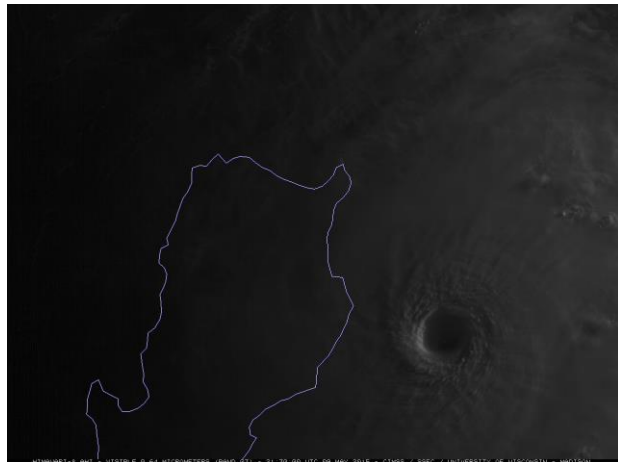# Status of NOAA Satellite Operations & McIDAS at ESPC

Jason Taylor – User Services Coordinator
Tony Salemi – Satellite Imagery Analyst
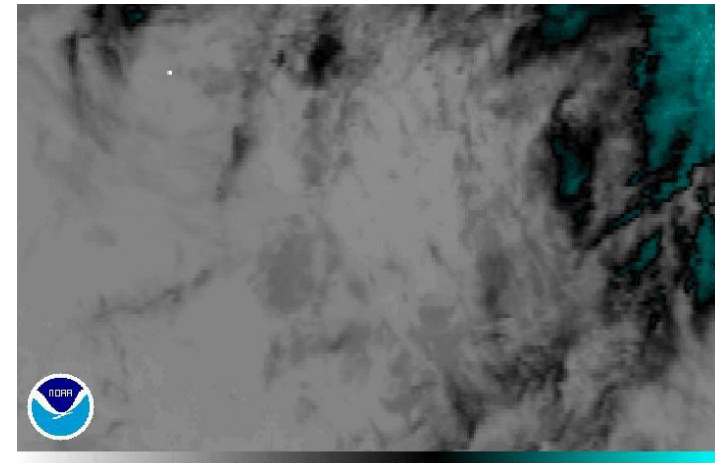NESDIS/OSPO/ Satellite Products and Services Division

McIDAS Users Group (MUG) Meeting

Madison, WI
June 8 – 11, 2015

Super Typhoon Noul on 5/9/15: Himawari-8

Wolf Volcano Eruption on 5/25/15: GOES-13

ESPC Coordination for MUG Talk

NESDIS / OSPO / SPSD @ NCWCP

- Matt Seybold,   GOES-R Data Ops Manager
- Natalia Donoho,   User Services Coordinator
- Clay Davenport,   Senior Product Programmer
- Robert Glassberg,   Senior Product Programmer
- Tom Renkevens,   SPSD Division Chief
- Shuang Qiu, Suomi NPP PAL
- John Paquette, Physical Scientist

NESDIS / OSPO / SPSD / SAB @ NCWCP
- Mark Ruminski,   Fire Team Lead & All Desks
- Davida Street,   Branch Chief

NESDIS / OSPO / MOD @ NSOF
- Bonnie Morgan,   GOES Product Area Lead
- Donna McNamara,   Data Access Manager

National Center for Weather & Climate Prediction (NCWCP)

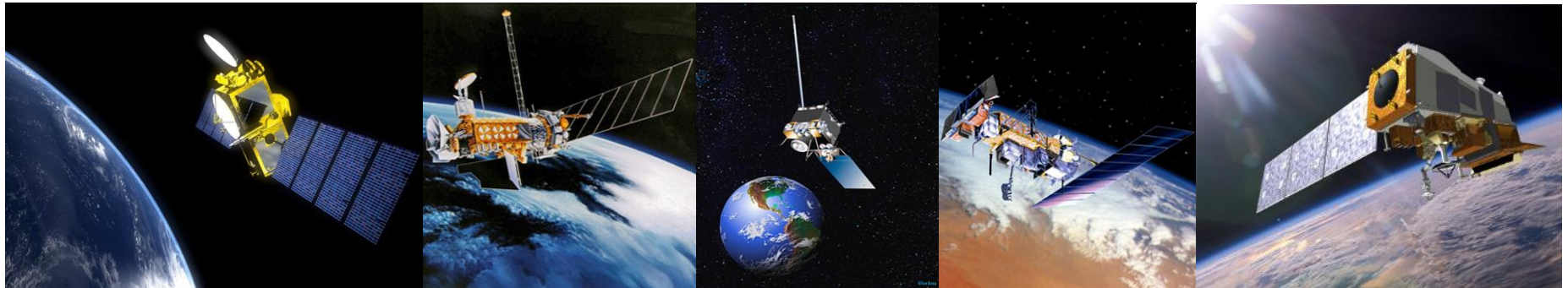NOAA Satellite Operations Facility (NSOF)

Presentation Overview

- Overview of the Office of Satellite and Product Operations (OSPO)

- Satellite Status and Updates

  - GOES, POES, Suomi NPP

- Data Access and Distribution

- McIDAS at ESPC

  - McIDAS at Satellite Analysis Branch's Tony Salemi

- GOES-R McIDAS Data for Users

- Himawari-8 Project Status and Update

- Q&A
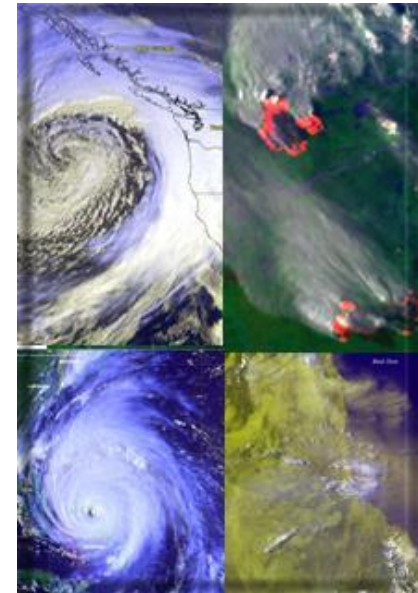
NESDIS Office of Satellite and Product Operations (OSPO)

- 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

NESDIS Office of Satellite and Product Operations (OSPO)

- OSPO has locations at four major facilities housing around 700 people.

- NOAA Satellite Operations Facility (NSOF) in Suitland, Maryland
  - Mission Operations Division (MOD)

- NOAA Center for Weather & Climate Prediction (NCWCP) in College Park, Maryland.
  - Satellite Product and Services Division (SPSD)

- Command and Data Acquisition Stations in Alaska and Virginia.
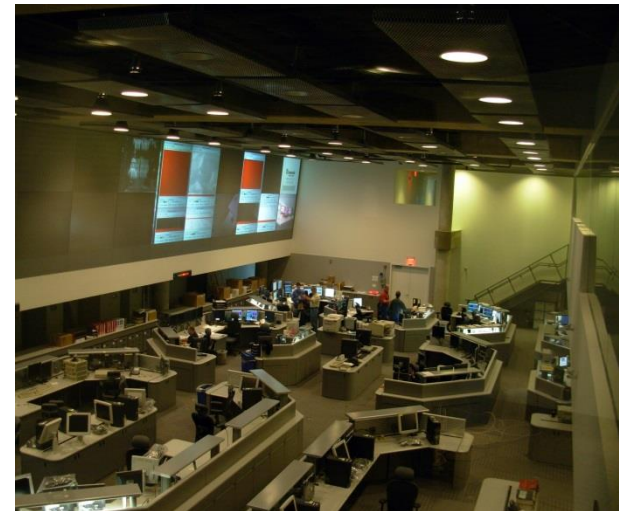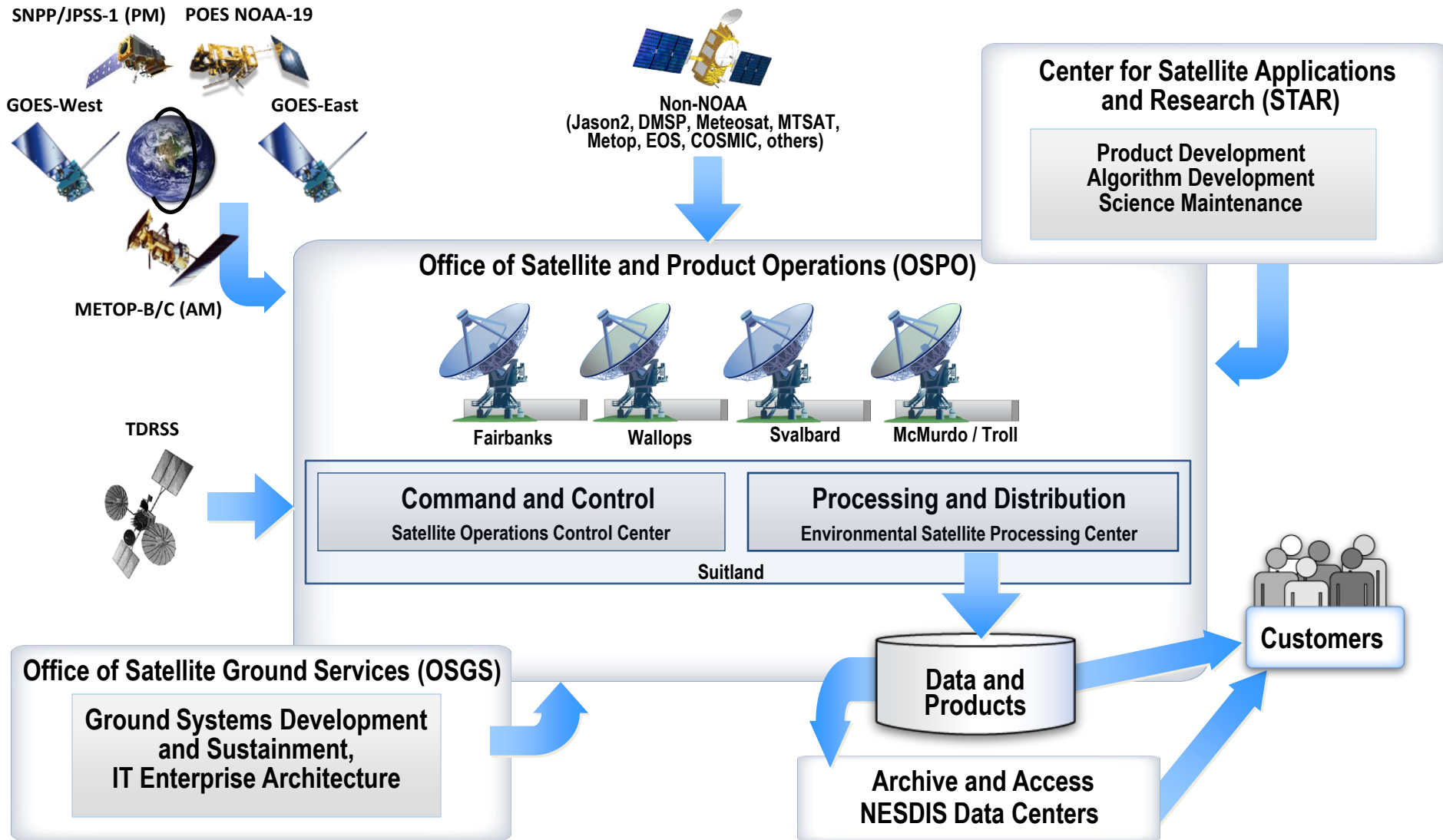

NSOF

Fairbanks CDAS

NCWCP

Wallops CDAS

OSPO's 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

Satellite Operations, Processing and Distribution

SNPP/JPSS-1 (PM)   POES NOAA-19

GOES-West   GOES-East

METOP-B/C (AM)

Non-NOAA
(Jason2, DMSP, Meteosat, MTSAT, Metop, EOS, COSMIC, others)

Center for Satellite Applications and Research (STAR)

Product Development
Algorithm Development
Science Maintenance

Office of Satellite and Product Operations (OSPO)

Fairbanks   Wallops   Svalbard   McMurdo / Troll

TDRSS

Command and Control
Satellite Operations Control Center

Processing and Distribution
Environmental Satellite Processing Center

Suitland

Office of Satellite Ground Services (OSGS)

