



SATELLITE OPERATIONS

Joint NWS & NESDIS/OSPO/SPSD Quarterly Meeting & Telecon

Wednesday, June 12, 2013

1700-1830 UTC (1:00-2:30 PM EDT)

Presented by Natalia Donoho

Location: NCWCP Conference Room 3552

Telephone: (877) 774-2087 Passcode: 237799#

WebEx: <https://spsd.webex.com/spsd/onstage/g.php?d=732028951&t=a>

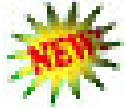
Password: joinus

Meeting Material: ftp://satepsanone.nesdis.noaa.gov/Presentations/Joint_NWS-NESDIS_Quarterly/

Thank you to Content Providers!

- Kevin Ludlum
- John Tsui
- Tim Schmit
- Ralph Ferraro
- Jessica Staude
- Ricky Irving
- Steve Ambrose
- Matt Seybold
- Tom Renkevans
- A.K. Sharma
- Scott Rogerson
- Debora Barr
- Hyre Bysal
- Lisa Hessler
- Mike Folmer

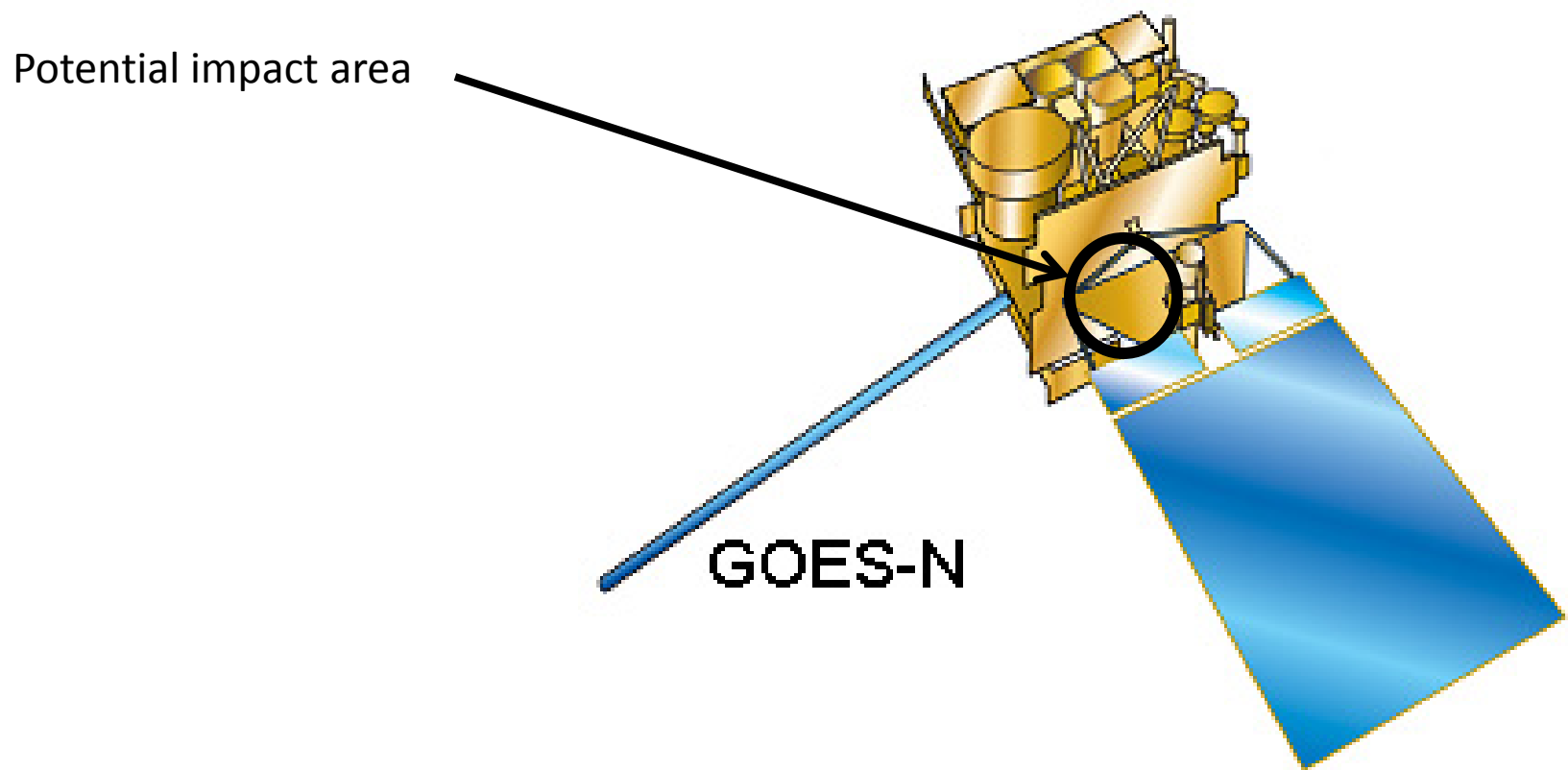
Meeting Agenda

- Hot Topics 
 - GOES-13 Anomaly Update
 - GOES-12 Decommissioning
 - GOES-East transition plan to optimized schedules (~Fall 2013)
 - Space look contamination issue
 - Other notable data outages
 - SATEPDIST Re-Val and other data access activities
- GEO Status
 - Meteosat-10
 - Himawari-8/9
 - Future GEO
- LEO Status
 - NOAA-17 Decommissioning
 - S-NPP / JPSS
 - METOP-B
 - GCOM-W1
- Product Development
- GOES-R/JPSS Proving Grounds Update
- Discussion
 - Working Group for GOES-12 (GOES-South America) frame addition

GOES-13 Attitude Anomaly on May 22

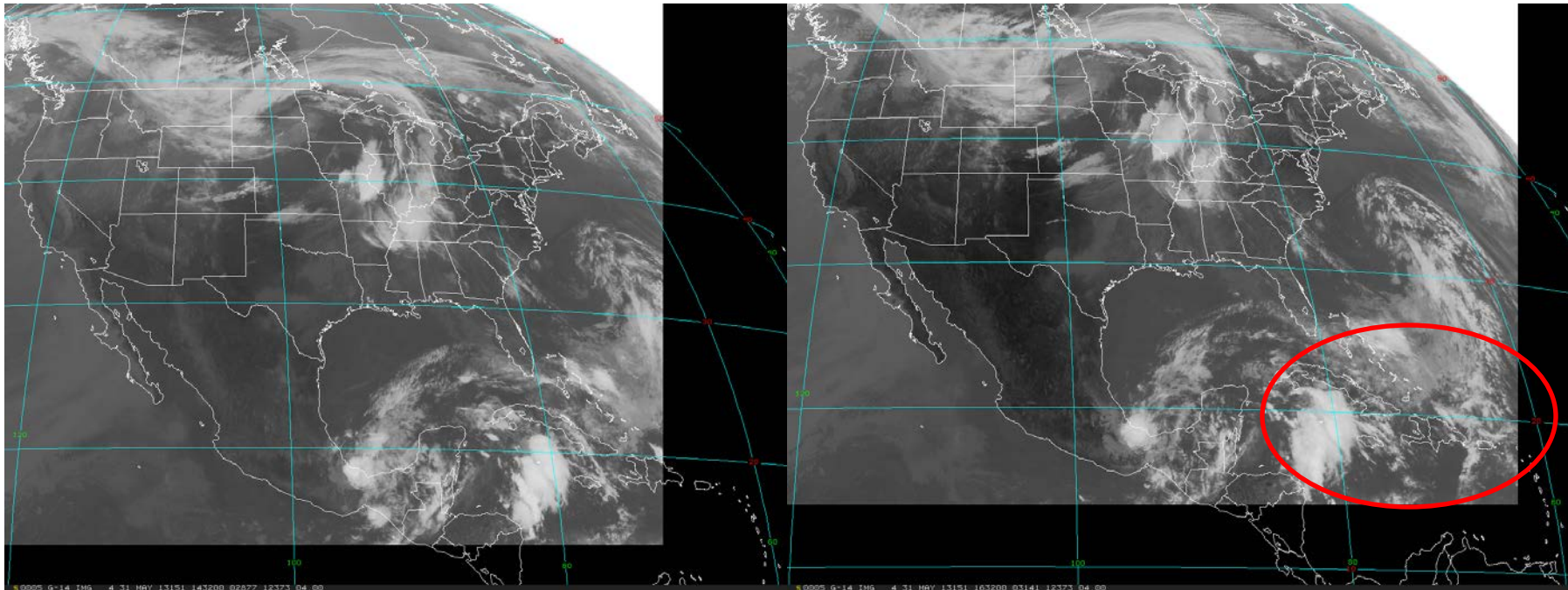
- GOES-13 experienced an attitude disturbance on May 22
 - Operations switched GOES-15 to full disk imaging providing products to GOES East as well as GOES West users
 - Initial recovery efforts were unsuccessful due to the magnitude of the disturbance
 - GOES-13 placed in storage mode and GOES-14 activated as the GOES-EAST satellite on May 23
 - GOES-14 began executing east routine schedules as of 0134z on May 24
- GOES-13 transitioned out of sun pointing storage and into normal earth pointing mode on May 28 and 29
- Imager and sounder activations occurred on May 30
- Sounder outgassing to improve medium and short-wave channels from May 31 to June 5.
- **GOES-13 returned to GOES-East operations on June 10 at 1545 UTC**
- Root cause investigation is ongoing with the current focus on a micro-meteorite impact in the solar array yoke area (see next slide for graphic)

GOES-13 Attitude Anomaly



GOES-13 Attitude Anomaly on May 22

GOES-14 CONUS sector change



The frames were modified in two ways: 1. The eastern edge of the CONUS frame moved farther East capturing Puerto Rico at approximately 64 degrees West and 2. The northern edge of the CONUS frame moved farther south near the northern extent of James Bay in Canada at approximately 55 degrees North.

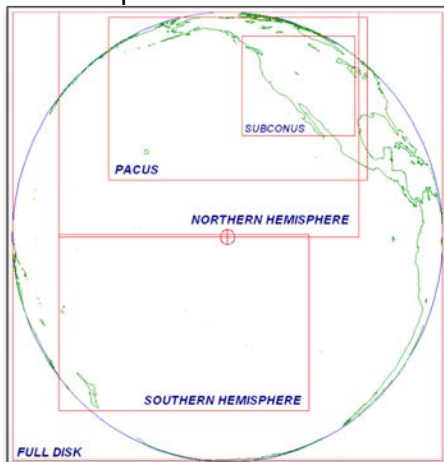
Present Status of GOES Constellation

(Imager Routine Schedules with 15 minute CONUS Coverage)

GOES-15

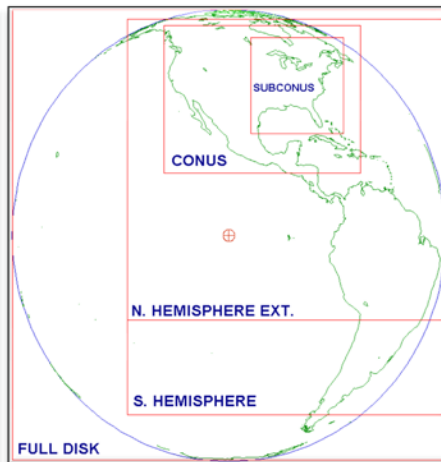
West
(135°W)

Stray Light Algorithm Applied
Optimized Schedule



GOES-14

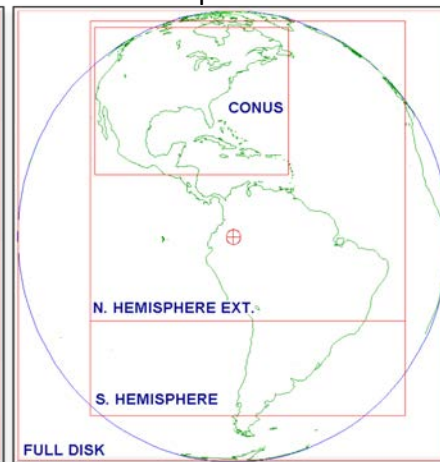
Standby
(105°W)



GOES-13

East
(75°W)

Stray Light Algorithm Applied
Schedule TB Optimized ~Fall 2013



GOES-12

S. America
(60°W)



- GOES-14: 2-3 weeks in August, 2013

- Normal operations mode for health & safety testing
- GOES-14 SRSO Plan will be reviewed by OSPO Director

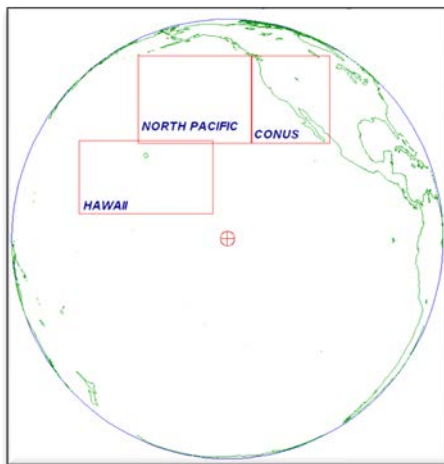
<http://www.ospo.noaa.gov/Operations/GOES/schedules.html>

Present Status of GOES Constellation

(Sounder Routine Schedules)

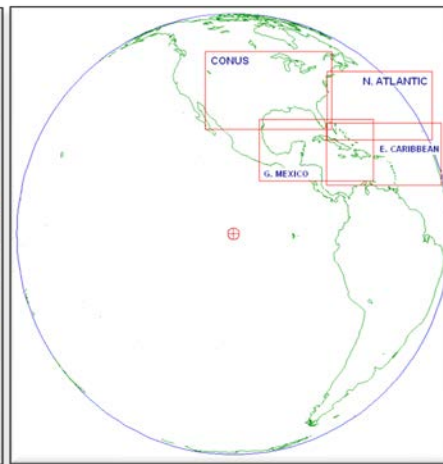
GOES-15

West
(135°W)



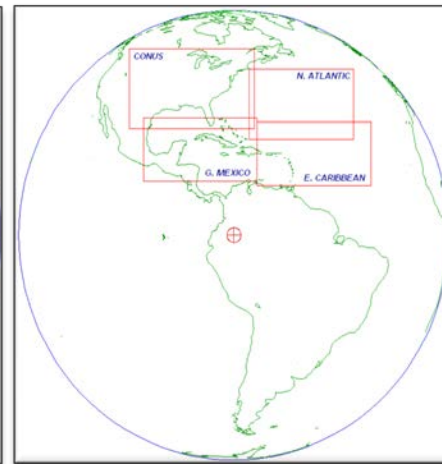
GOES-14

Standby
(105°W)



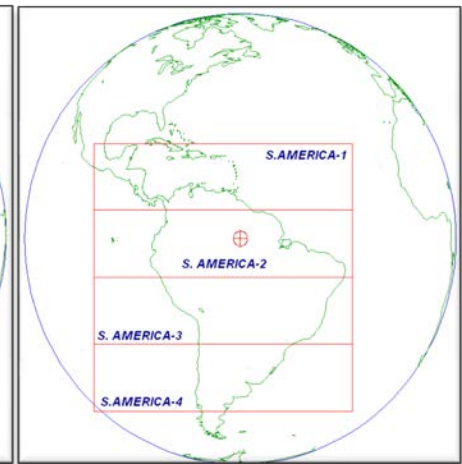
GOES-13

East
(75°W)



GOES-12

S. America
(60°W)



- GOES-14: 2-3 weeks in August, 2013
 - Normal operations mode for health & safety testing

<http://www.ospo.noaa.gov/Operations/GOES/schedules.html>

GOES-12 Decommissioning

- GOES-12 is scheduled to be decommissioned in mid-August, 2013
- The satellite has supported South America at 60°W since May 2010
 - May 6 - Approval was obtained from NESDIS/NWS AAs to move ahead with the decommissioning notification
 - May 29 – Decommissioning Letters cleared NOAA HQ and were transmitted to DOC
- Next Steps
 - Obtain DOC & OMB approval to notify Congress of the planned decommissioning/disposal of capital asset
 - Congressional Notification
 - Plan the GOES-12 decommissioning (boost out of orbit)

GOES-12 Decommissioning

ACTION:

