

NASA Supply Chain 2010 Conference



Geostationary Operational Environmental Satellite R- Series (GOES-R)

Michael Donnelly
GOES-R Flight Project Manager



What is GOES-R?

- GOES – Geostationary Operational Environmental Satellite
- GOES – basic element of the US weather monitoring and forecast system and a key component of NOAA’s National Weather Service
- GOES-R is the next generation of the system
- GOES-R is a joint / collaborative development in which;
 - NOAA provides program management, ground systems, and funding
 - NASA provides flight hardware (spacecraft, instruments, launch vehicle) and MA
 - Both organizations provide systems engineering and project management disciplines
 - Program Office, Flight & Ground Projects area all located here at GSFC



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 David M. Scheve, Deputy Director of
 George Barth, Deputy Director for Planning and Business Management
 Jim Greaves, Associate Director
 Bob Menrad, Associate Director for Formulation
 TBD - (NOAA), Associate Director for NOAA Programs
 John Wolfgang, Assistant Director
 Beth Keer, Assistant Director
 Jimmy Barcus, Assistant Director
 Dan Blackwood, Assistant Director

Mission Phase:
 Pre-A=Purple
 A=Red
 B=Blue
 C/D=Green
 E=Brown
 (Operations)

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 Associate Director

FPD BUSINESS MGMT. OFF.
 Code 403
 Gretchen Burton, Chief

JAMES WEBB SPACE TELESCOPE PROGRAM
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 - PMEIO (401.2)

PLANETARY SCIENCE PROJS. DIV.
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 David Mitchell, Acting Associate Director
 Vacant, Business Manager

GOES-R PROGRAM
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 Greg Mandt (NOAA), System Program Dir.
 Rick Pickering - (NASA) Dep. Program Mgr.
 Stephen M. Schaeffer (NOAA)
 Business Manager

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 Code 440
 Mansoor Ahmed, Assoc. Dir. & PCOS/COR Program Mgr.
 Tom Griffin, PCOS Dep. Prog. Mgr.
 Beth Keer, COR Dep. Prog. Mgr.
 Vince Elliott, Acting Business Mgr.

- SAM (431)
 MAVEN (432)

- GOES-R Ground (416)
 GOES-R Flight (417)

- HST Operations (441)
 - Servicing Studies (442)
 - IXO (445)

- LISA (447)
 - SSMO** (444)
 - JDEM (448)

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 Tom McCarthy, Dep. Assoc. Dir. & ESM Deputy Program Manager
 Wayne McIntyre-
 Climate Sensor Instruments
 Jonathan Bryson,
 Business Manager

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 Liz Citrin, Dep. Assoc. Dir.
 Linda Greenslade
 Business Manager

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 Associate Director
 Roger Clason, Dep. Prog. Mgr.
 Jeffrey Volosin, Dep. Prog. Mgr.
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 David Mitchell, Dep. Assoc. Dir.
 Joe Dezio, Explorers Dep. Prog. Mgr.
 Bob Jenkins, LWS/STP Deputy Program Manager
 Herb Mittelman,
 Explorers Business Manager
 Pietro Campanella
 LWS/STP Business Manager

- CSP(421) - GLORY (426)
 - GPM (422) - LDCM (427)
 - ESDIS (423) - ESMO* (428)
 - ICESat II (425) - NPP (429)
 - DESDynI Study - SMAP Study

- NIMO (450.1) - TDRS (454)
 - Laser Comm. (450.2) - ESP (455)
 - SN (452) - SNGSS (458)
 - NEN (453)

- SET (460) - IRIS
 - MMS (461) - NUSTAR
 - GEMS (463) - Astro-H
 - APL Projects (466) - LADEE
 (RBSP & SPP)
 - Solar Orbiter

* TERRA, AQUA, TRMM, SORCE, GRACE, EO-1, AURA
 ** GEOTAIL, WIND, SOHO, RXTE, ACE, TIMED, RHESSI, GALEX, CLUSTER, SWIFT, THEMIS, STEREO; IBEX, AIM; Fermi; SDO; LRO



