



# **NOAA's GOES Satellites:**

**Current Status, Operational Updates,  
Improvements, and Short-Term Plans**

**Tom Renkevans – Office of Satellite and Product Operations**

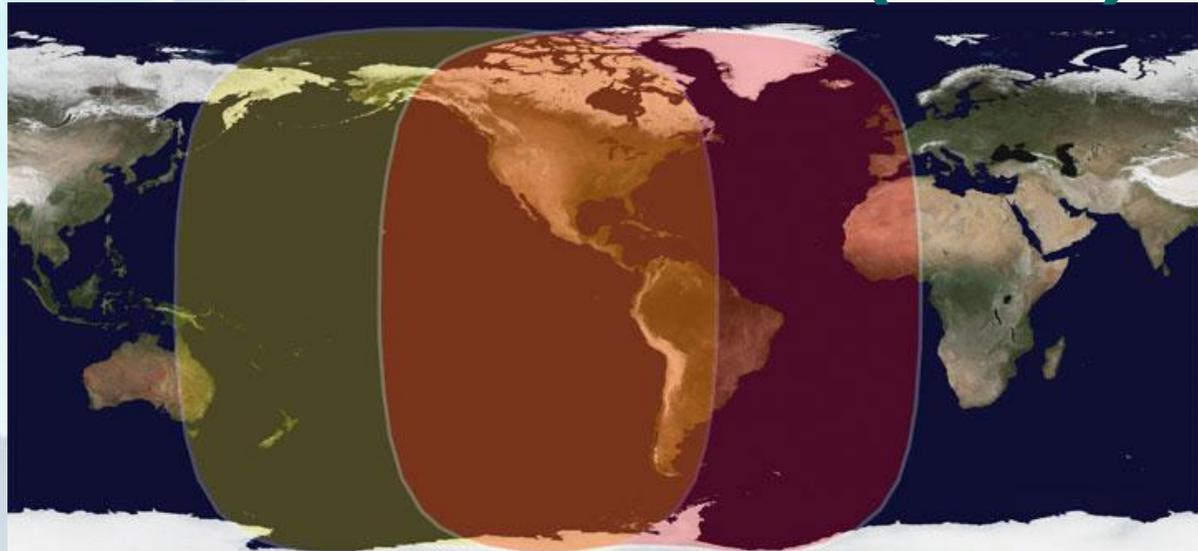
**NOAA/NESDIS  
October 20, 2011**

**7<sup>th</sup> GOES Users' Conference, Wynfrey Hotel, Birmingham, AL**

# Talk Structure

- **GOES Status Update**
  - ✓ Constellation Status
  - ✓ Flyout Schedule
  - ✓ Health and Performance
  - ✓ Improvements and Changes
  - ✓ GOES-15 Science Test Summary
  - ✓ **GOES-West Transition**
  - ✓ Eclipse Season Schedules & Shifted Frames
  - ✓ Stray Light Information/Updates
  - ✓ GOES-12 XGOHI
- **Organization and Data Delivery**
  - ✓ Organizational Structure
  - ✓ Distribution Policy
  - ✓ SATEPSDIST Summary
- **Select GOES Products Updates**
  - ✓ Current Status of AWIPS Products
  - ✓ GOES-POES Blended Hydro Products
  - ✓ GOES-Based Multi-Platform Tropical Cyclone Surface Wind Product
- **GOES Direct Readout information**
  - ✓ GVAR
  - ✓ GOES Data Collection Services
  - ✓ LRIT
  - ✓ EMWIN
  - ✓ HRIT/EMWIN Combination
- **Space Weather**
- **Updates from User Services**
  - ✓ Social media
  - ✓ CRM (Customer Relationship Management) database

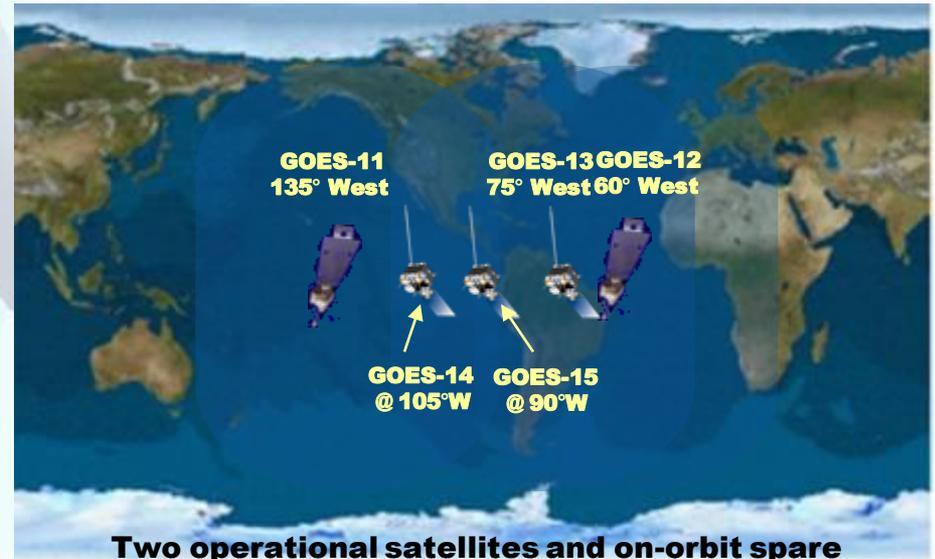
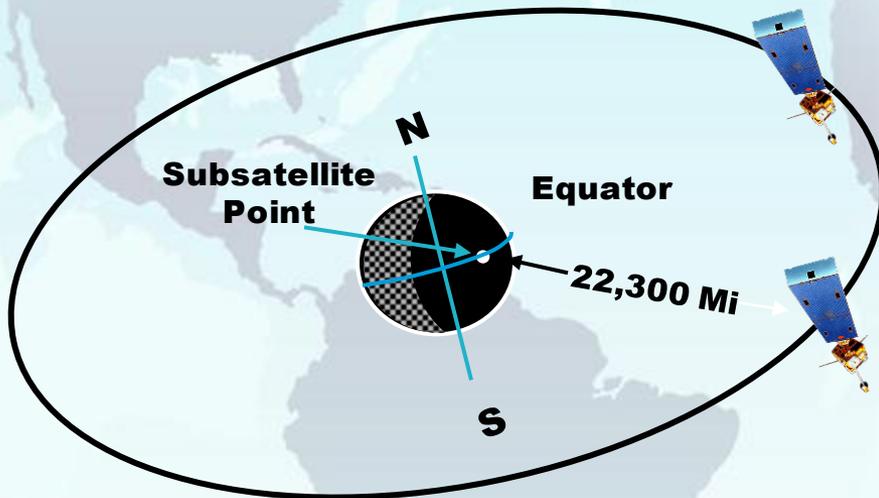
# Geostationary Satellites (GOES)



- 35,800 km high
- Two Satellite System continuously monitors the Western Hemisphere
- Northern Hemisphere Imaged every 15 minutes

- **Weather sentinel – constant monitoring of Hurricanes, Severe Storms, and more**
- **Input to weather models, forecasts, and warnings**
- **Sea surface temperature monitoring for fisheries and climate**
- **Winds for aviation**
- **Solar imagery for communication satellites, utility companies, and astronaut safety**
- **Environmental data collection from buoys, stream gauges, etc.**
- **Satellite-aided Search and Rescue**

# Current GOES Constellation



## • GOES I-M (8-12) series operational since 1994

- ✓ \*GOES-10 deorbited - was at 60° W in support of South America December 2, 2006 – December 1, 2009
- ✓ GOES-11 operational as GOES West at 135° W - June 21, 2006
- ✓ \*GOES-12 providing coverage of South America at 60°W - May 11, 2010

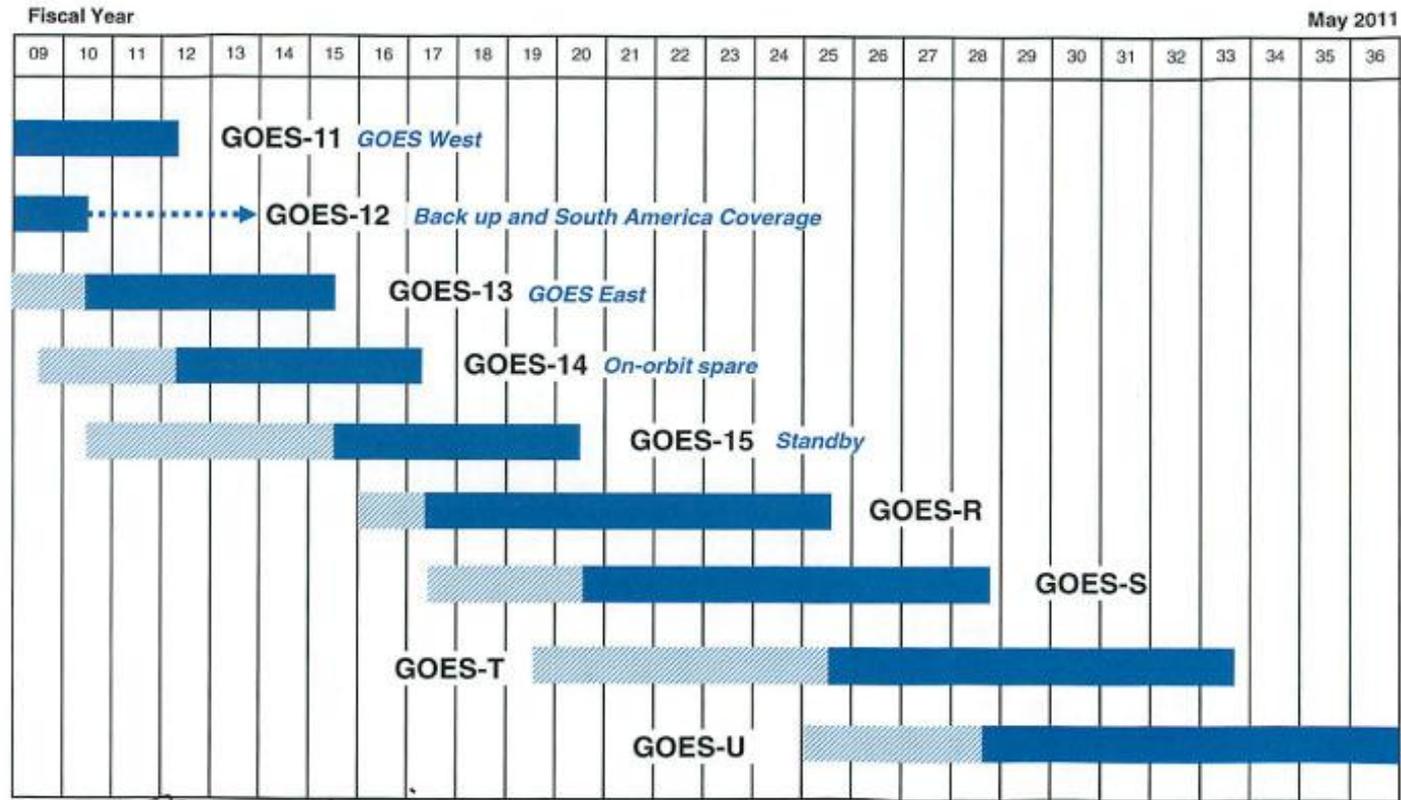
## • GOES N/O/P (13/14/15)

- ✓ \*GOES-13 operational as GOES-East at 75° W – April 14, 2010
- ✓ \*GOES-14 in Z-axis storage at 105° W – launched June 27, 2009
- ✓ \*GOES-15 in earth pointing 'storage' at 90°W with space instruments on - launched March 4, 2010



# GOES Launch Schedule

## Continuity of NOAA's Geostationary Operational Satellite Programs



Approved: May E. Kucya  
 Assistant Administrator for  
 Satellite and Information Services

Signed on: 5/23/11

.....> Satellite is operational beyond design life  
 [Hatched Box] Post Launch Test / On-orbit storage  
 [Solid Blue Box] Operational

<http://www.nesdis.noaa.gov/FlyoutSchedules.html>

# GOES Status Update

Performance Status October 3, 2011

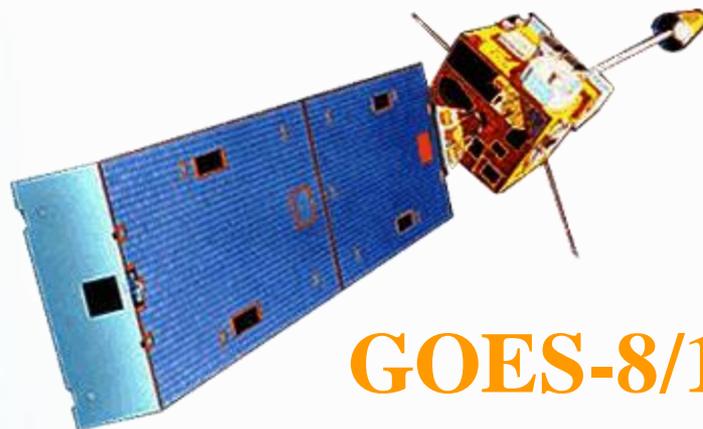
<http://www.oso.noaa.gov/goesstatus>

<i>Payload Instrument</i>	<b>GOES-11 (West) Launch: May 00 Activation: Jun 06</b>	<b>GOES-12 (S. America) Launch: Jul 01 Activation: Apr 03</b>	<b>GOES-13 (East) Launch: May 06 Activation: Apr 10</b>	<b>GOES-14 (Storage) Launch: Jun 09</b>	<b>GOES-15 (Standby) Launch: Mar 10</b>
Imager	G	Y (12)	G	G	G
Sounder	G	Y (3)	G	G	Y (10)
Energetic Particle Sensor (EPS)	G	Y (4)	G	G	Y (11)
Magnetometers	G	G	G	G	G
High Energy Proton and Alpha Detector (HEPAD)	G	G	G	G	G
X-Ray Sensor (XRS)	R (1)	R (5)	R (7)	G	G
Solar X-Ray Imager (SXI)	N/A	R (6)	Y (8)	G	G
<b><i>Spacecraft Subsystems</i></b>					
Telemetry, Command & Control	G	G	G	G	G
Attitude and Orbit Control	G	G	G	G	G
Inclination Control	G	R (9)	G	G	G
Propulsion	G	G	G	G	G
Mechanisms	G	G	G	G	G
Electrical Power	Y (2)	G	G	G	G
Thermal Control	G	G	G	G	G
Communications Payloads	G	G	G	G	G

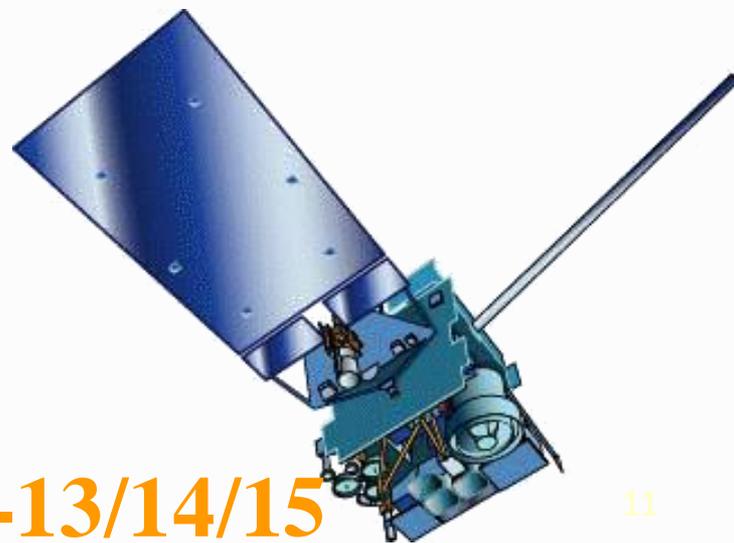
<b>Key</b>
Operational <b>G</b>
Operational with limitations <b>Y</b>
Non-operational <b>R</b>
Not Applicable <b>N/A</b>

# Comparisons of GOES Series

- ✓ GOES-13/14/15 have similar instruments to GOES-8-12, but on a different spacecraft bus.
- ✓ Spring and fall eclipse outages are avoided by larger onboard batteries.
- ✓ Improved navigation
- ✓ Improved radiometrics
- ✓ Starting with GOES-14, all IR channels at 4km resolution at nadir
  - ✓ GOES-14 & GOES-P Imagers have an 8th IR detector



**GOES-8/12**



**GOES-13/14/15**

✓ ***See talk on GOES-ABI at 9:15am!***

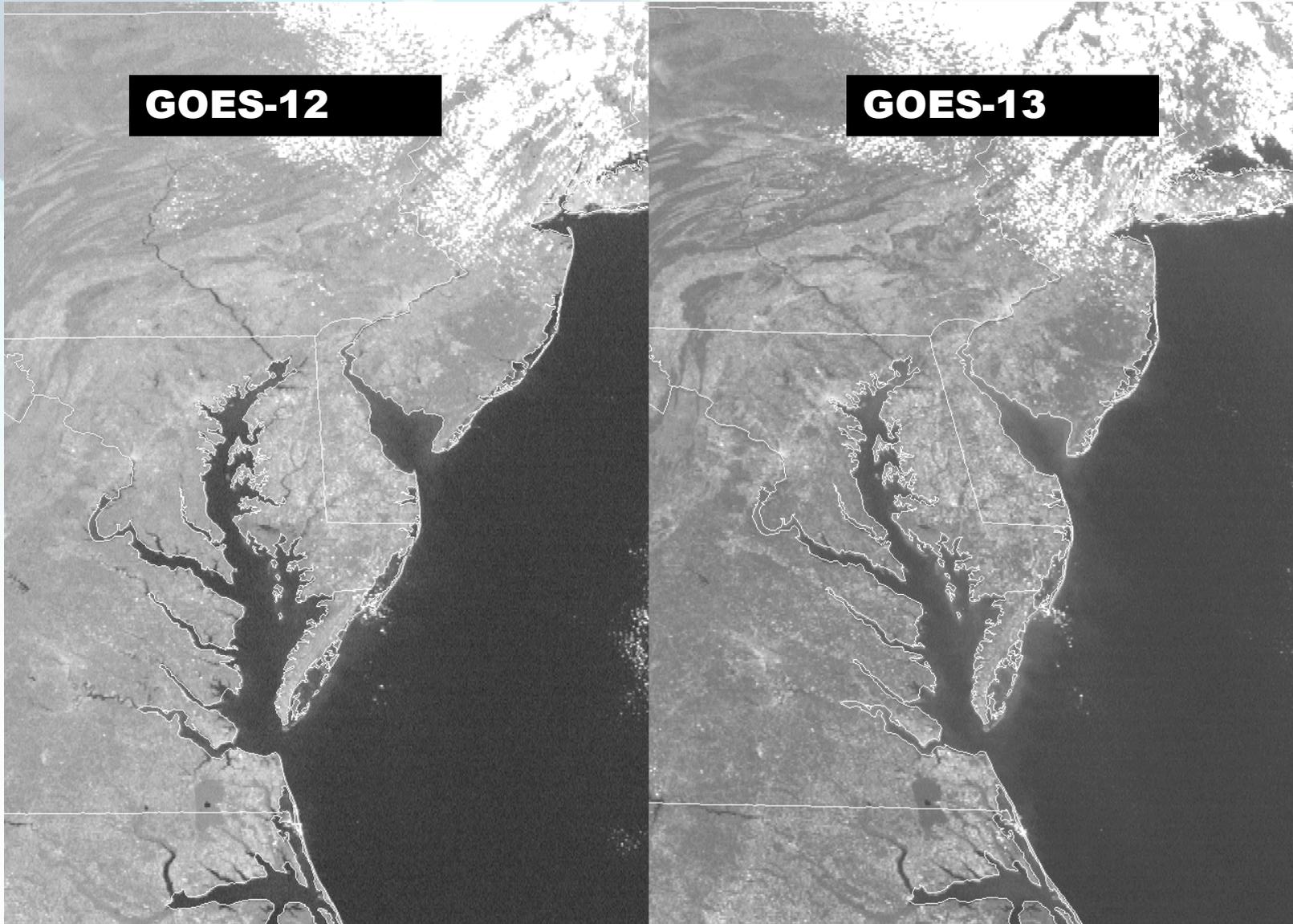


# Changes to GVAR Summary



- **GOES- 8 through 11:**
  - ☑ Instrument Factory Coefficients in Block 0 (GVAR Version 1)
- **GOES- 12 and 13:**
  - ☑ Instrument Factory Coefficients *both* in Block 0 and Block 11 (GVAR Version 2)
- **GOES-14 and 15 (GVAR Version 3):**
  - ☑ The data for the 8<sup>th</sup> detector have been added to block 0
  - ☑ Instrument Factory Coefficients are located in Block 11
  - ☑ Instrument Nadir and Detector Offsets located in Block 11 *but will also be located in Block 0*
    - ☑ Detector Offsets to be located in block 0, words 7933 to 8028
    - ☑ Instrument Nadir to be located in block 0, words 8033 to 8038
- **Published at:**  
[http://www.osd.noaa.gov/GVAR\\_Downloads/gvar\\_downloads.html](http://www.osd.noaa.gov/GVAR_Downloads/gvar_downloads.html)

