GOES-R/JPSS Program



CIMSS/ASPB Participation GOES-R/JPSS Proving Ground Status



Wayne Feltz, Mike Pavolonis, Tim Schmit, Andy Heidinger, Jordan Gerth, Scott Bachmeier, Scott Lindstrom, Justin Sieglaff, Lee Cronce, Robert Aune, Gary Wade, Brad Pierce, Kaba Bah, Will Straka, Jason Otkin, Sarah Monette, Chris Velden, Ralph Petersen, Russ Dengel and Chris Schmidt

March 4, 2013





- Demonstration of Satellite PG applications at National Center Testbeds/Demonstrations and NWS WFO
- AWIPS-2 status
- Eastern Region Virtual Workshop
- Upcoming meetings/conferences



Satellite Liaison: TBD

- Continue distribution of GOES-R Proxy for Nearcasting, UW-CTC, WRF synthetic imagery, Fire intensity detection
- Continue streamlining formats for AWIPS-2
- Plan for HWT 2013 collaborations, March/April visit by Jordan Gerth/Wayne Feltz
- Pending approval of HWT testbed plan by NOAT governance process other products will be added
- UW-CIMSS satellite applications "Boot Camp" will be held 8-19 July 2013







Satellite Liaison: Amanda Terborg

- UW-CTC, Overshooting-tops, Fog/low cloud, cloud phase, cloud height, and WRF simulated ABI radiance products
- February Winter Demo:
 - GOES-R cloud icing, height and phase
 - Synthetic NSSL WRF proxy for ABI
 - http://goesrawt.blogspot.com/
 - VIIRS data now available for AWC but not tested in operations yet
- Coordination of Overshoot research AWC and LaRC
- Summer demonstration scheduled August 12-23, 2013



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Satellite Liaison: Chad Gravelle

- Continued coordination of GOES-R Fog/Low Stratus products in Operational PG
- Coordinated 2013-2014 PG NWS TC demonstration plan
- Exploring possibility of convective Cloud-Top Cooling and Overshooting Top WFO PG demo within "convective-initiation toolbox"
- Assisted in distributing VIIRS bands (including DNB) to local WFO, Monterey and Louisville
- Assisted CRH and ERH with successful display of Fog/Low Stratus products in AWIPS 2.
- Working through NWS Operational PG regarding content of Proving Ground AO and how it relates to ongoing GOES-R PG activities







- Automated ash cloud alerts from AVHRR and MODIS will be provided to the VAAC and CWSU soon (training needs to be updated first).
- We have not received any feedback on the fog/low cloud products in the last couple of months. We are not sure how to maintain "momentum" in AK.
- VIIRS NetCDF files verified to be AWIPSII compatible
- VIIRS VISIT NWS training module under development
- Polar2grid tool being expanded for GEOCAT AK products





Satellite Liaison: Roy Huff

- Cloud Top Cooling (CTC), MIMIC-TPW, CRAS, and overshooting top and thermal couplet decision support products are now available at NWS Honolulu on AWIPS
- AWIPS-formatted MODIS cloud and moisture imagery from HCC antenna will be available this month
- Jordan Gerth plans to visit Honolulu and Pago Pago in the April/May timeframe to work with Eric Lau and touch base with Roy Huff and Bill Ward on the status of the demonstration
- Volcanic ash and SO₂ (from MODIS) will be made available (Spring 2013)
- Preparing for new X/L-band antenna installation at Ford Island





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Satellite Liaison: Michael Folmer

- UW-CIMSS providing Overshooting-Top/Enhanced-V products (same methods as SPC delivery), N-AWIPS displayed at OPC
- Cloud top height, phase, and temperature from GOES imager are in progress for display within N-AWIPS and AWIPS
- The Washington VAAC is now receiving SEVIRI based GOES-R volcanic ash products via a McIDAS ADDE server and automated alerts will soon be distributed
- GOES sounder total precipitable water and stability indexes (new operational version) now available via NESDIS
- Coordinated CIMSS GOES-R PG collaborations with 2013-2014 Satellite Proving Ground for Marine, Precipitation, and Hazardous Weather Applications demonstrations

Other GOES-R PG decision support products requested within plan
 available once approved by NOAT governance process



• Hurricane Intensity Estimate (HIE) Algorithm

Calculates tropical cyclone intensity (MSLP and max surface wind) objectively from proxy ABI IR-window channel imagery.

• Tropical Overshooting Tops (TOTs)

Employs IR-window channel imagery to identify convective protrusions above cumulonimbus anvils associated with very strong tropical convection updrafts, which can be related to tropical cyclone formation and intensification. Could also be important for marine and aviation applications.

• Saharan Air Layer (SAL) Product

Uses a split window (10.8 and 12.0 μ m) algorithm to identify and track dusty dry air masses (SAL), which can negatively impact tropical cyclone activity.





