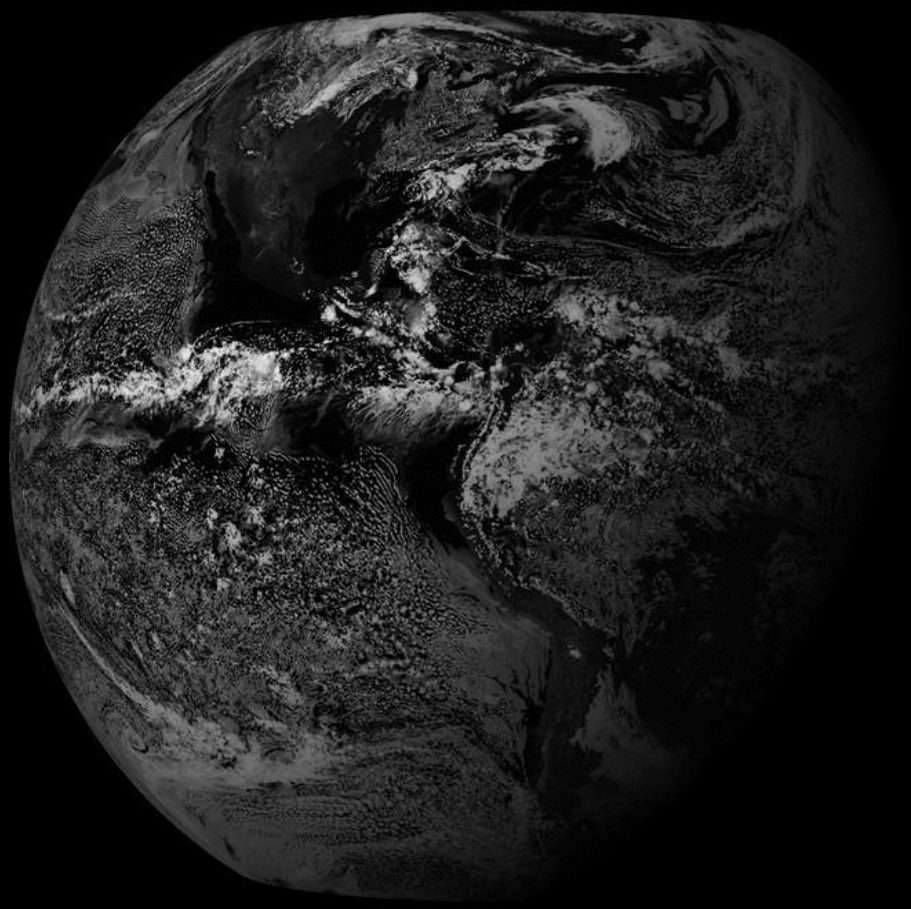
GOES-R Data Operations & User Services

Matthew Seybold

GOES-R Data Ops Manager

NESDIS/OSPO/SPSD



Simulated Cloud & Moisture Imagery (CMI) from First GOES-R Data Operations Exercise (DOE-0)

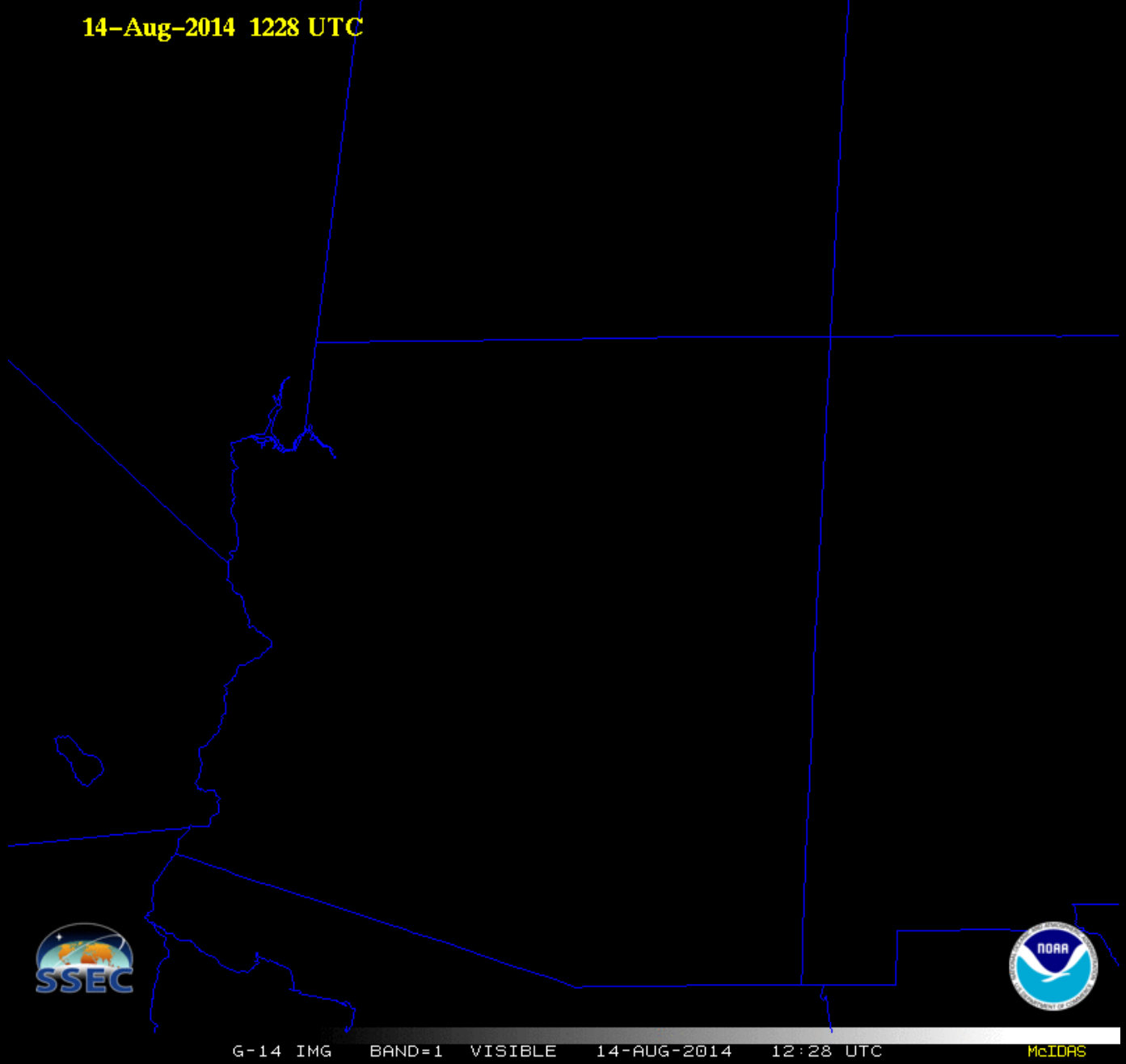
AMS Annual Meeting
20th Satellite Meteorology
Phoenix, AZ
January 6, 2015