# GOES-13: Improved Pointing Accuracy



13



## GOES-12

SFC WINDBIKTSJ at 13 UTC on 19 Feb 2010

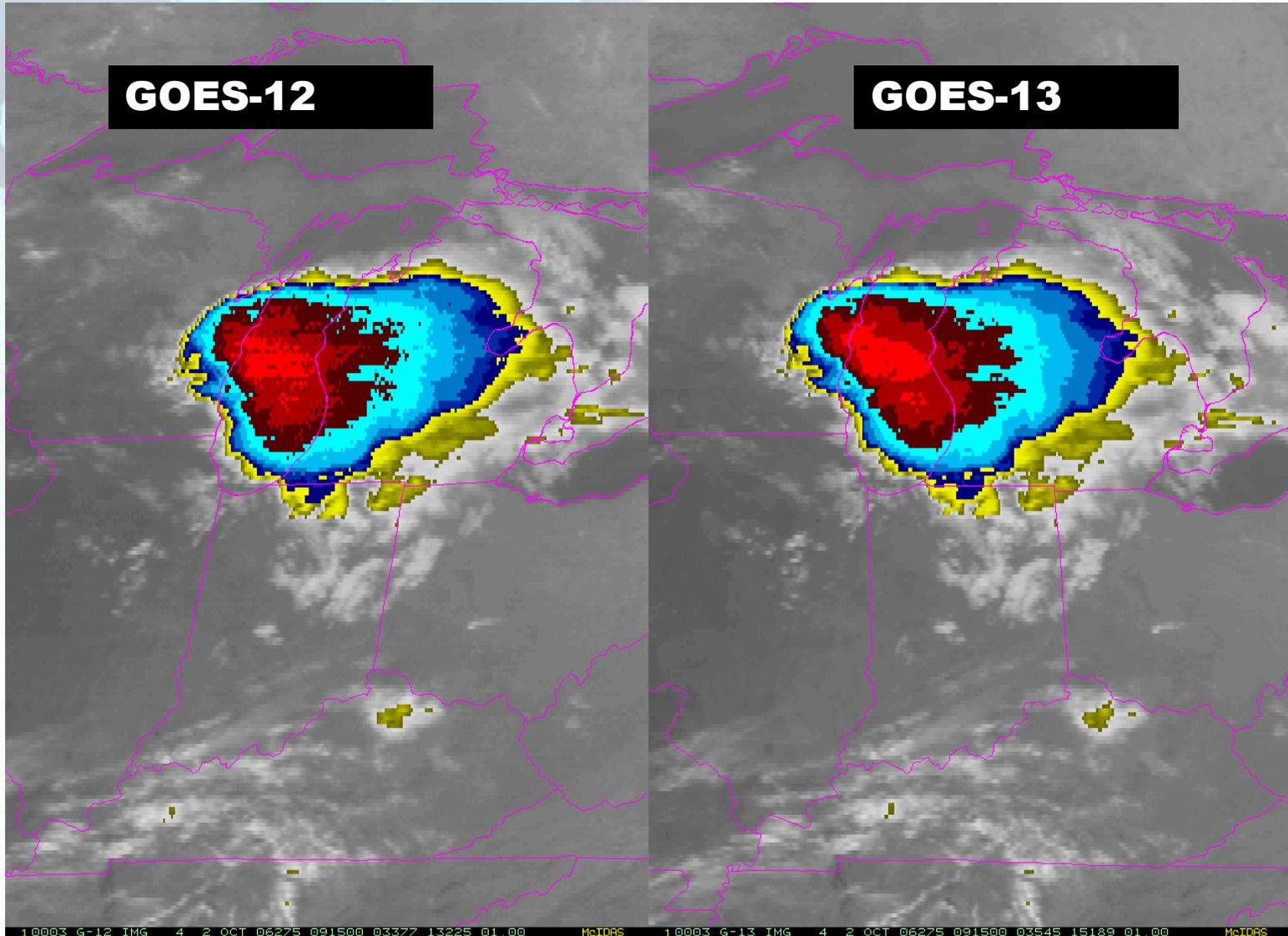
GOES-12 IMAGER - VISIBLE 0.65 (CHANNEL 01) - 13:02 UTC 19 FEBRUARY 2010 - CIMS:3

## GOES-13

SFC WINDBIKTSJ at 19 UTC on 19 Feb 2010

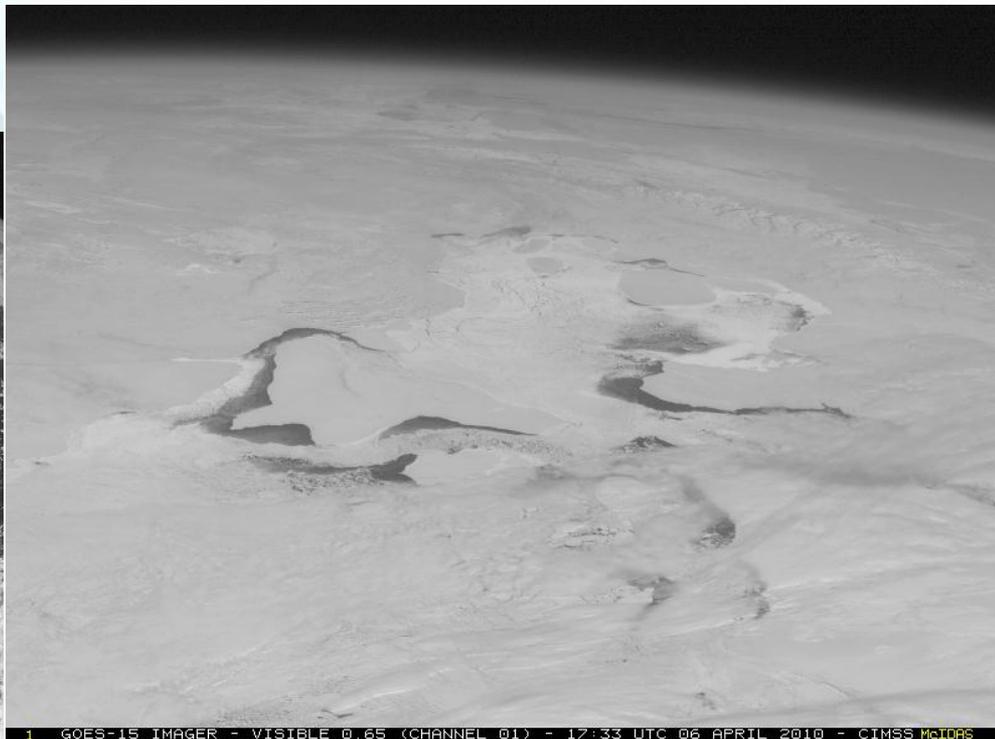
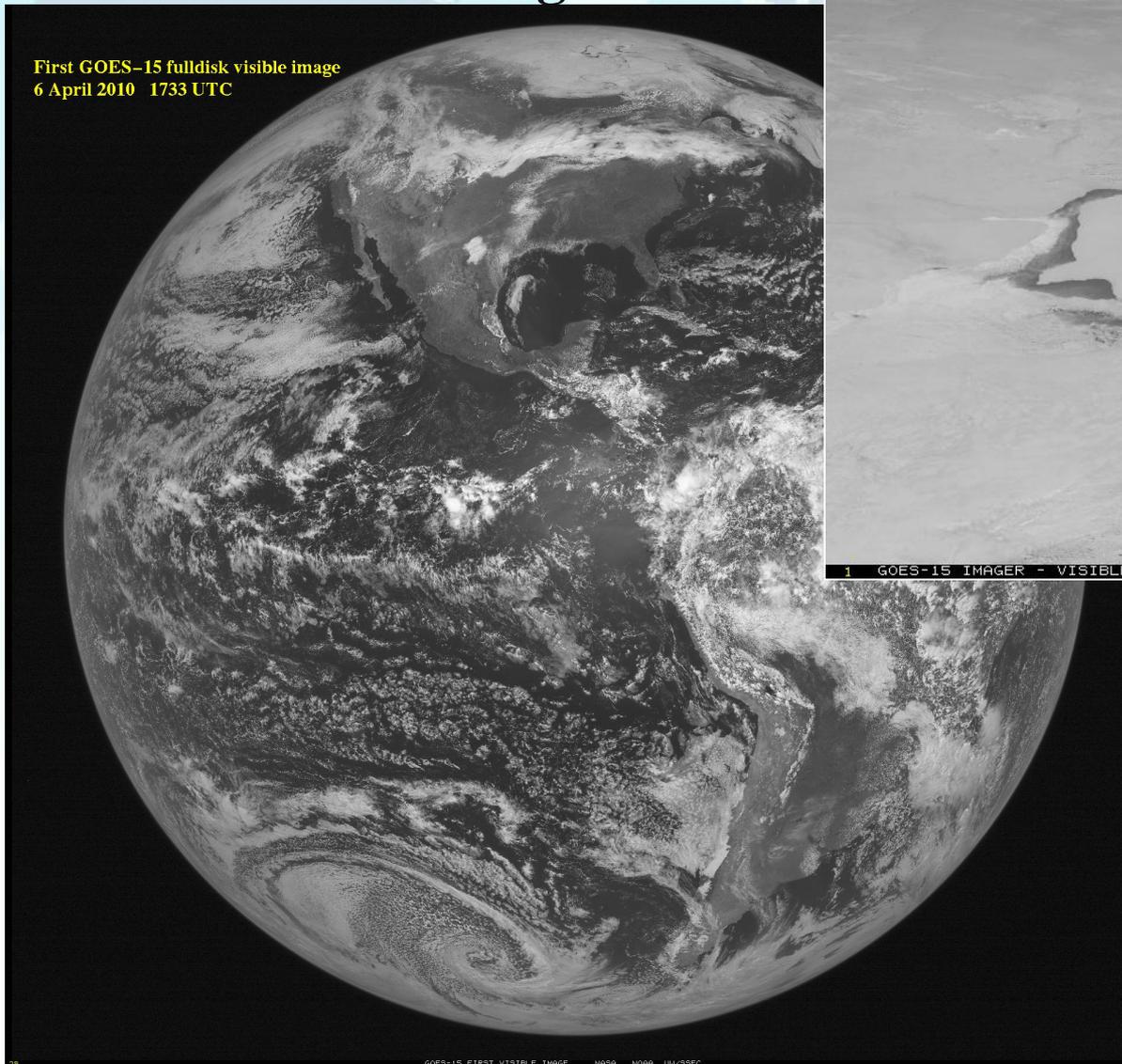
GOES-13 IMAGER - VISIBLE 0.65 (CHANNEL 01) - 13:02 UTC 19 FEBRUARY 2010 - CIMS:3

# GOES-13: Less Thermal Distortion



# First visible image from the GOES-15 Imager

First GOES-15 full-disk visible image  
6 April 2010 1733 UTC

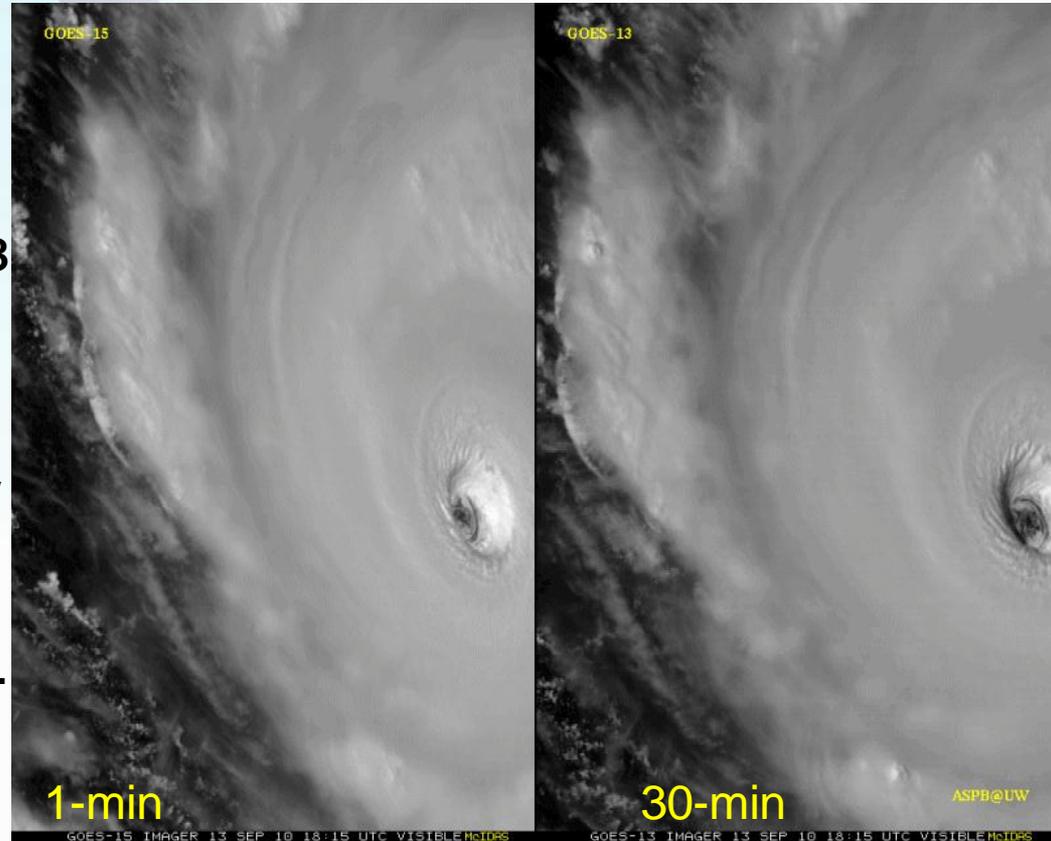


GOES-15 FIRST VISIBLE IMAGE NASA NOAA IM/SECC

# GOES-15 Science Test Summary

<http://rammb.cira.colostate.edu/projects/goes-p/>

- ✓ The Science Test part of Post Launch Testing for GOES-15 occurred in the **summer of 2010**.
- ✓ **Comparisons with AIRS and IASI** have found a bias of Imager bands 3 and 6. This has been mitigated by shifting the Spectral Responses.
- ✓ Unique 1-minute rapid scan imagery acquired
- ✓ GOES-15 data analysis will continue. **All the GVAR data archived.**
- ✓ Many products generated in near real-time.



Unique GOES-15 Imager Visible data from the NOAA Science Test

# Upcoming GOES Activities

- ☑ **GOES West Replacement**

- ☑ **GOES-15**

- ☑ **Date – December 6, 2011**

***DRAFT***

- ☑ **Shifted Frame Support** for GOES-East Fall Eclipse period, similar to this past spring eclipse

- ☑ **Consideration for similar support for GOES-West in the future**

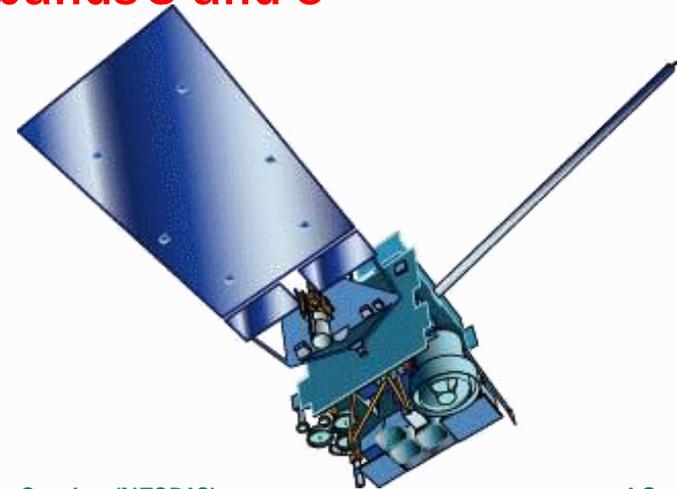
- ☑ **Stray Light Correction** for GOES-N/O/P Series

- ☑ **Contamination of data from stray light largely surrounding equinoxes**

- ☑ **Studies conducted**

# GOES-West Transition

- ☑ Changed (spectrally wider and spatially finer) **WV band** (from GOES-11)
- ☑ **New 13.3 um band** (and no 12 um band on the imager)
- ☑ **Change in GVAR** (to support 4km band 6)
- ☑ GOES-15 needs to be **(yaw) flipped** twice a year.
- ☑ New, recently shifted GOES-15 imager **SRF for bands 3 and 6**



# GOES-West Transition Timeline

**8/22/11**

- GOES-15 began executing GOES-West frames to accommodate advanced user testing of GOES-15 data. Data available to authorized users via McIDAS ADDE from ESPC

**10/17/11**

- Start GOES-15 westward drift from 89.5° W to 135° W, drift rate ~ 0.78 deg/day

**12/01/11**

- Drift rate adjust maneuver

**12/06/11**

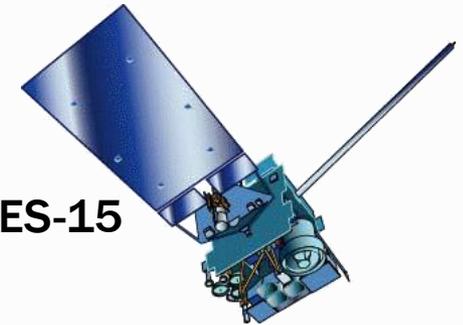
- GOES-15 approaches 129° W; **GOES-15 transition to GOES-West occurs**
- GOES-15 GVAR/LRIT data relayed through GOES-11
- Users do not re-point antenna
- Ancillary COMM services (DCS/EMWIN/SAR) remain on GOES-11

**12/14/11**

- Stop GOES-15 westward drift at 135° W
- GOES-15 GVAR data relayed through GOES-15
- Ancillary COMM services (DCS/EMWIN/SAR) switch to GOES-15

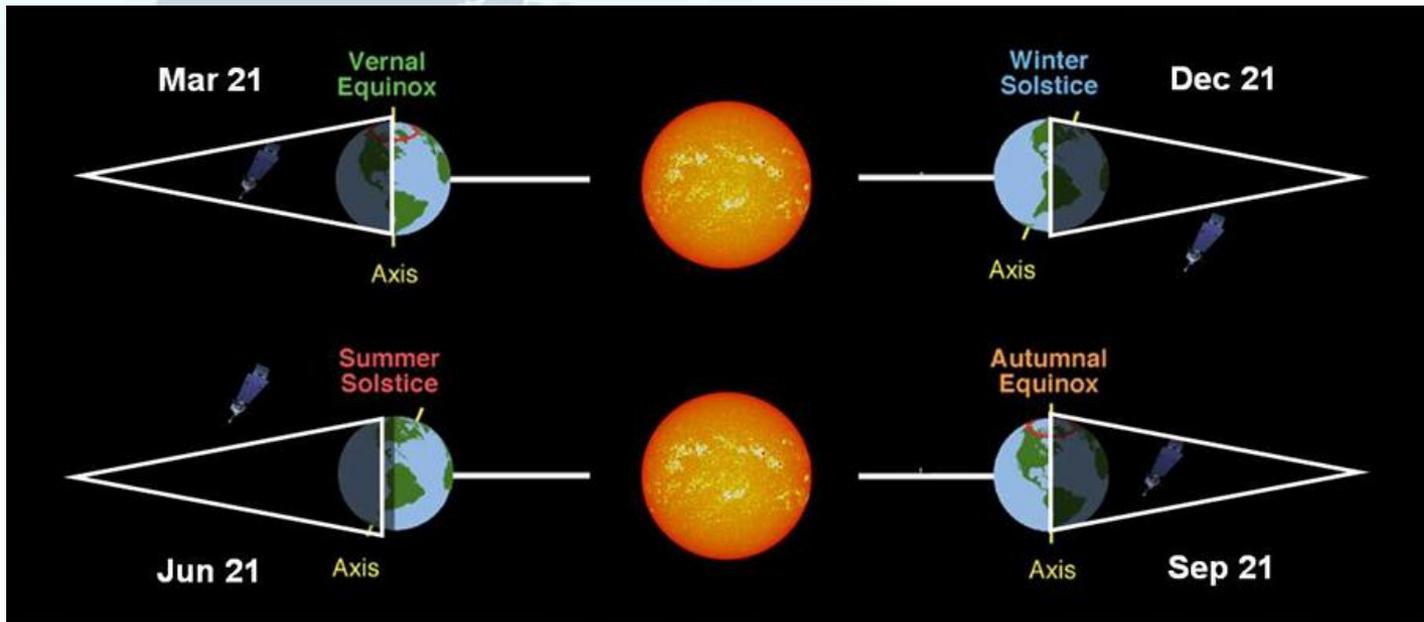
**12/15/11**

- GOES-11 decommission and de-orbit maneuvers**



# Eclipse Season

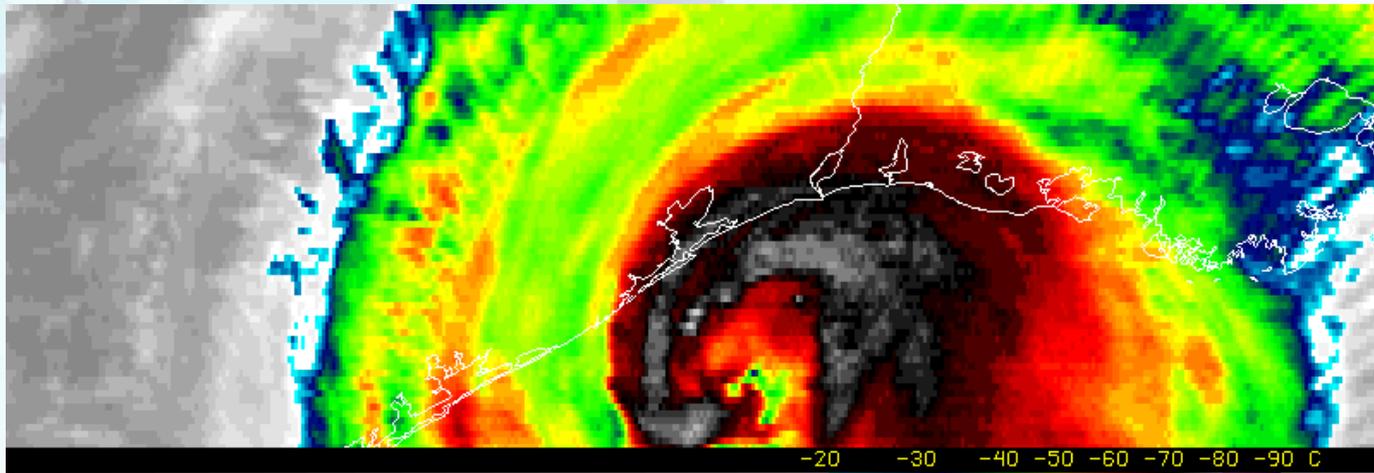
- GOES solar panels are blocked from sunlight up to 72 minutes/day
  - Insufficient power for instruments on GOES I/M series
  - Cannot image for up to 3 hours during daily eclipse on GOES I/M series
- Midwest thunderstorm occur during Vernal Equinox
- Hurricane season occurs during Autumnal Equinox period



