



An Overview of the GOES-R Program

Greg Mandt

GOES-R System Program Director



AMS 93rd Annual Meeting and
9th Annual Symposium on Future National
Operational Environmental Satellite Systems
Austin, Texas
January 8, 2013

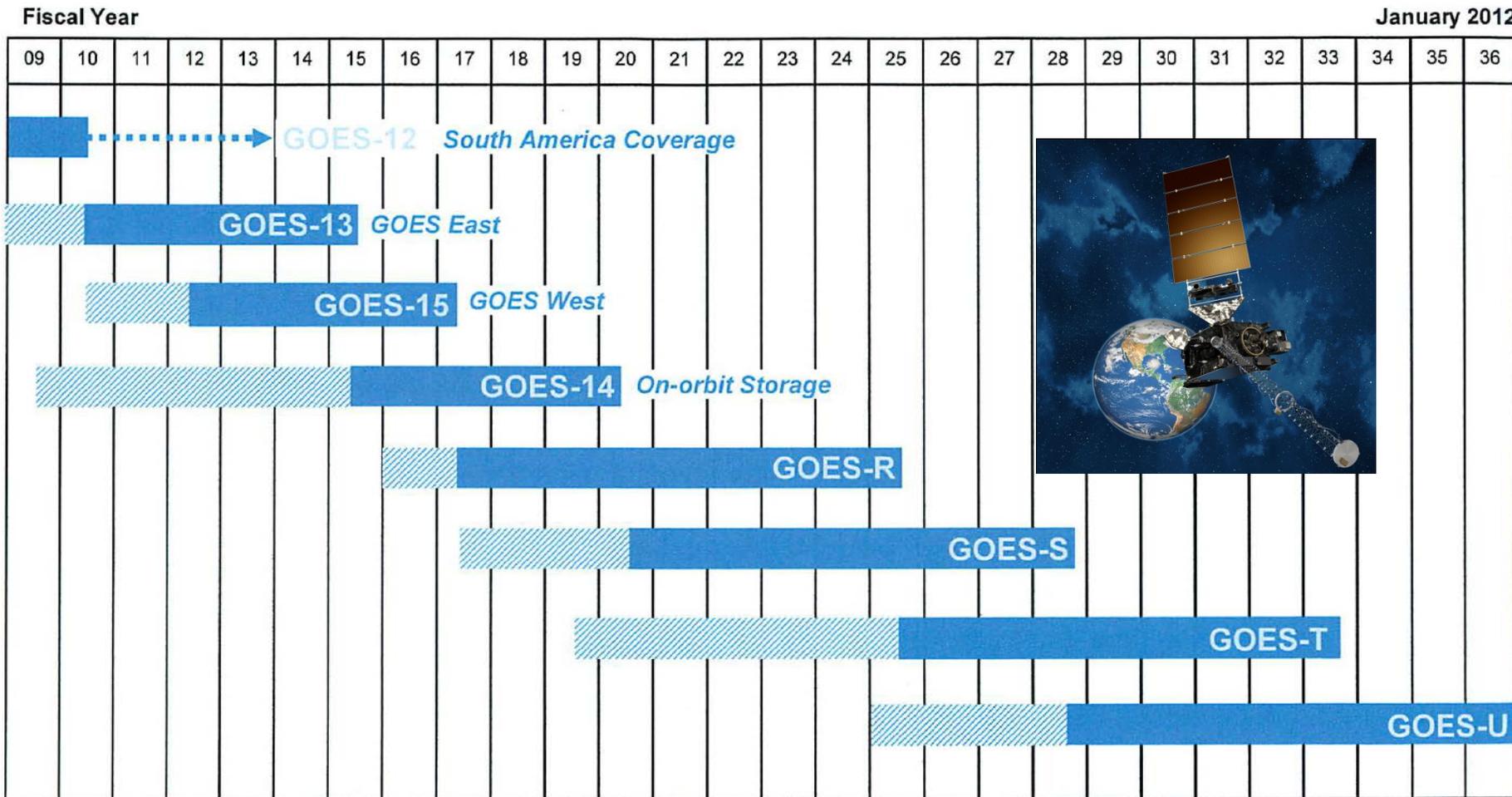


Suomi NPP "Blue Marble"
January 4, 2012



GOES East True Color
December 31, 2012

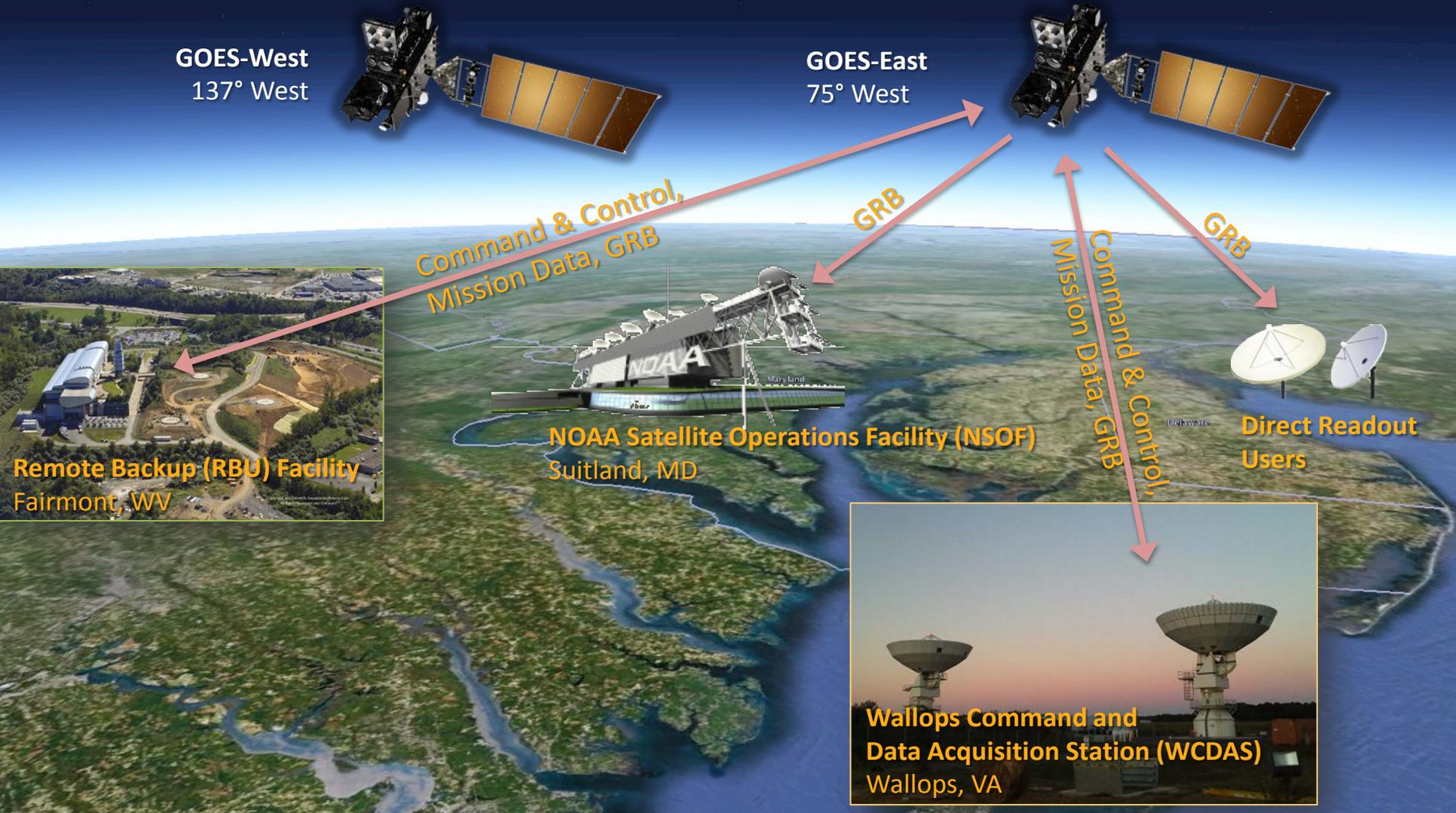
Continuity of GOES Operational Satellite Program



