Status of
NOAA Satellite Operations
& McIDAS in ESPC

Matthew Seybold

Final 2 days of GOES-12
10.7 um Longwave IR
August 13-15, 2013
http://cimss.ssec.wisc.edu/goes/blog/

MUG Meeting
Madison, WI
September 9-12, 2013

ESPC Coordination for MUG Talk

NESDIS / OSPO / SPSD @ NCWCP

- Jessica Braun,   Senior Product Programmer
- Tom Renkevens,   Deputy Director SDSD
- Natalia Donoho,   User Services Coordinator
- Bob Potash,   Senior Product Programmer
- Steve Ambrose,   GOES-R Data Ops Manager

NESDIS / OSPO / SPSD / SAB @ NCWCP

- Tony Salemi,   Ash, Fire, Oil, Tropical Desks
- Mark Ruminski,   Fire Team Lead & All Desks
- Gregg Gallina,   COOP Team Lead & All Desks
- Davida Street,   Branch Chief

NESDIS / OSPO / MOD @ NSOF

- Bonnie Morgan,   GOES Product Area Lead
- Russ Lancaster,   Senior Systems Analyst
- Donna McNamara,   Data Access Manager

NESDIS / GOES-R @ NASA Goddard

- Ananth Rao
- Maurice McHugh

NSOF

NCWCP

NESDIS Office of Satellite and Product Operations (OSPO)

Operates the Nation's 15 environmental satellites

- 3 Geostationary (GOES) by NOAA
- 4 Polar-Orbiting (POES) by NOAA
- 6 Defense Meteorological Satellite Program (DMSP) operated by NOAA
- 1 OSTM Jason-2 (Ocean Surface Topography Mission) Joint NOAA, NASA, CNES, EUMETSAT effort
- 1 Suomi National Polar-orbiting Partnership (NPP) by NOAA & NASA

Locations at four facilities housing 700 people

- NOAA Satellite Operations Facility (NSOF) in Suitland, MD - $5B facility operating $5B of satellites
- NOAA Center for Weather & Climate Prediction (NCWCP), College Park, MD
- Command and Data Acquisition Stations at Fairbanks, AK and Wallops, VA

NSOF

NCWCP

OSPO Key Roles

- Ground System Command & Control, Ingest, Generation, and Distribution

- Pre-Launch and Post-Launch Testing

- Operational Testing, Validation, and Verification

- User Readiness for Broadcast Services and Product Delivery

- Long-Term Continuity of Products and Services

Fairbanks CDA

Wallops CDA

Products (Derived & Interpretive)

Atmospheric Chemistry

Atmospheric Temperature

Fire and Smoke

Hurricane Intensity and Position

Imagery (e.g. Visible, IR, WV)

Land Cover – Ice, Snow, Vegetation

Ocean Color

Satellite Derived Winds (WS,WD,H)

Sea Surface Height & Temperature

Sounder Profiles and Imagery

Space Weather

Volcanic Ash and many more…
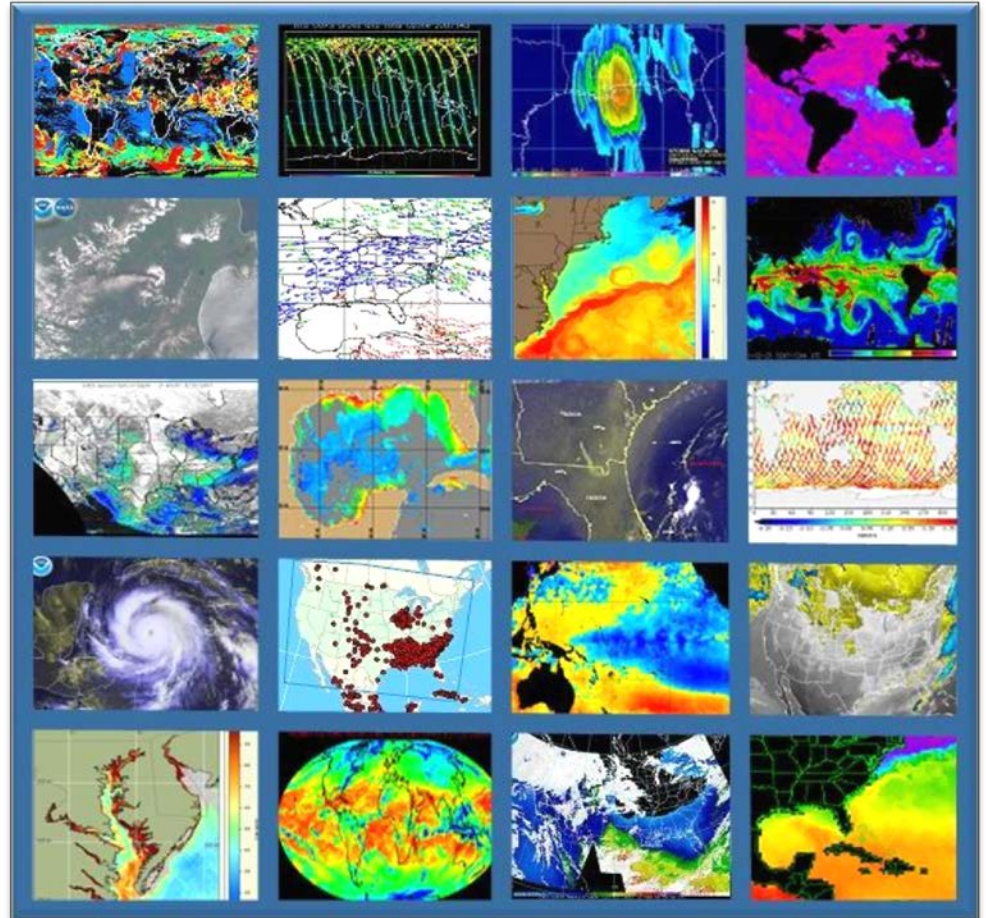
Direct Service Operations

Emergency Managers Weather Information Network (EMWIN):
- NOAA satellites relay critical information to users across the country.
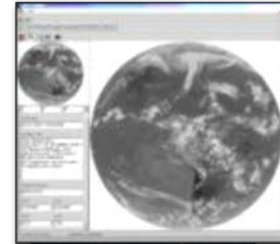 http://www.weather.gov/emwin/index.htm

Low Resolution Image Transmission (LRIT):
- NOAA satellites are used to relay satellite and weather products to users in remote locations, that do not have landlines or internet connections.
  http://www.noaasis.noaa.gov/LRIT/

Data Collection:
- NOAA satellites are used to collect and relay scientific data from around the globe.
  http://www.noaasis.noaa.gov/DCS/   http://www.noaasis.noaa.gov/ARGOS/

Search and Rescue:
- NOAA satellites are used to relay distress alerts from aviators, mariners and land-based users
  http://www.sarsat.noaa.gov/

Geonetcast Americas:
- Data from NOAA for diverse societal benefits - agriculture, energy, health, climate, weather, disaster mitigation, biodiversity, water resources, and ecosystems.
  http://www.geonetcastamericas.noaa.gov/index.html
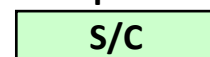
GOES Status (August 30, 2013)

Payload Instrument	GOES-15 (West) Launch: Mar 10 Activation: Dec 11	GOES-14 (Standby) Launch: Jun 09 Activation: N/A	GOES-13 (East) Launch: May 06 Activation: Apr 10
Imager	G	G	G
Sounder	Y (11)	G	Y (15)
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)	G	G	R (8)
Solar X-Ray Imager (SXI)	S/C (12)	G	Y (9)
Spacecraft Subsystems			
Telemetry, Command & Control	G	G	G
Attitude and Orbit Control	G	G	G
Inclination Control	G	G	G
Propulsion	G	G	S/C (10)
Mechanisms	G	G	G
Electrical Power	G	G	G
Thermal Control	G	G	G
Communications Payloads	S/C (13)	G	G

Key

Operational

G

Spacecraft Issues, but No User Impacts

S/C

Operational with Limitations

Y

Non-Operational

R

http://www.oso.noaa.gov/goesstatus
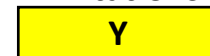
GOES Status (August 30, 2013)

| Service	GOES-15 (West)	GOES-14 (Standby)	GOES-13 (East)
LRIT	Operational	Standby	Operational
EMWIN	Operational	Standby	Operational
SARSAT	Operational	Standby	Operational
DCS	Operational	Standby	Operational
GVAR	Operational	Standby	Operational
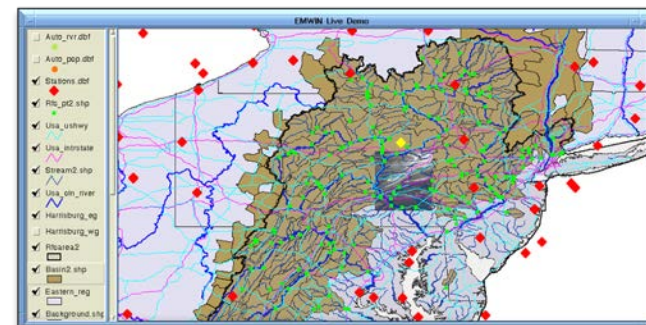
See summary of GVAR Instrument Factory Coefficients and Detector Offsets by Block:
http://www.osd.noaa.gov/GVAR_Downloads/gvar_downloads.html

GOES-15 (West)