Ground Systems Development and Sustainment,
IT Enterprise Architecture

Data and Products

Archive and Access
NESDIS Data Centers

Customers

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…
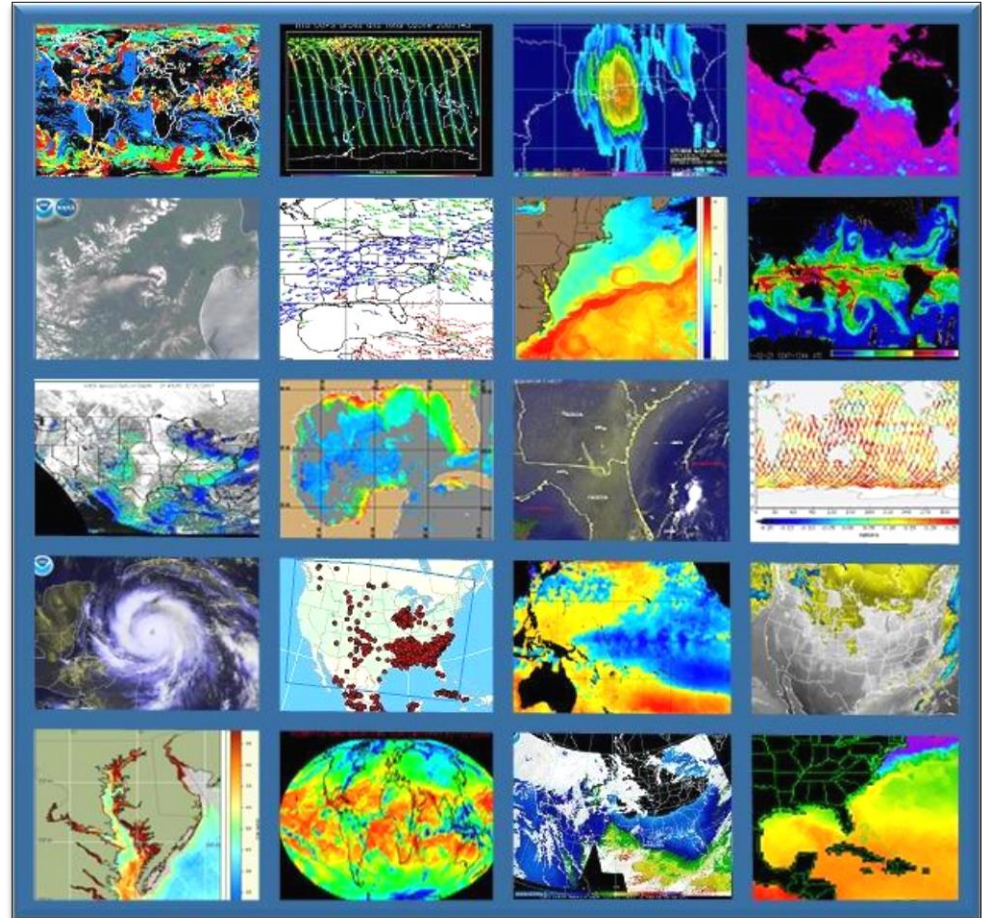
Direct Service Operations

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/
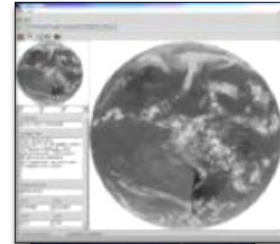
Data Collection:

- 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 Satellite Aid Tracking (SARSAT):

- NOAA satellites are used to relay distress alerts from aviators, mariners and land-based users (75 rescued through May 22, 2015).
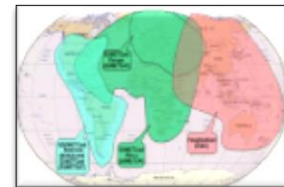
  http://www.sarsat.noaa.gov/

Geonetcast Americas:

- Data from NOAA for diverse societal benefits - agriculture, energy, health, climate, weather, disaster mitigation, biodiversity, water resources, and ecosystems.
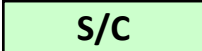
  http://www.geonetcastamericas.noaa.gov/index.html

GOES Status

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
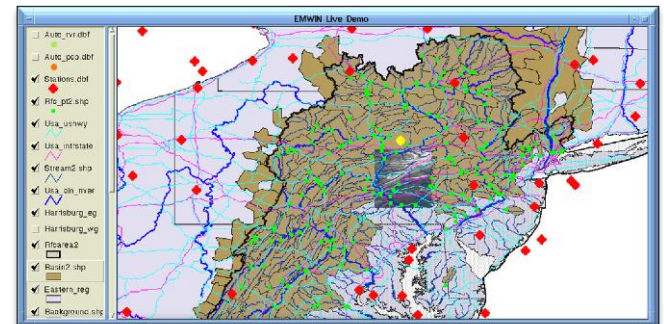
See summary of GVAR Instrument Factory Coefficients and Detector Offsets by Block:
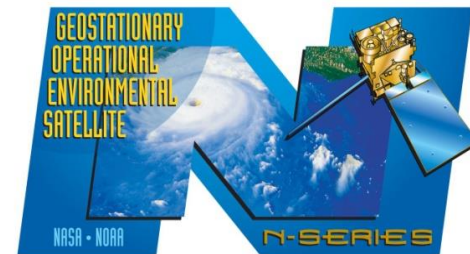http://www.osd.noaa.gov/GVAR_Downloads/gvar_downloads.html

GOES Status (May 4, 2015)

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

Key

Operational
G

Spacecraft Issues, but No User Impacts
S/C

Operational with Limitations
Y

Non-Operational
R

http://www.ospo.noaa.gov/Operations/GOES/status.html

GOES-13 (East)
Launch: May 2006 | Operational: April 2010

Issue #1:
Sounder filter wheel anomaly.
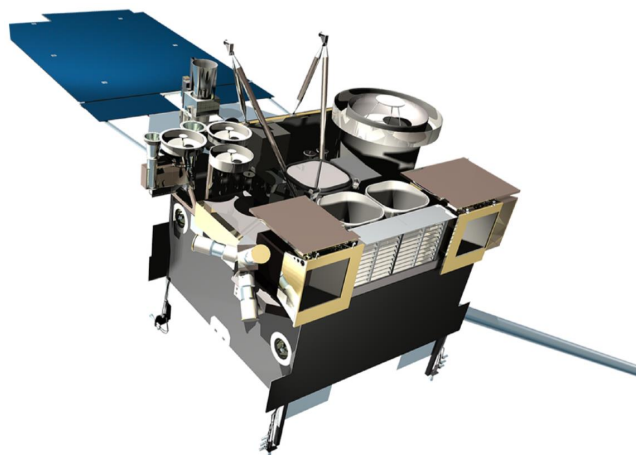Sounder frame sync losses.

Impact:
Sounder pixel dropouts
(minimal).

Issue #2:
CRS capacitor short.

Impact:
XRS X-ray measurements can
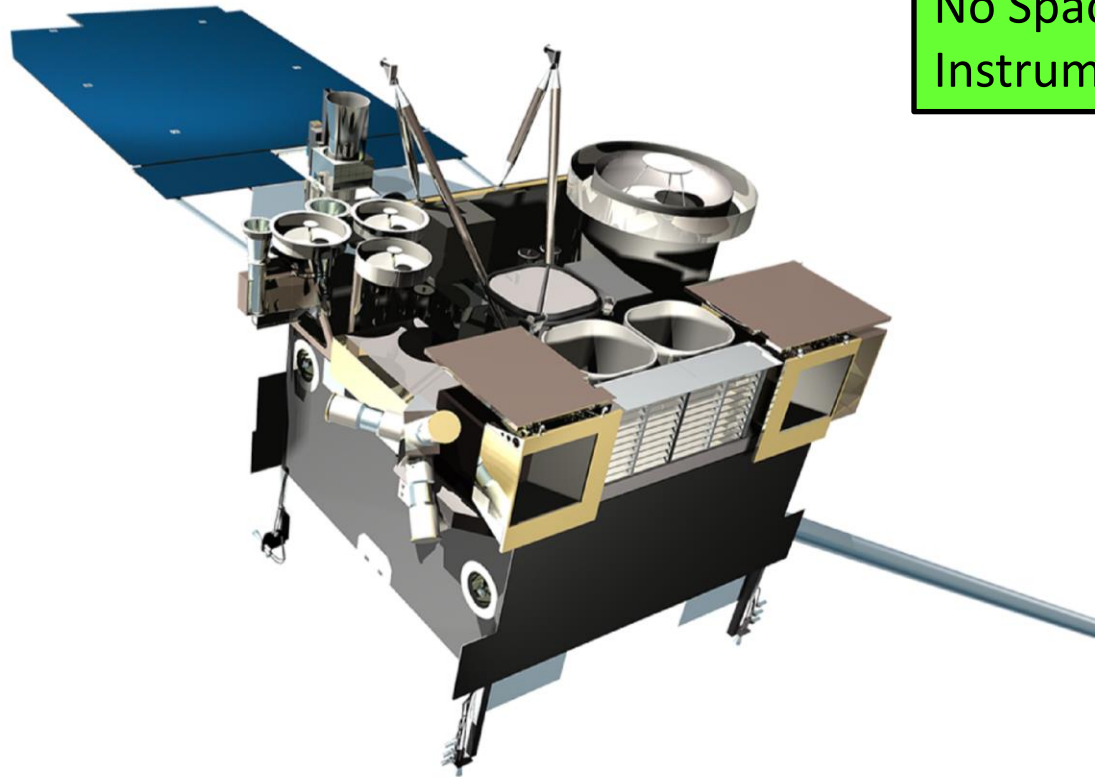potentially invert unexpectedly.

Issue #3:
SXI detector damage due to
flare.

Impact:
Nine rows currently affected
out of 512 total.

GOES-14 (Standby)
Launch: June 2009 | Operational: N/A

No Spacecraft or Instrument Issues

GOES-15 (West)

Launch: March 2010 | Operational: Dec 2011

Issue #1:
Star Tracker1 (ST1) and Star Tracker2 (ST2) failure. Operations with ST3 only.
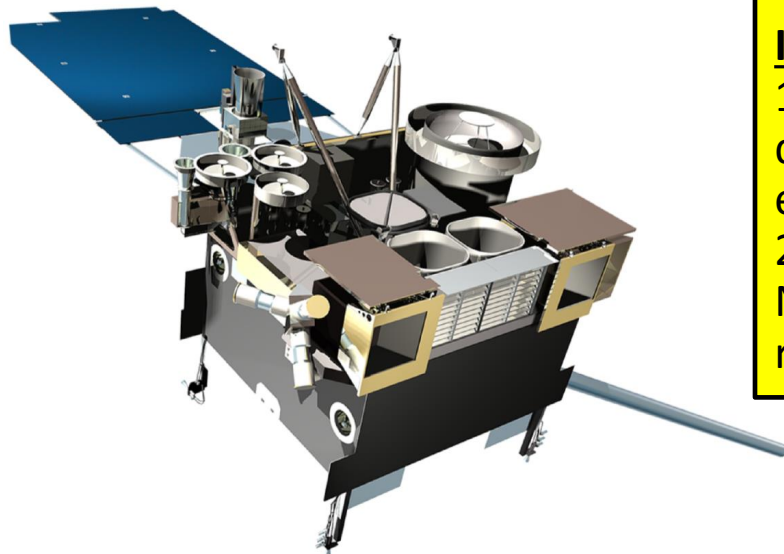
Impact:
Degraded INR performance in both E/W and N/S directions.

Issue #2:
Sounder temperature control blanket is raised. To maintain patch temperature control, a yaw flip at Equinox to keep Sun angle below cooler plane.
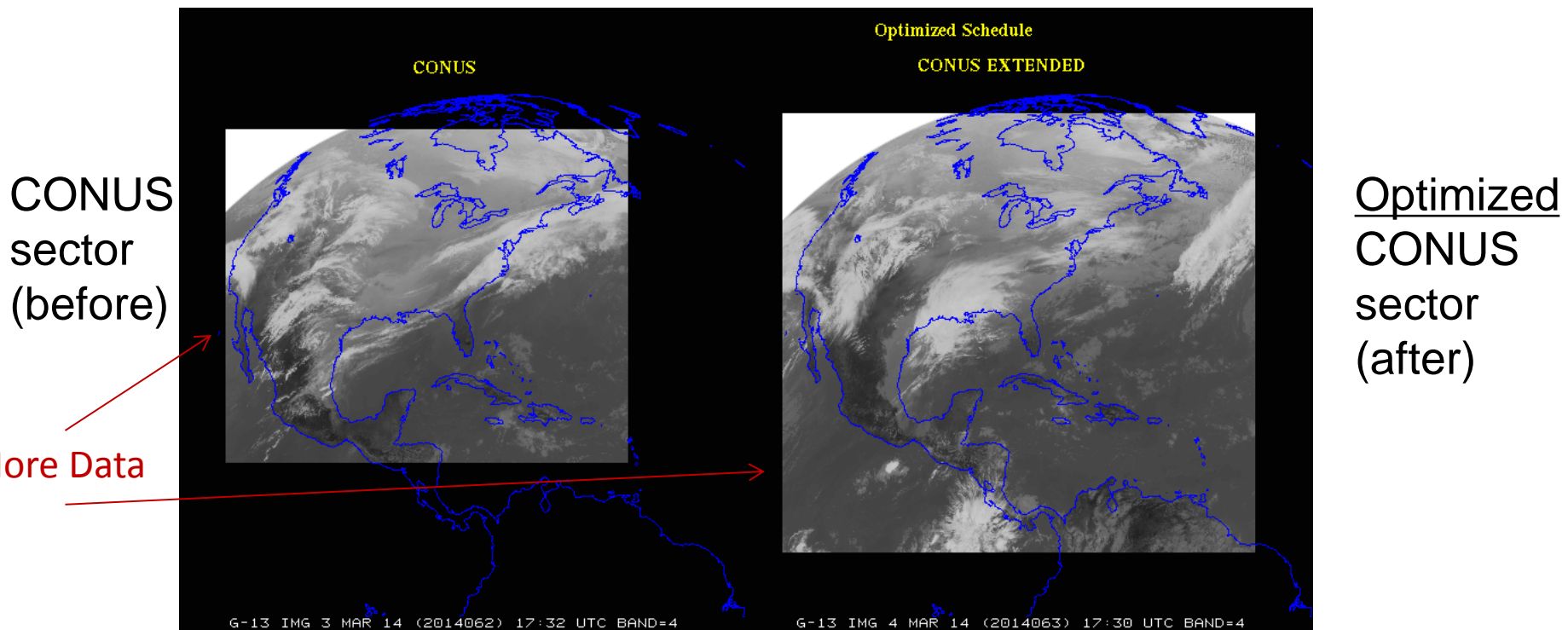
Impact:
1 hour data outage and degraded products during each yaw flip maneuver and 28 hours of INR (Image Navigation & Registration) recovery period.

