

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 Counce, Robert Aune, Gary Wade, Brad Pierce, Kaba Bah, Will Straka, Jason Otkin, Sarah Monette, Chris Velden, Ralph Petersen, Russ Dengel

November 13, 2012





- Demonstration of Satellite PG applications at National Center Testbeds/Demonstrations and NWS WFO
- AWIPS-2 status
- GOES-14 1-minute mode
- Upcoming meetings/conferences



Satellite Liaison: Chris Siewert

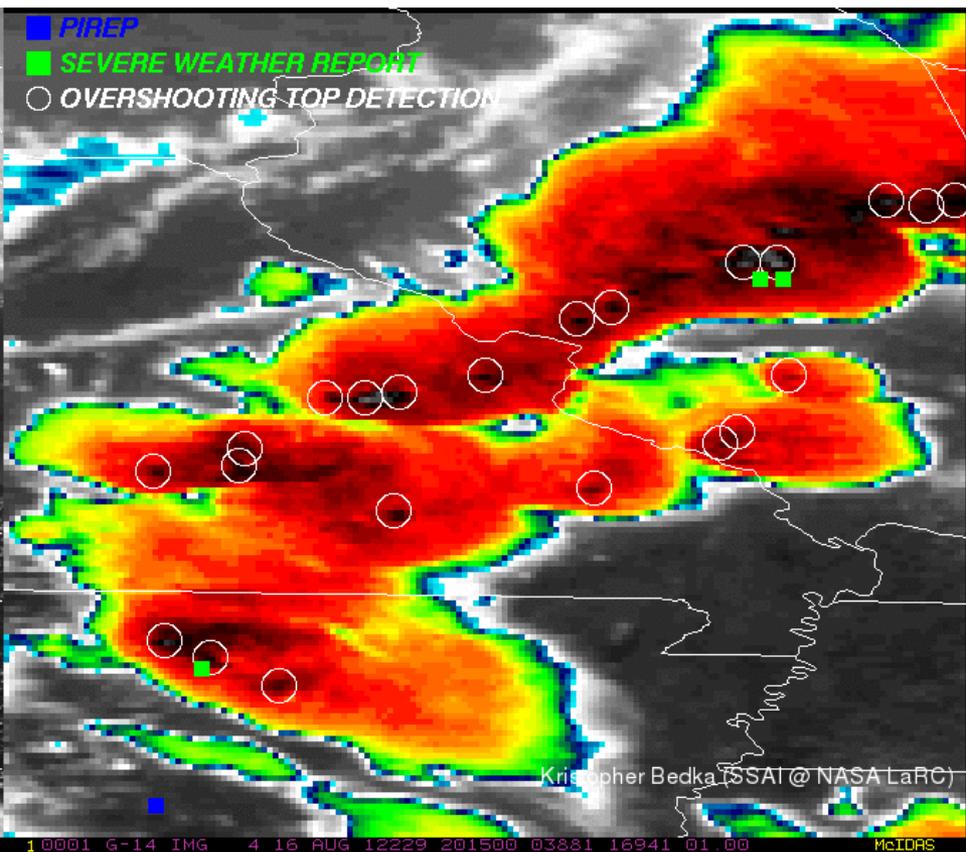
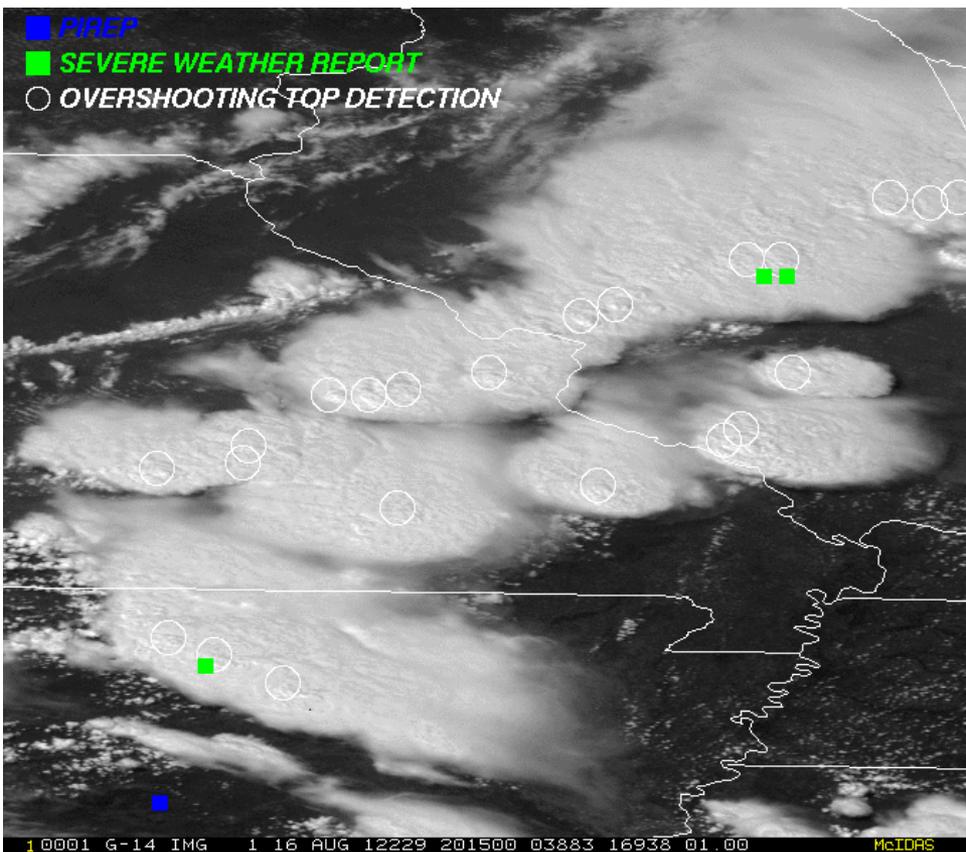
- Continue distribution of GOES-R Proxy for Nearcasting, UW-CTC, WRF synthetic imagery, Fire intensity detection
- Continue streamlining formats for AWIPS-2
- Plan for HWT 2013 collaborations
- **UW-CIMSS satellite applications “Boot Camp” will be held 8-19 July 2013**



Satellite Liaison: Amanda Terborg

- **UW-CTC, Overshooting-tops, Fog/low cloud, cloud phase, cloud height, and WRF simulated ABI radiance products are available via LDM and can be viewed in N-AWIPS and had been evaluated at AWT**
- **Collaborating with Bill Smith Jr regarding availability of icing product to AWC – Cross correlation between LaRC driven cloud inputs and GOES-R baseline cloud input**
- **Coordination is occurring with regard to providing turbulence/icing for next testbed demonstration**
- **GOES-13/GOES-14 backup support**
- **GOES-14 one-minute mode support to AWC**
- **VIIRS data now available for AWC use**