Launch: March 2010 | Operational: Dec 2011
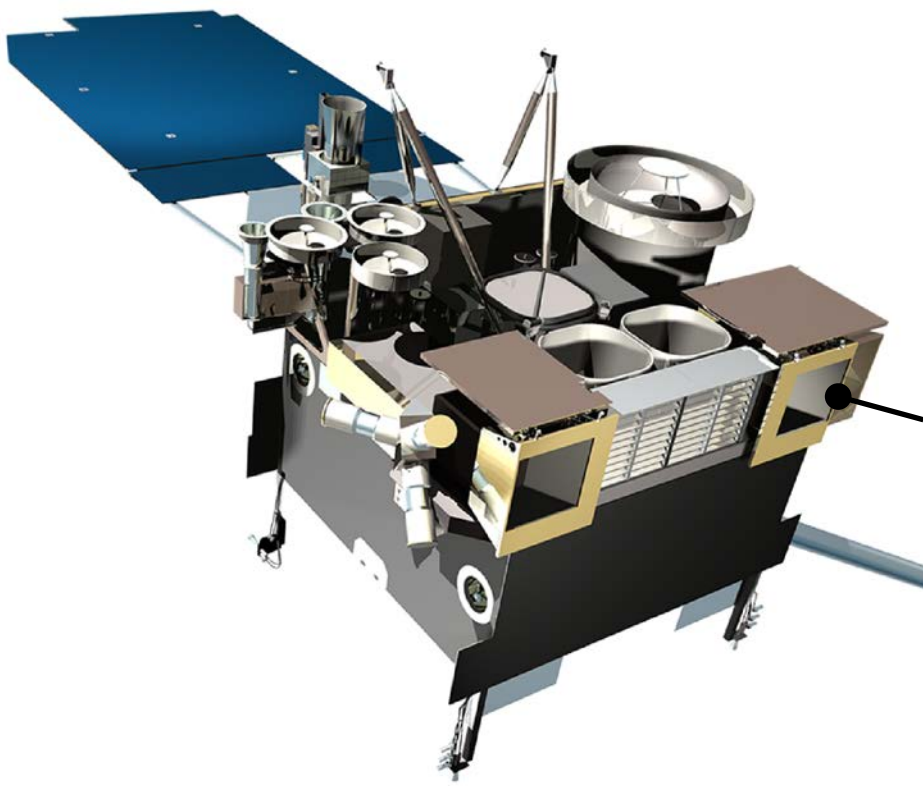
GOES-15 Sounder temperature control blanket is raised. To maintain patch temperature control, a yaw flip at Equinox to keep Sun angle below cooler plane.

Impact: 1 hour data outage and degraded products during each yaw flip maneuver and 28 hours of INR (Image Navigation & Registration) recovery period.
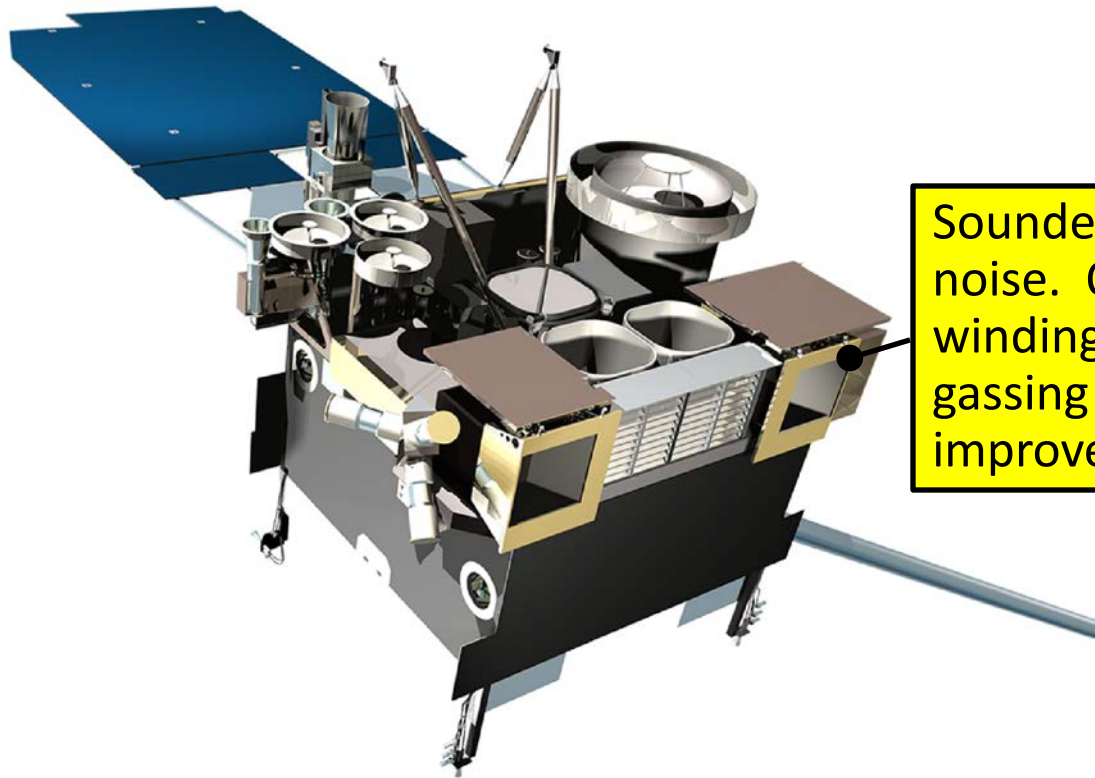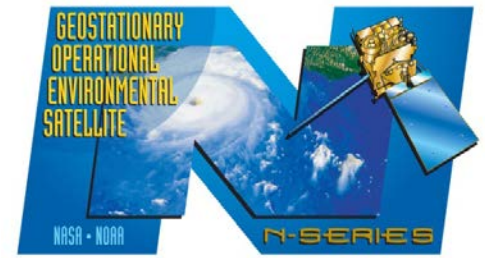
GOES-14 (Standby)

Launch: June 2009 | Operational: N/A
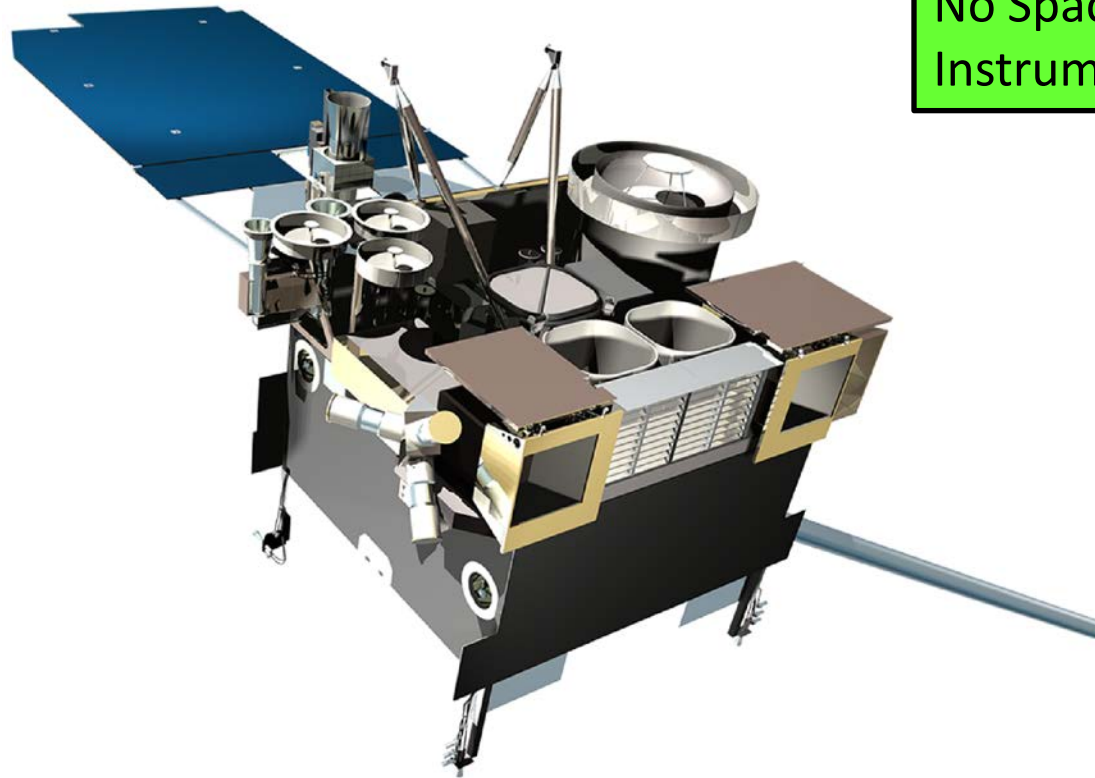
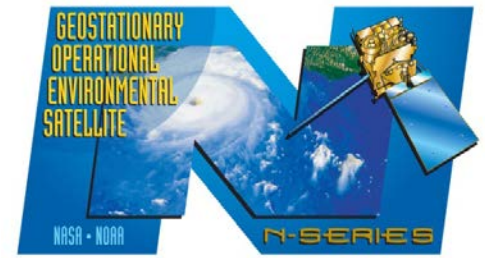No Spacecraft or Instrument Issues

GOES-13 (East)

Launch: May 2006 | Operational: April 2010

Sounder short-wave channel noise. Operating with both windings on. Sounder out-gassing in October, 2012 improved noise levels.

GOES-13 (East)
Imager IR Co-Registration Error Correction

- Improved data quality for weather products that rely on the combination of images in the IR channels (e.g. fog products that use difference between channel 2 and 4 – see figure)

- This GOES Ground System fix will be indicated by the status word "re-sampling" in GVAR Block 0

- Applied to future data only.