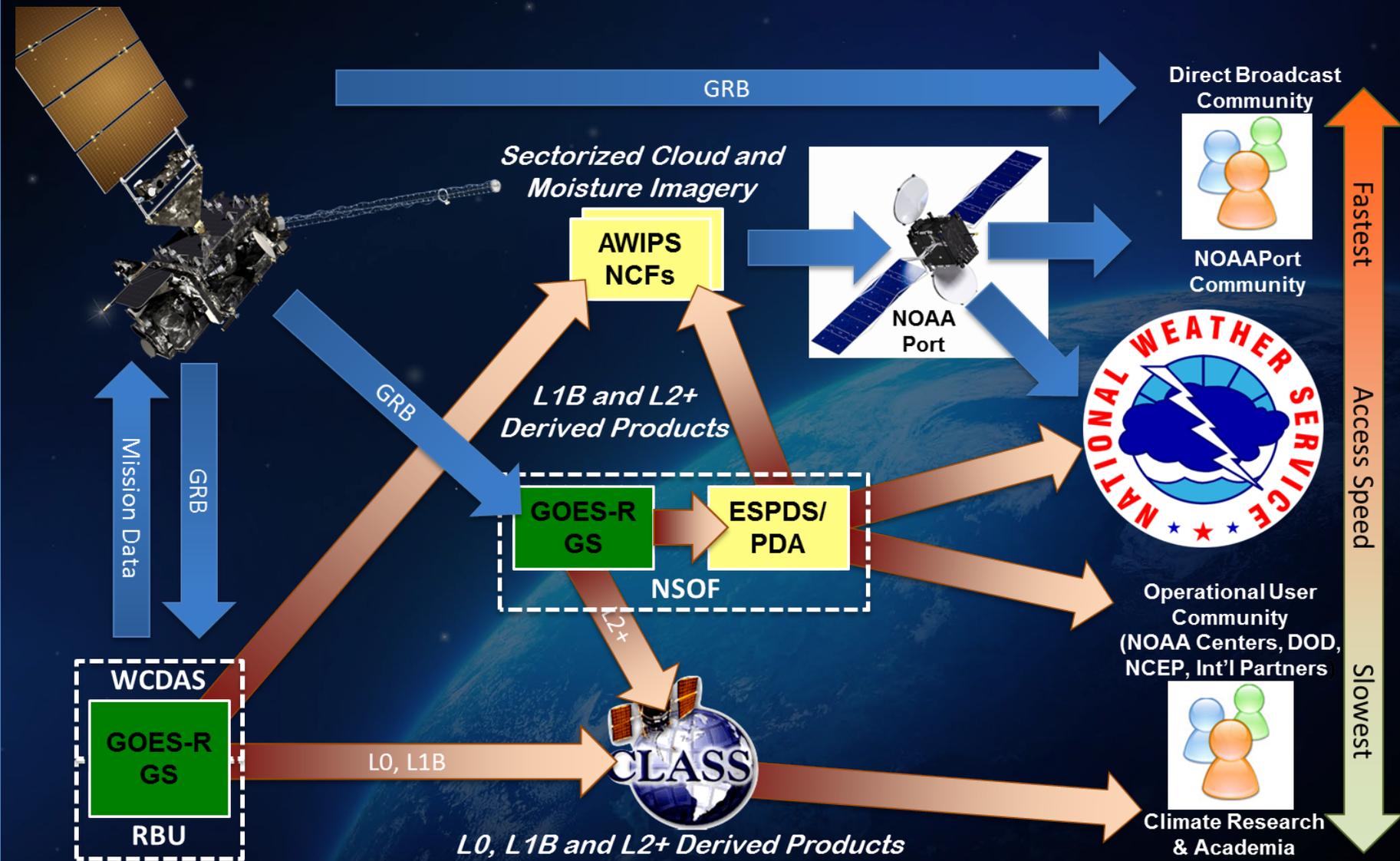
Approved: *Mary E. Kay*
 Assistant Administrator for
 Satellite and Information Services

 Satellite is operational beyond design life
 Post Launch Test / On-orbit storage
 Operational