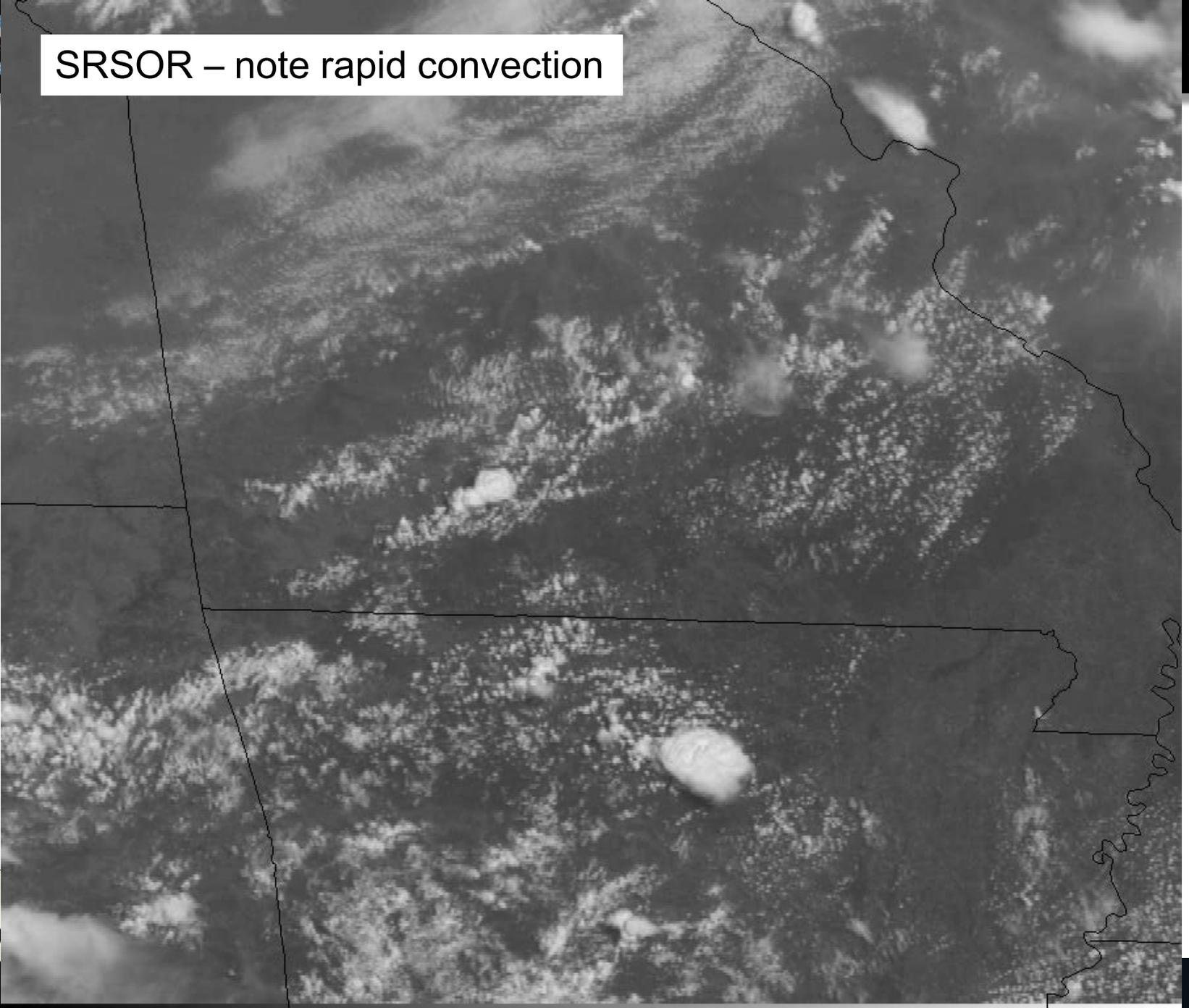


Satellite Liaison: Chad Gravelle

- **Provided guidance/updates regarding formalized low cloud/fog Central/Eastern region NWS WFO PG distribution – First NWS feedback presented at NWA**
- **Exploring convective Cloud Top Cooling WFO PG dissemination as next product**
- **CIMSS is aware of need to demonstrate products within AWIPS-2, we are working on getting all PG products into AWIPS-2 compatible formats**
- **Guidance regarding use of one minute GOES imager data for UW-CTC to Chad**
- **Assisted in distributing VIIRS bands (including DNB) to local WFO, Monterey WFO stated that they have been**

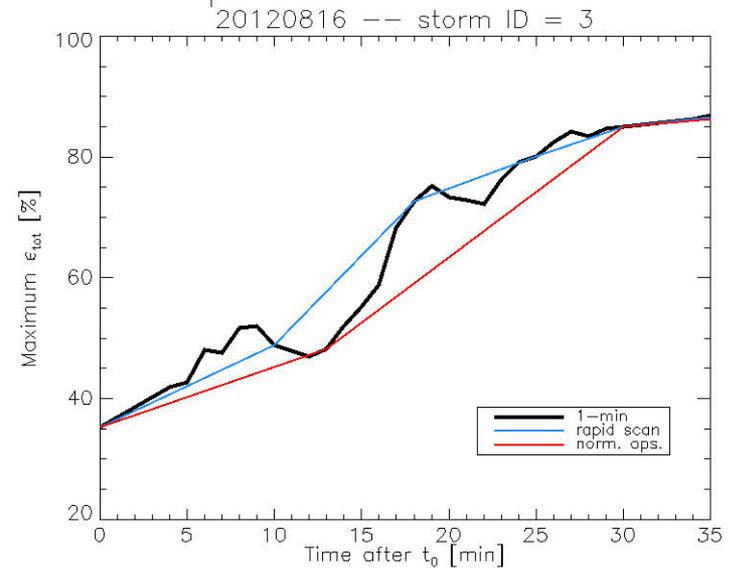
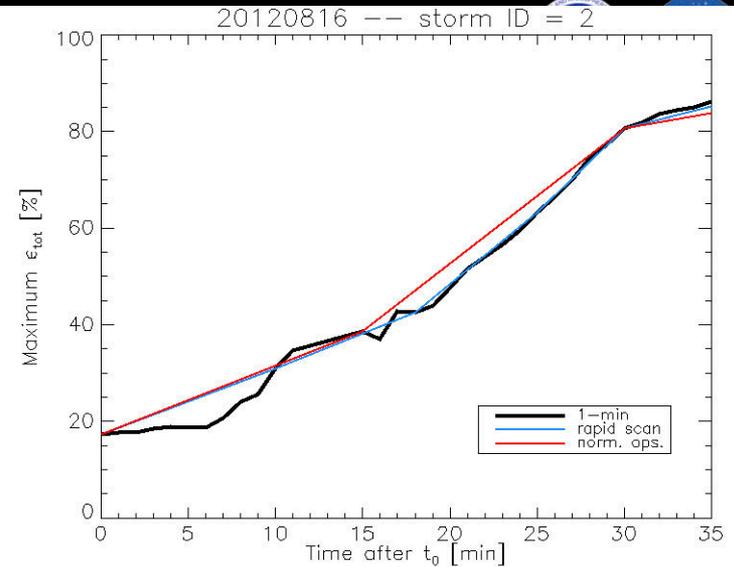
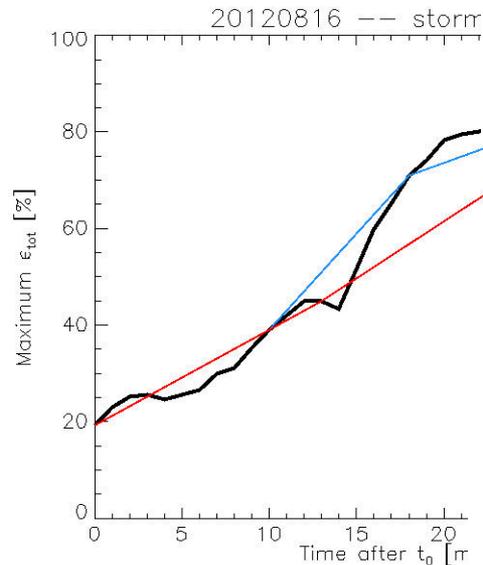
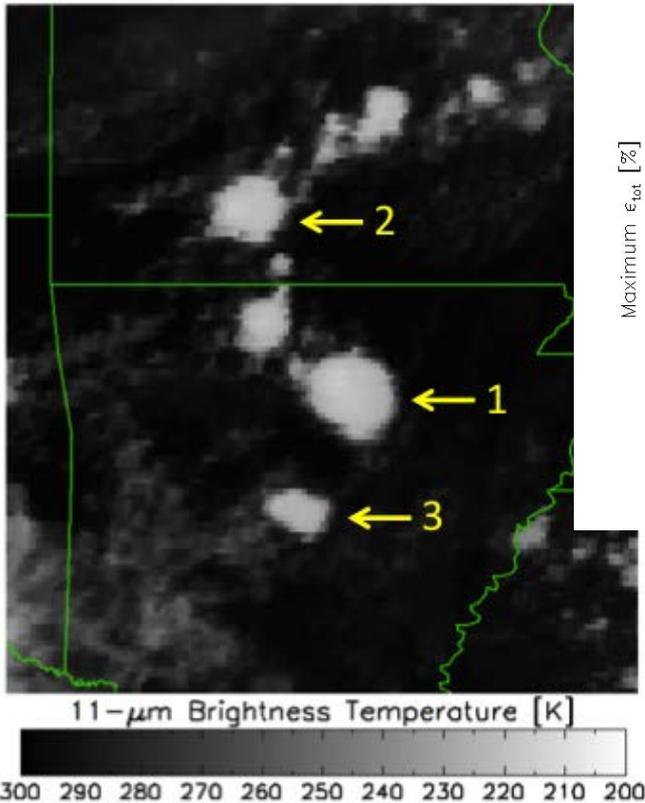
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SRSOR – note rapid convection



