SATELLITE OPERATIONS

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

**Tuesday, April 29, 2014**
**1700-1900 UTC (1:00-3:00 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?t=a&d=731025554
**Password:** joinus
**Meeting Material:** ftp://satepsanone.nesdis.noaa.gov/Presentations/Joint_NWS-NESDIS_Quarterly/

# Thank you to Content Providers!

- Liqun Ma
- David Donahue
- Chris Sisko
- John Paquette
- Shuang Qiu
- Limin Zhao
- Ralph Ferraro
- Kevin Ludlum
- Mark Ruminski
- Bill Winner
- Vaishali Kapoor
- Banghua Yan
- Antonio Irving
- Carl Gliniak
- John Tsui

# Meeting Agenda

- Hot Topics 

  - GOES-East transition to optimized schedules
  - GOES-East Rapid Frames
  - GOES-East South America Frames
  - GOES-West RSO Changes
  - Known Data Disruptions
  - Planned Work
- Operational Satellite Status
  - GEO Status
    - GOES-13/14/15
  - LEO Status
    - METOP-A/B
    - NOAA-19
- Future Satellites
  - JPSS
  - GOES-R
  - Himawari-8
- Product Development
  - New Precipitation Products
  - GPM Status Update
  - TACO
- News from Satellite Analysis Branch
- Upcoming Events and Meetings
- Action Items and Outstanding Issues
- Question/Comments

# GOES-East Optimized Schedules
# **Purpose**

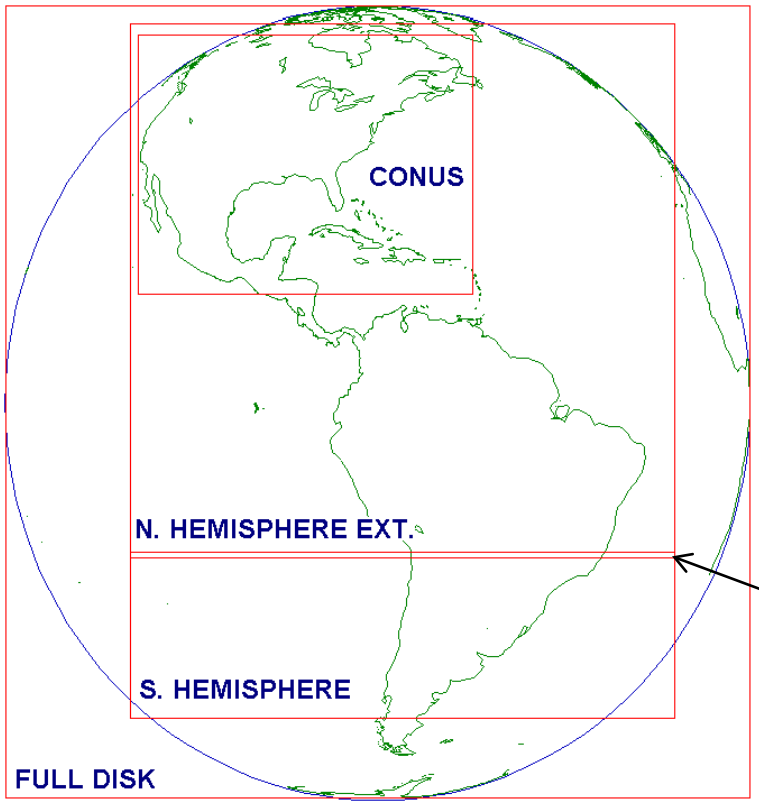
- To utilize small schedule idle times that were required on previous satellites (GOES I-M) for INR (image navigation & registration) commanding.
- To better align command timing between Routine (ERTN), Rapid Scan (ERAP), Super Rapid Scan (ESRSO) and Full Disk (EFD) schedules.
- To schedule star navigation windows for the same time in all GOES East Schedules.

# Benefits to Users

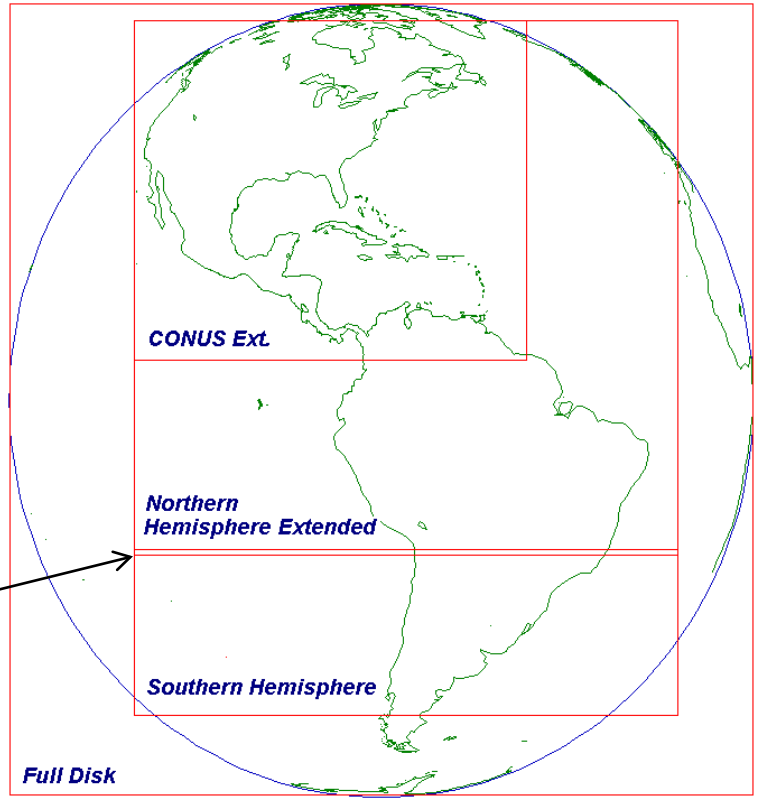
- Routine Schedule
  - The freed time will enable more coverage in areas, such as Canada, Western North Atlantic Ocean, the Caribbean Sea, Central America and South America.
  - For example, a tropical cyclone in the Eastern and Southern Caribbean Sea will now be imaged twice as often - every 15 minutes instead of every half hour.
- Rapid Schedule
  - Additional coverage of South America.
- Super Rapid Schedule
  - Gain 1 additional image per ½ hour.
  - Images are spread out more in time, giving better chance of more images in the time period of interest.
- Full Disk Schedule
  - Restores southern edge of Full Disk imagery.

# GOES-East Routine Frame Changes

GOES East Current Routine




Optimized




N. Hemisphere Ext. & S. Hemisphere frames overlap

The CONUS image in the Current Routine is replaced by the CONUS Ext. image in the Optimized Routine. This will gain beneficial coverage over more of Canada, West North Atlantic Ocean, the Caribbean Sea, East Caribbean Islands, Nicaragua, Costa Rica, Panama, Columbia, Venezuela, and Guyana. (No other frames change). Frame-dependent processing will need adjustment.

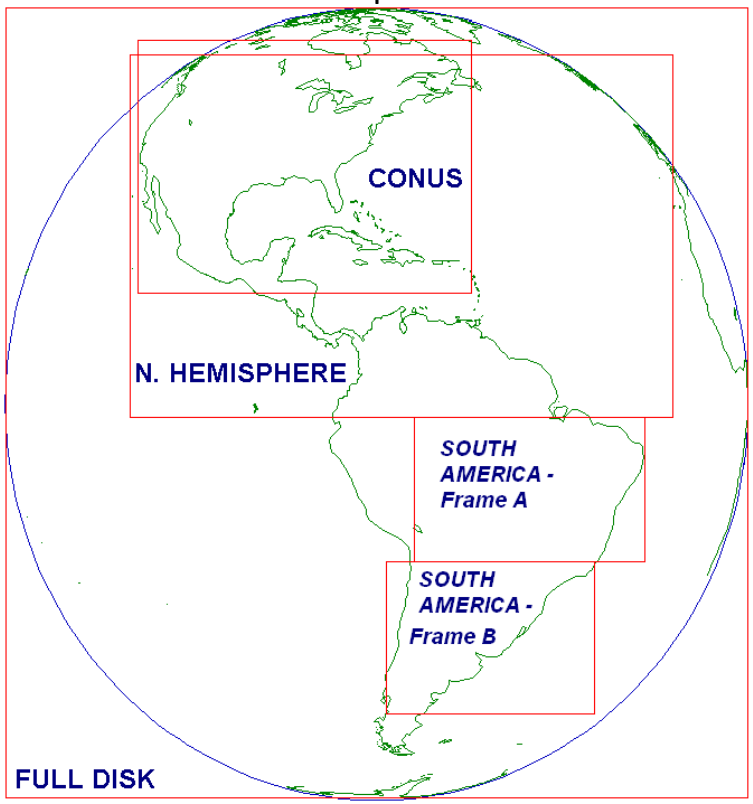
# GOES-East Routine Schedule Timing Changes

| Current Routine | | | Optimized Routine | | |
|---|---|---|---|---|---|
| 01:01:30 | CONTINENTAL US (CONUS) | 04:43 | 01:00:00 | CONTINENTAL US (CONUS) EXT. | 06:59 |
| 01:09:10 | SOUTHERN HEMISPHERE | 04:49 | 01:07:15 | SOUTHERN HEMISPHERE | 04:49 |
| 01:15:00 | NORTHERN HEMISPHERE EXT. | 14:15 | 01:15:00 | NORTHERN HEMISPHERE EXT. | 14:15 |
| 01:31:30 | CONTINENTAL US (CONUS) | 04:43 | 01:30:00 | CONTINENTAL US (CONUS) EXT. | 06:59 |
| 01:39:10 | SOUTHERN HEMISPHERE | 04:49 | 01:37:15 | SOUTHERN HEMISPHERE | 04:49 |
| 01:45:00 | NORTHERN HEMISPHERE EXT. | 14:15 | 01:45:00 | NORTHERN HEMISPHERE EXT. | 14:15 |
| 02:01:30 | CONTINENTAL US (CONUS) | 04:43 | 02:00:00 | CONTINENTAL US (CONUS) EXT. | 06:59 |
| 02:09:10 | SOUTHERN HEMISPHERE | 04:49 | 02:07:15 | SOUTHERN HEMISPHERE | 04:49 |
| 02:15:00 | NORTHERN HEMISPHERE EXT. | 14:15 | 02:15:00 | NORTHERN HEMISPHERE EXT. | 14:15 |
| 02:31:30 | CONTINENTAL US (CONUS) | 04:43 | 02:30:00 | CONTINENTAL US (CONUS) EXT. | 06:59 |
| 02:39:10 | SOUTHERN HEMISPHERE | 04:49 | 02:37:15 | SOUTHERN HEMISPHERE | 04:49 |
| 02:45:00 | FULL DISK | 26:06 | 02:45:00 | FULL DISK | 26:06 |
| 03:15:00 | NORTHERN HEMISPHERE EXT. | 14:15 | 03:15:00 | NORTHERN HEMISPHERE EXT. | 14:15 |
| 03:31:30 | CONTINENTAL US (CONUS) | 04:43 | 03:30:00 | CONTINENTAL US (CONUS) EXT. | 06:59 |
| 03:39:10 | SOUTHERN HEMISPHERE | 04:49 | 03:37:15 | SOUTHERN HEMISPHERE | 04:49 |
| 03:45:00 | NORTHERN HEMISPHERE EXT. | 14:15 | 03:45:00 | NORTHERN HEMISPHERE EXT. | 14:15 |