Slide Collaborators

- Mike Andrews – GOES-R Data Operations Support Team (DOST) Lead
- Ed Czopkiewicz – GOES-R GRB Simulator PM
- Jaime Daniels – STAR AWG Lead (J22.6)
- Bob Iacovazzi – GOES-R Cal Val Coordination Team (CVCT) & CWG Lead
- Satya Kalluri – GOES-R Development, Integration, & Test (J11.1)
- Heather Kilcoyne – GOES-R Algorithm Implementation & Policy Lead (J16.1)
- Dan Linebarger – GOES-R Ground Readiness Manager
- Wayne MacKenzie – OSPO/SPSD GOES-R Product Area Lead
- Maurice McHugh – GOES-R Product Distribution
- Tim Meisenhelder – GOES-R DOE Data Lead
- Tim Schmit – STAR/CIMSS ABI Science Lead (J10.4)
- Chris Sisko – OSPO/MOD JPSS Data Operations Manager
- Nikki Wilcox – GOES-R DOE Lead
- Walter Wolf – STAR Algorithm Integration Team (AIT) Lead (J16.2)

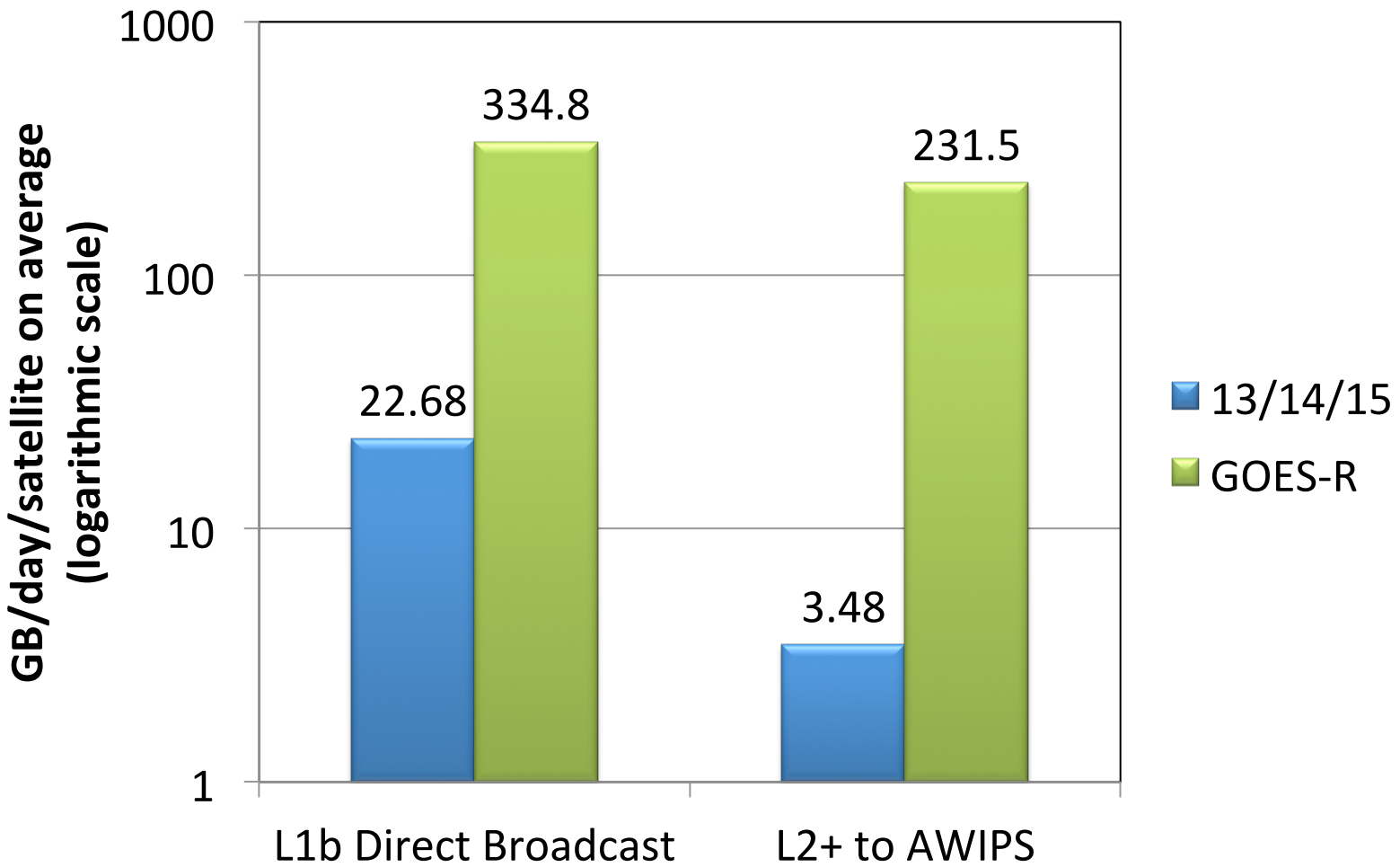
Outline

- Exciting Differences from GOES-13/14/15
- GOES-R Product Distribution Outlets
  - Status of GRB Simulators
  - Status of PDA and McIDAS Translation
- Data Operations Exercises (DOEs)
- Anomaly Tracking, CM, and User Support



Tim Schmit (NESDIS/STAR/CIMSS) http://cimss.ssec.wisc.edu/goes/srsor2014/GOES-14_SRSOR.html

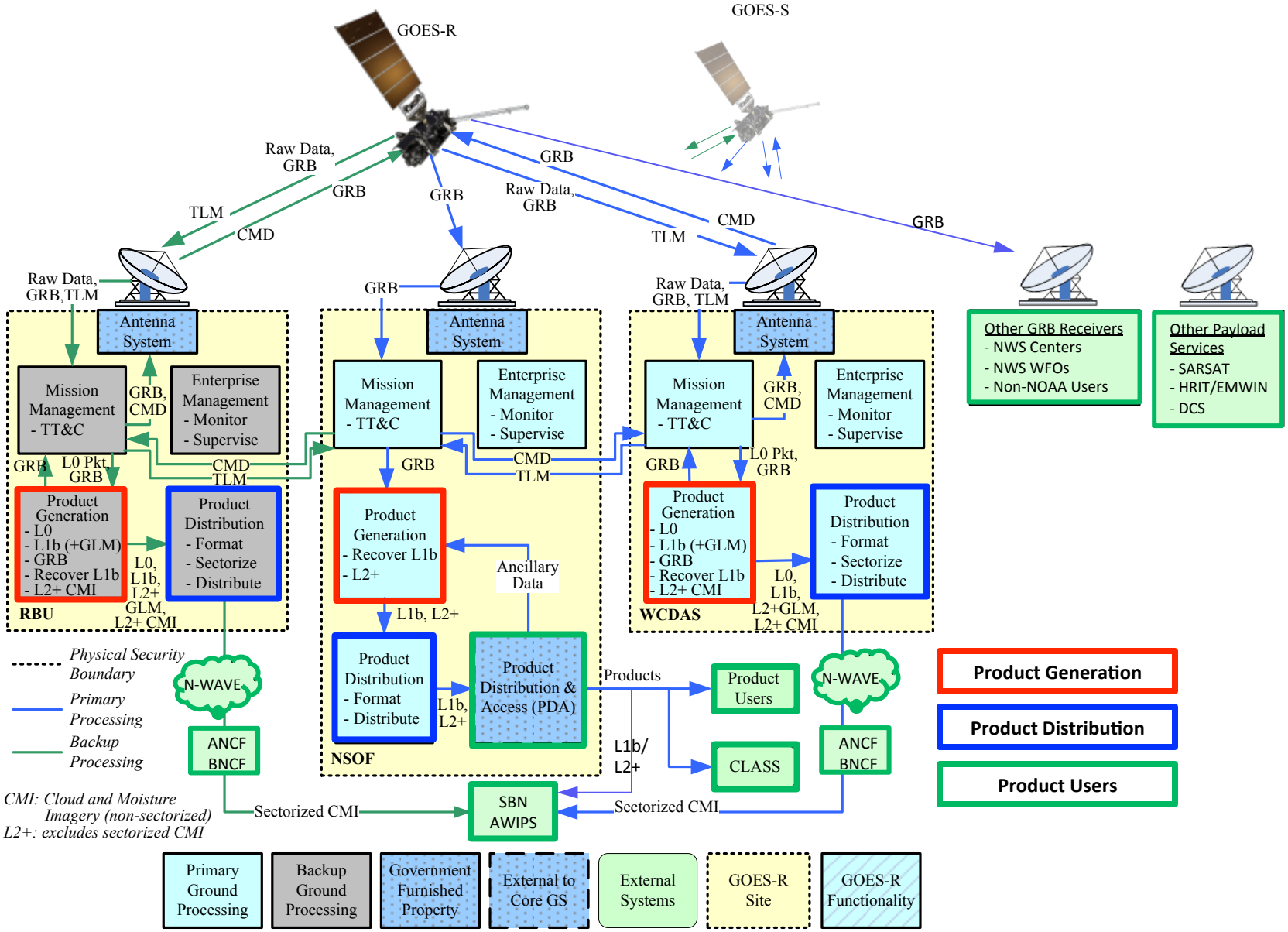
Data Volumes – GOES 13/14/15 & GOES-R



Includes Sectorized CMI KPP
Excludes non-KPP L2+ products

Bonnie Morgan (NESDIS/OSPO)
Andy Royle (NESDIS/GOES-R)