- Expected in SPS release 10.4 by mid-October, 2013 (originally Summer 2013, but had to resolve false detects of fire points)
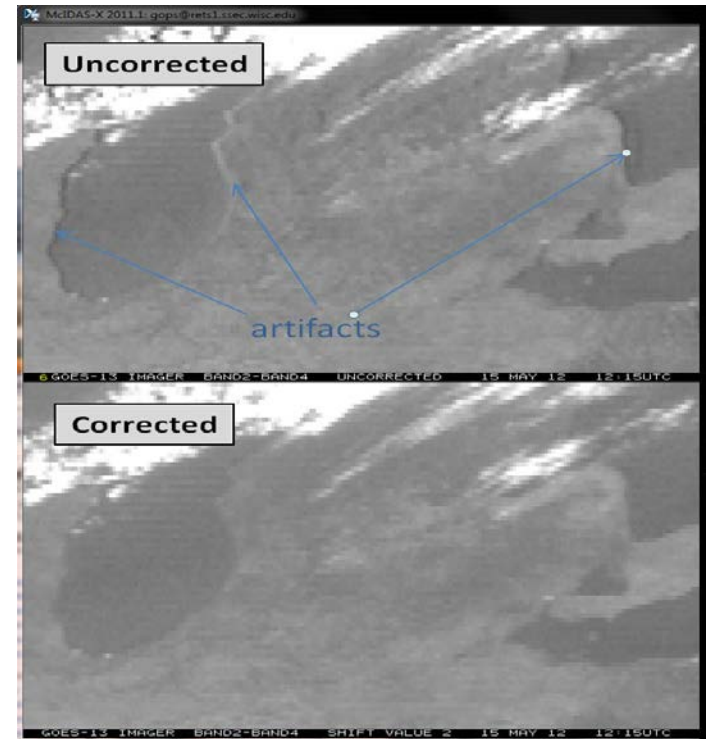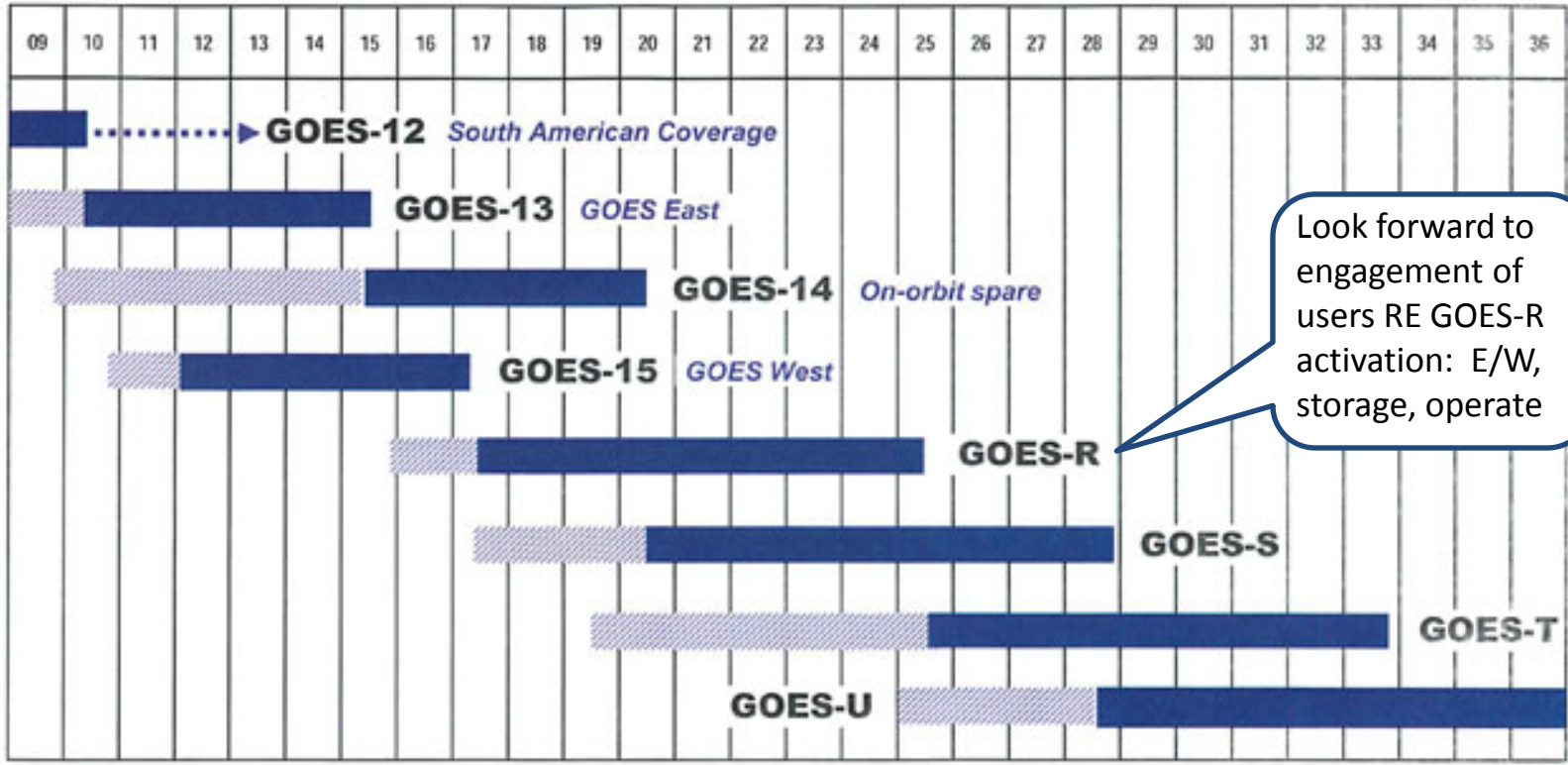

GOES-13 Imager band difference (band 2 – band 4) for the uncorrected (top panel) and corrected images (lower panel).

GOES Flyout Schedule
April 10, 2013

Fiscal Year — As of April 2013

| 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |

GOES-12 *South American Coverage*

GOES-13 *GOES East*

GOES-14 *On-orbit spare*

GOES-15 *GOES West*

GOES-R

GOES-S

GOES-T

GOES-U

Look forward to engagement of users RE GOES-R activation: E/W, storage, operate

Key

·········▶ Satellite is operational beyond design life

▬▬▬ Operational

▨▨▨ On-orbit GOES storage

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

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

POES Status (Sept 1, 2013)

http://www.oso.noaa.gov/poesstatus/index.asp

Operational	G
Spacecraft Issue but no User Impact	S/C
Operational with Limitation	Y
Non-Operational	R
Not Applicable	N/A

Spacecraft Subsystems	METOP-A	METOP-B	NOAA-19	NOAA-18	NOAA-16	NOAA-15
Launch Date	Oct 2006	Sep 2012	Feb 2009	May 2005	Sep 2000	May 1998
Operational Date	May 2007	April 2013	Jun 2009	Aug 2005	Mar 2001	Dec 1998
Mission Data Category	Secondary (AM)	Primary (AM)	Primary (PM)	Secondary (PM)	Secondary (PM)	Secondary (AM)
Payload Instruments						
AVHRR	G	G	G	G	Y(13)	Y(20)
HIRS	G	Y (33)	Y (32)	Y (3)	Y(14)	R (6)
AMSU-A1	Y(26)	G	G	G	Y(15)	Y(21)
AMSU-A2	G	G	G	G	G	
AMSU-B	N/A	N/A	N/A	N/A	G	R (12)
MHS	G	G	Y (8)	G	N/A	N/A
SEM	G	G	G	G	G	G
SBUV	N/A	N/A	S/C (9)	R (29)	Y(16)	N/A
Spacecraft Subsystems						
Telemetry, Command & Control	G	G	G	G	G	G
ADACS	G	G	G	Y (7)	Y(17)	Y(10)
EPS	G	G	G	G	G	G
Thermal Control	G	G	G	G	G	Y(22)
Communications	Y (1)	G	G	G	Y(30)	Y(23)
APT/LRPT	R (2)	G	G	G	R(18)	G
DCS	N/A	N/A	N/A	G	G	G
ADCS	G	Y (31)	G	N/A	N/A	N/A
SAR	G	G	G	G	Y(19)	Y(24)

POES Status (Sept 1, 2013)
http://www.oso.noaa.gov/poesstatus/index.asp

Operational		G
Spacecraft Issue but no User Impact		S/C
Operational with Limitation		Y
Non-Operational		R
Not Applicable		N/A

Spacecraft Subsystems	METOP-A	METOP-B	NOAA-19	NOAA-18	NOAA-16	NOAA-15
Launch Date	Oct 2006	Sep 2012	Feb 2009	May 2005	Sep 2000	May 1998
Operational Date	May 2007	April 2013	Jun 2009	Aug 2005	Mar 2001	Dec 1998
Mission Data Category	Secondary (AM)	Primary (AM)	Primary (PM)	Secondary (PM)	Secondary (PM)	Secondary (AM)
Payload Instruments						
AVHRR	G	G				
HIRS	G	Y (33)				
AMSU-A1	Y(26)	G				
AMSU-A2	G	G				
AMSU-B	N/A	N/A			R (12)	
MHS	G	G	Y (8)			N/A
SEM	G	G	G	G		
SBUV	N/A	N/A	S/C (9)			
Spacecraft Subsystems						
Telemetry, Command & Control	G	G	G	G		
ADACS	G	G	G	Y (7)	Y(17)	Y(10)
EPS	G	G	G	G	G	G
Thermal Control	G	G			G	Y(22)
Communications	Y (1)	G			Y(30)	Y(23)
APT/LRPT	R (2)	G			R(18)	G
DCS	N/A	N/A			G	G
ADCS	G	Y (31)			N/A	N/A
SAR	G	G	G	G	Y(19)	Y(24)

Longwave ch 5,6 soon to be out of spec. Ch 10 out of spec.

...ve channel ...filter wheel ...h high mode. ...P or ECMWF assimilation.

Out of spec.

...opper ...d. No usable data generated

RF loss of ~10 dB, 25% less availability for data collection.