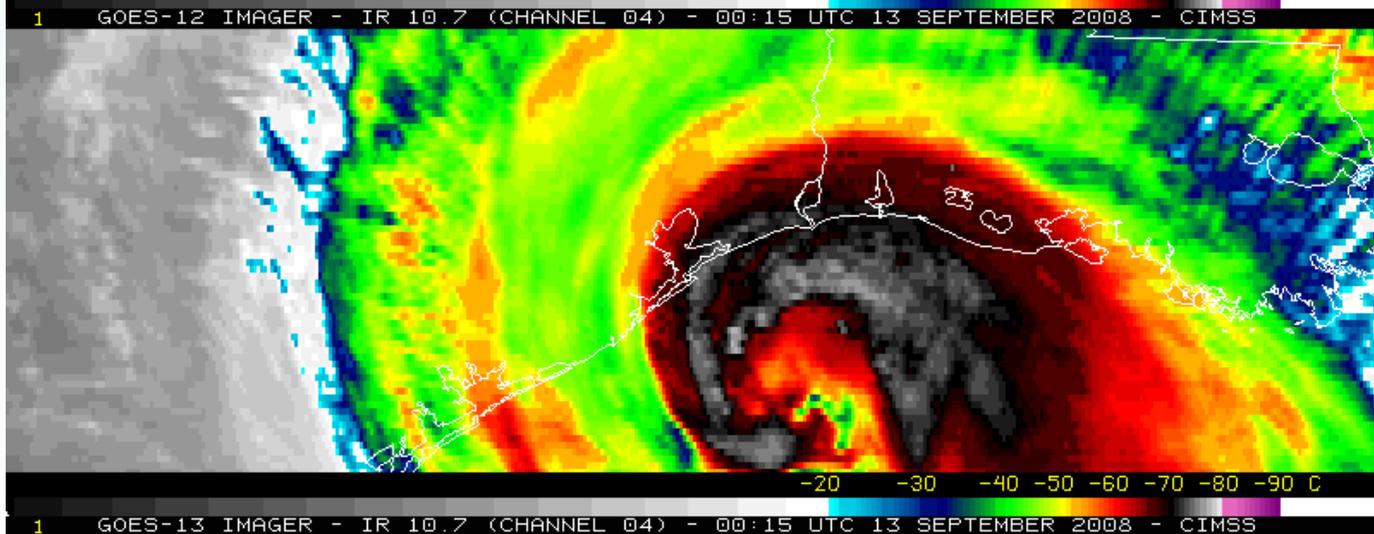
<http://www.ssd.noaa.gov/PS/SATS/eclipse.html>

# GOES-12/13 (During eclipse)

**GOES-12**



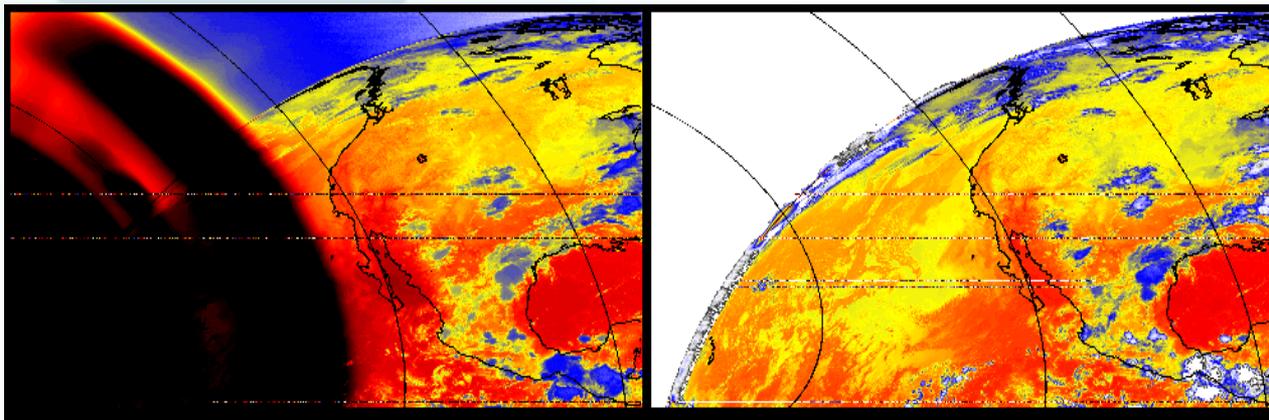
**GOES-13**





# Stray Light Updates

- ☑ GOES-13/14/15 imagers and sounders are capable of scanning the sun without health and safety issues. However, NOAA has to cancel or replace all imaging within 6 degrees due to intolerable sun intrusion.
- ☑ **Annual loss: Equivalent to 6 days of imaging.**
- ☑ The sun intrusion is more detectable on shorter wavelength IR channels (especially Channel 2) of the imager with the effect increasing as the scan mirror line-of-sight (LOS) gets closer to the sun.
- ☑ NOAA and ITT Industries have characterized the effect of the sun intrusion and developed a correction algorithm to claim >95% of lost images.

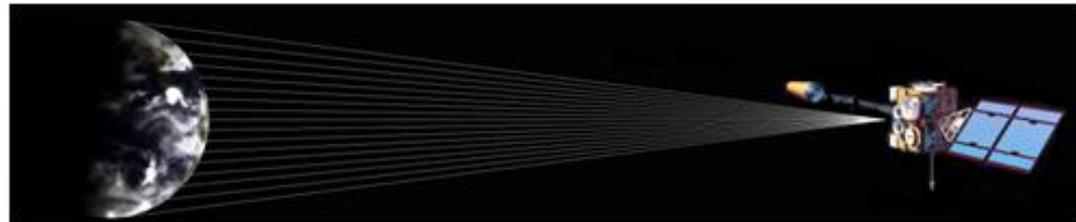
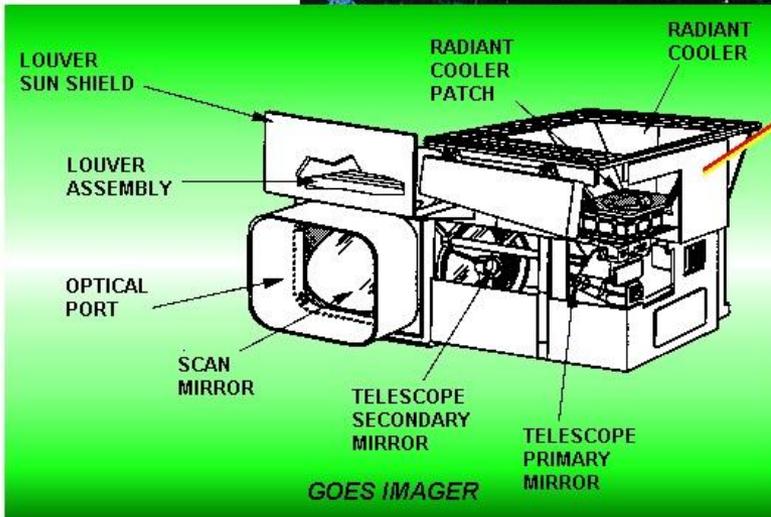
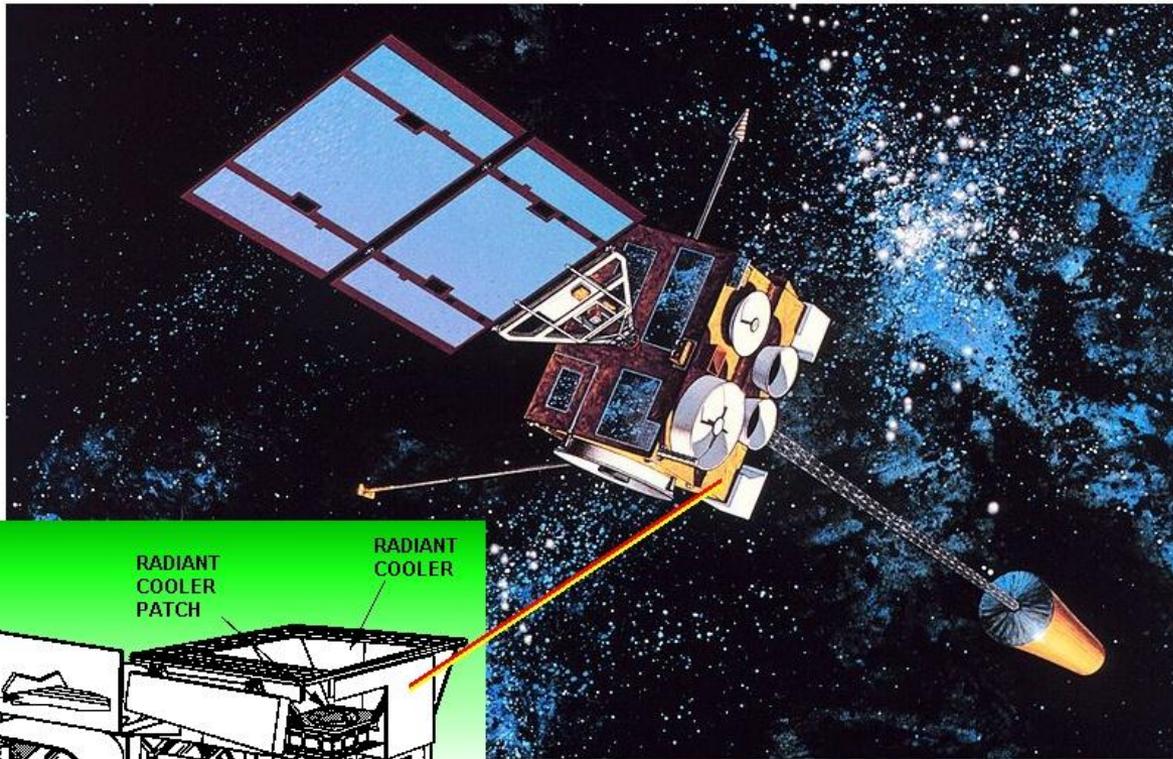


Slide Credit: Hyre Bysal & Tim Schmit, NESDIS

**Stray light data for testing are available on NOAA FTP site and SSEC McIDAS ADDE servers**

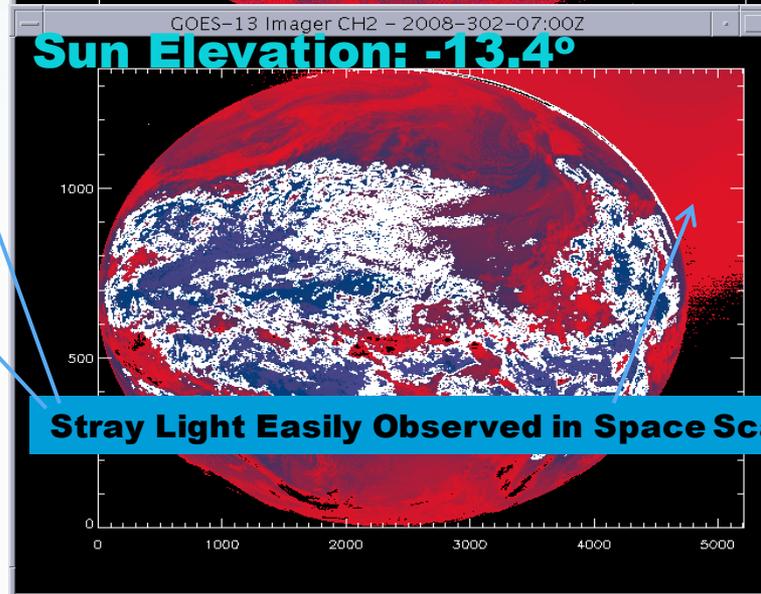
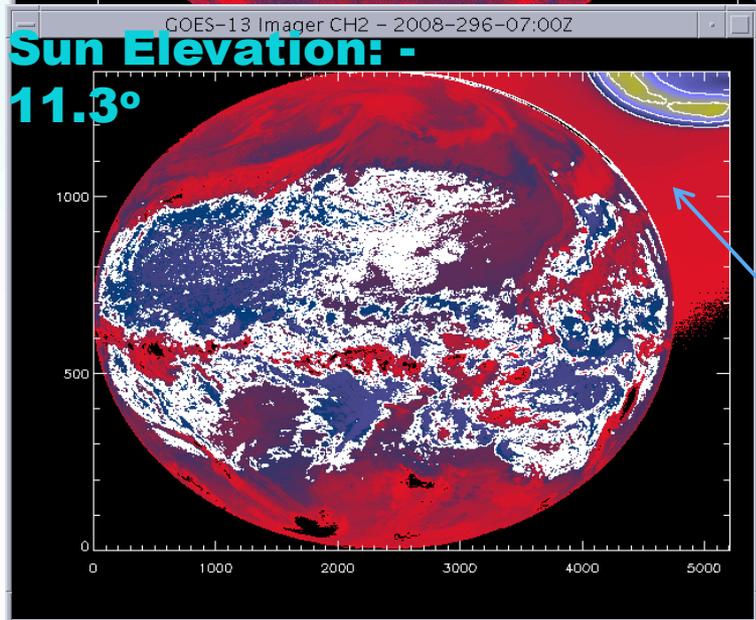
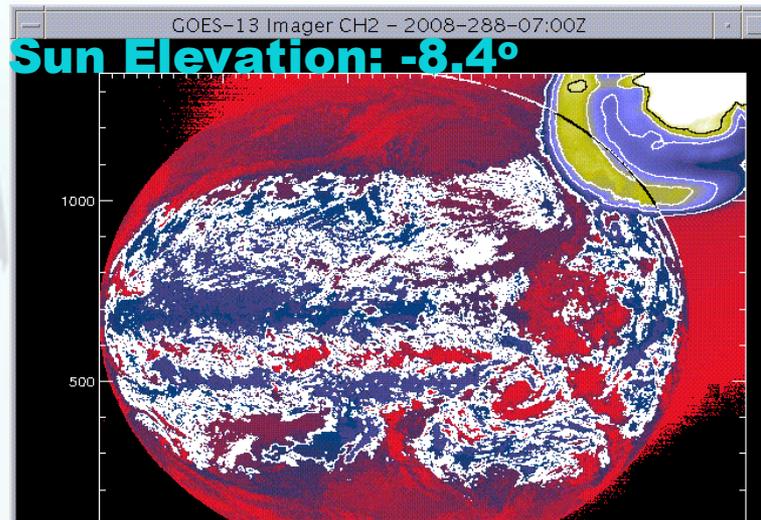
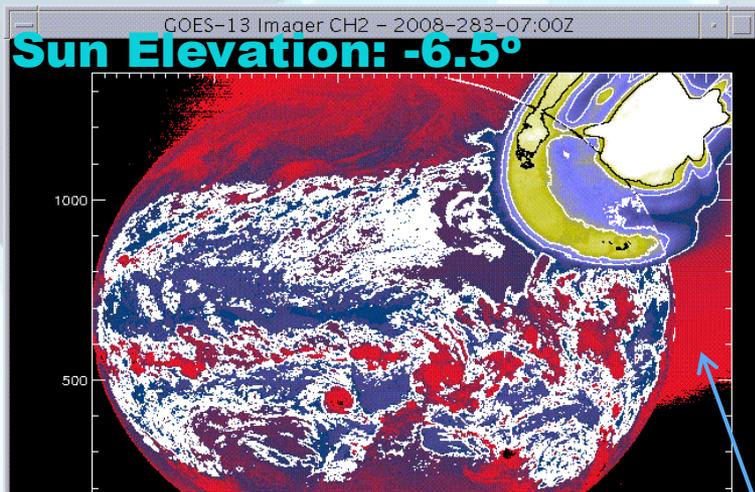
# ITT GOES Imagers scan Earth from Geo Orbit (in Visible, 3.9 $\mu$ m, 6.5 $\mu$ m, 10.8 $\mu$ m & 13.3 $\mu$ m bands)

**ITT re-designed imager to withstand direct views of the sun**

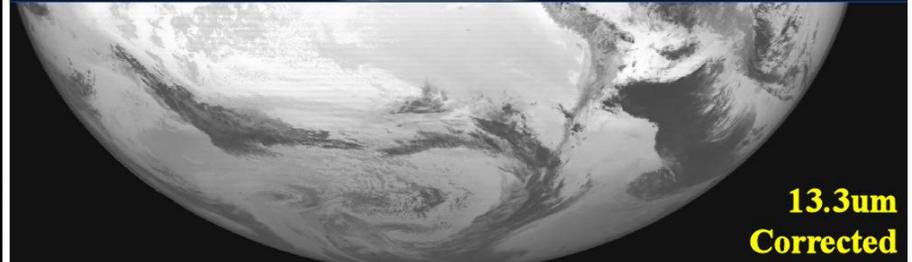
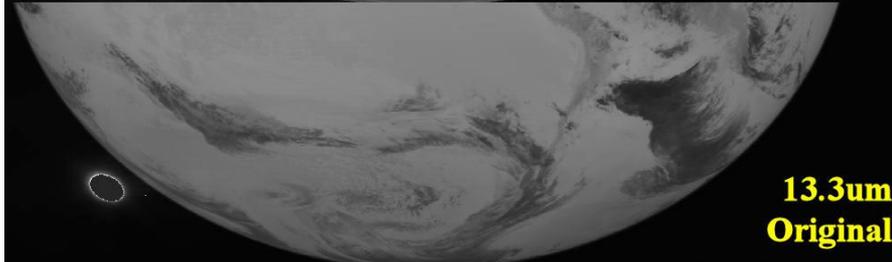
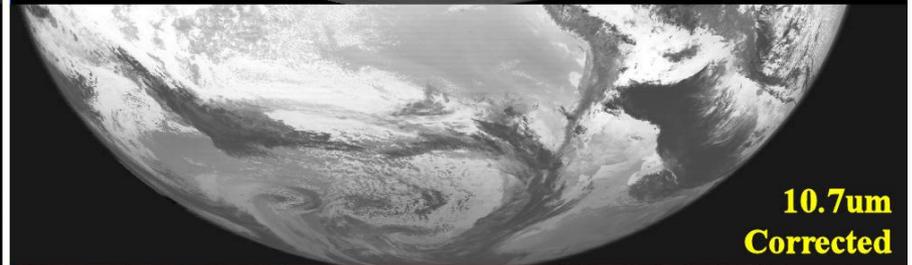
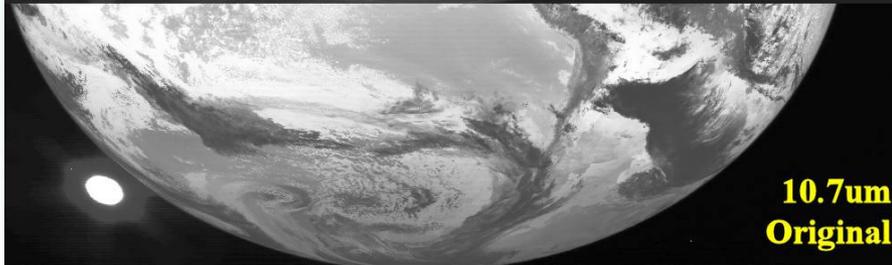
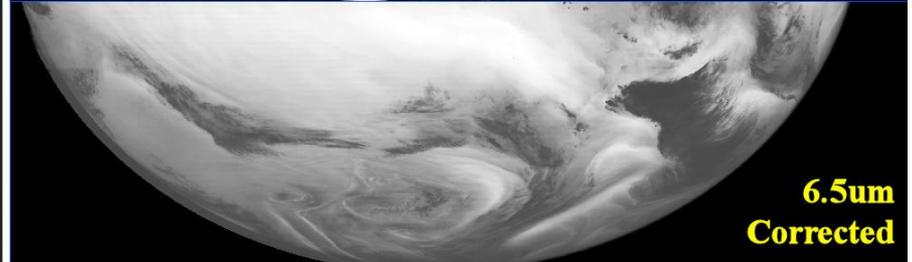
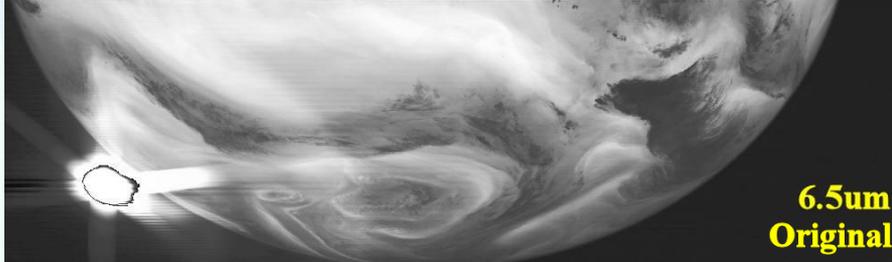
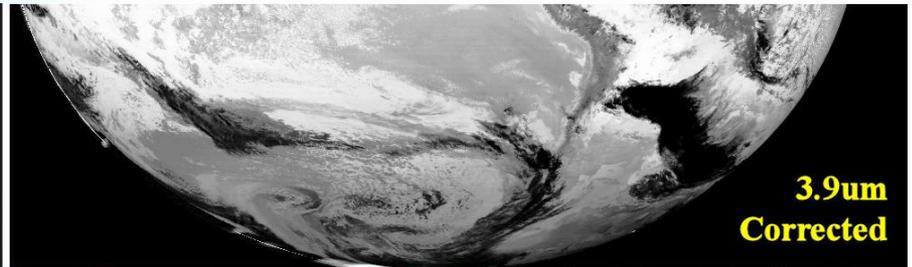
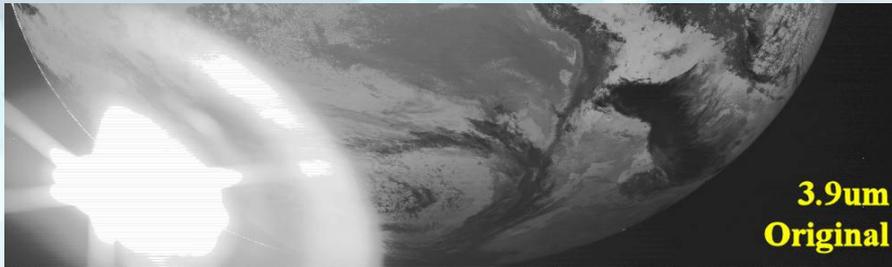