GOES-R Distribution to Users

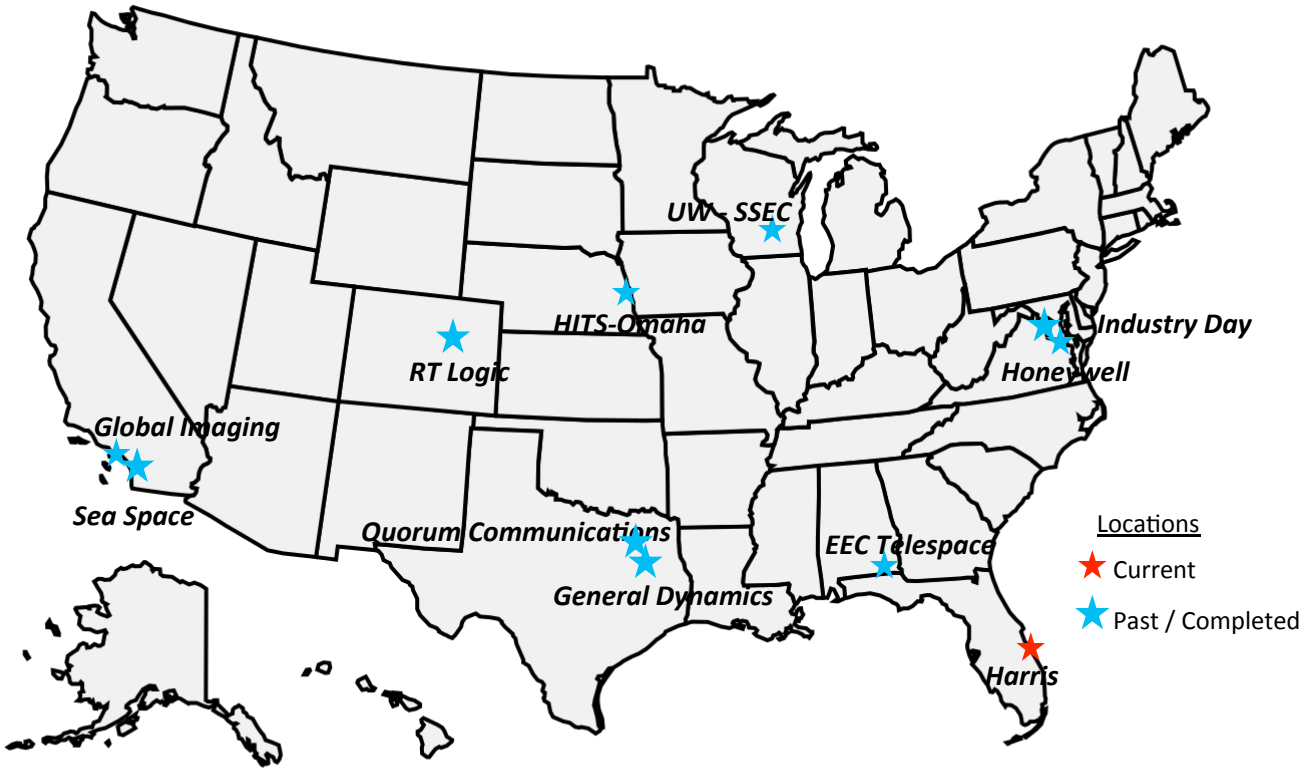


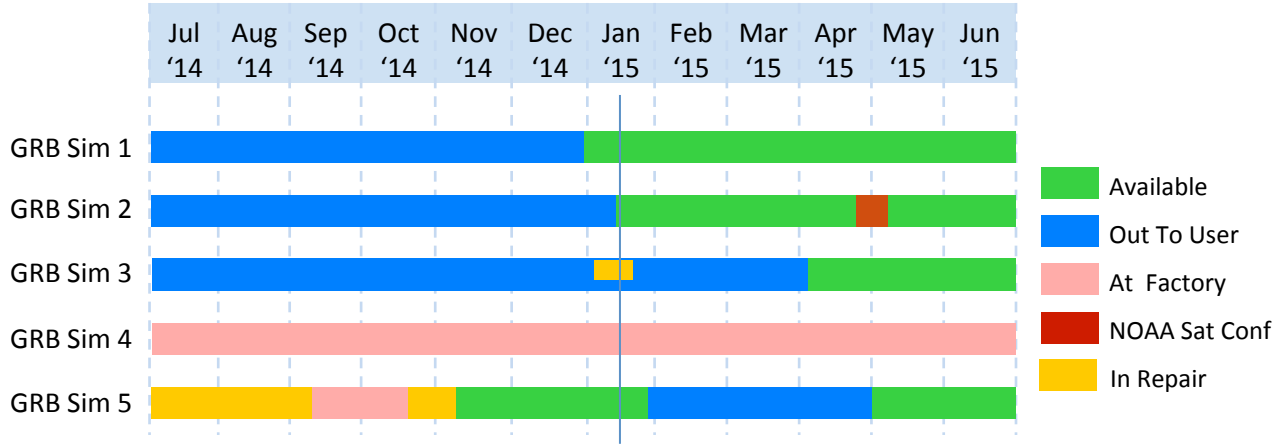
GOES-R Rebroadcast (GRB) Simulators

- Self-contained hardware & software with pull out keyboard and screen
- Available for 90-day loan periods with potential extensions
- Includes training & tech support
- Loans commenced Nov 2013 and slated through 2019
- 9 loans completed
- Requests:
  - Matthew.Seybold@noaa.gov
  - Jenny.Moore@noaa.gov
- OSPO GRB Product Area Lead:
  - Marlin.O.Perkins@noaa.gov
- Project Manager at HITS:
  - Ed Czopkiewicz (eczopkie@harris.com)

http://www.goes-r.gov/users/grb.html

Status of GRB Simulators





Current Status

Sim 1 – At HITS-Omaha Depot. Already re-baselined. Will complete QA in early Jan 2015.

