




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

Wednesday, October 17, 2012

1-3 pm EDT

Presented by Natalia Donoho (NESDIS/SPSD)

**Location: NCWCP Conference Room 3552
Dial in: 1-877-917-1654 passcode: 5917706#**

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- ✔ **Share status and updates**
 - ✔ **Improve communication**
 - ✔ **Provide an open forum for satellite customers to provide feedback to user services**
 - ✔ **Questions are encouraged!**



HOT! HOT! HOT!

GOES-13 Return to Operational Service as GOES-East tomorrow, October 18, 2012, at 10:44 EDT (1444 UTC)

GOES-14 Drift Stop Maneuver will be executed Friday, October 19, 2012, at 9:56 EDT (1356 UTC)





Agenda

- **Hot Topics**

-  GOES-13 Anomaly Update

- **Status of Operational Satellites: GOES, POES and non-NOAA**

-  GOES Status

-  Bad Fog Channel Images
-  Erroneous change to the GOES-13 CONUS frame coordinates
-  GOES-15 Imager Line Shifts
-  GOES-15 Missed Frames

-  POES Status

-  NOAA-17 Yaw Errors







- **Status of Non-Operational Satellites: NPP, METOP-B, METEOSAT-10**

- **Status of Future Satellites: JPSS, GOES-R, etc.**

- **Select Products Updates and Development Initiatives**

-  New promotions

- **Updates from User Services**

-  Other anomalies
-  New Contact Information
-  Upcoming Meetings and Events
 -  NOAA Satellite Conference
-  Action Items and Outstanding Issues
-  Open Floor

GOES-13 Anomaly Update

GOES-13 is currently out of operational service with a plan to return to full service on Thursday, October 18.

The 24 hour product validation tests were on October 12 and October 16. Both the Imager and the Sounder performed nominally through the period. Both Imager and Sounder have returned to pre-anomaly performance levels. The Sounder shortwave channels are much improved since the outgas operation, performed over the weekend.

The planning for the maneuver to stop GOES-14 began on October 16. The maneuver is scheduled for 9:56 EDT (1356 UTC) on Friday.

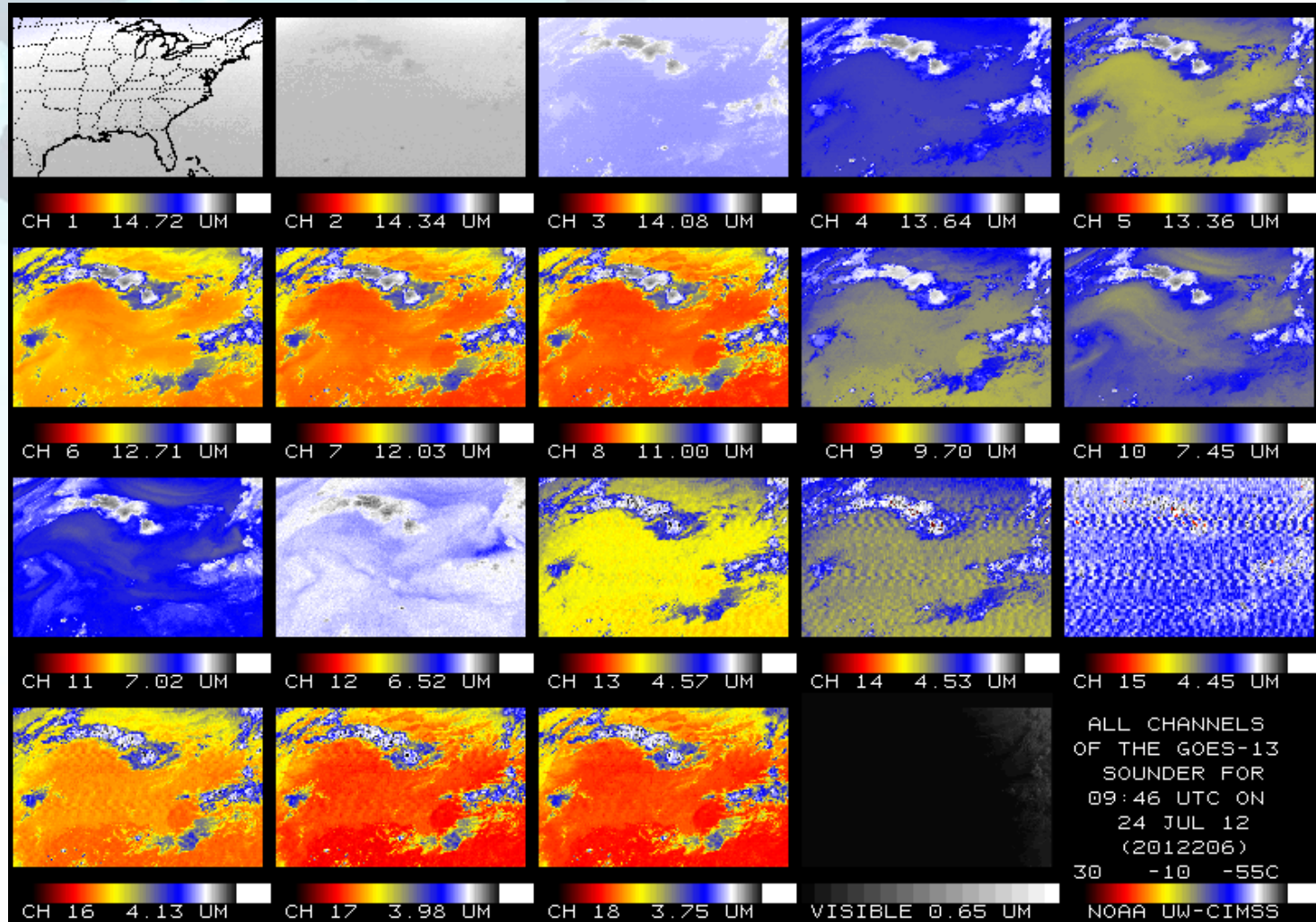
We plan to leave GOES-14 in normal mode executing a GOES-east routine schedule over the weekend as a backup.



GOES-13 Anomaly

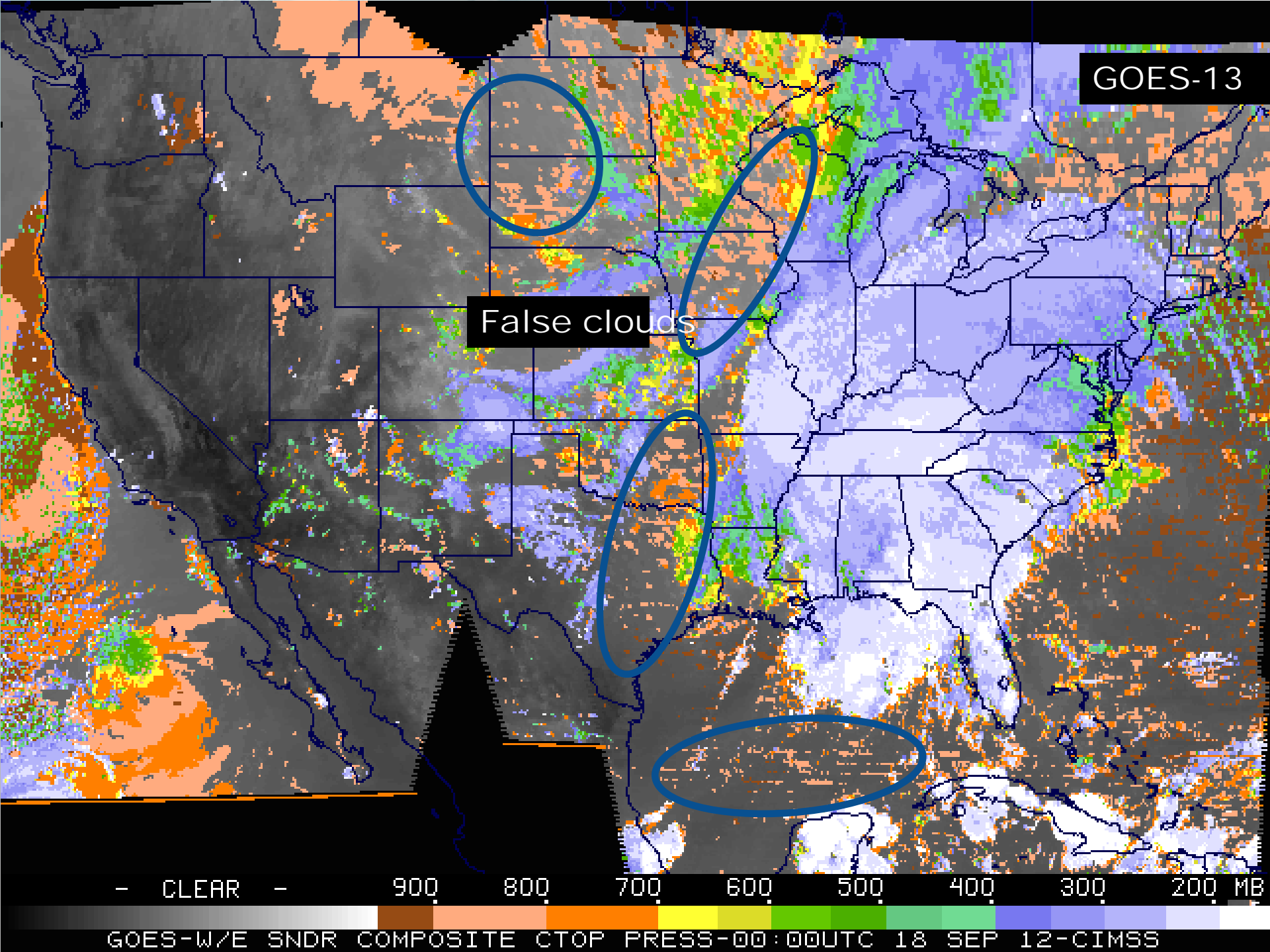
- **Issues with the GOES-13 sounder filter wheel started in June 2012**
- **Recovery activities had some success, but more noise in September, 2012**
- **Sept 23, 2012 at 1126 UTC GOES-13 Sounder experienced fault trip and was taken out of service**
 - ☑ **Root cause of Sounder Anomaly: filter wheel vibration**
- **Sept 23, 2012 at 2122 UTC GOES-13 Imager taken out of service**
 - ☑ **Root cause of Imager Anomaly: Sounder filter wheel vibration disturbance was transmitted to on the Imager/Sounder optical bench & Imager scan mirror had an anomalous response**