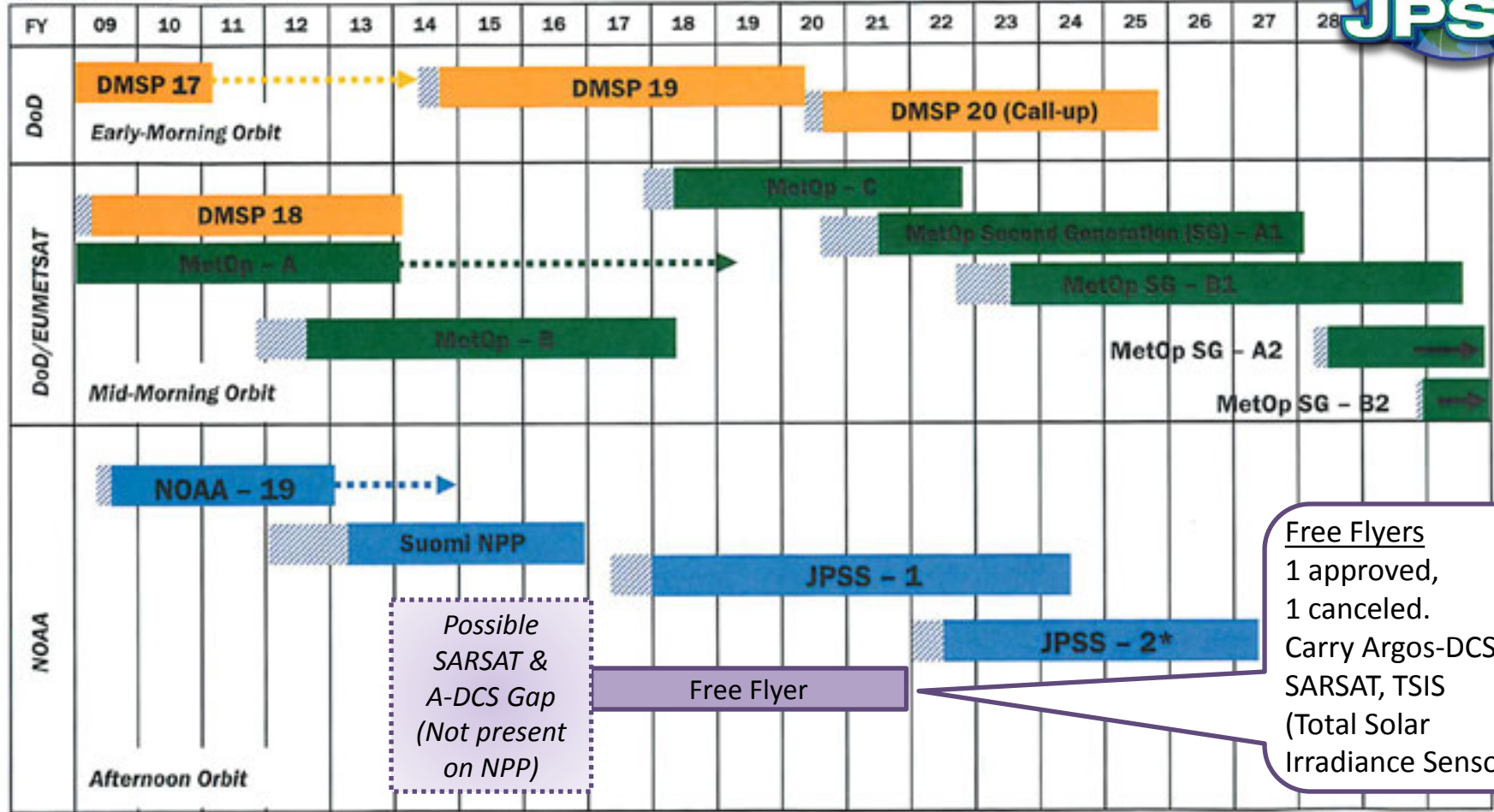# Suomi NPP – Mission Status

Launched in October, 2011

Date	Activity
2 / 2012	ATMS radiances added to ECMWF & NOAA GFS models
8 / 2013	NCEP added CrIS radiances to operational model
9 / 2013	ORR (Operational Readiness Review) for moving NDE system to ESPC including prod, dist, mon, and notif
9 / 2013	Ozone BUFR to NCEP Central Operations (NCO)
10 / 2013	Temperature/humidity soundings delivered to AWIPS2
10 / 2013	ACSPO SST to Coastwatch Servers MiRS to CLASS NUCAPS (CrIS & ATMS) Soundings to CLASS
11 / 2013	VIIRS Imagery to NCO ACSPO SST to CLASS
12 / 2013	VIIRS Polar Winds to NCO & CLASS Green Vegetation Fraction to NCO & CLASS

Launch Dates based on U.S. PB 14

FY	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

DoD — Early-Morning Orbit
- DMSP 17
- DMSP 19
- DMSP 20 (Call-up)

DoD/EUMETSAT — Mid-Morning Orbit
- DMSP 18
- MetOp – A
- MetOp – B
- MetOp – C
- MetOp Second Generation (SG) – A1
- MetOp SG – B1
- MetOp SG – A2
- MetOp SG – B2

NOAA — Afternoon Orbit
- NOAA – 19
- Suomi NPP
- JPSS – 1
- JPSS – 2*
- Free Flyer

Possible SARSAT & A-DCS Gap (Not present on NPP)

Free Flyers
1 approved, 1 canceled. Carry Argos-DCS, SARSAT, TSIS (Total Solar Irradiance Sensor)

Approved: _____
Assistant Administrator for Satellite and Information Services

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

- - - -> Operations beyond design life

///// Post Launch Test
▬ Operational
——> Operational beyond FY 2030

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

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

Data Access Services

- Current Access Services (in addition to Direct Broadcast)
  - Data Distribution Service (DDS) – (s)FTP push/pull from secure accounts *
  - NWS Telecommunications Gateway
  - GINI (GOES Ingest and NOAAPORT Interface) / NOAAPORT for Advanced Weather Interactive Processing System (AWIPS) display
  - SATEPSDIST – GOES, POES, and Derived Products; McIDAS *
  - Shared Processing DAPE Gateway – for military partners *
  - MODIS server – subset of products made by NASA *
  - Websites - http://www.ospo.noaa.gov/

  Require Data Access Request

- Archival
  - NODC, NGDC, and NCDC archive data products using CLASS

McIDAS Data Delivery Summary

SATEPSDIST –

Geostationary satellite data is ingested on a SSEC Data Ingestor (SDI), converted to McIDAS format and placed on a server.

In addition, some foreign geostationary data, polar data, model data and derived products are converted into McIDAS.

This data is served via McIDAS ADDE:

Data	NSOF Server	ADDE Name
Derived Products	SATEPSDIST1e	DPD
GOES-E	SATEPSDIST2e	GER
GOES-W	SATEPSDIST3e	GWR
Polar	SATEPSDIST4e	PLR
Model data	SATEPSDIST5	MOD
Global Mosaic 5 Sat. Comp.	SATEPSDIST6	MOS
MSG/MET	SATEPSDIST6e	MSG / MET
MTSAT	SATEPSDIST7e	MTS
Select requested data	SATEPSANONE	PUB *(not operational)*
Surface/Ship Buoy/RAOBs	FOS2	FOS (Family of Services)

No more FY Chinese data, but may obtain via CIMSS

GINI Role in AWIPS Products

- ## Created and distributed through GINI
  - Imagery (E/W Conus, PR, SuperN, Nhemi, AK, HW)
  - Sounder images (E/W Conus, ECari, NAtl, HW, Npac)
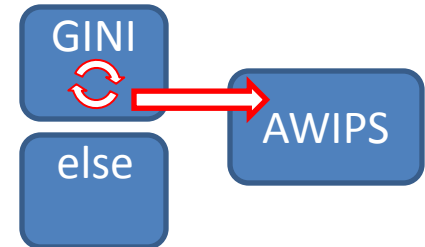
- ## Created outside GINI, but distributed through GINI
  - Five geostationary satellite composite files (VIS, IR, WV)
  - GOES Sounder Derived Products (TPW, LI, CTP, ECA, Skin-T)
  - GOES Imager Derived Products (LCB)
 - GOES / Polar Blended (POES and DMSP) TPW,
    % of TPW Normal, Blended RR products
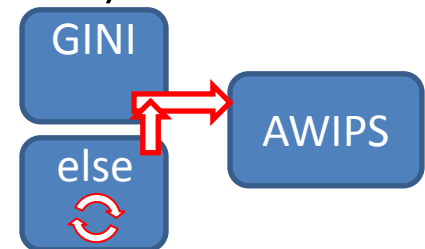
- ## Created outside GINI, distributed outside GINI
  - Precipitation Autoestimator (PG on satepsdist1, PD from DDS to AWIPS)
  - GOES BUFR and POES BUFR Soundings
  - High Density Winds
  - ASCAT
  - Text Messages: SPENES, VAA, Tropical Bulletins, Help Desk messages
  - ASOS Satellite Cloud Products
  - Autosnow GRIB Files
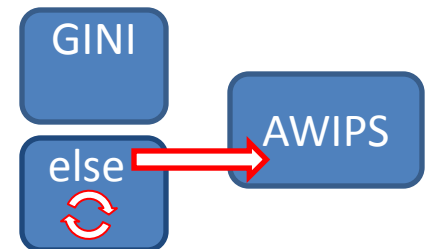
Data Access & Distribution Policy

- Full policy and forms at http://www.ospo.noaa.gov/Organization/About/access.html

- Security requirement to know and document all users accessing operational data servers and what products they are receiving
  - Users request data using a Data Access Request (DAR) form.