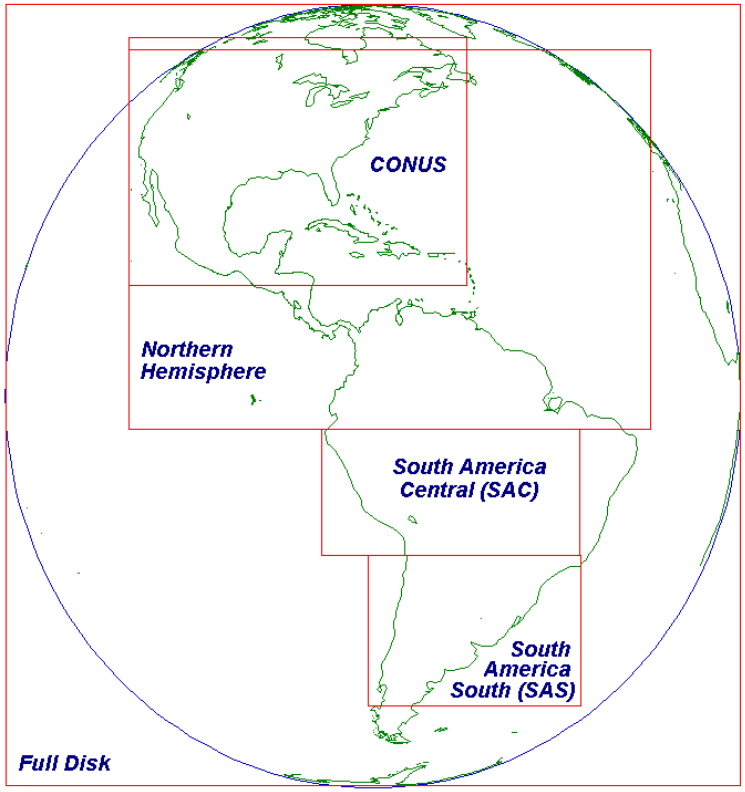
NOTE – Images will now be provided at new times in the schedule and there will be different lengths of time between images. The times are commanded times, and there could be up to a 20 second delay for processors to see the start of image. Any time-dependent processing should be modified to match the new image time stamps.

# GOES-East Rapid Frame Changes

GOES East Current
Rapid Scan




Optimized




Primary changes are with South America Frames, but all image frames in the Rapid Schedule have been modified, some more than others.

Going from Routine to Rapid scan will generate less coverage of the Eastern Caribbean Sea because although the Routine schedule has the new CONUS Extended, the Rapid schedule has the smaller CONUS frame. NESDIS is looking at Eastern Caribbean frame options in the Rapid schedule to address this coverage.

Also, the South America frames have been adjusted per WMO request.

# GOES-East Rapid

# Schedule Timing Changes

## Current Rapid

| | | |
|---|---|---|
| 00:59:50 | SOUTH AMERICA - IMAGE A | 02:02 |
| 01:02:05 | CONTINENTAL US (CONUS) | 04:43 |
| 01:10:00 | CONTINENTAL US (CONUS) | 04:43 |
| 01:15:00 | NORTHERN HEMISPHERE | 09:44 |
| 01:25:00 | CONTINENTAL US (CONUS) | 04:43 |
| 01:29:50 | SOUTH AMERICA - IMAGE B | 02:02 |
| 01:32:05 | CONTINENTAL US (CONUS) | 04:43 |
| 01:40:00 | CONTINENTAL US (CONUS) | 04:43 |
| 01:45:00 | NORTHERN HEMISPHERE | 09:44 |
| 01:55:00 | CONTINENTAL US (CONUS) | 04:43 |
| 01:59:50 | SOUTH AMERICA - IMAGE A | 02:02 |
| 02:02:05 | CONTINENTAL US (CONUS) | 04:43 |
| 02:10:00 | CONTINENTAL US (CONUS) | 04:43 |
| 02:15:00 | NORTHERN HEMISPHERE | 09:44 |
| 02:25:00 | CONTINENTAL US (CONUS) | 04:43 |
| 02:29:50 | SOUTH AMERICA - IMAGE B | 02:02 |
| 02:32:05 | CONTINENTAL US (CONUS) | 04:43 |
| 02:40:00 | CONTINENTAL US (CONUS) | 04:43 |
| 02:45:00 | FULL DISK | 26:06 |
| 03:15:00 | NORTHERN HEMISPHERE | 09:44 |
| 03:25:00 | CONTINENTAL US (CONUS) | 04:43 |
| 03:29:50 | SOUTH AMERICA - IMAGE B | 02:02 |
| 03:32:05 | CONTINENTAL US (CONUS) | 04:43 |
| 03:40:00 | CONTINENTAL US (CONUS) | 04:43 |
| 03:45:00 | NORTHERN HEMISPHERE | 09:44 |
| 03:55:00 | CONTINENTAL US (CONUS) | 04:43 |

## Optimized Rapid

| | | |
|---|---|---|
| 01:00:00 | CONTINENTAL US (CONUS) | 04:37 |
| 01:04:50 | SOUTH AMERICA CENTRAL (SAC) | 02:01 |
| 01:07:05 | CONTINENTAL US (CONUS) | 04:37 |
| 01:15:00 | NORTHERN HEMISPHERE | 09:55 |
| 01:25:09 | CONTINENTAL US (CONUS) | 04:37 |
| 01:30:00 | CONTINENTAL US (CONUS) | 04:37 |
| 01:34:50 | SOUTH AMERICA SOUTH (SAS) | 02:05 |
| 01:37:05 | CONTINENTAL US (CONUS) | 04:37 |
| 01:45:00 | NORTHERN HEMISPHERE | 09:55 |
| 01:55:09 | CONTINENTAL US (CONUS) | 04:37 |
| 02:00:00 | CONTINENTAL US (CONUS) | 04:37 |
| 02:04:50 | SOUTH AMERICA CENTRAL (SAC) | 02:01 |
| 02:07:05 | CONTINENTAL US (CONUS) | 04:37 |
| 02:15:00 | NORTHERN HEMISPHERE | 09:55 |
| 02:25:09 | CONTINENTAL US (CONUS) | 04:37 |
| 02:30:00 | CONTINENTAL US (CONUS) | 04:37 |
| 02:34:50 | SOUTH AMERICA SOUTH (SAS) | 02:05 |
| 02:37:05 | CONTINENTAL US (CONUS) | 04:37 |
| 02:45:00 | FULL DISK | 26:06 |
| 03:15:00 | NORTHERN HEMISPHERE | 09:55 |
| 03:25:09 | CONTINENTAL US (CONUS) | 04:37 |
| 03:30:00 | CONTINENTAL US (CONUS) | 04:37 |
| 03:34:50 | SOUTH AMERICA SOUTH (SAS) | 02:05 |
| 03:37:05 | CONTINENTAL US (CONUS) | 04:37 |
| 03:45:00 | NORTHERN HEMISPHERE | 09:55 |
| 03:55:09 | CONTINENTAL US (CONUS) | 04:37 |

NOTE – Images will now be provided at new times in the schedule and there will be different lengths of time between images. The times are commanded times, and there could be up to a 20 second delay for processors to see the start of image. Any time-dependent processing should be modified to match the new image time stamps.

# Testing/Transition

• Testing was coordinated with Products and User Services, and analysis was conducted with good results.

• GOES-14 Testing: In August, 2013 when GOES-14 was out of storage, all four schedules (ERTN, ERAP, ESRSO and Full Disk) were tested. Adjustments were made to ensure the sequences ran without error, and retested successfully.

• GOES-13 Testing:
  - Mar 4, 1645-1900 UTC replace routine imaging with Optimized routine imaging.
  - Mar 6, 1600-1900 UTC replace routine imaging with Optimized Rapid imaging.
  - Apr 22, 1600-1900 UTC replace routine imaging with Optimized routine imaging.
  - Apr 24, 1600-1900 UTC replace routine imaging with Optimized Rapid imaging.

The Optimized Schedules will transition to operations **on May 6, 2014**.

•More information can be found here prior to transition
**http://www.ospo.noaa.gov/Operations/GOES/schedules_3col.html**

# Examples

Side by side example showing more coverage with extended CONUS: http://cimss.ssec.wisc.edu/goes/blog/wp-content/uploads/2014/03/2PL_ROUTINE_OPTIMIZED_IRW.GIF

CIMSS Satellite blog: http://cimss.ssec.wisc.edu/goes/blog/archives/15068

Puerto Rico (PR) had improved coverage: http://cimss.ssec.wisc.edu/goes/blog/wp-content/uploads/2014/03/IR_PRR.gif (image from Jordan Gerth)

Example of the 2 South American sectors: http://cimss.ssec.wisc.edu/goes/blog/wp-content/uploads/2014/03/G13_SAC_SAS_BAND_04.GIF

More information: http://www.ospo.noaa.gov/Operations/GOES/schedules_3col.html

# GOES-15 RSO Changes

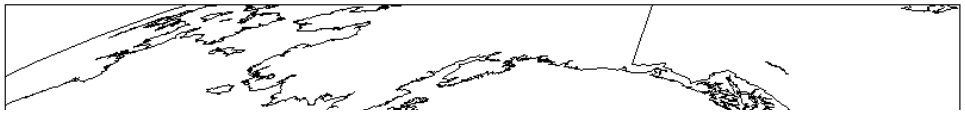
- GOES I-M series had GOES-West Rapid Frames
- During GOES N-P development, those requirements were not retained
- The last AK/Sitka/TPARC RSO called was in August 2008
- The last GOES-West Hawaii RSO called was in 2009 (GOES-11)
- These four sectors went away:  Alaska, Sitka, TPARC (~southern Alaska), Hawaii

# Alaska, Sitka, TPARC

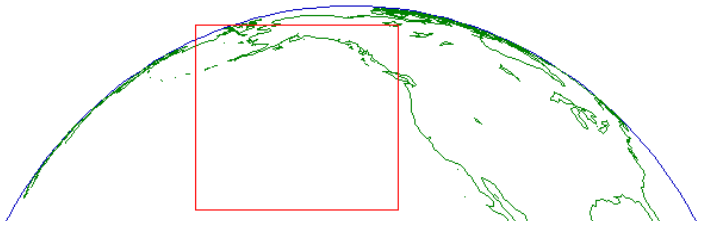
## ALASKA @ 135°W

| | Lat | Lon | Elev | Scan | Line | Pixel | NS C,I | EW C,I | Time |
|---|---|---|---|---|---|---|---|---|---|
| Start: | 99.000 | 999.000 | 8.31 | -3.42 | 2712 | 11613 | 1,3340 | 1,5475 | 2:18 |
| Stop: | 99.000 | 999.000 | 4.49 | 1.05 | 5096 | 16484 | 2,5548 | 2,4210 | |
| Center: | 41.459 | -144.309 | 6.40 | -1.18 | | | | | |