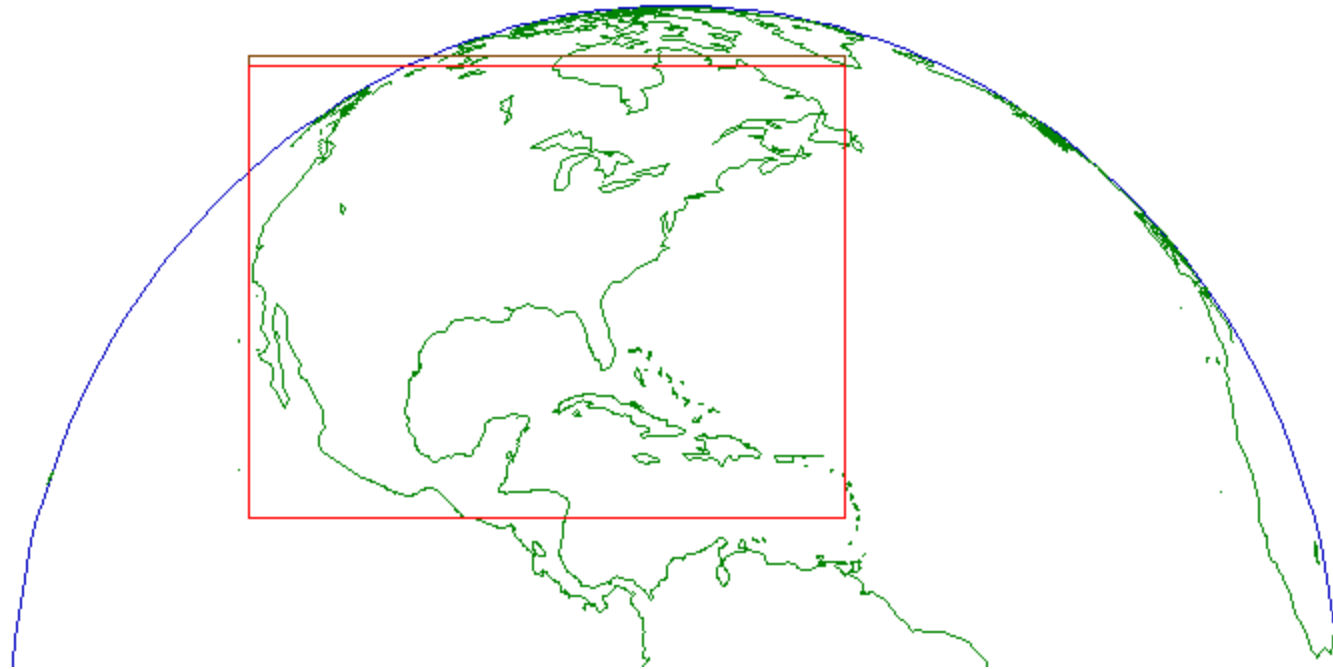
“OSPO to analyze the possibility of providing an image of South America every hour when GOES-13 is in Rapid Scan Operation. ”

Following this meeting, members of the Working Group, will provide their recommendations.

Proposed GOES-13 Schedule additions

- The following slides show the proposed routine and rapid schedule changes for the GOES-13 the GOES East Operational Satellite. The proposed start is in Fall, 2013
- All approved changes have be tested using GOES-14 when out of storage in 2012.
- This would be a gain of two sub-conus images per hour for non-full disk hours and one sub-conus image per hour for full disk hours in the routine schedule.
- This would be a gain of one short southern hemisphere image per hour for non-full disk hours in the rapid schedule.
- A few notes:
 - Any items in **Red** are proposed changes from the current sequence.
 - XX – represents the hour of day.
 - Need a start date, and coordination with User Community.

Proposed CONUS Frame Change



- proposed new CONUS frame
- northern extent of current CONUS frame

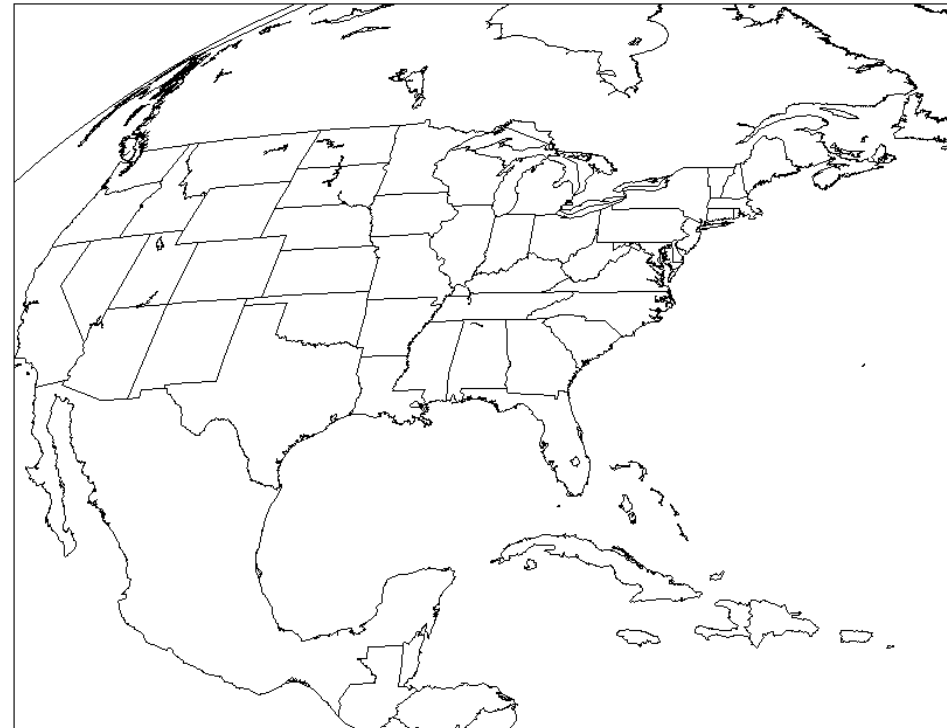
Above shows the proposed CONUS frame overlaid on the current CONUS frame. The frame boundaries are the same with the exception of the northern edge as displayed by the brown vs. red colors.

Proposed CONUS Frame Change

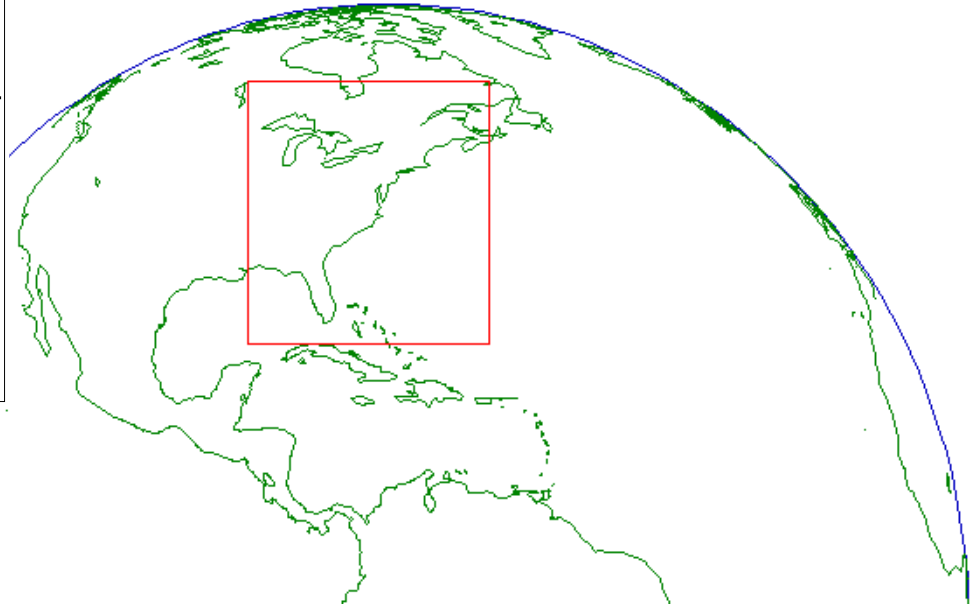
proposed CONUS



current CONUS



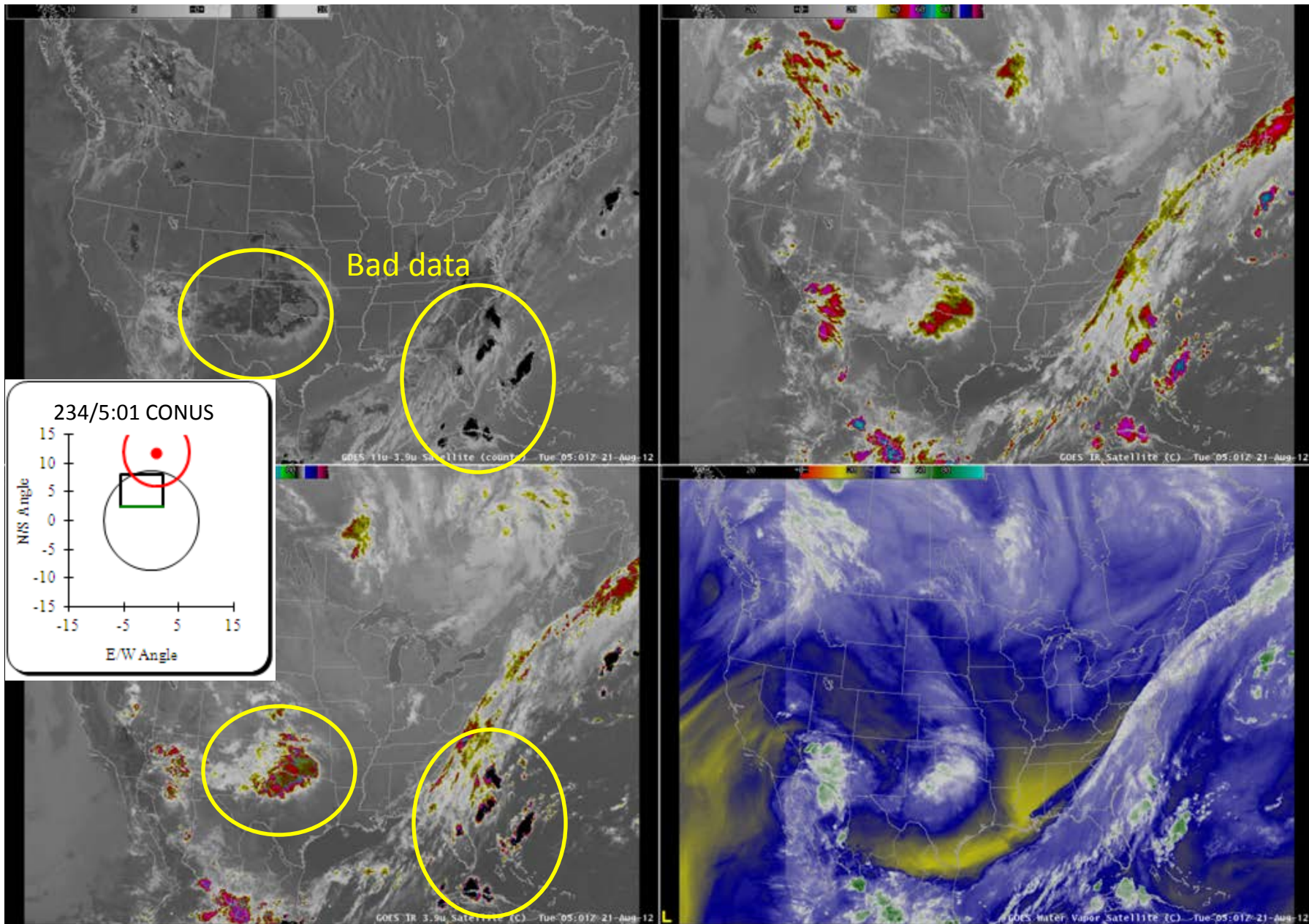
Proposed SUB-CONUS Frame

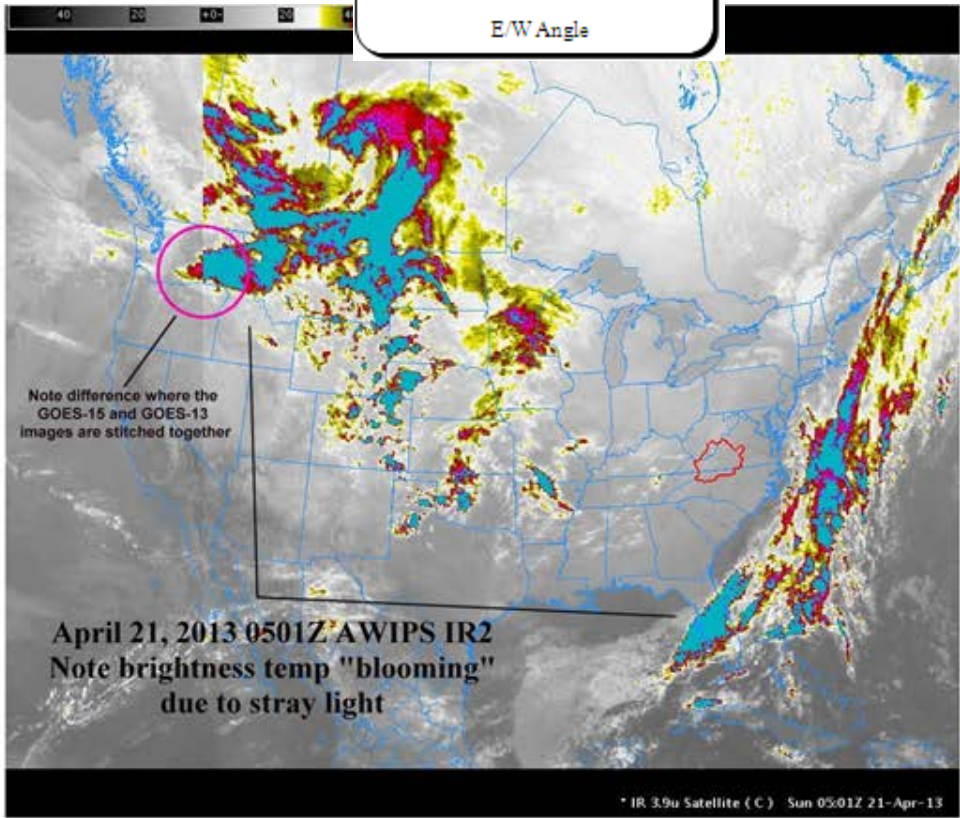
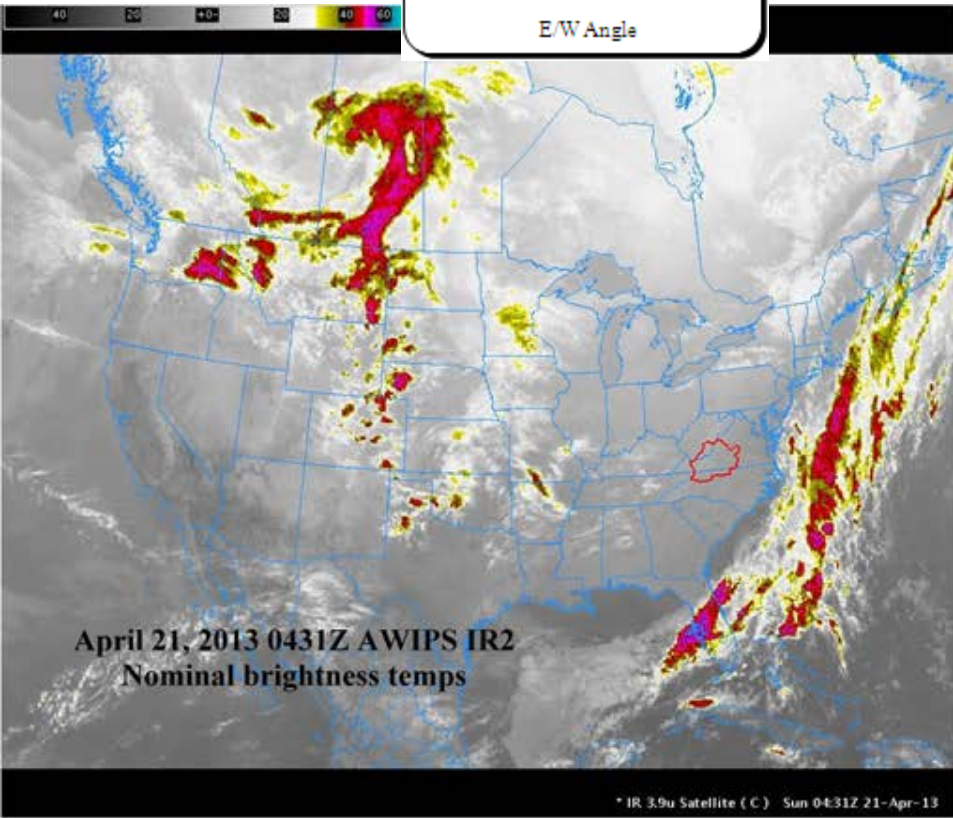
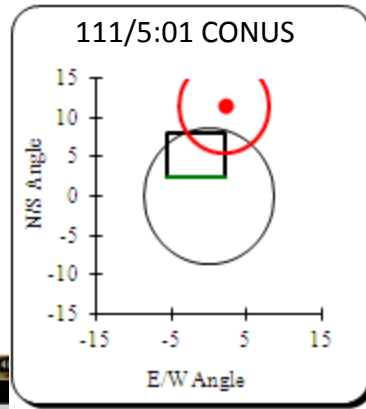
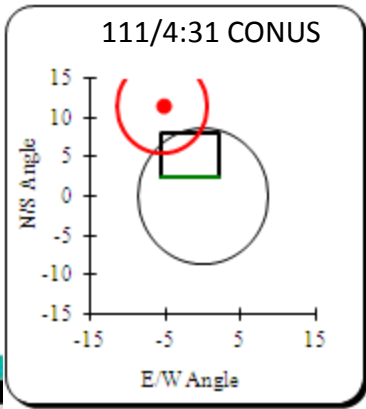