Sim 2 – Just returned from Quorum Comm. in Irving, TX. Goal is to complete rebaseline and testing by third week in Jan 2015.

Sim 3 – At Harris Melbourne factory for support of NWS GRB Antenna program. Modem Repair.

Sim 5 – At HITS-Omaha Depot. Awaiting shipment to SSEC.

Projected Loans

Sim 1 – None at this time

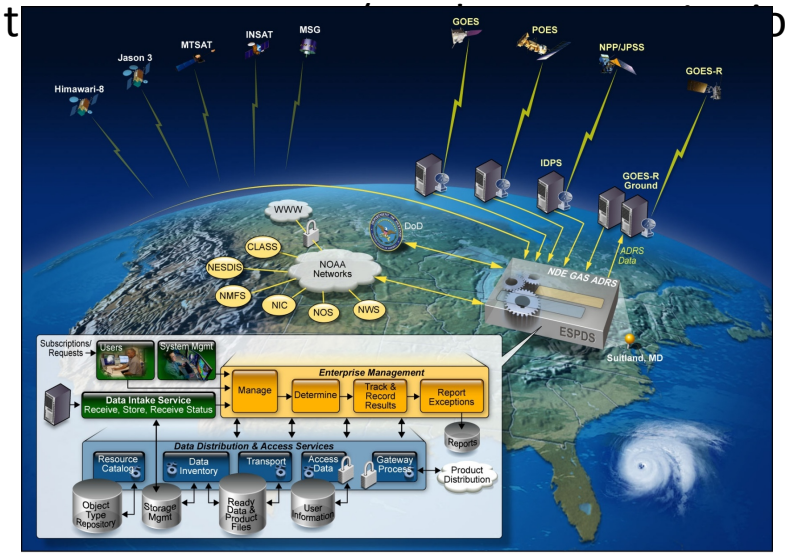
Sim 2 – NOAA Satellite Conference in late April, 2015.

Sim 3 – Harris Melbourne has current loan through 15 Mar 2015. Expect an extension request through 15 Jun 2015.

Sim 5 – Shipping out to University of WI – SSEC by 9 Jan 2015. Current borrowing period from 15 Jan 2015 to 15 Apr 2015.

PDA (Product Distribution & Access)

- Enterprise (GOES, POES, Others) GUI-based customer data access portal
- Replaces current ESPC systems (DDS, NDE, GOES satepsdist, etc.)
- Provides data catalog w/ 7-day (GOES-R), 4-day (JPSS), & 3-day (Legacy) data stores
- Allows NetCDF4 (w/ CF metadata) users t on, selection and transfer method)
  - No longer one-size-fits-all
  - Data Shaping Capability
  - Flexible
  - Sectorize
  - Time Frequency
  - Mesoscale Domains
  - Mode Changes



- Supports FTPS and SFTP protocols
- Supports push and pull interfaces
- Source of data for
  - NCO (and EMC) Model ingest of GOES Radiances, Derived Products, and AMVs
  - AWIPS L1b/L2+ Derived Products
- Access granted to real-time users by OSPO Data Access Review Board (DARB)
- PDA backup at Consolidated Backup (CBU) does not include GOES-R data
- External Interface Testing is already ongoing with CLASS, NWS, DoD, and others
- Operational Readiness Review (ORR) – Oct 2015, First Ops data: S-NPP Jan 2016
- See Rich Baker talk on Thursday for complete timelines & integration status (J21.2)

netCDF -to- McIDAS Format Translation of GOES-R Data

- OSPO will continue to provide McIDAS ADDE access for GOES-13/14/15 data to operational users
- GOES-R data will be served in netCDF4 format via PDA
  - The future client-side McIDAS software (update to McIDAS X/V is required to ingest GOES-R data) will perform netCDF4 to McIDAS AREA format conversion
  - Users who previously employed middleware for tailoring will be able to utilize PDA tailoring capabilities for GOES-R data:
    - Data sectorization
      - Geographic coordinate corner points, spatial resolution, bit depth scaling
    - Remapping to Mercator, Lambert Conformal, Polar Stereographic of Platte Carre projections
    - Layer extraction

Data Operations Exercises (DOEs)