GOES-13 Sounder



GOES-13

False clouds

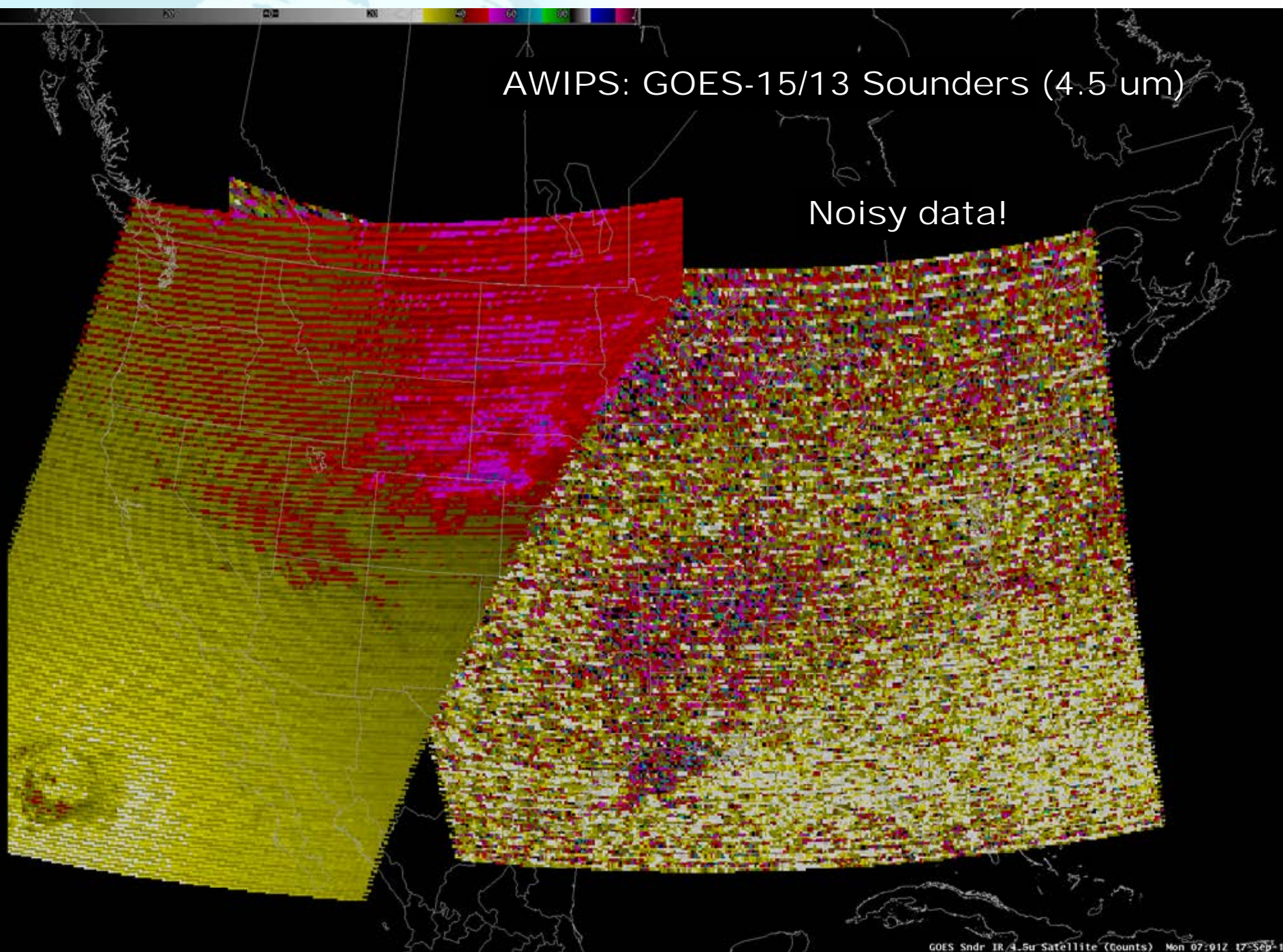


- CLEAR - 900 800 700 600 500 400 300 200 MB

GOES-W/E SADR COMPOSITE CTOP PRESS-00:00UTC 18 SEP 12-CIMSS

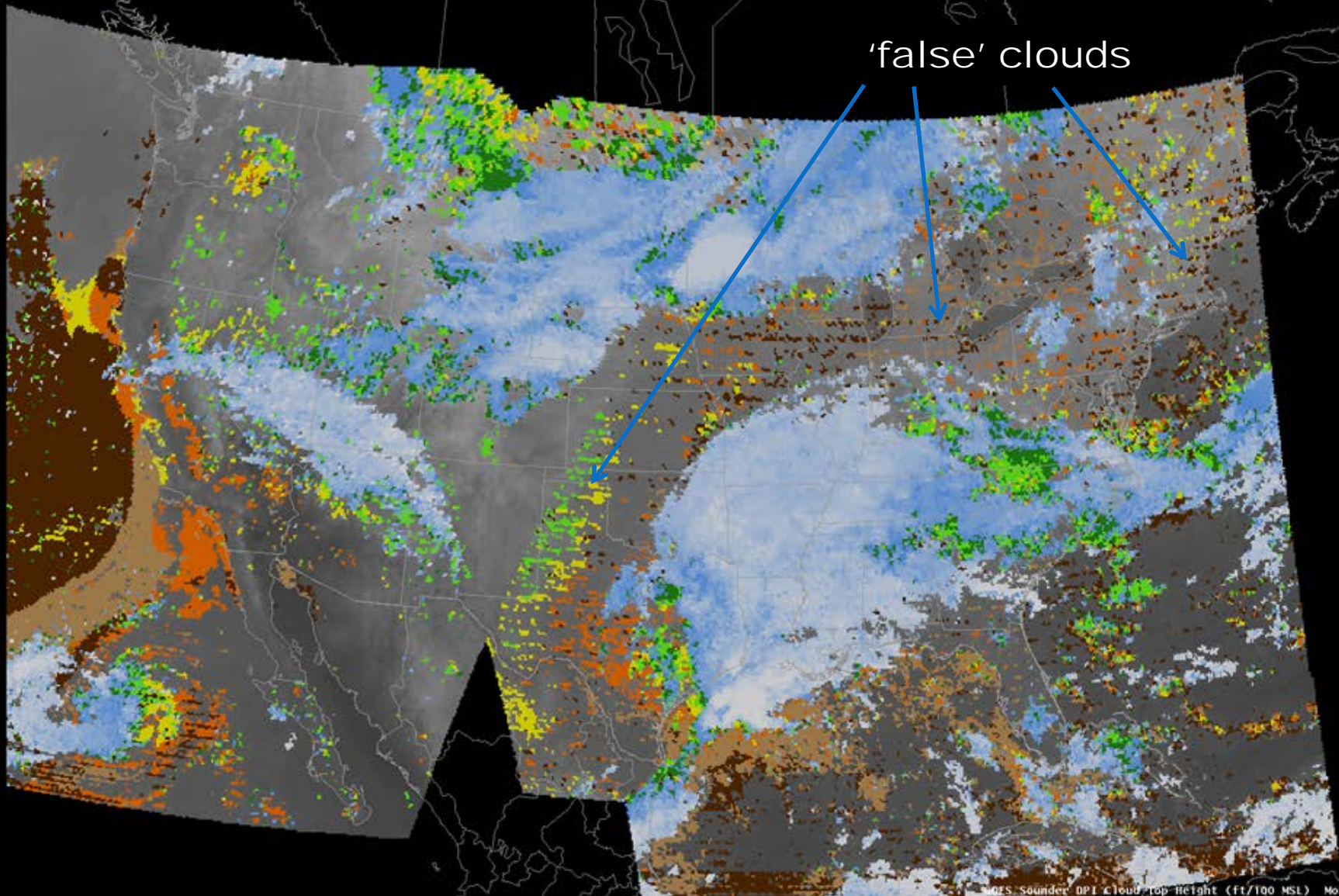
AWIPS: GOES-15/13 Sounders (4.5 μm)

Noisy data!



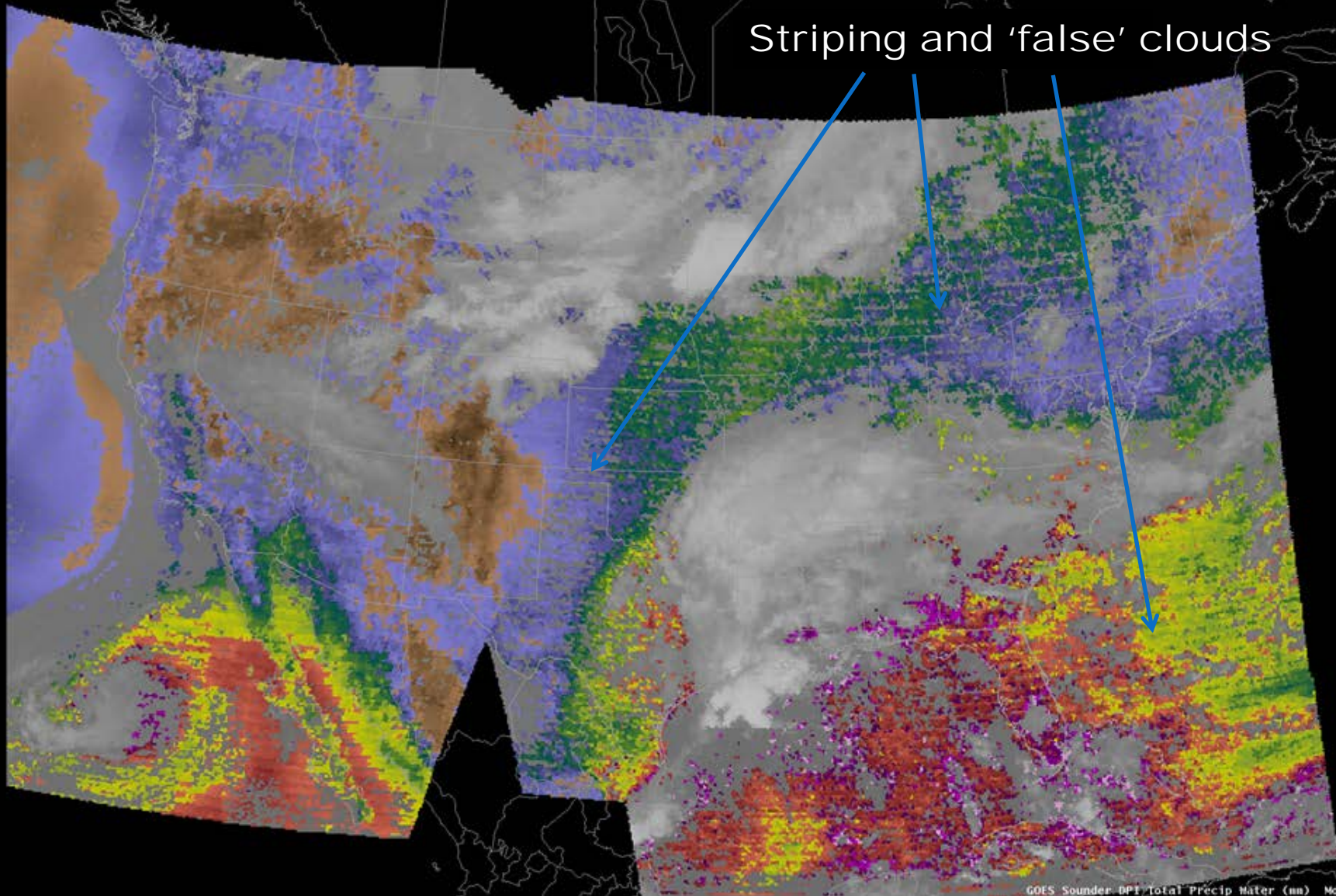
AWIPS: GOES-15/13 Sounders (Cloud top height)