Rate of temporal cooling in the longwave infrared band

Cintineo et al., 2013 (CIMSS)



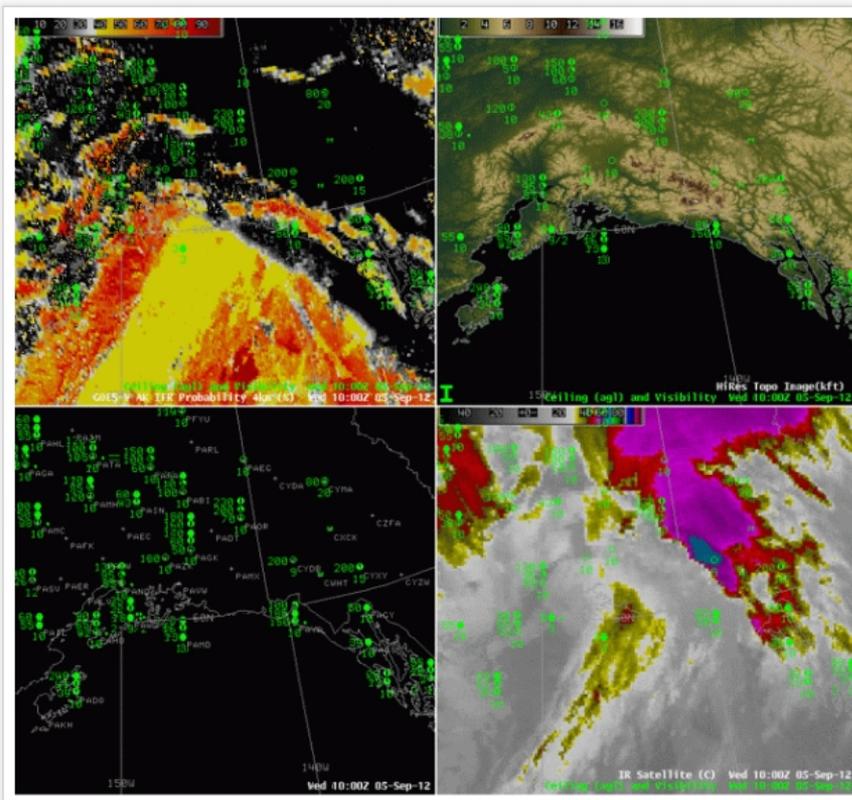
Rapid convection is often seen on geostationary data before significant radar echo's.

GOES-R Fog Product Examples

SEP

5

IFR Probabilities during an extratropical cyclone in the Gulf of Alaska



GOES-R IFR Probabilities (Upper left), Color-enhanced Topography (Upper right), Surface Observations and ceilings (Lower Left), Enhanced 10.4 micrometer IR Satellite imagery (Lower right)

Oceanic storms will generate IFR conditions, and the GOES-R IFR Probability fields, a fused product that blends satellite and model information, provides an indication of how and when visibilities decrease. The animation above, at hourly intervals, shows the steady advance of higher IFR probabilities eastward through the Gulf of Alaska. Note how the observations at Middleton Island (PAMD) and at Yalutai (PAYA) both transition to IFR conditions as the 'front' of higher probabilities passes -- around 0700 UTC at PAMD and around 1300 UTC at PAYA.

Blog for GOES-R Fog/Low Stratus training:

<http://fusedfog.blogspot.com>

Started 7/11/2012
8200 page views
65 posts

Live VISITview training provided:
AFC, EWC, TBW, HNX, PHI
OHX, CRH, WRH, ERH, SRH
and Alaska Region

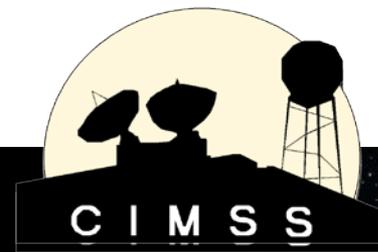
4) Alaska/AAWU/High Latitude Testbed

- Automated ash cloud alerts from AVHRR and MODIS will be provided to the VAAC and CWSU in the next month or so.
- M. Pavolonis (NOAA/NESDIS) and Corey Calvert (UW-CIMSS) conducted several in-person training sessions on GOES-R AWG fog/low cloud and volcanic ash products at Fairbanks WFO, Anchorage WFO, AAWU, and CWSU (9/11/2012 – 9/14/2012)
- “I wanted to let you know I used your GOES Fog Products today and yesterday. They were very helpful. Thank you for your work developing these important tools.” Kristine Nelson (Anchorage CWSU MIC)
- 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

- **UW-CTC, Morphed Total Precipitable Water, and Overshooting-top decision support products are now available at NWS Honolulu AWIPS platforms**
- **DB antenna was installed 9 August 2012, VIIRS data is being used and mentioned in AFDs**
- **Volcanic ash and SO₂ (from MODIS) will be made available Jan – Mar 2013**
- **Jordan and Wayne will visit Hawaii NWS and U of Hawaii week of December 3-7 to discuss 2013 PG plans with PAC**





3 Nov 2012 11:20 UTC

Forecasters in Hawaii issued this discussion

HAWAIIAN ISLANDS SATELLITE INTERPRETATION MESSAGE
NWS CENTRAL PACIFIC HURRICANE CENTER HONOLULU HI
1230 UTC SAT NOV 03 2012

BASED ON DATA THROUGH 1200 UTC NOVEMBER 03 2012

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NIGHTTIME SATELLITE IMAGERY FROM THE VIIRS DAY-NIGHT BAND SHOWS MOSTLY CLOUDY SKIES OVER THE WINDWARD BIG ISLAND WITH RADAR CONFIRMING SOME LIGHT SHOWERS IN THE AREA. THE WINDWARD HANA COAST AND LOWER SLOPES ARE COVERED WITH LOW CLOUDS WHILE THE REST OF MAUI COUNTY IS CLEAR. ON OAHU...PARTLY CLOUDY SKIES PREVAIL. ON KAUAI...THE EARLIER CLOUDY SKIES HAVE CLEARED IN THE EARLY MORNING HOURS.