GOES-R Program

Program Scientist (NOAA)
Project Scientists (NASA & NOAA)

GOES-R Program Office (410)
System Program Director (SPD): Greg Mandt (NOAA)
Deputies (NASA & NOAA)

NASA GSFC Center Mgmt Council

Program Control (NOAA)

Program Systems Engineering (NASA)

Program Mission Assurance (NASA)

Contracts (NASA & NOAA)

Flight Project (NASA) (417)

Ground Segment Project (NOAA) (416)





GOES-R Mission

Earth Pointing

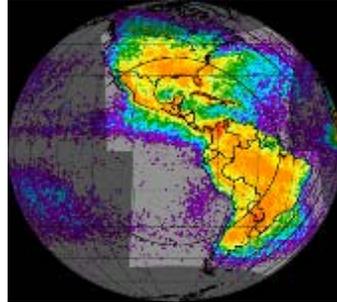
Visible & IR Imagery



Advanced Baseline Imager (ABI)

- Imagery of the Earth's surface, atmosphere, and ground cover

Lighting Mapping

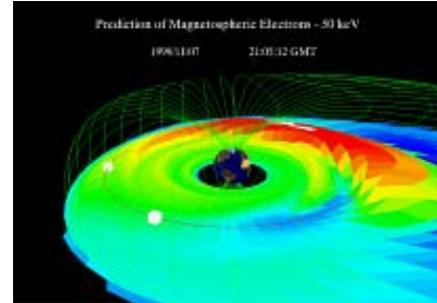


Geostationary Lightning Mapper (GLM)

- Detects the frequency and location of lightning activity

In-Situ

Space Weather Monitoring



Space Environment In-Situ Sensor Suite (SEISS)

- Monitors the space environment

Magnetometer

- Measures magnitude and direction of Earth's magnetic field

Sun Pointing

Solar Imaging



Solar Ultra-Violet Imager (SUVI)

Extreme UV/X-Ray Irradiance Sensors (EXIS)

- Provides realtime measurement of solar activity, and observes the sun's emissions, providing early detection and location of flares

New and improved capabilities for

- decreased lead times for severe weather warnings
- better storm tracking capabilities
- solar, space weather, and climate analyses
- advanced products for aviation, transportation, commerce



