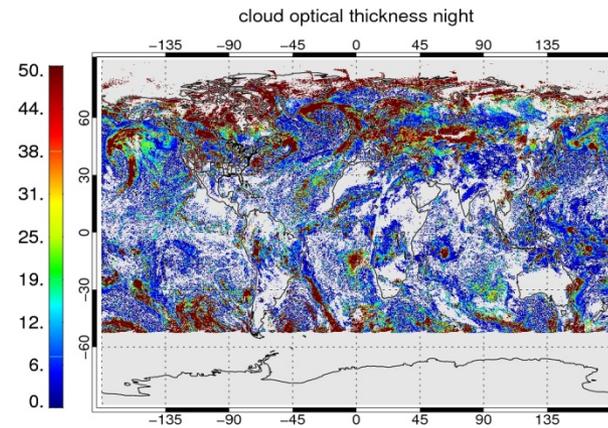
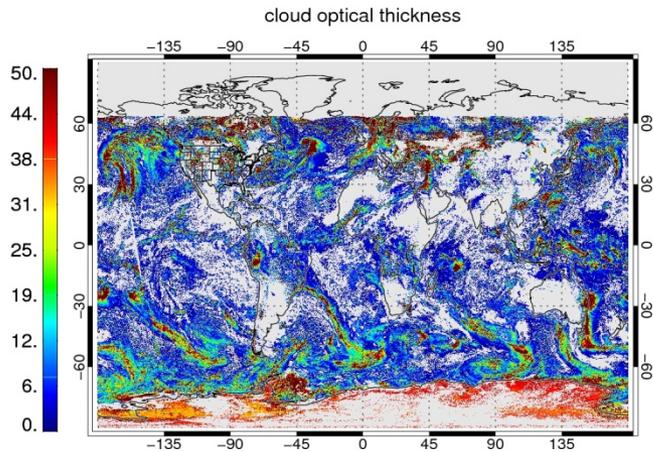




Key Results/Accomplishments



Case studies and long-term comparisons demonstrate **consistency** between daytime and nighttime results for COD.