'false' clouds



AWIPS: GOES-15/13 Sounders (TPW)

Striping and 'false' clouds



Prior to September 23, 2012

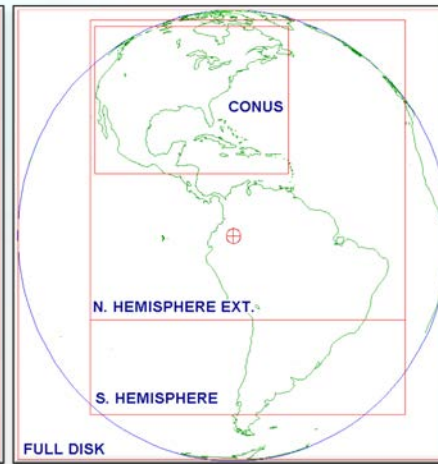
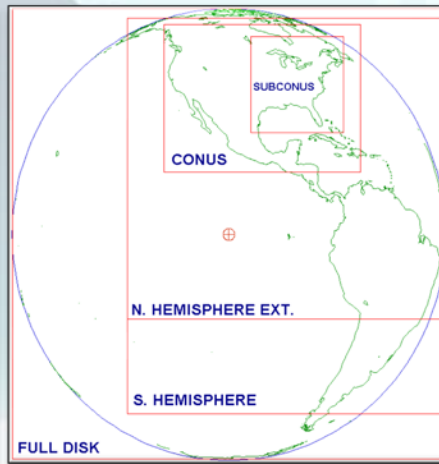
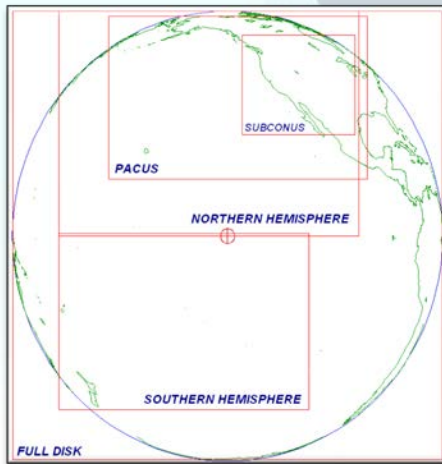
(Routine Schedule with 15 minute CONUS Coverage)

GOES-15
West
(135 W)

GOES-14
Standby
(105 W)

GOES-13
East
(75 W)

GOES-12
S. America
(60 W)



- The next several slides illustrate the mitigating steps taken during the GOES-13 anomaly
- The illustration shows only the Imager Routine schedules, although there was an impact across all GOES-13 instruments

September 23, 2012

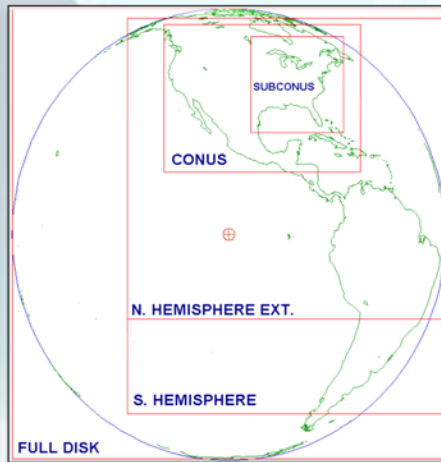
(Routine Schedule with 15 minute CONUS Coverage)

GOES-15
West
(135 W)

GOES-14
Standby
(105 W)

GOES-13
Standby
(75 W)

GOES-12
S. America
(60 W)



- Given the decision to place GOES-13 in standby mode, GOES-15 was set by standard protocol to a schedule of only full-disk scans to provide coverage of both the West and East domains

September 24, 2012

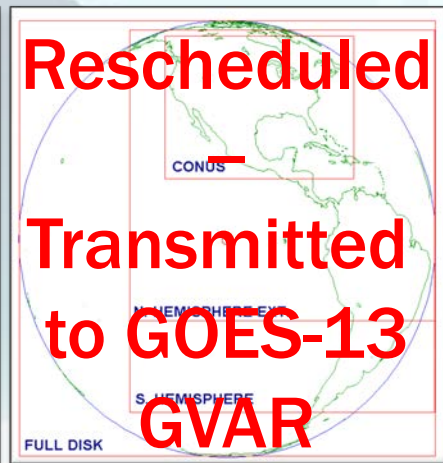
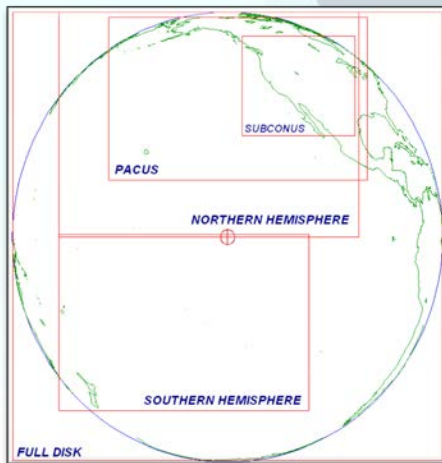
(Routine Schedule with 15 minute CONUS Coverage)

GOES-15
West
(135 W)

GOES-14
East
(105 W)

GOES-13
Standby
(75 W)

GOES-12
S. America
(60 W)



- Although GOES-14 was in standby, it was in normal operations mode for health & safety testing and was also being utilized for GOES-R tests & SRSO studies. GOES-14 was switched from Optimized Routine Schedule with SUBCONUS frames to GOES-13 Routine Schedule and transmitted through GOES-13 GVAR. GOES-15 was returned from Full Disk schedule to Routine schedule



Drift Commenced October 1, 2012

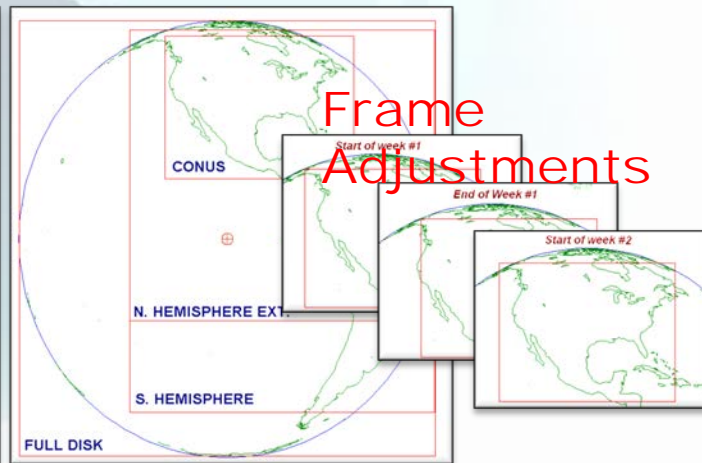
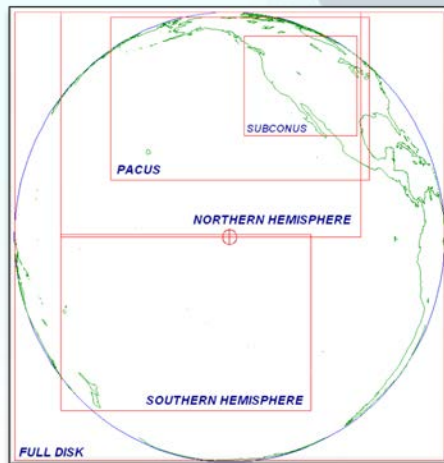
(Routine Schedule with 15 minute CONUS Coverage)

GOES-15
West
(135 W)

GOES-14
East
(Δ 0.9 E/day)

GOES-13
Standby
(75 W)

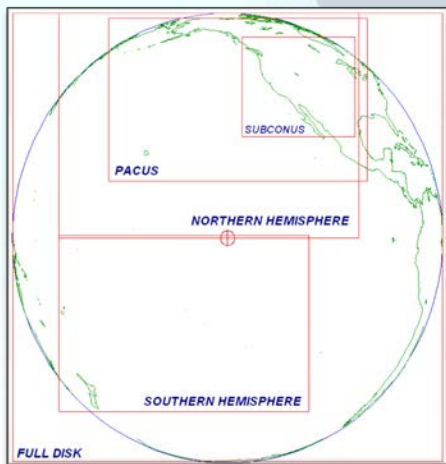
GOES-12
S. America
(60 W)



- Frame adjustments every Wednesday at 1900 UTC compensate for satellite drift and keep scans on target
- At $\sim 83^\circ$ W, GOES-14 will observe CONUS frame including both CA & PR
- GOES-14 is still being transmitted through GOES-13 GVAR