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MORRISON



CIMSS

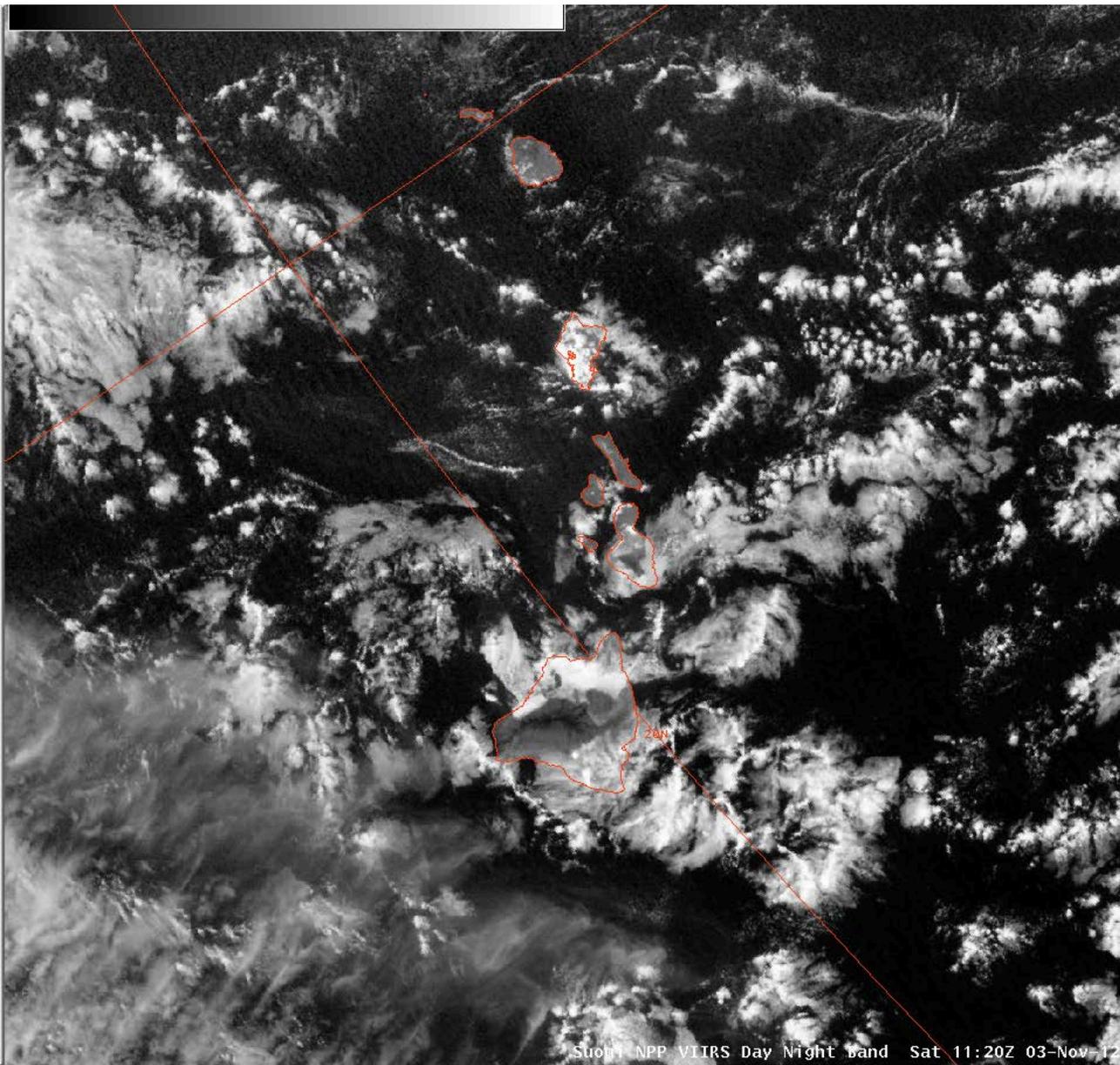




NPP VIIRS used by Operational Forecasters



VIIRS Day/Night Band 3 Nov 2012 11:20 UTC

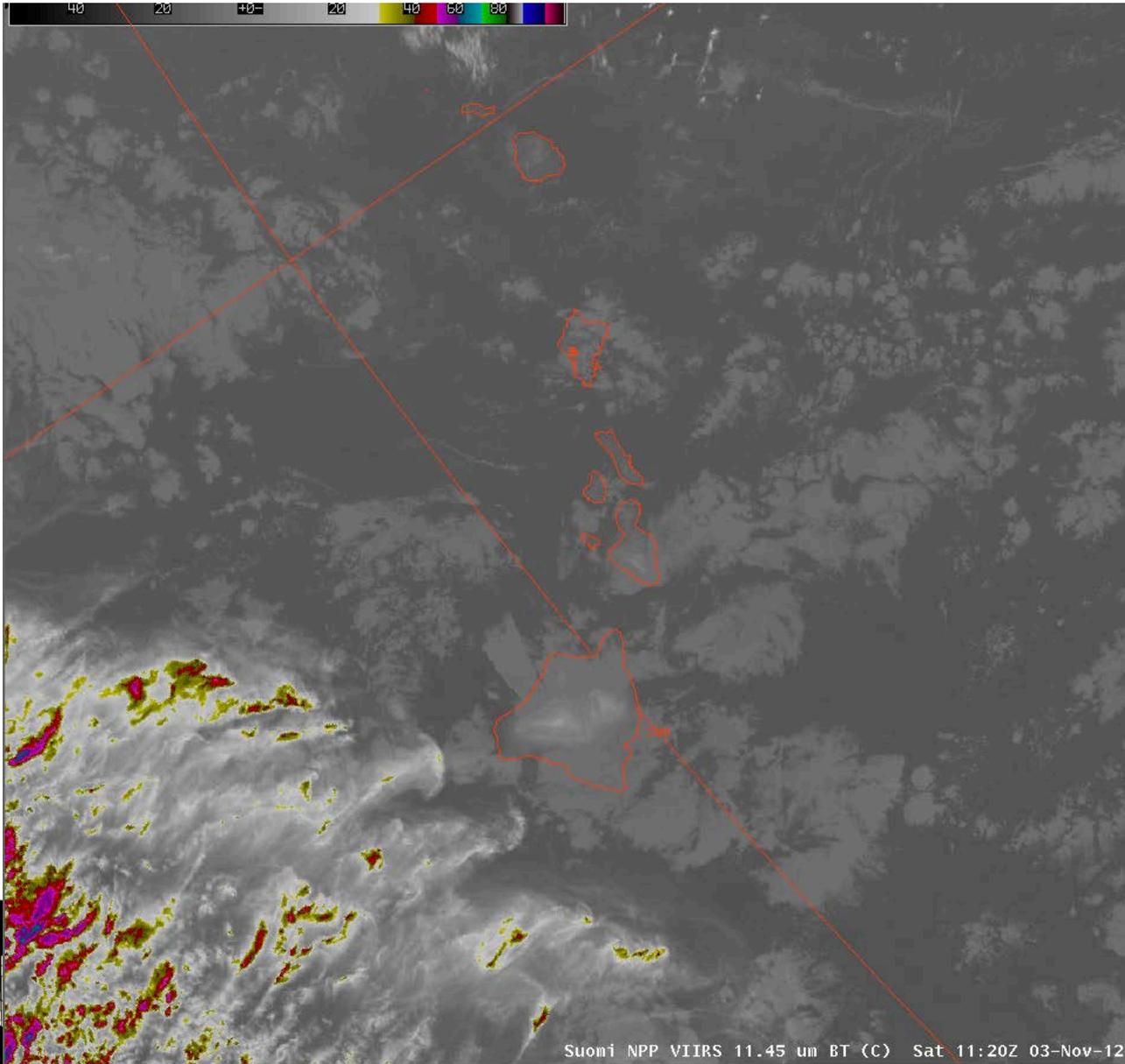




NPP VIIRS used by Operational Forecasters



VIIRS IR Window 3 Nov 2012 11:20 UTC



Suomi NPP VIIRS 11.45 um BT (C) Sat 11:20Z 03-Nov-12

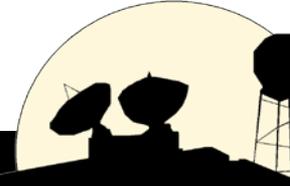
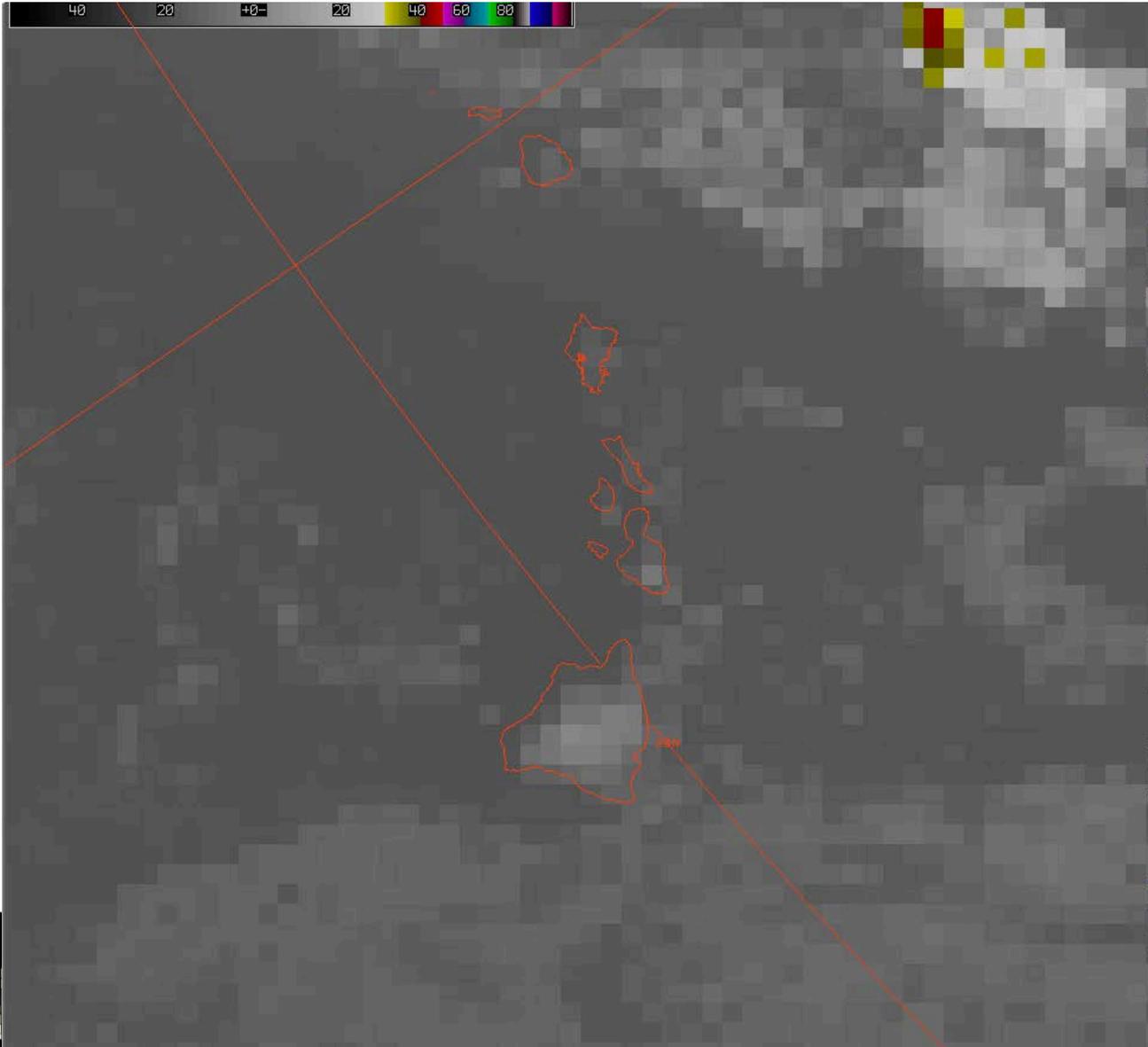
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NPP VIIRS used by Operational Forecasters



GOES IR Window 5 Nov 2012 13:30 UTC



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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**
- **Request for Nearcasting product for evaluation – feed is now available**
- **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**
- **Received one-minute GOES-14 data from SSEC data center**
- **VIIRS data has been made available via N-AWIPS for HPC, OPC, and SAB**



- **Overarching Goal:** Demonstrate selected GOES-R surrogate tropical products in real-time to identified users/forecasters and receive feedback
- **Who:** -- National Hurricane Center (NHC)
-- Tropical Analysis and Forecast Branch (TAFB) -- Ocean Prediction Center/Hydrometeorological Prediction Center/Satellite Analysis Branch (OPC/HPC/SAB)
- **When:** -- August 1 - November 30, 2012