GOES-R Architecture Overview



GOES-R Data Distribution



GOES-R Features that Allow Near-Continuous Observation: Susan Linch – Thu, Jan 10, 9:15 AM

NOAA Product Distribution and Access: Where is it going and what can I expect?: Daniel Beall – Thu, Jan 10, 9:45

The ingredients for sustaining success in NOAA R20 for GOES-R: Jordan Gerth – Thu, Jan 10, 2:30 PM

GOES-R Instruments

Earth Pointing

In-Situ

Sun Pointing

Visual & IR Imagery

Lightning Mapping

Space Weather Monitoring

Solar Imaging

Advanced Baseline Imager (ABI)

Geostationary Lightning Mapper (GLM)

Space Environment in-Situ Sensor Suite (SEISS)

Solar Ultra-Violet Imager (SUVI)



Exelis (ITT) Corporation
Ft. Wayne, IN

Lockheed Martin Advanced
Technology Center
Palo Alto, CA

Assurance Technology Corp.
Carlisle, MA

Lockheed Martin Advanced
Technology Center

Magnetometer

**Extreme UV/X-Ray
Irradiance Sensors (EXIS)**



Lockheed Martin Space Systems
Newtown, PA

Laboratory for Atmospheric and
Space Physics
Boulder, CO

Improved Space Weather Monitoring for GOES-R: William Denig – Mon, Jan 7, 4:45 PM

Preparing for the Advanced Baseline Imager on the GOES-R Series: Tim Schmit – Tue, Jan 8, 11:00 AM

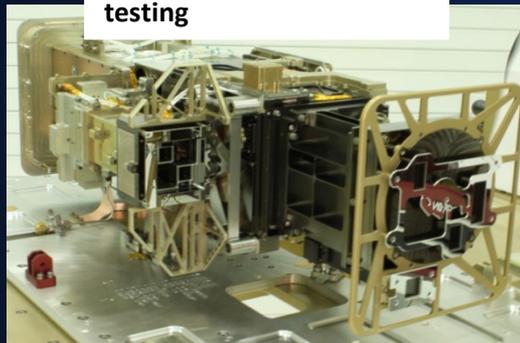
The GOES-R Geostationary Lightning Mapper: A New Eye on Lightning: Steve Goodman – Wed, Jan 9, 8:30 AM

Flight Project Progress

ABI FM1 completed vib testing



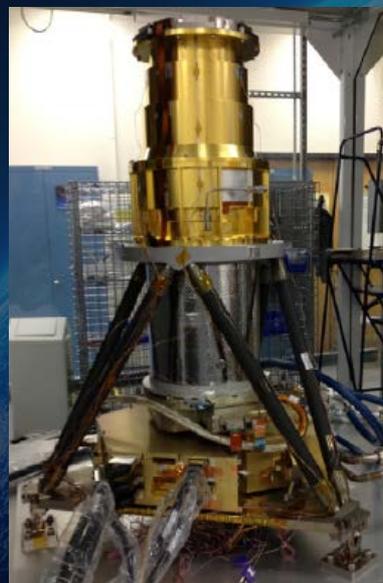
EXIS FM1 in thermal vac testing



S/C Core Structure Delivered to Stennis



SEISS components all in environmental testing.