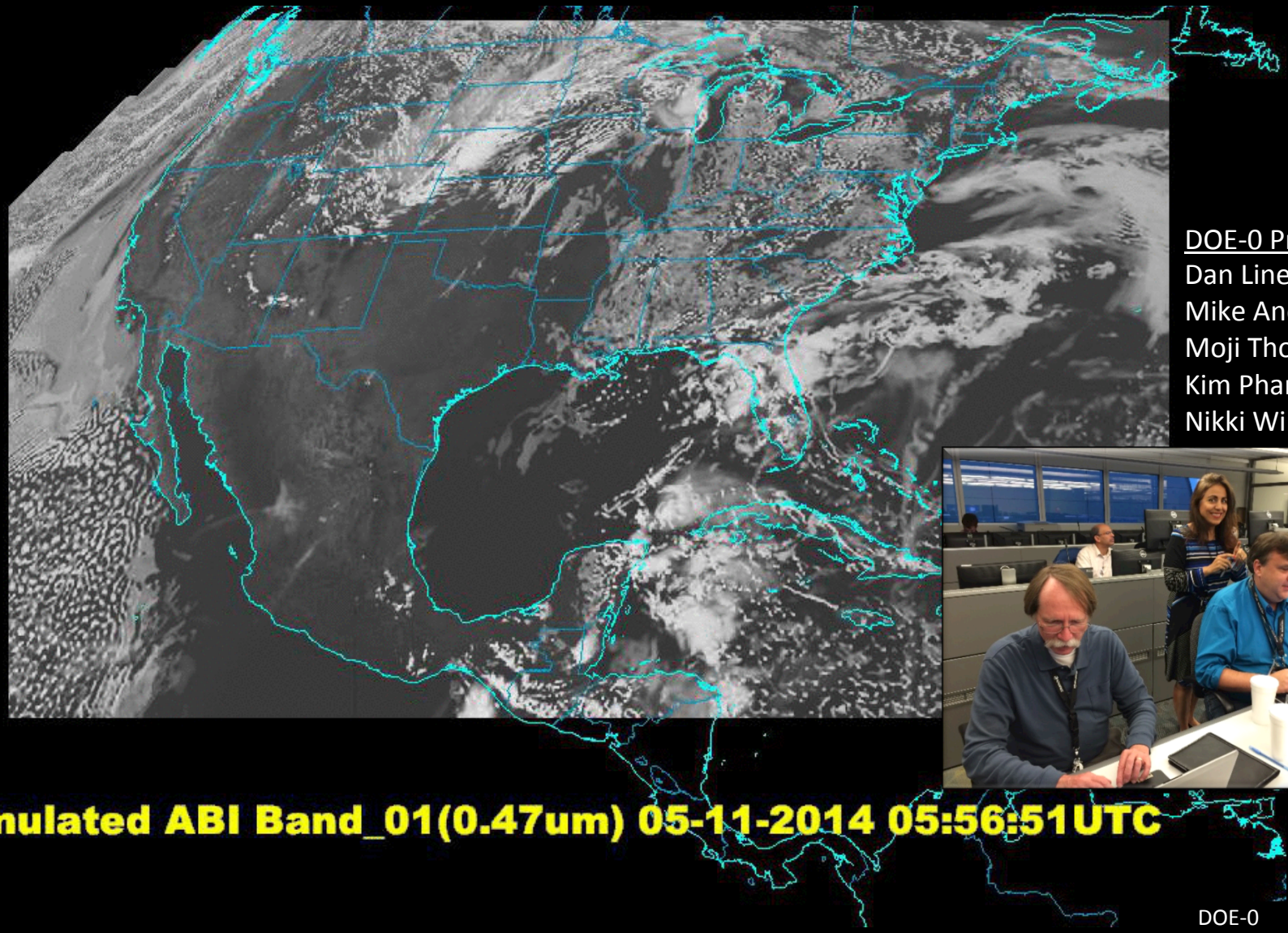
- DOEs are mission rehearsals executed by the Data Operations team
- DOEs provide incremental readiness to prepare systems, operators, processes, and teams to support mission operations
- Conducted in a "rehearse like we fly" manner
- Both nominal and anomalous conditions are exercised
  - Problems encountered are recorded and opened for investigation
  - Unscripted events are injected including failover scenarios
  - Some long duration DOEs are planned to satisfy consumers' needs
- Provide risk reduction for GSP's scripted GSIT (Ground Segment Integration & Test team) requirement (functionality and capability) verification tests
- Goal is to ultimately exercise the entire ground system by processing data from end-to-end, from L0 through L2+, including PDA
- NWS and PDA are engaged in the planning and execution of the DOEs
- OSPO-approved PDA users can use DOEs to validate their requirements (e.g. TOWR-G using DOE4)
- Coordination with NWS is on-going to extend the exercises through the NWS system

DOE Descriptions

- Capabilities of each DOE builds upon prior DOE capabilities
- All aspects (Capabilities, Data Flow & Duration, Dates) are tentative based on coordination with outside groups & potential severe weather
- Additional DOEs may be added as well

DOE-0	DOE-1	DOE-2	DOE-3	DOE-4
Nov 1 – Nov 5, 2014	May 11 – May 17, 2015	June 10 – June 18, 2015	July 7 – July 29, 2015	Sep 10 – Oct 16, 2015
Sites: CBU only Data Flow & Duration: 1) AWG Proxy Team at CIMSS's Baseline Data Set (ABI-only) for 24-hours	Sites: WCDAS & NSOF Data Flow & Duration: 1) Baseline Data Set (All instruments) for 48-hours 2) MVTDS Simulated Data Set for 8 hours	Sites: WCDAS & NSOF Data Flow & Duration: 2) MVTDS Simulated Data Set for 48+ hours 3) CIMSS AAWDS data for 24+ hours	Sites: WCDAS & NSOF Data Flow & Duration: 2) MVTDS Simulated Data Set for 5+ days 3) CIMSS AAWDS data for 3+ days 4) RDR MVTDS Thermal vacuum data for 1 day	Sites: WCDAS & NSOF Data Flow & Duration: 3) CIMSS AAWDS data for 14+ days
Capabilities: • Integrate GSSIM • Nominal PG/PD processing • Generation of GRB (no distribution to NSOF) • KPPs to AWIPS	Added Capabilities: • Products to PDA ITE • Distribute L0 to LZSS • Generation and distribution of GRB to NSOF • SOP validation	Added Capabilities: • DE available for Cal/Val	Added Capabilities: • Products to PDA OPS	Added Capabilities: • Participation by NWS WFOs & RFOs