Instrument View



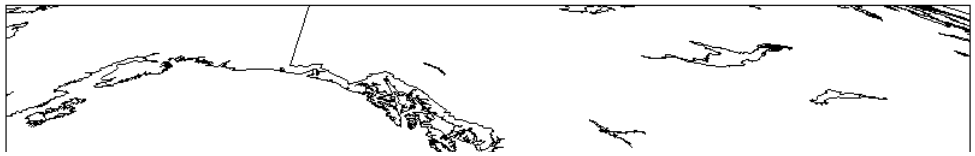
Earth View



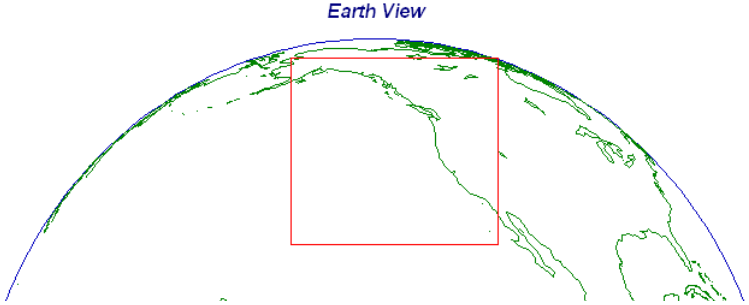
## SITKA @ 135°W

| | Lat | Lon | Elev | Scan | Line | Pixel | NS C,I | EW C,I | Time |
|---|---|---|---|---|---|---|---|---|---|
| Start: | 67.014 | -165.473 | 8.31 | -1.81 | 2712 | 13363 | 1,3340 | 2,1089 | 2:18 |
| Stop: | 27.100 | -117.253 | 4.49 | 2.70 | 5096 | 18284 | 2,5548 | 2,6010 | |
| Center: | 41.368 | -131.549 | 6.40 | 0.44 | | | | | |

Instrument View



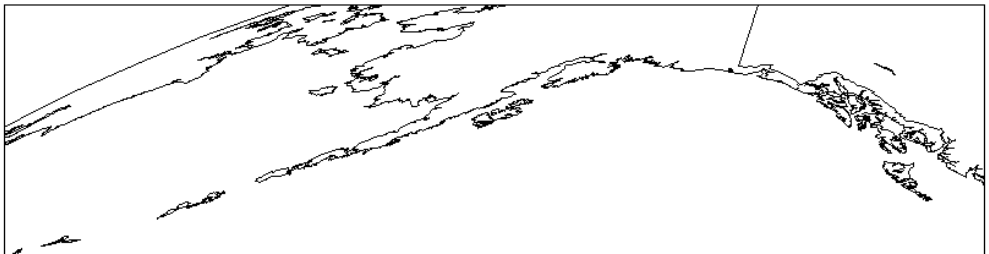
Earth View



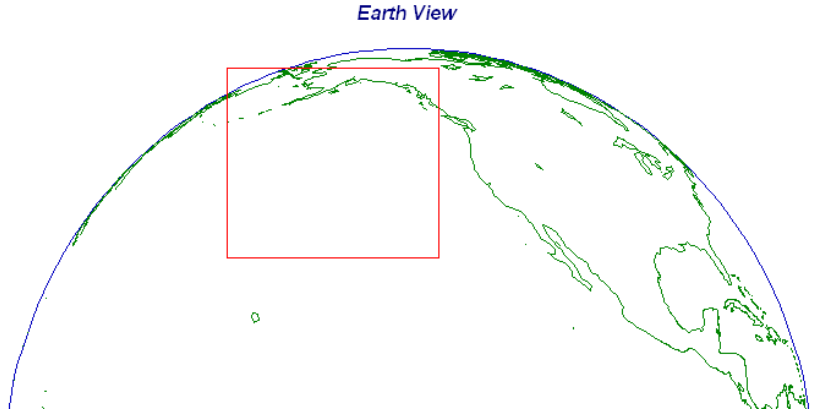
## TPARC @ 135°W

| | Lat | Lon | Elev | Scan | Line | Pixel | NS C,I | EW C,I | Time |
|---|---|---|---|---|---|---|---|---|---|
| Start: | 99.000 | 999.000 | 8.31 | -3.89 | 2712 | 11100 | 1,3340 | 1,4962 | 2:18 |
| Stop: | 99.000 | 999.000 | 4.49 | 0.65 | 5096 | 16055 | 2,5548 | 2,3782 | |
| Center: | 41.553 | -147.793 | 6.40 | -1.62 | | | | | |

Instrument View



Earth View

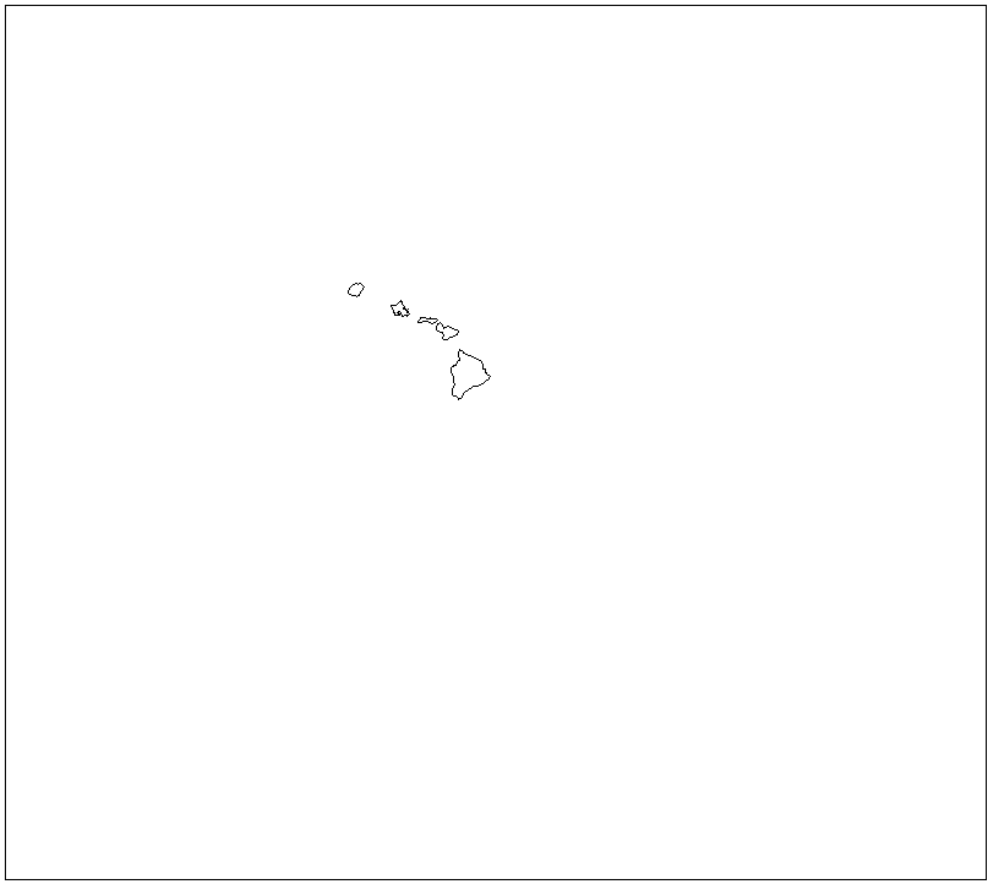


# Hawaii

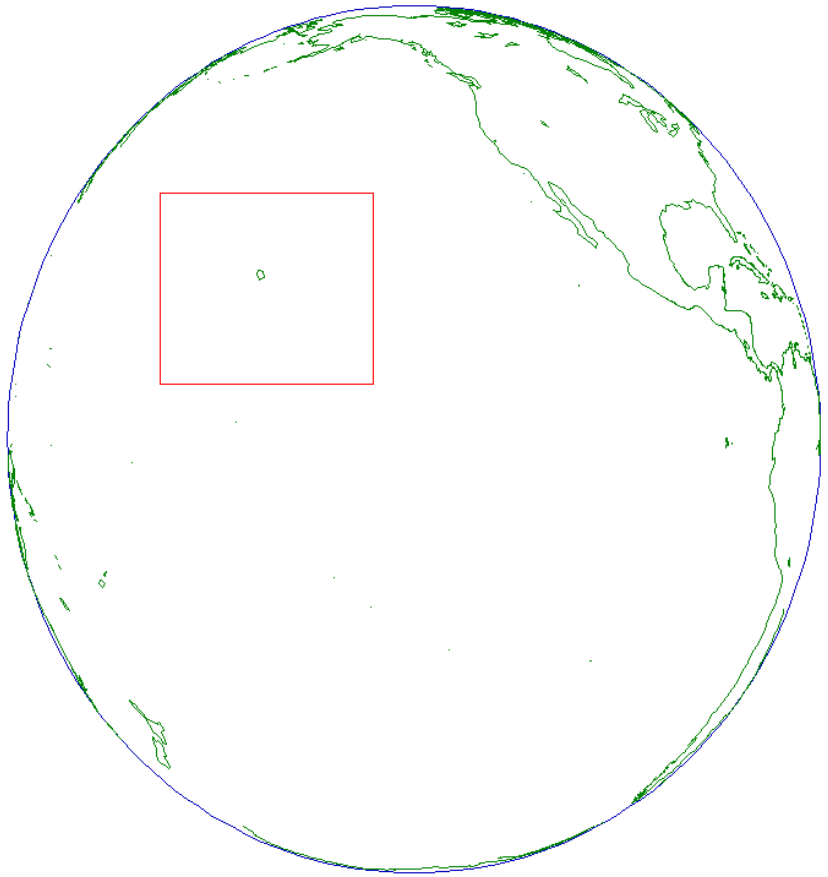
**HAWAII @ 135°W**

| | Lat | Lon | Elev | Scan | Line | Pixel | NS C,I | EW C,I | Time |
|---|---|---|---|---|---|---|---|---|---|
| Start: | 31.431 | -176.832 | 4.94 | -5.45 | 4816 | 9400 | 2,4568 | 1,3262 | 2:17 |
| Stop: | 6.311 | -140.035 | 1.11 | -0.89 | 7200 | 14371 | 4,0640 | 2,2097 | |
| Center: | 17.713 | -154.375 | 3.03 | -3.17 | | | | | |