- Ever increasing data volume requires prioritization of users to effectively manage distribution resources and ensure effective system performance

- Higher priority access will be given to organizations with:
  - Mission and statutory authority
  - Signed NESDIS cooperative agreements or legislative authorities
  - A demonstrated timeliness requirement for near-real time data to support operational user applications

- If available and sufficient, users will be directed to sources of data external to NESDIS (e.g. CIMSS). Also recommend alternatives for denied users
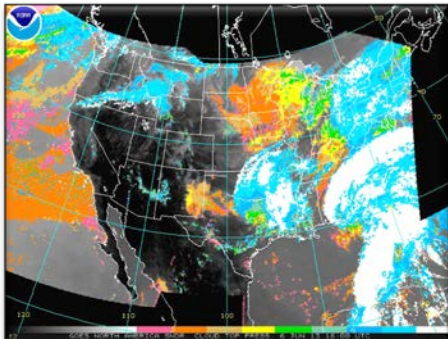
Cloud Top Pressure
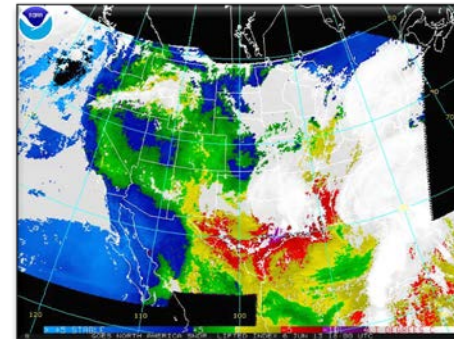
Lifted Index

Data Access & Distribution

- DDS Re-Validation was accomplished in 2012
  - Migration to new DDS was completed
  - There was a 17% reduction in the number of approved accounts

- SATEPSDIST Re-Validation was accomplished in 2013
  - Part of migration to new GEODIST servers
  - GEODIST will likely host ONLY McIDAS ADDE access
  - McIDAS GROUP access restrictions will be enacted for external users
  - It very important users identify all datasets they need
  - All non-McIDAS files will be served via DDS
  - Satepsanone is not part of the sateps re-validation and migration

Command & Control
at NSOF

- Contact information for SATEPSDIST users were not well maintained, so if you are a current user who has not been contacted, let us know ASAP to get a DAR form.

- GEODIST scheduled to be operational in January, 2014 (originally Aug, 2013)
  -- Planning for 30 days parallel test period prior to becoming operational
  -- Planning to have SATEPSDIST run with 8x5 support for 2 weeks after cut-over date.

Future Data Access & Distribution

- New enterprise system Product Distribution and Access (PDA) is coming
- Will be used for legacy GOES/POES, NPP, IJPS and GOES-R data access
- Operational for legacy and NPP planned for Oct 2014
- McIDAS ADDE access will remain on GEODIST
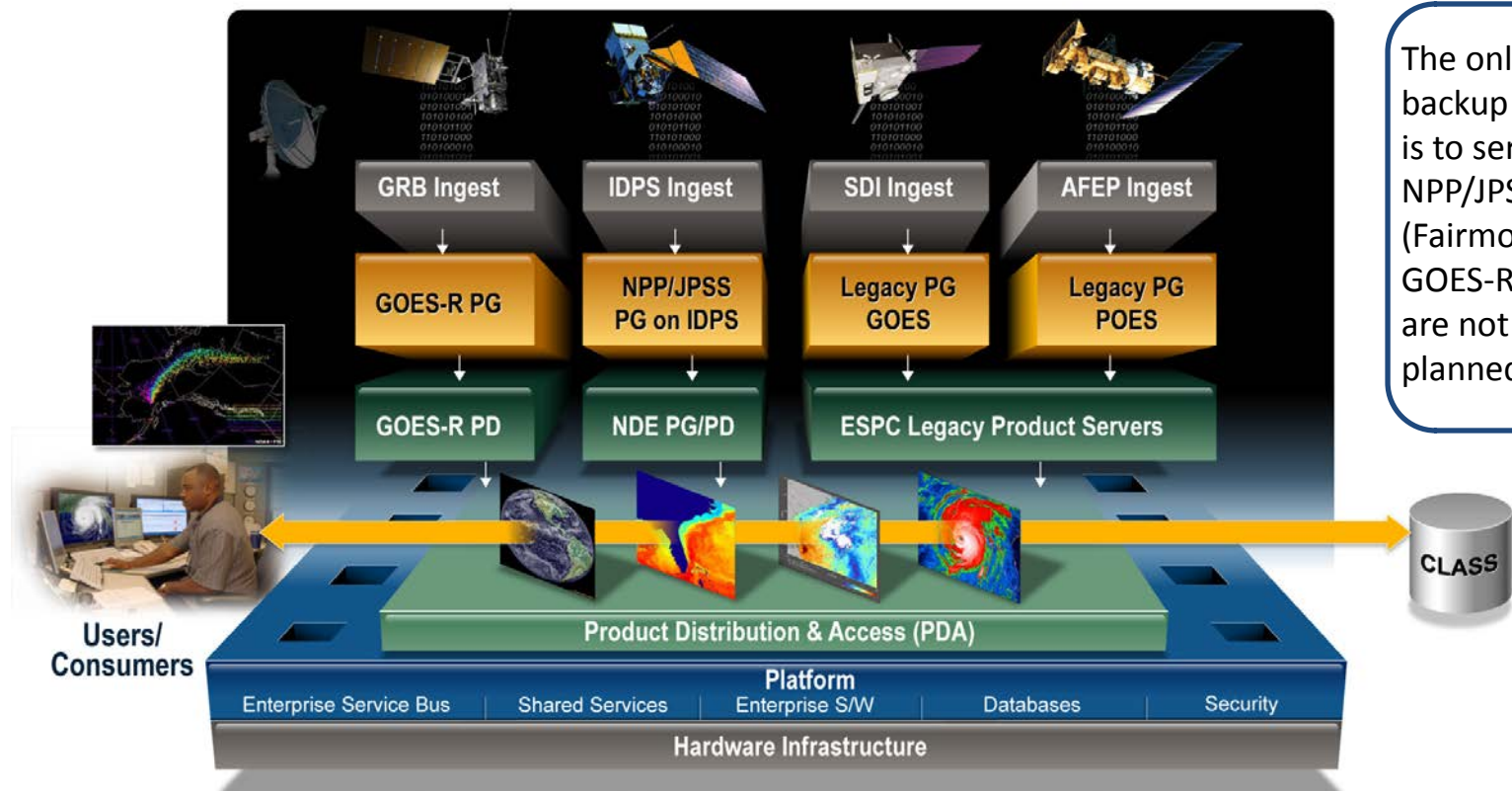
The only planned backup for PDA is to serve NPP/JPSS at CBU (Fairmont, WV). GOES-R & Legacy are not yet planned.

ESPC Notifications, Status, and Contacts

24/7 Help Desk	ESPCOperations@noaa.gov
ESPC Messages	http://www.ssd.noaa.gov/PS/SATS/messages.html
WMO GTS Bulletins	Urgent: http://www.weather.gov/view/validProds.php?prod=ADM&node=KNES Routine: http://www.weather.gov/view/validProds.php?prod=ADA&node=KNES
User Services	SPSD.UserServices@noaa.gov
Data Access	NESDIS.Data.Access@noaa.gov
Webmaster	SSDWebmaster@noaa.gov
Facebook	www.facebook.com/NOAANESDIS
Twitter	www.twitter.com/noaasatellites
Satellite Ops Status	http://www.oso.noaa.gov/daily-news/index.asp
Press releases	http://www.nesdis.noaa.gov/news_archives/
Web	www.ospo.noaa.gov

McIDAS at ESPC

- ESPC has a standing, annual contract with SSEC for McIDAS Support and ongoing development

- ESPC has two representatives on the McIDAS Advisory Committee (MAC) (<u>How determined?</u>)
  - Gregg Gallina (NESDIS/OSPO/SPSD/SAB)
  - Jessica Braun (SSAI in NESDIS/OSPO/SPSD)

- Typically greater representation at MUG
  - OSPO/MOD - Bonnie Morgan, Russ Lancaster
  - OSPO/SPSD - Tom Renkevens, SAB Personnel

McIDAS & ESPC Applications

- Over 50 applications in ESPC use McIDAS, McIDAS libraries, input & serve McIDAS AREA Files, MD point files, GRID (McIDAS GRID Format), and Text via ADDE