GLM EDU Complete



SUVI FM1 beginning environmental testing



Launch Vehicle Contract Awarded

Ground Segment Progress

Core GS, GS Project, ESPDS and CLASS CDRs Complete

WCDAS Antenna Sites



RBU Antenna Sites



RBU Site 2 Foundation Footer



Harris C400 Development Lab



WCDAS Power House Construction



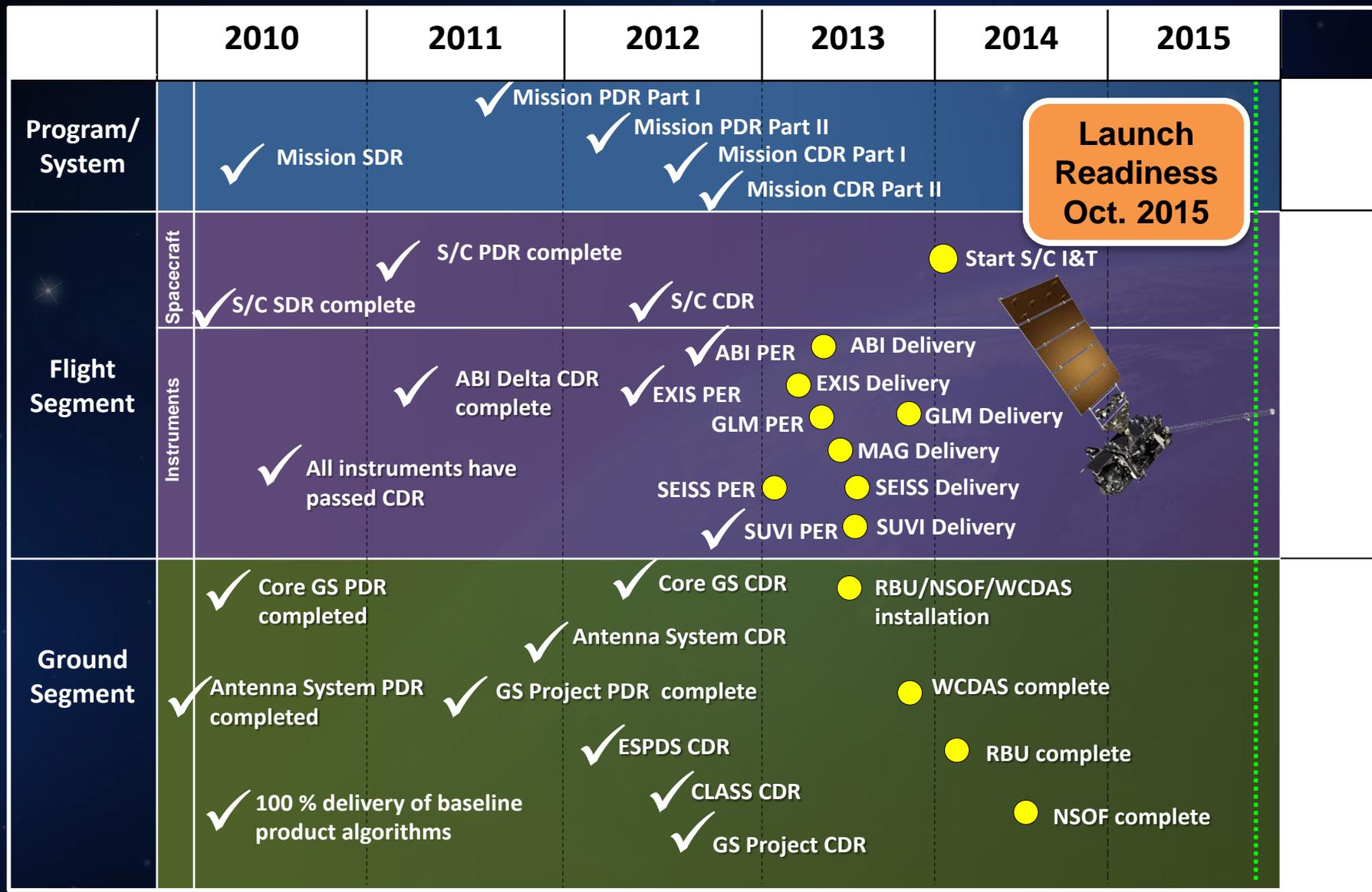
WCDAS Site 5 Antenna Installation



MMP Installation at NSOF



GOES-R Milestones



Launch Readiness Oct. 2015





GOES-R Products



Baseline Products

Advanced Baseline Imager (ABI)

- Aerosol Detection (Including Smoke and Dust)
- Aerosol Optical Depth (AOD)
- Clear Sky Masks
- Cloud and Moisture Imagery
- Cloud Optical Depth
- Cloud Particle Size Distribution
- Cloud Top Height
- Cloud Top Phase
- Cloud Top Pressure
- Cloud Top Temperature
- Derived Motion Winds
- Derived Stability Indices
- Downward Shortwave Radiation: Surface
- Fire/Hot Spot Characterization
- Hurricane Intensity Estimation
- Land Surface Temperature (Skin)
- Legacy Vertical Moisture Profile
- Legacy Vertical Temperature Profile
- Radiances
- Rainfall Rate/QPE
- Reflected Shortwave Radiation: TOA
- Sea Surface Temperature (Skin)
- Snow Cover
- Total Precipitable Water
- Volcanic Ash: Detection and Height