Corrupt Space Look Causing Bad 4-um Data (affecting at least fog product)

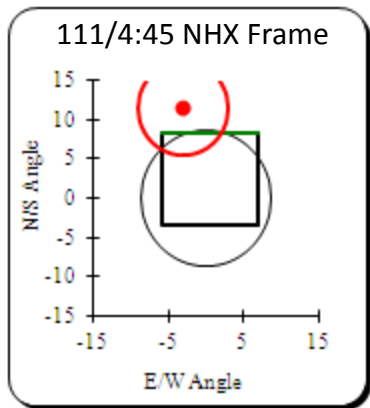
- Happens just around Spacecraft midnight when the furthest space look is within 10 degrees (the “clean side”)
 - 1 or 2 images affected per day (beginning of 4:45 NHX, and 5:01 CONUS).
 - May exceed spec at times (2K from truth at 300K - 50-60K at 225K scene)
- Historically, the GOES-8/12 series did not take images during “KOZ”
 - Up to 3 hours of outage during eclipse days
 - The effect right after eclipse was not noticed as much due to “KOZ” until sun was 5+ degrees north of the pole
- No outage on GOES-13/15
- Recent issue seems to be corrupted space look and not directly related to the stray light correction. GOES-13 also has Channels 2/4 co-registration issue which adds to the “fog” problem.
- Space looks are switched to the ‘clean’ side of the earth (away from the sun, etc.) between frames around midnight.

AWIPS as seen at CIMSS

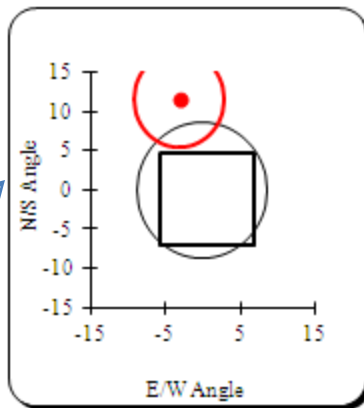




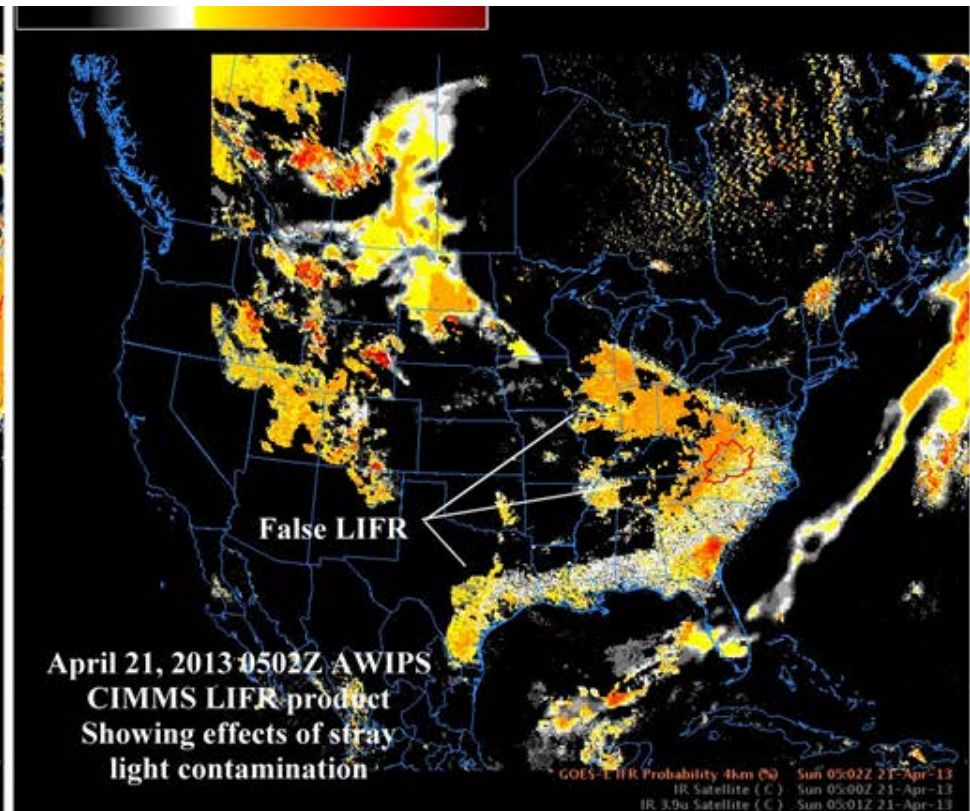
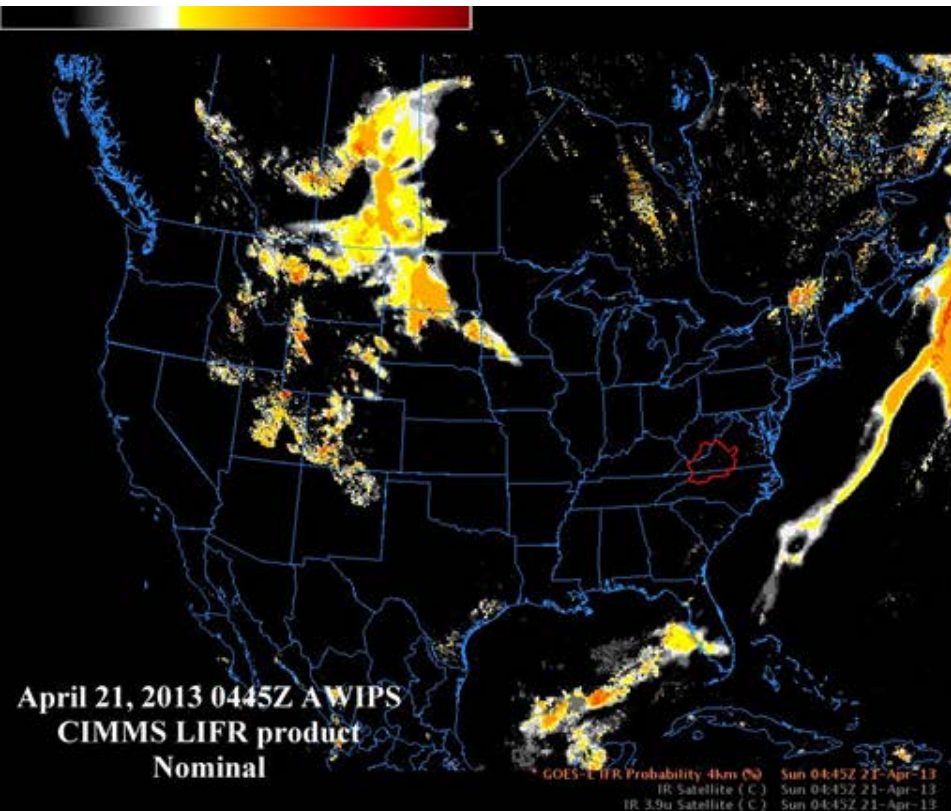
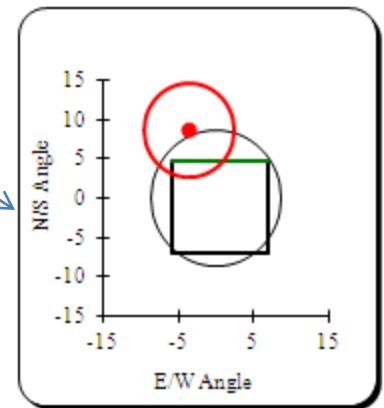
From the NWS (Blacksburg)



111/4:45 NHX
ShiftedFrame

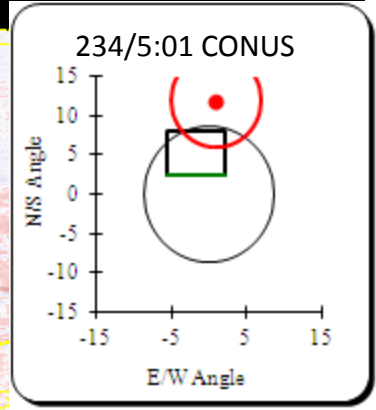


103/4:45 NHX
ShiftedFrame



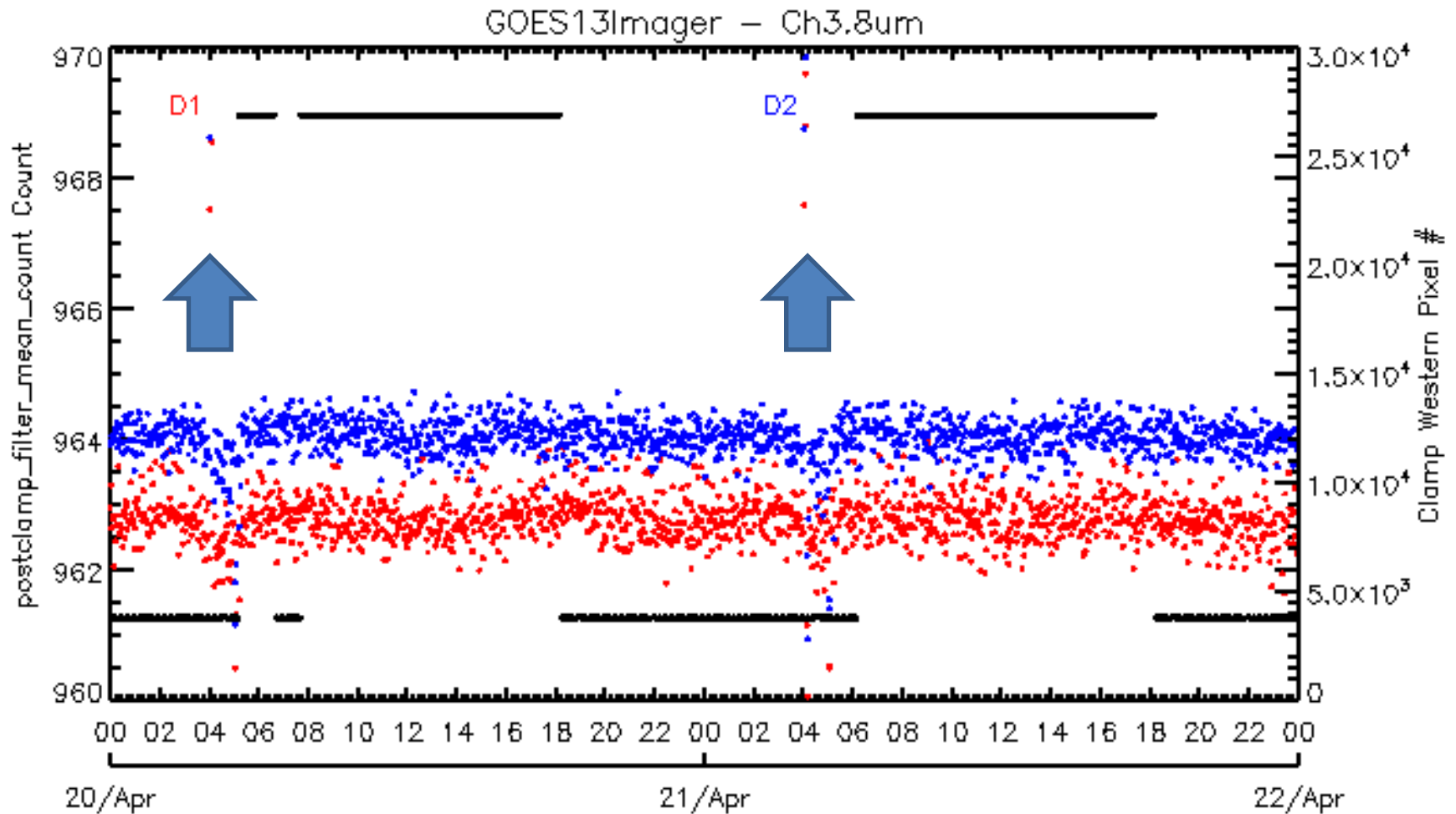
From the NWS (Blacksburg)

Time difference (band 2)



Artificially colder by ~50K

“Out-of-family” Space looks at 05 UTC



From Fangfang Yu

Way Forward Possible Options

Fall Eclipse 2013

- 1) Do nothing
 - No good, since products are affected and users have noticed.
 - Fall 2014 will be same if no action by products groups by mid-July

- 2) Have product producers check GVAR stray light flags
 - Only works on case-by-case basis
 - Each PAL would need to be involved
 - NWS/AWIPS does not have the GVAR flags

- 3) Don't send out a GVAR image for this time with bad SL
 - When the sun is right above the North Pole
 - Less than 1-2 per day (late-August, mid-April)
 - Not a black/white issue – subjective selection?
 - “Bad” frames can/must be identified based on April/2013 images

- 4) Notify users for effected images

- 5) Shift Frames ~4 degrees if acceptable by NWS (?)

- 6) Modify calibration procedure
 - Filter space look or use previous good space look – being studied

Other known data disruptions (since March 2013)

- The **NSOF antenna issue** happened on May 12 from ~1211 UTC to 1336 UTC.

From the outage notification: Due to the local GVAR antenna issues at NSOF, ESPC missed to following data: 1200Z Full Disc, 1245z and 1315z GWPACU, 1230z and 1300z GWNHEM, 1252z GWSHEM and the 1224z and 1301z West Sounder.

- But, in the case of the GINI, we actually failed operations over to our CIP system (nport5) and were able to produce and send out everything from 1300Z on.

