

An Overview of the GOES-R Program



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GOES-R System Program Director

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GOES-R Mission Overview



GOES-R is the next generation of GOES satellites that will provide a major improvement in quality, quantity, and timeliness of data collected.

Earth Pointing



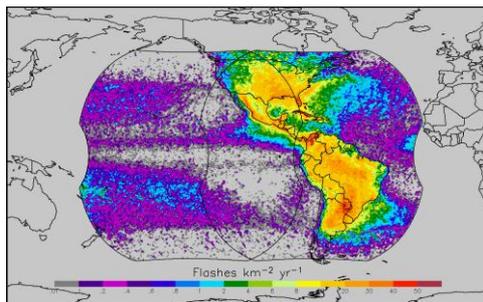
Visual & IR Imagery



- Advanced Baseline Imager (ABI)



Lightning Mapping

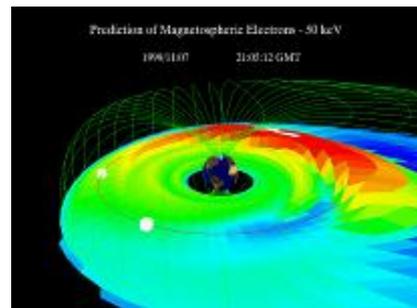


- Geostationary Lightning Mapper (GLM)

In-Situ



Space Weather Monitoring



- Space Environment in-Situ Sensor Suite (SEISS)
- Magnetometer

Sun Pointing



Solar Imaging



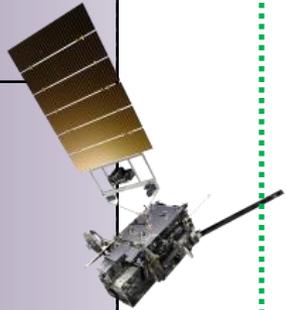
- Solar Ultra-Violet Imager (SUVI)
- Extreme UV/X-Ray Irradiance Sensors (EXIS)

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

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Program/ System		System Design Review complete ✓			Working to System PDR in August 2011 ●				
Flight Segment	Spacecraft		Spacecraft SDR complete ✓		PDR held January 18-20 2011 ✓				
	Instruments		5 Instrument contracts underway ✓ EXIS, SUVI, SEISS, and GLM have all passed CDR ✓		ABI delta CDR Complete ✓				
Ground Segment		Core contract awarded to Harris Corp. ✓			Antenna SDR complete ✓				
		Core SRR complete ✓			Core GS PDR complete ✓				
		80% delivery of baseline product algorithms ✓			Antenna System PDR April 2011 ●				
		RBU lease awarded ✓			GS Project PDR in June 2011 ●				