Simulated Cloud & Moisture Imagery (CMI) from the First GOES-R Data Operations Exercise (DOE-0)



DOE-0 Principals:
Dan Linebarger
Mike Andrews
Moji Thompson
Kim Pham
Nikki Wilcox

DOE-0

DOE-0 After Action Review (AAR)

- 154,690 MB (151.06 GB) of compressed data was delivered to AWIPS during the 24-hour run
  - 102 MB of PAR (product activity reports) files and 154,588 KB NetCDF files
- 284,716 total files were delivered, expected 284,928
  - 100% of files sent to AWIPS were received at AWIPS
    - All the L2 SCMI tiles sent to AWIPS were received at AWIPS
      - one forced closed connection, successful transfer on retry
    - System latency appeared to be within tolerance but reports cannot be confirmed (open PTRs on latency reports)
    - Several error messages noted, system appeared to recover without data impact
    - Maximum sftp sessions opened at a given time was 53 out of a maximum possible 150

Product	# tiles sent to NWS	# tiles received at NWS	diff	Tile Volume (MB)**	# tiles expected	Diff tiles	# PAR sent	# PAR received	diff	PAR volume (MB)	# PAR expected	Diff PAR
FD	6144	6144	0	4638	6144	0	1535	1535	0	2.7	1536	1
CONUS	115200	115200	0	86004	115200	0	4608	4608	0	41.8	4608	0
MESO	103537	103536*	0	57956	103680	144	46015	46015	0	54.8	46080	65
PUERTO RICO	6144	6144	0	5990	6144	0	1534	1534	0	2.7	1536	2
total	231025	231024	0	154588	231168	144	53692	53692	0	102	53760	68

*The # of tiles sent to AWIPS without forced send command is 103536 (one file was delivered twice as designed).

**Rounding errors present on some values in tile volume

Consolidation to OSPO Enterprise Anomaly Tracking & Configuration Management

Tool Name / User / Record Type	ECMT OSPO	CMART GOES-R	Future Tools Future Constellations
PATRON Ticket w/ WR & CCR Flags	✓		
PR (RATS)	✓		
WR (RATS)	✓		
CCR (RATS)	✓		
Satellite IR (CATS)	✓		
Legacy MOCI CCR	✓		
OCCR		✓	✓
GOES-R MOCI CCR		✓	✓
IR		✓	✓
SR		*	✓
PTR		Harris	✓

*SRs are initiated by Tivoli in GOES-R SOZ & PPZ, but are neither CMART nor ECMT.

Incident, Problem, Enhancement, Baseline Change?

ECMT PATRON Ticket

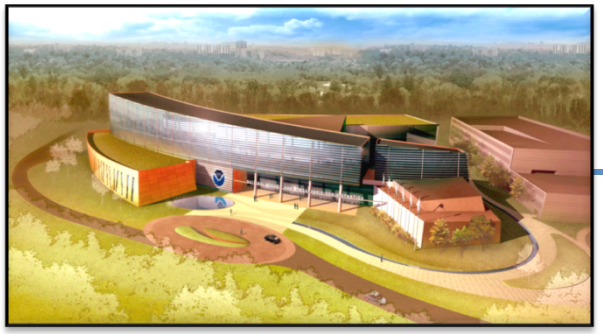
GOES-R Product Help Team

- Dual Capabilities
  - GOES-13/14/15
  - GOES-R
- ESPC Help Desk at NSOF
  - Help Ticket submissions
    - ESPCoperations@noaa.gov
    - (301) 817-3880
  - Anomaly Notifications
    - Future Subscription Service
  - RSO Requests to SDM
- User Services Coordinators at NCWCP
  - Natalia Donoho (OSPO Enterprise)
  - TBD (OSPO Enterprise)
  - TBD (specific to GOES-R)

NESDIS

OSPO (Operations)

NSOF



NCWCP

GOES-R Product Operations Team

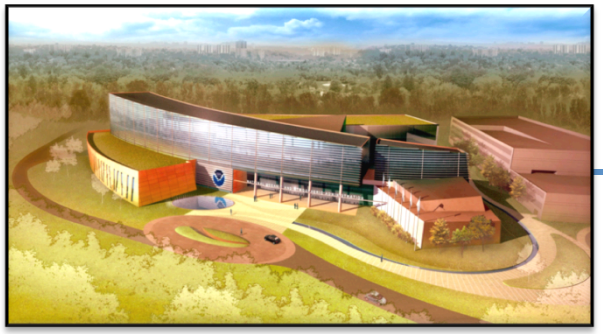
- Data Operations Manager (DOM) at GSFC/NSOF/NCWCP
  - Matthew Seybold
- GOES-R PAL (Product Area Lead) at GSFC/NCWCP
  - Wayne MacKenzie
  - ABI (Advanced Baseline Imager)
  - GLM (Geostationary Lightning Mapper)
- Direct Readout Services PAL (Product Area Lead) at NSOF
  - PALs – TBD & Marlin Perkins
  - HRIT/EMWIN (High Rate Information Transmission / Emergency Managers Weather Information Network)
  - GRB (GOES-R Rebroadcast)
- Legacy GOES-13/14/15 Staff at NSOF/NCWCP
  - System Engineers & PALs - Bonnie Morgan, Kay Metcalf, Paul Seymour, Marlin Perkins, Lakel Smith, John Paquette, Derived Product PALs
- Data Access including PDA at NSOF
  - Donna McNamara (Data Access Manager)
  - Chris Sisko (JPSS Data Operations Manager)
  - Public Service Announcement from Donna:
    - Satepsdist servers are being retired at the end of this month (1/'15)
    - Contact Donna if your satepsdist data access has not been revalidated for the new servers:
      - McIDAS data will be served from Geodist
      - Non-McIDAS data will be served from DDS