Other known data disruptions (since March 2013)

- **April 16 – MPLS Failover Test**

NCEP – Pulled 187 files from DDS-CIP from 9:00 – 10:15 am

Models did not fail and both the 12Z NAM and GFS completed on time. Models look consistent with previous forecast models

- **May 15 - ESPC Distribution Zone Network Outage (2 hrs)**

- **June 4 - Planned router switch for the NCEP POP connection (1 hour)**

SATEPSDIST Re-Val

- Replacing SATEPSDISTXe servers later this year.
- McIDAS access will be on new GeoDist servers.
- Non-McIDAS files will be moved to our Data Distribution Servers.
- **Data Access Requests forms are due June 16.** User may identify that their group needs access and request an extension to complete the form.
 - Users must identify exactly the files they require, as we are planning to turn off products without identified users.
- McIDAS dataset must be specified to the 2nd level -- such as PLR/SST
- Forms must have a real signature and be sent to nesdis.data.access@noaa.gov

GOES Status (June 10, 2013)

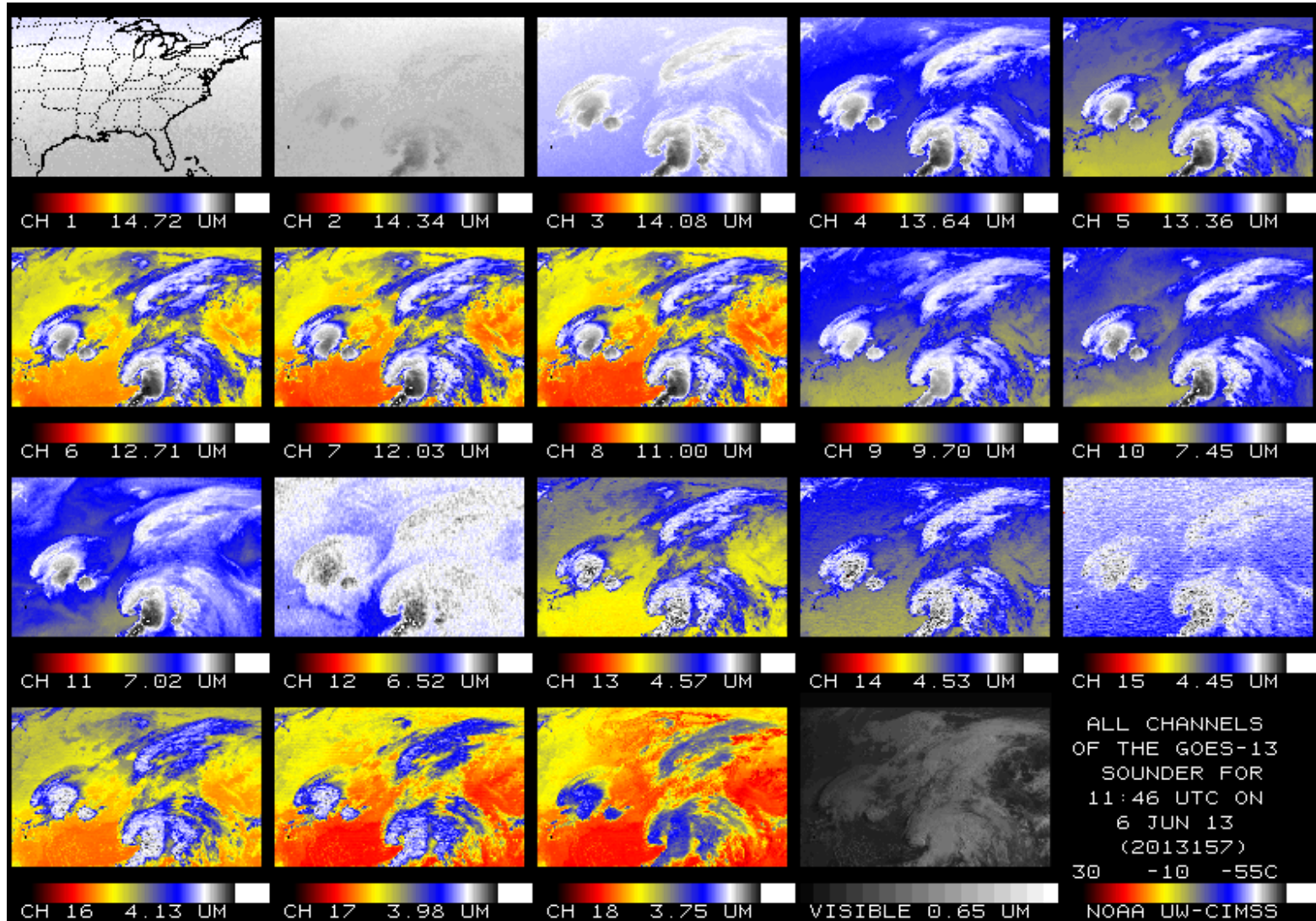
Payload Instrument	GOES-12 (S. America) Launch: Jul 01 Activation: Apr 03	GOES-13 (East) Launch: May 06 Activation: Apr 10	GOES-14 (Standby) Launch: Jun 09 Activation: N/A	GOES-15 (West) Launch: Mar 10 Activation: Dec 11
Imager	S/C (1)	G	G	G
Sounder	Y (2)	Y (15)	G	Y (11)
Energetic Particle Sensor (EPS)	Y (3)	G	G	G
Magnetometers	G	G	G	G
High Energy Proton and Alpha Detector (HEPAD)	G	G	G	G
X-Ray Sensor (XRS)	Y (4)	R (8)	G	G
Solar X-Ray Imager (SXI)	R (5)	Y (9)	G	S/C (12)
Spacecraft Subsystems				
Telemetry, Command & Control	G	G	G	G
Attitude and Orbit Control	S/C (14)	G	G	G
Inclination Control	R (6)	G	G	G
Propulsion	Y (7)	S/C (10)	G	G
Mechanisms	G	G	G	G
Electrical Power	G	G	G	G
Thermal Control	G	G	G	G
Communications Payloads	G	G	G	S/C (13)

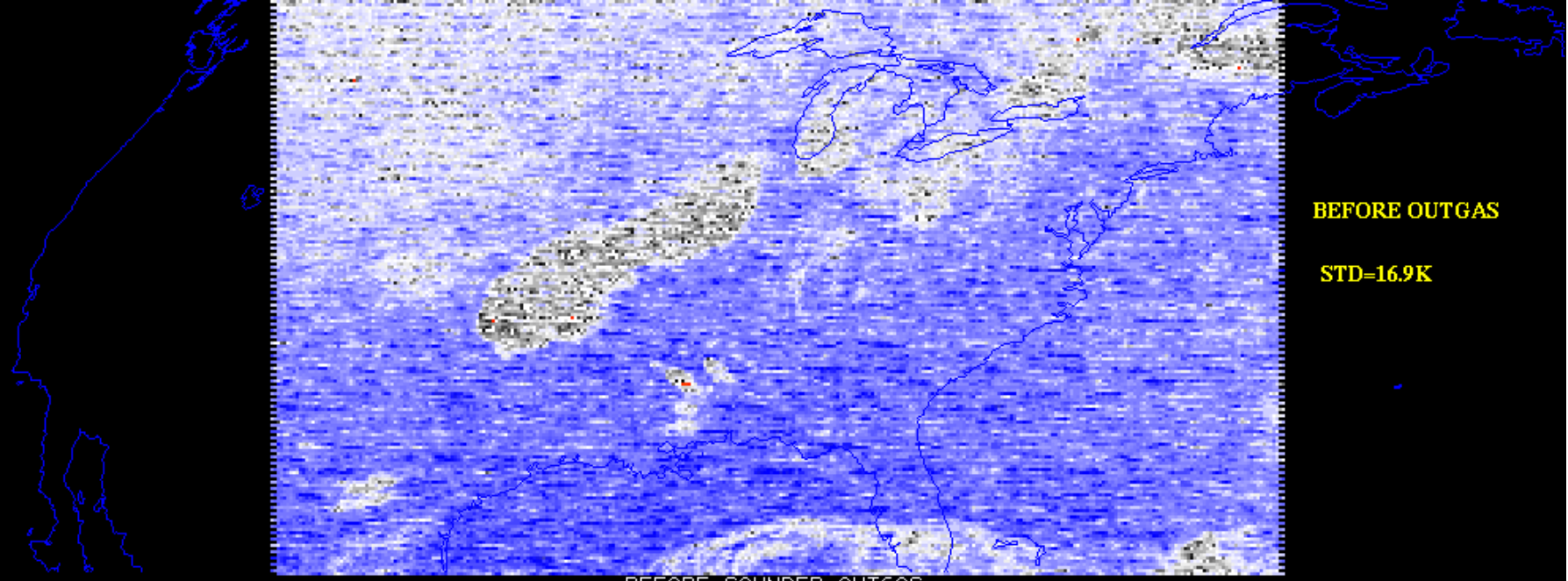
Key

Operational	G
Spacecraft issues but no user impacts	S/C
Operational with limitations	Y
Non-operational	R

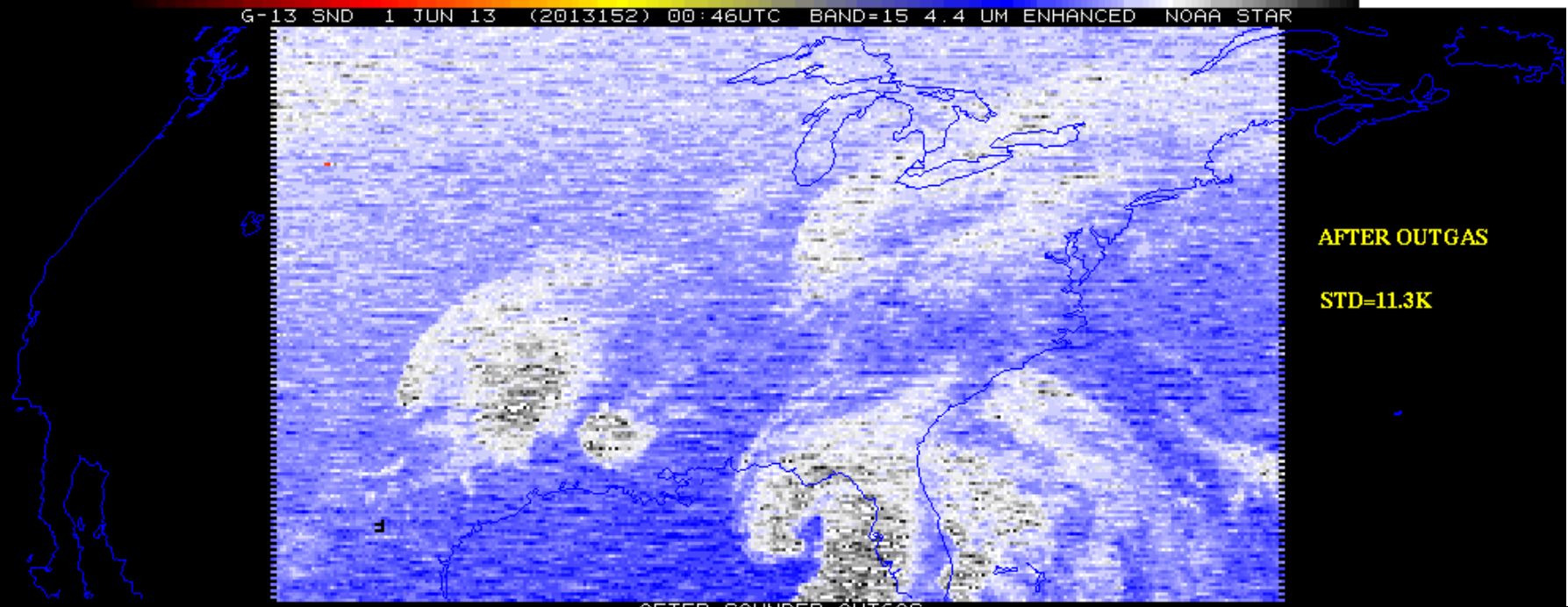
<http://www.oso.noaa.gov/goesstatus>

GOES-13 Sounder (after 4-day outgas)