*Instrument View*



*Earth View*



# GOES-15 RSO Changes

- Preliminary discussion with NWS started
- No current timetable, plans for testing
  - Further discussions planned

# Known Data Disruptions

- GOES-15 antenna issue at NSOF – October 20, 2013 @ 0400 UTC- 0705 UTC
  - Weak signal from the GVAR antenna for GOES-15 at NSOF. Weak signal caused the data to be corrupted which, in turn, caused the Advanced Front End Proceesor (AFEP) to stop processing data.
- ESPC Failover to Wallops CIP GINI – December 10, 2013 @1100 UTC
  - NWS did not have GOES imagery feed for approximately a 4 hour period
  - Cause: CIP can only send data to BNCF. They don't have the T1 line needed to send to ANCF
- GOES-13 Imagery degradation and GINI Switch – February 13, 2014 @1422-1515 UTC
  - Degraded GOES-East imagery @ ~1409 UTC
  - Switched over to giniL1 cip at wallops, during the switch we failed over both goes 13 and goes 15
- FOS data outage – March 9-10, 2014
- GOES-East Imagery Loss – April 7, 2014 @ 2025-2245 UTC
  - Multiple GOES Ingest NOAAPORT Interface (GINI) issues, to include system and application problems, resulted in a lack of data availability and failed processing

# Planned work

- MPLS Failover scheduled for May 28, 2014
  - Operations will failover over from NSOF (ANCF) to Wallops (BNCF)
  - All level 2 AWIPS products will be received at the BNCF during the scheduled failover test period with the exception of the SFOV
  - See http://www.ssd.noaa.gov/cip.html for detailed information on ESPC/CIP products

# GEO Status

# Geostationary Operational Environmental Satellite (GOES) Operations Status

March 31, 2014

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

**Key**

Operational

G

Spacecraft issues but no user impacts

S/C

Operational with limitations

Y

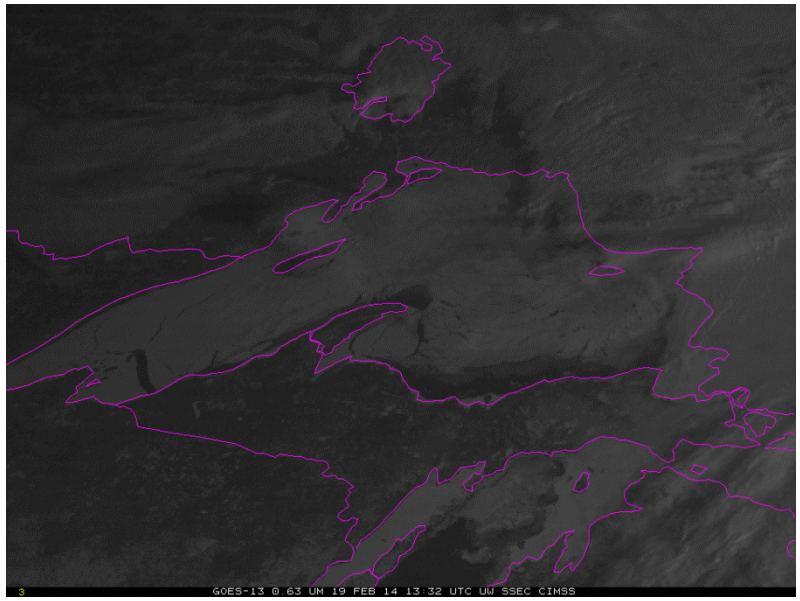
Non-operational

R

# GOES-13 Navigation Anomalies

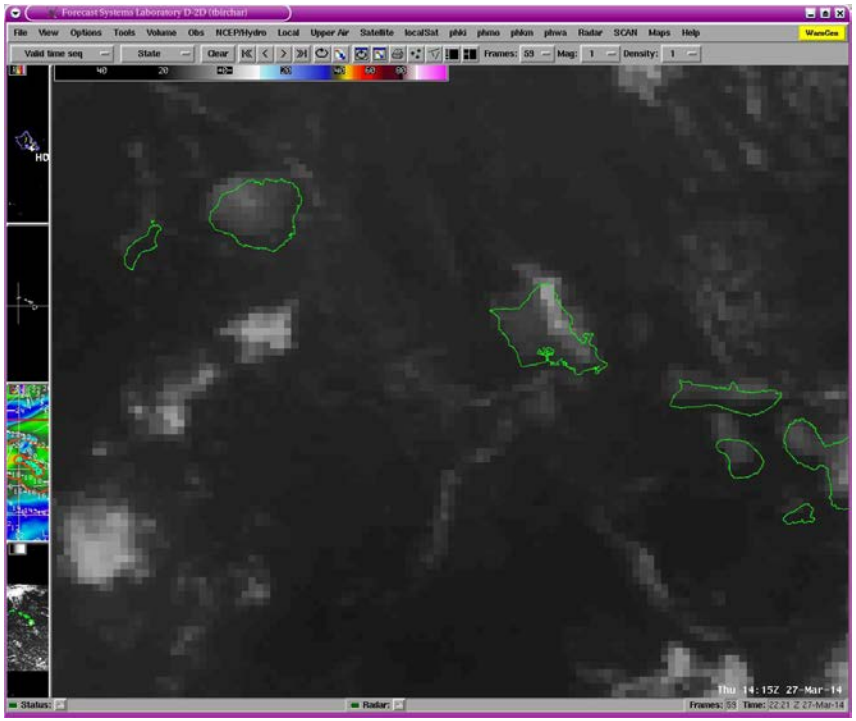
- A GOES-13 (GOES-East) North/South Station Keeping maneuver was performed on Wednesday, February 19, 2014, beginning 1145 UTC, and ending at 1945 UTC

- During this time, the navigation of the satellite degraded mostly in the north-south direction. At 1945 UTC, after the maneuver ended, the navigation snapped back to normal.



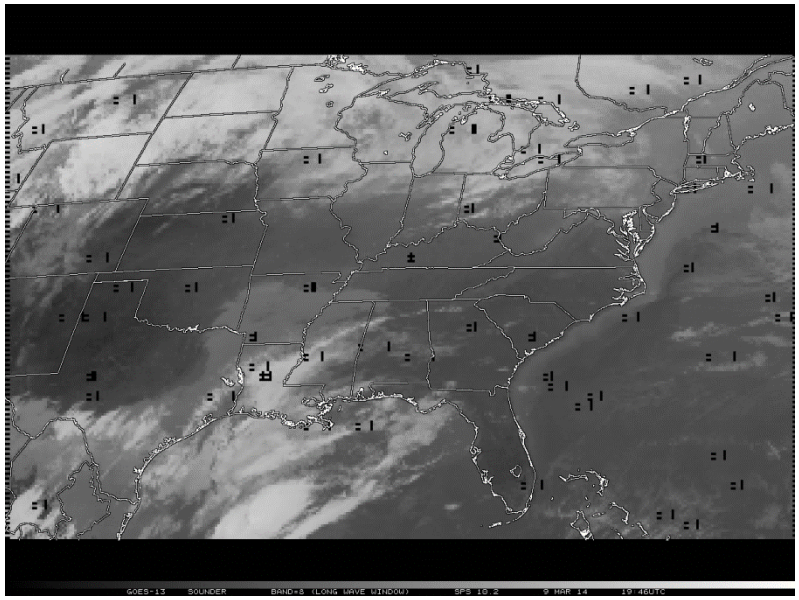
# GOES-15 IR Imagery Navigation Shift

- Observed in March, 2014
- Hawaii sectors in AWIPS
- Under investigation



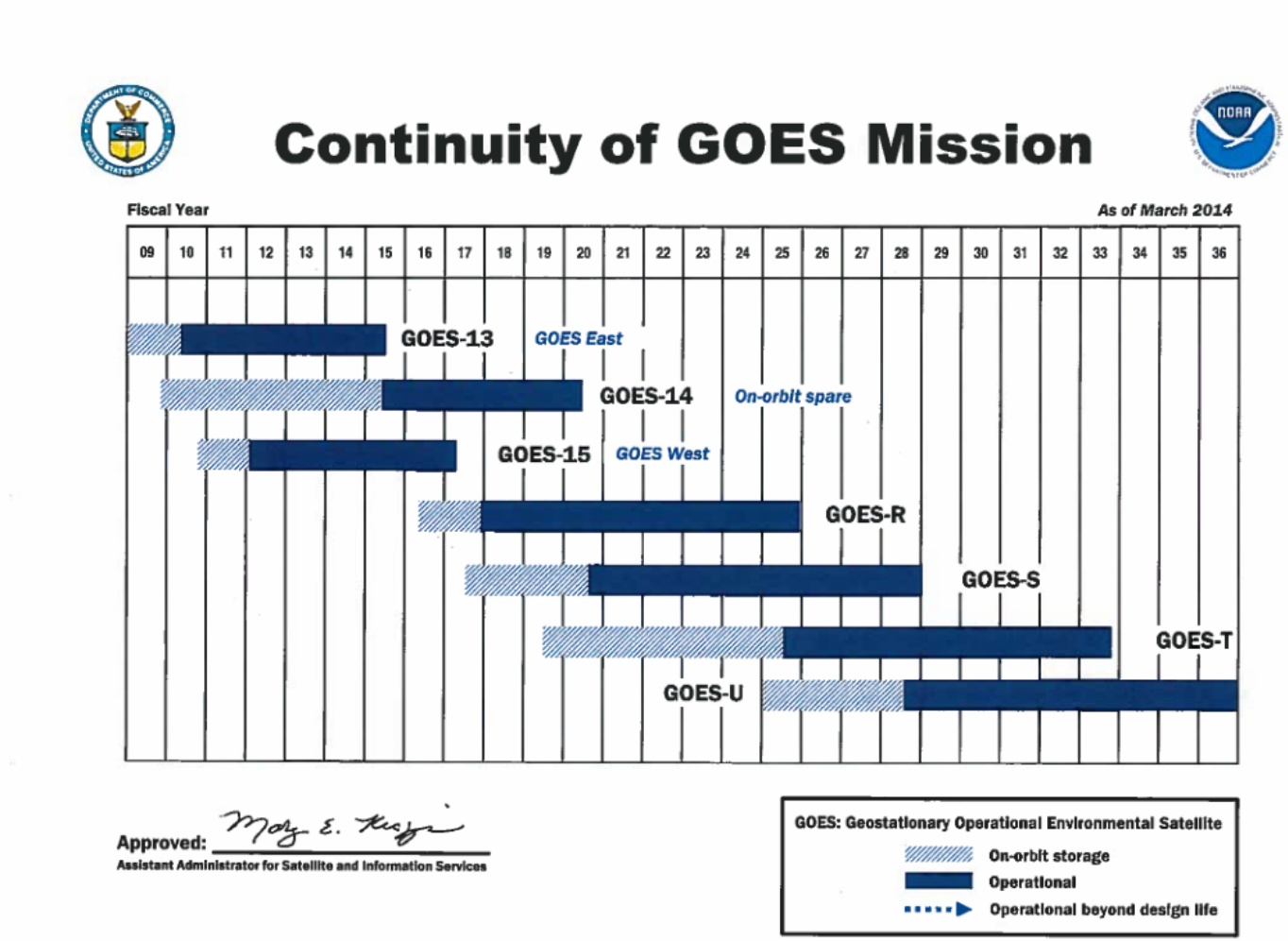
# GOES-13 Sounder Anomalies

- Increased number of unexpected scan line lengths, missing pixels
- Detected on 1 July 2013
- Became more common since 12 September, 2013
- Missing data can now be reclaimed using a modified version of the SPS (Sensor Processing System), the ground software that makes the GVAR data stream



http://cimss.ssec.wisc.edu/goes/blog/archives/13936
http://cimss.ssec.wisc.edu/goes/blog/page/3