-- On-site (NHC) training was provided July 31
- **What:** 3 sat products provided by CIMSS (Atlantic basin), GOES-14 imager one-minute



- ***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 μm) algorithm to identify and track dusty dry air masses (SAL), which can negatively impact tropical cyclone activity.





8) NWS WFO Demonstrations



- **CIMSS GOES-R Local Area Demonstration with MKX in progress (began mid June and will continue through mid November) – Year 3!**
- **CIMSS staff are participating approximately every other Tuesday**
- **Forecasters are evaluating: UW-CTCR improvements, Nearcasting, Low Cloud/Fog, VIIRS imagery (including DNB), and WRF Synthetic ABI bands**
- **Evaluation is recorded through posts on GOES-R HWT blog site (great recent posts on GOES-R AWG fog/low cloud products)**
- **The GOES-R AWG fog/low cloud products have been cited in at least 14 AFD's (it would be great if AWIPS kept track of how many times each product is loaded)**
- **Scott Lindstrom conducted VisitView based GOES-R AWG fog/low cloud training sessions with the Austin (TX), Anchorage (AK), Hanford (CA), and Tampa (FL) WFO's**

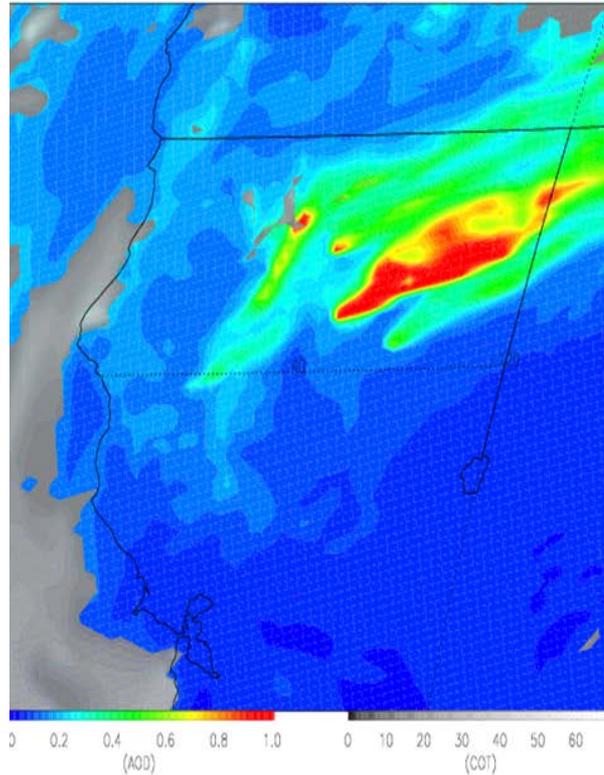


http://cimss.ssec.wisc.edu/goes_r/proving-ground/wrf_chem_abi/wrf_chem_abi.html

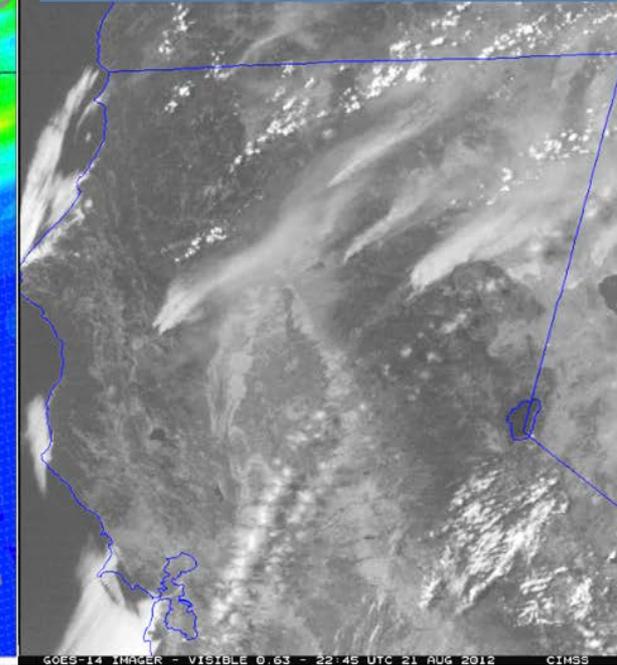
Real-time Proxy Framework Support: WRF-Chem/RAQMS Component