*For a complete description of this instrument, refer to the instructions on the Title Page of this page.*

# 07:00-Full Disk During 20 Days (7 deg. Sun movement)



# Results for all Channels corrected 1° from Sun



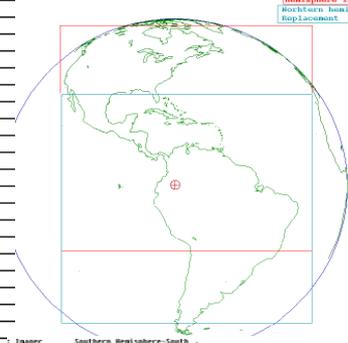
***See poster 4.10 on stray light***

ROUTINE	~0345Z	NHEM	CONUS	SHE	Time	NHEM	CONUS	SHEM	FUI	~0645Z					
IMAGER	04:06:30	04:14:10	04:30:00	04:36:30	04:44:10	05:00:00	05:06:30	05:14:10	05:30:00	05:36:30	05:44:10	06:11:00	06:30:00	06:36:30	06:44:10

**Aug 13**

Extra data scanned in South region (blue box)

228	081600					KOZ									
229	081700					KOZ									
230	081800					KOZ									
231	081900					KOZ									
232	082000					KOZ									
233	082100					KOZ									
234	082200					KOZ									
235	082300					KOZ									
236	082400					KOZ									
237	082500					KOZ									
238	082600					KOZ									
239	082700					KOZ									
240	082800					KOZ									
241	082900					KOZ									
242	083000					KOZ									
243	083100					KOZ									
244	083200					ECL									
245	083300					ECL									
246	083400					ECL									
247	083500					ECL									
248	083600					ECL									
249	083700					ECL									
250	083800					ECL									
251	083900					ECL									
252	084000					ECL									
253	084100					ECL									
254	084200					ECL									
255	084300					ECL									
256	084400					ECL									
257	084500					ECL									
258	084600					ECL									
259	084700					ECL									
260	084800					ECL									
261	084900					ECL									
262	085000					ECL									
263	085100					ECL									



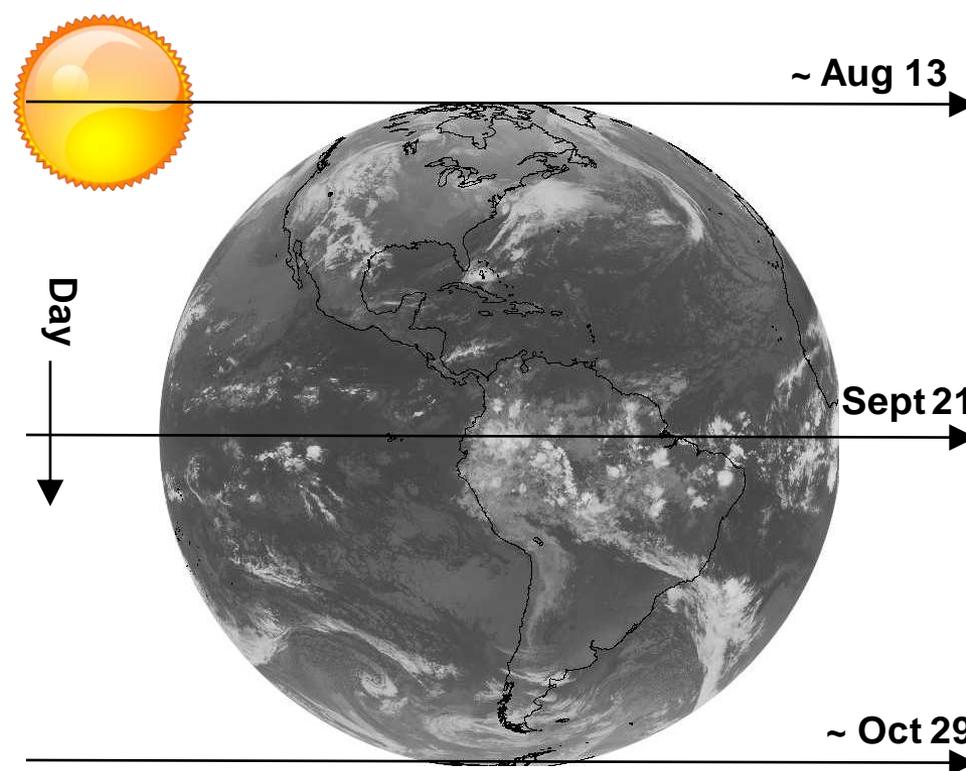
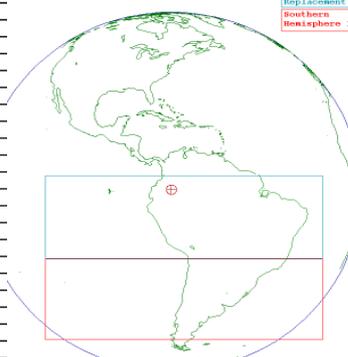
<http://www.ssd.noaa.gov/PS/SATS/eclipse.html>  
<http://www.ssd.noaa.gov/PS/SATS/GOES/EAST/sched.html>  
<http://www.ssd.noaa.gov/PS/SATS/GOES/WEST/sched.html>

# Fall Eclipse

**Sept 21**

Extra data scanned in North region (blue box)

268	092400														
269	092500														
270	092600														
271	092700														
272	092800														
273	092900														
274	093000														
275	093100														
276	093200														
277	093300														
278	093400														
279	093500														
280	093600														
281	093700														
282	093800														
283	093900														
284	094000														
285	094100														
286	094200														
287	094300														
288	094400														
289	094500														
290	094600														
291	094700														
292	094800														
293	094900														
294	095000														
295	095100														
296	095200														
297	095300														
298	095400														
299	095500														
300	095600														



~0345Z                      Time                      ~0645Z

Not to scale

# Eclipse Schedule

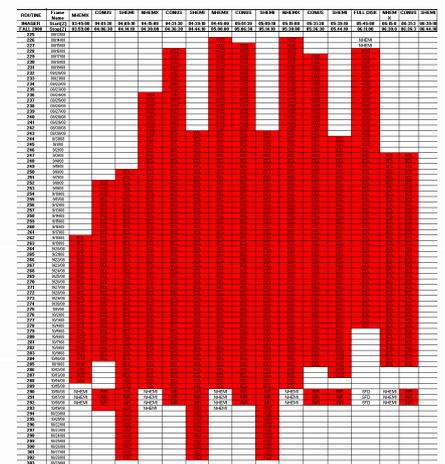
<http://www.ssd.noaa.gov/PS/SATS/eclipse.html>

GOES-13	Frame Name	NHEM-X	CONUS	SHEM-I	NHEM-X	CONUS	SHEM-I	NHEM-X	CONUS	SHEM-I	NHEM-X	CONUS	SHEM-I	FULL DISK W	NHEM-X	CONUS
ROUTINE	Start/End															
IMAGER	03:45:00	04:01:30	04:09:10	04:15:00	04:31:30	04:39:10	04:45:00	05:01:30	05:09:10	05:15:00	05:31:30	05:39:10	05:45:00	06:15:00	06:31:30	
FALL 2011	Stop/2	03:59:16	04:06:20	04:13:45	04:29:16	04:36:20	04:43:45	04:59:16	05:06:20	05:13:45	05:29:16	05:36:20	05:43:45	06:11:10	06:29:16	06:36:20
225	08:13:11													FULL DISK W-S		
226	08:14:11													FULL DISK W-S		
227	08:15:11													FULL DISK W-S		
228	08:16:11							NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
229	08:17:11							NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
230	08:18:11					CONUS-S		NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
231	08:19:11					CONUS-S		NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
232	08:20:11					CONUS-S		NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
233	08:21:11					CONUS-S		NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
234	08:22:11					CONUS-S		NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
235	08:23:11					CONUS-S		NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
236	08:24:11					CONUS-S		NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
237	08:25:11					CONUS-S		NHEM-X-S	CONUS-S		NHEM-X-S			FULL DISK W-S		
238	08:26:11							NHEM-X-S	SLZ		SLZ			FULL DISK W-S		
239	08:27:11							NHEM-X-S	SLZ		SLZ	CONUS-S		FULL DISK W-S		
240	08:28:11							NHEM-X-S	SLZ		SLZ	CONUS-S		SLZ		
241	08:29:11							NHEM-X-S	SLZ		SLZ	CONUS-S		SLZ		
242	08:30:11							NHEM-X-S	SLZ		SLZ	CONUS-S		SLZ		
243	08:31:11							NHEM-X-S	SLZ		SLZ	CONUS-S		SLZ		
244	09:01:11							NHEM-X-S	SLZ		SLZ	CONUS-S		SLZ		
245	09:02:11							NHEM-X-S	SLZ		SLZ	CONUS-S		SLZ		
246	09:03:11							SLZ	SLZ		SHEM-I X 3			SLZ		
247	09:04:11							SLZ	SLZ		Frame 1 X 2			SLZ		
248	09:05:11							SLZ	SLZ		NHEM-X-S			SLZ		
249	09:06:11							SLZ	SLZ		NHEM-X-S			SLZ		
250	09:07:11							SLZ	SHEM-I		NHEM-X-S			SLZ		
251	09:08:11							SLZ	SHEM-I		NHEM-X-S			SLZ		
252	09:09:11							SLZ	SHEM-I		NHEM-X-S			SLZ		
253	09:10:11							SLZ	SHEM-I		NHEM-X-S			SLZ		
254	09:11:11							SLZ	SHEM-I		NHEM-X-S			SLZ		
255	09:12:11							CONUS-S X 3						SLZ		
256	09:13:11							Frame 1 X 3						SLZ		
257	09:14:11							CONUS-S X 3						SLZ		
258	09:15:11							Frame 1 X 3						SLZ		
259	09:16:11							CONUS-S X 3						SLZ		
260	09:17:11							Frame 1 X 3						SLZ		
261	09:18:11							CONUS-S X 3						SLZ		
262	09:19:11							Frame 1 X 3						SLZ		
263	09:20:11							CONUS-S X 3						SLZ		
264	09:21:11							Frame 1 X 3						SLZ		
265	09:22:11							CONUS-S X 3						SLZ		
266	09:23:11							Frame 1 X 3						SLZ		
267	09:24:11							CONUS-S X 3						SLZ		
268	09:25:11							Frame 1 X 3						SLZ		
269	09:26:11							CONUS-S X 3						SLZ		
270	09:27:11							Frame 1 X 3						SLZ		
271	09:28:11							CONUS-S X 3						SLZ		
272	09:29:11							Frame 1 X 3						SLZ		
273	09:30:11							CONUS-S X 3						SLZ		
274	10:01:11							Frame 6 X 3						SLZ		
275	10:02:11							SHEM-I X 3						SLZ		
276	10:03:11							Frame 6 X 3						SHEM-I-N		
277	10:04:11							SHEM-I X 3						SHEM-I-N		
278	10:05:11							Frame 6 X 3						SHEM-I-N		
279	10:06:11							SHEM-I X 3						SHEM-I-N		
280	10:07:11							Frame 6 X 3						SHEM-I-N		
281	10:08:11							SHEM-I X 3						SHEM-I-N		
282	10:09:11							Frame 6 X 3						SHEM-I-N		
283	10:10:11							SHEM-I X 3						SHEM-I-N		
284	10:11:11							Frame 6 X 3						SHEM-I-N		
285	10:12:11							SHEM-I X 3						SHEM-I-N		
286	10:13:11							Frame 6 X 3						SHEM-I-N		
287	10:14:11							SHEM-I X 3						SHEM-I-N		
288	10:15:11							FRAME 0						SHEM-I		
289	10:16:11							FRAME 5						SHEM-I		
290	10:17:11							FRAME 0						SHEM-I		
291	10:18:11							FRAME 5						SHEM-I		
292	10:19:11							FRAME 0						SHEM-I		
293	10:20:11							FRAME 5						SHEM-I		
294	10:21:11							FRAME 0						SHEM-I		
295	10:22:11							FRAME 5						SHEM-I		
296	10:23:11							FRAME 0						SHEM-I		
297	10:24:11							FRAME 5						SHEM-I		
298	10:25:11							FRAME 0						SHEM-I		
299	10:26:11							FRAME 5						SHEM-I		
300	10:27:11							FRAME 0						SHEM-I		
301	10:28:11							FRAME 5						SHEM-I		
302	10:29:11							FRAME 0						SHEM-I		
303	10:30:11							FRAME 5						SHEM-I		

**LEGEND**

NHEM-X-S	N Hemisphere Extended shifted south
CONUS-S	CONUS shifted south
FULL DISK W-N	Full Disk clipped at the bottom
FULL DISK W-S	Full Disk clipped at the top
SHEM-I-N	S Hemisphere shifted north
SHEM-I-X	Stray Light characterization frames
SLZ	Frame canceled due to Stray Light Zone

- Eclipse periods avoided on GOES N/O/P
- Shifted Frames used in support of former Keep Out Zone areas
- Both result in extra data for users!

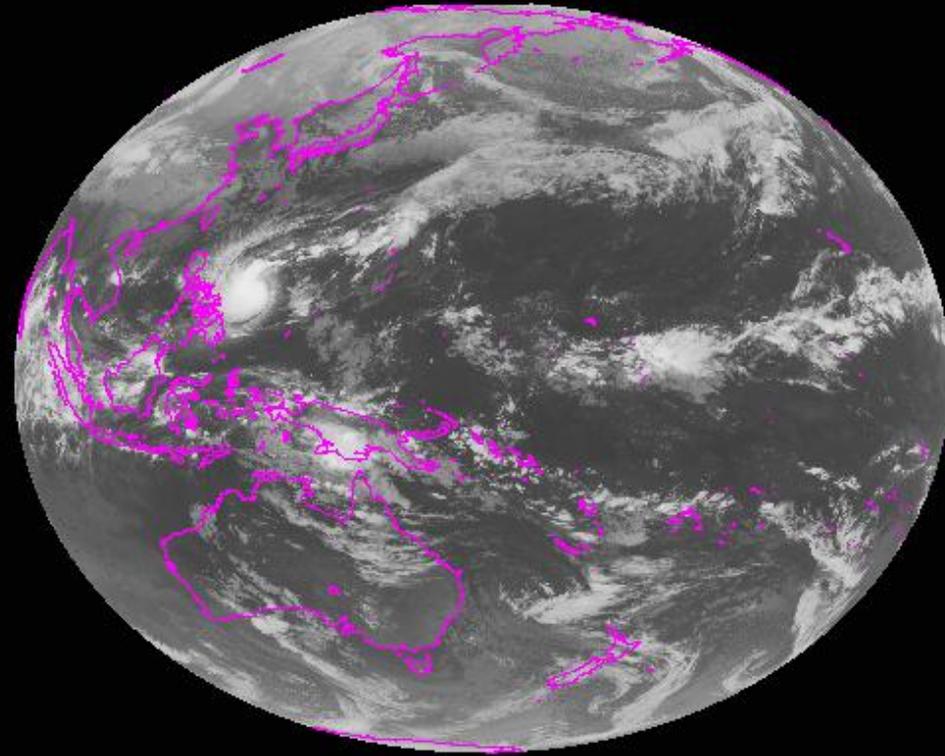
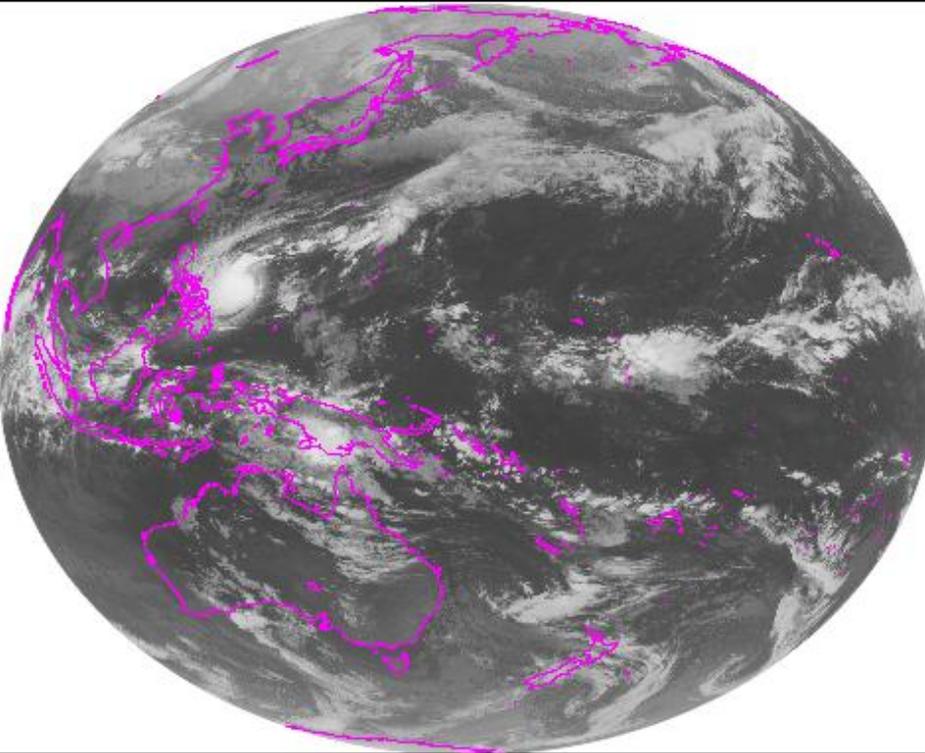


# GOES-12 Extended GOES High Inclination (XGOHI)

- ✔ Apparent earth 'wobble' is removed prior to distribution.
- ✔ Good navigation with XGOHI data.
- ✔ Process is not reversible.
  
- ✔ **GOES-12 XGOHI** operations will start on **November 14** at around 1915 UTC.
- ✔ **GOES-12 inclination will reach 1.75 deg** on November 14. We plan to have several tests prior to November.
- ✔ Users don't have to do anything to get the GOES-12 XGOHI (GVAR) data. There's a minimal delay in getting the data and the data are remapped.
- ✔ Performed successfully with GOES-10
- ✔ <http://www.ssd.noaa.gov/PS/SATS/GOES/SA/>
- ✔ <http://cimss.ssec.wisc.edu/goes/rt/goessa.php>

# Why XGOHI?

UW/SSEC NOAA/ASPB

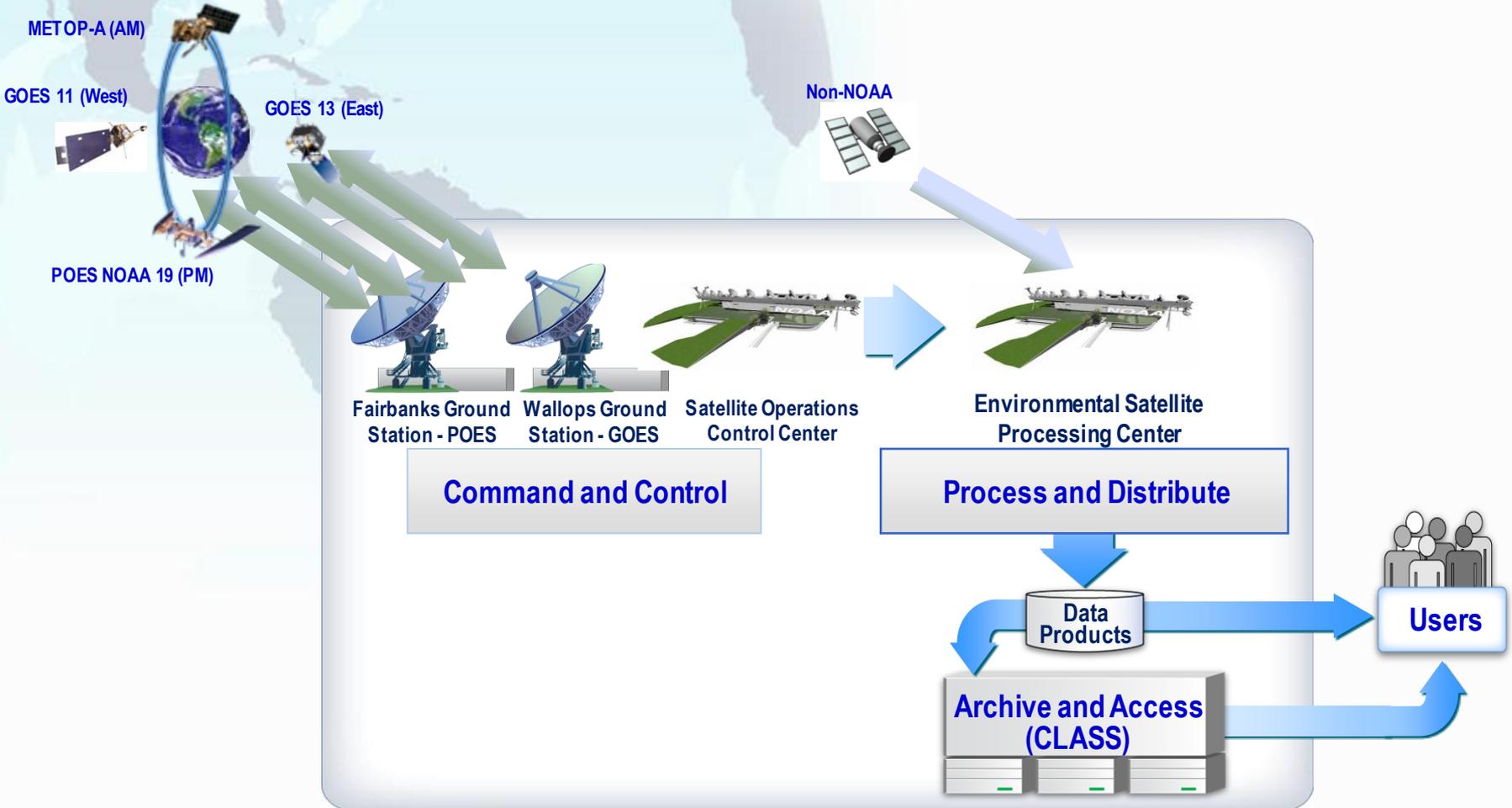


GOES-9 IMAGER 16 NOV 05 18:25Z ORG. PROJECTION

GOES-9 IMAGER 16 NOV 05 18:25Z REMAPPED PROJECTION

**GOES-9 High Inclination Movie (Inclination of approximately 1.8 degrees)**

# Satellite Information Flow



# Mission Operations: Command and Control

## 24-hour Operations for GOES and Polar Systems

- **Functions include:**
  - ✔ Orbit Determination
  - ✔ Spacecraft Navigation
  - ✔ Data Acquisition
  - ✔ Engineering
  - ✔ Commanding GOES to perform special image acquisition
    - ✔ “Rapid scan” of a hurricane or major storm
  - ✔ 24-hour mission control center for search and rescue