Launch Readiness Oct. 2015



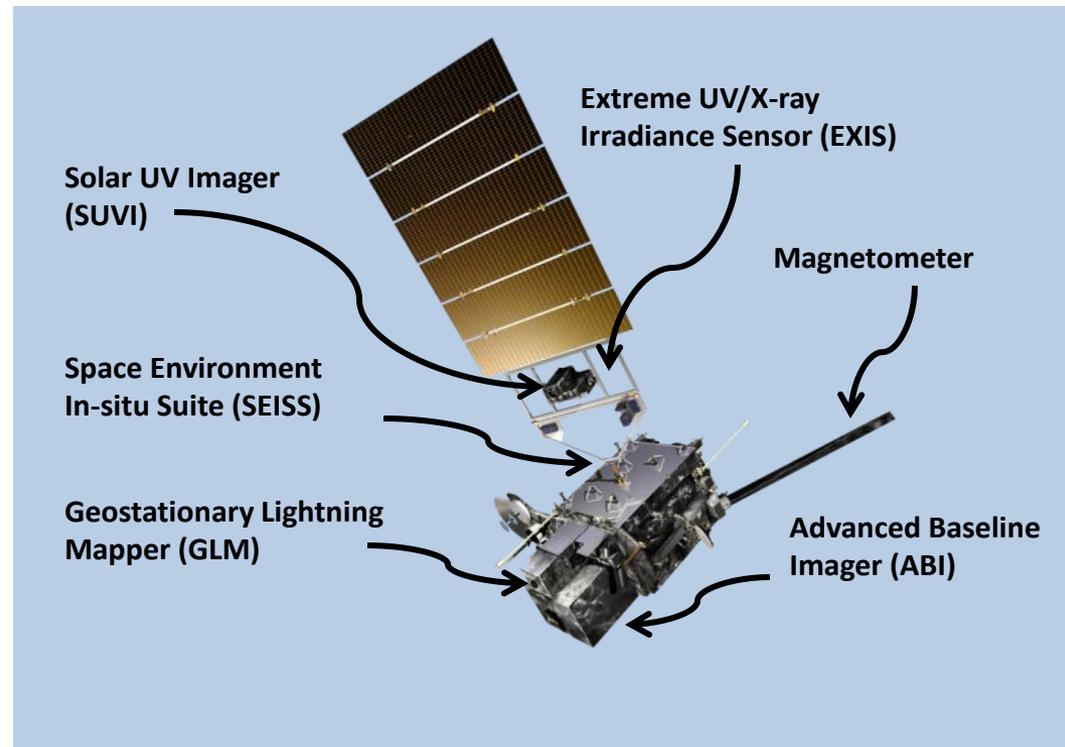


GOES-R Spacecraft



Specifications

- **Size:** ~5.5 meters (from launch vehicle interface to top of ABI)
- **Mass:** Satellite (spacecraft and payloads) dry mass <2800kg
- **Power Capacity:** >4000W at end-of-life (includes accounting for limited array degradation)
- Spacecraft on-orbit life of 15 years with orbit East-West and North-South position maintained to within +/-0.1 degree
- 3-axis stabilized



Lockheed Martin Space Systems Co (LMSSC) of Newtown, PA is primary contractor



Advanced Baseline Imager (ABI)



Specifications

- 16 channel imager
- Improves upon current capabilities in spectral information (3X), spatial coverage (4X), and temporal resolution (5X)
- Improves every product from current GOES Imager and will offer new products for severe weather forecasting, fire and smoke monitoring, volcanic ash advisories, and more



ABI Proto-Type Model (PTM)

ITT Corporation of Ft. Wayne, IN is primary contractor



Geostationary Lightning Mapper (GLM)



Specifications

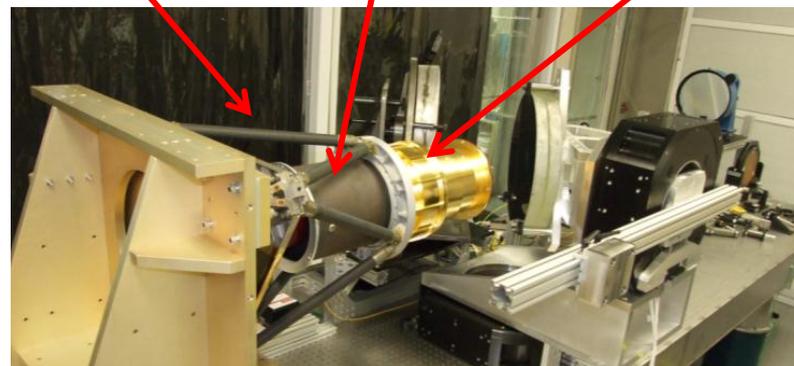
- **Detects total lightning:** in-cloud, cloud-to-cloud, and cloud-to-ground
- 70-90% flash detection day and night
- Near uniform spatial resolution
- Aids in forecasting severe storms and tornado activity, and convective weather impacts on aviation safety and efficiency
- Currently no ocean coverage, and limited land coverage in dead zones

Lockheed Martin Advanced Technology Corp of Palo Alto, CA is primary contractor

Sensor Unit
Mechanical Support
Structure

Metering tube

Optical Assembly



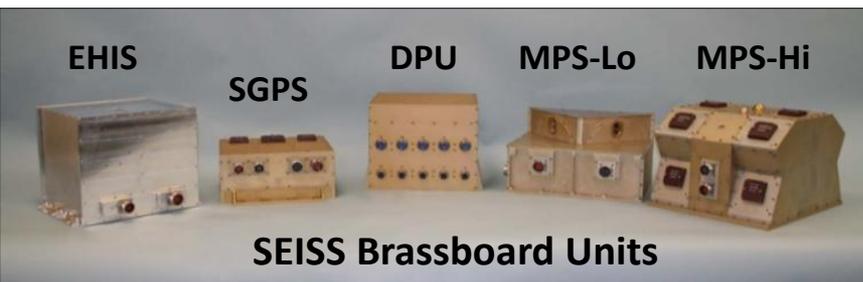
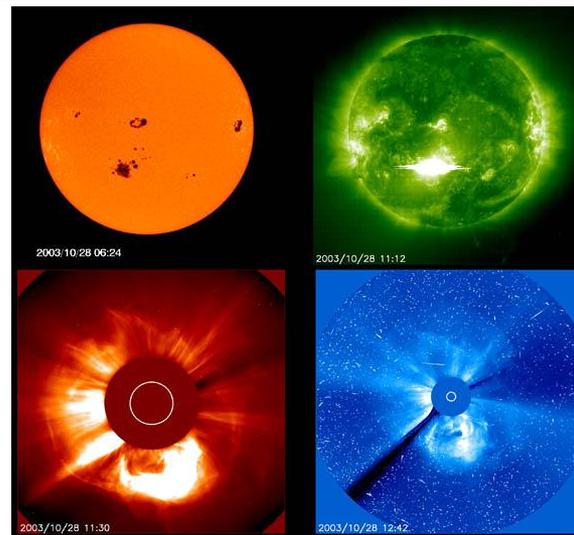