- ADT, ABBA, CSBT, HMS, others…
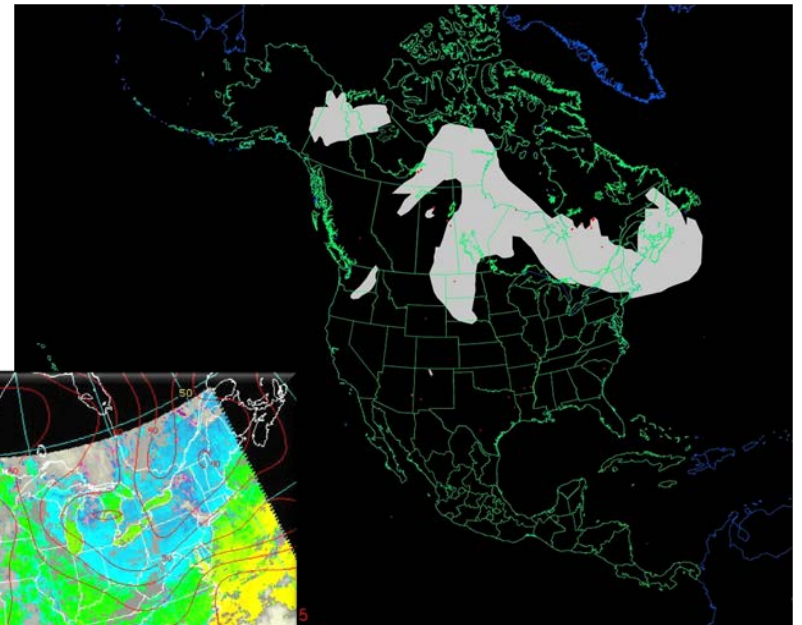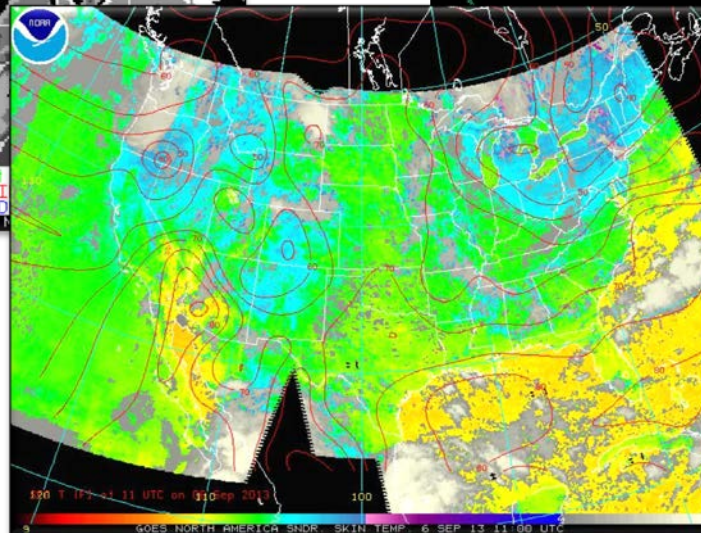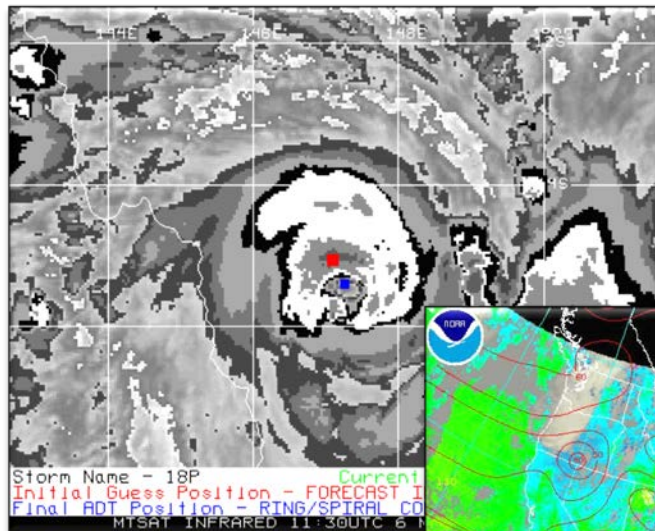
Ad hoc McIDAS Usage at ESPC

- Heavy usage of the local GINI server in McIDAS format for validation checks (image previews) for conversion of GOES-13 and GOES-15 data to NWS AWIPS

- Great reliance on GINIs during GOES-13 anomalies to confirm the output images quickly and efficiently (Generated mock AWIPS files to confirm changes to use GOES-14).

- GINIs, remappers, and Level 2 products that utilize McIDAS were all used for
  - The new GOES-13 rapid schedule (to compensate for GOES-12 decom)
  - The new GOES-13 optimized routine schedule (TBD)

McIDAS Systems at ESPC

- Over 20 SDIs at NSOF and Wallops OBF
  - Several are dedicated...
  - GOES-East, -West, -14, Remappers
  - MTSAT Remapper
  - GOES Ingest and NOAAPORT Interface (GINI)

- Over 20 Workstations in SAB
  - -X for realtime analysis, product generation, and QA/QC
  - RHEL 5 Linux on Intel x86
  - Many "home grown" programs in Fortran, .PGM, BATCH

- Advantage - The ADDE protocol allows for many users accessing single systems with one port (112)
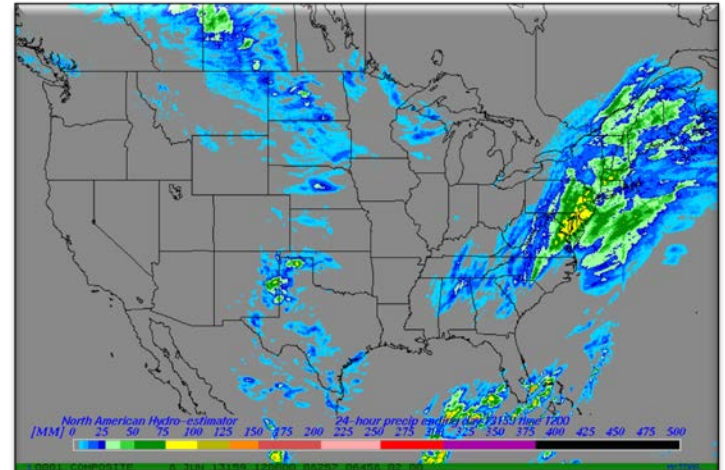
Global Hydro-Estimator 1 Day Total

- ESPC Product Generation/Distribution
  - IBM P6 Series with Linux Partitions
  - Many other Linux systems (gp*)
  - GINI running on Linux
- Con – Lack of AIX support (GOES-East, GOES-West, and the ESPC Product server are all on AIX)
- As of last week, ESPC ported the last GINI system (nport5) from SGI to Linux

McIDAS Advantages in SAB

- Institutional knowledge - SAB Analysts have great familiarity with McIDAS

- Ability to have near-global coverage at multiple domain scales and resolution (~980 frames) of quickly and routinely loaded (SPIDER) imagery at the tap of a button (TU Hotkeys) to perform interrogation, manipulation and value-added analysis when every second counts for time sensitive and rapidly evolving natural and man-made hazards; such as volcanic eruptions, flash flooding, fires, etc.

  - This cannot be done presently with NAWIPS or HMS. In fact, depending on the area of concern up to 20 minutes is lost waiting for imagery to show up on these other systems vs McIDAS

  - HOWEVER, since the NWS is the primary user of many SAB products (e.g. volcanic ash and heavy precipitation), there are benefits for SAB to conduct PG on NAWIPS like, <u>quick overlays</u> and seamless <u>in-tool distribution</u>. Fire uses HMS for analysis.
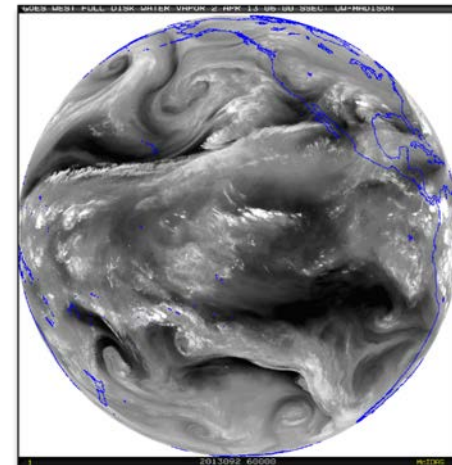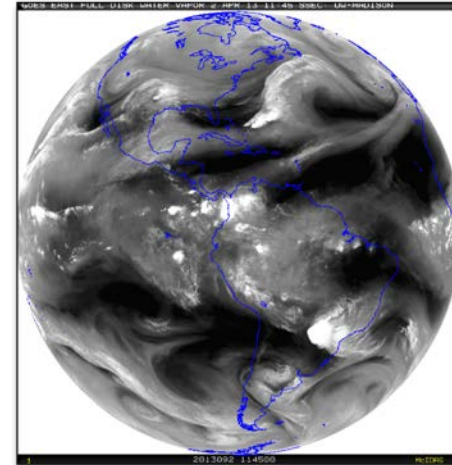
McIDAS Challenges in SAB

- Maintaining efficient access to servers for operations (SPIDER is in-house stop-gap measure). Any interest in taking on support for SPIDER?

- Additional customer requirements for advanced data formats (GIS, KMZ)... writing own local code for NPP VIIRS, Windsat, others to convert them to AREA files as there are no local servers

- Learning Curve with commands

- Color Tables – only 8 bit – challenge with upcoming GOES-R
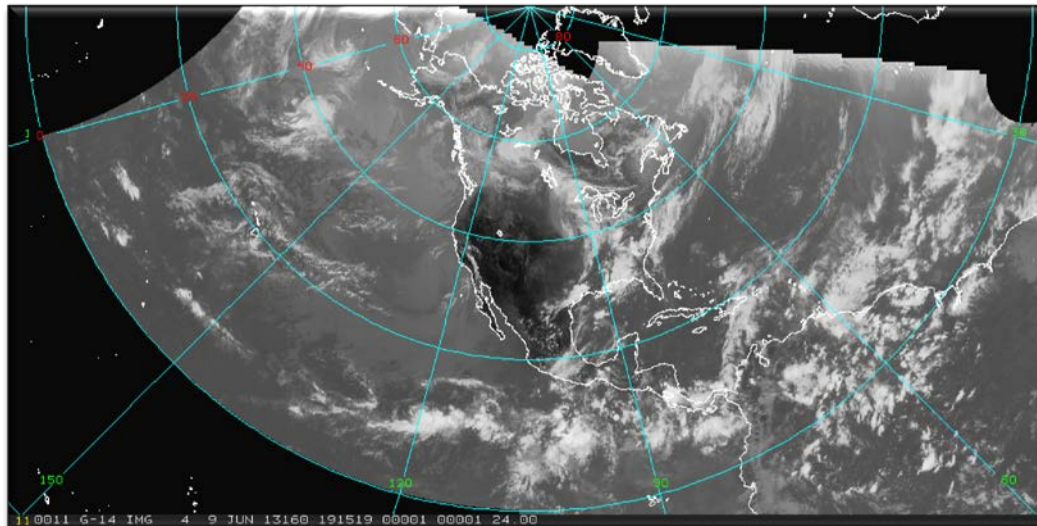
North Hemi Composite - IR

SAB Use of McIDAS

- SAB is 24x7 operation of 5 disaster mitigation desks (Heavy Precipitation, Volcanic Ash, Fire/Smoke/Dust, Marine Pollution, Tropical Cyclones) All desk use Mc-X in some capacity, except Marine which is ArcGIS

- McIDAS-X Usage: ~10 operational Linux systems with 24 GB RAM each and multiple monitor visualization setup

- A persistent daemon (image loop refresh) "SPIDER" uses ADDE protocol to display ~100 imagery loops