<http://www.ospo.noaa.gov/>

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

# Satellite Products and Services

24-hour Operational Support for Severe Weather and Environmental Forecasting  
Near-Real-Time Products For the User

## • Sample of Operational Products

- ✓ Atmospheric Temperature and Moisture Profiles
- ✓ Winds
- ✓ Fire Detection
- ✓ Gridded Images of Clouds and Moisture
- ✓ Vegetation Index
- ✓ Measure Solar Radiation
- ✓ Volcanic Detection
- ✓ Sea Surface Temperature
- ✓ Snow and Ice Cover



<http://www.ospo.noaa.gov/>

## • Environmental Monitoring

- ✓ Ozone Data and Products
- ✓ Oil Spill

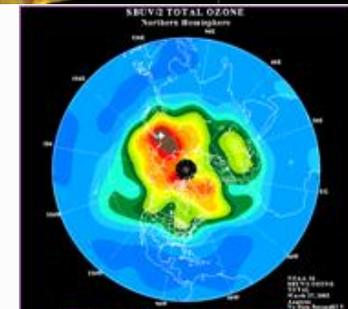
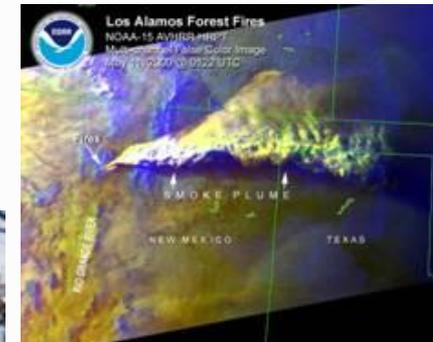
<http://www.osdpd.noaa.gov/>

## • Distribution Services

- ✓ Distribution of NOAA satellite data sets via satellite rebroadcasting and other communications means
- ✓ NOAA uses data from NASA, DoD, and European satellites

## • User Services

- ✓ Interface between NESDIS and the user community.
- ✓ Manages the directservices (DCS, Argos) and the Search and Rescue system (SARSAT)



# Data Access & Distribution Policy

Contact: [NESDIS.data.access@noaa.gov](mailto:NESDIS.data.access@noaa.gov)

NOAA OFFICE OF SATELLITE AND PRODUCT OPERATIONS  
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE

ORGANIZATION SERVICES PRODUCTS OPERATIONS Search

OSPO Mission & Strategy  
» International Agreements  
» POES Current  
» GOES Current

History  
» History in Images  
» POES History  
» GOES History

OSPO Information  
» **Access and Distribution Policy**  
» Organization Chart  
» Disclaimer  
» Web Linking Policy  
» Use of Data and Products  
» FAQs: Imagery

Office of Satellite Operations:  
[www.oso.noaa.gov](http://www.oso.noaa.gov)

Office of Satellite Data Processing and Distribution:  
[www.osdpd.noaa.gov](http://www.osdpd.noaa.gov)

Operations Reports:  
[GOES](#) | [POES](#) | [Bulletins](#)  
[OSO Morning Report](#)

Product Areas:  
[Atmosphere](#) | [Land](#) | [Ocean](#)  
[Hazards](#) | [Satellite Imagery](#)

Satellites:  
[Services](#) | [Information](#)  
[History](#)

[Access and Distribution Policy](#)

» Satellite Imagery Products

NOAA Photo Library

GOES Geostationary Operational Environmental Satellites

POES Polar Operational Environmental Satellite

follow us on [twitter](#)

OSO Contact | OSDPD Contact | Contact Webmaster  
[weather.gov](#) | [NOAA Privacy Policy](#) | [USA.gov](#) | [Ready.gov](#)  
Page updated on September 29, 2011.

- ☑ To consistently vet user requests for near real-time satellite data and products based on organizational affiliation or type of application
- ☑ To effectively manage data **distribution resources** to ensure effective system performance
- ☑ To be in compliance with policy, procedures and required **interconnection agreements** with NIST/DOC IT security regulations
- ☑ To factor ESPC **IT system planning** and future distribution resource availability and capacity needs into data access decisions

New Site: <http://www.ospo.noaa.gov>

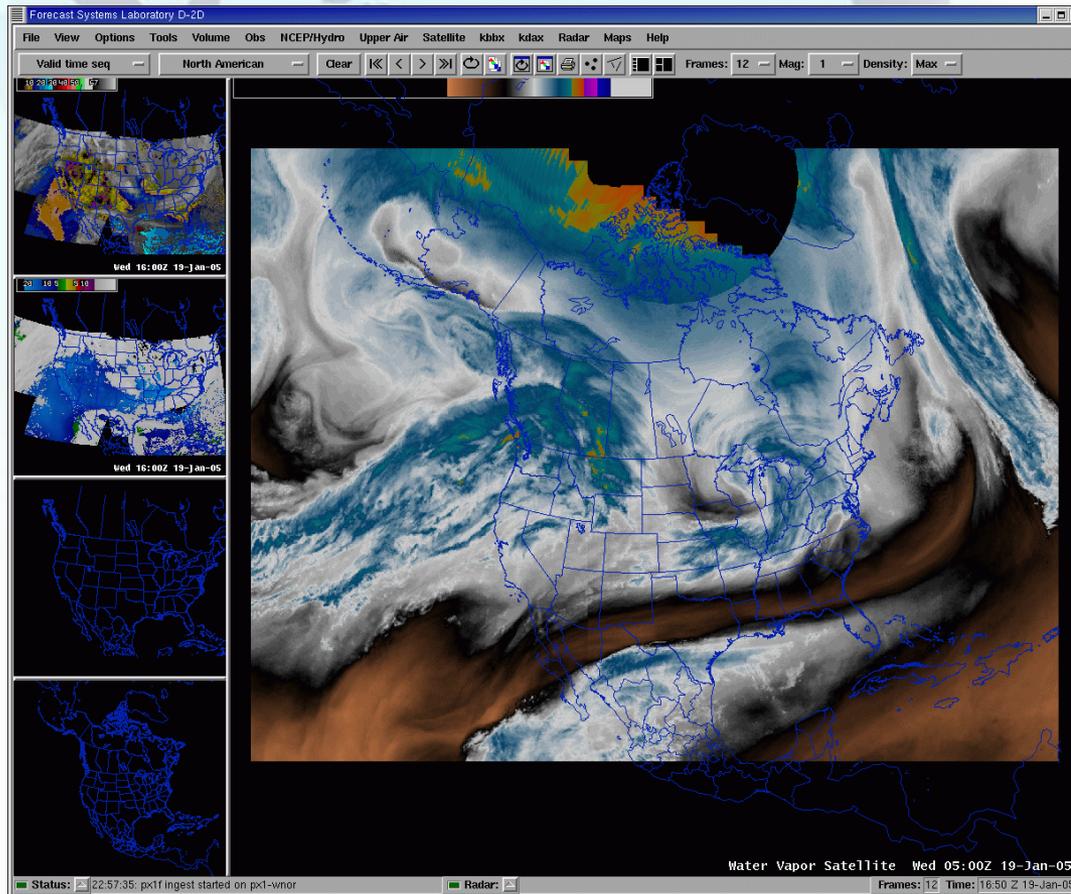
# GOES Data Delivery Summary

- Broadcast Services – GVAR, LRIT
- Various Websites
- GINI / NOAAPORT – for AWIPS display
- DDS – mostly polar data and products, some GOES derived products
- SATEPSDIST
  - Geostationary satellite data is ingested on a Satellite Data Ingestor (SDI), converted to McIDAS format and placed on a server. This data can then be transferred to the various workstations via McIDAS ADDE software

 <u>Data</u>	<u>NSOF Server</u>	<u>ADDE Name</u>
 Derived Products	SATEPSDIST1e	DPD
 GOES-E	SATEPSDIST2e	GER
 GOES-W	SATEPSDIST3e	GWR
 Polar	SATEPSDIST4e	PLR
 MSG/MET	SATEPSDIST6e	MSG / MET
 MTSAT	SATEPSDIST7e	MTS

# Satellite Imagery to National Weather Service

<http://www.nws.noaa.gov/om/ord/iob/NOAAPORT/index.shtml>



## AWIPS Display

Used at:

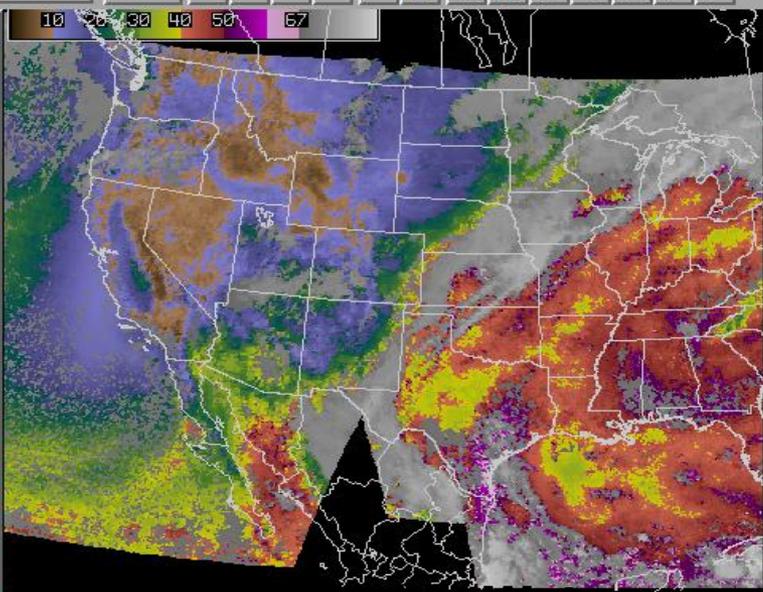
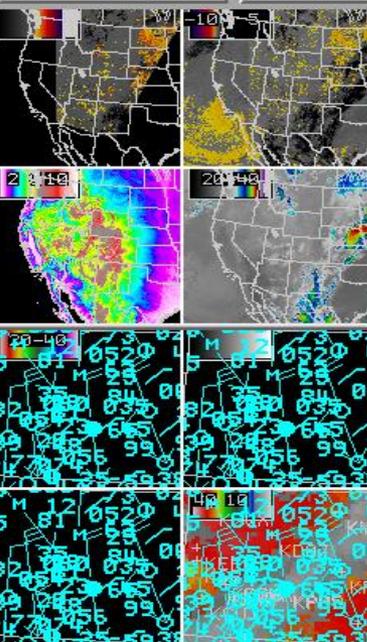
- ☑ NWS Forecast Offices
- ☑ National Centers
- ☑ River Forecast Centers
- ☑ NESDIS
- ☑ others

*See Talk at 9:45 on AWIPS-2*

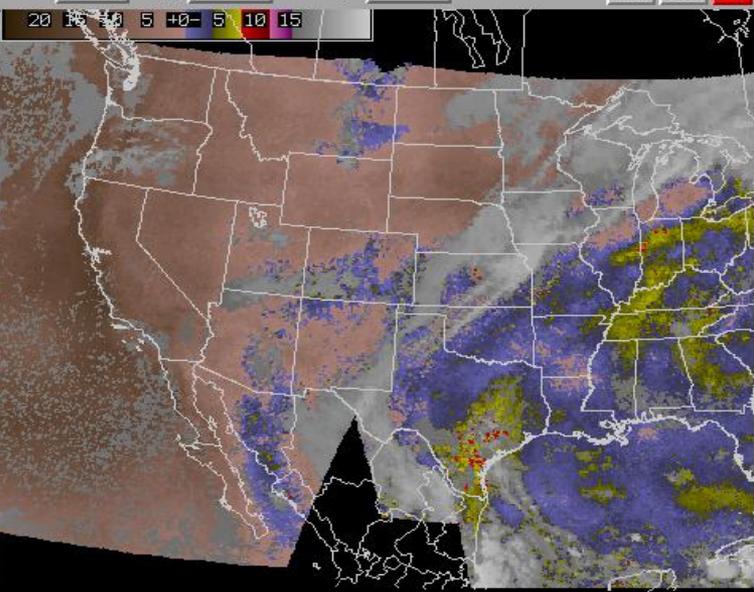
# Sample of GINI and AWIPS Products

- Created and distributed through GINI
  - ✓ Imagery
  - ✓ Sounder “images”
- Created outside of GINI, but distributed through GINI
  - ✓ 4 (5) satellite composite.
  - ✓ Sounder Derived Products (TPW, LI, CTP, ECA, Skin-T)
  - ✓ Imager Derived Products (LCB)
  - ✓ Polar (POES and DMSP) microwave derived products (TPW, Rain Rate, blended TPW)
  - ✓ AutoEstimator for Precipitation
- Created outside of GINI, distributed outside of GINI, but appearing within AWIPS
  - ✓ GOES BUFR and POES BUFR Soundings
  - ✓ High Density Winds
  - ✓ ASCAT
  - ✓ Text Messages: SPENES, VAA, Tropical Bulletins, Help Desk messages
  - ✓ ASOS Satellite Cloud Products

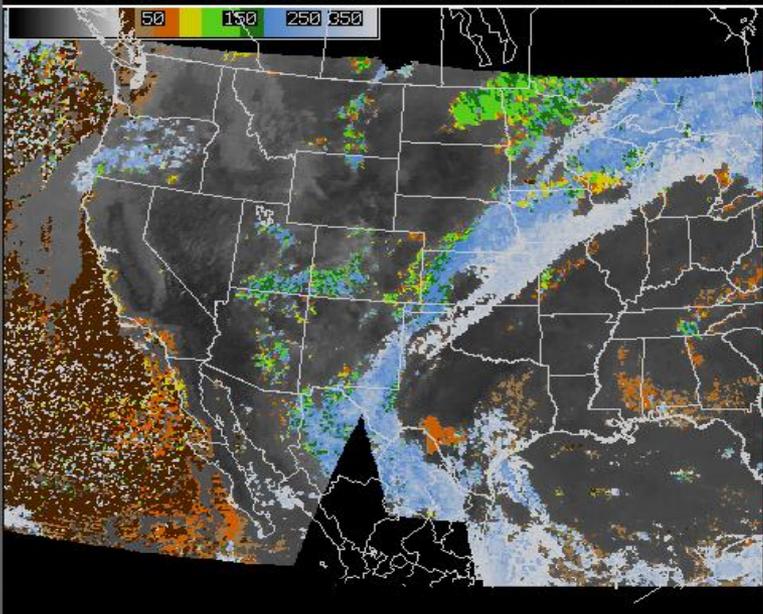
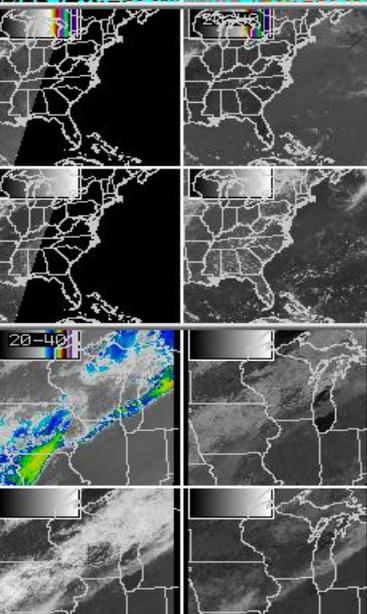




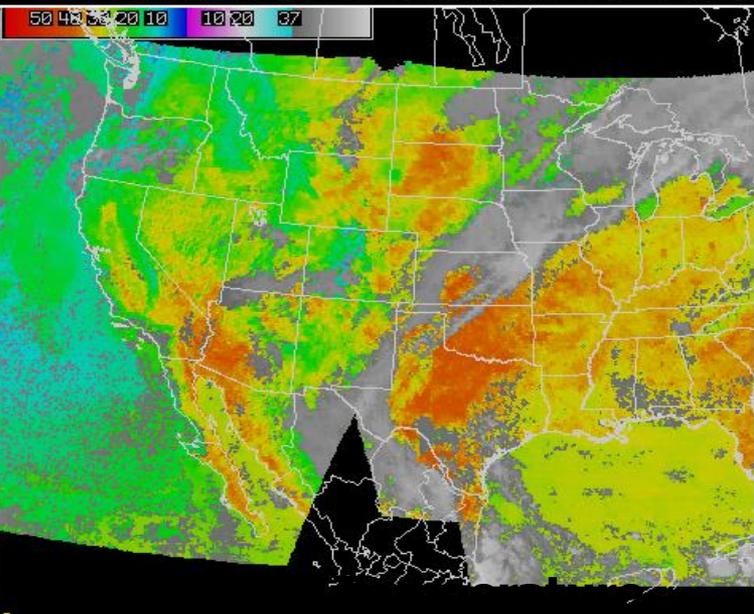
GOES Sounder DPI Total Precip Water (mm) Wed 16:00Z 02-Aug-06



GOES Sounder DPI Lifted Index (C) Wed 16:00Z 02-Aug-06



GOES Sounder DPI Cloud Top Height (ft/100 MSL) Wed 16:00Z 02-Aug-06



GOES Sounder DPI Skin Temperature (C) Wed 16:00Z 02-Aug-06

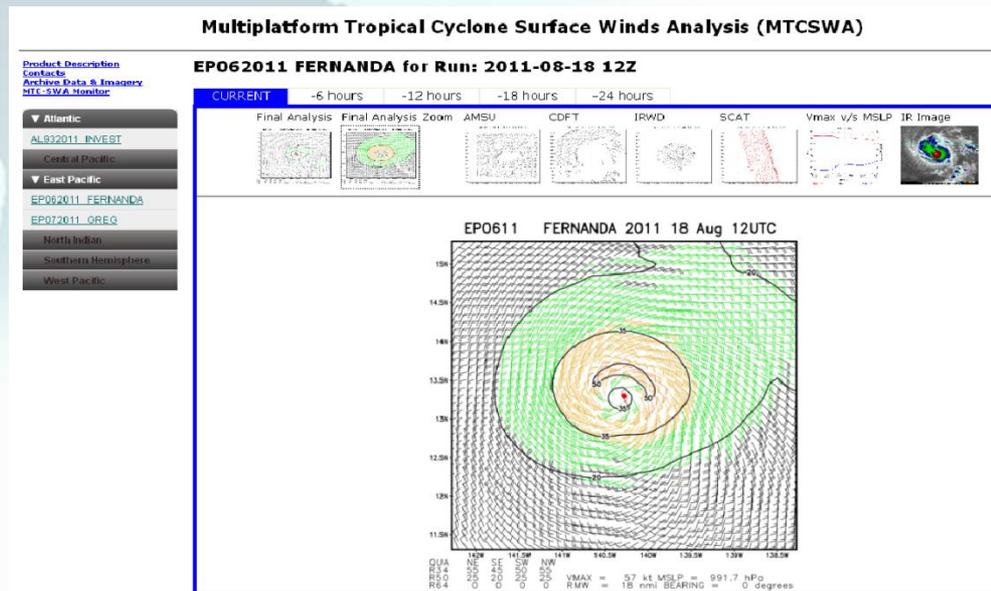
# Current Status of AWIPS Products

- ✔ **Enhanced Blended TPW** and TPW Percent of Anomaly Products (initial version of these products are currently on AWIPS) - Implemented on September 15, 2011
- ✔ **Expansion of the Blended TPW products** to provide additional coverage to the west in response to the NWS WR's request - Implemented with Enhanced Blended TPW Products on September 15, 2011
- ✔ **Blended Rain Rate Products** (these products will be an improvement to the single sensor (SSMIS) products currently on AWIPS) - Pending scheduling from NWS AWIPS II
- ✔ **GOES-Hourly Winds** – Pending NWS' consideration. Currently 3 hourly product interval
- ✔ **High Temporal Satellite Precipitation Estimates** - Pending scheduling from NWS AWIPS II
- ✔ **GOES SFOV 1x1 (Replacing 5x5) DPI Products** (e.g. LI, TPW, ECA, ASOS SCP) - To be implemented in November 2011, specific date to be coordinated with NWS
- ✔ Capability of AWIPS to Display **Hydro-Estimator Products** in GRIB2 - To be released in AWIPS II, in the January - March 2012 time frame

The above products will significantly improve analyzes of heavy precipitation events and associated forecasts at the NWS WFOs