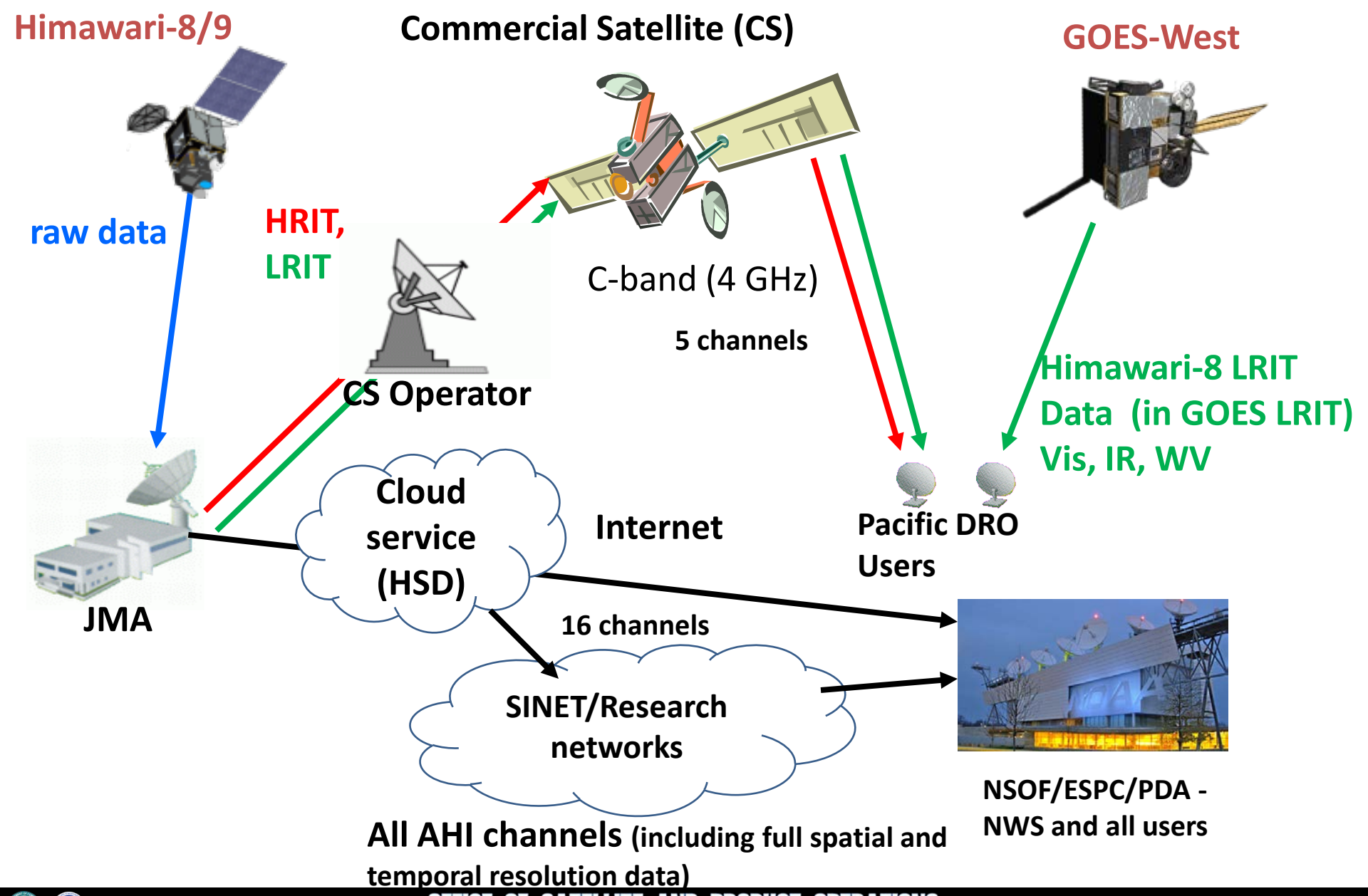
# GOES Flyout Schedule



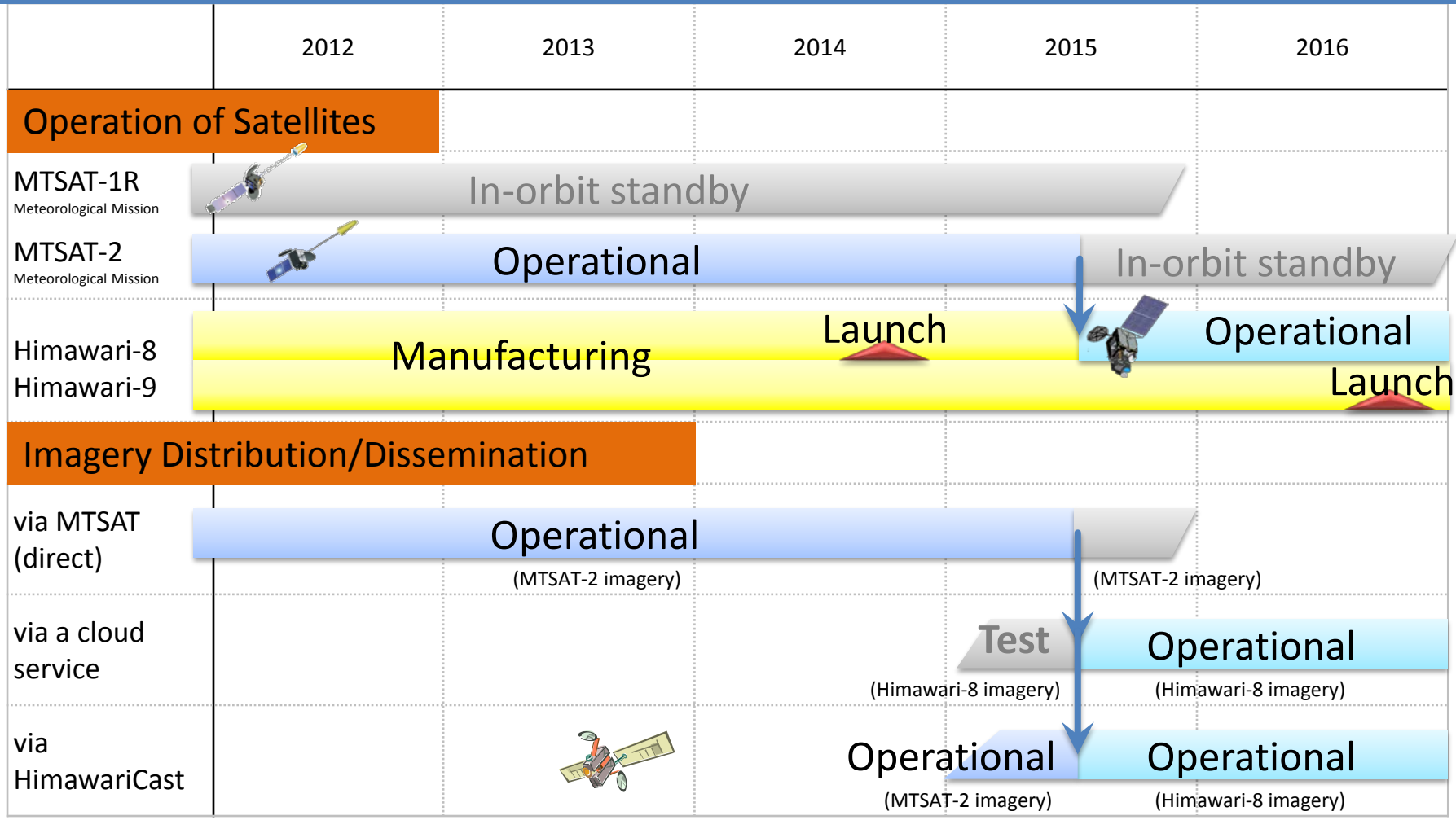

http://www.nesdis.noaa.gov/flyout_schedules.html http://www.goes-r.gov

# NOAA-JMA Himawari-8 Data Flow Plans

# H-8 Distribution/Dissemination Ops Plan



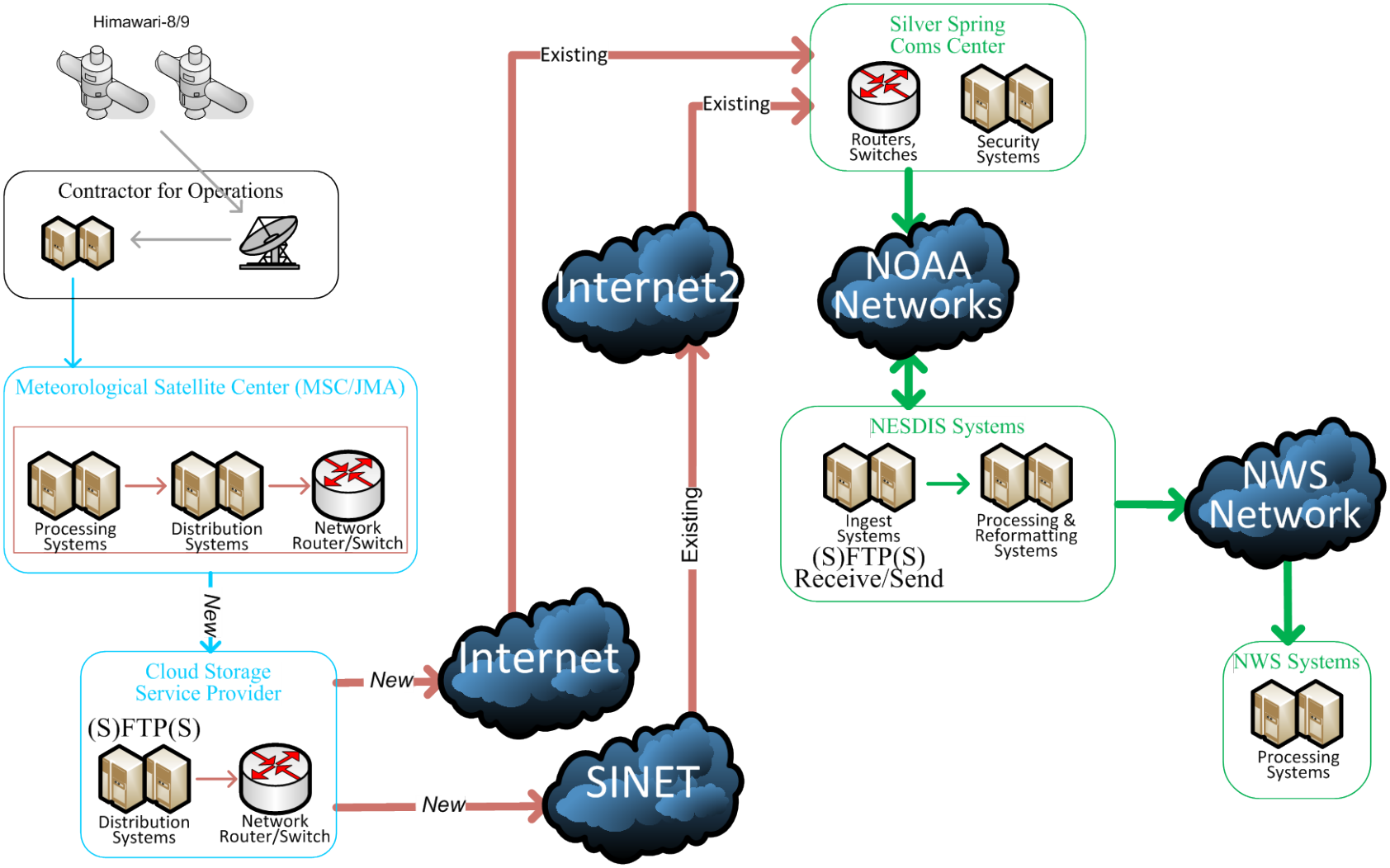
# Schedule of Distribution/Dissemination