October 18-19 Configuration

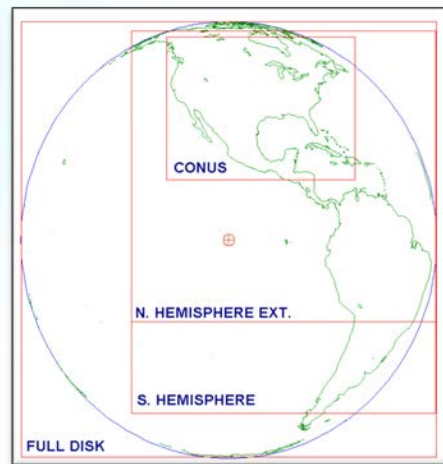
GOES-15
West
(135 W)



GOES-14
Standby
(89.5 W)

GOES-13
East
(75 W)

GOES-12
S. America
(60 W)



Schedule:

- **October 18** - Return GOES-13 to operations
- **October 19** - Stop GOES-14 at 89.5 W

Notifications & Status

General Satellite Messages from ESPC:

<http://www.ssd.noaa.gov/PS/SATS/messages.html>

WMO Bulletins on the GTS (Global Telecommunications System):

- WMO header NOUS71 KNES (AWIPS ID ADANES) for urgent notices (e.g., outages or anomalies)
<http://www.weather.gov/view/validProds.php?prod=ADM&node=KNES>
- WMO header NOUS72 KNES (AWIPS ID ADMNES) for routine notices (e.g., eclipse schedule, RSO, etc.)
<http://www.weather.gov/view/validProds.php?prod=ADA&node=KNES>

Non-Operational Sources:

Sat Ops Status: <http://www.oso.noaa.gov/daily-news/index.asp>

Twitter: <http://twitter.com/noaasatellites>

Facebook: <https://www.facebook.com/NOAANESDIS>

Press Release:

http://www.nesdis.noaa.gov/news_archives/goes_reposition.html



GOES Status

October 2, 2012

<i>Payload Instrument</i>	GOES-12 (S. America) Launch: Jul 01 Activation: Apr 03	GOES-13 (Standby) Launch: May 06 Activation: Apr 10	GOES-14 (East) Launch: Jun 09 Activation: Sep 12	GOES-15 (West) Launch: Mar 10 Activation: Dec 11	
Imager	S/C (1)	R (16)	G	G	G
Sounder	Y (2)	R (15)	G	Y (11)	
Energetic Particle Sensor (EPS)	Y (3)	G	G	G	
Magnetometers	G	G	G	G	S/C
High Energy Proton and Alpha Detector (HEPAD)	G	G	G	G	
X-Ray Sensor (XRS)	Y (4)	R (8)	G	G	Y
Solar X-Ray Imager (SXI)	R (5)	Y (9)	G	S/C (12)	
<i>Spacecraft Subsystems</i>					R
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)	

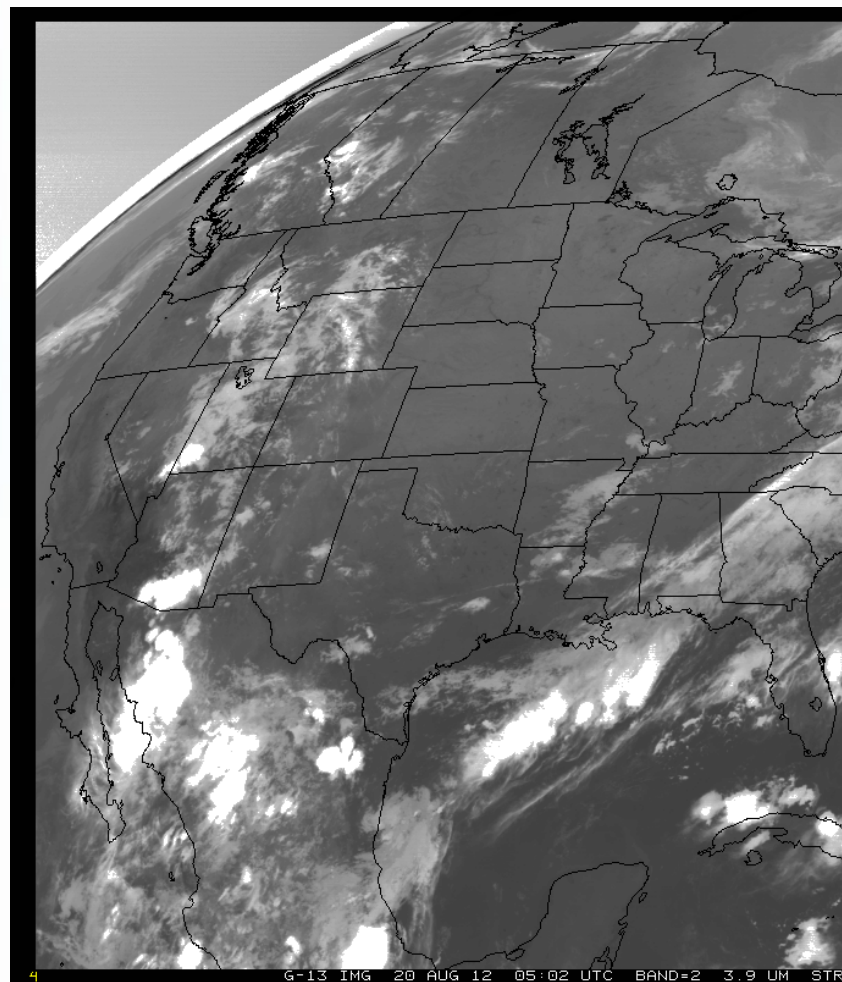
Bad Fog Channel Images

During the night bad 3.9 μm satellite images are corrupting the 11-3.9 μm fog channel, reversing the way clouds should appear (i.e all clouds both low and high are colored as very dark).

This isn't a one-time event, we have seen it on GOES-13 and -15 and non-full disk images as well. Seems like it just depends on the earth, sun, moon, satellite geometry

How can we make sure the forecaster doesn't see a large black area?

Need to bring in the users and algorithm developers of the fog product in to the discussion.

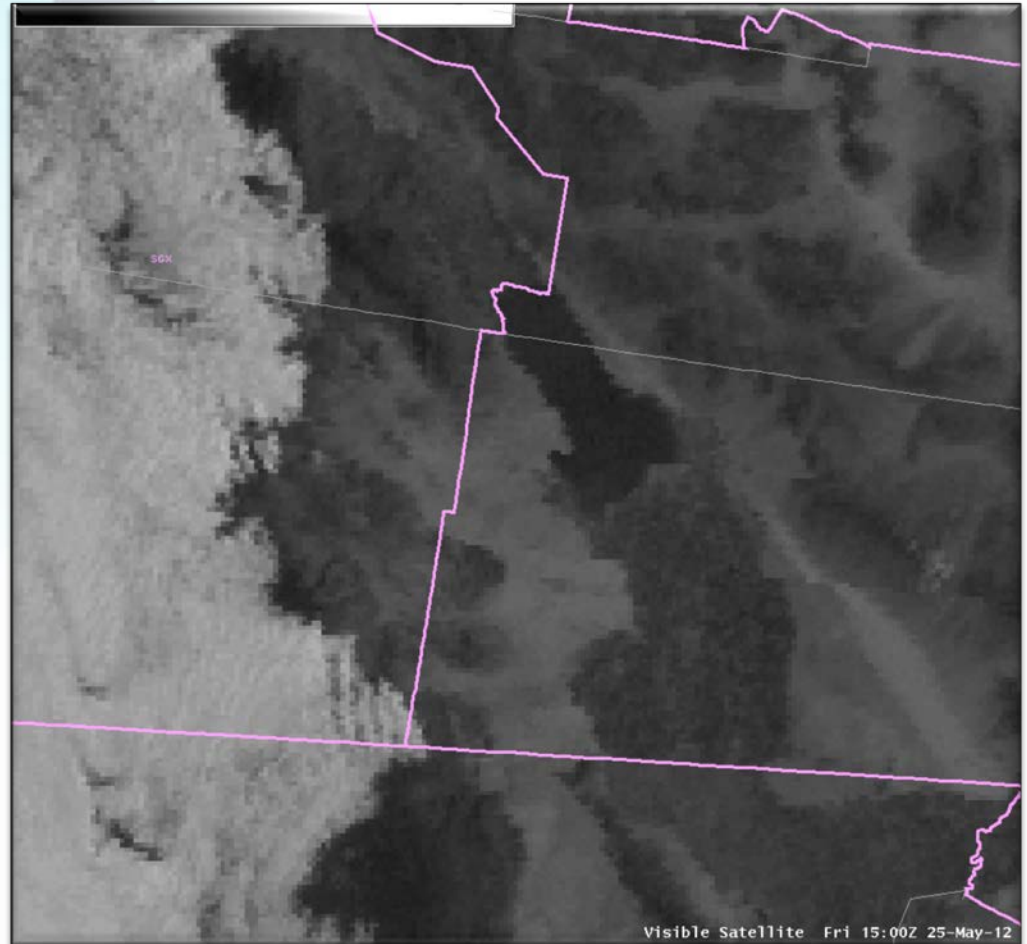


GOES-15 Line Shifts

The shifts were caused by the sync loss of the system, which led to the loss of the data during a scan

Confirmed for a short period - GOES-R Construction - Gas generator was shut off and relocated

Have you seen anything lately?





GOES-15 Missed Frames

Problem with the GINI products during RSOs. The root cause has not been identified yet, but this is the approach of the investigation:

A mitigating procedure was put in place at the ESPC help desk in mid-July which is supposed to limit these outages to 15 minutes at worst.

An investigation of the software is still underway including inspection of remapper code, GINI code, and AWIPS product generation code.