Geostationary Lightning Mapper (GLM)

Lightning Detection: Events, Groups & Flashes

Space Environment In-Situ Suite (SEISS)

- Energetic Heavy Ions
- Magnetospheric Electrons & Protons: Low Energy
- Magnetospheric Electrons: Med & High Energy
- Magnetospheric Protons: Med & High Energy
- Solar and Galactic Protons

Magnetometer (MAG)

Geomagnetic Field

Extreme Ultraviolet and X-ray Irradiance Suite (EXIS)

- Solar Flux: EUV
- Solar Flux: X-ray Irradiance

Solar Ultraviolet Imager (SUVI)

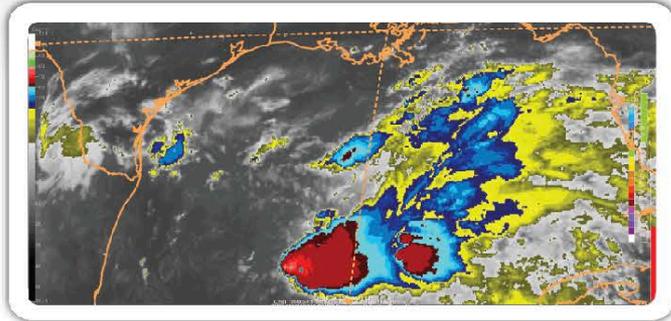
Solar EUV Imagery

Future Capabilities

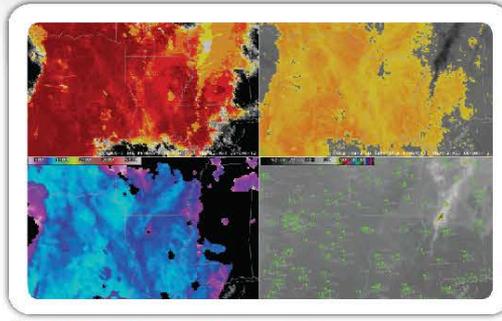
Advanced Baseline Imager (ABI)

- Absorbed Shortwave Radiation: Surface
- Aerosol Particle Size
- Aircraft Icing Threat
- Cloud Ice Water Path
- Cloud Layers/Heights
- Cloud Liquid Water
- Cloud Type
- Convective Initiation
- Currents
- Currents: Offshore
- Downward Longwave Radiation: Surface
- Enhanced "V"/Overshooting Top Detection
- Flood/Standing Water
- Ice Cover
- Low Cloud and Fog
- Ozone Total
- Probability of Rainfall
- Rainfall Potential
- Sea and Lake Ice: Age
- Sea and Lake Ice: Concentration
- Sea and Lake Ice: Motion
- Snow Depth (Over Plains)
- SO₂ Detection
- Surface Albedo
- Surface Emissivity
- Tropopause Folding Turbulence Prediction
- Upward Longwave Radiation: Surface
- Upward Longwave Radiation: TOA
- Vegetation Fraction: Green
- Vegetation Index
- Visibility

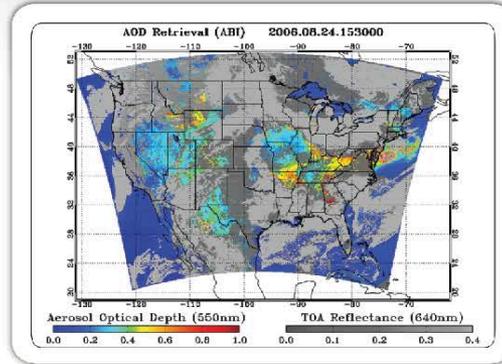
The GOES-R Proving Ground



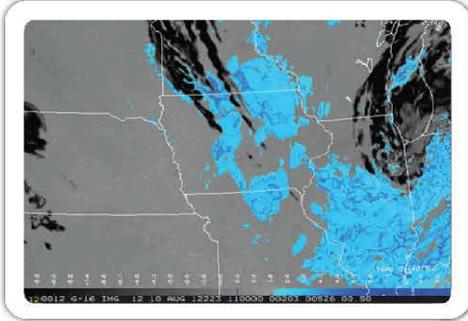
AWC – Kansas City, MO IR Imagery of Oceanic Storms