GOES-East Optimized Schedule

Increased the coverage from the GOES-13 imager (May 2014). The size and/or start time of certain sectors was changed. More information is available at http://cimss.ssec.wisc.edu/goes/blog/archives/15068
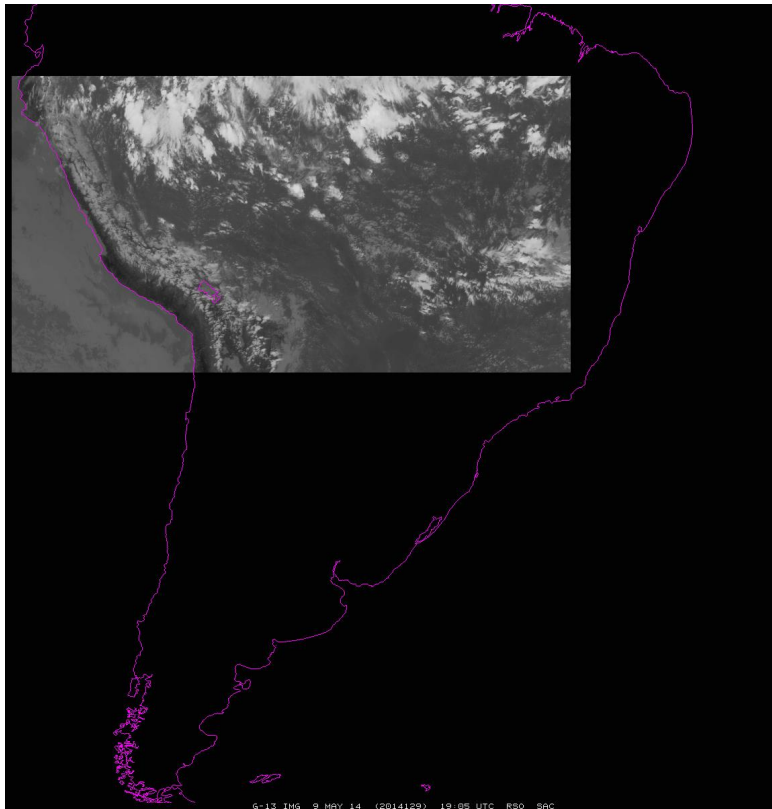

CONUS sector (before)

More Data

Optimized CONUS sector (after)

Comparison of the size of the Continental U.S. sector (before, left) and the extended coverage (after, right).
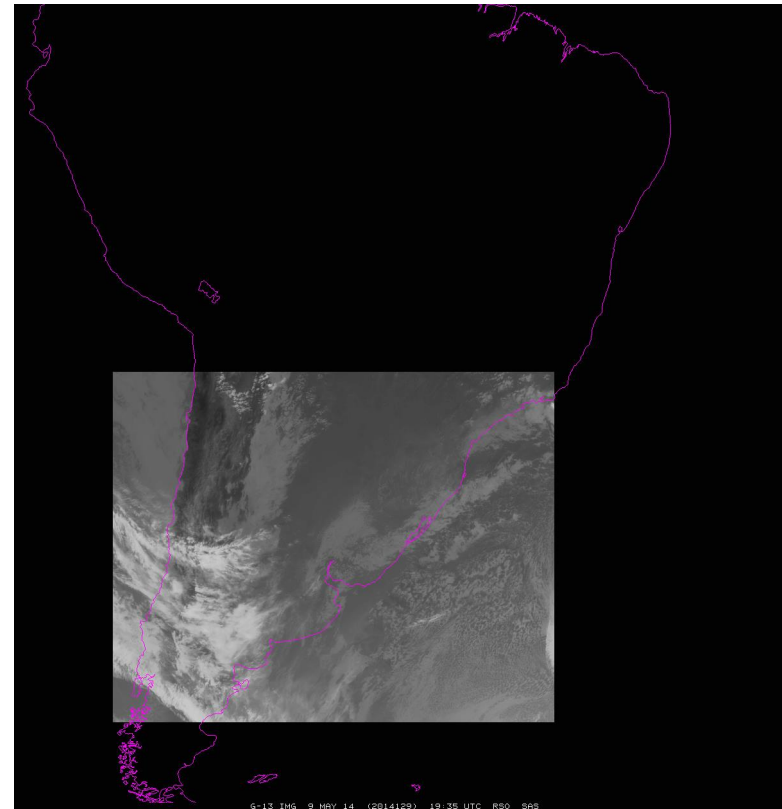
South America RSO Frames Created

GOES-13 (East) Rapid Scan Operations (RSO) South America Frames were created to drastically improve coverage

South America Central (SAC)
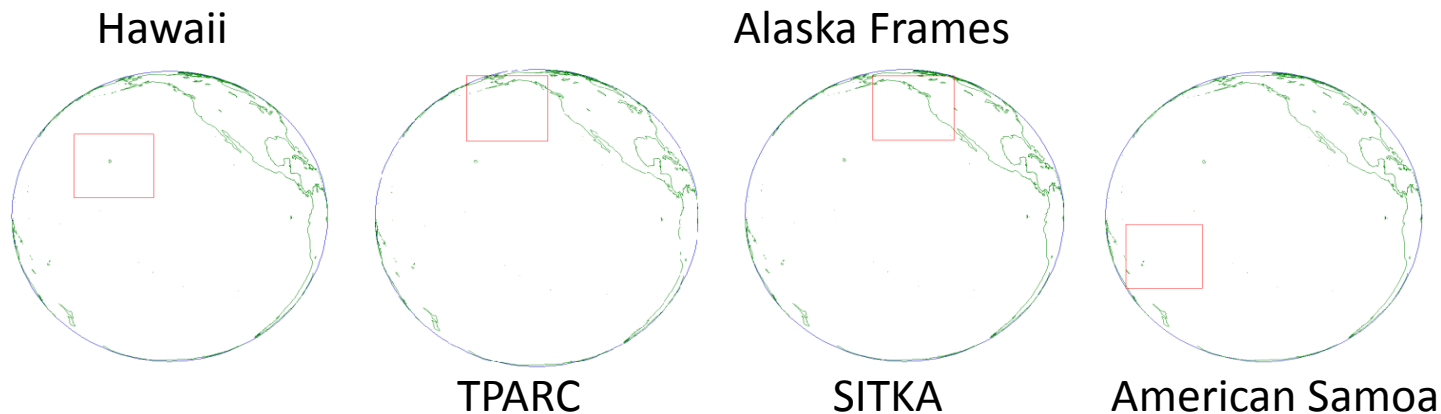
South America South (SAS)

New GOES-West RSO Sectors

- Requested by the NWS Alaska and Pacific Regions - NESDIS developed three additional operational GOES- West RSO sectors for GVAR and AWIPS broadcast; Alaska SITKA and Alaska TPARC, and Hawaii
  - RSO sectors are available for NOAA user call-up, 24x7 operations
  - Still working out requirements/code changes for American Samoa.

http://cimss.ssec.wisc.edu/goes/blog/archives/16856
http://cimss.ssec.wisc.edu/goes/blog/archives/17027

Hawaii

Alaska Frames

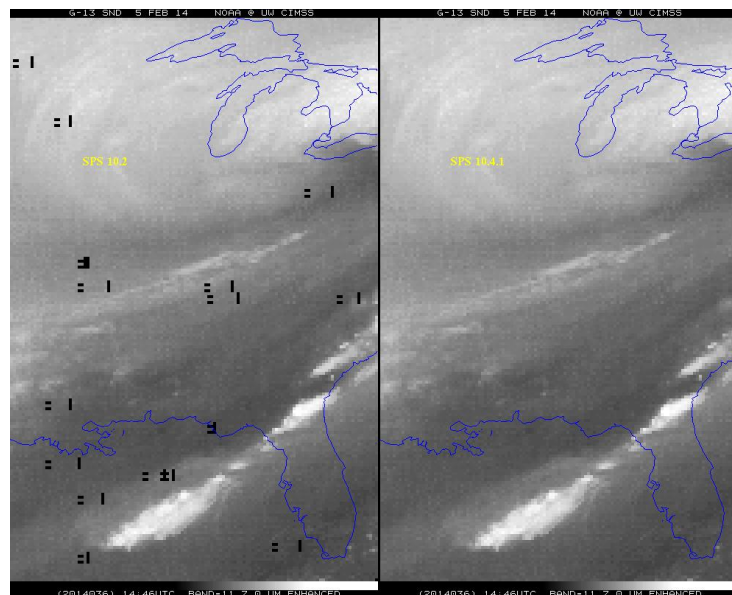TPARC   SITKA   American Samoa

GOES-13 Sounder Dropped Data

A correction that re-claims previously missing Sounder data was developed by OSPO, working with Exelis and others. These re-claimed data were provided, and then qualitatively and quantitatively analyzed at CIMSS. This correction is now operational (March 2014).

GOES-13 Sounder water vapor band (11) showing the missing data with the current image (left), along with the corrected and re-processed image (right) with a test version of the SPS (Sensor Processing System). While one band is shown, all GOES-13 Sounder bands are affected.

GOES-14 Super Rapid Scan Operations (SRSOR)

- GOES-14 provided very unique data and offered a glimpse into the possibilities that will be provided by the ABI on GOES-R in one minute mesoscale imagery

- Past GOES-14 SRSOR schedule
  - Jun 12–14, Aug 19–28, 2013
  - May 8–22, Aug 14–28, 2014