- Use Fnc keys to switch loops and pan entire globe through SPIDER loaded frames (e.g. NW Pacific IR, Shift+F1 - NW Pacific Vis, F2 - Central US IR) and still use command line (grudgingly)

- Lots of batch commands and everything is scripted by business work flow

- Uses McIDAS AREA files for web site as do NWS offices across country, namely NHC, AWC, NWS Western Region
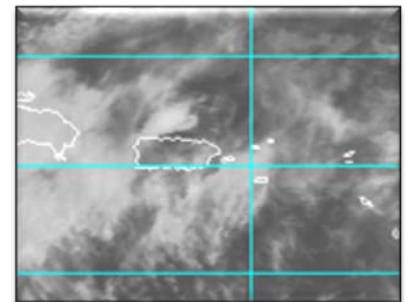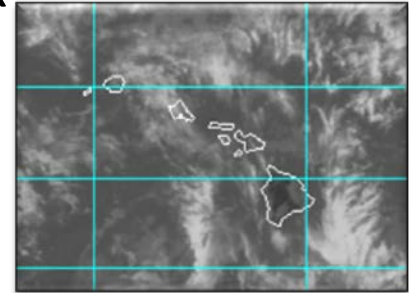
Format Conversion Challenge
GRIB1 to GRIB2

- NCEP will decommission GRIB1 in Nov 2013
- Many ESPC applications are set up to ingest NCEP data in McIDAS GRID format
- We are working on our Model Server to decode the NCO data from GRIB2 format and generate GRID format by using the McIDAS GRIB Server
- This may require using the MATH or the UNITS for the McIDAS GRDCOPY commands
- Conversations with ESPC & SSEC technical POCs are underway

McIDAS AREA files for GOES-R

- GOES-R files will come in NetCDF, which is not currently readable by McIDAS-X
  - No migration path has been proposed to ensure SAB operational needs will be met
  - Legacy AREA files for other satellite's data will still be available in PDA
- Need SSEC to translate (provide cal/nav blocks) from GOES-R NetCDF files to McIDAS AREA files for use in McIDAS-X
  - Would these "on the fly" translations sacrifice timelines?
  - Presumably this server would reside in ESPC
  - Does standing OSPO contract with SSEC cover the translation?
  - Is SSEC looking to GOES-R or PDA to fund translation? PDA has a requirement due in 9/2013 to provide the McIDAS AREA files. This will be deferred. Are you asking GOES-R to fund SSEC in early 2014?
  - Estimated date for when the translation may be provided?
- SAB is also looking at ArcGIS (brand new enterprise license), IDL, AWIPS
- We understand (via GOES-R folks) there is already some existing Mc-V support to read NetCDF files, so is ESPC covered?
- Question – Other users migrating from Mc-X to Mc-V? Experiences?

Ingestor for GOES-R?

- Is an ingestor (SDI) planned for GOES-R?
- If so, what is output format? AREA format, like present SDIs?
- If so, then the NetCDF conversion to AREA format is unnecessary, correct? Sunset of McIDAS AREA files would occur as legacy satellites retire
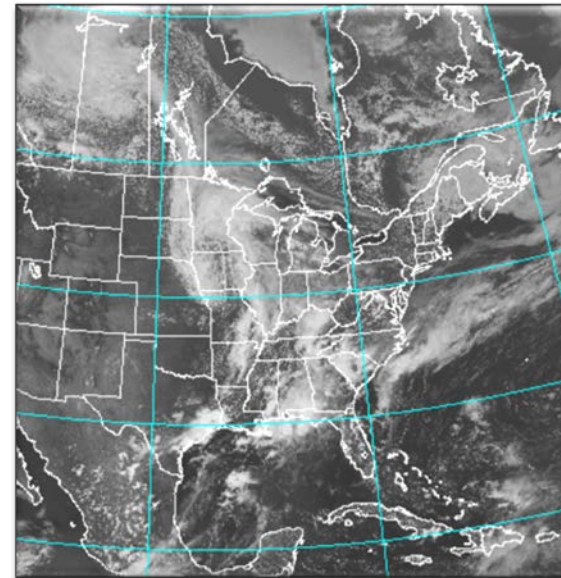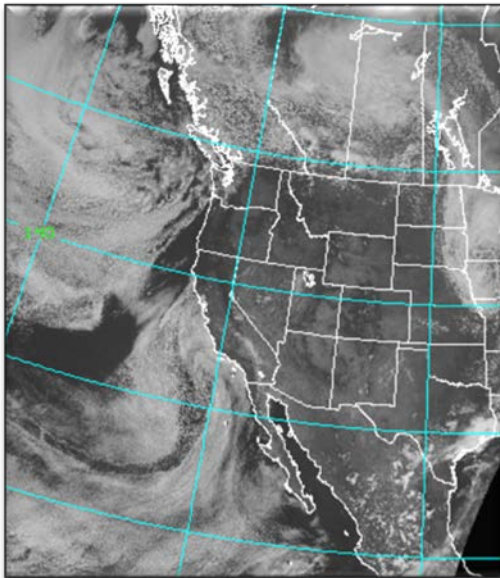
Will Mc-X be upgraded to handle…

- Increased temporal resolution of GOES-R
  - Otherwise, SAB will have to develop and re-write SPIDER
  - Perhaps get a better SKU (Skedular command)
- Increased spatial resolution of VIIRS/GOES-R while preserving 1 to 1 pixel ratio
- Overlay of multiple files à la AWIPS2 (e.g. imagery and other obs files)
  - Time reference overlays to match imagery timestamps (read image time and align overlays).
  - Mc-V has this functionality, but not Mc-X. Impacts all SAB desks, but especially Precipitation.


Total Precipitable Water

Surface Skin Temperature
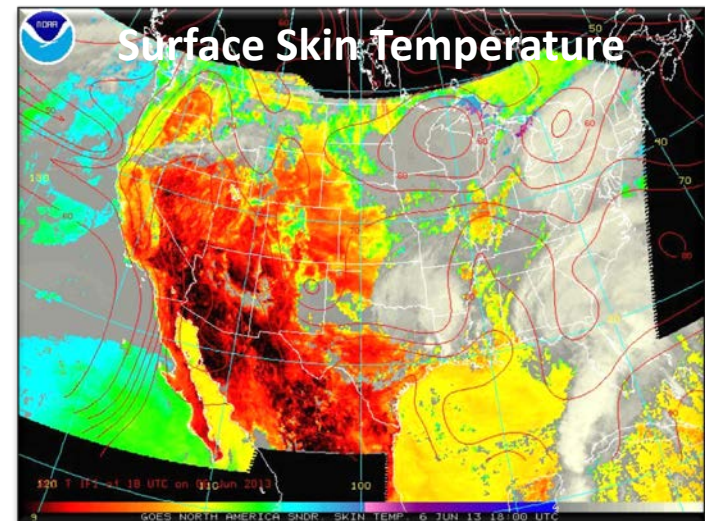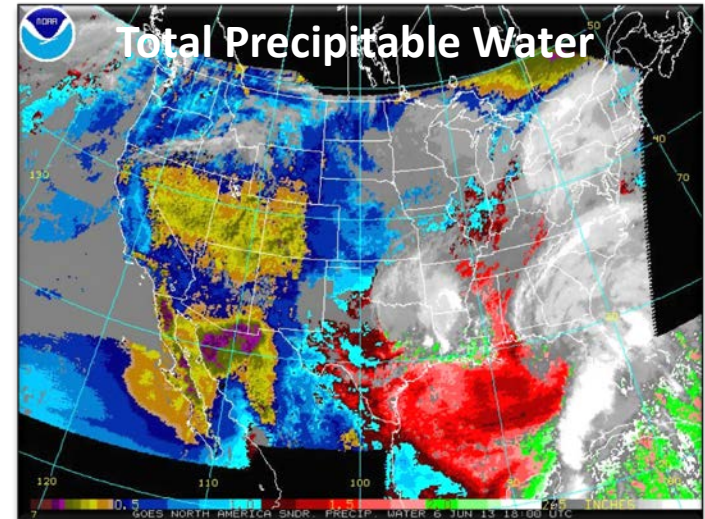
Will Mc-X be upgraded to handle…

- How often is Mc-X maps database updated? Missing Pacific Islands currently… :(

- Can Mc-V maps be supplied to Mc-X? There are currently better maps in V than X.

- Are there plans to improve the resolution/quality of the maps in McIDAS-X or McIDAS-V

- Can SAB update station database on their own?
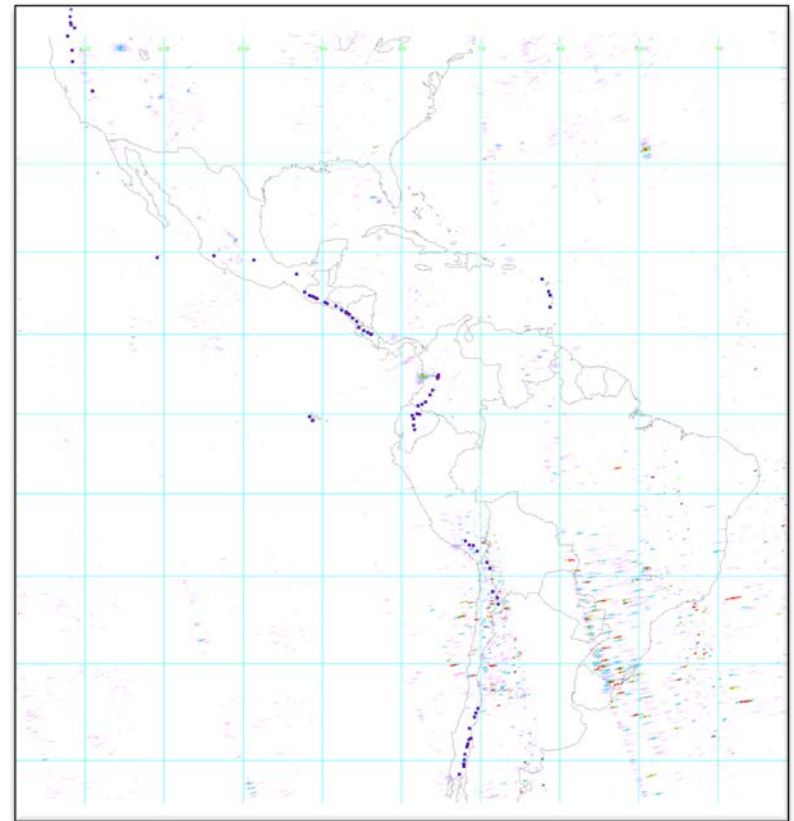
OMI Tropics SO2 Composite
(OMI_ME_SO2_DDC2.GIF)