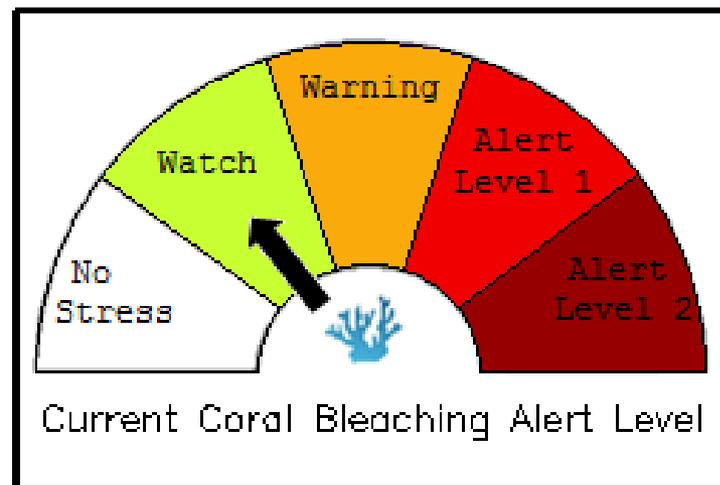
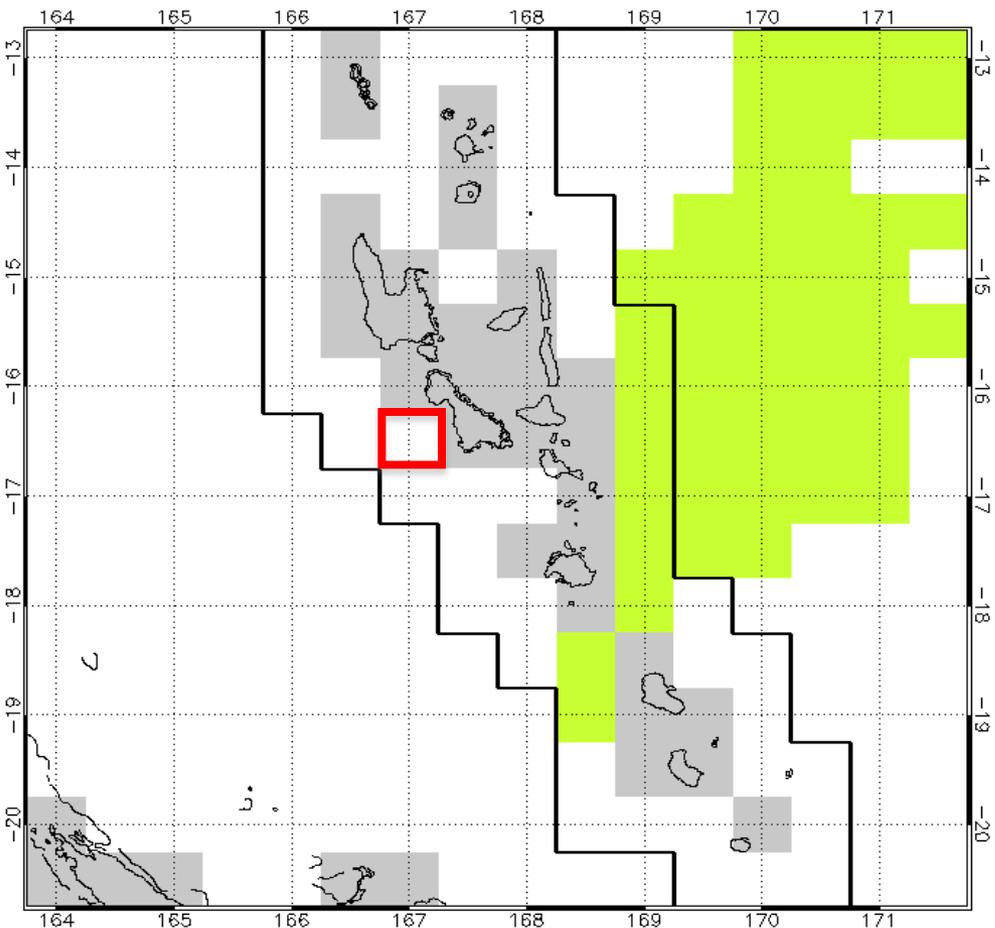
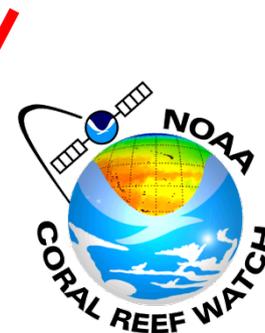
This is the first satellite-based retrieval, which is able to measure COD for non-cirrus clouds at night.

NLCOMP will help to close the nighttime observation gap of cloud optical properties. This will be especially valuable in winter in high latitudes where cloud observations are missed for longer periods (example: Alaska)



Key Results/Accomplishments

Work with users on prototype coral bleaching designs ✓





JPSS PGRR Project Review

29 Apr – 1 May



Outline

- **Brief Project Overview and Objectives (1 slide)**
 - Goal(s):
 - Satellite sensors used:
 - Targeted NOAA users:
 - Period of Performance:
 - Budget:
- **Scientific Basis/Approach (1 slide)**
 - What measurements are used in your algorithm/product? (i.e., VIIRS CH1, NDVI, ...)
 - Has this been done previously by you or other investigators? (i.e., AVHRR to VIIRS)
 - Is any ancillary data used? (i.e., NWP model fields)
 - Is your product output combined with any other data? (i.e., product is displayed in Google Maps)
- **Key Results/Accomplishments (2 slides)**
- **User Interactions (if appropriate for your project) (1 slide)**
 - How did your project interact with users and what feedback did you get?
 - What is your perceived impact for the user?
 - When do you think your project is ready for a detail demonstration with the user, and what type of support would be needed?
- **Any issues? (1 slide)**
 - current or possible future problems, and
 - approaches to get around or mitigate the problem(s), as appropriate
- **Schedule for remainder of project (1 slide)**
- **What would you do in next phase of project? (1 slide)**
 - What would you do if funded again for next PGRR LOI call (FY15 – FY17)