  http://cimss.ssec.wisc.edu/goes/srsor2015/GOES-14_SRSOR.html

  http://cimss.ssec.wisc.edu/goes/srsor/GOES-14_SRSOR.html

  http://cimss.ssec.wisc.edu/goes/srsor2013/GOES-14_SRSOR.html

  http://cimss.ssec.wisc.edu/goes/srsor2014/GOES-14_SRSOR.html

- SRSOR provided May 18-Jun 12, 2015, planned for Aug 10-22, 2015

  http://cimss.ssec.wisc.edu/goes/srsor2015/GOES-14_SRSOR.html
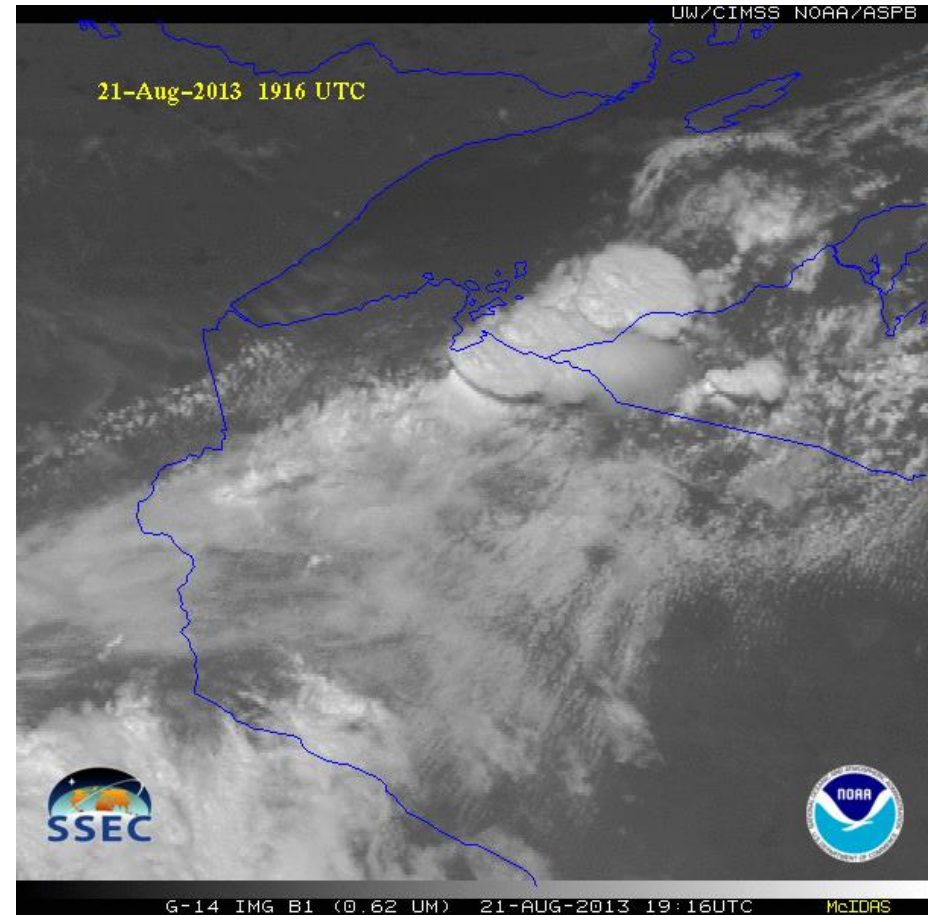
GOES-14 visible image showing rapid convective development
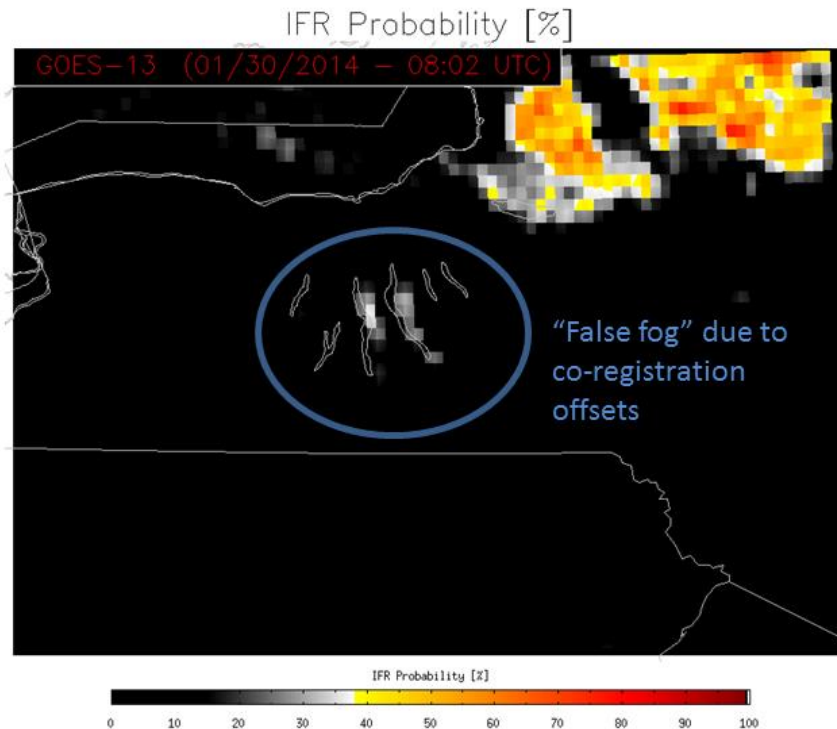
GOES-13 Imager Co-Registration

Currently testing an updated GOES Imager co-registration correction.
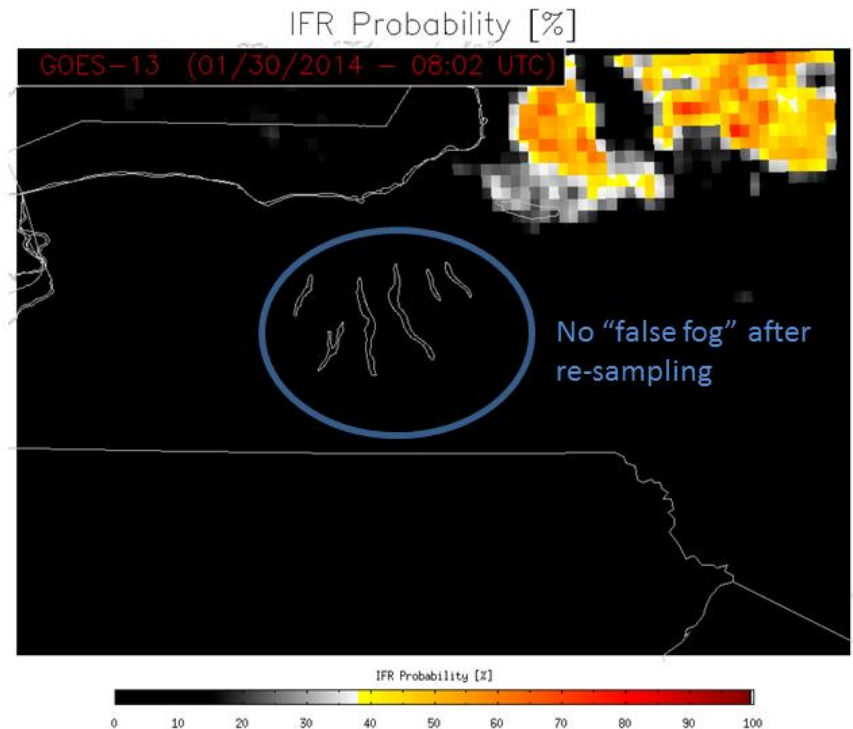More information is available at:

http://fusedfog.ssec.wisc.edu/?p=910#Update17November and
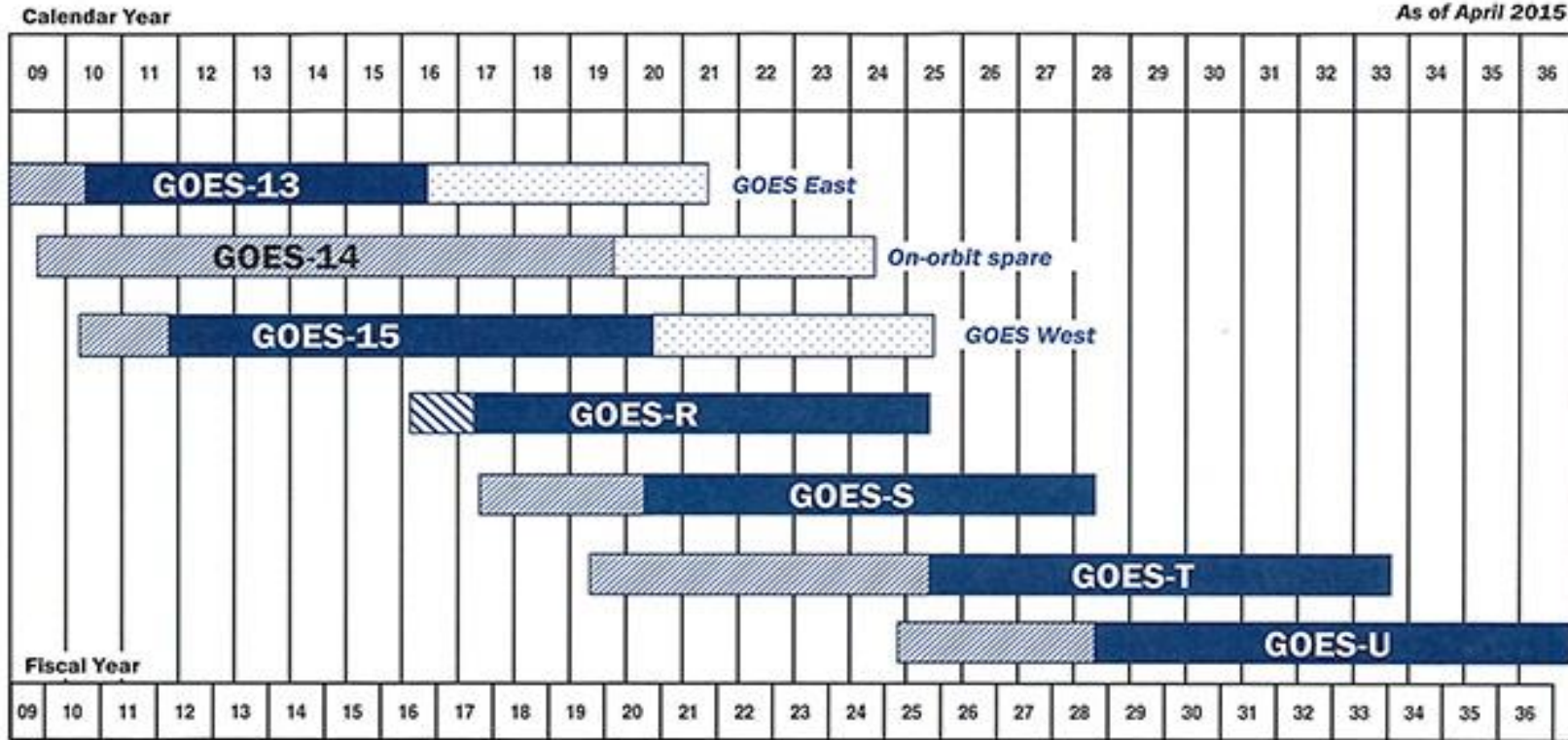http://cimss.ssec.wisc.edu/goes/blog/archives/17705

Prior to co-registration correction

After co-registration correction

Improved product with latest (Feb 2015) imager co-registration correction

GOES Flyout Schedule

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

POES Status (April 24, 2015)

http://www.ospo.noaa.gov/Operations/POES/status.html

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

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

Suomi NPP – Milestones
Launched in October, 2011

| Date	Activity
1 / 2014	ATMS/CrIS SDR to JMA, CMC, India-NCMWRF
2/ 2014	MiRS to NCO
6 / 2014	VIIRS Polar Winds to NCO, EUMETSAT, JMA, CMC NDE PE2 System Readiness Review
7 / 2014	NDE PE2 handover
8 / 2014	OMPS NP/TC Ozone to JMA
2 / 2015	Green Vegetation Fraction to NCO & CLASS
5 / 2015	ACSPO SST L3 product to EUMETSAT
6 / 2015	Microwave Tropical Cyclone Products to JTWC & NCO

LEO Flyout Schedule - April 2015

NOAA & Partner Polar Weather Satellite Programs
Continuity of Weather Observations

As of April 2015
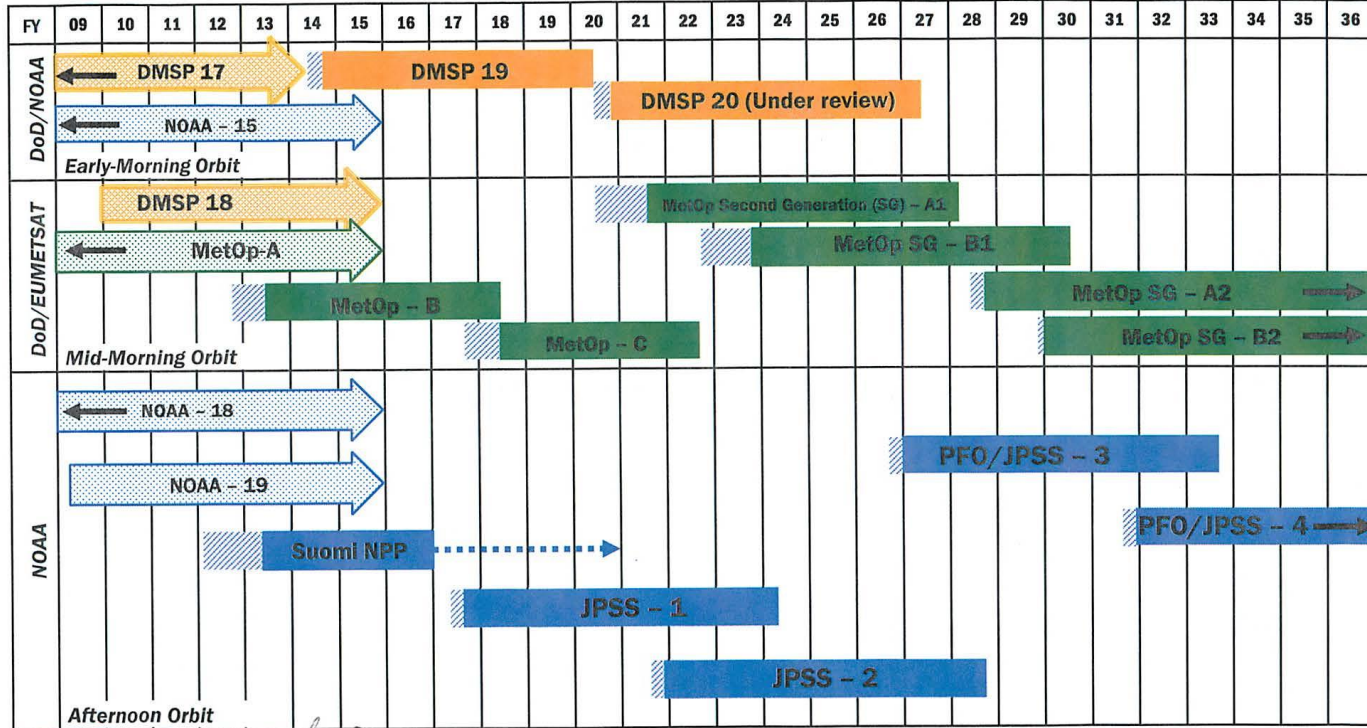
Data Access Services

- 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
  - GEODIST – 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