Will Mc-V be upgraded?
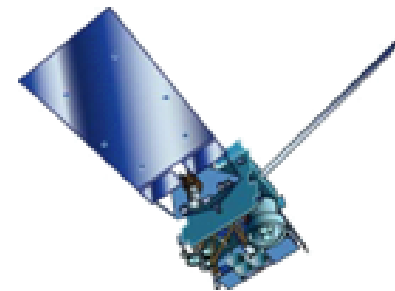
- Does not meet SAB needs at present
  - Too slow and too prone to crash while handling imagery loops
  - Fine for a small set of images, but for a loop of many images or many loops of a small set of images, it becomes too slow or crashes
- What is the status with the memory leak?
- How much faster/more data can be loaded before crashing?
- SAB has 48 hot keys with 10 image loops constantly loaded on each workstation… currently these will not load in Mc-V
- Can the 3D and Hydra displays be turned off entirely (not just hidden). Perhaps this could improve response and stability?

Will Mc-V be upgraded?

- SAB is not looking to have a one-to-one replacement of their current McIDAS-X method of 48 loops and 1000+ frames. A 10 frame loop will not be sufficient for GOES-R's routine high temporal resolution.

- The ability to load high resolution data quickly and efficiently without reduction of bit depth within each pixel is extremely important, and this is not limited to just one type of data nor one set of images.
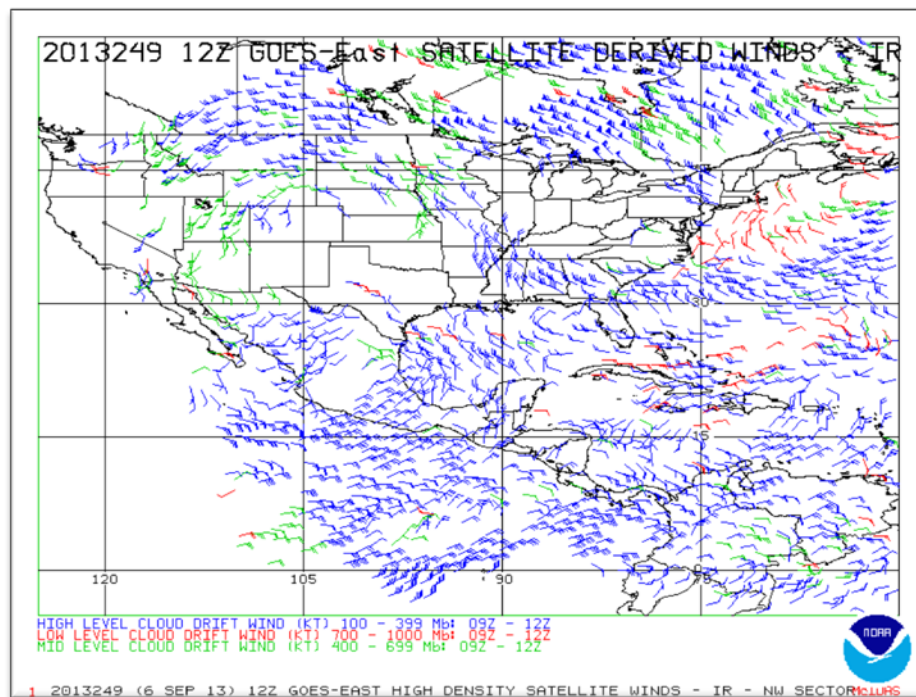
HD Winds image
(Point Data (MD File))
c812nwir.gif

ADDE access to S-NPP imagery?

- Are there plans to provide ADDE access to SNPP image data (raw, native satellite projection data, NOT remapped)?
- Currently, SAB has ADDE access to imagery, composites, and products and ftp access to HDF files of the raw, native projection data
- Interested for the sake of Hazard Mapping System (Fire & Smoke)
  - Since the fires are often single pixel events, the typical remapping that occurs in the other products may mask the fire signature
  - The native resolution/projection is also important for emissions modeling if the user makes use of the fire's radiative power
  - Does the PEATE ADDE server @ SSEC provide these data?
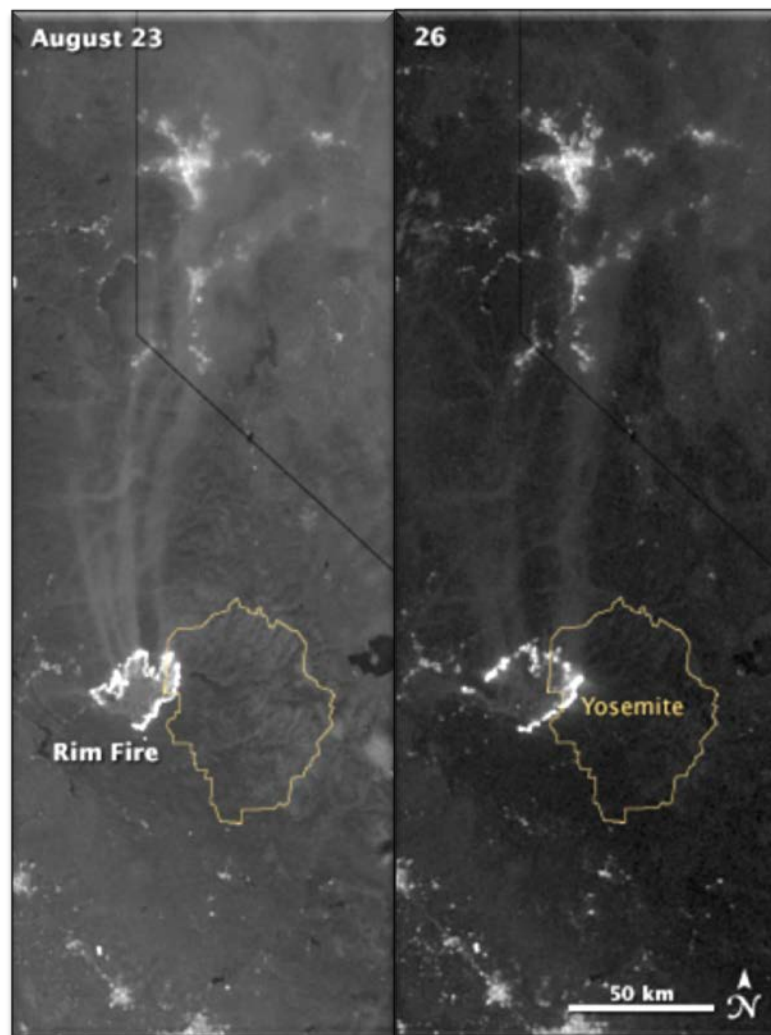
NOAA S-NPP VIIRS day-night band imagery.
Composite assembled by Jesse Allen and Robert Simmon.

ADDE Server for Himawari-8?
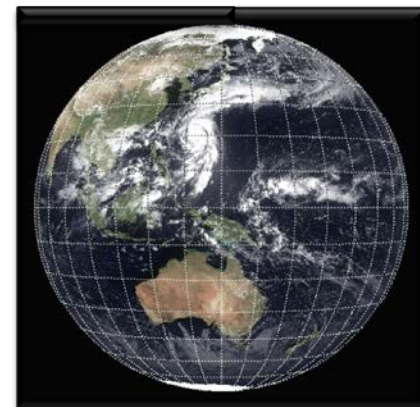
- Launch in summer, 2014
- Late 2014 – test data available via FTP
- Operational in summer, 2015 replacing MTSAT-2
- Equivalent spectral channels to GOES-R ABI (16 channels) and similar specifications
- No DRO transmissions, so either JMA will provide a commercial satellite relay or use NREN internet2
- NWS reqs: Imagery, Radiances, AMVs (NetCDF4)
- New SDI ingestors will be required to process H-8 data for McIDAS display
- Any plans for an ADDE server for Himawari-8?

Summary of Questions

- What is SSEC's plan for McIDAS-V to enhance performance for visualization? Could ESPC's needs eventually be met? Is there an ideal solution?

- Will McIDAS-X eventually have a "module" to read NetCDF4 files?

- Will SSEC develop an ADDE (or ADDE-like) data server for GOES-R?
  - If so, what file format will these data be in? AREA? NetCF4? Other?

- What is SSEC's plan to build an SDI to receive GRB data?
  - If there is a plan to receive the data via GRB, what format will the data be put in once received?

- Are MUG funds "applied" to be used towards such step function transitions from one satellite generation to another, or is a "plus up" needed?

- Outside of ESPC, what is the SSEC / MUG plan for "user transition" of the other 40-50 MUG members for GOES-R data? (e.g. AREA file format, ADDE, McIDAS-X vs V)

- Basically, the bottom line question for SSEC/MUG - what are you plans for GOES-R? From an ingest of GRB, all the way to a distribution perspective.
  - GRB Industry Day is October 25, 2013 in Silver Spring, MD   FedBizOps: https://www.fbo.gov/index?s=opportunity&mode=form&id=bd2a1dcc059a14c83a692b946342b25d&tab=core&_cview=0

Thank You!