Space Weather Instruments



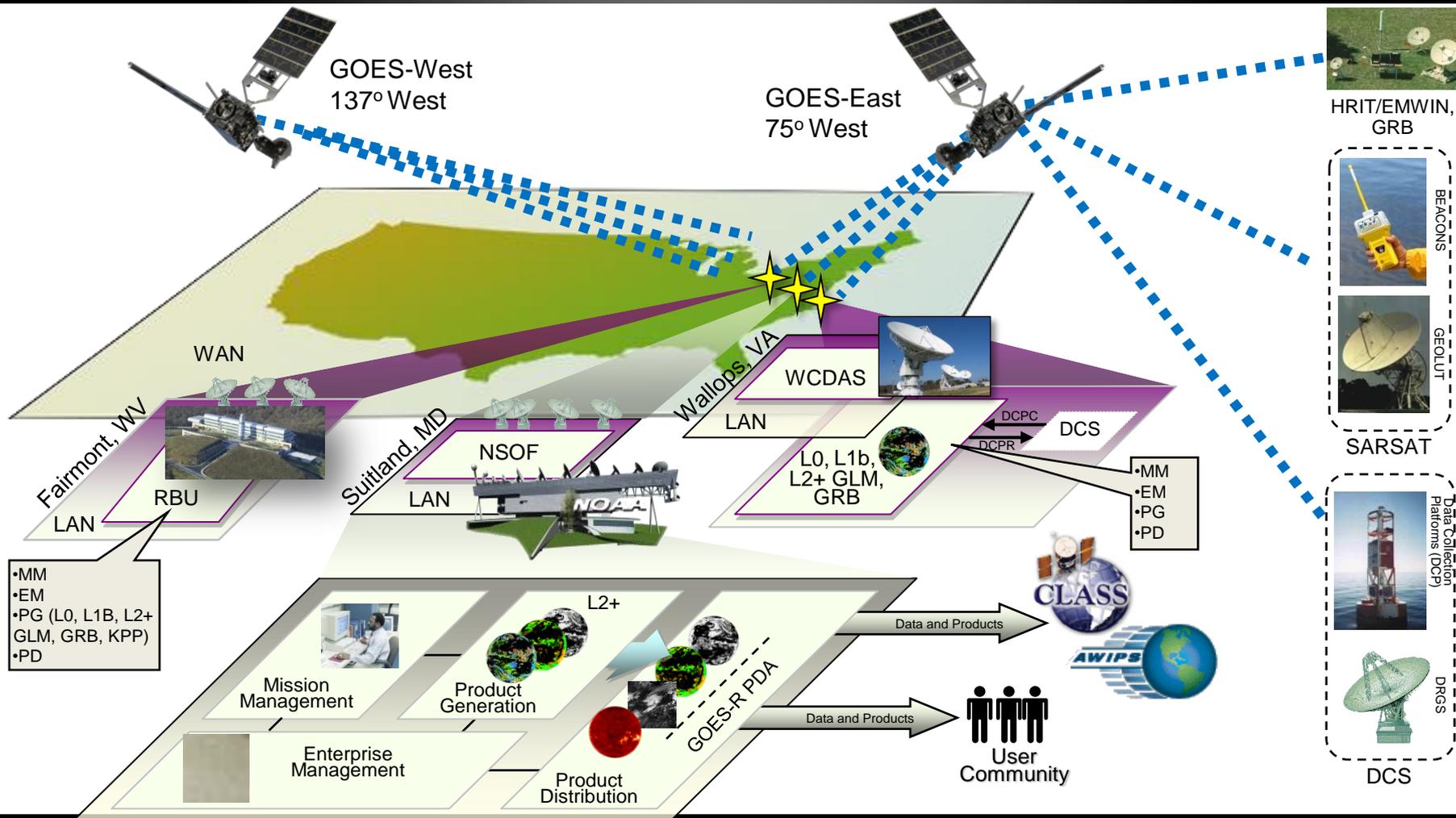
Space Environment Impacts Earth!