GEODIST –

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	GEODIST1e	DPD
GOES-E	GEODIST2e	GER
GOES-W	GEODIST3e	GWR
Polar	GEODIST4e	PLR
Model data	GEODIST5	MOD
Global Mosaic 5 Sat. Comp.	GEODIST6	MOS
MSG/MET	GEODIST6e	MSG / MET
MTSAT	GEODIST7e	MTS
Select requested data	SATEPSANONE	PUB *(not operational)*
Surface/Ship Buoy/RAOBs	FOS2	FOS (Family of Services)

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
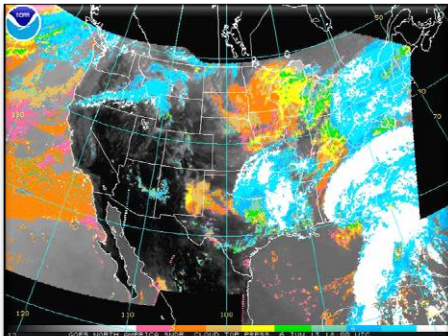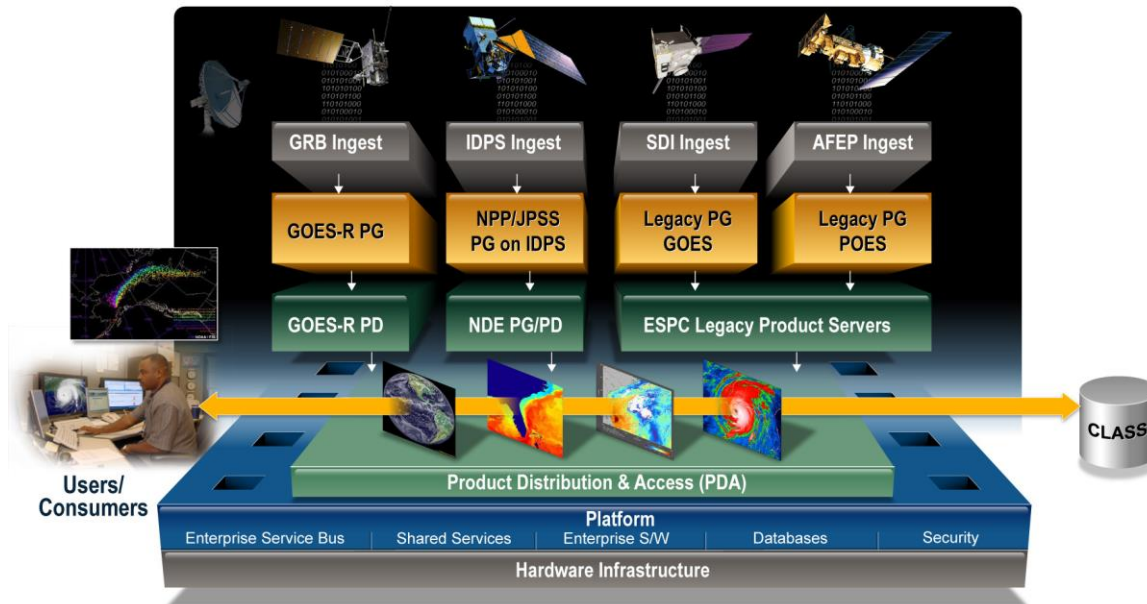

Cloud Top Pressure
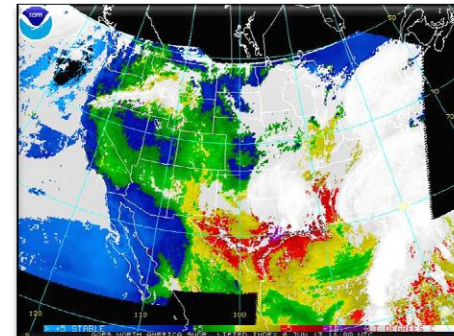
Lifted Index

Near Future Data Access & Distribution

- New enterprise system Product Distribution and Access (PDA) is coming in summer 2016

- Will be used for legacy GOES/POES, NPP/JPSS, and GOES-R data access

- Operational Readiness Review (ORR) for December 2015

- McIDAS ADDE access will remain on GEODIST

Backup for PDA is to serve NPP/JPSS only 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 & 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…
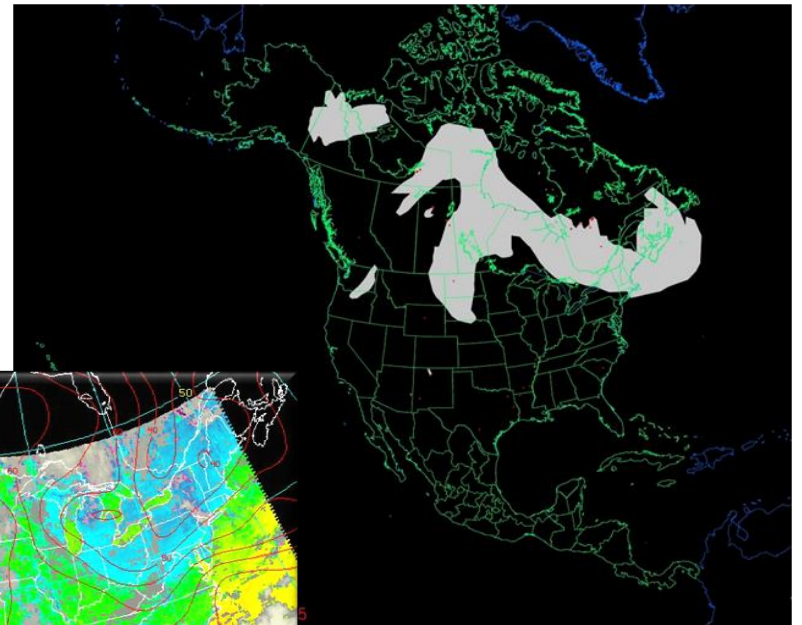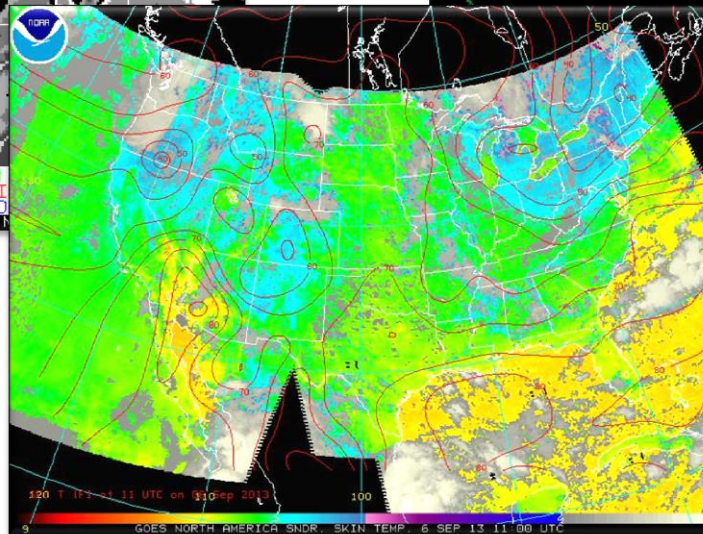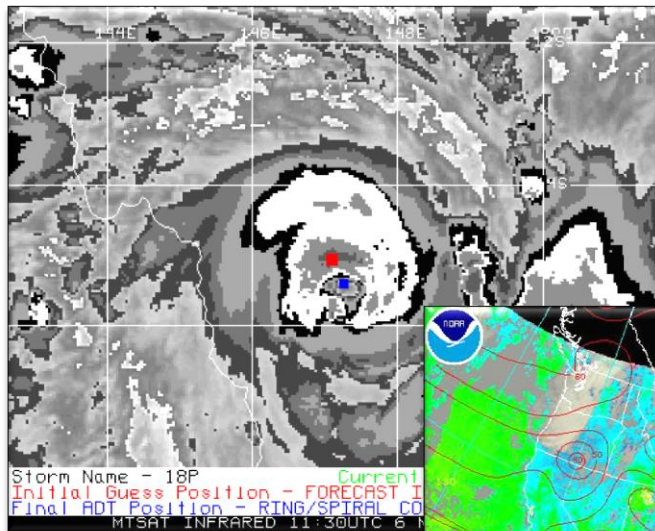
Ad hoc McIDAS Usage at ESPC

- 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 GOES-13 rapid schedule (to compensate for GOES-12 decom)
  - The GOES-13 optimized routine schedule

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 6 Linux on Intel x86_64
  - Many "home grown" programs in Fortran, .PGM, BATCH

- Advantage - The ADDE protocol allows for many users accessing single systems with one port (112)
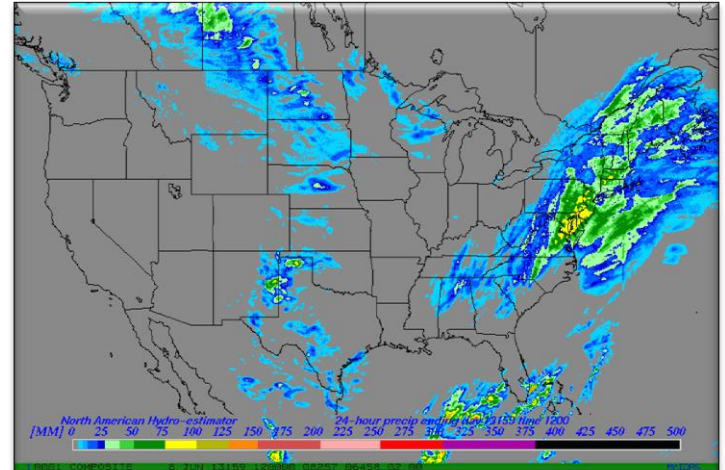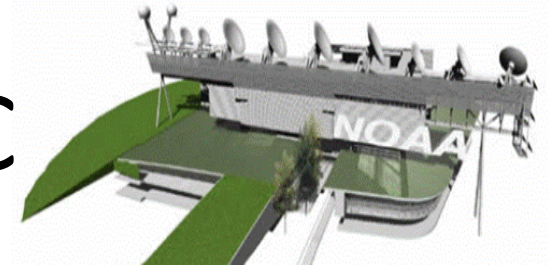

Global Hydro-Estimator 1 Day Total

- ESPC Product Generation/Distribution
  - IBM P6 Series with Linux Partitions
  - Many other Linux systems (gp*)
 - GINI running on Linux

McIDAS at ESPC

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

- ESPC representatives on the McIDAS Advisory Committee (MAC)
  - Bonnie Morgan (GOES Product Area Lead)
  - Jason Taylor (User Services Coordinator)
 - Tony Salemi (Satellite Imagery Analyst)

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
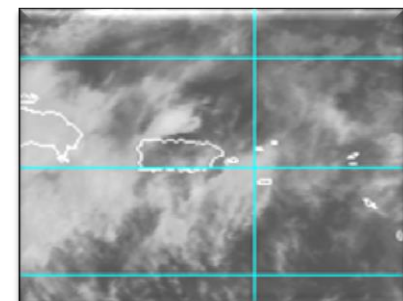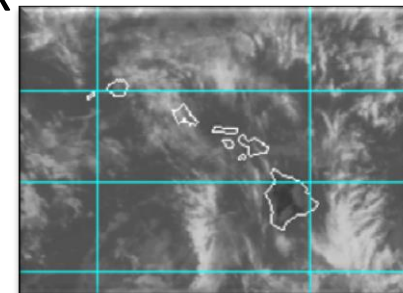
McIDAS Advantages in SAB

- 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.
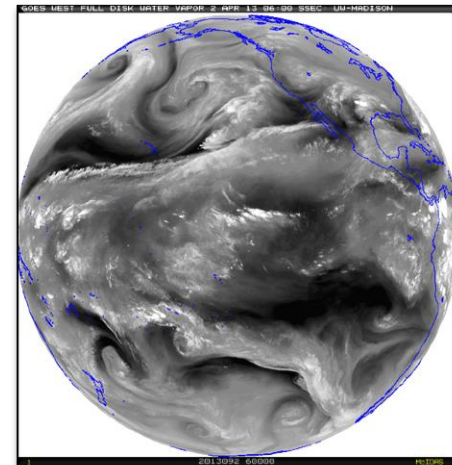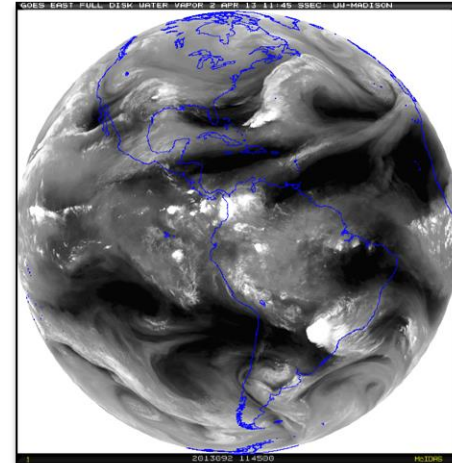
McIDAS Challenges in SAB

- Maintaining efficient access to servers for operations (SPIDER is in-house stop-gap measure).