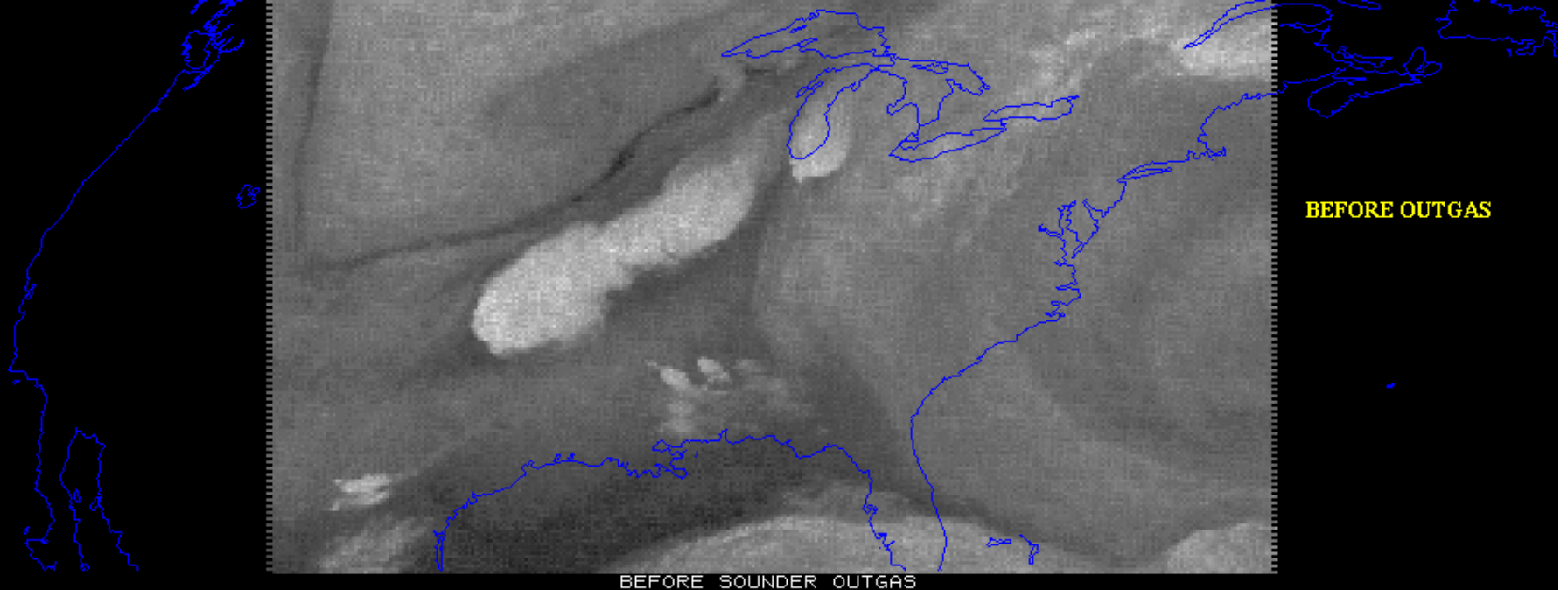


G-13 SND 1 JUN 13 (2013152) 00:46UTC BAND=15 4.4 UM ENHANCED NOAA STAR



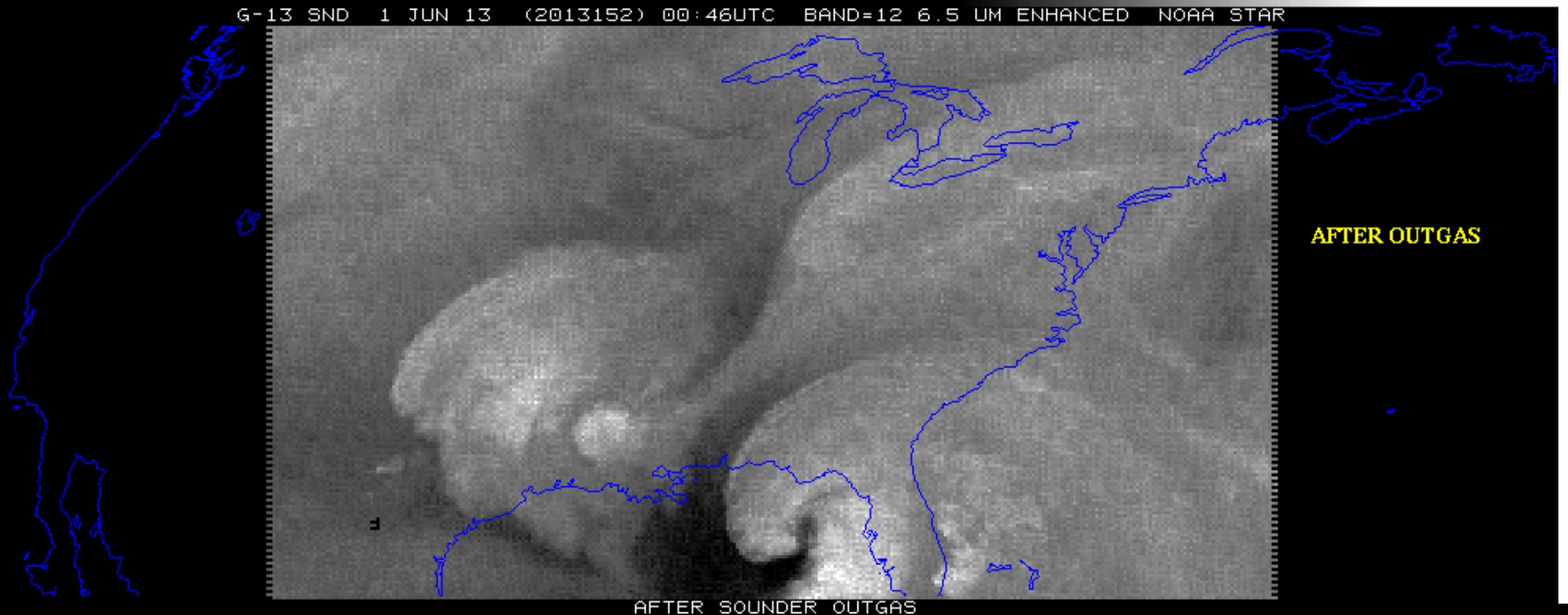
G-13 SND 6 JUN 13 (2013157) 11:46UTC BAND=15 4.4 UM ENHANCED NOAA STAR





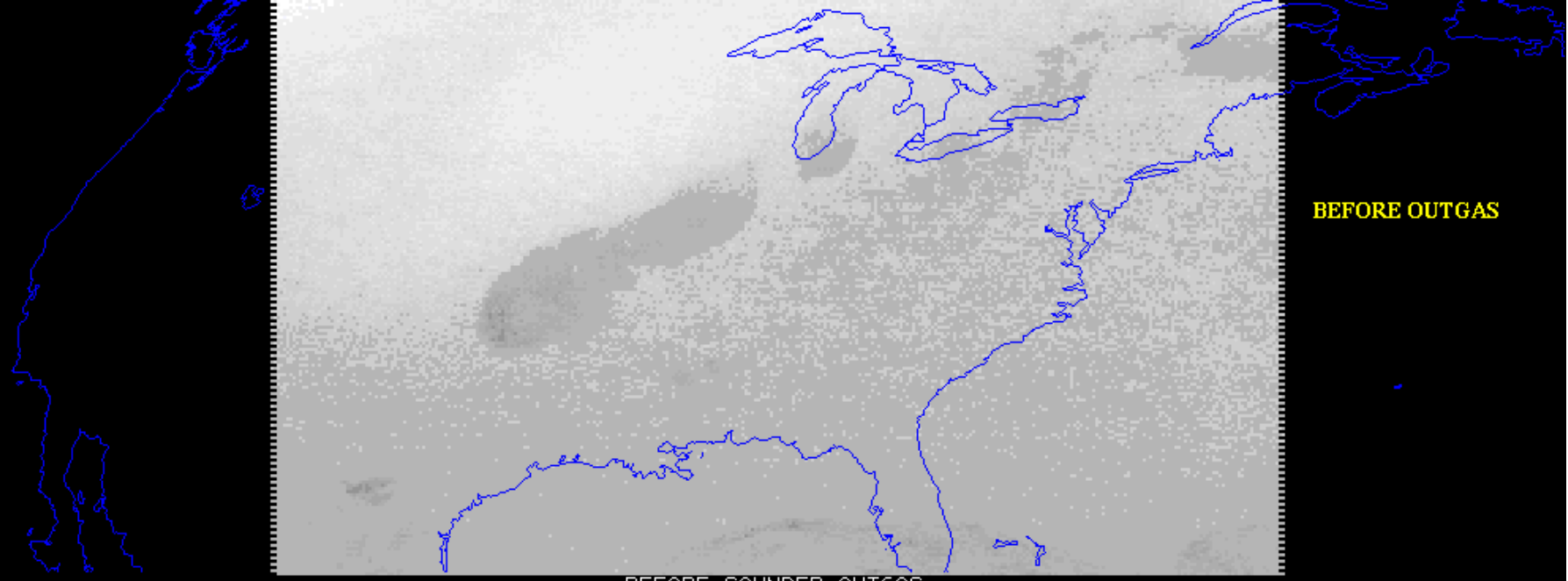
BEFORE SOUNDER OUTGAS

G-13 SND 1 JUN 13 (2013152) 00:46UTC BAND=12 6.5 UM ENHANCED NOAA STAR

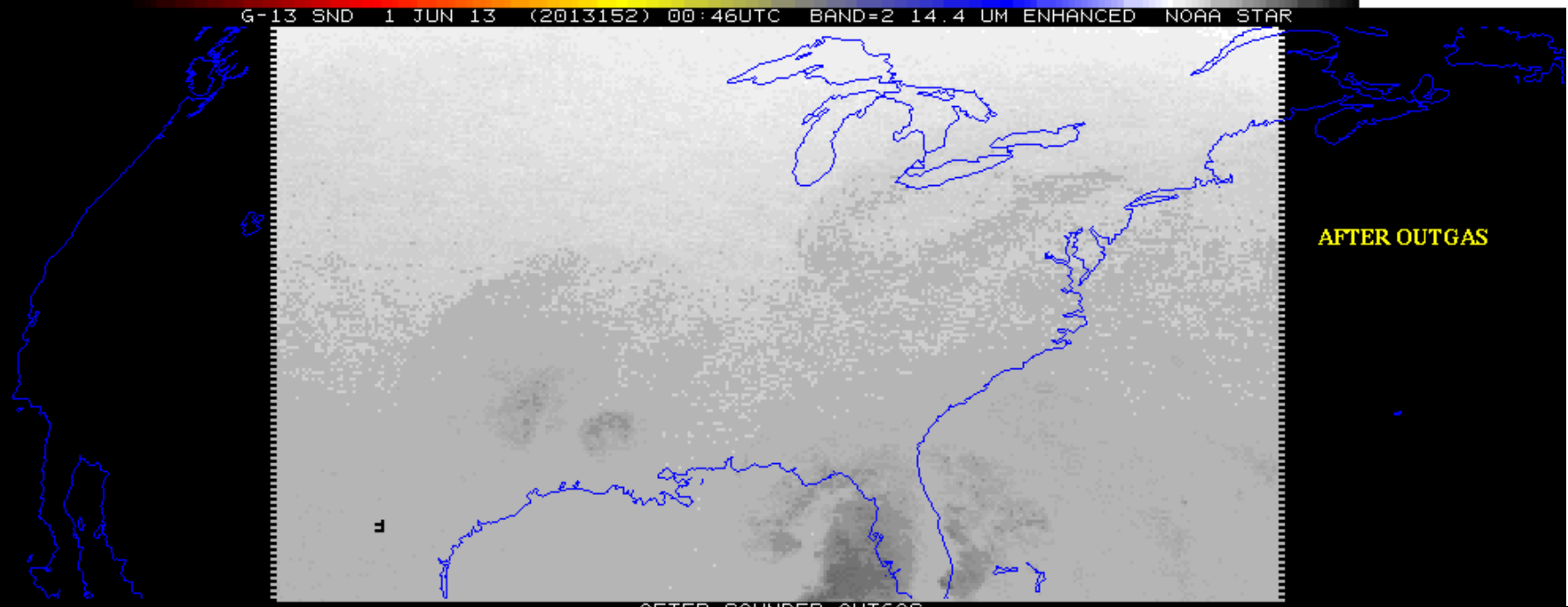


AFTER SOUNDER OUTGAS

G-13 SND 6 JUN 13 (2013157) 11:46UTC BAND=12 6.5 UM ENHANCED NOAA STAR

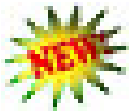


G-13 SND 1 JUN 13 (2013152) 00:46UTC BAND=2 14.4 UM ENHANCED NOAA STAR



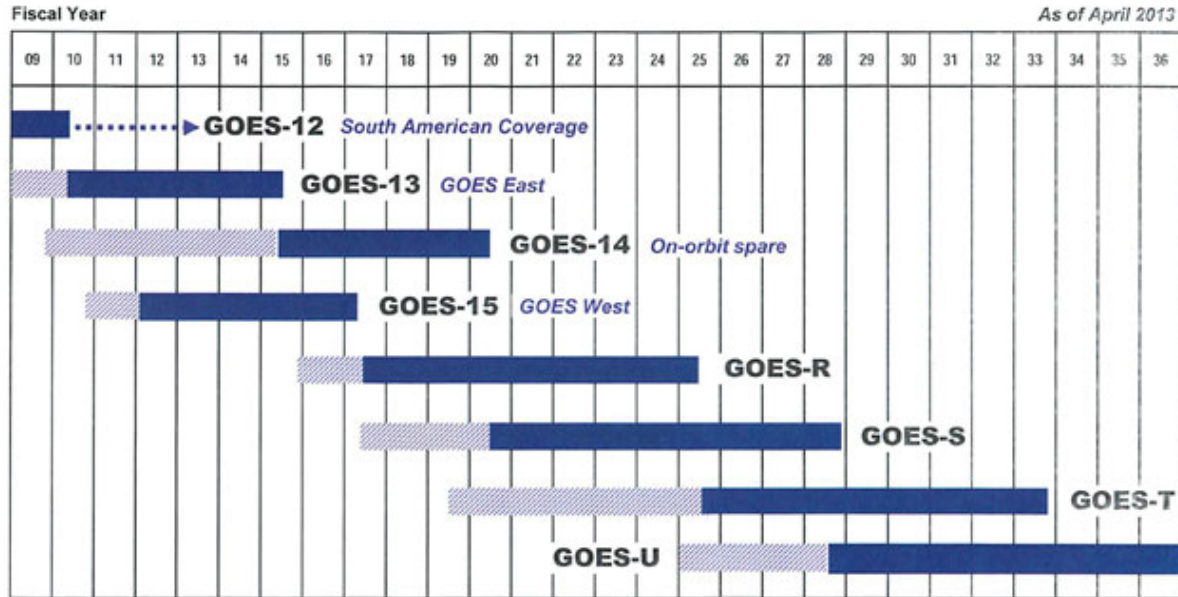
G-13 SND 6 JUN 13 (2013157) 11:46UTC BAND=2 14.4 UM ENHANCED NOAA STAR



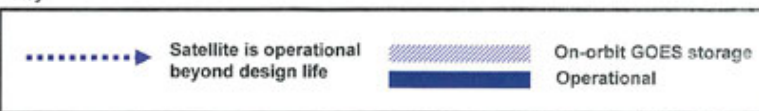


GOES Flyout Schedule

Continuity of GOES Mission



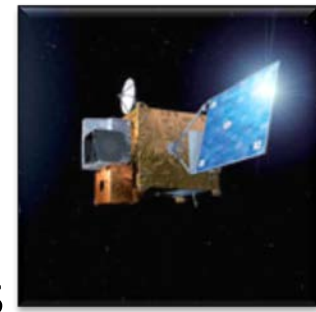
Key



Approved:
 Assistant Administrator for Satellite and Information Services

Eumetsat GEOs

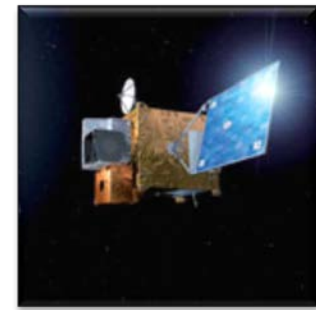
Meteosat-10 Operational



- On January 21, Meteosat-10 replaced Meteosat-9 as EUMETSAT's primary geostationary satellite at 0 degrees
- Prior to operations, Meteosat-10 data streaming tests (2-3 hours) were performed to validate users' data ingest and processing systems
- User notifications were set out by NESDIS prior to each test period
 - During the first test on Dec. 13, 2012, NESDIS discovered a “bug” in decrypting M-10 data at user sites
 - After encryption key code reconfiguration changes were made, another test was performed on January 17, 2012
 - this test also failed
 - To avert additional user impacts while the investigation continued, NESDIS coordinated with EUMETSAT to send in-the-clear (unencrypted) Meteosat-10 data starting January 21
 - This configuration enabled users to receive the full data set without degradation

Eumetsat GEOs

Meteosat-10 Operational



- On February 20 and 27, final encryption and user decryption validation tests were performed
 - On February 27, Meteosat-10 standard rebroadcast via U.S. DOMSAT was restored
 - All users reported successful decryption
- Present
 - Meteosat-10 and Meteosat-9 split primary duties at 0° and 3.5° East (backup status)
 - Meteosat-8 is at 9.5° East
 - Meteosat-7 is over Indian Ocean at 57.5° East
- Future – Might switch 8 and 9 positions (next slide)

Eumetsat GEOs

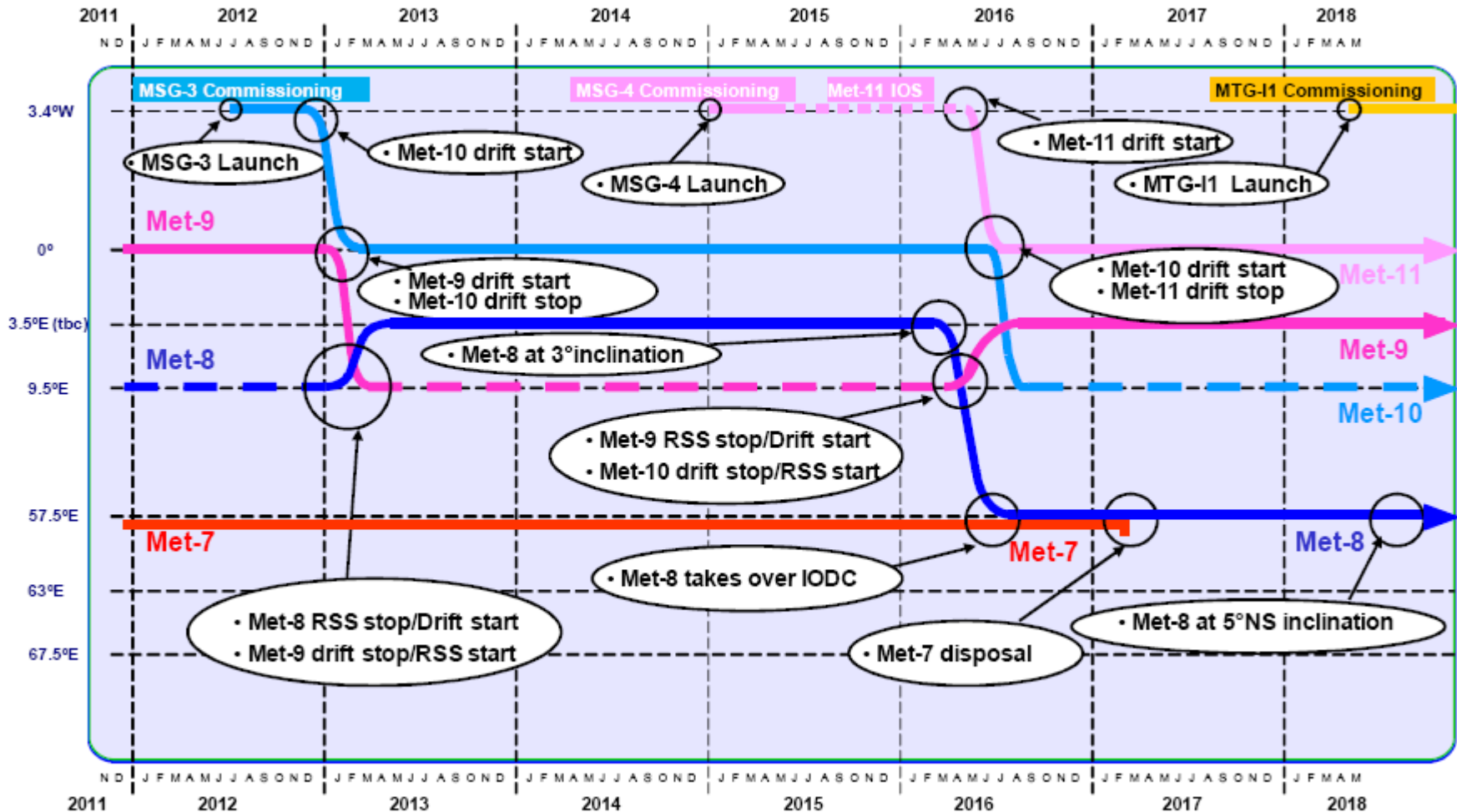
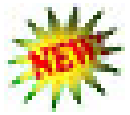


Figure 1: A Potential Meteosat planning till end of 2018

Slide from AMS - June 2012

Meteosat-7 was supposed to reach end of life in 2014, but now extended 3 years.