**Parallel Dissemination**

- HimawariCast/CS service will start test transmissions in January 2015
- The cloud service will start its test operation in March 2015

# H-8 Data Flow (All 16 AHI Channels) via SINET/Internet2 Networks to NOAA/NESDIS



# H-8 Commissioning Timeline

- H-8 Launch – September/October 2014
- CS test using rebroadcast operational MTSAT-2 HRIT data -- January 2015
  - 5 channels
  - NWS PR plans to participate
- Planned data distribution tests with Internet cloud service and SINET connection between JMA and NOAA – March 2015
    - Routine transmissions of pre-operational H-8 data
    - All 16 AHI channels in HSD
- STAR begins interim distribution of H-8 test products to NWS – March 2015

# H-8 Commissioning Timeline

- CS operational DRO of H-8 data, five channels, in HRIT format – July 2015
  - Channels have same specifications as MTSAT-2 except data are transmitted at 10 minute intervals
- Using NREN/I2 link, operational distribution of H-8 BUFR products from NOAA/NESDIS/OSPO Product Distribution and Access (PDA) system to NCEP and other users – January 2016
  - 24x7 support
  - PDA is the planned enterprise system for data distribution from NOAA/NESDIS to all users

# LEO Status

# NOAA-19 (PM Primary)

| Subsystem | Description | Status |
|---|---|---|
| ADACS | Attitude Determination and Control System | Green |
| A-DCS | Advanced Data Collection System | Yellow |
| AMSU-A1 | Advanced Microwave Sounding Unit -A1 | Green |
| AMSU-A2 | Advanced Microwave Sounding Unit -A2 | Green |
| AVHRR | Advanced Very High Resolution Radiometer | Green |
| CCS | Command and Control System | Green |
| COMM | Communications | Green |
| DHS | Data Handling System | Green |
| DPLY | Deployment Subsystem | Green |
| EPS | Electrical Power System | Green |

| Subsystem | Description | Status |
|---|---|---|
| FSW | Flight Software | |
| GROUND | Polar Acquisition and Command System (PACS) | |
| HIRS | High Resolution Infrared Radiation Sounder | Orange |
| MHS | Microwave Humidity Sounder | Yellow |
| RCS | Reaction Control Subsystem | |
| SARP-3 | Search and Rescue Processor - 3 | Green |
| SARR | Search and Rescue Repeater | Green |
| SBUV | Solar Backscatter Ultraviolet Radiometer | Green |
| SEM | Space Environment Monitor | Green |
| THERM | Thermal Control System | Green |

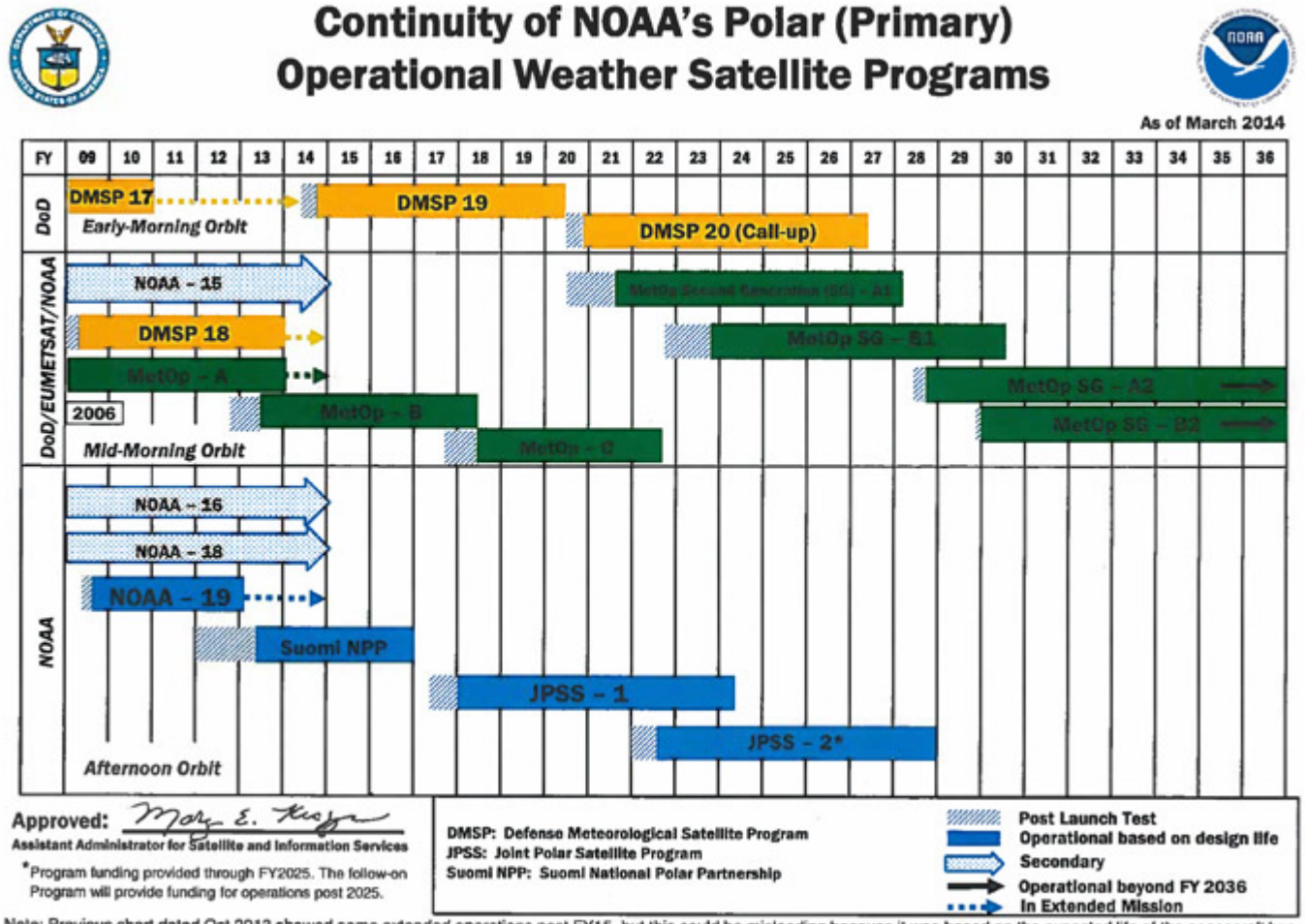
# METOP-B (AM Primary)

| Subsystem | Description | Status |
|---|---|---|
| ADCS | Data Collection System | Orange |
| AMSU-A1 | Advanced Microwave Sounding Unit -A1 | Green |
| AMSU-A2 | Advanced Microwave Sounding Unit -A2 | Green |
| AVHRR | Advanced Very High Resolution Radiometer | Green |
| HIRS | High Resolution Infrared Radiation Sounder | Yellow |
| SARP | Search and Rescue Processor | Green |
| SARR | Search and Rescue Repeater | Green |
| SEM | Space Environment Monitor | Green |

# METOP-A

| Subsystem | Description | Status |
|---|---|---|
| ADCS | Data Collection System | Orange |
| AMSU-A1 | Advanced Microwave Sounding Unit -A1 | Green |
| AMSU-A2 | Advanced Microwave Sounding Unit -A2 | Green |
| AVHRR | Advanced Very High Resolution Radiometer | Green |
| HIRS | High Resolution Infrared Radiation Sounder | Yellow |
| SARP | Search and Rescue Processor | Green |
| SARR | Search and Rescue Repeater | Green |
| SEM | Space Environment Monitor | Green |

# LEO Flyout Schedule




http://www.nesdis.noaa.gov/FlyoutSchedules.html http://www.jpss.noaa.gov

# Suomi-NPP Status

as of April 24, 2014

| Spacecraft | S-NPP |
|---|---|
| **Launch Date** | Oct 28, 2011 |
| **Mission Category** | LTAN 1330 (PM) +/- 10 mins |

| Payload Instruments | Status |
|---|---|
| ATMS | G |
| CERES | G |
| CrIS | G |
| OMPS – Nadir | G |
| OMPS – Limb | G |
| VIIRS | G |

Operational (or capable of)

Operational with limitations (or in standby)