- Instruments provide early warning
- Communications satellites / power grids
- Voice and data blackouts over poles
 - Communications blackouts
 - Aviation routing
- Astronaut safety
 - Solar storms can expose astronauts to equivalent of 8 chest X-rays



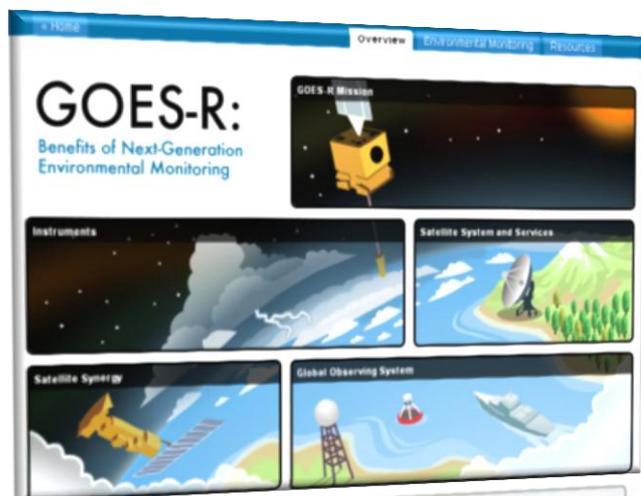


Ground Segment System Architecture





Training and Education



GOES-R 101

Bernie Connell¹, Timothy J. Schmit^{2,3}, Jim Gurka⁵,
Steve Goodman⁵, Don Hillger^{2,4}, Steven Hill⁶,
And many other contributors

GOES-R Program in cooperation with
Satellite Hydrology and Meteorology (SHyMet) Forecasters Course

¹ Cooperative Institute for Research in the Atmosphere, Colorado State University
² NOAA/NESDIS Satellite Applications Research
³ Advanced Satellite Products Branch
⁴ Regional and Mesoscale Meteorology Branch
⁵ NOAA/NESDIS/OSD GOES-R Program Office
⁶ NOAA/NWS Space Weather Prediction Center
⁷ Cooperative Institute for Meteorological Satellite Studies, University of Wisconsin-Madison