- Purpose of the HIE is to provide TC analysts with a completely objective and operationally-proven tool to estimate TC intensity using GOES-R ABI IR imagery.
- The HIE has been demonstrated to NHC/TAFB specialists within the GOES-R Proving Ground since the 2010 Atlantic TC season.
 - As proxy data for GOES-R, the HIE employs 15-minute IR imagery from Meteosat-9/10 and GOES-East (CONUS sector).
- Algorithm heritage based on the Advanced Dvorak Technique (ADT)
 - Developed by UW-CIMSS, used operationally by NHC
- Systematic verification of **HIE** is underway as part of PG feedback
- Helped to upgrade Michael (2012) to major hurricane





Tropical Overshooting Top (TOT) Detection Algorithm



- Objectively identifies overshooting top locations using cold IR pixels relative to neighbors, to isolate and quantify active vigorous tropical convection.
- As proxy data for GOES-R, the TOT algorithm employs 15-minute IR imagery from Meteosat-9/10 and GOES-East (CONUS sector).
- Research underway to associate TOT trends with TC genesis and rapid intensification, and as a potential predictor in statistical prediction models.
- Feedback in 2012

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- Useful for TAFB tropical wave analysis
- Some false and missed TOT detection in TCs Nadine and Ernesto
 - Algorithm tuning underway

Example from 2012 NHC Proving Ground – Hurricane



Brightness Temperature (C)

-100-90-80-70-60-50-40-30-20-10 0 10 20 30

GOES-E color-enhanced IR image and identified TOTs (yellow dots) at 0615UTC on 25 Oct., 2012





NWS Milwaukee focal point: Steve Davis

- CIMSS GOES-R Local Area Demonstration with MKX will continue again this summer and fall (anticipated to begin in June after MKX has transitioned to AWIPS II)
- 2012 completed activities report in progress
- 2013 activities plan in progress
- Anticipated GOES-R products to be demonstrated in 2013 include:
 - Convective Cloud Top Cooling (coordinated with Chad Gravelle)
 - Nearcasting
 - Sky Cover (Extension of Cloud and Moisture Imagery)
- Anticipated JPSS products to be demonstrated in 2013 include:
 - Day/Night Band







http://cimss.ssec.wisc.edu/goes_r/proving-ground/wrf_chem_abi/wrf_chem_abi.html







CIMSS AWIPS II Update







Motion of sea ice near Barrow, Alaska (using 11.45 µm VIIRS IR images) Credit: Scott Bachmeier





• Recent Work:

- Attending AWIPS II developers' forum conference calls, discussions pertaining to the GOES-R Proving Ground, and meetings of the EPDT
- Helping to plan AWIPS/RGB session for NOAA Satellite Science Week
- Passed design review of updated lightning ingest and visualization plug-ins for Pacific Region Headquarters
 - Code to be committed to baseline repository this week for deployment as part of OB13.3
- Found issue with NLDN ingest into AWIPS II
- Investigating performance of regionalsat plug-in
- Enhancement written for scaling byte array to real numbers via XML
 - Awaiting for next steps
- J. Gerth and L. Cronce visited NWS Milwaukee to work with their ITO in configuring their AWIPS II for GOES-R Proving Ground products





CIMSS AWIPS II Update



LN Lightning Plot sible Satellite

The World Wide Lightning Location Network (WWLLN) provides lightning information across the entire Pacific Basin. CIMSS wrote the plug-in to display this data in AWIPS II.

Image credit: Eric Lau







- Short-term Priorities:
 - Obtain access to Dimensions to commit AWIPS II code
 - Write discrepancy reports for AWIPS II
 - Begin to deliver VIIRS imagery at full resolution to AWIPS II using the operational netCDF4
 - Document CTCR ingest and display for WFO sites using AWIPS II
 - Draft FLS instructions for AWIPS II are now posted online
 - Continue to work on resolving AWIPS II issues with NWS Sullivan (MKX)
- Long-term Priorities:
 - Confirm all CIMSS AWIPS I imagery/products are AWIPS II compliant
 - Complete transition from AWIPS I to AWIPS II on all workstations at CIMSS





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Direct Broadcast VIIRS in AWIPS

- Kathy Strabala was part of 2 town hall meetings describing utility of VIIRS DB data in AWIPS at AMS meeting in Austin, Texas
 - "Assessment of Pre-Operational Data from the VIIRS Instrument on Suomi-NPP"
 - "Early Successes from the Suomi-NPP Mission"
- Polar2grid version 1.0 publically released through the CSPP website (http://cimss.ssec.wisc.edu/cspp/)
 - Reprojects and reformats VIIRS SDR data to AWIPS NetCDF and GeoTIFF
- Scott Bachmeier finishing VIIRS in AWIPS VISITview
 teletraining Module





February 26, 2013

- 1. Early Results from the Central Region Demonstration of the GOES-R Fog and Low Stratus Algorithm Applied to Current Real-time GOES Imagery and Data -Brian Motta
- 2. Using Simulated Satellite Imagery in NWS Experiments/Testbeds Justin Sieglaff
- 3. GOES-R ABI (Advanced Baseline Imager) Rapid Refresh Imaging Capabilities Tim Schmit
- 4. Improving Very-Short-Range Forecasts of the Pre-Convective Environment Using Operational Geostationary Satellite Observations Ralph Petersen
- Using UW-Cloud Top Cooling Rates in Convective Storm Warning Experiments

 Justin Sieglaff
- 6. Suomi NPP VIIRS Satellite Imagery in AWIPS Scott Bachmeier
- 7. Linear Optimization as a Solution to Improve the Sky Cover Guess, Forecast Jordan Gerth







2013

- Virtual Science Week 17-23 March
- NSC (DRC/GUC) 8-12 April
- O-CONUS 17-21 June
- EUMETSAT/AMS 16-20 Sept

Telcon College Park, MD Fairbanks, Alaska Vienna, Austria

http://www.eumetsat.int/Home/Main/News/Conferences_and_Events/820209?I=en

2014

• AMS Annual meeting 2-6 Feb

Atlanta, GA