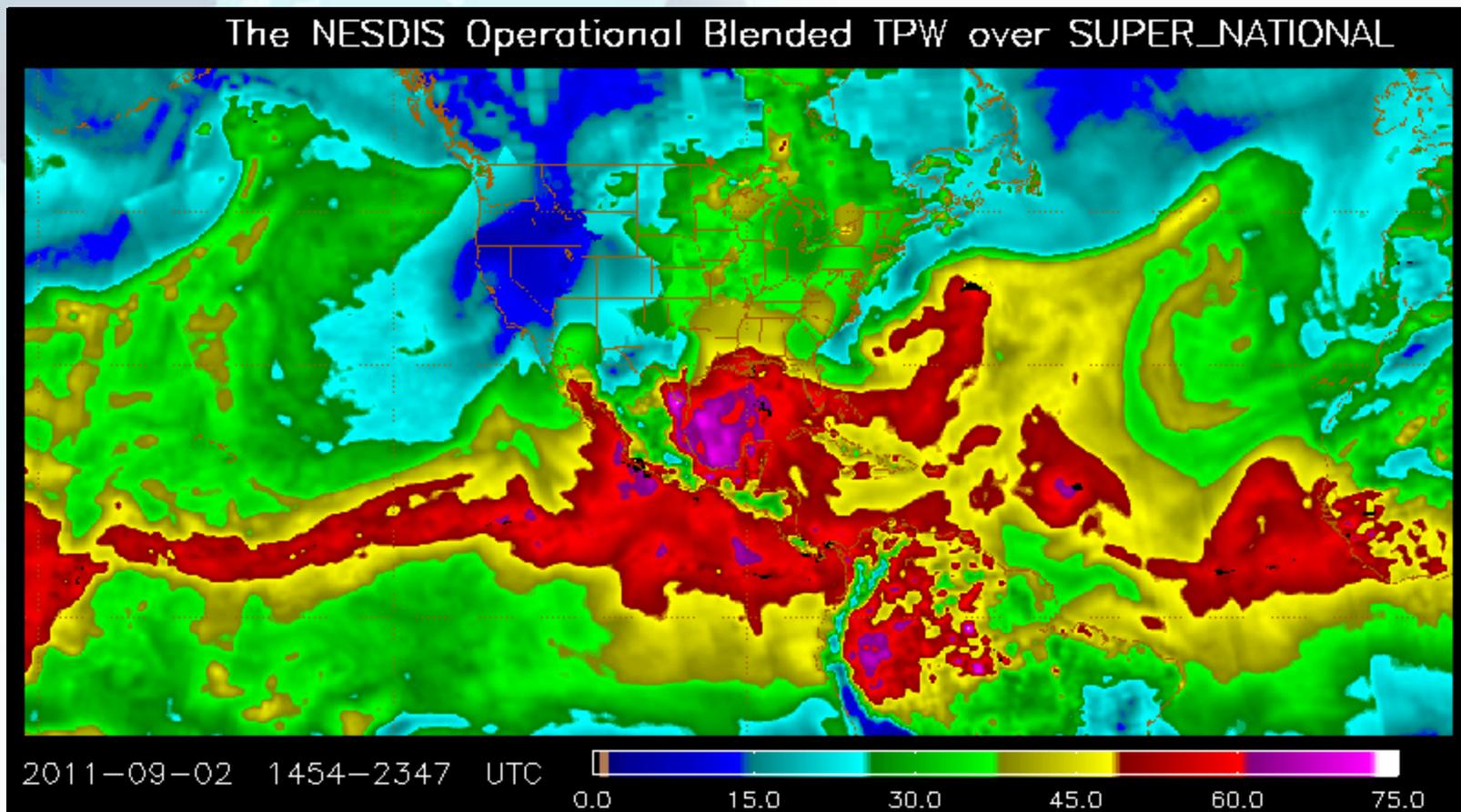
# GOES-Based Multi-Platform Tropical Cyclone Surface Wind Product (MTC-SWA)

- Requirement from DOD/Joint Typhoon Warning to provide a tropical cyclone surface wind analysis from satellite sources at 6-hour interval for the analysis of 34-kt, 50-kt, 64-kt and maximum wind radii.
- User community: tropical cyclone forecast centers and WMO Regional Specialized Meteorological Centres worldwide
- Benefit to user: provides **tropical cyclone surface wind field estimates** including the analysis of 34-kt, 50-kt, 64-kt and maximum wind radii at 6 hourly intervals



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

# Product Enhancement for GOES-POES Blended Hydro Products



Enhanced Operational bTPW Product  
<http://www.osdpd.noaa.gov/bTPW/>

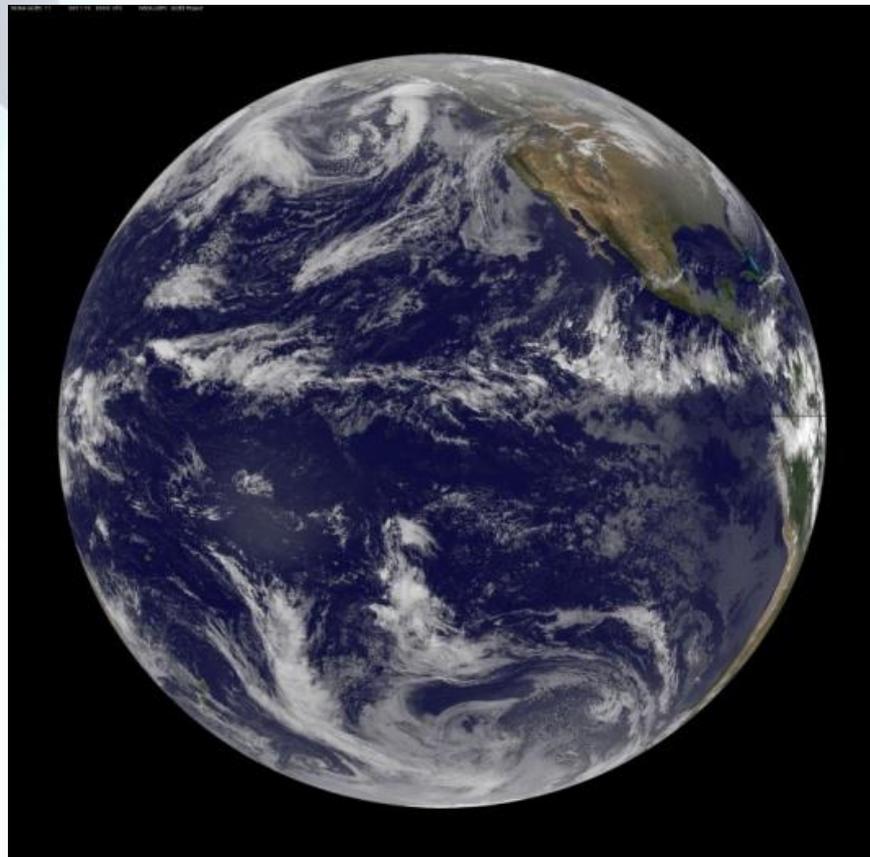
# Geostationary Broadcast Service Status

Spacecraft	LRIT	EMWIN	SARSAT	DCS	GVAR
GOES-11	Operational	Operational	Operational	Operational	Operational
GOES-13	Operational	Operational	Operational	Operational	Operational
GOES-14	Standby	Standby	Standby	Standby	Standby
GOES-15 (89.5°W) Replaces GOES-11 in Dec 2011	Capable of Operation	Capable of Operation	Capable of Operation	Capable of Operation	Turned-on (Active)
GOES-12	Standby	Operational	Standby	Standby	Central & South Americas

# GOES VARiable (GVAR) Current Status

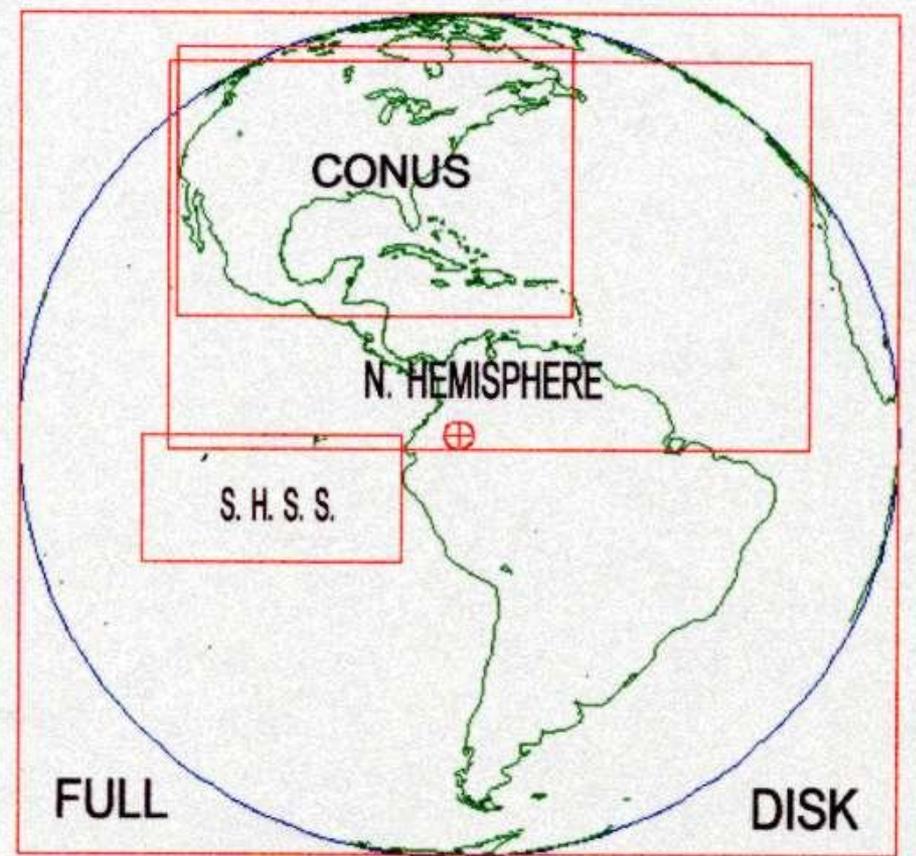
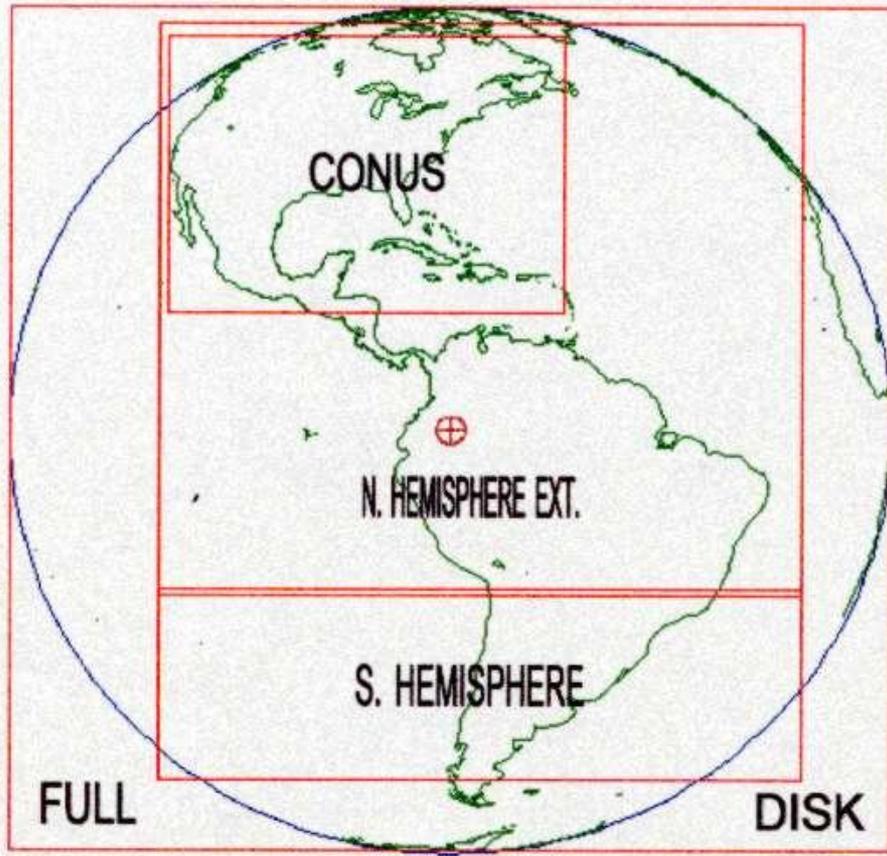
## GOES-11/13 Imager Schedules

- **Routine**
  - ✓ Full Disk every 3 hours
  - ✓ Northern Hemisphere every 30 minutes
  - ✓ CONUS/PACUS every alternating 30 minutes
  - ✓ Southern Hemisphere every 30 minutes
- **Rapid Scan**
  - ✓ Full disk every 3 hours
  - ✓ Northern Hemisphere every 30 minutes (shortened)
  - ✓ CONUS/PACUS every 7 minutes
  - ✓ Southern Hemisphere every 60 minutes
- **Super Rapid Scan**
  - ✓ Full Disk every 3 hours
  - ✓ Northern Hemisphere every 30 minutes (shortened)
  - ✓ CONUS/PACUS every alternating 30 minutes
  - ✓ 1000 km<sup>2</sup> “floating” sector at 1 minute intervals, 4 times per hour
- <http://www.ssd.noaa.gov/PS/SATS>



# GOES-East Routine RSO

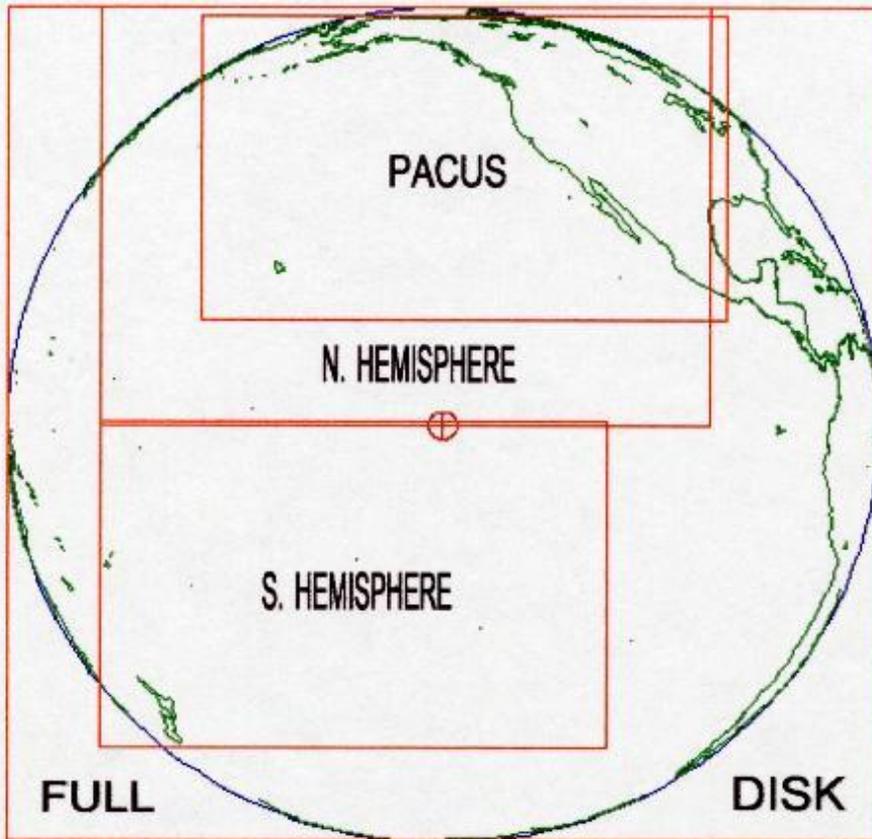
<http://www.ssd.noaa.gov/PS/SATS/GOES/EAST/sched.html>



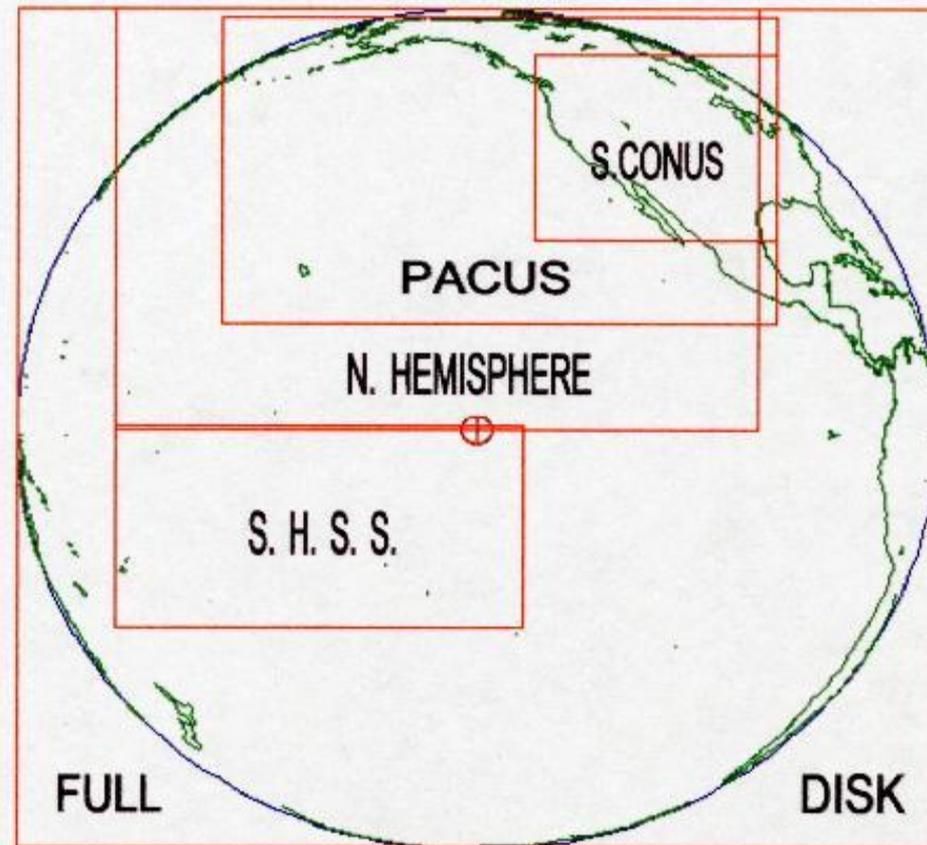
# GOES-West Routine RSO

<http://www.ssd.noaa.gov/PS/SATS/GOES/WEST/sched.html>

GOES WEST IMAGER ROUTINE SCHEDULE SCANS

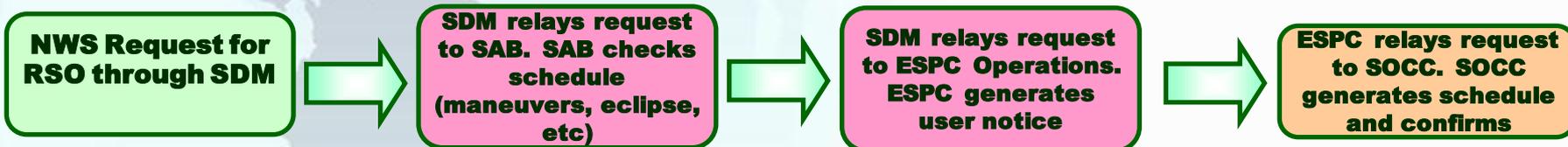


GOES WEST RAPID IMAGER SCHEDULE SCANS



# Rapid Scan Operations

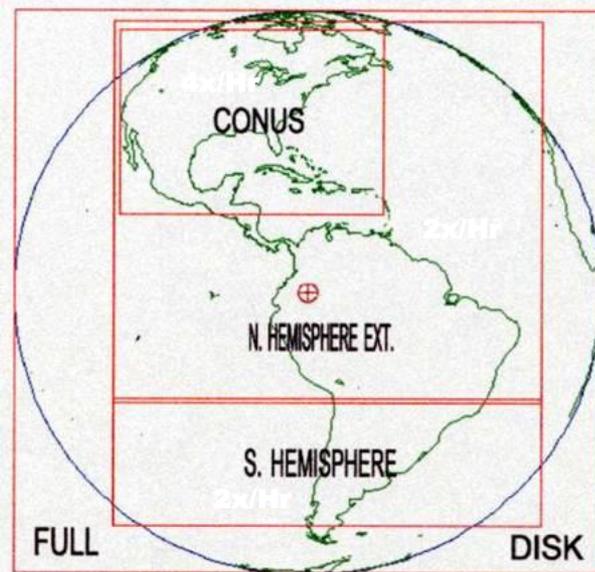
- Current methodology for requesting GOES I-P Rapid Scan
- AWIPS does not handle Super Rapid Scan (for research and special events only)



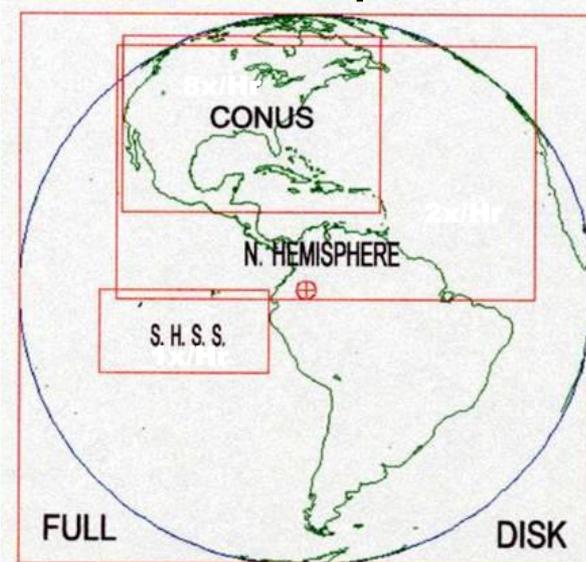
**Up to 40% of schedule during Spring/Summer “Convective” season is comprised of Rapid Scanning.**