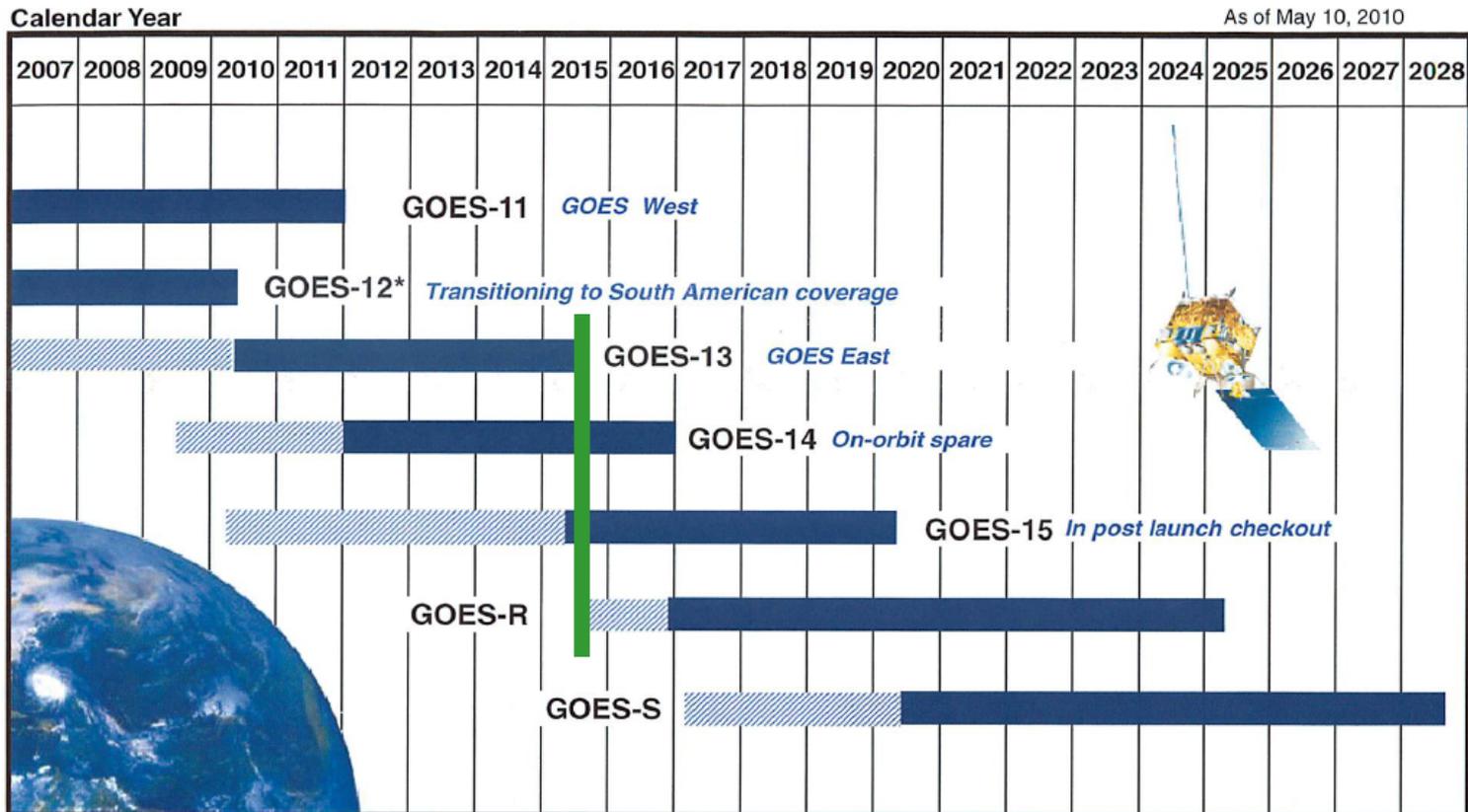
GOES-R Improvements

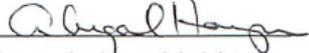
	GOES I-M	GOES N-P	GOES R
Performance Capability			
Imaging			
Visible Resolution	1 km	1 km	0.5 km
IR Resolution	4-8 km	4-8 km N 4 km O/P	1-2 km
Full Disk Coverage Rate	30 min	30 min	5 min
# of Channels	5	5	16
Solar Monitoring	GOES-M only	Yes	Yes
Lightning Detection	No	No	Yes
Operate through Eclipse	No	Yes	Yes
Ground System Backup	Limited	Limited	Limited
Archive and Access	Limited	Limited	Yes
Raw Data Volume per spacecraft	2.6 Mbps	2.6 Mbps	75 Mbps



