



GOES-R Program Update

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GOES-R System Program Director



GOES-R Rebroadcast (GRB) Simulator Industry Day
October 25, 2013

GOES-R System Architecture

GOES-West
137° West



GOES Storage
105° West



GOES-East
75° West



**Command & Control,
Mission Data, GRB**

GRB

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Mission Data, GRB**

GRB



NOAA Satellite Operations Facility (NSOF)
Suitland, MD



**Direct Readout
Users**



**Wallops Command and
Data Acquisition Station (WCDAS)**
Wallops, VA

GOES-R Milestones

		2010	2011	2012	2013	2014	2015	2016
Program/ System			✓ Mission Preliminary Design Review (PDR) Part I	✓ Mission PDR Part II	✓ Mission Critical Design Review (CDR) Part I			
		✓ Mission System Design Review (SDR)		✓ Mission CDR Part II				
Flight Segment	Spacecraft	✓ S/C SDR complete	✓ S/C PDR complete	✓ S/C CDR			● S/C Integration and Test (I&T) Begins	
	Instruments	✓ All instruments have passed CDR	✓ ABI Delta CDR complete	✓ EXIS PER	✓ ABI Pre-Environmental Review (PER)	✓ EXIS Delivery	● GLM PER ● GLM Delivery	
Ground Segment		✓ Core GS PDR completed	✓ GS Project PDR complete	✓ Core GS CDR	● Antenna Delivery (2 WCDAS, 1 NSOF)	● Antenna Delivery (2 RBU, 1 NSOF)		
		✓ Antenna System PDR completed	✓ Environmental Satellite Processing and Distribution System (ESPDS) CDR	✓ Comprehensive Large Array-data Stewardship System (CLASS) CDR	● R1 Ready – HW/SW at NSOF, WCDAS, RBU	● Antenna Delivery (1 WCDAS, 1 RBU, 2 NSOF)	● Launch Operational Baseline	
		✓ 100 % delivery of baseline product algorithms	✓ GS Project CDR					

Launch Readiness 2QFY 2016



Flight Project Progress

ABI PFM Pre-Shipment Review Complete



ABI Prepared for Transport

Spacecraft System Module First Power-On



SUVI Environmental Testing Complete

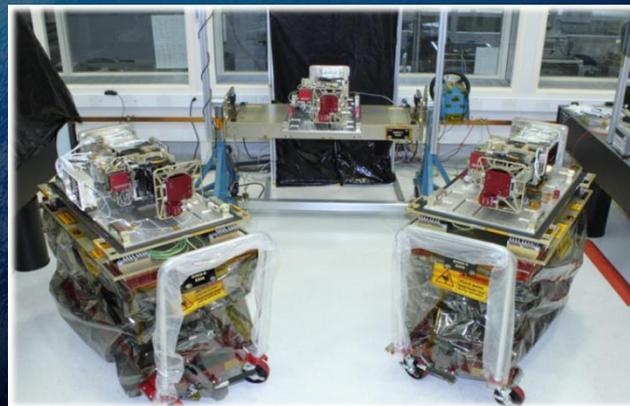


SEISS Environmental Testing Complete



SEISS Thermal Vacuum Chamber Entry

**EXIS FM1 Pre-Shipment Review Complete
EXIS FM2 Pre-Environmental Review Complete
EXIS FM3 Preparing for Pre-Environment Calibrations**