A concurrent hardware refresh effort will bring a new GINI server "giniL1" into operations



Erroneous change to the GOES-13 CONUS frame coordinates

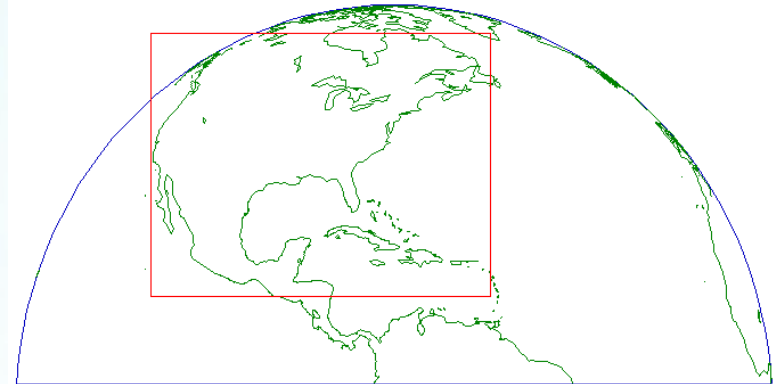
Since August 24 2012, users noticed that the CONUS sector has been missing data over the western US coast, most noticeably over California

A schedule was promoted into operations that contained erroneous frame coordinates on August 24, 2012.

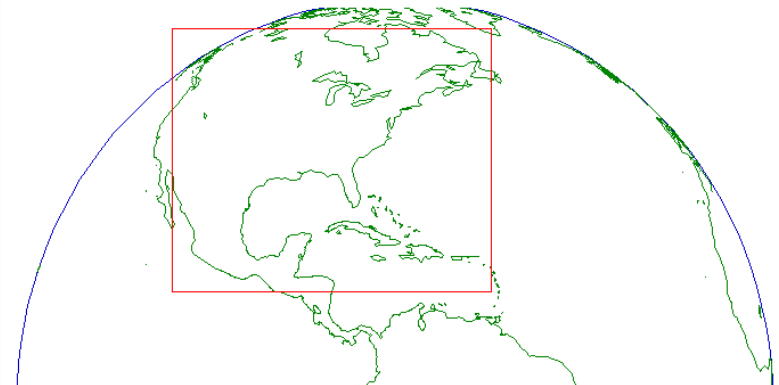
First fixed image at September 21, 2012 0102 UTC

Length of Impact: 28 days

CONUS image prior to August 24 and resuming on September 21



CONUS image from August 24 - September 21



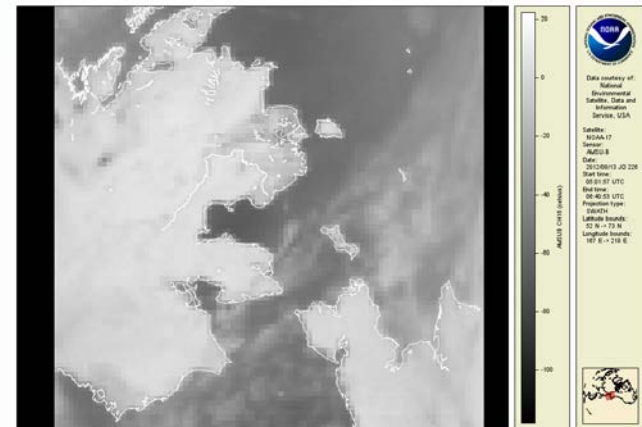
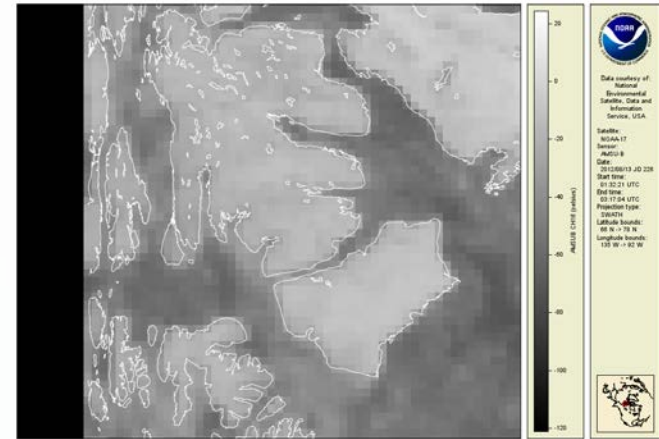
October 2, 2012

Spacecraft Subsystems	METOP-A	NOAA-19	NOAA-18	NOAA-17	NOAA-16	NOAA-15
Launch Date	Oct 2006	Feb 2009	May 2005	Jun 2002	Sep 2000	May 1998
Operational Date	May 2007	Jun 2009	Aug 2005	Oct 2002	Mar 2001	Dec 1998
Mission Data Category	Primary (AM)	Primary (PM)	Secondary (PM)	Secondary (AM)	Secondary (PM)	Secondary (AM)
Payload Instruments						
AVHRR	G	G	G	R (11)	Y(13)	Y(20)
HIRS	G	G	Y (3)	G	Y(14)	R (6)
AMSU-A1	Y(26)	G	G	R (4)	Y(15)	Y(21)
AMSU-A2	G	G	G	G	G	
AMSU-B	N/A	N/A	N/A	Y (9)	G	R (12)
MHS	G	Y (8)	G	N/A	N/A	N/A
SEM	G	G	G	G	G	G
SBUV	N/A	S/C (9)	G	G	Y(16)	N/A
Spacecraft Subsystems						
Telemetry, Command & Control	G	G	G	G	G	G
ADACS	G	G	Y (7)	Y(27)	Y(17)	Y(10)
EPS	G	G	G	Y(25)	G	G
Thermal Control	G	G	G	G	G	Y(22)
Communications	Y (1)	G	G	S/C (5)	G	Y(23)
APT/LRPT	R (2)	G	G	G	R(18)	G
SAR	G	G	G	G	Y(19)	Y(24)

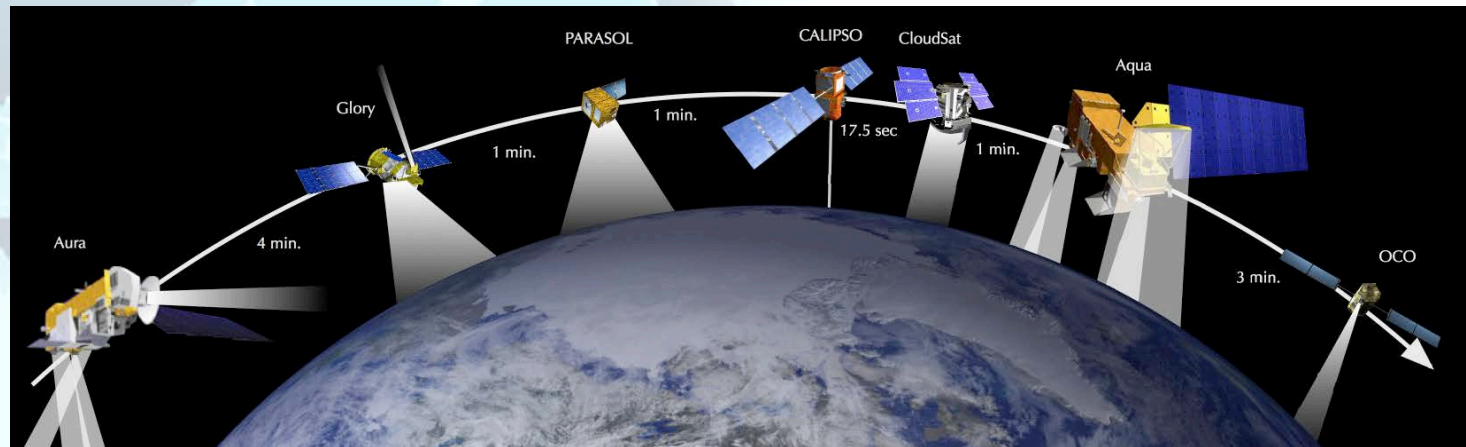
Impact on NOAA-17 AMSU products due to earth location error

On July 25, 2012, the NOAA-17 gyro-2 winding motor was turned off, which resulted in greater geolocation error than existed previous to the gyro change. The resulting geolocation errors are within about 1 pixel or ~15km.

NOTE: GFS-GSI and the NAM-GSI only monitor NOAA-17 AMSU-B 1b radiances. They are not assimilated.



Status of Operational Satellites: NASA EOS



Aqua was launched on May 4, 2002, and has six Earth-observing instruments on board, collecting a variety of global data sets. Enough fuel remains on board for Aqua operations at least into the early 2020s.

Aura was launched in July 2004, The third member was **PARASOL**, in December 2004, and the fourth and fifth members are **CloudSat** and **CALIPSO**, in May 2006.

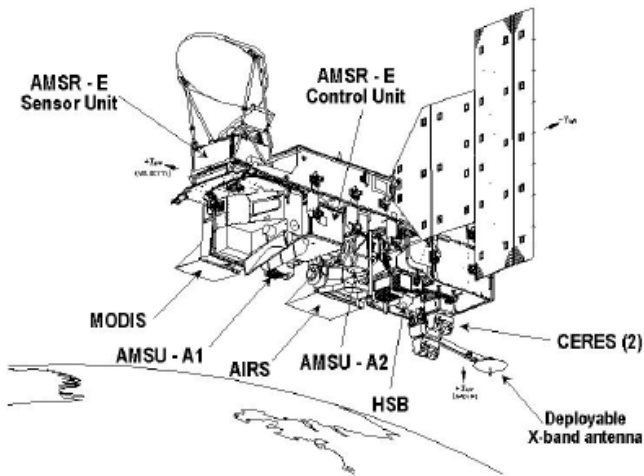
The Japanese satellite **GCOM-W1** was launched on May 18, 2012 and entered the A-Train in front of Aqua on June 29, 2012.

Status of Operational Satellites: NASA/EOS



Aqua's Earth-Observing Instruments

- AIRS: Atmospheric Infrared Sounder
- AMSU: Advanced Microwave Sounding Unit
- HSB: Humidity Sounder for Brazil
- CERES: Clouds and the Earth's Radiant Energy System
- MODIS: Moderate Resolution Imaging Spectroradiometer
- AMSR-E: Advanced Microwave Scanning Radiometer for the Earth Observing System



Aqua space-viewing side (left) and Earth-viewing side (above), courtesy of Northrop Grumman.