GOES Fly-out Schedule

Continuity of GOES Operational Satellite Program



Approved: 
 Deputy Assistant Administrator
 for Systems

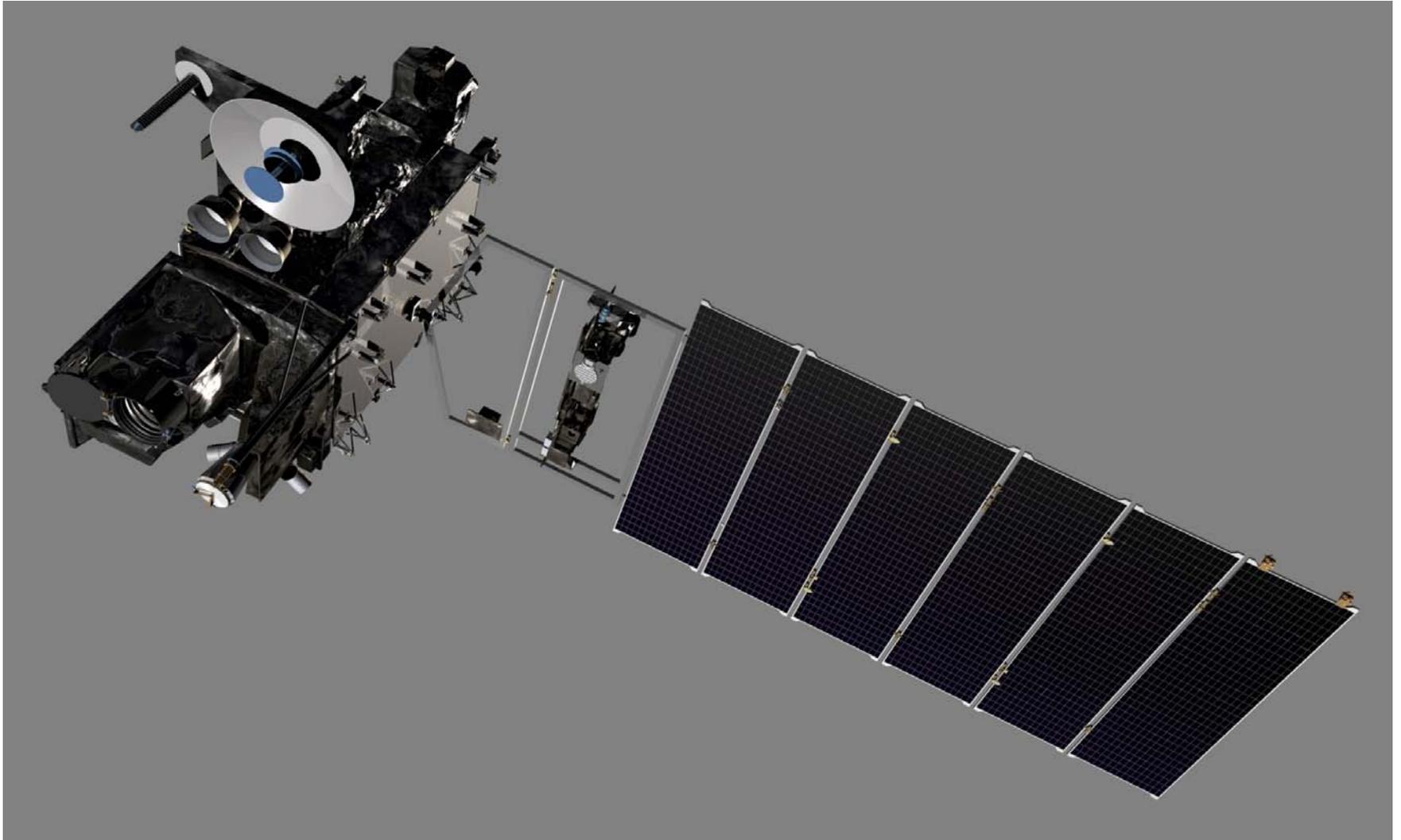
*Backup and South American Coverage
 beginning June 2010