- 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
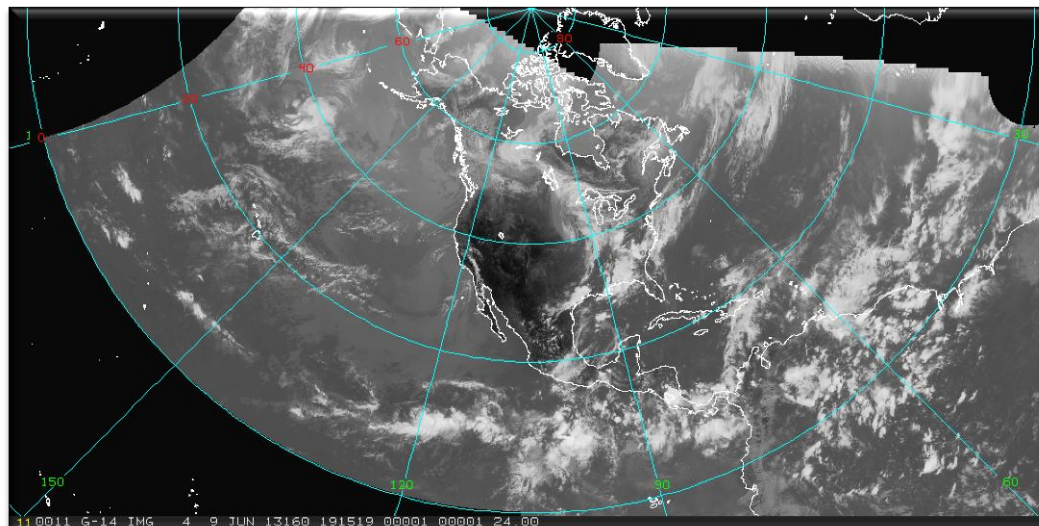
North Hemi Composite - IR
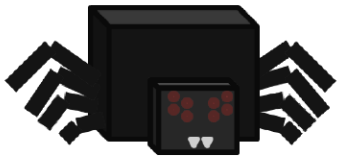
SPider

Satellite **P**roduct **I**nformation **D**istribution **E**nvi**R**onment

Expands on concepts of Core Mcidas commands concepts

ADDE, DATALOC, DSSERVE, PT/GRD/IMGLIST, PT/GRD/IMGDISP, PT/GRD/IMGCOPY, SKL, etc.

Consists of two programs: Spider Server (SPS) and Spider Client (SPC)

Benefits:
- -- Automatic loading without duplication of images
- -- Reduces task loading of server/workstations
  - Numerous pings to server but fewer downloads
- -- Run from command line environment (typically SKL) on all platforms
  - Leads to distribution system effectiveness
- -- Timely, based on user needed requirements (set to any refresh rate)

Two Types of SPider

- ## Spider Client (SPC)

  - User
    - Resides on Workstation
    - Keeps Request File of user defined loop(s) specifications and polls it against the Server Availability File
    - Pulls "area" files from server and loads it into predetermined frame

- ## Spider Server (SPS)

  - Host
    - Resides on Server
    - Integrated into "Area generator" that creates products on the server
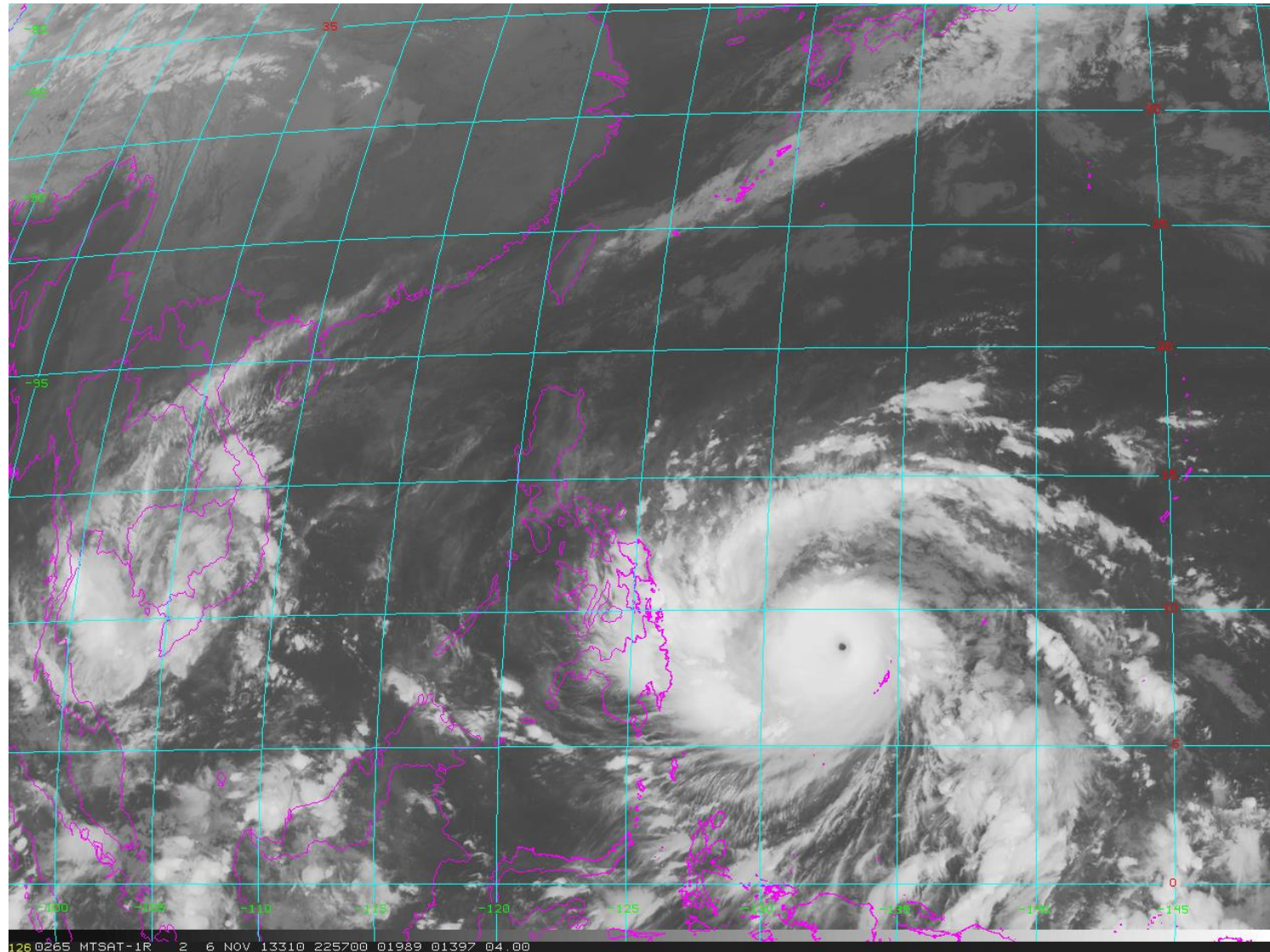   - Keeps and up to date Availability List of these products

SPC

SPS
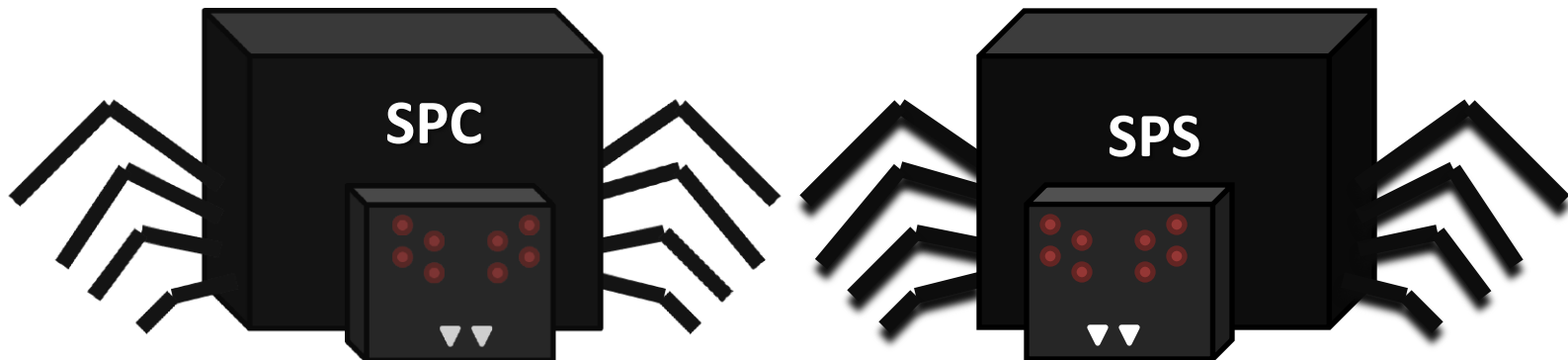
Washington Volcanic Ash Advisory Center (VAAC)
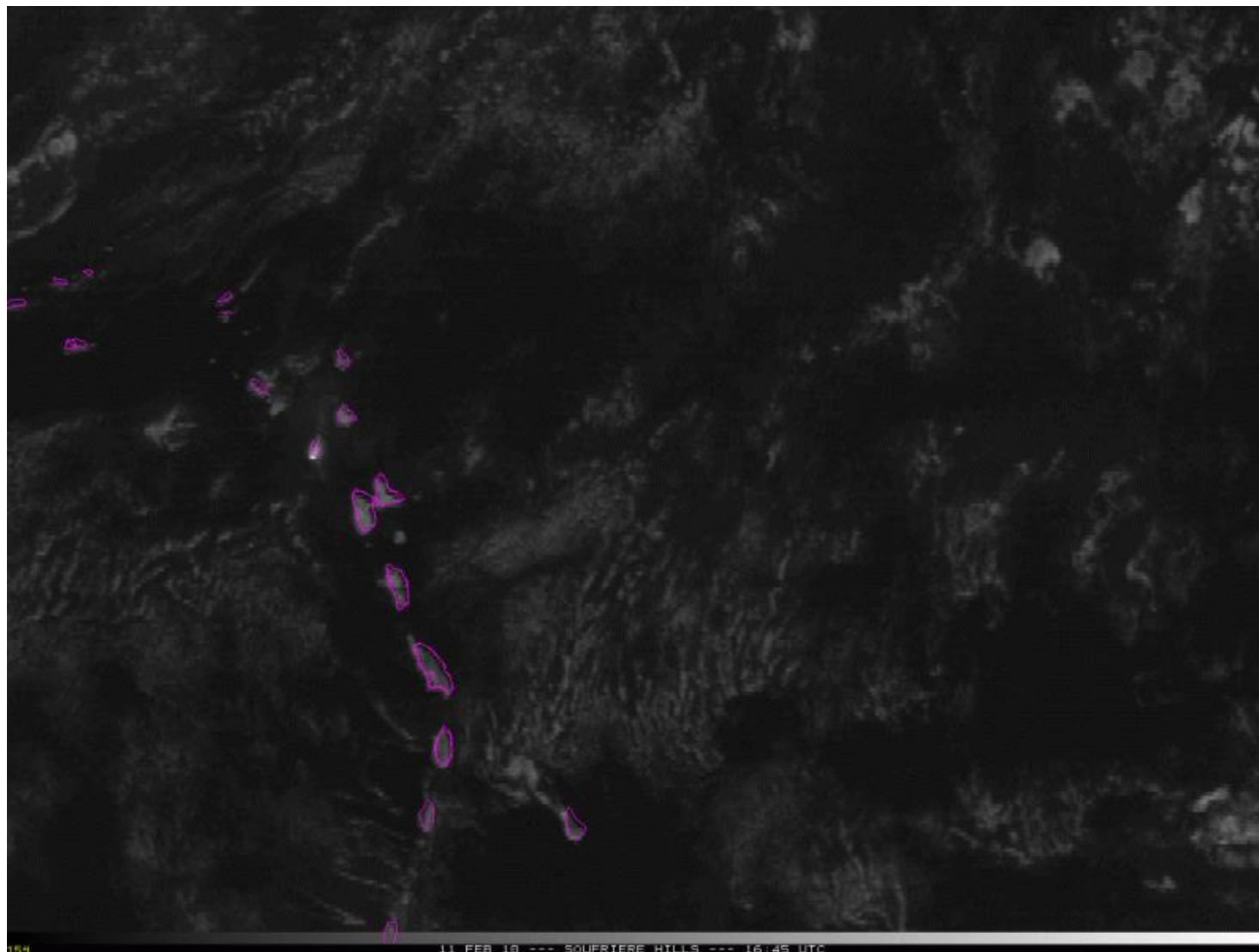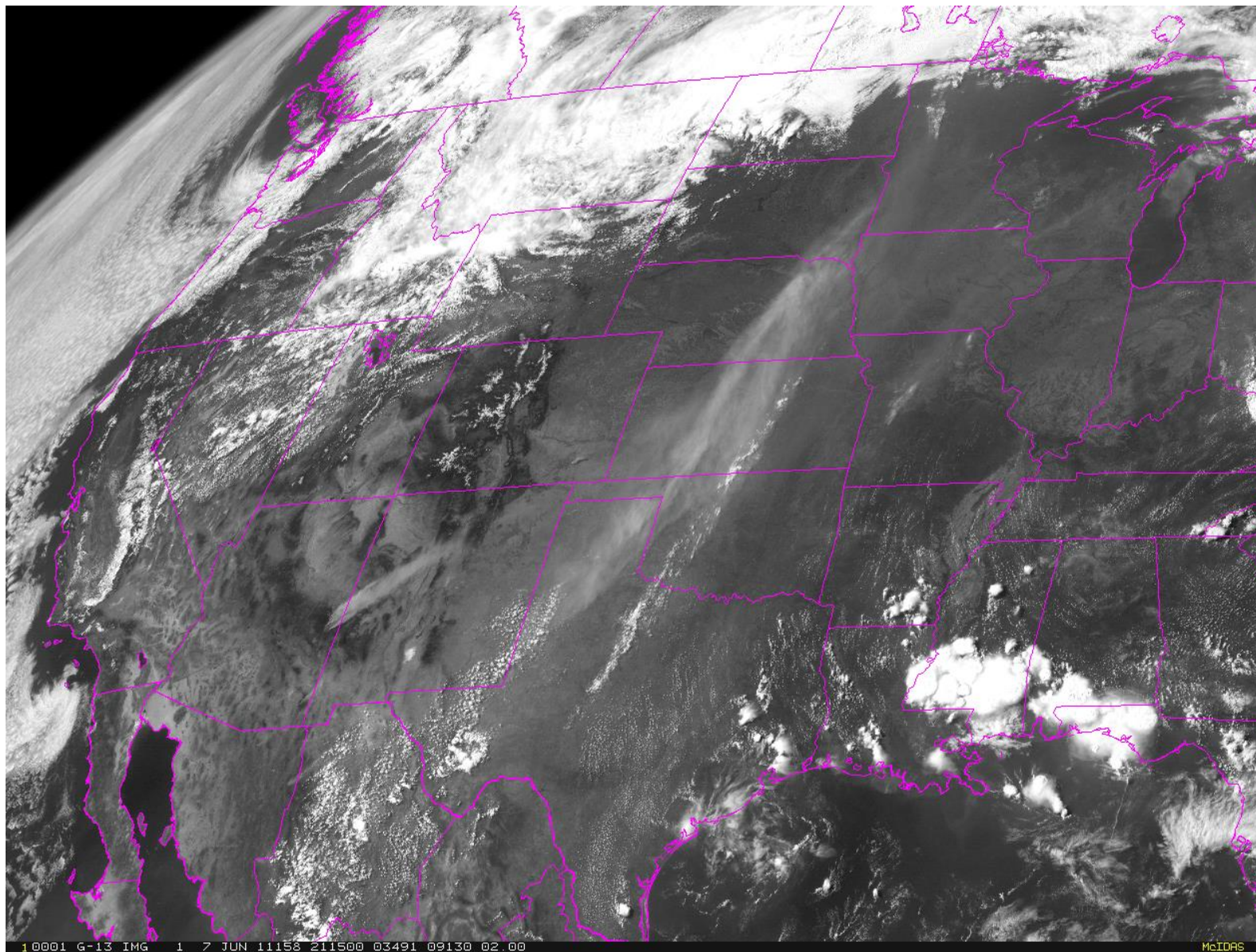