Non-NOAA Satellites Types and Instruments

Defense Meteorological Satellite Program (DMSP)

- F15: SSM/I, SSM/T and SSM/T2
- F16, F17, F18: SSM/IS

NASA/JMA/CSA Earth Observation System (EOS)

- Terra: MODIS
- Aqua: AIRS, MODIS, AMSR-E

EUMETSAT Metop-A: ASCAT, GOME and IASI

IPO/Navy Coriolis: WindSAT

EUMETSAT/CNES/NOAA/NASA Jason-2: POSEIDON-3 Altimeter

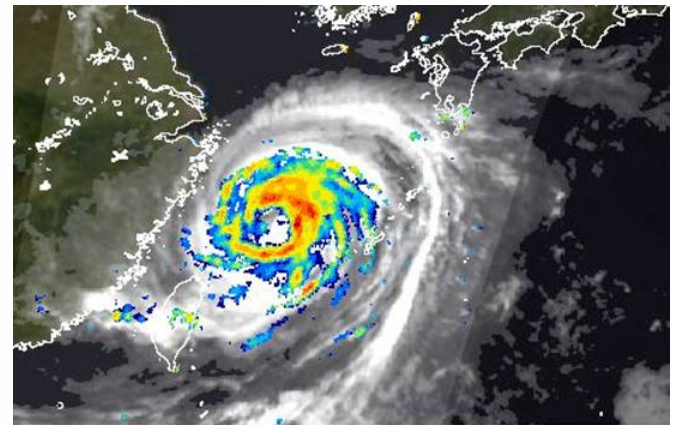
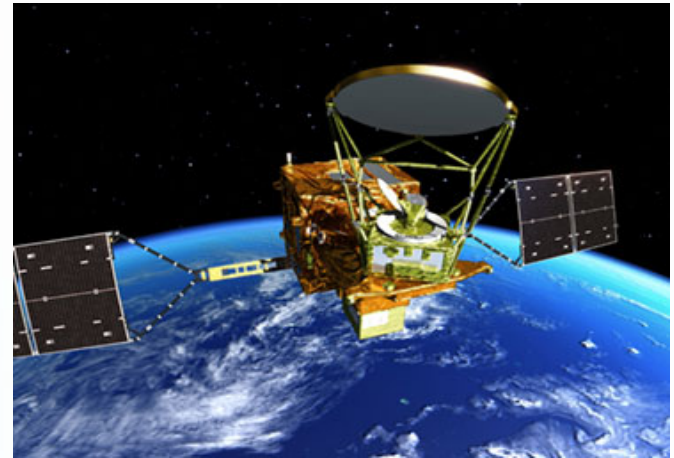
NASA/JAXA TRMM: TMI, PR, and VIRS

Status of Operational Satellites: SHIZUKU GCOM-W1

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.

Figure is rainfall image of the Typhoon No.11 "HAIKUI" approaching the east coast of China, observed by the SHIZUKU when it flew over Japan around 2:30 a.m. on August 7, 2012 (JST).



weak heavy

Status of Non-Operational Satellites: Suomi NPP

Launched in October, 2011

NCEP using ATMS radiances in the GFS model since June, 2012

NCEP planning to add CrIS radiances to operational model in 2014

AWIPS will add VIIRS imagery for Alaska on October 10, 2012

ECMWF is assimilating NPP ATMS

Testing with primary customers is well underway with the NDE group at NSOF testing with NCEP, AFWA, NAVO, FNMOC, EUMETSAT, and others



Status of Non-Operational Satellites: METOP-B

Launched on 17 September 2012, Metop-B is currently being commissioned for operations. It's orbit is planned for 0950 L.

We do not know if it will supplement the current constellation or replace Metop-A (0930 L).

OSP0 is now testing products. Most products will be available for user testing in late November-early December 2012.

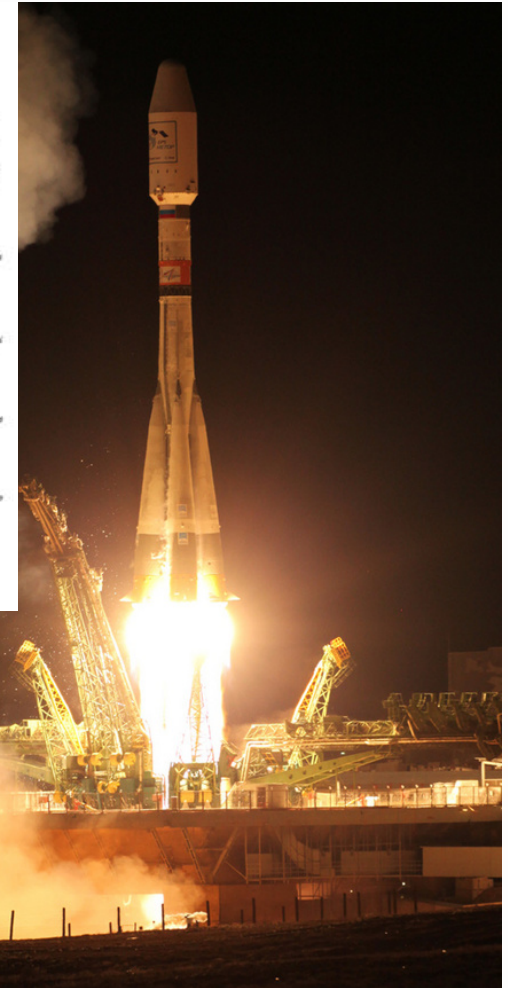
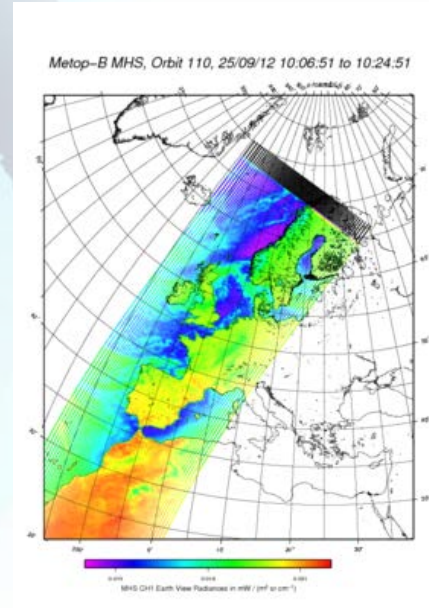
The spacecraft will become fully operational in May 2013.

Links to the first data can be found under

AMSU: http://www.eumetsat.int/groups/cps/documents/image/img_metopb_first_amsu-a_l.png

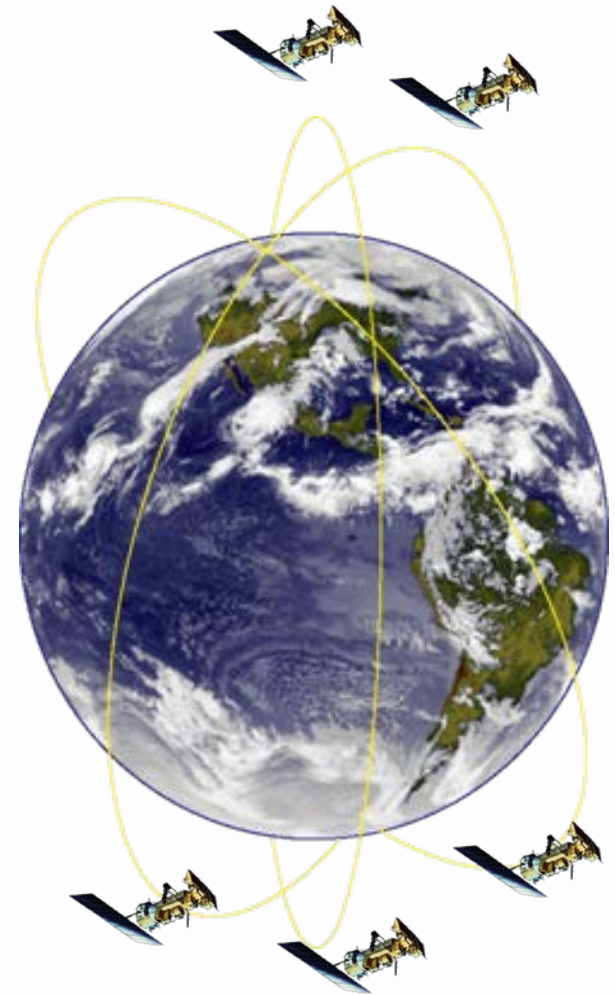
ASCAT: http://www.eumetsat.int/groups/cps/documents/image/img_metopb_first_ascat_l.png

MHS: http://www.eumetsat.int/groups/cps/documents/image/img_metopb_first_mhs_l.png



Polar-Orbiting Local Times

- Metop-A – 0930 AM Primary
- NOAA-19 – 1334 PM Primary
- Metop-B – Launched 9/17
 - 📌 Currently in PLT & Commissioning Phase
- NOAA-18 – 1502 PM Secondary
- NOAA-17 – 0656 AM Back-up
- NOAA-16 – 2040 PM Secondary
- NOAA-15 – 0444 AM Secondary



Status of Non-Operational Satellites: MSG-3 (METEOSAT-10)

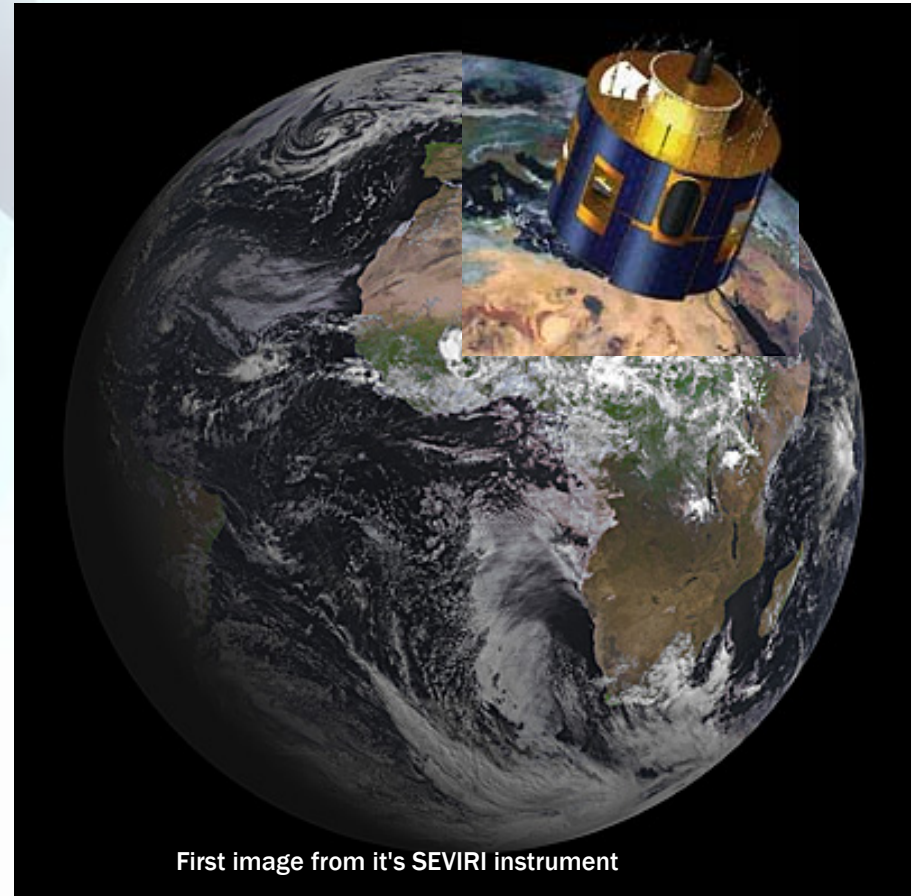
Meteosat-10 was launched in July 2012 and is now in PLT.