**Results in significant loss of satellite coverage for South America**

**GOES-East Routine Scan**



**GOES-East Rapid Scan**



# GOES Data Collection Service (DCS)

- **Data Relay**

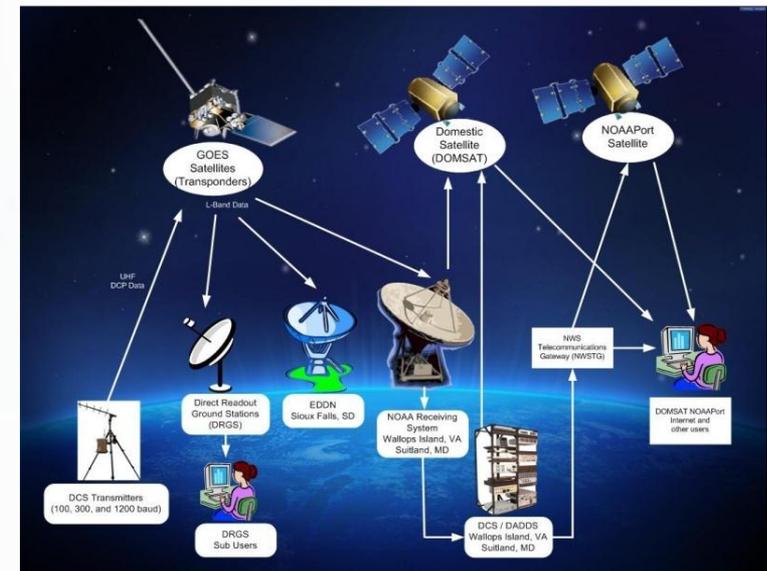
- ✔ Environmental data in near real-time
- ✔ > 23,000 data collection platforms
- ✔ Delivered back to the owner in seconds

- **Frequency Share/Time**

- ✔ Approximately 200 Channels  
In process of doubling
- ✔ Hourly Transmissions (or less)

- **Data Dissemination**

- ✔ GOES Direct Broadcast  
Large antennae, multiple channels
- ✔ DOMSAT  
commercial satellite, small antenna, one stream
- ✔ Internet connection
- ✔ LRIT
- ✔ GTS



<http://noasis.noaa.gov/DCS>

# GOES DCS Current System Improvements

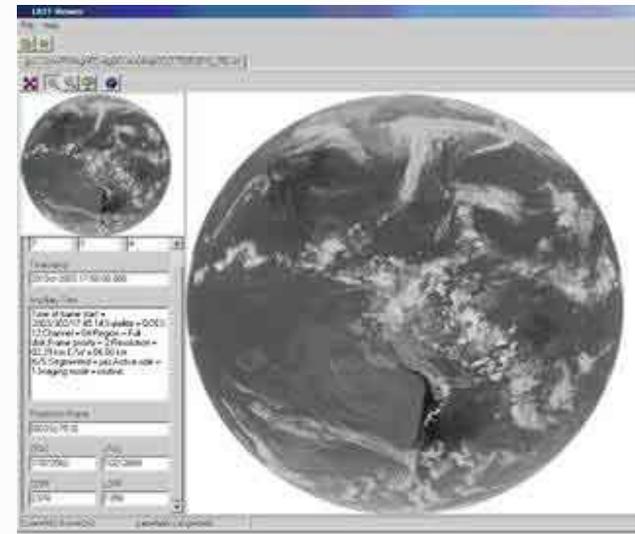
- ✔ New ground system (DADDS) in operation
- ✔ New transmitters to cut channels in half, double capacity available
- ✔ Finishing conversion to faster transmitters, eliminating slower (100 bps) transmitters
- ✔ Future implementation of available 2-way communication capability
- ✔ Rebroadcast through LRIT and future HRIT service

***See Poster 4.42***

**<http://noasis.noaa.gov/DCS>**

- **LRIT: Low Rate Information Transmission**
- **Broadcast for GOES imagery and other weather data**
  - ✔ No subscription fee
  - ✔ Available from Western Africa to the Pacific islands
  - ✔ Includes:
    - ✔ Three channels of each GOES image
    - ✔ Graphic images of MSG and MTSAT
    - ✔ Secondary broadcast of GOES Data Collection System (DCS) observations
    - ✔ Secondary EMWIN data broadcast
    - ✔ Tropical Storm Data
    - ✔ Other NOAA products
  - ✔ L-Band Frequency: 1691.0 MHz
  - ✔ Data Rate: 128 kbps
- **Relatively low-cost ground system**

**<http://noaasis.noaa.gov/LRIT>**



- **EMWIN: Emergency Managers Weather Information Network**
- **NWS broadcast for public weather dissemination**
  - ✓ No subscription fee
    - Requires little infrastructure in a disaster, not dependent on internet or utility lines
    - 24/7 since 1996 with almost zero down time
    - L-band signal adds to reliability
  - ✓ Available from Western Africa to the Pacific islands
  - ✓ Includes:
    - ✓ Weather forecast
    - ✓ Weather/Radar maps
    - ✓ Some satellite images
    - ✓ Severe weather warnings
  - ✓ L-Band Frequency
  - ✓ Data Rate: 19.2 kbps
- **Relatively low-cost ground system ( <\$2400 )**

**<http://www.nws.noaa.gov/emwin>**

# EMWIN User Receive System “Screen Shots”

**WxImage**  
File Select Image Browse Image Animate Help

HIGH WIND WRN/ADV SNOW ADV  
WINTER WX ADV  
WINTER STM/SNOW WATCH  
WINTER STM/SNOW WARN  
BLIZZARD WRN

SS FLOOD ADV 1 31637

Request Weather Message  
Text Quick List

Product Code

WFUS54 KFWD 100051  
TORFWD  
TKC121-497-100130-  
/O.NEW.KFWD.TO.W.0018.080410T0048Z-080410T0130Z/

BULLETIN - EAS ACTIVATION REQUESTED  
TORNADO WARNING  
NATIONAL WEATHER SERVICE FORT WORTH TX  
748 PM CDT WED APR 9 2008

THE NATIONAL WEATHER SERVICE IN FORT WORTH HAS ISSUED A

- \* TORNADO WARNING FOR...  
NORTHWESTERN DENTON COUNTY IN NORTH CENTRAL TEXAS...  
NORTHEASTERN WISE COUNTY IN NORTH CENTRAL TEXAS...
- \* UNTIL 830 PM CDT
- \* AT 748 PM CDT...NATIONAL WEATHER SERVICE METEOROLOGISTS DETECTED A  
DEVELOPING TORNADO 17 MILES WEST OF PONDER..MOVING NORTHEAST AT 36

E-Mail Message Print Message Close

**WxImage**  
File Select Image Browse Image Animate Help

10 0008 / 0645Z

IR 8 km NOAA HTTP://WWW.GOES.NOAA.GOV

Image: G08CIRUS 4/10/08 08:41

**WxImage**  
File Select Image Browse Image Animate Help

S Radar Mosaic  
8 UTC 04/10/2008

Image: RADREFUS 4/10/08 10:31

100 % 1:17 PM

<http://www.nws.noaa.gov/emwin>

- **GOES-R constellation**

- Combined HRIT/EMWIN transponder

- Greater user/vendor base

- Combined LRIT and EMWIN Broadcast/Product Suite

- HRIT/EMWIN Specifications

- Frequency: 1694.1 MHz      Data Rate: 400 kps

- Modulation: BPSK      Polarization: Linear

- Forward error correction

- User satellite dish form factor remains small

- HRIT / EMWIN Prototype Receiver

- Capable of receiving HRIT/EMWIN, LRIT and EMWIN from all GOES-Series

- Information available at [www.goes-r.gov](http://www.goes-r.gov)

- **HRIT/EMWIN Info: <http://www.goes-r.gov/users/hrit.html>**

# LRIT and EMWIN Merger

**LRIT**

**EMWIN**

- Higher data rate: 400 Kbps
- GOES Product improvements
  - ✓ More frequent full-disk images
  - ✓ Higher resolution and/or more image channels
    - ✓ GOES-R Advanced Baseline Imager products
- EMWIN Enhancements
  - ✓ TBD
- Modified Signal Characteristics
  - ✓ New Frequency: 1694.1 MHz
  - ✓ New receiver required
  - ✓ Works with either of the current LRIT or EMWIN antennas
- Primary re-broadcast for GOES DCS data
- HRIT/EMWIN Info: <http://www.goes-r.gov/users/hrit.html>

a

# HRIT/EMWIN Poster Session

- **Representatives available at poster all day**
  - ☑ LRIT Program
  - ☑ EMWIN Program
  - ☑ GOES-R Program (HRIT/EMWIN)
- **Providing description and soliciting feedback**
  - ☑ Overview of HRIT/EMWIN system
  - ☑ Prototype of new receiver
  - ☑ Broadcast content

***See Poster 4.43***

# Space Weather Scales

## Three Categories:

- Geomagnetic Storms**  
 (Ground-based magnetic field)  
 Power Utilities, GPS Users, Spacecraft operations
- Solar Radiation Storms**  
 (GOES > 10 MeV particles)  
 Astronaut Safety  
 Airline Communication
- Radio Blackouts**  
 (GOES Solar X-rays)  
 Airline and Maritime HF Comm.

Two of the three Space Weather Scales depend on GOES



## NOAA Space Weather Scales

Category		Effect	Physical measure	Average Frequency (1 cycle = 11 years)
Scale	Descriptor	Duration of event will influence severity of effects		
<b>Geomagnetic Storms</b>				
G 5	Extreme	<b>Power systems:</b> widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage. <b>Spacecraft operations:</b> may experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. <b>Other systems:</b> pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.) <sup>**</sup> .	Kp values* determined every 3 hours Kp=9	Number of storm events when Kp level was met; (number of storm days) 4 per cycle (4 days per cycle)
G 4	Severe	<b>Power systems:</b> possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. <b>Spacecraft operations:</b> may experience surface charging and tracking problems, corrections may be needed for orientation problems. <b>Other systems:</b> induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.) <sup>**</sup> .	Kp=8, including a 9-	100 per cycle (60 days per cycle)
G 3	Strong	<b>Power systems:</b> voltage corrections may be required, false alarms triggered on some protection devices. <b>Spacecraft operations:</b> surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems. <b>Other systems:</b> intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.) <sup>**</sup> .	Kp=7	200 per cycle (130 days per cycle)
G 2	Moderate	<b>Power systems:</b> high-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage. <b>Spacecraft operations:</b> corrective actions to orientation may be required by ground control, possible changes in drag affect orbit predictions. <b>Other systems:</b> HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.) <sup>**</sup> .	Kp=6	600 per cycle (360 days per cycle)
G 1	Minor	<b>Power systems:</b> weak power grid fluctuations can occur. <b>Spacecraft operations:</b> minor impact on satellite operations possible. <b>Other systems:</b> migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine) <sup>**</sup> .	Kp=5	1700 per cycle (900 days per cycle)

\* Based on this measure, but other physical measures are also considered.

\*\* For specific locations around the globe, use geomagnetic latitude to determine likely sightings (see [www.sec.noaa.gov/Aurora](http://www.sec.noaa.gov/Aurora)).

Solar Radiation Storms		Flux level of ≥ 10 MeV particles (ions) <sup>*</sup>	Number of events when flux level was met <sup>**</sup>
S 5	Extreme	10 <sup>7</sup>	Fewer than 1 per cycle
S 4	Severe	10 <sup>6</sup>	3 per cycle
S 3	Strong	10 <sup>5</sup>	10 per cycle
S 2	Moderate	10 <sup>4</sup>	25 per cycle
S 1	Minor	10	50 per cycle

\* Flux levels are 5 minute averages. Flux in particles/cm<sup>2</sup>-sec.<sup>2</sup> Based on this measure, but other physical measures are also considered.

\*\* These events can last more than one day.

\*\*\* High energy particle measurements (>100 MeV) are a better indicator of radiation risk to passengers and crews. Pregnant women are particularly susceptible.

Radio Blackouts		GOES X-ray peak brightness by class and by flux <sup>*</sup>	Number of events when flux level was met; (number of storm days)
R 5	Extreme	X20 (2x10 <sup>3</sup> )	Fewer than 1 per cycle
R 4	Severe	X10 (10 <sup>3</sup> )	8 per cycle (8 days per cycle)
R 3	Strong	X1 (10 <sup>2</sup> )	175 per cycle (140 days per cycle)
R 2	Moderate	M5 (5x10 <sup>-5</sup> )	350 per cycle (300 days per cycle)
R 1	Minor	M1 (10 <sup>-5</sup> )	2000 per cycle (950 days per cycle)

\* Flux, measured in the 0.1-0.8 nm range in W<sup>2</sup>. Based on this measure, but other physical measures are also considered.

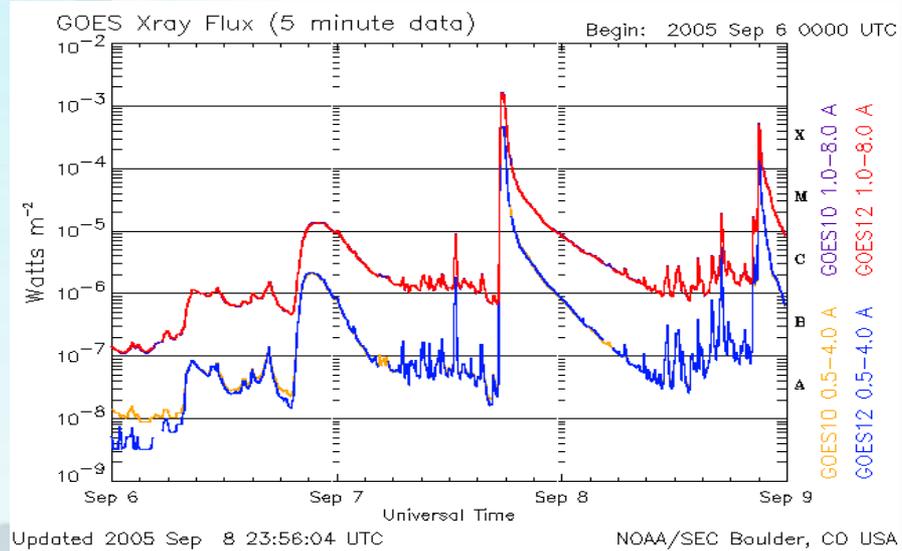
\*\* Other frequency bands are also used for radio blackouts.



# X-Ray Sensor

## X-Ray Sensor:

- **Monitors whole-Sun x-ray irradiance**
- **Two Channels**
  - 0.05 - 4 nm
  - 0.1 to 0.8 nm
- **3 Second Cadence**
- **3 Second Latency**

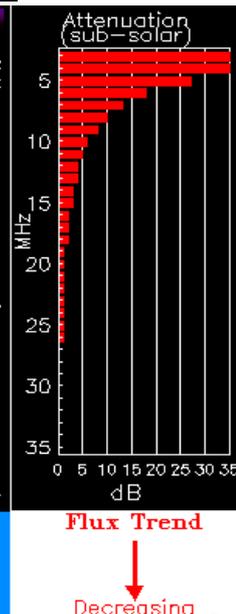
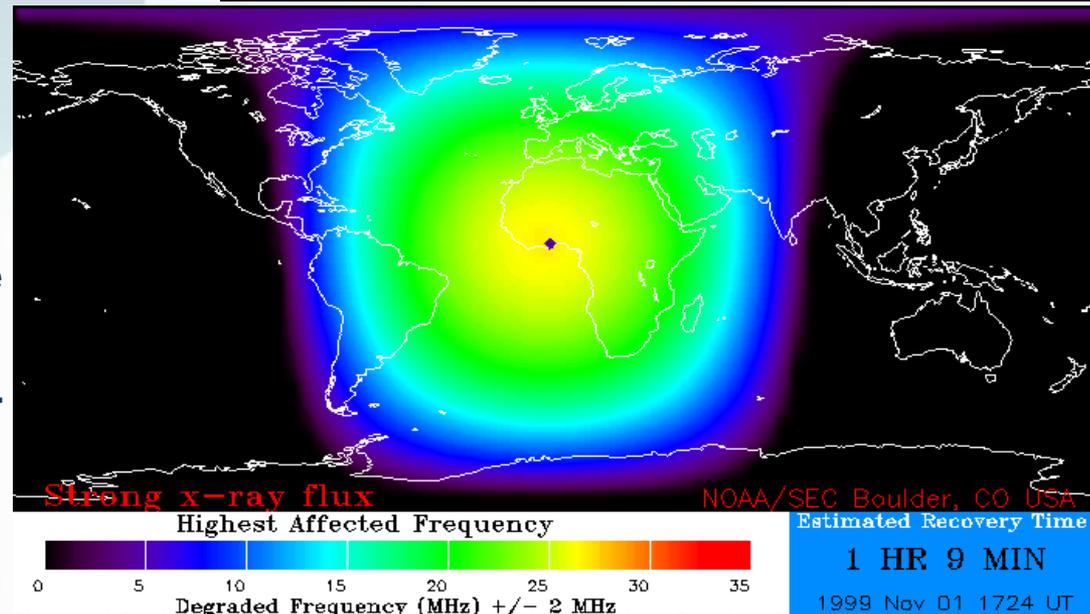


## HF Radio Communication Absorption Product:

[http://sec.noaa.gov/rt\\_plots/dregion.html](http://sec.noaa.gov/rt_plots/dregion.html)

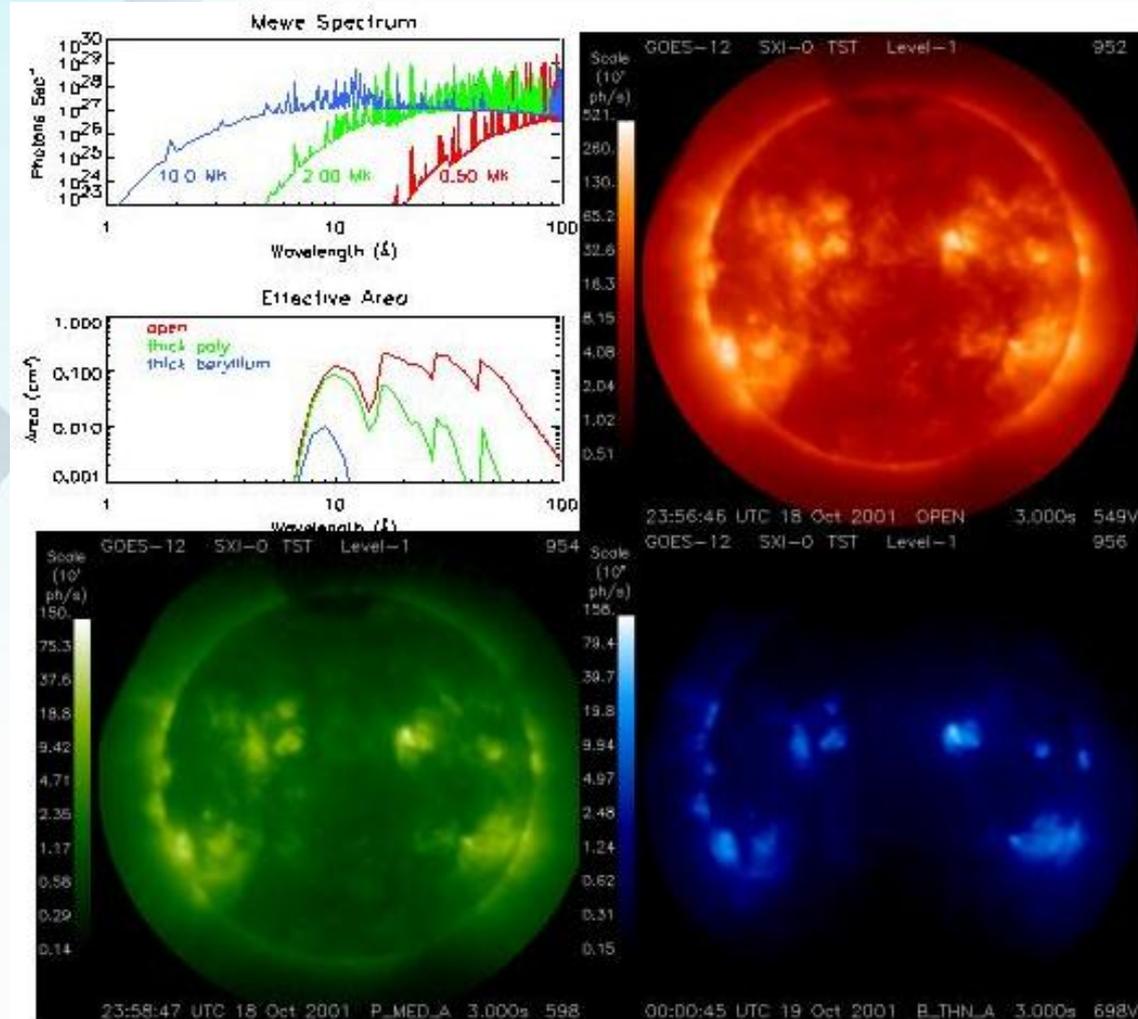
## Customer Uses:

- **Detect Solar Flare Onset**
- **Measure Flare Magnitude complexity**
- **Precursor for Other Major Events**
- **Key for Radio HF Radio Communication**



# Solar X-Ray Imager

- SXI:
- Full disk soft x-ray images
- One - minute cadence,
- Full disk, 512 x 512 pixel array
- 5 arc sec pixels,
- 0.6 – 6 nm,



## SXI Utility

- Identify Flare location and other solar features
- Forecast flare probability:
  - ☑ Assess active region complexity,
- Forecasts geomagnetic storms:
  - ☑ Locate coronal holes
  - ☑ Coronal Mass Ejections
- Forecast radiation storms:
  - ☑ Locate flares
- Forecast solar activity:
  - ☑ Monitor active regions beyond east limb