11 FEB 10 --- SOUFRIERE HILLS --- 16:45 UTC

Tropical Cyclone Position and Intensity Estimates

Fire, Smoke and Dust Identification

0001 METOP-A   31 MAY 11151 051455 09127 09697 00.33

Fire, Smoke and Dust Identification

10001 G-13 IMG   1   7 JUN 11158 211500 03491 09130 02.00   McIDAS

Fire, Smoke and Dust Identification
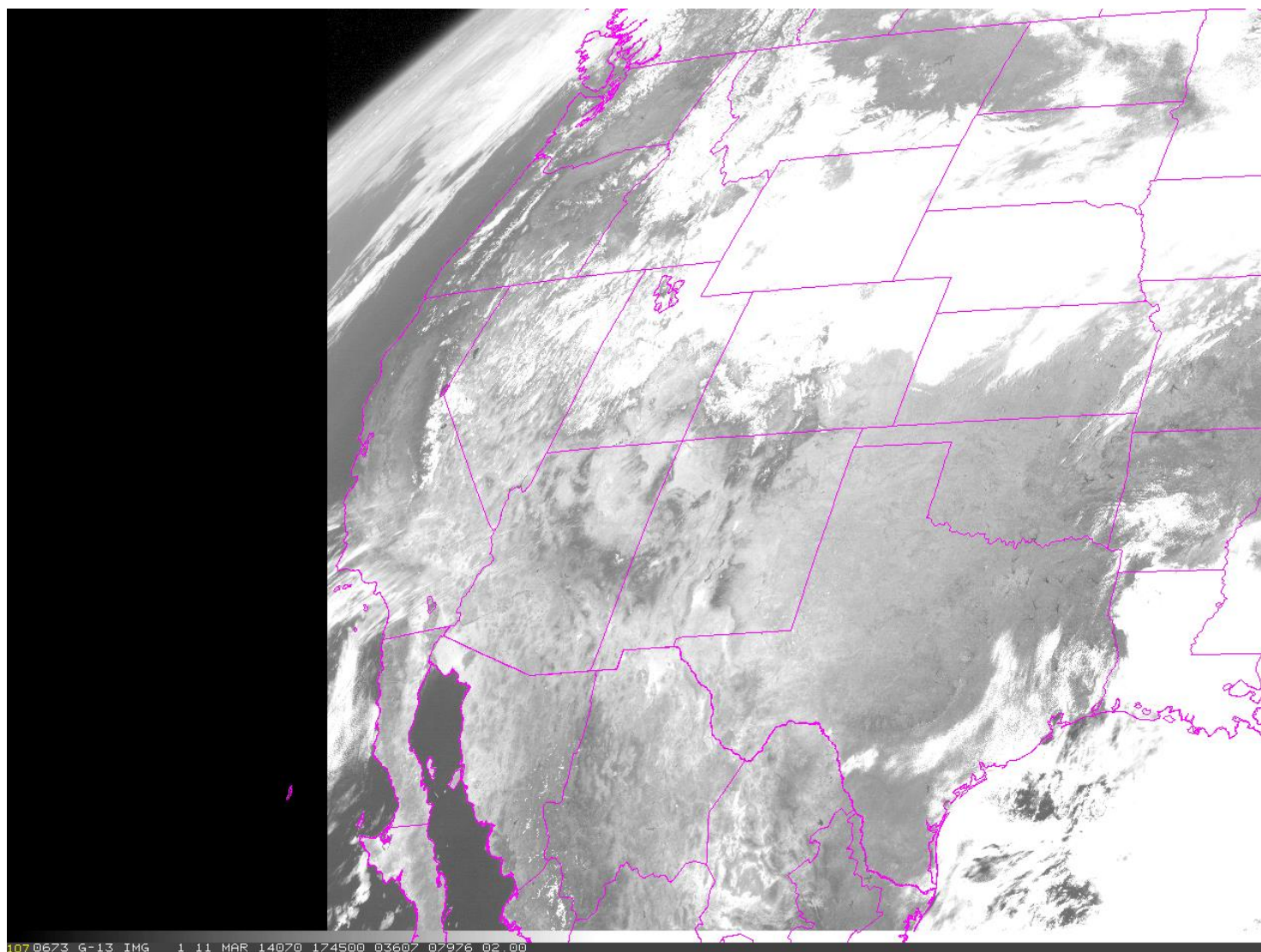
Satellite Interpreted Precipitation Estimates

104 0026 G-12 IMG 04 22 JUN 03173 234500 03689 11669 01.00
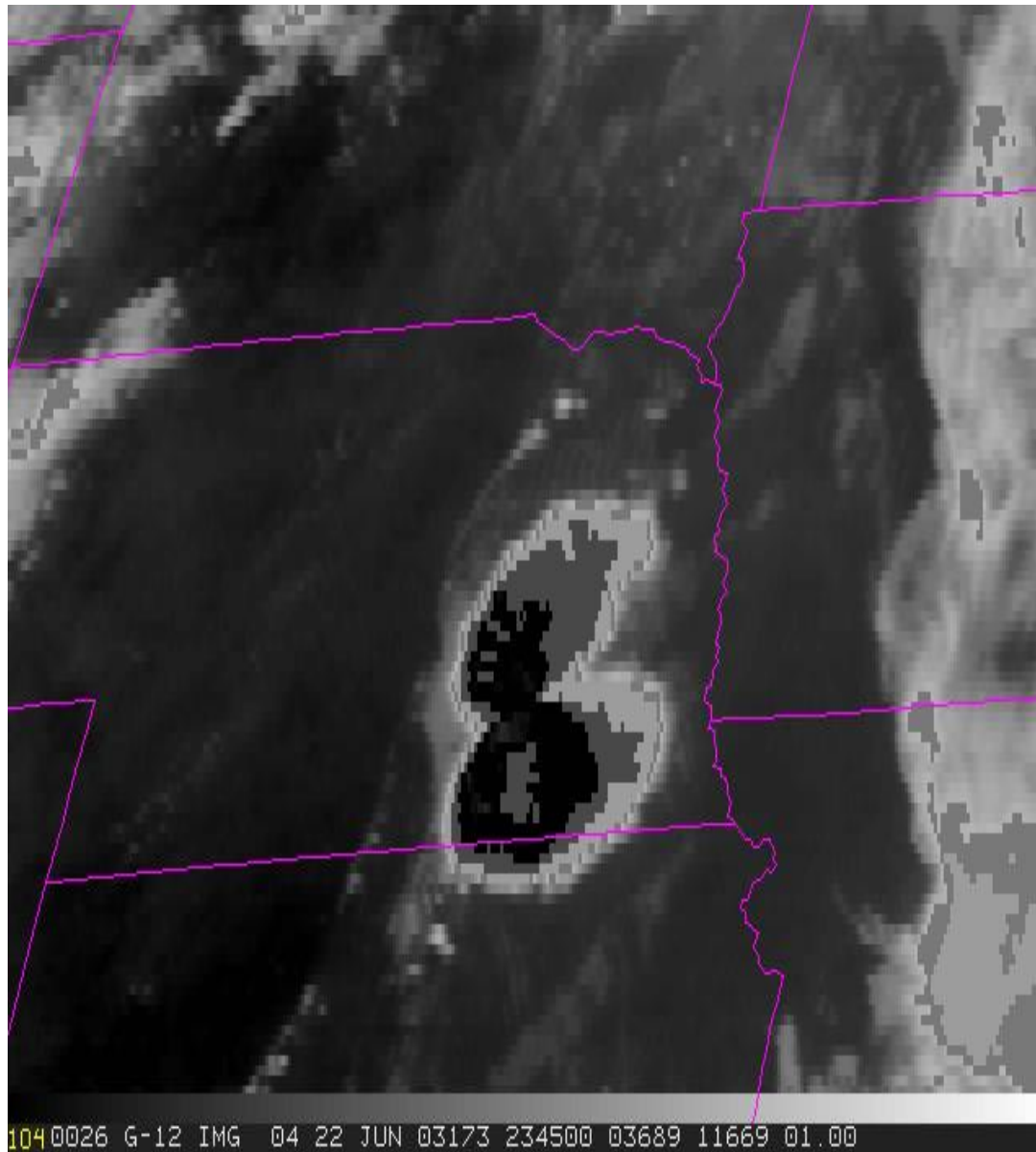
Marine Pollution Surveillance
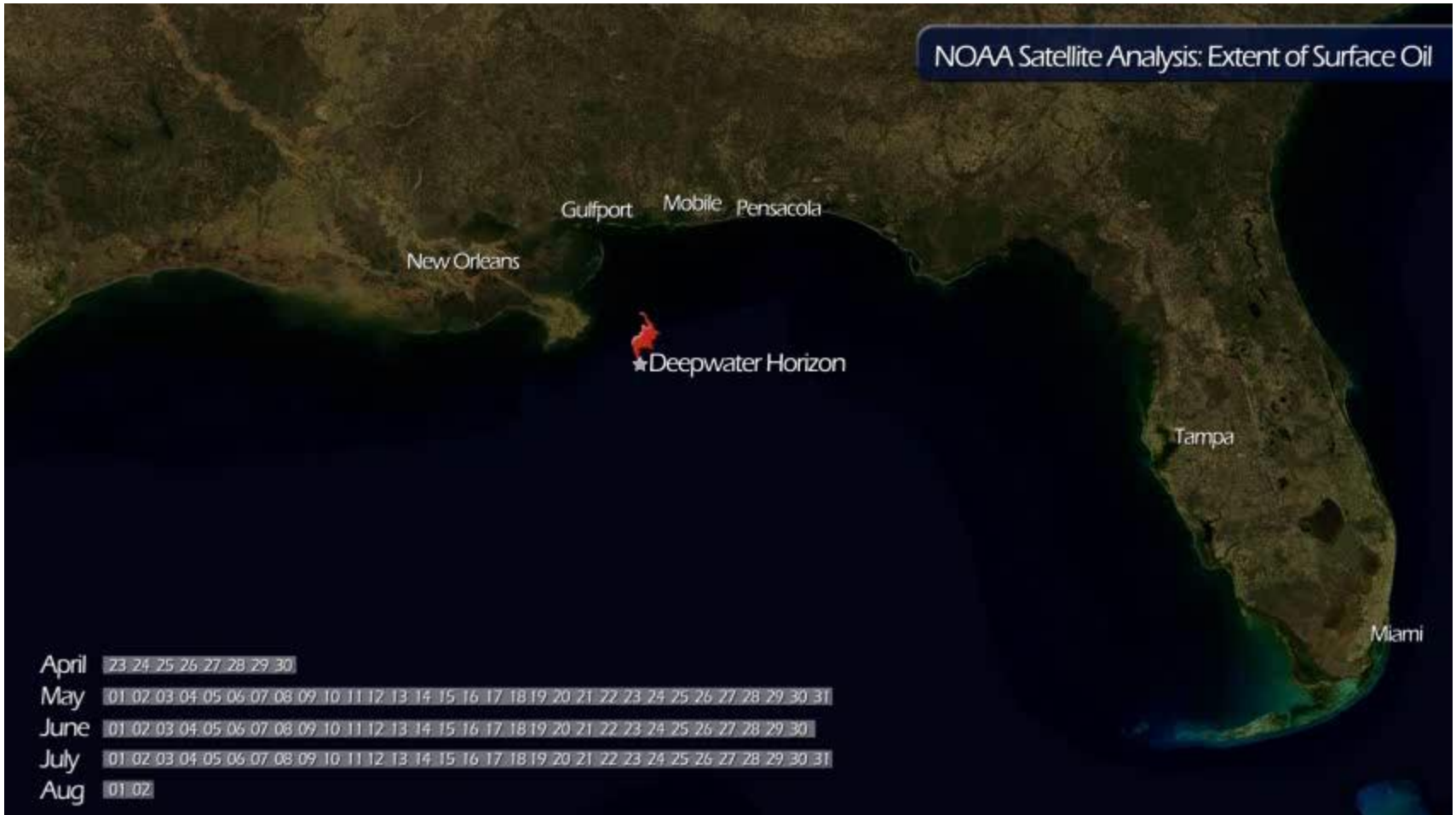
Future SAB Use of McIDAS