All systems are nominal.

Meteosat-10 will replace Meteosat-9 at 0 degrees in January 2013.

Being a follow-on Meteosat Second Generation satellite, minimal resources will be required for the transition.

NESDIS/OSPPO will begin data processing and application testing in the next week using sample Meteosat-10 data.



<http://www.eumetsat.int/msg3/index.html>

Status of Future Satellites:

JPSS

JPSS will provide operational continuity of satellite-based observations and products for NOAA Polar-orbiting Operational Environmental Satellites (POES), NASA's Earth Observing Satellites (EOS), and Suomi NPP

JPSS-1 will fly the following instruments in the afternoon orbit utilizing an NPP-like spacecraft:

Visible/Infrared Imager/Radiometer Suite (VIIRS)

Cross-track Infrared Sounder (CrIS)

Advanced Technology Microwave Sounder (ATMS)

Ozone Mapping and Profiler Suite –Nadir (OMPS-Nadir)

Clouds and Earth Radiant Energy System (CERES)

JPSS-2 spacecraft will be subject to open competition and will carry the same suite of instruments as JPSS-1

JPSS is responsible for developing the Total Solar Irradiance Sensor (TSIS) and accommodating the data communications packages (DCS and SARSAT) on two free flyer satellites

Launch Readiness Date	JPSS-1: FY 2017 JPSS-2: FY 2022 Free Flyer-1: FY2016 Free Flyer-2: FY2021
Program Architecture	3 Satellites (S-NPP, JPSS-1, JPSS-2), 2 free-flyer satellites
Program Operational Life	FY 2016 – FY 2028
Program Life-cycle FY 2013 President's Budget	\$12.9 billion





Status of Future Satellites: GOES-R

The GOES-R Ground Segment Project (GSP) Core GS Prime Contractor, Harris Corporation, completed GOES-R Mission Management Prototype (MMP) training on Open Systems (OS)/Common Environment for Test (COMET) at the NOAA Satellite Operations Facility (NSOF).

Harris conducted the Software Requirements Review (SWRR) for the Magnetometer Level-0 and Level-1 Processing CSCs. Over 80 requirements were reviewed with the Use Cases. Harris is now prepared for the design phase. This was the final SWRR for the Ground Segment's Product Generation

Final bolting and torqueing of the new GOES-R W-1 and W-2 antennas at the Wallops Command, Data, and Acquisition Station (WCDAS) is being completed and alignments of the antennas will begin next week, with an expected completion date of mid-Oct 2012

The Advanced Baseline Imager (ABI) Proto Flight Model (PFM) was successfully powered on September 22nd and bench testing is proceeding

Status of Future Satellites: Himawari-8

Himawari-8 will NOT have a transponder, precluding DRO for users.

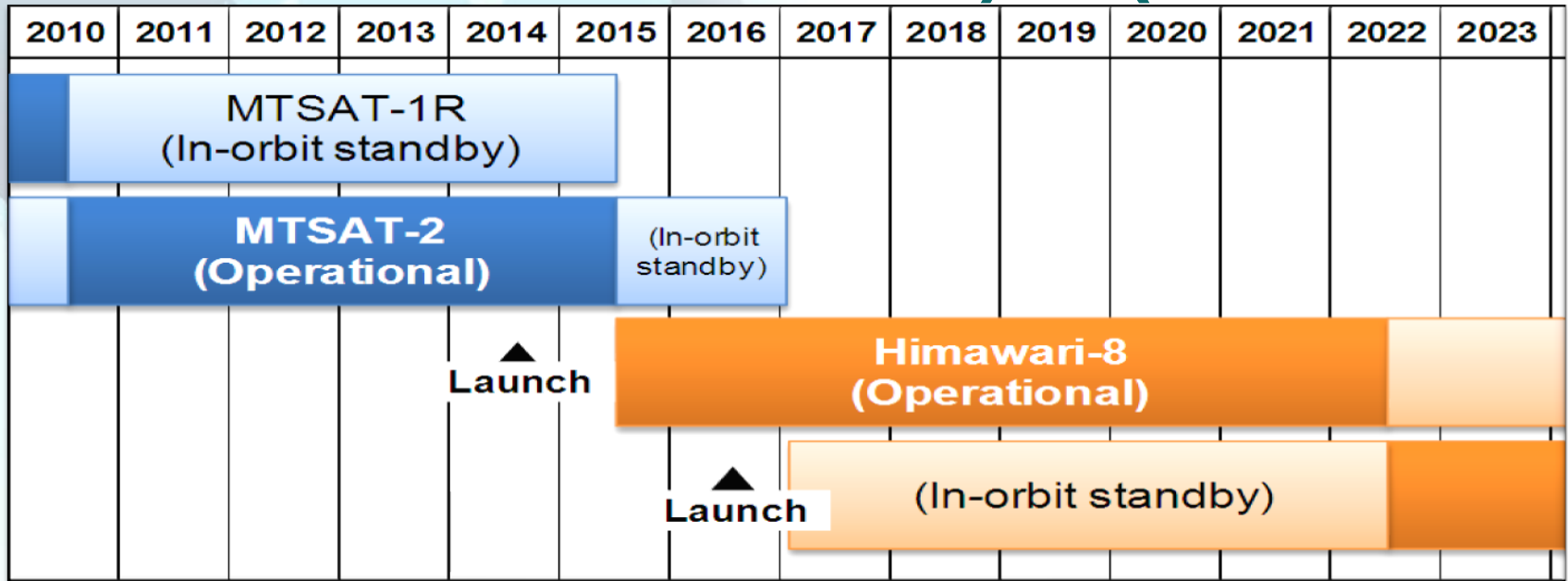
NESDIS/OSPO is investigating various communication options to transmit the H-8 data, probably a subset of the AHI, using a dedicated link from Tokyo to the U.S.

In order for NESDIS/OSPO to allocate additional resources to this project, **WE NEED official requirements** from the NWS and/or DoD to maintain access to JMA geo data at 140E. The SPSRB would be a good start.

By the way, would an equivalent data set to what we receive today from MTSAT-2 be acceptable to the NWS when H-8 becomes operational (i.e., 4km IR, 1 km vis. and 5 spectral channels)? This initial data set from H-8 would conserve significant communication and data processing resources following the transition in 2015.



Future GEO Plans Himawari-8/9 (sunflower)



There is no L-band on these satellites.

JMA plans to launch Himawari-8 in 2014 and begin its operation in 2015

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

Status of Future Satellites Cont.

**NASA JPL's Soil Moisture Active Passive (SMAP) -
2014**

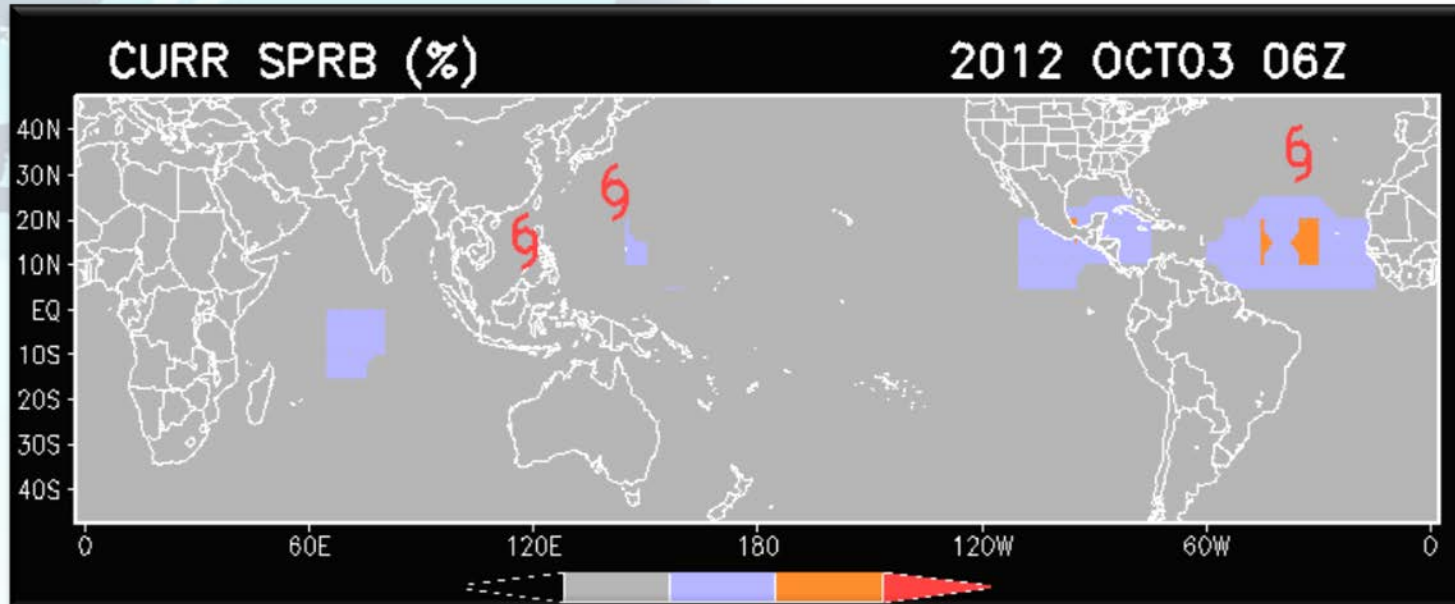
**NASA GSFC's Global Precipitation Measurement (GPM)
follow-on to TRMM - 2014**