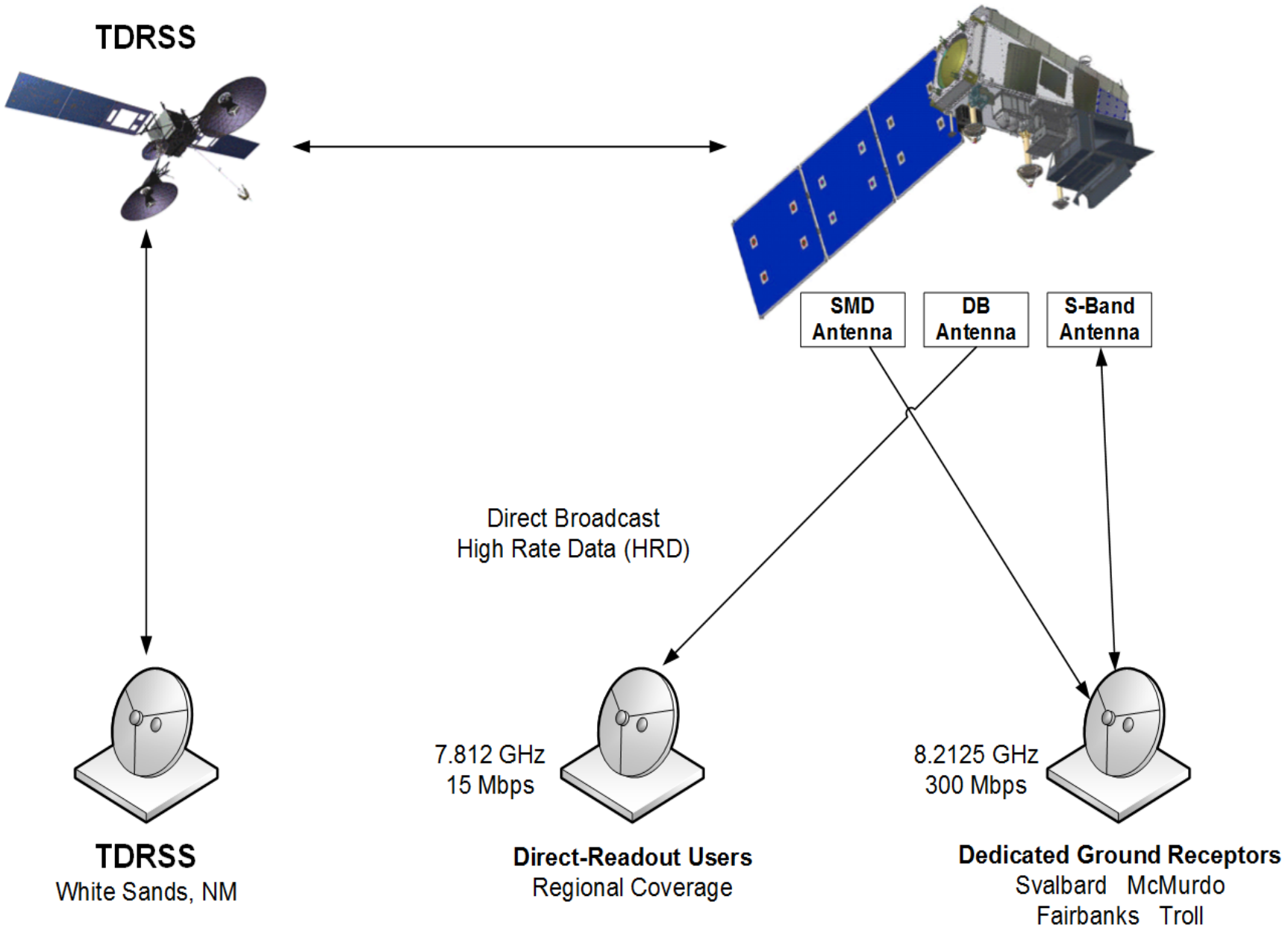
Operational with degraded performance

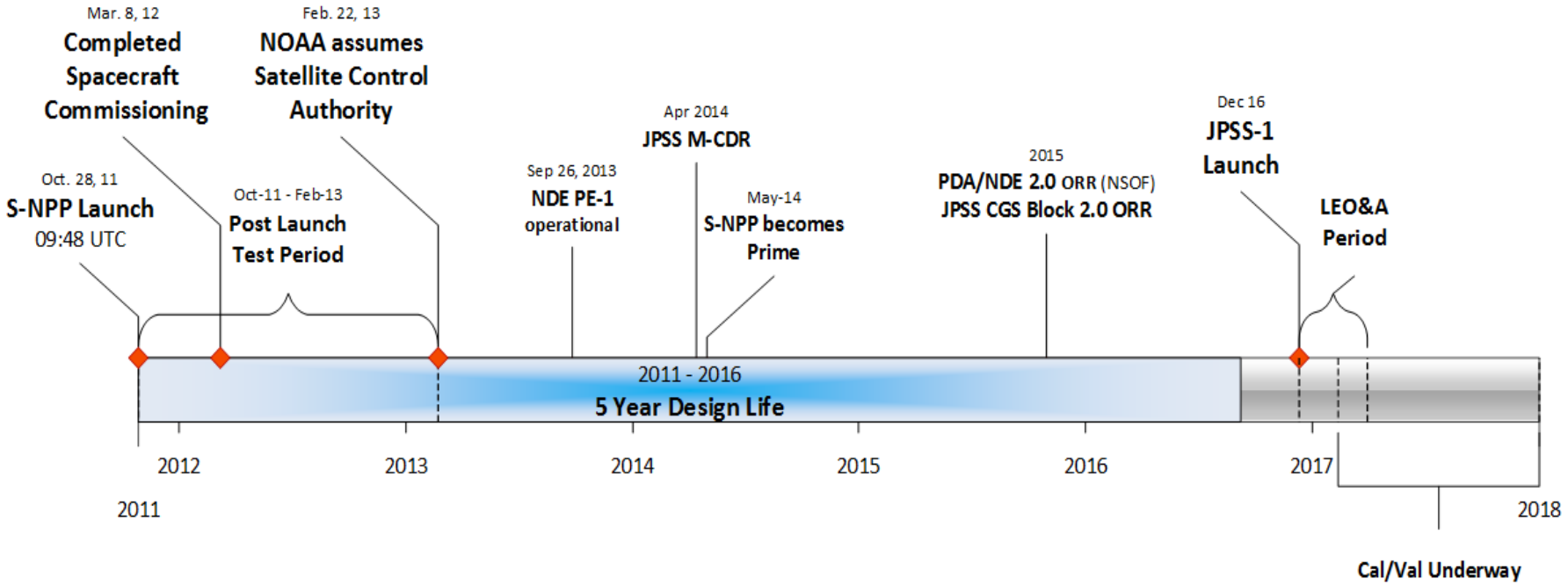
Not functional

| Spacecraft Subsystem | Status |
|---|---|
| TLM, Command & Control | G |
| ADCS | G |
| EPS | G |
| Thermal Control | G |
| Communications | G |
| CDP | G |
| SCC | G |
| GPS | G |
| 1553 | G |
| 1394 | G |

Functional but turned off

No status reported


TDRSS
SMD Antenna
DB Antenna
S-Band Antenna
Direct Broadcast
High Rate Data (HRD)
7.812 GHz
15 Mbps
8.2125 GHz
300 Mbps
TDRSS
White Sands, NM
Direct-Readout Users
Regional Coverage
Dedicated Ground Receptors
Svalbard McMurdo
Fairbanks Troll




- NUCAPS T/q profiles available on the SBN as of April 15, 2014.
  - details noted in TIN 14-03: http://www.nws.noaa.gov/os/notification/tin14-03nucaps.txt
- JPSS-1 Mission Critical Design Review conducted on April 22-24, 2014 and that new mission is currently on-track for launch in Dec of 2016.
- S-NPP becomes primary satellite in PM orbit on May 1st, 2014; this is a designation on the mission management control side for resource priority usage – NOAA-19 data will still be made available.

# Suomi-NPP Maneuvers

**Long lead time scheduled maneuvers:**

- Drag Make-Up maneuver (DMU) for maintaining optimum geo-location.
- VIIRS Lunar Roll (~9 per year) for VIIRS calibration activities
- Inclination Maneuvers to ensure optimum LTAN maintenance – 1st is anticipated by the summer of 2014.

Notification process: calendar summary via email, mission notices & ESPC notices

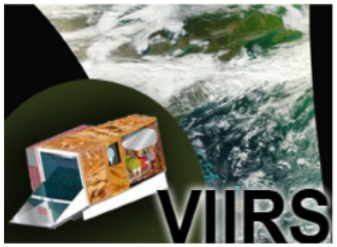
**Short lead time maneuvers:**

- Risk Mitigation Maneuver (RMM) – risk analysis provided by NASA CARA.

Notification process: mission notices & ESPC notices

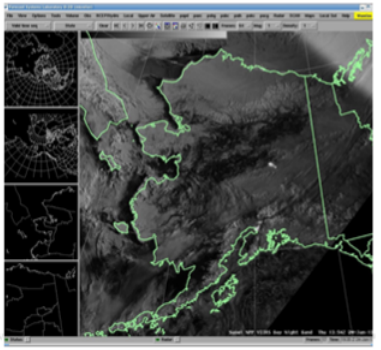
# S-NPP Key Performance Parameters (KPPs)

**VIIRS Imagery EDR** - 0.64µm (I01), 3.74µm (I04), 11.45µm (I05), 8.55 µm (M14), 10.763 µm (M15), and 12.03 µm (M16) for latitudes greater than 60ºN in the Alaskan region

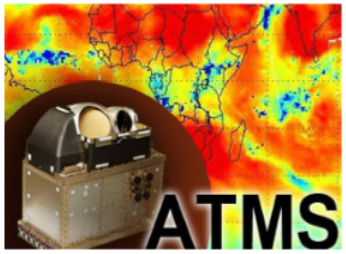


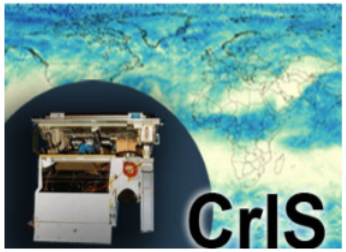

NWS Alaska Region

Anchorage WFO
Fairbanks WFO

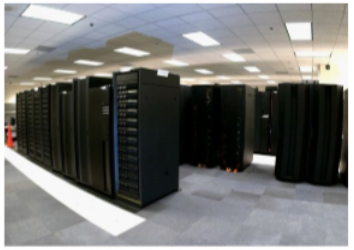


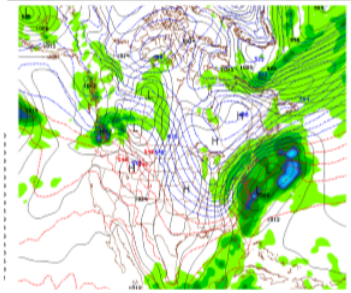
**CrIS & ATMS SDRs** – for data assimilation into numerical weather prediction (NWP) models




National Centers for Environmental Prediction (NCEP)