GLM FM1 Sensor Unit FPA First Power Up



Ground Segment Progress

Facility Upgrades at WCDAS



RBUS Antenna Sites



GOES-R Antenna Structure Assembly at RBUS Complete



GOES-R Mission Management System Delivered



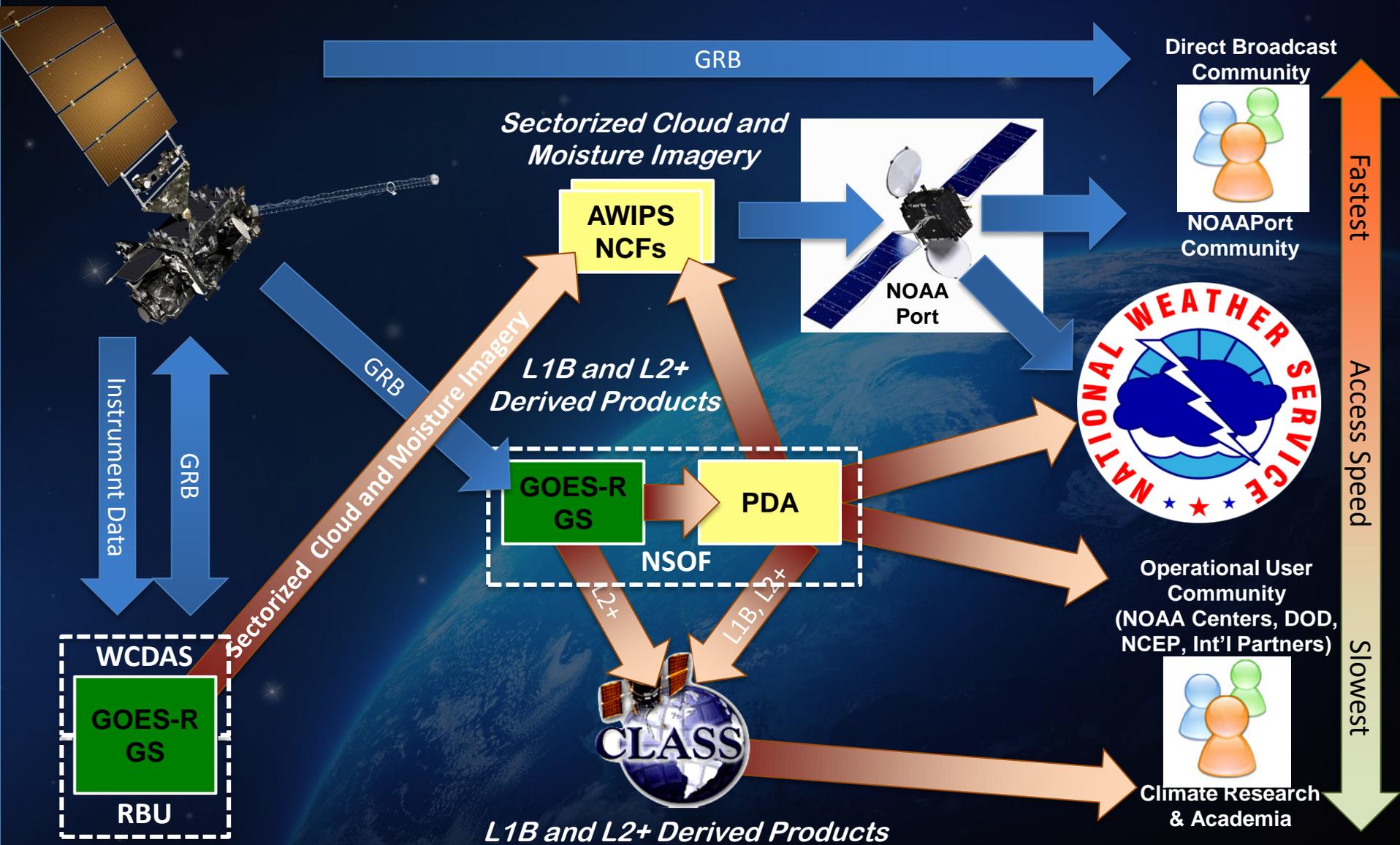
GOES-R Rebroadcast Simulators Shipped



Front

Rear

GOES-R Data Distribution





Transition from GVAR to GRB

	GVAR	GOES Rebroadcast (GRB)
Full Disk Image	30 minutes	5 minutes (Mode 4)
		15 min (Mode 3)
Other modes	Rapid Scan, Super Rapid Scan	3000 km x 5000 km CONUS: 5 min
		1000 km x 1000 km Mesoscale: 30 sec
Polarization	None	Dual circular polarized
Receive Center Frequency	1685.7 MHz (L-band)	1686.6 MHz (L-band)
Data Rate	2.11 Mbps	~30 Mbps
Antenna Coverage	Earth coverage to 5°	Earth coverage to 5°
Data Sources	Imager and Sounder	ABI (16 bands), GLM, SEISS, EXIS, SUVI, MAG
Space Weather	None	~2 Mbps
Lightning Data	None	~0.5 Mbps