- Space Weather Products Support at SWPC in Boulder, CO
  - EXIS (Extreme Ultraviolet and X-ray Irradiance Sensors)
  - SEISS (Space Environment In-Situ Sensor Suite)
  - SUVI (Solar Ultraviolet Imager)
  - MAG (Magnetometer)

NESDIS

OSPO (Operations)

NSOF



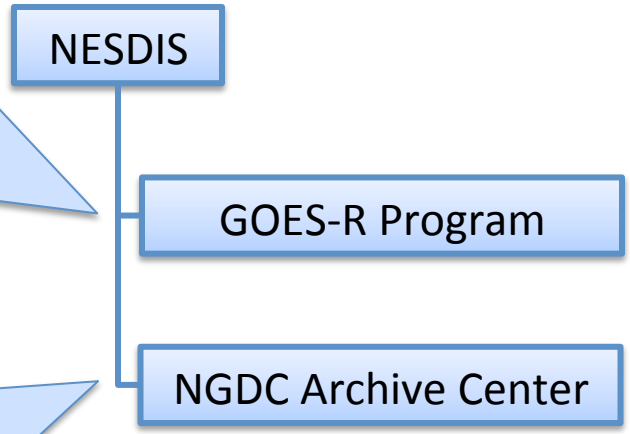
NCWCP

GOES-R Product Cal/Val Team

- CVCT Lead (Calibration & Validation Coordination Team)
  Bob Iacovazzi at GSFC/NSOF/NCWCP,
  CWG (Calibration Working Group) members,
  AWG (Algorithm Working Group) members:
  - ABI CMI
  - ABI & GLM L2+ products

  * See Jaime Daniels' Talk Thursday on AWG L2+ Product Validation Readiness Activities (Talk # J22.6)

- Chief – Solar & Terrestrial Physics
  Bill Denig at NGDC
  - EXIS (Extreme Ultraviolet and X-ray Irradiance Sensors)
  - SEISS (Space Environment In-Situ Sensor Suite)
  - SUVI (Solar Ultraviolet Imager)
  - MAG (Magnetometer)



Thank You!

Matthew Seybold
GOES-R Data Ops Manager
NESDIS/OSPO/SPSD
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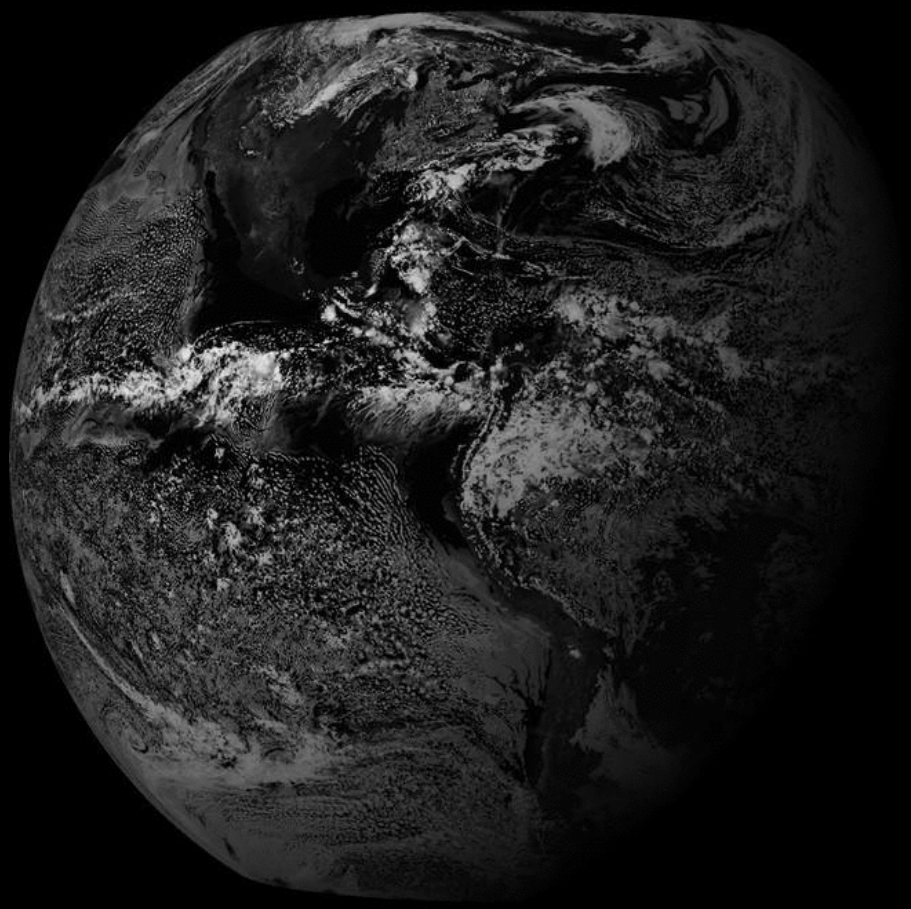
(202) 557-4997



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