- Nested RAQMS/WRF-CHEM aerosol simulations are now being produced in real-time to support GOES-R Proxy Framework
- GOES-R Proxy aerosol optical depth (AOD) simulation captures observed smoke due to wildfires in Northern California

RAQMS/WRF-CHEM 8km Real-time GOES-R
AWG Proxy simulation 23Z August 21, 2012



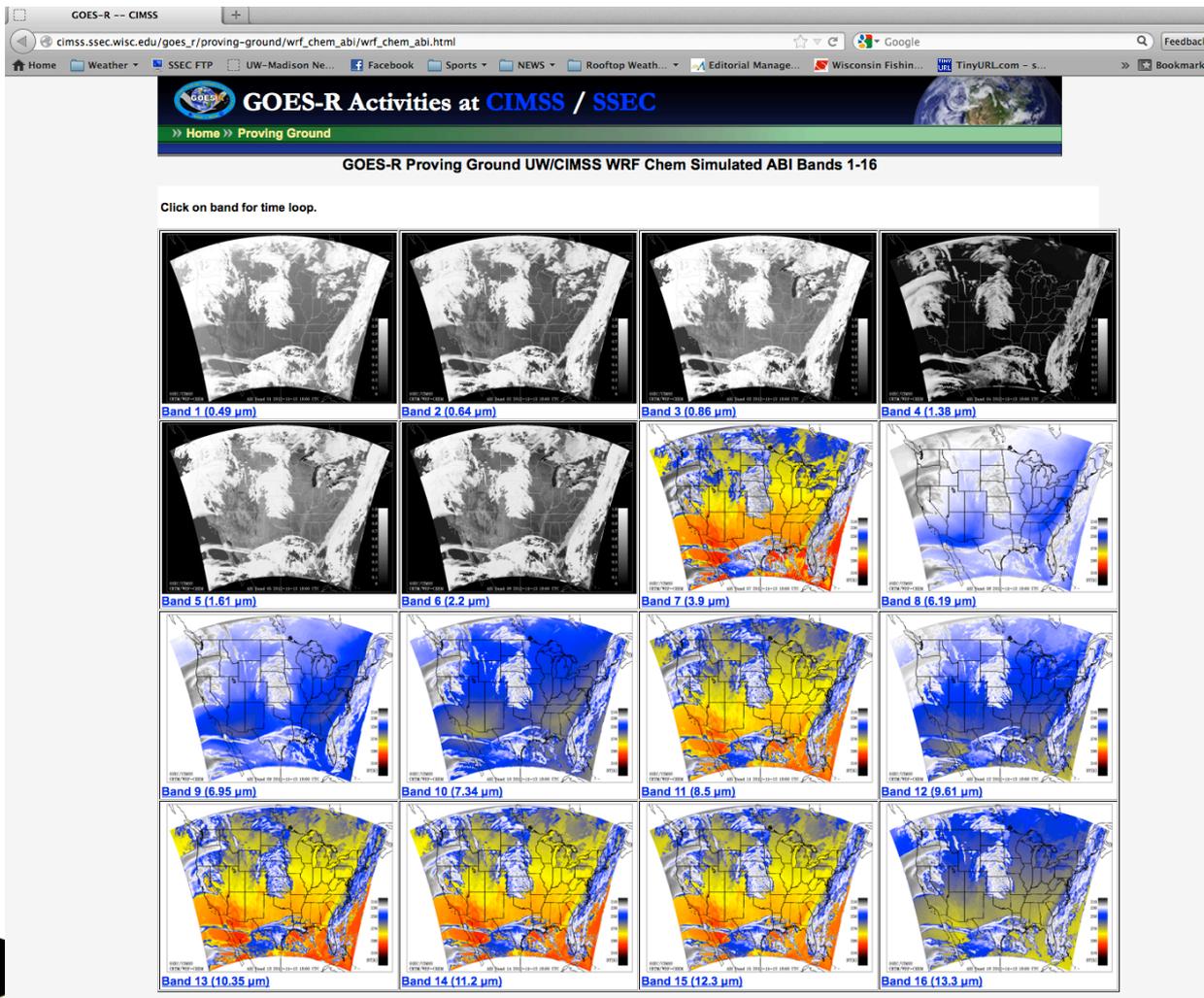
McIDAS images of GOES-14 1-minute interval
Super Rapid Scan Operations for GOES-R
(SRSOR) 0.63micron
22:45Z August 21, 2012



Real-time Proxy AOD/COT (left) and GOES-14 visible image (right) of
August 21, 2012 Northern California Wildfires

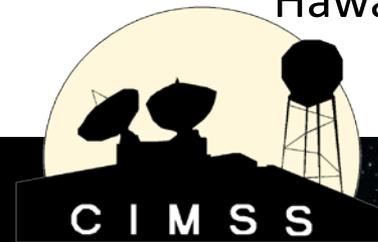
GOES-R Proxy Framework supports GOES-R ABI pre-launch activities by providing real-time GOES Rebroadcast (GRB) files containing synthetic ABI radiances that will be distributed to AIT and Proving Ground partners for testing GOES-R algorithms and data systems in real-time.