Online training modules

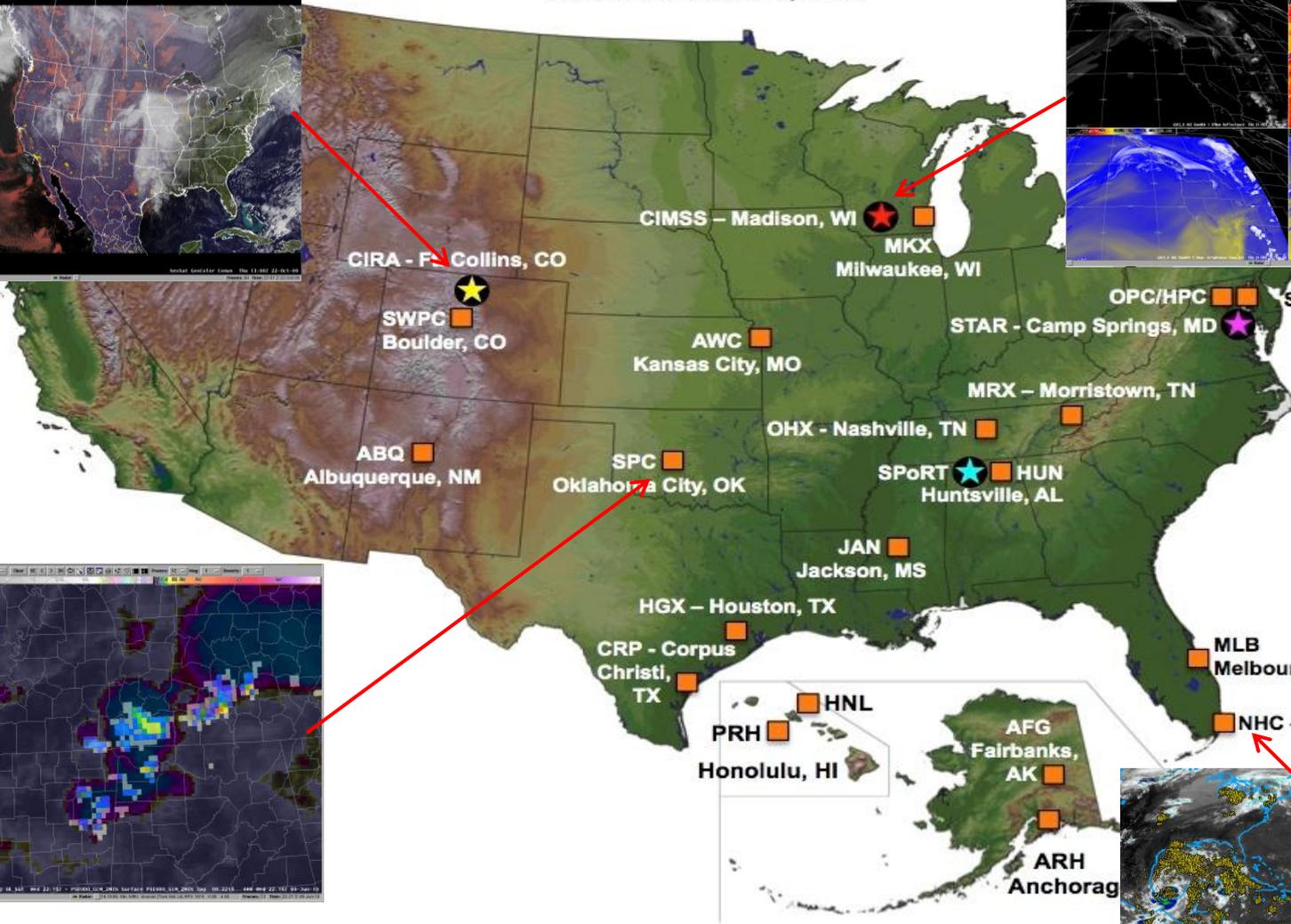
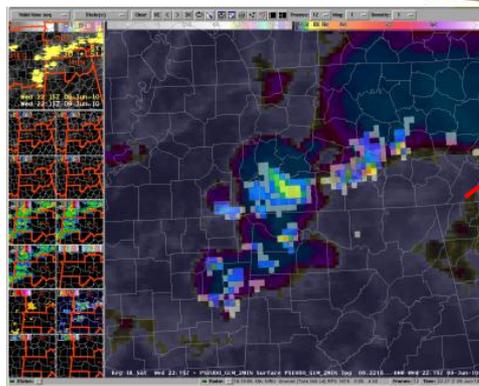
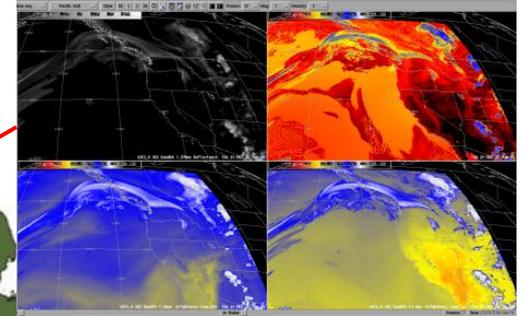
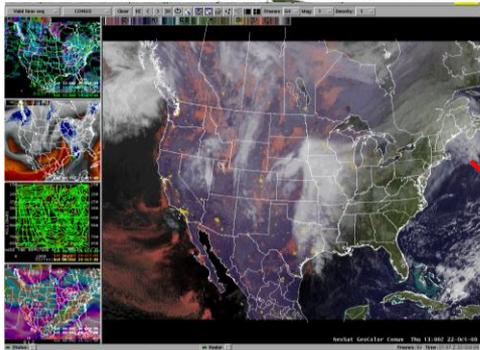
- http://meted.ucar.edu/goes_r/envmon/
- <http://cimss.ssec.wisc.edu/satmet/>
- <http://rammb.cira.colostate.edu/visit/video/goesr101/player.html>
- http://rammb.cira.colostate.edu/training/shymet/forecaster_intro.asp

GOES-R Proving Ground



GOES-R Proving Ground Evaluation Partners

Current as of January 2011





7th GOES Users' Conference



Joint with 36th Annual NWA Meeting in Birmingham, AL
Oct. 15-21, 2011 at the Wynfrey Hotel



Visit: <http://www.goes-r.gov> or <http://www.nwas.org/meetings> for more info!

Deadline for poster abstracts: June 1



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!

Any ???