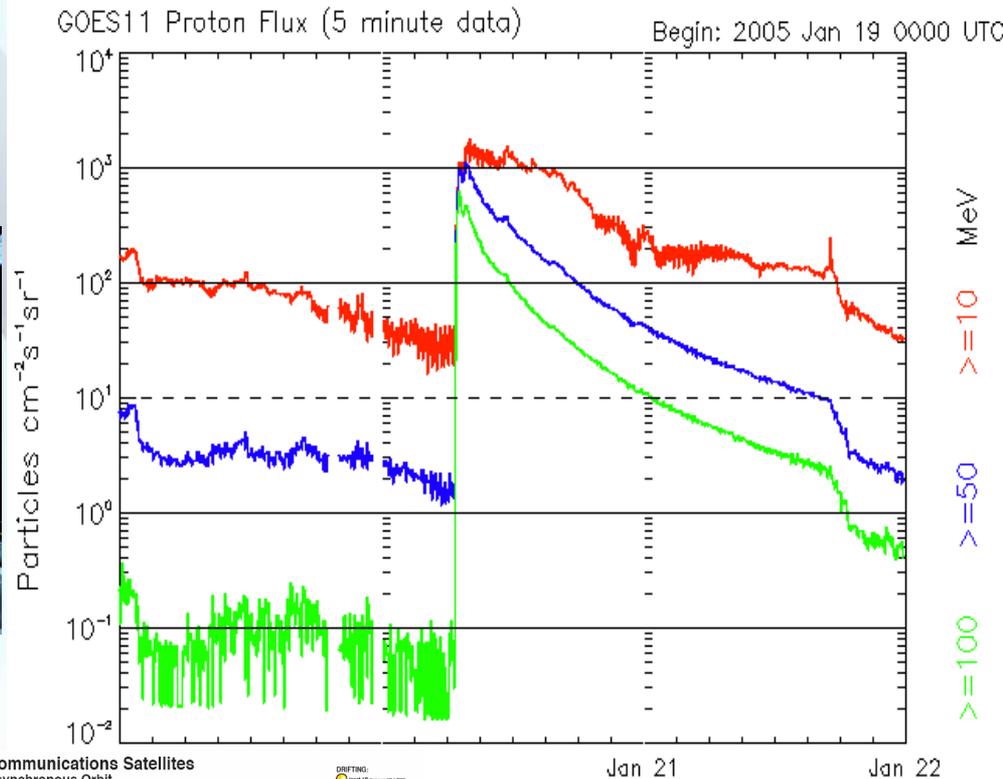
# GOES Energetic Particle and Magnetometer Sensors

## Energetic Particle Sensor (EPS): Monitors the energetic electrons, protons, and heavy ions

e: 0.6 to 4.0 MeV, p: 0.7 to 700 MeV, a: 4 to 3400 MeV

### Customer Uses:

- HF Communications
- Space Station operations
- Spacecraft system design
- Spacecraft anomaly assessment
- Satellite launch readiness

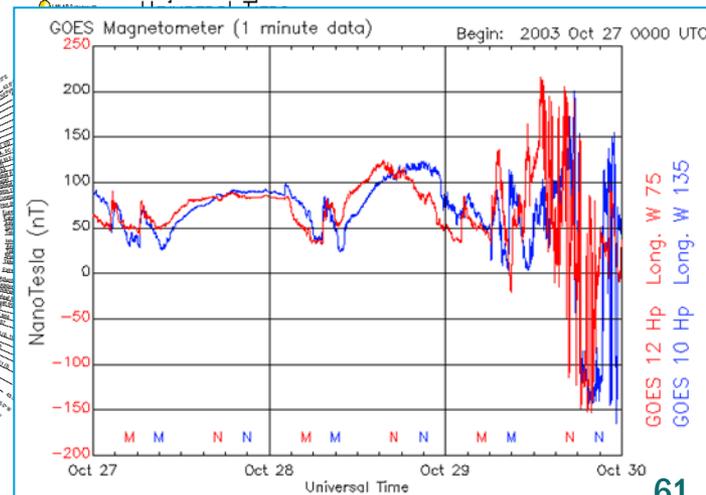
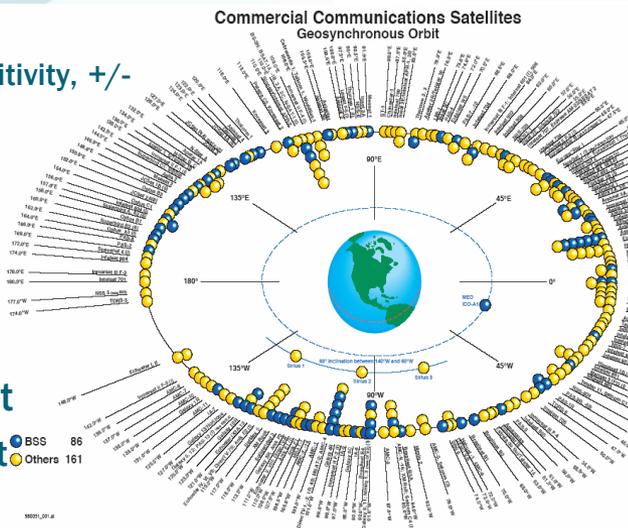


## Magnetometer:

- Monitors the vector magnetic field at geosynchronous orbit
- 0.512 second samples,  $\sim 0.1$  nT sensitivity,  $\pm 1000$  nT

### Customer Uses:

- Satellite Operations
  - Magnetopause Crossing
  - Attitude Control
- Energetic Particle Support
  - Provides key environment parameters



# News from the web team

<http://www.ospo.noaa.gov>

## Official OSPO Website

- Working on merger of the OSDPD and OSO web sites into a unified, look and feel for the new OSPO site.
- Phase 1 (of 3) was completed on Sep 28.
- By the end of FY12 – up and running.

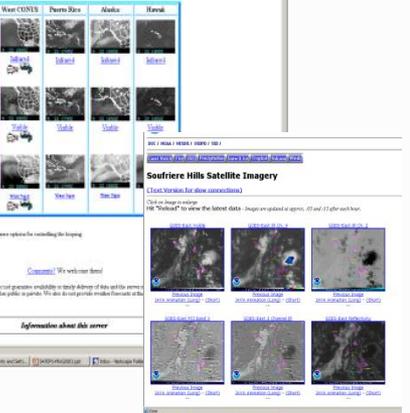
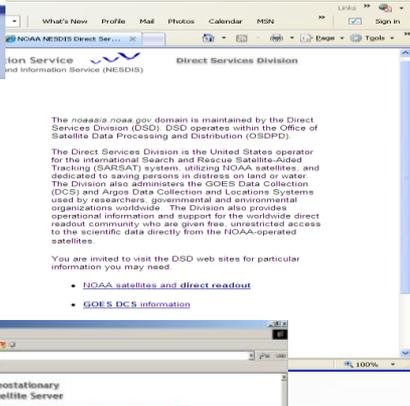
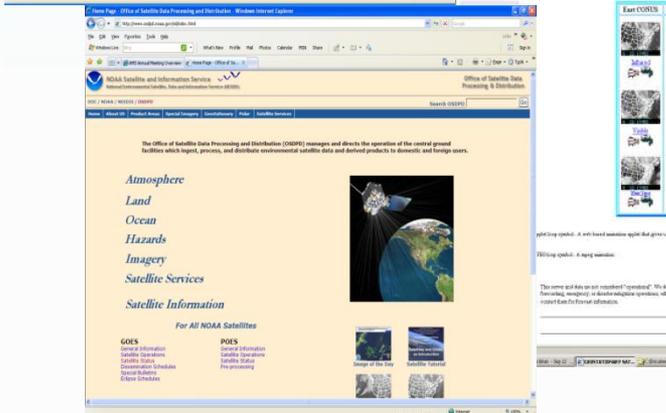
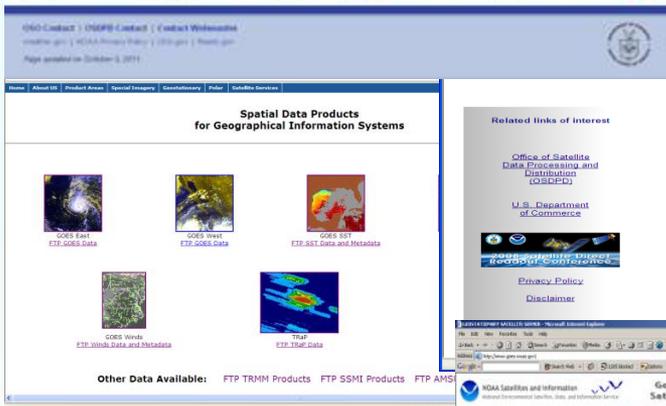
## Use of Social Media and Web 2.0



<http://www.facebook.com/NOAANESDIS>



[http://www.twitter.com/usnoaagov\\_ospo](http://www.twitter.com/usnoaagov_ospo)



# Web Links

[www.ospo.noaa.gov](http://www.ospo.noaa.gov)

**Public Product Servers**

<http://satepsanone.nesdis.noaa.gov/>

<ftp://satepsanone.nesdis.noaa.gov/>

Images, Products, Various Formats

Focus on **Direct Readout** information

(GVAR, LRIT, DCS, HRPT, APT, ARGOS)

<http://noaasis.noaa.gov>

Links to operational satellite products and

images and **GIS Products**

<http://www.osdpd.noaa.gov/ml/gis>

The **Geostationary Satellite Server**

<http://www.goes.noaa.gov>

Real time satellite data over large regions.

Viewing global or synoptic scale events

using visible, infrared, and water vapor

images and **Specialized imagery** and synoptic scale

viewing of events

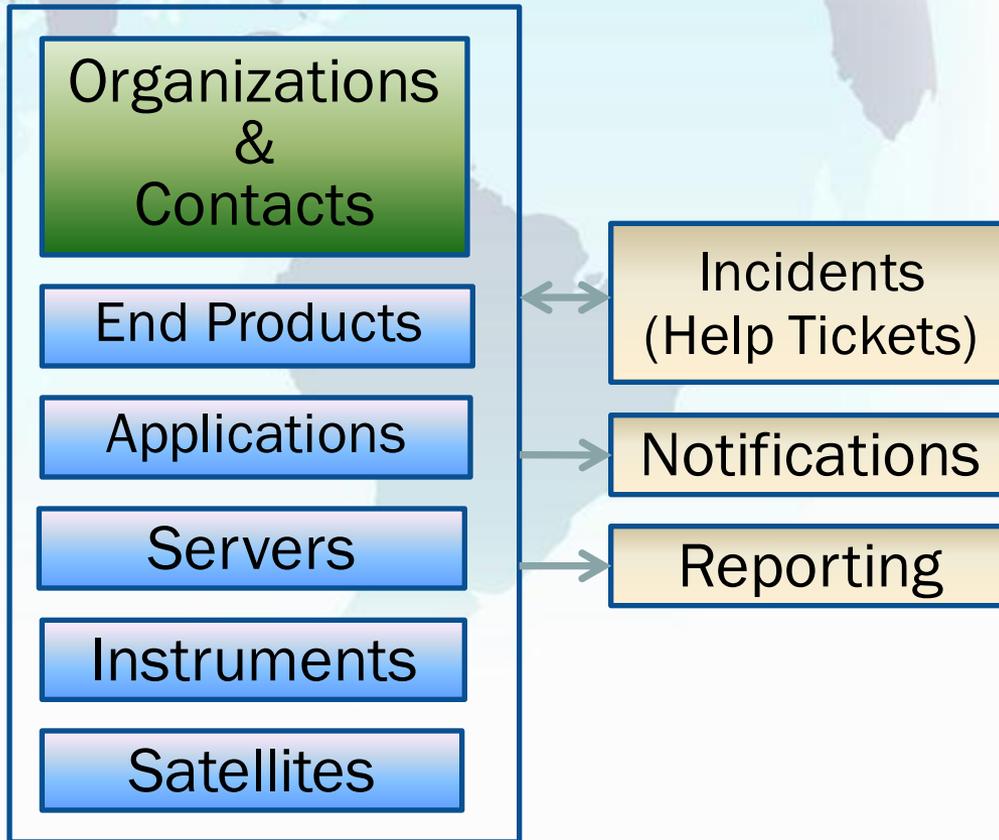
<http://www.ssd.noaa.gov> web pages.

Derived products for hazard monitoring

(fire, volcano, tropical, heavy precipitation)



# Customer Relationship Management (CRM) Database



- **The Goal** is for improved management of
  - ✓ Product Monitoring Procedures
  - ✓ Trouble Tickets
  - ✓ Notifications
  - ✓ Tracking of Interactions with Users
- **Data Load Status**
  - ✓ Complete
    - ✓ Satellites
    - ✓ Instruments
    - ✓ Applications
    - ✓ End Products
    - ✓ Organizations and Contacts
  - ✓ In Progress
    - ✓ Servers
    - ✓ User / End Product Linkage
- **Training for Help Desk and PALs**
  - ✓ Complete – Incident Tracking
  - ✓ Next – Product Management & Queries
- **Web Portal (Future)**
  - ✓ User Help Ticket Submission
  - ✓ User Contact Information and Reaffirmation

# Application Usage

- An Application is the image or science software running in ESPC that ingests satellite data & generates End Products
- 168 Applications produced for All Users
- 93 Applications used by 37 NWS centers / offices / branches
- 55% of available Applications are used by NWS
- 37% of Applications used by NWS use GOES (Any combination of GOES-11/12/13 including Blended Applications with NOAA and/or Non-NOAA POES)

# End Product Usage

- **An End Product is generated by an Application and may vary by satellite, instrument, region, format, resolution, etc.**
- **30,560 End Products produced for All Users**
  - Those are unique End Product-to-User records.
  - Some of the records include multiple satellites and sensors, some do not. It depends on how the product is typically characterized by the Product Area Lead (PAL) and users.
- **6,050 End Products used by 37 NWS centers / offices / branches**
- **21% of available End Products are used by NWS**
- **79% of available End Products are produced for use by Non-NWS users**

# Contact Information

- Operational Concerns, including outages and administrative information: [ESPCOperations@noaa.gov](mailto:ESPCOperations@noaa.gov) (24/7 ESPC Help Desk)
- General Comments and Inquiries (User Services): [SPSD.Userservices@noaa.gov](mailto:SPSD.Userservices@noaa.gov)
- Data Access Inquiries: [NESDIS.Data.Access@noaa.gov](mailto:NESDIS.Data.Access@noaa.gov)
- Website Feedback: [SSDWebmaster@noaa.gov](mailto:SSDWebmaster@noaa.gov)

## DCS Info: <http://noaasis.noaa.gov>

### **Kay Metcalf**

GOES DCS Program Manager

[Kay.Metcalf@noaa.gov](mailto:Kay.Metcalf@noaa.gov)

301-817-4558

### **Letecia Reeves**

GOES DCS Customer Service

[Letecia.Reeves@noaa.gov](mailto:Letecia.Reeves@noaa.gov)

301-817-4563

## LRIT, HRIT/EMWIN Info: <http://www.goes-r.gov/users/hrit.html>

### **Paul Seymour**

[Paul.Seymour@NOAA.Gov](mailto:Paul.Seymour@NOAA.Gov)

301-817-4521

[www.noaasis.noaa.gov](http://www.noaasis.noaa.gov)

### **Rob Wagner**

[Robert.Wagner@NOAA.Gov](mailto:Robert.Wagner@NOAA.Gov)

301-713-0870 x 154

<http://www.weather.gov/emwin/>

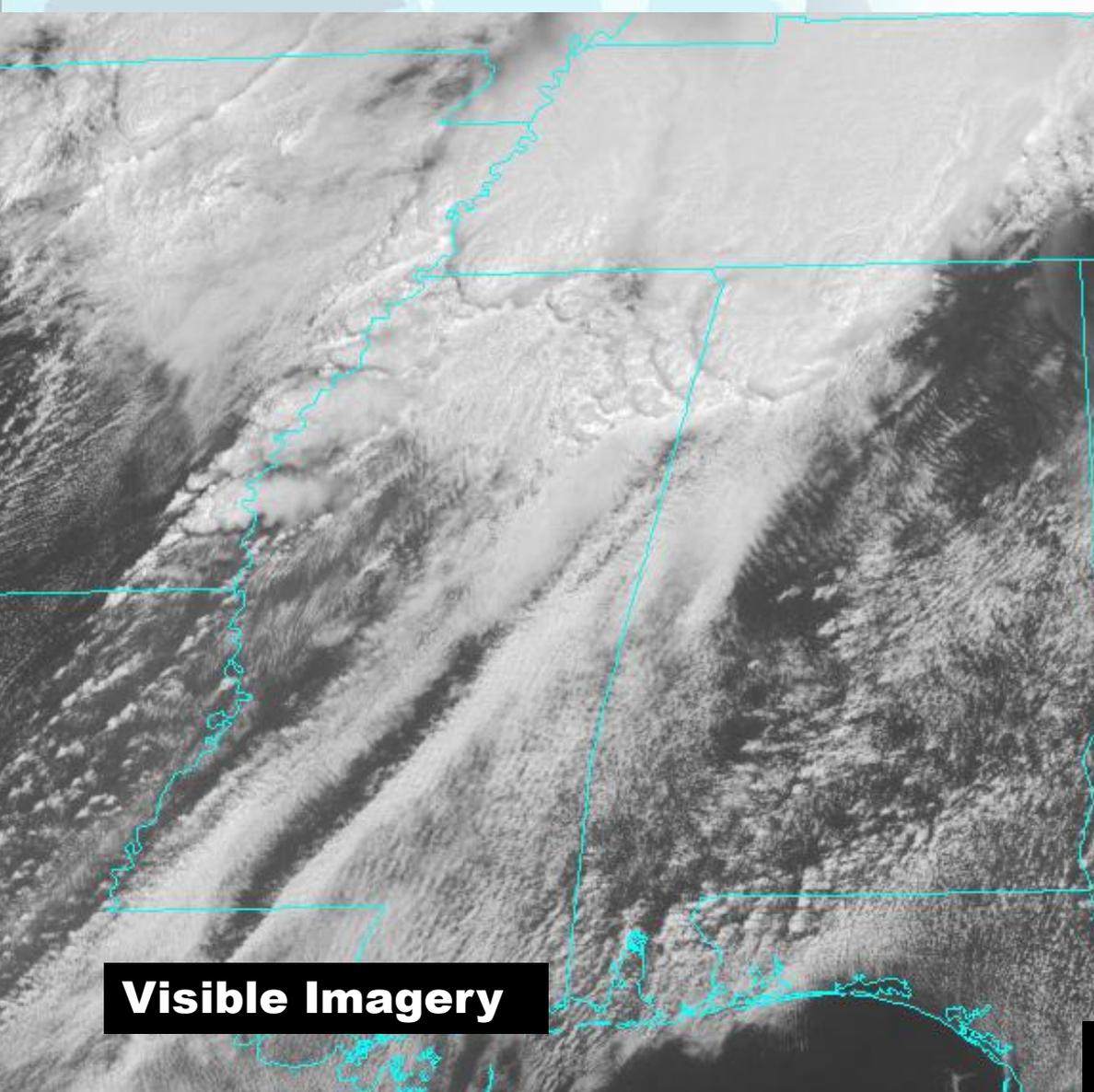
### **Santos Rodriguez**

[Santos.Rodriguez@NOAA.Gov](mailto:Santos.Rodriguez@NOAA.Gov)

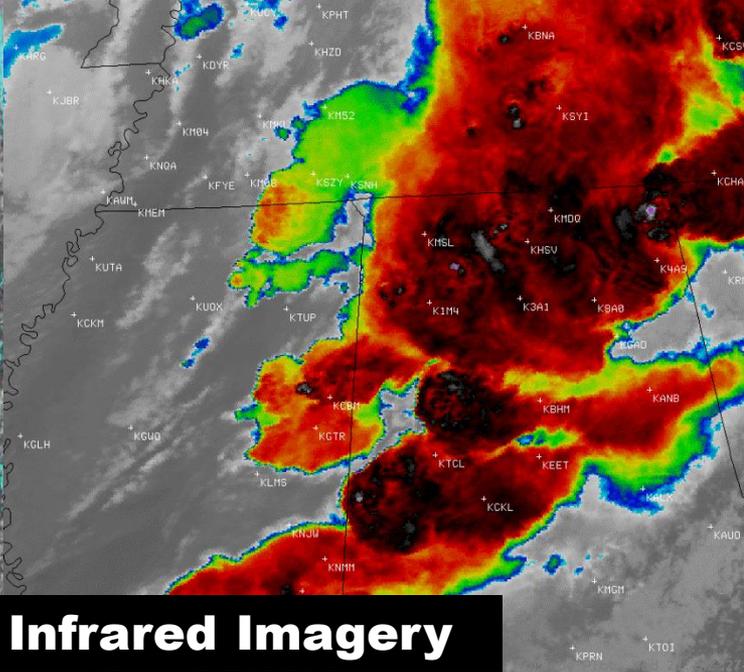
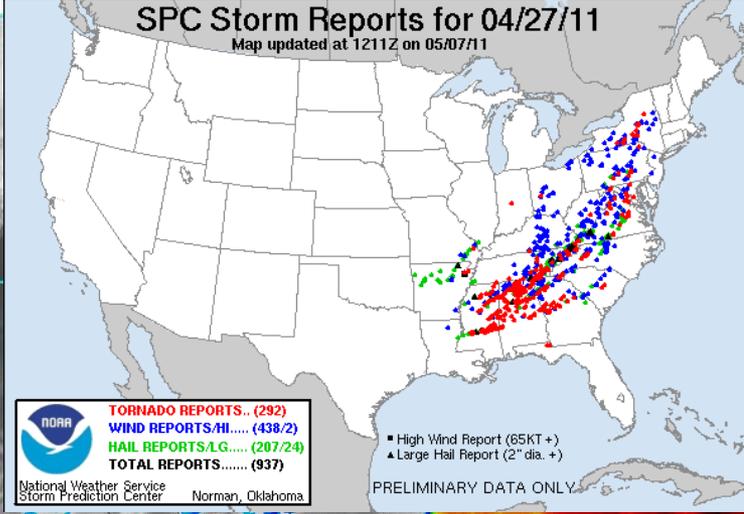
301-713-0077

<http://www.weather.gov/emwin/>

# Tornado Outbreak April 27



**Visible Imagery**



**Infrared Imagery**