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



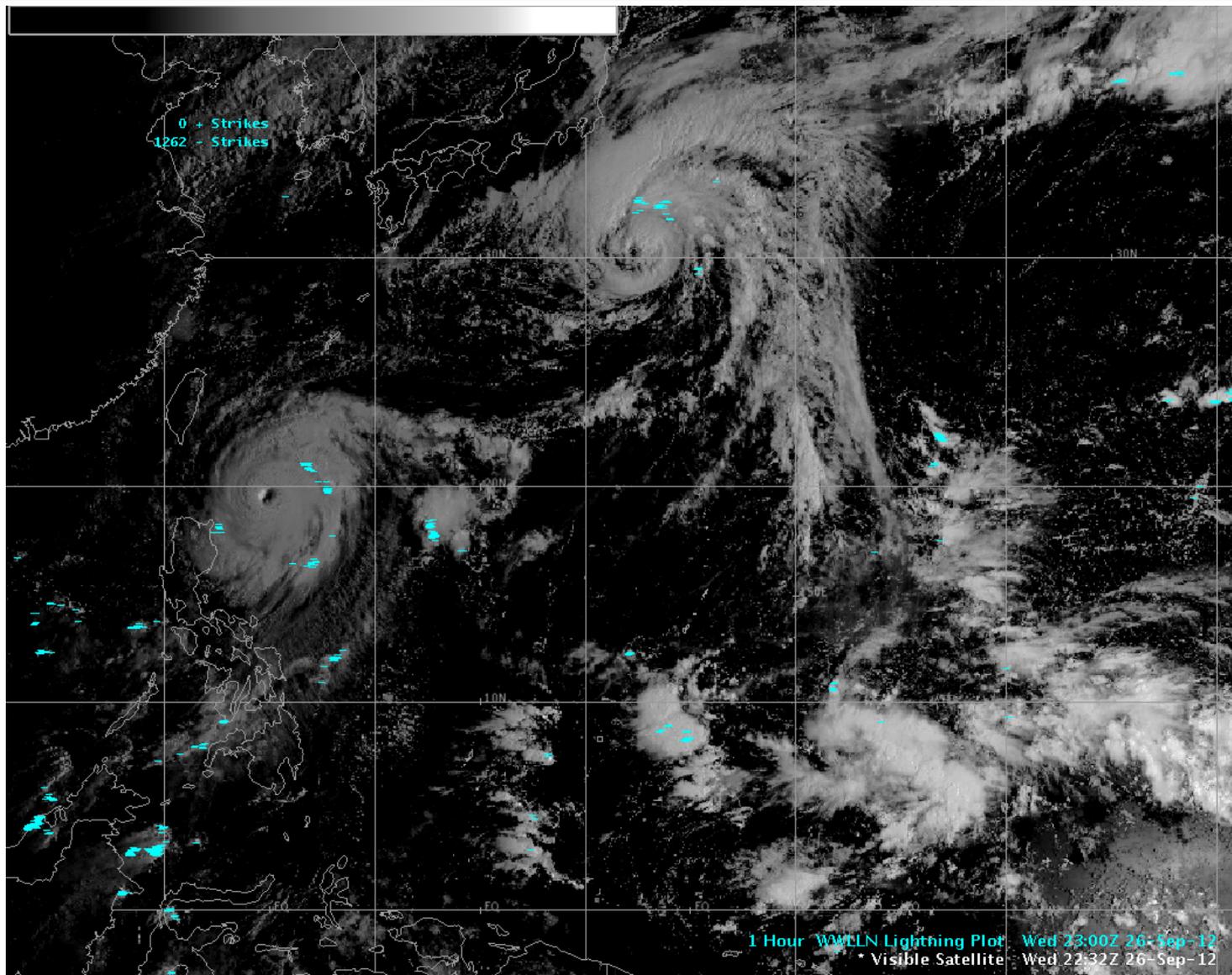
- **Recent Work:**

- Attending AWIPS II developers' forum conference calls, discussions pertaining to the GOES-R Proving Ground, and meetings of the EPDT
 - Participation within EPDT should be expanded
- Completed implementation of updated lightning ingest and visualization plug-ins at Pacific Region Headquarters
 - In the process of submitting documentation for design review
 - Awaiting Common Access Card to directly commit code to Dimensions and to support
- Built temporary McIDAS and netCDF3 plug-ins to replace baseline versions (baseline versions could not ingest files after changes to the GINI satellite decoder)
- Investigating performance of regionalsat plug-in
- Continue to support Roy's ADAM workstation at the University of Hawaii - Manoa



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:**

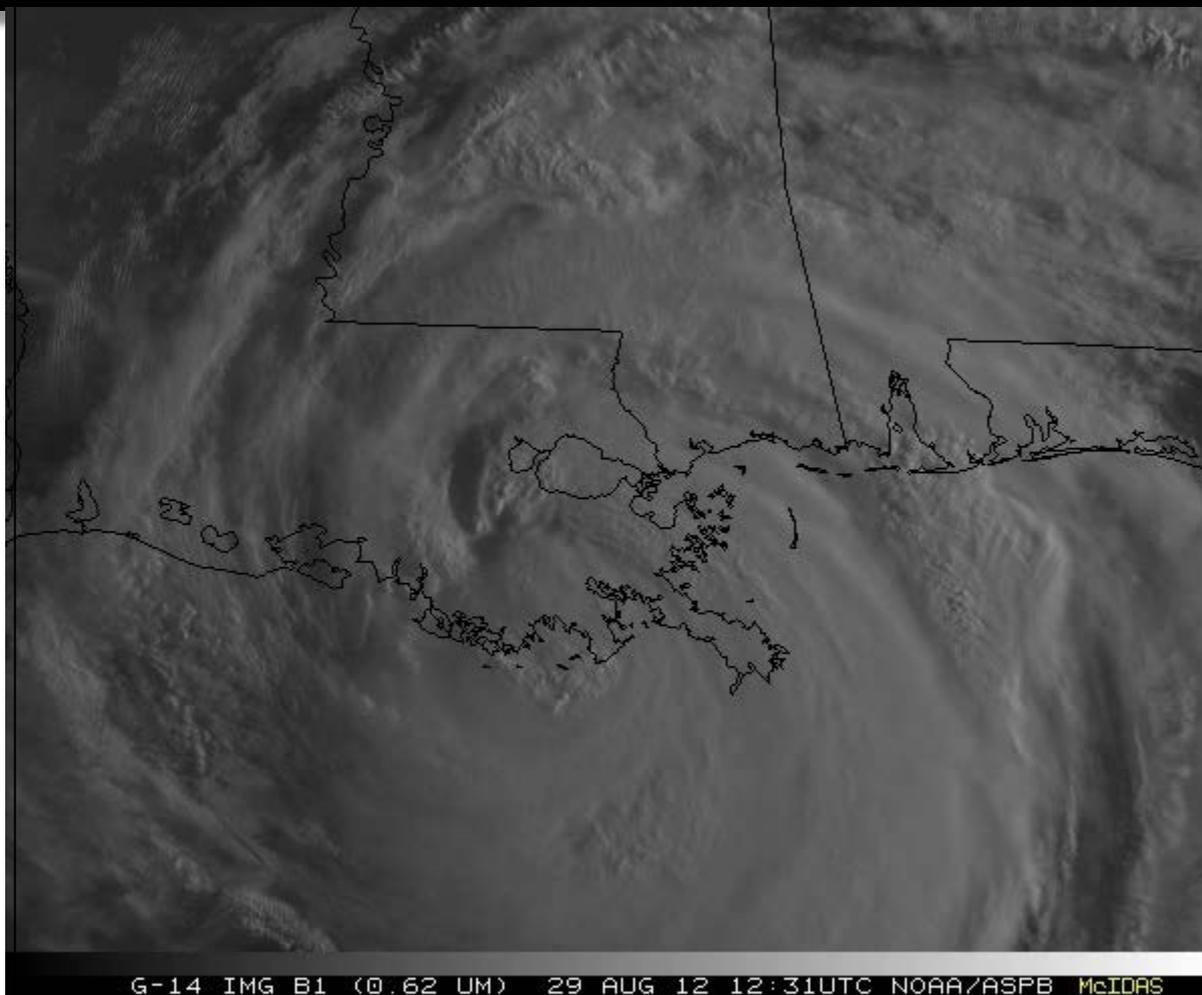
- Review new netCDF4 files to assess format of new operational VIIRS imagery delivery
- Document FLS and CTCR ingest and display for WFO sites using AWIPS II
- Expand suite of Hawaii DB antenna products into AWIPS II at PRH/HFO
 - Topic of discussion for December visit
- Continue to work on resolving AWIPS II issues with NWS Sullivan (MKX)
 - AWIPS II will likely not be used operationally there until 2013

- **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



- SRSOR (Super Rapid Scan Operations for GOES-R) from GOES-14 imager while it was out of storage.
- Worked with OSPO to define schedules
- Deciding on daily location for scanning between mid-August and end of October
- Posting many animations
- http://cimss.ssec.wisc.edu/goes/srsor/GOES-14_SRSOR.html
- Many phenomena were observed: convection, hurricanes, fires, smoke, etc.,
- Data to many groups HPC, OPC, AWC, SPC, etc.