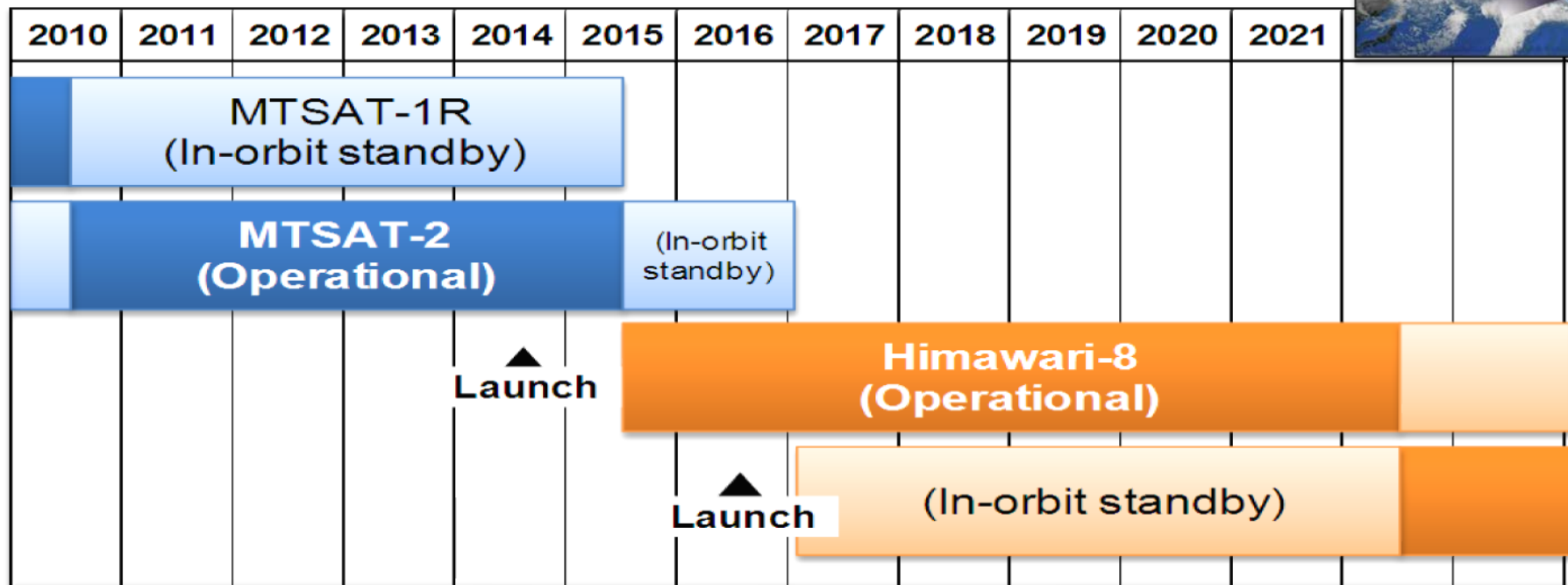
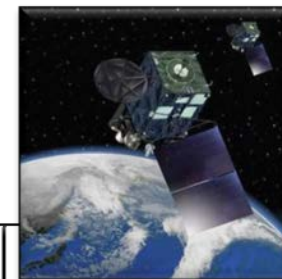


Meteosat-10 Special Operation

- From July 1 to July 9, 2013, EUMETSAT will perform decontamination of the SEVIRI (imager) on Meteosat-10
 - Starting at 0815 UTC on July 1, Meteosat-8 will become the primary operational satellite at 0 degrees
 - Stationed at 3.5W, EUMETSAT will rectify Meteosat-8 imagery to 0 degrees
 - DRO users will not need to re-point their antennas
 - Meteosat-8 data will be rebroadcast through Meteosat-10
 - Starting at 09:15 UTC on July 9, Meteosat-10 will resume operations at 0 degrees
 - This procedure will be transparent to users with the possible exception of a few missed images and products

JMA GEOs

Himawari-8/9 (sunflower)



- There is no L-band on these satellites. There is dialogue with JMA and COPC partners on if/how to get data back to the U.S.
- JMA plans to launch Himawari-8 in 2014 and transition to operations in 2016
- The launch of Himawari-9 for in-orbit standby is also scheduled in 2016
- Himawari-8/9 will be in operation around 140 degrees East covering the East Asia and the Western Pacific

JMA GEOs

MTSAT-2 Transition to Himawari-8

- Himawari-8 (H-8) will replace MTSAT-2 operations at 140E in June 2015
 - H-8 is analogous to GOES-R having 16 spectral channels at the same and temporal resolutions
 - HOWEVER, H-8 will not have a transponder for DRO users
 - In the absence of a transponder, JMA plans to provide the data set via the Internet to serve users
 - NESDIS and NWS currently pursuing two viable communication options to retransmit real-time H-8 data from JMA to the U.S. including NWS PR:
 - Using a dedicated link (either commercial point to point or Internet2) from JMA to Hawaii to retransmit the full set of all spectral channels from the Advanced Himawari Imager (AHI)
 - From Hawaii, data will be redistributed to CONUS and Alaska Region
 - This is the highest user priority conditional on availability of recurring O&M funds
 - » **There is no approved source of funding this far**
 - Using a provided COMSAT from JMA to rebroadcast an equivalent MTSAT spectral channel (the current spectral set available to users) from the Himawari-8 AHI. The data will be initially received in Hawaii via a ground station to support NWS PR and rebroadcasted to the CONUS through a U.S. DOMSAT to support NOAA operations
 - FD scans will be available every 10 minutes versus the current hourly and NH every 30 minutes
 - A funding partnership can be developed between NOAA and DoD to pay for the recurring communication costs



POES Operational Status

June 4, 2013

Spacecraft Subsystems	METOP-A	METOP-B	NOAA-19	NOAA-18	NOAA-16	NOAA-15
Launch Date	Oct 2006	Sept 2012	Feb 2009	May 2005	Sep 2000	May 1998
Operational Date	May 2007	April 2013	Jun 2009	Aug 2005	Mar 2001	Dec 1998
Mission Data Category	Secondary (AM)	Primary (AM)	Primary (PM)	Secondary (PM)	Secondary (PM)	Secondary (AM)
Payload Instruments						
AVHRR	G	G	G	G	Y(13)	Y(20)
HIRS	G	G	G	Y (3)	Y(14)	R (6)
AMSU-A1	Y(26)	G	G	G	Y(15)	Y(21)
AMSU-A2	G	G	G	G	G	
AMSU-B	N/A		N/A	N/A	G	R (12)
MHS	G	G	Y (8)	G	N/A	N/A
SEM	G	G	G	G	G	G
SBUV	N/A		S/C (9)	R(29)	Y(16)	N/A
Spacecraft Subsystems						
Telemetry, Command & Control	G	G	G	G	G	G
ADACS	G	G	G	Y (7)	Y(17)	Y(10)
EPS	G	G	G	G	G	G
Thermal Control	G	G	G	G	G	Y(22)
Communications	Y (1)	G	G	G	Y(30)	Y(23)
APT/LRPT	R (2)	G	G	G	R(18)	G
DCS	N/A	N/A	N/A	G	G	G
ADCS	G	Y(31)	G	N/A	N/A	N/A
SAR	G	G	G	G	Y(19)	Y(24)

NOAA-17 Decommissioning

- NOAA-17 (NOAA-M) was launched on June 24, 2002
- NOAA-17 (NOAA-M prior to launch) was successfully decommissioned on April 10, 2013, at 8:27 am EDT.
- NOAA-17 provided 11 years 293 days of service.



Suomi NPP - Mission Status

Date	Activity
10 / 2011	Launch
2 / 2012	ECMWF is assimilating NPP ATMS
6 / 2012	NCEP using ATMS radiances in the GFS model
10 / 2012	AWIPS will add VIIRS imagery for Alaska
3 / 4-8 / 2013	Testing of temperature/humidity soundings to TNCF
On-going	Testing with primary customers is well underway with the NDE group at NSOF testing with NCEP, AFWA, NAVO, FNMOC, EUMETSAT, and others
7 / 31 / 2013	ESPC takes over with 24x7 product generation, monitoring, and notifications
10 / 2013	Temperature/humidity soundings delivered to AWIPS2
2014	NCEP planning to add CrIS radiances to operational model

S-NPP Satellite Products

31 July 2013 products transition to ops

ATMS BUFR

Users: NWS/NCEP, EUMETSAT

CrIS BUFR 399 channels

User: NWS/NCEP

CrIS BUFR All channels

User: EUMETSAT

VIIRS EDRs for Alaska

Users: AWIPS II users

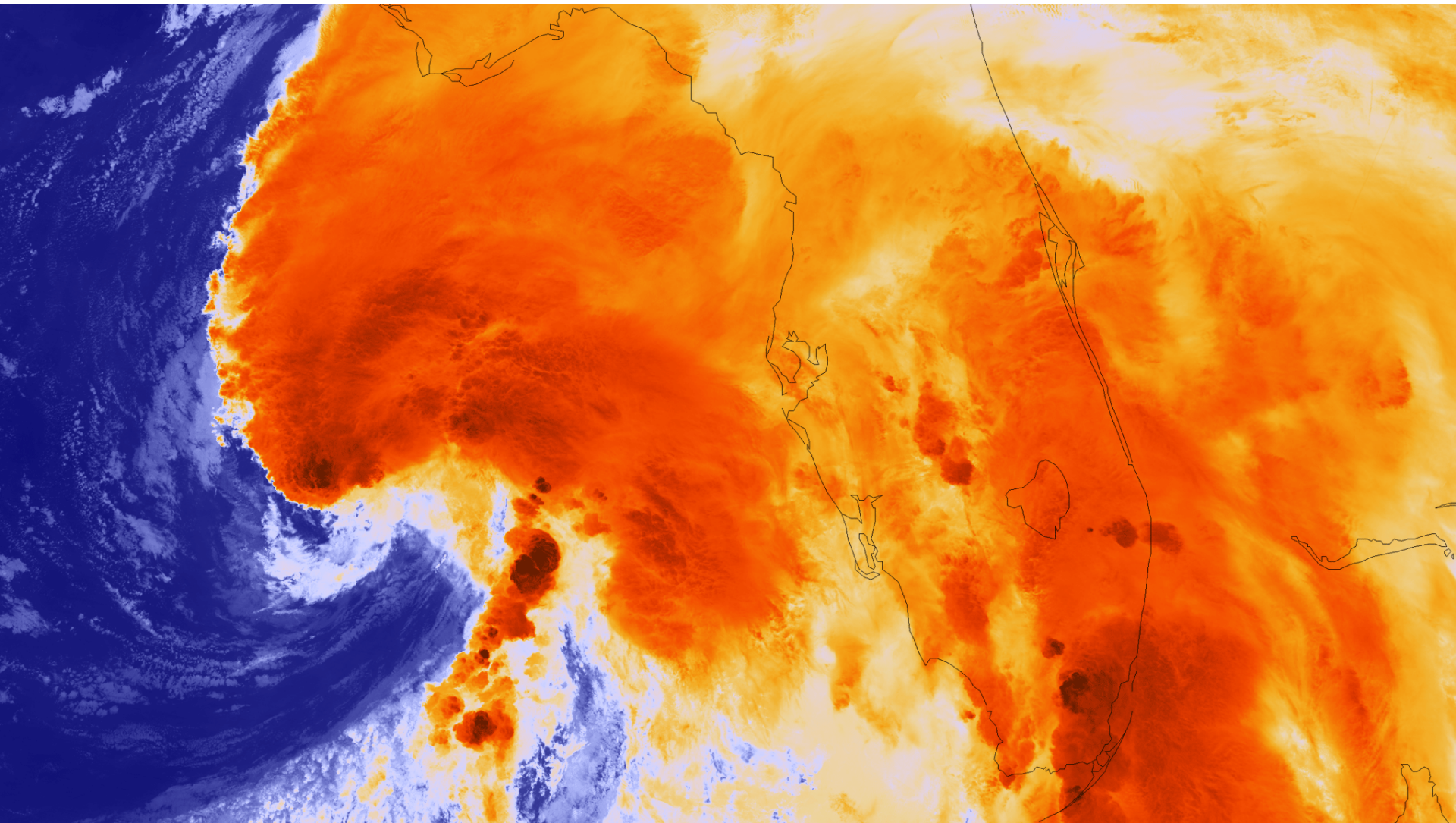
Cloud fraction and height

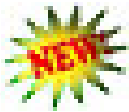
User: EUMETSAT



The NDE Project will conduct an Operational Readiness Review (ORR) on 23 July 2013 in the Auditorium at the NOAA Center for Weather and Climate Prediction starting at 08:30 am

Tropical Storm Andrea heads for Florida





LEO Flyout Schedule

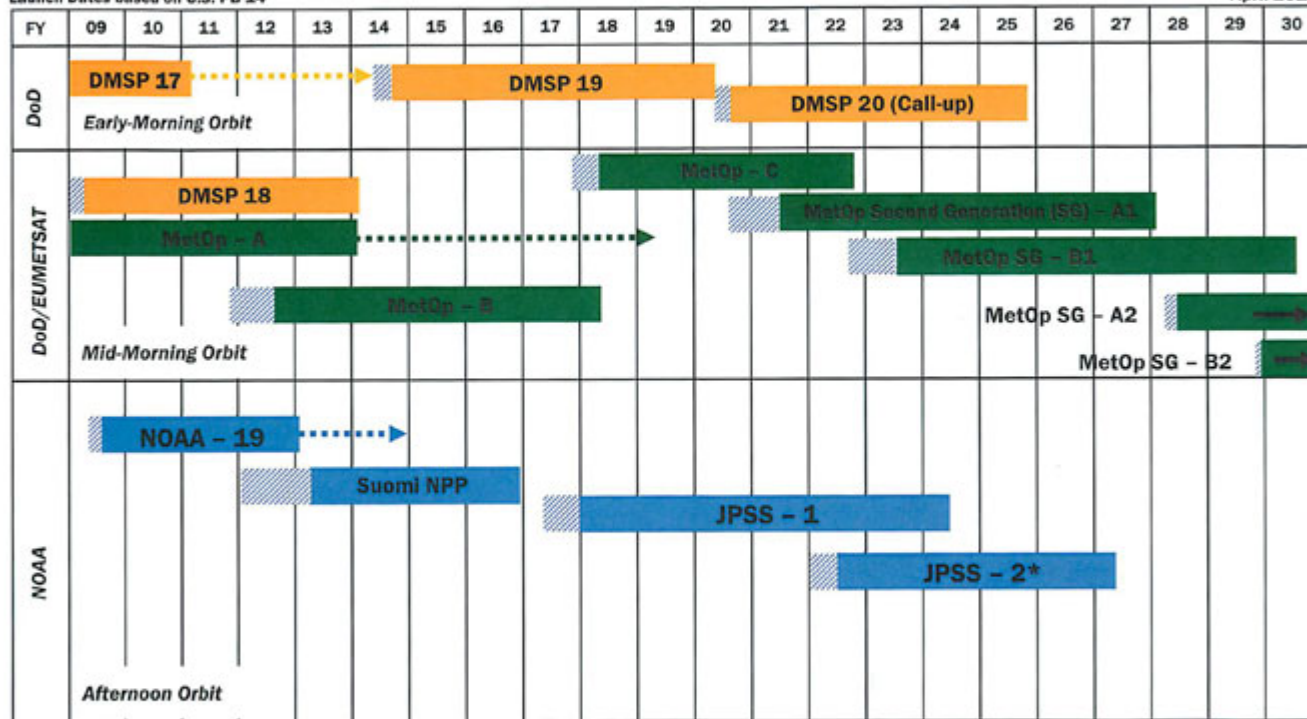


Continuity of NOAA's Polar (Primary) Operational Weather Satellite Programs



Launch Dates based on U.S. PB 14

April 2013



Approved: 
 Assistant Administrator for Satellite and Information Services

DMSP: Defense Meteorological Satellite Program
 JPSS: Joint Polar Satellite Program
 Suomi NPP: Suomi National Polar Partnership

Operations beyond design life

* Program funding provided through FY2025. The follow-on program will provide funding for operations post FY2025.

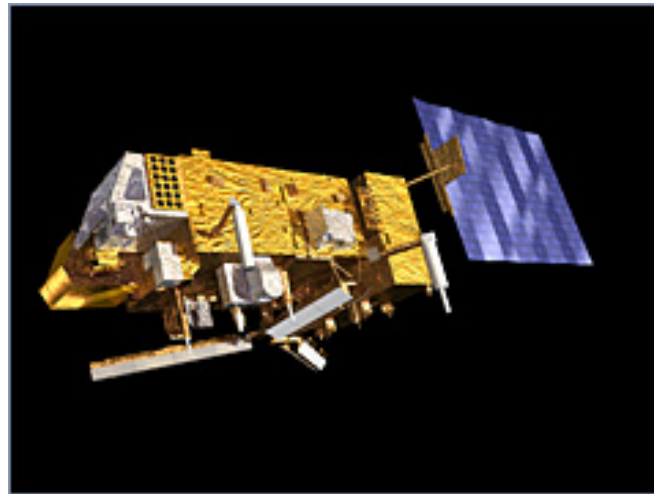
Post Launch Test

Operational

Operational beyond FY 2030

EUMETSAT LEOs: Metop-B Status

- Launched on September 17, 2012 (50 minutes behind Metop-A)
- Replaced Metop-A as EUMETSAT's prime operational LEO weather satellite on April 24, 2013



EUMETSAT LEOs: Metop-B Products

Total Applications = 21 (17 of 21 are operational)

TOAST, ATOV, MSPPS, MIRS, RADBUD, GVI, Polar Mapping, Coastwatch, ASCPO, Winds, eTrap, FIMMA, HMS, CLAVRx , bRR and TBW for MSPPS , ASCAT

- June 5 - Operational METOP-B ASCAT products

2 of 21 applications will go operational when EUMESTAT declares it operational (GOME, IASI).