JPSS PGRR Project Review Agenda

- Excel Table



JPSS Science Seminars - Past

Date	Presenters	Topic
November 18, 2013	Mark DeMaria	Joint JPSS-GOES-R Tropical Cyclone Satellite Data Assimilation Discussion
December 16, 2013	Arunas Kuciauskas and Jeff Hawkins	NexSat JPSS Demonstration Project NRL-MRY VIIRS Data and Cal-Val Work
January 27, 2014	Cara Wilson	Facilitating NOS/NMFS End-User Access to VIIRS data
February 24, 2014	Walter Wolf	Uniform Multi-Sensor Algorithms for Consistent Products
March 21, 2014	Alex Gilerson	Development of algorithms for retrieval of chlorophyll-a in the Chesapeake Bay and other coastal waters based on JPSS-VIIRS bands
April 21, 2014	Active Fire Team	JPSS and GOES-R Activities Supporting 2013 Fire Outbreaks



JPSS Science Seminars - Future

Date	Presenters	Topic
May 19, 2014	Amy Huff Shobha Kondragunta	VIIRS Aerosol Products for Air Quality Applications
June 23, 2014	Dan Pisut	Visualization of Suomi NPP Data
July 21, 2014	Daisuke Hotta Eugenia Kalnay	Application of EFSO to Proactive Quality Control, and Efficient Testing of Forecast Impact of New Instruments
August 18, 2014	Training Team	Joint JPSS/GOES-R Training
September 29, 2014	Pingping Xie	Infusing JPSS PMW Retrievals to CMORPH Precipitation Estimates for Improved Weather, Climate, and Water Applications
October 20, 2014	Jerry Zhan	Enhance Agricultural Drought Monitoring Using NPP/JPSS Land EDRs For NIDIS
November 17, 2014	SPORT, Mike Pavolonis	Joint JPSS/GOES-R Low Cloud and Fog
December 15, 2014	Jeff Key	Development, Generation, and Demonstration of New JPSS Ice Products in Support of a National Ice Center JPSS Proving Ground and Risk Reduction Activity
January 26, 2015		
February 23, 2015		
March 23, 2015		
April 20, 2015		
May 18, 2015		
June 22, 2015		
July 20, 2015		
August 17, 2015		
September 21, 2015		



Upcoming Conferences/Workshops

- **STAR JPSS Annual Meeting (12-16 May, NCWCP)**
 - Review the progress of the STAR JPSS program over the past year and review the plans in the coming year;
 - Engage with users and other key external stakeholders such as NASA, OSPO, NDE, GCOM, JPSS Risk Reduction and Proving Ground, the JPSS Ground and Flight Segments, and industry partners.
 - Enhance interaction between SDR and EDR teams and facilitate science and technical exchanges among the teams.
 - Hold individual meetings with the product application teams and the Algorithm Integration Team (AIT) to review algorithm code development and other activities.
 - Hold splinter meetings to develop plans for improved utilization of JPSS products.
 - Inform the JPSS Program Office and the STAR Management on the status of the program.
- **12th Annual JCSDA Workshop (21-23am May, NCWCP)**
 - Review the ongoing and planned scientific development sponsored by the NASA-NOAA-DOD Joint Center for Satellite Data Assimilation
 - Coordinate these efforts, both internally and with the outside research community involved in the satellite data assimilation



Upcoming Conferences/Workshops

Satellite Proving Ground/User Readiness Meeting (2-5 Jun 2014, Kansas City MO)

– Meeting Objectives

- Review GOES-R/JPSS program status (including PG) and discuss areas of synergy
- Explain and clarify Path(s) to Operations (including NWS Operations PG) (Mike/Carven to write, talk w/ Brian re: scope concern)
- Review current and discuss future PG training needs (Wendy, Tony discuss and report back, Nov 6-7 Satellite mtg...)
- Highlight specific Proving Ground activities through presentations by WFO and National Centers SOOs/forecasters, and Satellite Liaisons
- Explain AWIPS and data delivery and utilization strategies
- Evaluate effectiveness of communicating PG activities (seminars, articles, conference participation)



Conclusions

An understanding of how JPSS data used throughout NOAA is pivotal to evolving and maintaining a robust satellite mission that serves the needs of all Line Offices.

- SNPP continues to prove its value – NWS supports DNB and 1.6 micron channel as new KPPs
- The JPSS Program is on-track for a successful JPSS-1 launch.
- Demonstrated and documented major accomplishments of the Proving Ground and Risk Reduction Program
- The JPSS River Ice and Flooding Products initiative has proven its value supporting the Alaska Pacific and North Central River Forecast Centers.
- This initiative has paved the way for other joint opportunities. First meeting of Joint JPSS/GOES-R Fire and Smoke Initiative to be on 8 May.