Additional Information: <http://www.goes-r.gov/users/grb.html>

GRB Simulators

Simulated data/test patterns



Binary/PNG/JPEG
Proxy Data

GRB signal in Baseband and IF Frequencies

- CCSDS packets in LHCP and RHCP streams
- Lossless compression
- DVBS2 framing
- BCH/LDCP encoding
- 8-PSK or QSPK modulation



Modulator

DVBS2/CCSDS
Front End
Processor

GRB
Simulator
Processor

Time code
Reader/Generator

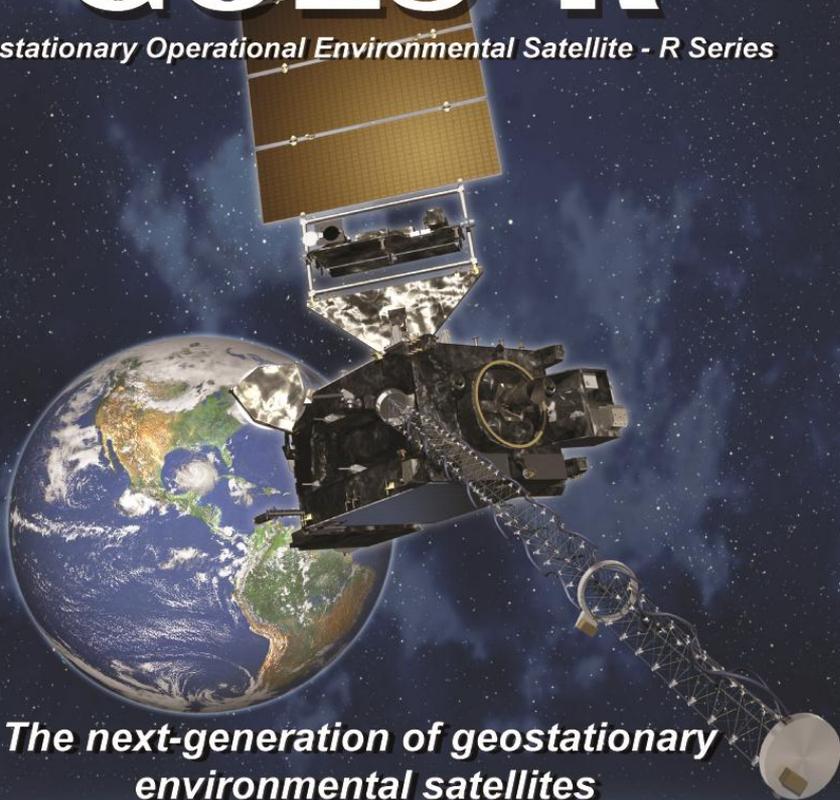
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GOES-R

Geostationary Operational Environmental Satellite - R Series



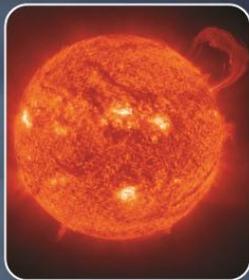
The next-generation of geostationary environmental satellites



Advanced imaging for accurate forecasts



Real-time mapping of lightning activity



Improved monitoring of solar activity

Spacecraft image courtesy of Lockheed Martin

Thank you!

For more information visit www.goes-r.gov



www.facebook.com/GOESRsatellite

<https://www.youtube.com/user/goesrsatellites>