- May 9 - MetOp-B GOME-2 products as pre-operational

- June 2013 - IASI Metop-B Level 1 data products plans to be operational this month

2 of 21 applications are TBD (IMS, SMOPS)

Products Updates and Development Initiatives, including new promotions:

IASI Metop-A Phase 2 will be operational to generate the Outgoing Longwave Radiation (OLR). This phase includes the improvements due to science algorithm updates and Clavr-X inputs to the IASI products processing system. Plan to brief the operational implementation to SPSRB and getting the board's approval this month.

More Future LEO Satellites

Year	Satellite
Early 2014	Megha-Tropiques (M-T) Precipitation Products
2014	NASA JPL's Soil Moisture Active Passive (SMAP)
2014	NASA GSFC's Global Precipitation Measurement (GPM) (Follow-on to TRMM)
2016	Joint Taiwan-U.S. FORMOSAT-7/COSMIC-2 (12 birds in this constellation!) GPS Radio Occultation micro satellites with high spatial/temporal resolution of temperature and moisture profiles used for climate studies, defense, and space weather models

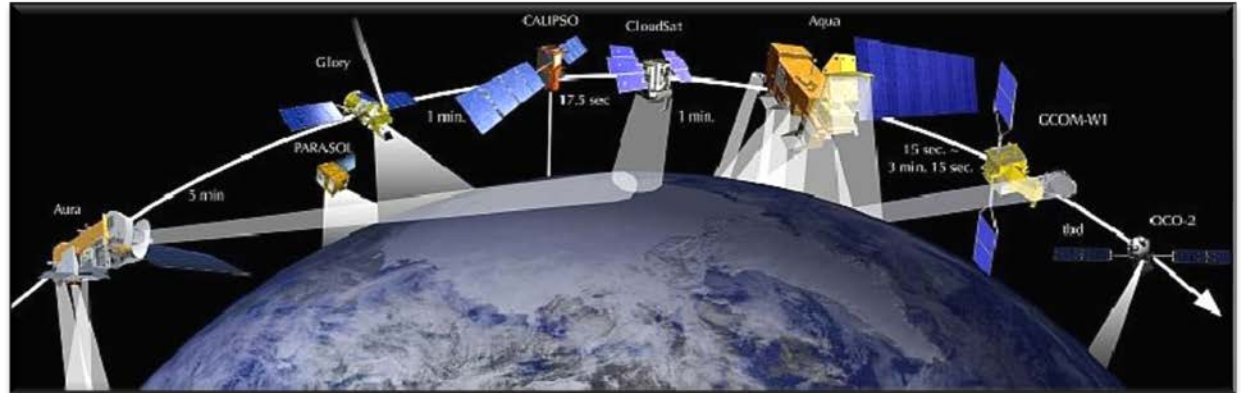
Megha-Tropiques (CNES/ISRO)

- Satellite and Sensor Status (launched 10/12/11)
 - Status of primary payload
 - MADRAS (MW Imager – 18 to 157 GHz)
 - It is likely that this sensor has failed...we are trying to confirm this
 - SAPHIR (MW WV Sounder – 183 GHz)
 - Excellent data set; Agrees well with ATMS (see next slide)
 - SCARAB (Radiation Budget)
 - First data sets just received
- We are engaged with EUMETSAT to acquire n.r.t. via their data stream
 - Hopefully by around August 1, 2013
- NESDIS M-T CDR for TB's held in March 2013
 - Target distribution for SAPHIR TB's around August 1
 - MiRS hydrological products by late 2013/early 2014

Update - R. Ferraro/CoRP

JAXA LEO: SHIZUKU GCOM-W1

- In afternoon “A-Train”
- Carries AMSR-2
- Focus on water obs



- Successor to Aqua and is part of the GEOSS (Global Earth Observation System of Systems)
- NESDIS is working closely with JAXA to prepare for JAXA AMSR2 executable code on NOAA systems to process AMSR2 data for level 1 products. STAR is preparing to produce level 2 products operationally by September 2013.

...more on GCOM-W1 in Ralph Ferraro's Slides

GCOM-W AMSR-2 (Japan) Status

- Part of JPSS, launched in May 2012
- AMSR-2 → AMSR-E legacy
- OSD/STAR/OSPO effort to develop EDR's
 - Legacy/in-house algorithms
- CDR held in April 2013
 - operational “Phase I” products by fall 2013 – rain rate, TPW, CLW, ocean winds, etc.
- Test data sets can be obtained from Paul Chang (STAR)

AMSR-2 Rain Rates – Moore, OK Tornado

Patrick Meyers (CICS)/Ralph Ferraro (STAR)

Moore Tornado – GPROF Rain Rates
2013-05-20 19:33

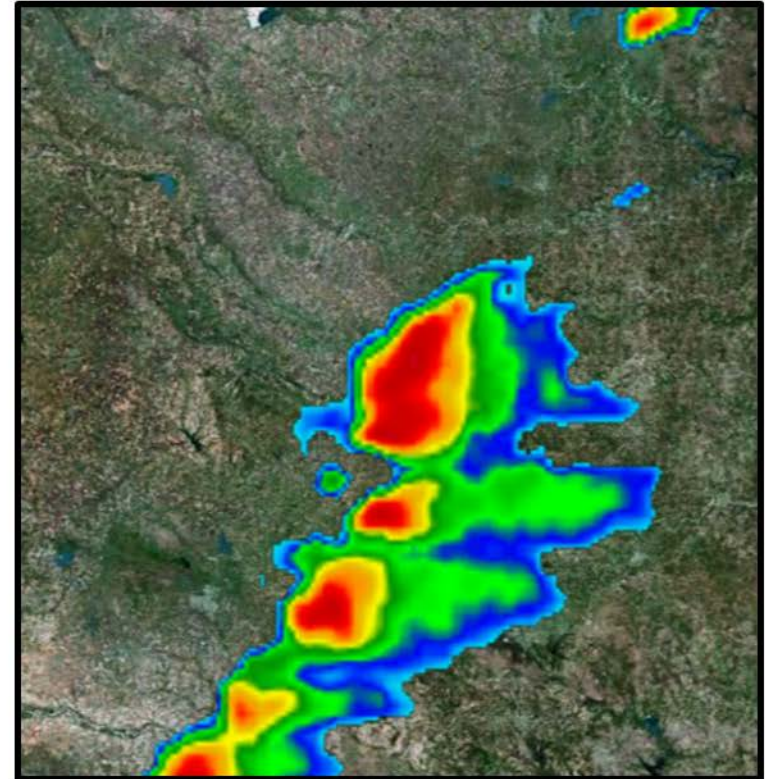
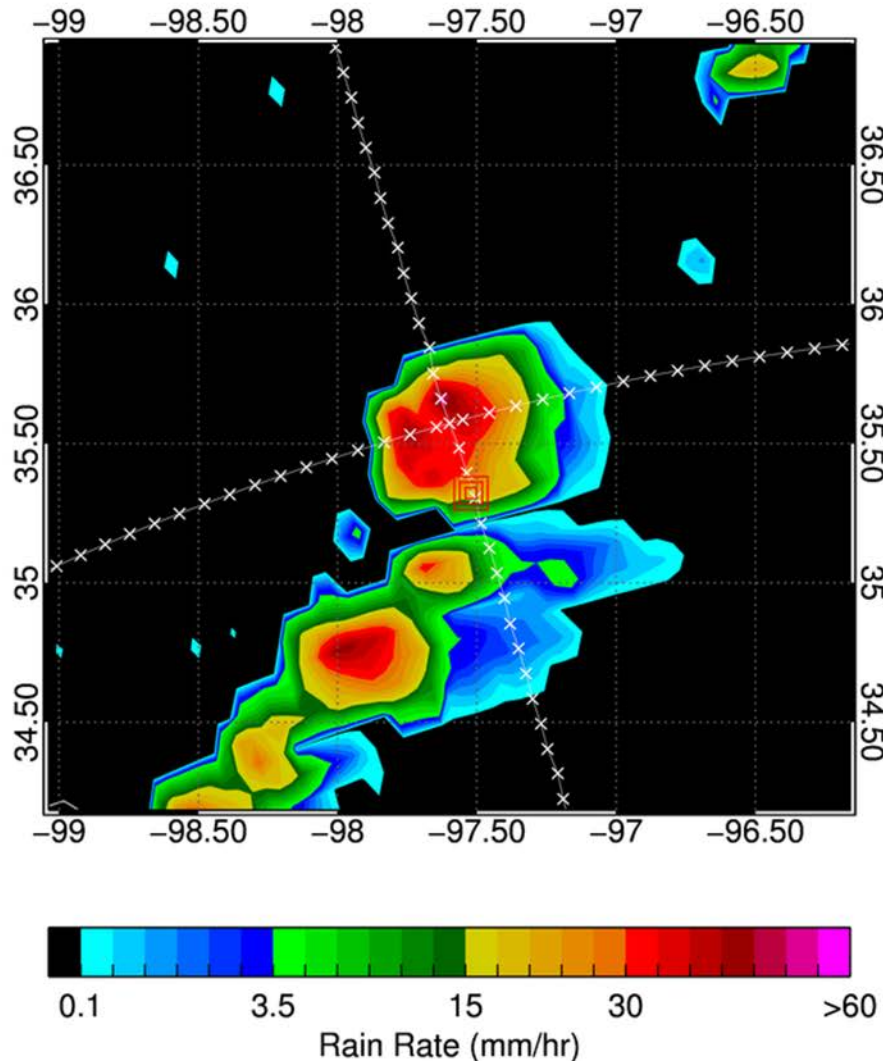


Fig. 1 – AMSR2 rain rate retrieval from GPROF2010 (left). Concentric squares indicate location of the Moore Tornado. White 'X's are locations of AMSR2 observations presented in Figure 2. Location and intensity of GPROF retrievals match well with Oklahoma City radar reflectivities (right).

GOES-R GRB format simulator delivered

- GOES-R Realtime Broadcast (GRB) Simulator testing completed and simulators in route Harris in Omaha.
- Five GRB Simulators delivered by Harris:
 - Four GRB Simulators were shipped to HITS – Omaha, NE on May 30 for loan program.
 - One GRB Simulator will stay in Melbourne for use in Release testing.
- These will be used by industry, government, and academia to build direct broadcast receiving stations.
 - A simulator loan process is being developed.
 - A simulator industry day is planned for this Fall in DC area.

NSOF Facilities ready for GOES-R hardware

- Facilities – NSOF ready to receive Release Mission Management, the first delivery of GOES-R equipment for GOES-R flight control.
 - LCR and Computer Room layout - **Completed**
 - Power feeds - **Completed**



GOES-R Data Compression

- NESDIS has asked GOES-R, CLASS and ESPDS for initial cost for what it would take to implement compression and data duplication
 - Has no impact to AWIPS data.
 - Reduces Telecom bandwidth requirements and storage media sizing, up to 58%
- GSP moving forward with task direction to implement data compression to PDA and CLASS interfaces

Data Operations Support Team (DOST)

- Recent Accomplishments towards System Validation tests
 - DOST simulated test data team working on approaches for improved test data for the DOT's. GFS model data generated test data, at U. of Wisconsin, to be delivered to GOES-R through a simulator connected to the ground system gives continuous full disk simulated “images” at all modes for Data Operations Tests.
 - NOAA Virtual Lab (Vlab) chosen as the collaboration system the DOST will use to share files, schedule, and other information with interface stakeholders.
 - DOST team coordinating with interfaces, AWIPS, CLASS, and PDA, to ensure they are ready for system tests at the end of next year and our schedules are linked.

De-Ice Heater Installation at WCDAS GOES-R antenna



Remote Backup Facility (RBU) Site Alignment activity



NSOF Physical Plant Construction



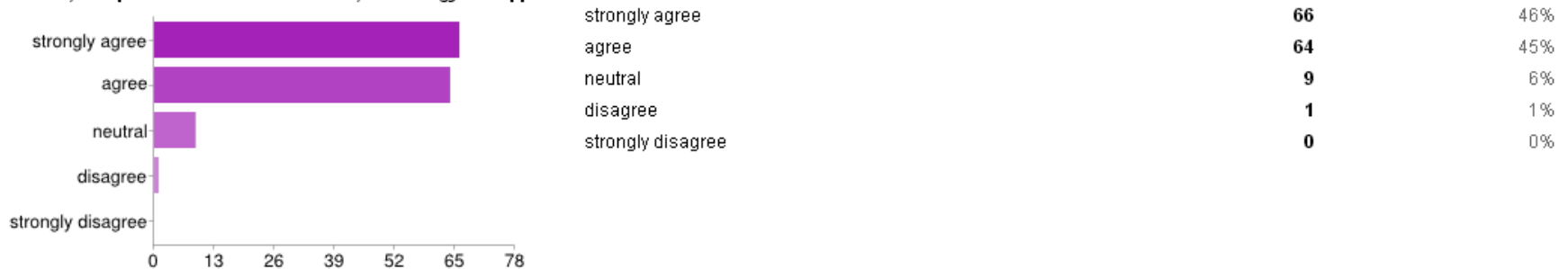
Product Anomaly, Ticket, Relationship, Organization, and Notification tool (PATRON)

- PATRON is an early release of the Configuration Management Anomaly Reporting and Tracking (CMART) system that is being developed for GOES-R
 - Hosted on the Harris Contractor Portal (HCP) in Melbourne
 - Provides OSPO Product Operations with a replacement for the End-of-Life Aplicor ticketing system
 - Provides OPSO with early use of and exposure to the GOES-R CMART environment
- Operational on January 31, 2013
 - Support provided by HCP Helpdesk
 - Support is 6:00 am to 11:00 pm, 7 days a week
- Harris added staff to supplement development support
 - Initial Development continues thru June 2013
 - Sustainment activities continue after June 2013
 - Plans for continued development, such as implementing RATS into PATRON, are being prepared
- PATRON has over 200 users registered and exceeded OSPO's expectations for a ticketing system.



- Over 500 people attended “NSC-2013” at NCWCP from April 8-12, including 70 foreign nationals from 20 countries. An additional 100+ participated remotely
- Total cost to NOAA to execute all of the above was approximately \$36k
- All presentations and posters are available at <http://satelliteconferences.noaa.gov/2013/>

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



AWIPS Update

- GOES High Density Hourly Winds to replace three hourly winds in July/August 2013 (BUFR)
- CONUS scale of Global Hydro-Estimator (GHE) product to replace current CONUS scale H-E in July 2013 (GRIB2)
- GOES Sounder SFOV DPI for Hawaii National Sector to be activated in September 2013
- NPP/VIIRS imagery available via SBN for NWS Alaska Region AWIPS II (netCDF4)
 - Three channels: visible, shortwave, and 11 micron thermal window

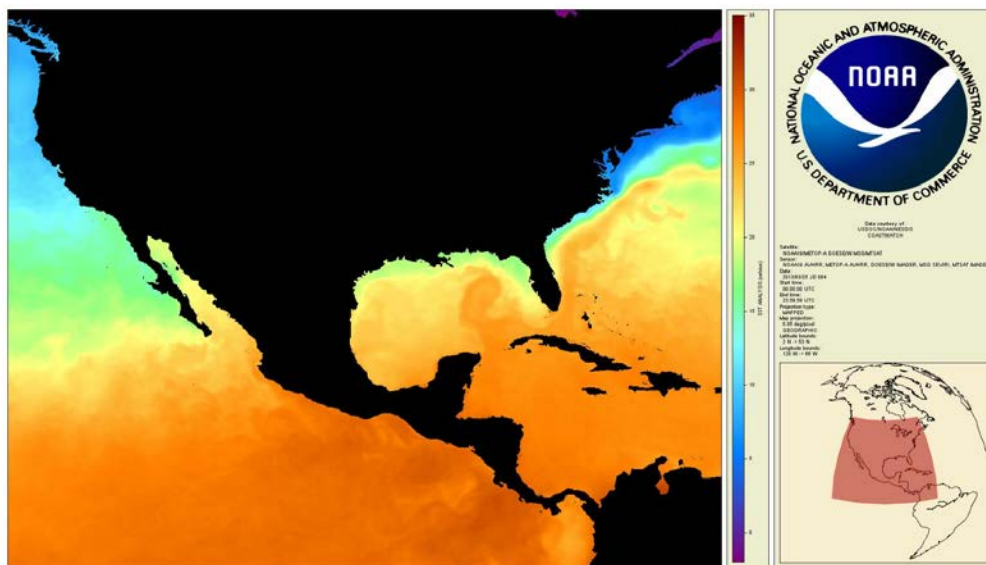
AWIPS Update

- NPP Soundings planned for activation in September 2013 (netCDF4)
- NPP Near Constant Contrast imagery available for Alaska, Pacific, and CONUS regions in January 2014 (netCDF4)

New nighttime-only 5km blended SST product

- Enhanced SST product went operational March 20
- New nighttime-only 5km blended SST product will remove most of the diurnal signal typically associated with daily composited products and is critical for users for whom diurnal warming makes temperature anomaly determination difficult.