 Satellite is operational beyond design life
 On-orbit GOES storage
 Operational

SENSITIVE AND PRIVILEGED: FOR OFFICIAL USE ONLY

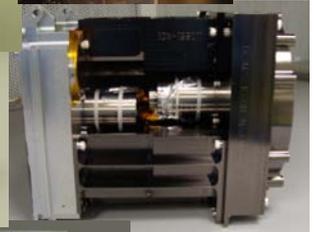
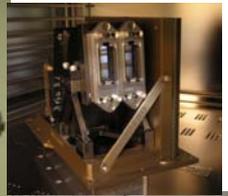
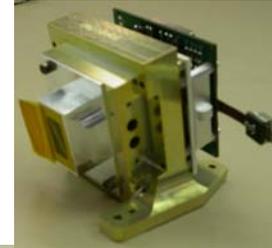
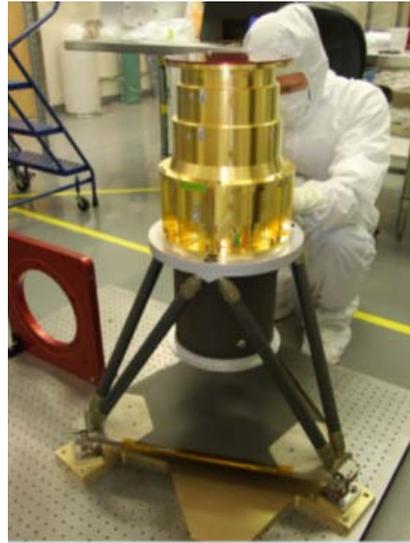
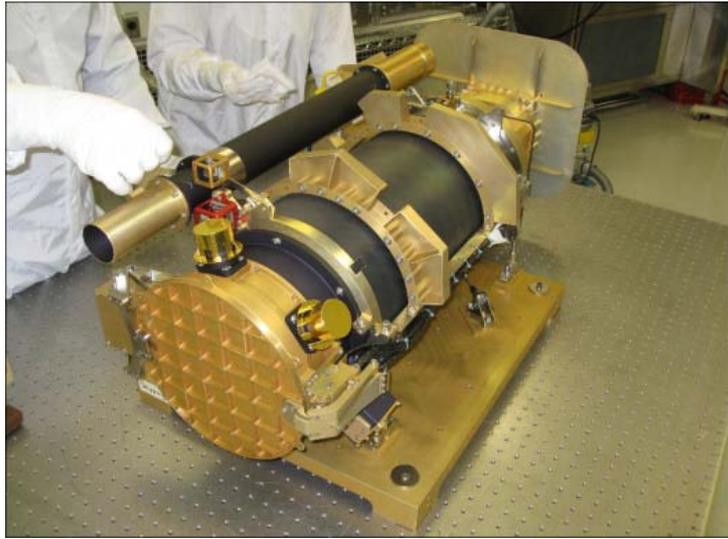


GOES-R





What is GOES-R





"Supply Chain Management"

- The GOES-R MA staff, led by Roman Kilgore, has been charged with "...getting into our contractors knickers..."
 - They are to be friendly and cordial and professional, but not your friends...
 - We expect everyone to become confident in your ability to deliver, but not comfortable...
- Why?
 - Friends are willing to overlook our faults
 - Comfortableness leads to sloppiness, laziness, screw-ups, failures
 - Really big numbers...



Big Numbers

GOES-R Satellite Lifetimes.....

20 years

10 years operations + 5 years on-orbit storage + 5 years ground storage



Big Numbers

GOES-R & S Budget.....

\$7.6B

This the run-out budget for R&S through ~ 2032



Big Numbers

GOES-R Satellite contractors (prime & first tier subs)....

{not including Ground Project contracts}

65

This is the current count, but the S/C is still in procurement...



Current Contractors

- Prime Contractors:

- S/C: LMSSC (*Newtown, Denver, Sunnyvale, Stennis*)
- ABI: ITT (*Ft. Wayne & Rochester*)
- SEISS: ATC (*Carlisle*)
- SUVI: LMSSC (*Palo Alto*)
- GLM: LMSSC (*Palo Alto*)
- EXIS: LASP (*Boulder*)

- Subcontractors:

- Microsemi, BAE, BEI, DRS, NGST, SSG, Tinsley, ATK, ACT, Barr, Pioneer, DSI, JDSU, Reynard, Photonis, Micron, SI, IRD, MOSIS, Kyocera, JY, Hamamatsu, CDA, SEAKR, STA, UAH, UNH, Ryco, Alliance (MDA), Lightworks, LLNL, LBL, RXO, RAL, e2v, Tayco, Luxel, Sonoma Photonics (NG), H. Magnetics, MEDA, Interpoint, Aerojet, GD, MOOG, BF Goodrich, Aeroflex, Dalsa, ITL (AZ State), Phoenix, Epner, MIL, SDL (Utah State), Kollmorgan, Vanguard, FEI, Rymsa, Honeywell, L3, SAFT, Ares, ...



So, why do we do this?



Hurricane Isabel – September 2003