**Joint Taiwan-U.S. FORMOSAT-7/COSMIC-2 (12 birds in
this constellation!) - 2016**

These Products entered the operational data stream in FY12

- **Blended GOES Biomass Burning Emissions Program (GBBEP)**
- **Global Blended Rate Rate (bRR)**
- **Global Tropical Cyclone Formation Probability (TCFP)**
- **GOES Land Surface Temperature (GLST)**
- **Ocean Heat Content (OHC)**
- **Microwave Integrated Retrieval System (MiRS)**
- **Microwave Surface and Precipitation Products System (MSPPS) Snowfall Rate**
- **MODIS Ocean Color products using near-infrared (NIR) and shortwave infrared (SWIR)**
- **Soil Moisture Operational Product System (SMOPS)**

Global TCFP (Tropical Cyclone Formation Probability)



Combines global water vapor imagery from five geostationary satellites to estimate 24 hour probability of cyclone formation

GOES-East / West, MTSAT-1R, Meteosat-9 / 7

Available on the internet

<http://www.ssd.noaa.gov/PS/TROP/TCFP/index.html>

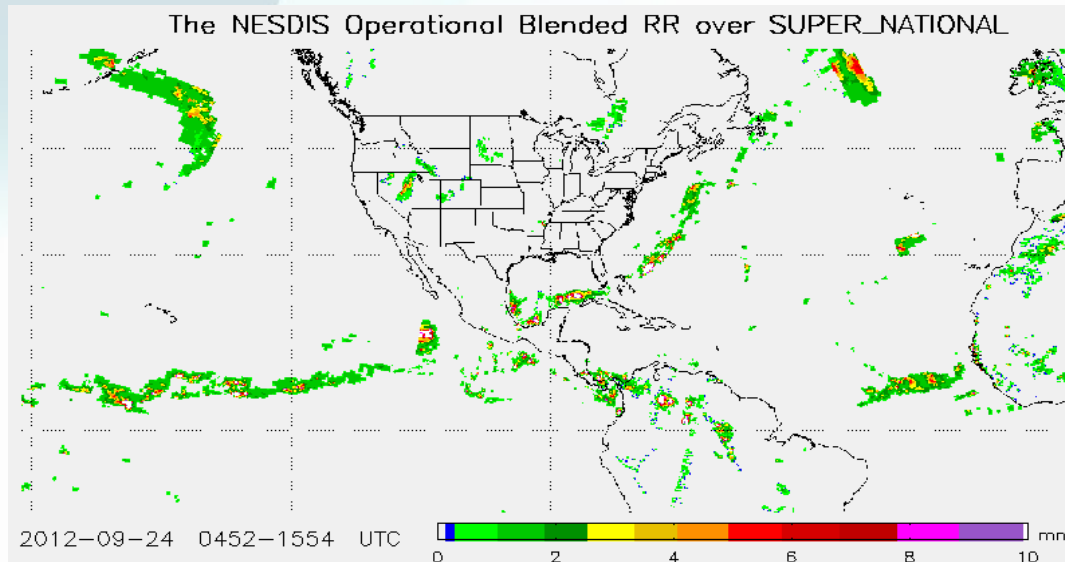


The blended Rain Rate (bRR)

On September 18, 2012, the blended rain rate (bRR) product was implemented into the ESPC operation and declared its operational status with 24/7 support.

The operational bRR provides a unified global rain rate product hourly by blending together recent rain rate retrievals from the passive microwave instruments onboard six polar-orbiting satellites, including NOAA-18, NOAA-19, Metop-A, DMSP F16, F18 and F18.

The product is made available in HDF-EOS, McIDAS and AWIPS formats, and provided to users through the ESPC Data Distribution Server (DDS), McIDAS ADDE servers, and also through NWS AWIPS and N-AWIPS. The imagery products are also available on the Internet through: <http://www.ospo.noaa.gov/Products/atmosphere/brr>

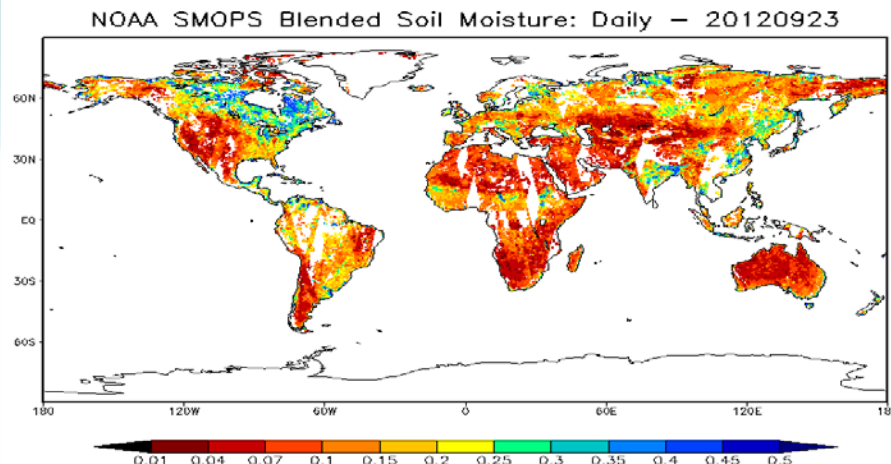


The Soil Moisture Operational

On September 26, 2012, the SMOPS was implemented into the ESPC operation and declared its operational status with 8x5 support.

The SMOPS retrieves and merges soil moisture retrievals from multi-satellites/sensors, including Windsat, ASCAT, SMOS, to provide a unified soil moisture product over global land in supporting the NCEP/EMC's needs for a satellite-based global soil moisture observational data product for its land surface model assimilation.

The product is made available in both GRIB2 and netCDF formats, and provided to users through the ESPC Data Distribution Server (DDS). The imagery products are also available on the Internet through: <http://www.ospo.noaa.gov/Products/land/smops>



MSPPS snowfall rate product

On October 1, 2012, the MSPPS snowfall rate product was implemented into the ESPC operation under 24/7 support.

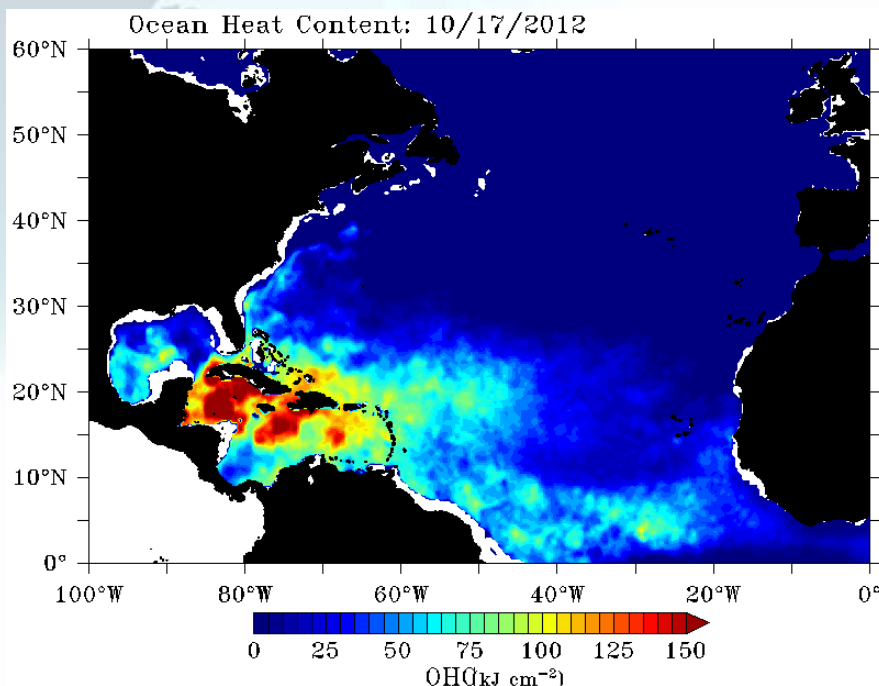
The product is made available to user community in both orbital and gridded files and can be accessed through the ESPC Data Distribution Server (DDS), and the McIDAS ADDE server. The imagery products are also available on the Internet through:

<http://www.ospo.noaa.gov/Products/atmosphere/mspps>

Ocean Heat Content product

The Ocean Heat Content product, which uses sea surface height anomaly fields from operational altimeters and GOES-POES blended SST analyses, was approved for operational implementation by the Satellite Products and Services Review board in August, 2012, and has been made pre-operationally available to users since September 11, 2012.

The 8/7 maintenance and support was commenced at the ESPC on September 27, 2012 http://www.ospo.noaa.gov/Products/ocean/ocean_heat.html





Updates from User Services

- **Other Anomalies/Issues**
- **New Contact Information**
- **Action Items and Outstanding Issues**
- **Upcoming Meetings and Events**
- **Open Floor**

DDS Outage 10/10/2012

ESPC data distribution was out of service for ~ 9 hours

After analysis of the data, IBM determined that the ethernet interface addresses became corrupted during the routine maintenance activity earlier in the day.

Once the configurations were restored, the connections were re-established and data began flowing once again.

The CIP activation activity was suspended.



OSPPO Leadership

Please welcome!

Vanessa Griffin - OSPPO Deputy Director

Commander Debora Barr - OSPPO Assistant
Director

New Contact Information for Matt & Nat

Matt Seybold

Tel: (301)683-3248

Cell: (202)557-4997

Natalia Donoho

Tel: (301) 683-3242

Cell: (202) 604-0734

**Operational Concerns, including outages and administrative information:
ESPCOperations@noaa.gov or (301) 817-3880 (24/7 ESPC Help Desk)**

General Comments and Inquiries (User Services): SPSD.Userservices@noaa.gov

Data Access Inquiries: NESDIS.Data.Access@noaa.gov

Website Feedback: SSDWebmaster@noaa.gov



NCWCP Ribbon Cutting Ceremony



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Action Items and Open Floor

Thank you!