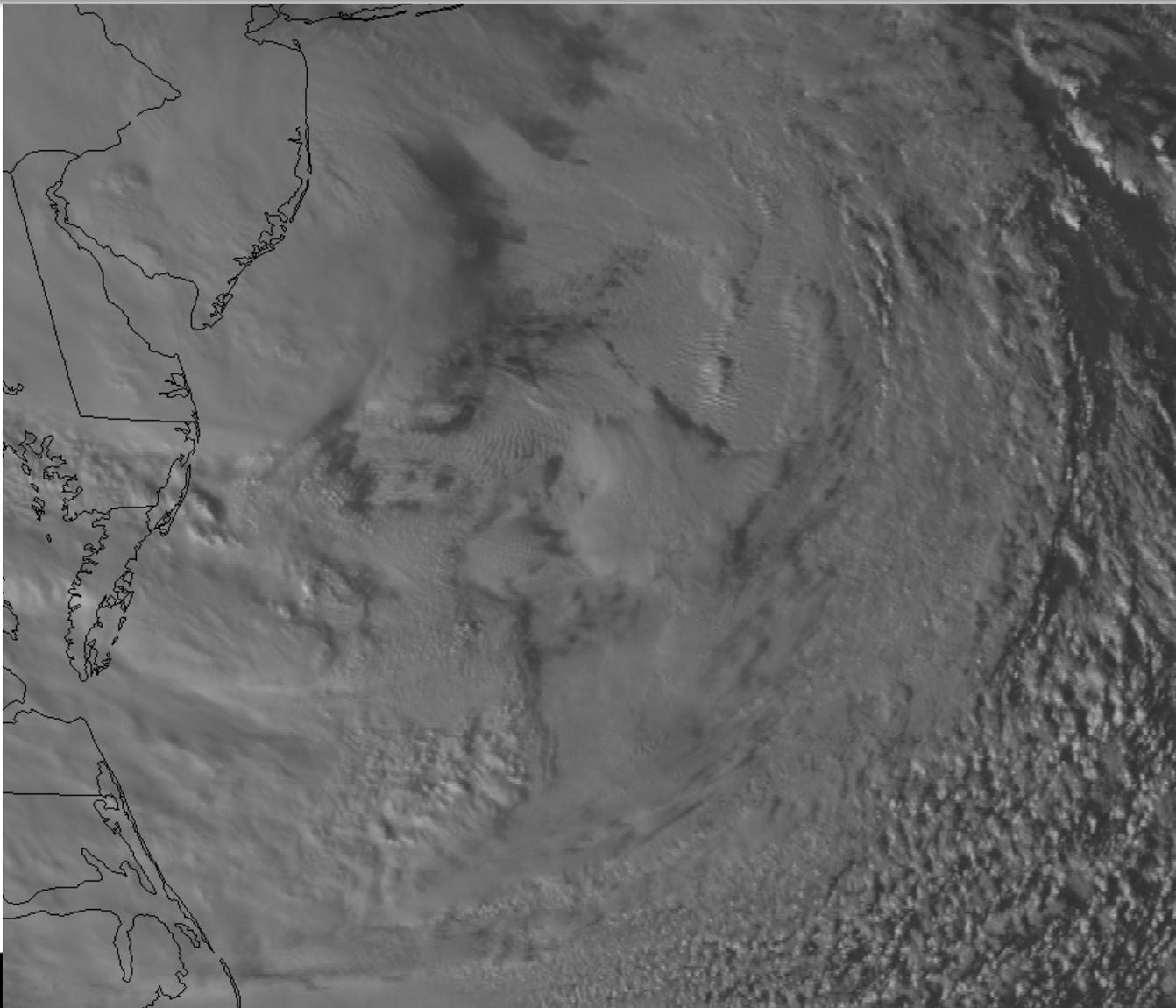


*Animation from GOES-14 Imager water at 1-min time resolution.
(click to loop)*

SRSOR provided unique information and offers a glimpse into the possibilities that will be provided at even higher resolutions by the ABI on GOES-R.



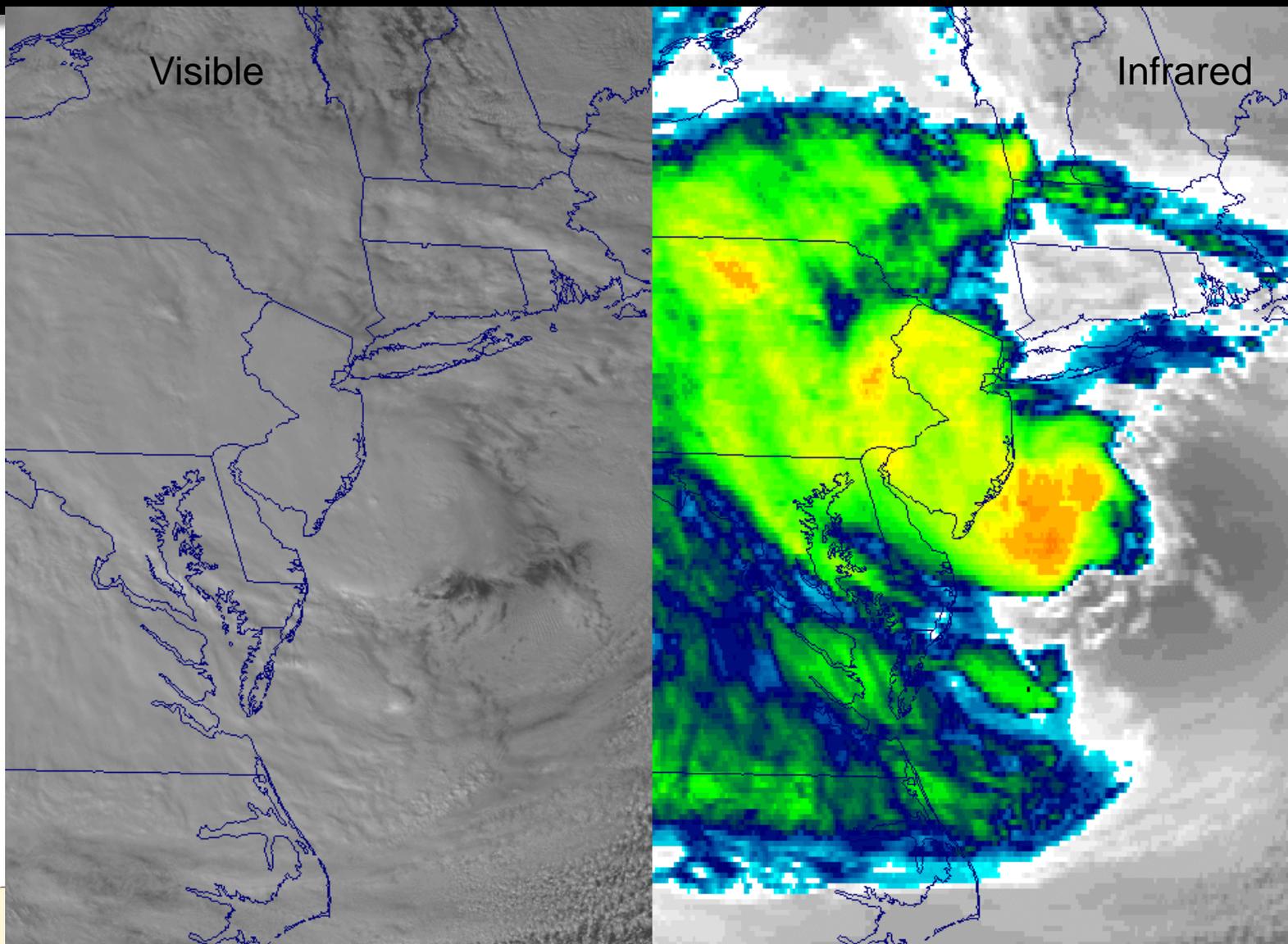
GOES-14 SRSOR of Sandy (Visible)



G-14 IMG BAND=1 (0.62 UM) 29 OCT 12 (2012303) 20:15 UTC NOAA UW/SSEC CIMSS McIDAS

The 1-min interval imagery shows 'what is happening', not 'what has happened'.

GOES-14 SRSOR



The GOES-14 SRSOR animations truly ‘went viral’, demonstrating their unique information. These datasets will be used for years to better prepare for the ABI.

- **2012**

- AGU (Geo Satellite) 3-7 December San Francisco, CA

- **2013**

- AMS Annual Meeting 6–10 January Austin, TX
- High Impact WX 6-8 February Norman, OK
- Virtual Science Week 17-23 March Telcon
- NSC (DRC/GUC) 8-12 April College Park, MD
- O-CONUS 17-21 June Fairbanks, Alaska
- EUMETSAT/AMS 16-20 Sept Vienna, Austria
 - http://www.eumetsat.int/Home/Main/News/Conferences_and_Events/820209?l=en