- NAWIPS, McIDAS-X, & ENVI/IDL currently used

- Transition to AWIPS2 and an enhanced Hazard Mapping System (HMS) within ENVI/IDL in one year.

- Imagery file formats needed (HDF, geoTIFF, netCDF)

- McIDAS-V to be used for intense image interrogation, manipulation and value-added analysis.
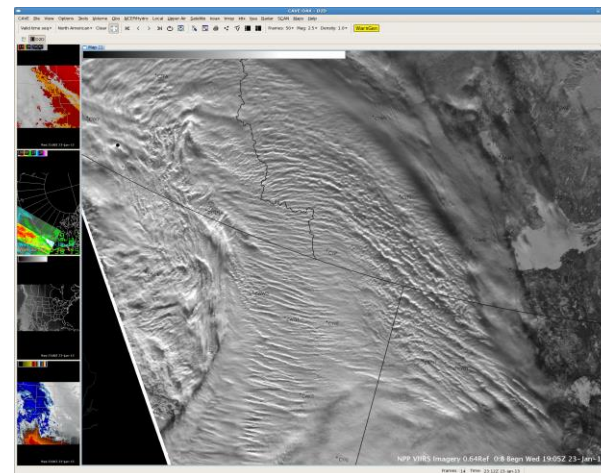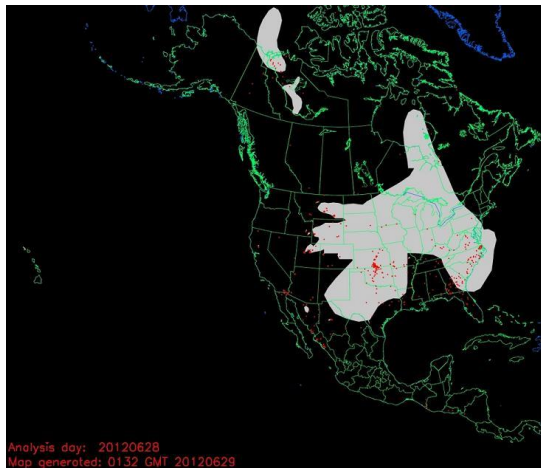
GOES-R McIDAS Data for Users

- Recent concerns:
  - Current GEODIST McIDAS ADDE servers not sized to handle GOES-R (nor Himiwari-8) data.
  - No funds currently programmed for GOES-R (nor Himawari-8) distribution.
  - Limited set of NCEP remote centers, which have not yet made plans to accommodate their GOES-13/14/15 data operations.

- User impacts:
  - NCEP Remote National Centers (AWC, SPC, NHC) rely on ADDE protocol for post-processing and web production of their products.
  - AWIPS NCP will also utilize GRB (no McIDAS data are included) as a means of receiving GOES-R data, so only some of their essential specialized products (sectorized, filtered, stretched, blended, channel-selected, generated to web) are impacted.
  - The NCEP centers located in College Park, MD (NCO, CPC, WPC, OPC) as well as SWPC in Boulder, CO do <u>not</u> have this ADDE need.
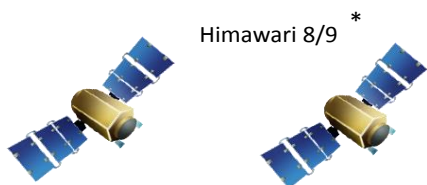
GOES-R McIDAS Data for Users

- Recent Status:
  - NWS is looking into the employment of ADDE servers on-site at the three remote centers.
  - The GOES-R SSEC Data Ingestor (SDI) solution was previously advertised for delivery in April, 2015.
  - Status report indicates development work progressing. Looking forward to delivery.
  - Concern regarding the status of GOES-R data read and translate (NetCDF to McIDAS Area) capability in the client-side McIDAS software.
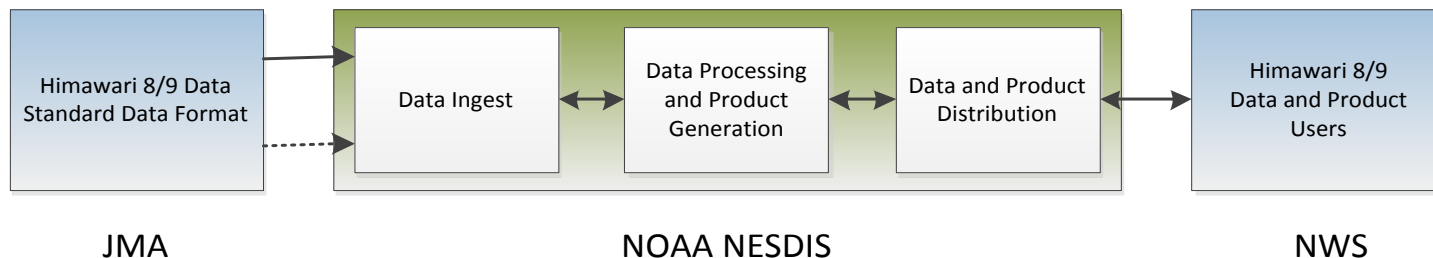
Himawari-8 Project Status & Plans

Interim Demonstration Capability (IDC)

- Beginning on July 7, 2015, JMA will declare Himawari-8 operational.
  - STAR currently is committed to hosting the IDC for 12 months (data processing & product generation) from July 2015 to July 2016.
  - Support by STAR is provided during normal working hours during the IDC period.
  - NESDIS/STAR will make available radiances and AMVs in BUFR for user testing
- JMA will terminate MTSAT-2 service in November 2015 (users notified).
- H-8 is planned to transition to <u>full</u> operational capability at the NSOF in July 2016 and/or after PDA is declared operational.
  - The operational Data Ingest and Distribution functional areas will be provided by the Product Distribution and Access (PDA) subsystem, currently in development and test.
  - The requirement for PDA delays implementation at the NSOF, resulting in a need for an Interim Demonstration Capability until 2016.

Himawari 8/9 *

*H-9 is the planned replacement to H-8 at its end of life (2022)

Himawari 8/9 Data Standard Data Format	Data Ingest	Data Processing and Product Generation	Data and Product Distribution	Himawari 8/9 Data and Product Users

JMA   NOAA NESDIS   NWS

Himawari-8 Project Status & Plans

- Recent Events & Accomplishments:
  - Began testing receipt of data from Japan Meteorological Agency HimawariCloud on 16 March 2015; operational testing began in April 2015.
  - NESDIS/STAR receiving H-8 HSD level 1b file via JMA's HimawariCloud during IDC.
  - NWS NCEP is pulling test data to generate segmented files for AWIPS2 in NetCDF4 format.
  - NESDIS is analyzing data transmissions including reliability and data latency
    - Reduced to 5 minutes from initial 8 minutes observed.
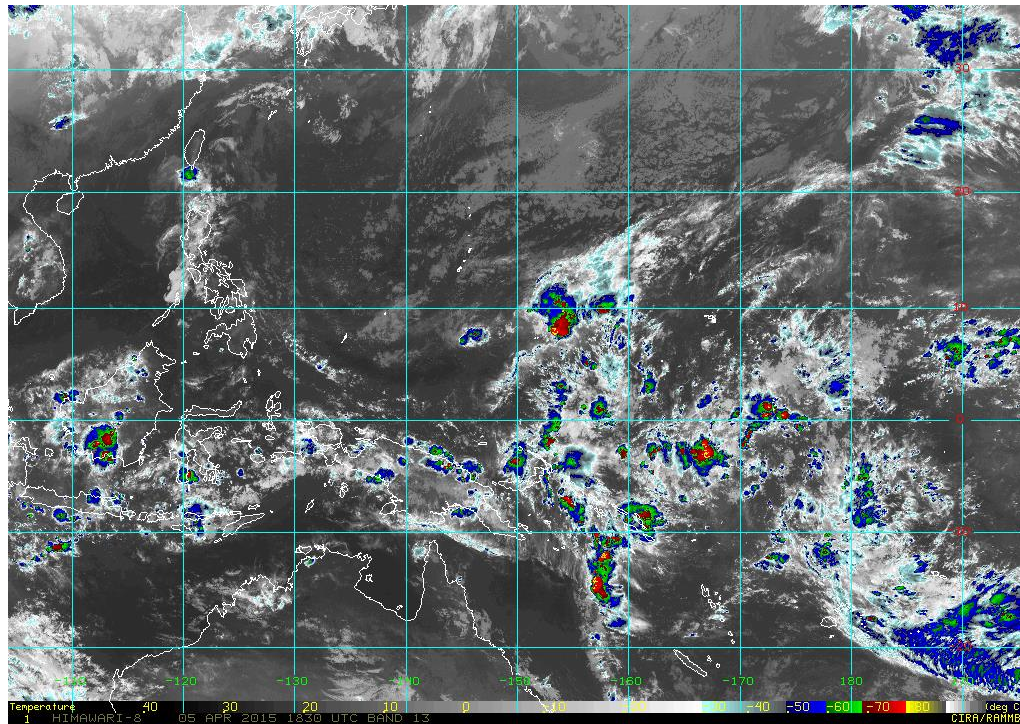

First test images from Himawari-8 (Image credit: 18 December 2014, Japan Meteorological Agency)

Himawari-8 Spacecraft (Image Credit: Mitsubishi Electric Corporation)

Current Himawari-8 Images

- ## Image Loops from Colorado State University
  - Himawari-8 Band 13 (10.4 µm) - Sector 6

Click image for live data image loop (live internet required)

Himawari Project Plans and Status

- Recent Customer Inquiries:
  - Ensure SSEC/CIMSS plans to provide H-8 McIDAS ADDE server for users.
  - Request for SSEC to enable user access (e.g. ADDE) to H-8 McIDAS area files from their site.

Thank You SSEC!
We appreciate you!

Questions?