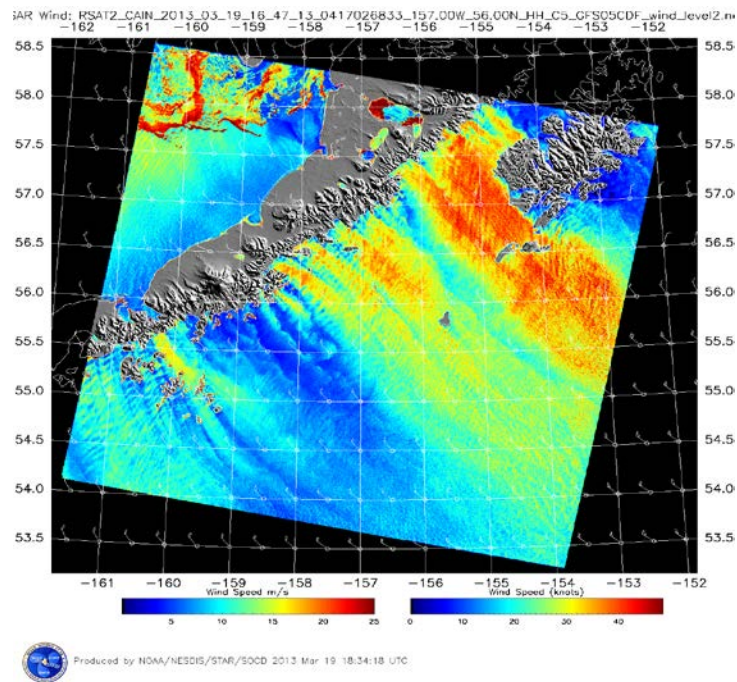
NOAA's Coral Reef Watch program relies on SST anomalies to determine the amount of thermal stress being endured by the coral. Thermal stress can cause coral bleaching and if the stress is prolonged, can cause coral mortality.



Sample image of regional extraction of the SST product.

New Synthetic Aperture Radar (SAR) High Resolution Coastal Winds products

- New Synthetic Aperture Radar (SAR) High Resolution Coastal Winds products approved by SPSRB on March 20th for operational implementation
- Requested by multiple NWS forecast offices for use in wave and wind forecasts and warnings.
- Initially the product coverage will be limited mainly to Alaska and Washington coastal regions with SAR data acquired from RADARSAT-1 and RADARSAT-2.
 - Future satellite launches will expand coverage to other U.S coastal areas including the Great Lakes.

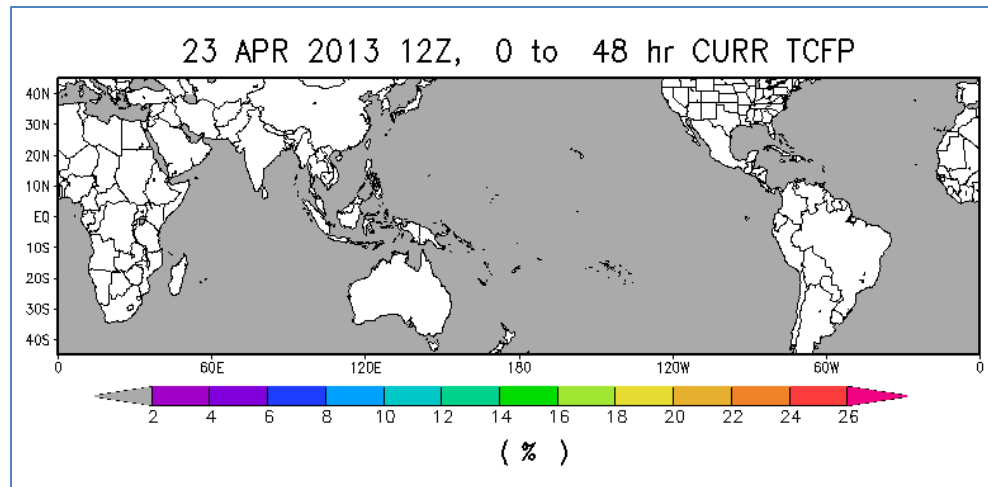


Sample product .png image of the southern coast of Alaska and Kodiak Island in the upper right corner of the image. The image depicts wind speeds (color) with wind directional barbs overlaid.

User comment: "SAR imagery enhances overall knowledge and understanding of ocean storm evolution, and significantly improves knowledge and forecasts of dangerous terrain effects such as gap winds and barrier jets. These weather phenomena negatively impact international and domestic barge operations, ferry transportation and commercial fishing activities. They can also prove fatal if unwarned."

TCFP

- The 48 Hour Global Tropical Cyclone Formation Probability (TCFP) Product successfully transitioned to operations on April 23
 - Extended forecast time to 48-hr instead of 24 hr
 - Increased product resolution to 1° x 1° lat/lon (instead of the old resolution of 5° x 5° lat/lon)
 - Uses GFS analyses and forecasts (instead of analysis only)

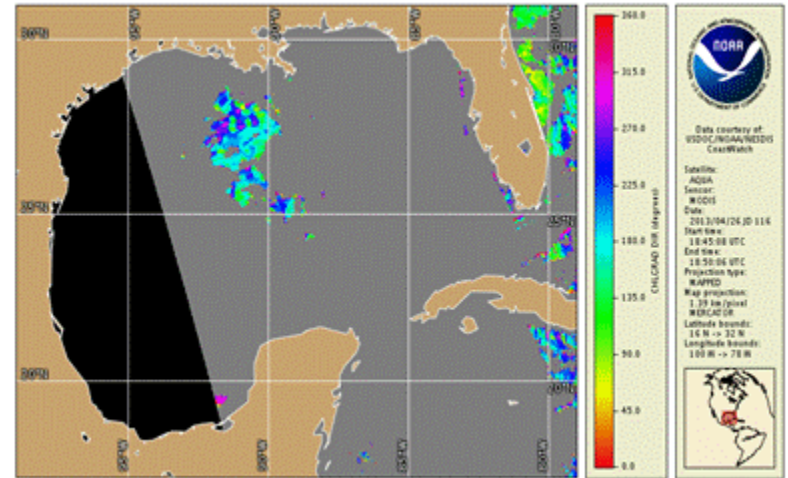


Okeanos MODIS/Aqua Operational Production of Chlorophyll Frontal Products

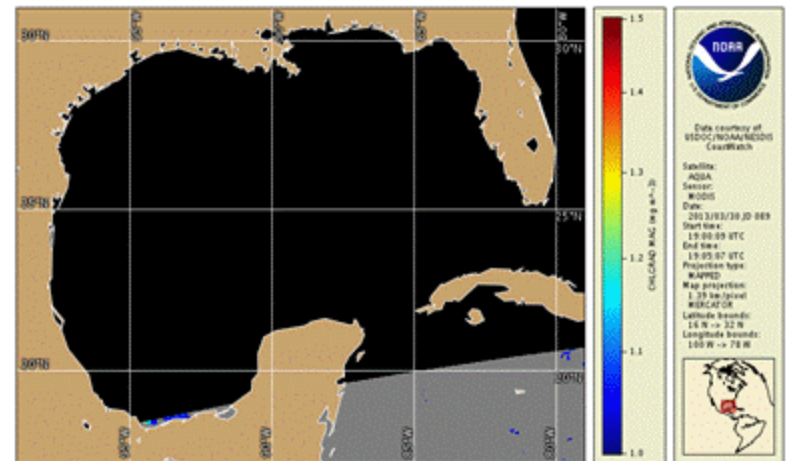
- On May 28, 2013, MODIS/Aqua chlorophyll frontal products were operationally generated in the new Okeanos Operational Production System (OPS)
 - significantly benefit NOAA marine ecosystem program deeply understand ocean chlorophyll frontal spatial and temporal variability and better monitor marine fisheries and protected species.
 - also help the NOAA oil spill detection program eliminate potential false positive (i.e., biogenics) in detecting oil on water. Examples of the products are shown at right.

The frontal products are operationally available in the following ftp address: <ftp://cw-okeanos.noaa.gov/pub/FRONTAL/>

Granule Gradient Magnitude (Animation)



Daily Merged Gradient Magnitude (Animation)



Advanced Dvorak Technique (ADT8.1.4)

- Advanced Dvorak Technique (ADT8.1.4) was approved for operations on May 15th
 - ADT provides an automated, objectively-derived estimate of tropical storm location and intensity for Tropical Prediction Center (NCEP/TPC), Central Pacific Hurricane Center (NWS/CPHC), Joint Typhoon Warning Center (JTWC), and the Satellite Analysis Branch (SAB). Major upgrades in this version are:
 - Incorporation of code to allow direct (self-contained) processing of the MW "eye score" within ADT algorithm using PMW imagery directly.
 - Implemented the Courtney/Knaff/Zehr logic for determining the ADT final MSLP value, with new equations and parameter inputs into the ADT
 - Modification of the eye and cloud region regression equations
 - Changed EPAC storms to use West Pacific regression equations for eye and CDO based on EPAC case statistical analysis
 - Added in a CDO adjustment for weak, forming storms or strong, weakening storms (to adjust for biases in each case).

GOES-R/JPSS Proving Grounds

Mid-Year Updates

06/12/13

Provided by Mike Folmer

High-Latitude Proving Ground

Satellite Liaison: Eric Stevens

- 2013 OCONUS workshop to be held in Anchorage and Fairbanks next week, June 17-21.
- Over the last month CIMSS developed, and GINA implemented, enhancement to CSPP software for processing VIIRS Day-Night Band imagery. Results favorably received by NWS Alaska Region WFOs.
- For the future...
 - Work with NOAA/NESDIS to “operationalize” direct broadcast of SNPP and Aqua imagery
 - Begin receiving and processing SNPP CrIS sounder data, shipping products to NWS and using data in Alaskan NWP modeling

Aviation Weather Center

GOES-R Proving Ground Activities

Satellite Liaison: Amanda Terborg

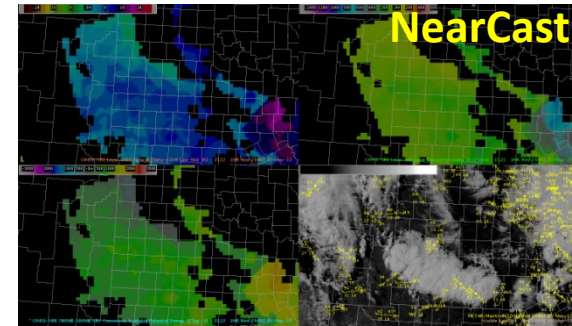
- Simulated Imagery training
 - WRF and NAM Nest simulated bands were transitioned into operations on June 7th
 - Training will go from June 13th through July 2nd (3 sessions)
- 2013 Summer Experiment
 - August 12th – 23rd
 - Structure:
 - Domestic: CSIG, CCFP and NAM
 - International: Global Graphics
 - GOES-R Products:
 - Simulated Satellite Imagery (NAM Nest and NSSL WRF)
 - GOES-R CI, CTC and OT/EV
 - Pseudo Geostationary Lightning Mapper
 - Nearcasting
 - Cloud Height algorithms

The GOES-R Proving Ground in the Hazardous Weather Testbed and Storm Prediction Center

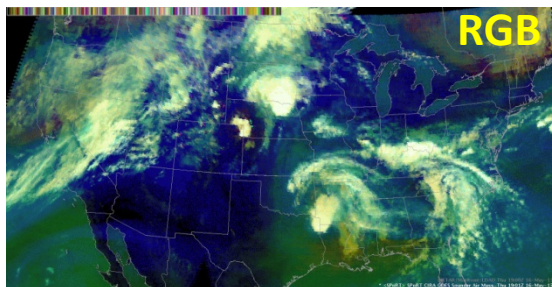
HWT/SPC Satellite Liaison: Bill Line

2013 Experimental Warning Program in the HWT: May 6-24

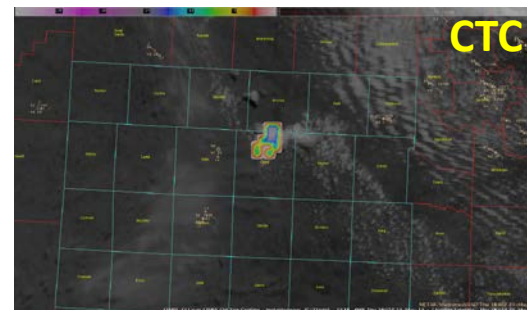
- Products tested:
 - Cloud and Moisture Imagery (UW-CIMSS & CIRA)
 - Total Lightning Detection (NSSL-CIMMS & NASA-SPoRT)
 - Convective Initiation (UAH & NASA-SPoRT)
 - NearCast Model (UW-CIMSS)
 - Product also shown in the EFP's final week (June 3-7)
 - Cloud Top Cooling (UW-CIMSS)
 - RGB Airmass Product (NASA-SPoRT & CIRA)



“... the theta-e difference product placed the tongue of mid-level unstable air just where high based thunderstorms finally evolved.”



“The GOES Sounder Air Mass image is very useful in highlighting the different features of interest for today.”



“Tornado warning was issued 19:21 UTC which resulted in 1 hr 6 min lead time if you had warned initially off the CTC signal.”

Proving Ground in the SPC: Starting this summer

- Appropriate products will be explained, tested and evaluated in operations.

Pacific Region Satellite Proving Ground

Update from Bill Ward

- Mark DeMaria and Kathy Strabala will be traveling to the Pacific Region as Visiting Scientists the week of July 8. Initial agenda shows there will be discussions/training on Tropical Cyclones and lightning as well as VIIRs and MODIS. We plan to have additional Visiting Scientists this year given availability.
- Dr. Steven Businger and Bill Ward sat down with Roy Huff (former Satellite Liaison) for checkout last week. Jordan Gerth called in for this as well. We went over all the duties for the GOES-R PG antenna at the Hawaii Community College and additional items that Roy was handling. These duties will now be distributed between UH, NWS, and the Visiting Scientists.

GOES-R Operations Proving Ground

Satellite Liaison: Chad Gravelle

- GOES-R Fog and Low Stratus West Coast WFO Evaluation began in May (EKA, LOX, MTR, and SEW)
- NWS Central Region WFO Convective Cloud-Top Cooling Evaluation began last week (ABR, ARX, DMX, EAX, GLD, ILX, JKL, LMK, LSX, OAX, and PAH)
- The 11 Central Region WFOs will also begin evaluating the Convective Initiation product in the next few weeks.
- Some Eastern Region WFOs are also evaluating Convective Cloud-Top Cooling, Convective Initiation, and Fog and Low Stratus.

Satellite Proving Ground for Marine, Precipitation, and Hazardous Weather Applications

Satellite Liaison: Michael Folmer

- Covers the Weather Prediction Center (WPC), Ocean Prediction Center (OPC), NHC Tropical Analysis and Forecast Branch (TAFB), and NESDIS Satellite Analysis Branch (SAB)
- The 2013 GOES-R Convective Demonstrations started on 04/01/13 and will run through 10/31/13.
 - NSSL WRF and NAM Simulated Imagery
 - Overshooting Top Detection
 - Vaisala GLD-360 Lightning Density and Pseudo-Geostationary Lightning Mapper Products
 - GOES-R Convective Initiation
- OPC will be hosting a Coast Guard Academy Intern from 06/17/13 – 07/31/13 to help quantify offshore convection for OPC and TAFB using the OTD and Lightning Density products.
- Michael will be assisting the NASA HS3 Field Campaign with GOES-R and JPSS products in August/September 2013.
- The 2013 JPSS Proving Ground activities will be complimenting the GOES-R demonstration, starting with the VIIRS Day-Night Band.

2013 GOES-R Convective Demonstrations

Vaisala GLD-360 Lightning Density

Overshooting Top Detection