## S-NPP is NASA satellite operated by NOAA

- Serving as a Risk Reduction Mission and Operational Mission

**Anomalies**

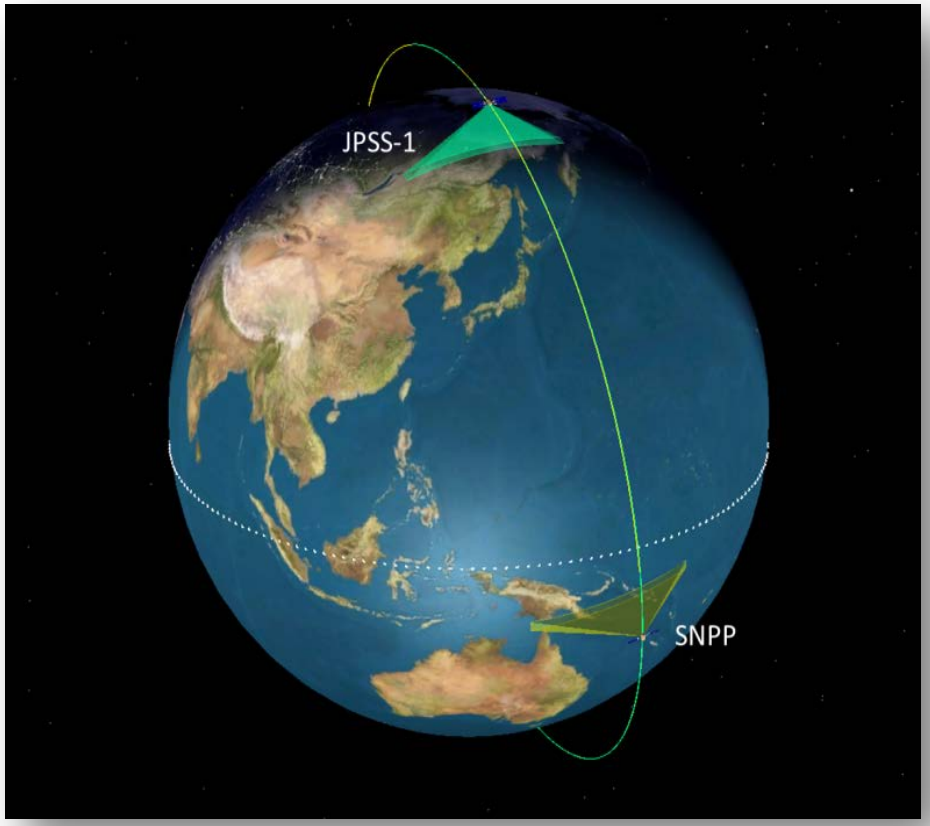
- CrIS CREECBIT stuck
- Half Angle Mirror (HAM) and Rotating Telescope Assembly (RTA) occasionally loses sync
- VIIRS Single Board Computer (SBC) Lock-Ups
- 1394 bus reset
- CEP-1
- ATMS Scan Motor increase

# Suomi-NPP and JPSS-1

**S-NPP prime ground station is SVL (located in Svalbard, Norway)**
- SSR dump every orbit (101 mins)
- TDRSS (White Sands) support is available for anomaly resolution and proficiency passes

**JPSS-1 prime ground stations are SVL and McMurdo (located in Antarctica)**
- SSR dumps twice per orbit, one complete rev down linked each dump (1/2 orbit overlap)
- Ka-band SMD also available for J-1 via TDRSS as contingency
- TDRSS (White Sands) support is available for LEO&A, anomaly resolution, SMD and proficiency passes

**Backup ground station sites are:**
- Fairbanks CDAS
- Troll




JPSS-1 will assume 1330 LTAN (PM) Orbit

S-NPP will be 20 minutes behind JPSS-1

# Product Development

a list of products that became operational since October, 2013

- Ocean Heat Content products over the North Pacific : Nov, 2013

- Microwave Integrated Retrieval System (MiRS) S-NPP Products (including 10 products: Rain Rate, Total Precipitable Water, Cloud Liquid Water, Snow Cover, Sea Ice Concentration, Snow Water Equivalent, Land Surface Temperature, Land Surface Emissivity, Temperature and Moisture Profiles) Dec, 2013

- Upgrades in GOES Solar Radiation Product Suite for Coral Reef Watch Products: Jan, 2014

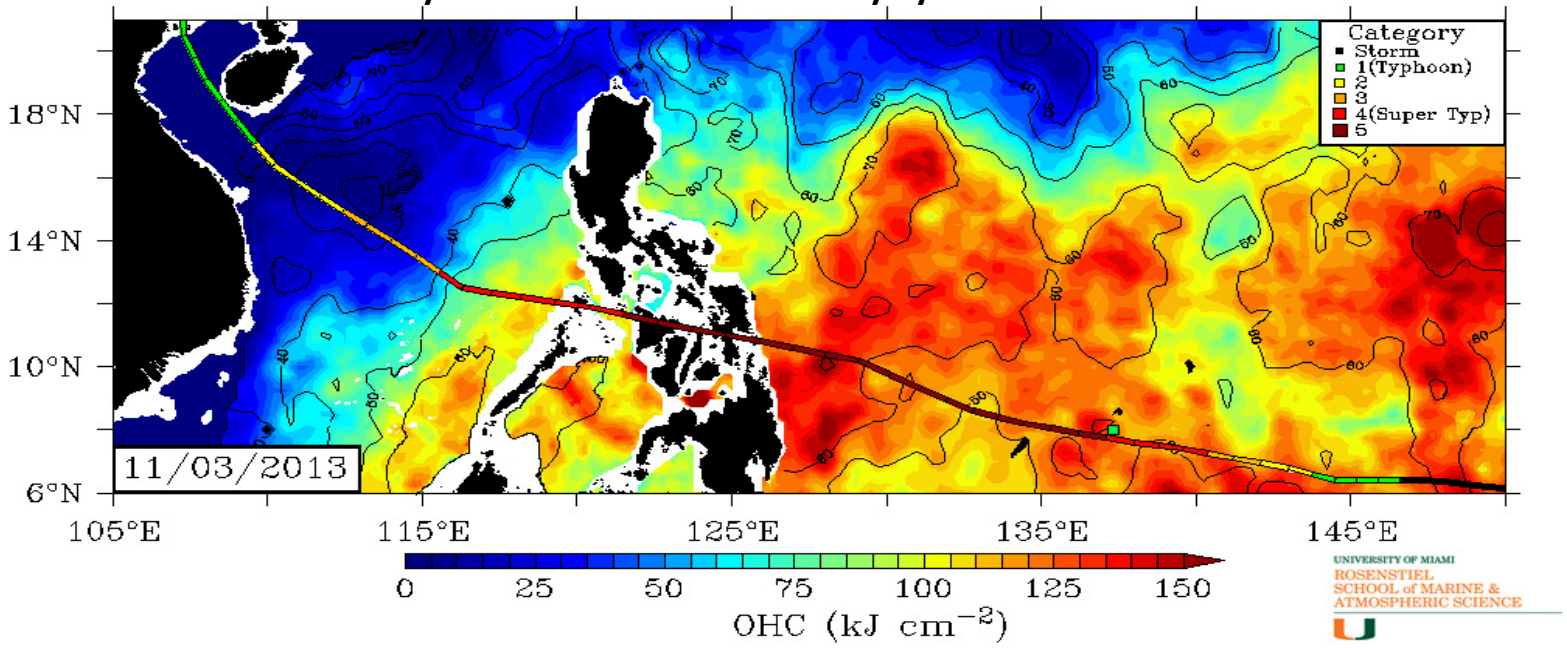
- S-NPP Advanced Clear-Sky Processor for Oceans (ACSPO): Feb, 2014
- VIIRS Polar Winds: March, 2014

# Ocean Heat Content product

The Ocean Heat Content product is being renamed to "Satellite Ocean Heat Content Suite" to distinguish it from NODC's legacy Ocean Heat Content derived from non-satellite sources.

**Highlights since last Quarterly Meeting**

- **Northern Pacific Basin OHC products became operational Nov. 5, 2013**
  http://www.ospo.noaa.gov/Products/ocean/ohc_np.html
- **NAVO produced daily SARAL/AltiKa and Cryosat-2 SSHA files are flowing from DAPE to DDS**
- **Univ. of Miami has modified OHC software to utilize daily SARAL/AltiKa SSHA files**
- **Operational OHC processing will be using SARAL/AltiKa SSHA files by end of April**
- **Univ. of Miami will modify OHC software to utilize daily Cyrosat-2 SSHA files**




OHC prior to development of Super Typhoon Haiyan utilizing both Jason-2 and SARAL data.

# Global eTRaP

- Ensemble Tropical Rainfall Potential
- Uses
  - Remote Sensing Microwave Satellite Rain Rates
  - Global Geostationary Satellite Derived Rain Rates
  - Storm-center track forecasts
- Already in NAWIPS; will be in AWIPS-2 soon

# Global eTRaP

- Upgrades coming soon:
  - Improved accuracy through adding products from NHC Rainfall Climatology Persistence model (RCLIPER) (End of 2014) to include:
    - Vertical Shear
    - Topography of Impacted Region
    - Cyclone Climatology
  - Include rain rate from S-NPP (Jan. 2015)
  - Next upgrade will output to grib2 as well as McIDAS, ASCII and images

# Total Ozone Analysis of CrIS and OMPS (TACO)

- Generates combined UV and IR ozone retrievals using new algorithm
- New version of current TOAST and TIROS products
- Provides global 1˚x1˚ ozone total amount
- Significantly increased accuracy in their troposphere ozone estimation

# Satellite Analysis Branch

- SAB is working with the NCO Dataflow group to completely overhaul the available satellite imagery to operational meteorologists within NAWIPS (local to NCWCP) and eventually AWIPS(2).
- This overhaul, will provide all geostationary and composite polar imagery and derived products in the native spatial and temporal resolution.
- Additionally, this overhaul will aid potential retirement of some of the lower resolution AREA files hosted on SPSD servers. The collaboration is in the formative stages with preliminary tests with GOES-East and West datasets with very encouraging results.

# VIIRS Active Fire Product and Imagery for Daily Fire Analysis

VIIRS Automated Active Fire Product (AFP) being received in SAB. Will be evaluating for inclusion in the Hazard Mapping System daily fire analysis .

AFP is generated using 750m resolution m band imagery. SAB will also initially use m band (m13) in HMS to QC AFP and add fires from imagery if required. We are hopeful to include VIIRS m band fire detections this summer

SAB is also evaluating higher resolution (375 m) i band imagery for use in the HMS.

Issues affecting use of i band imagery include higher false alarm rate, image depiction of small features on HMS display and system performance with larger data volumes to process

Users will be notified when VIIRS data is being incorporated

# New Precipitation Products

- See an Update on the NESDIS Hydrometeological Products from Limin Zhao and Limin Zhao and Ralph Ferraro

# Upcoming Events and Meetings

- ***May 19-22, 2014:*** The Space Symposium, Colorado Springs, CO
- ***June 2-6, 2014:*** The Satellite Proving Ground/User Readiness Meeting, NWS Training Center, Kansas City, MO.
- ***July 13-18, 2014:*** The International Geoscience and Remote Sensing Symposium, Québec, Canada
- ***July 30 – Aug 1, 2014:*** The 27th Satellites and Education Conference, Madison, WI.
- ***September 22 - 26, 2014*** 2014 EUMETSAT Meteorological Satellite Conference, Geneva, Switzerland
- ***January 4-8, 2015*** AMS Annual Meeting, Phoenix, AZ
- ***April, 2015*** NOAA Satellite Conference, DC Metro Area

# Action Items

# Questions/Comments

- Open for any questions or comments…