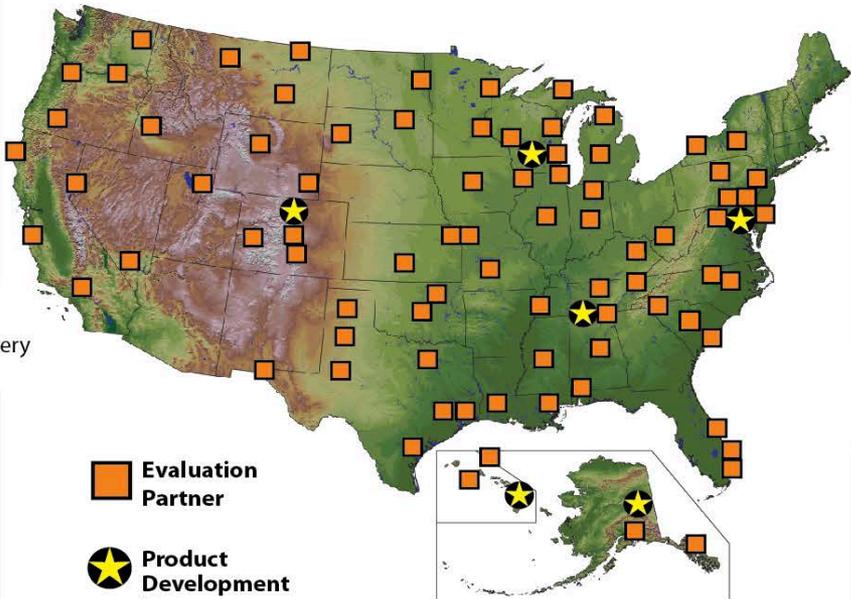
CIMSS/STAR – Madison, WI Fog/Low Stratus Product



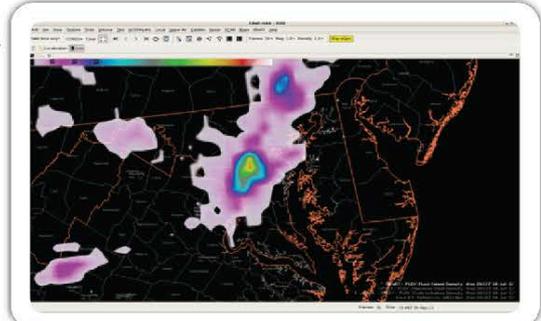
STAR/UMBC – College Park, MD Aerosol Optical Depth



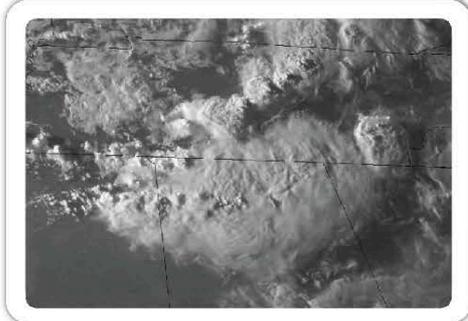
CIRA/STAR – Ft. Collins, CO ABI Synthetic Low Cloud Enhancement Imagery



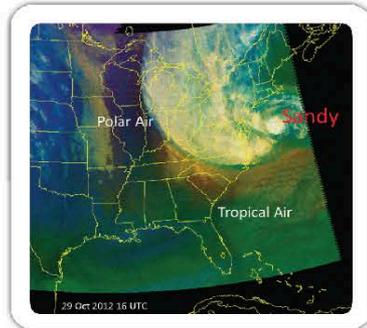
- Evaluation Partner
- ★ Product Development Partner



SPORT/NASA – Huntsville, AL GLM Lightning Density



SPC – Norman, OK Severe Storms 1-Min Visible Imagery of Overshooting Tops



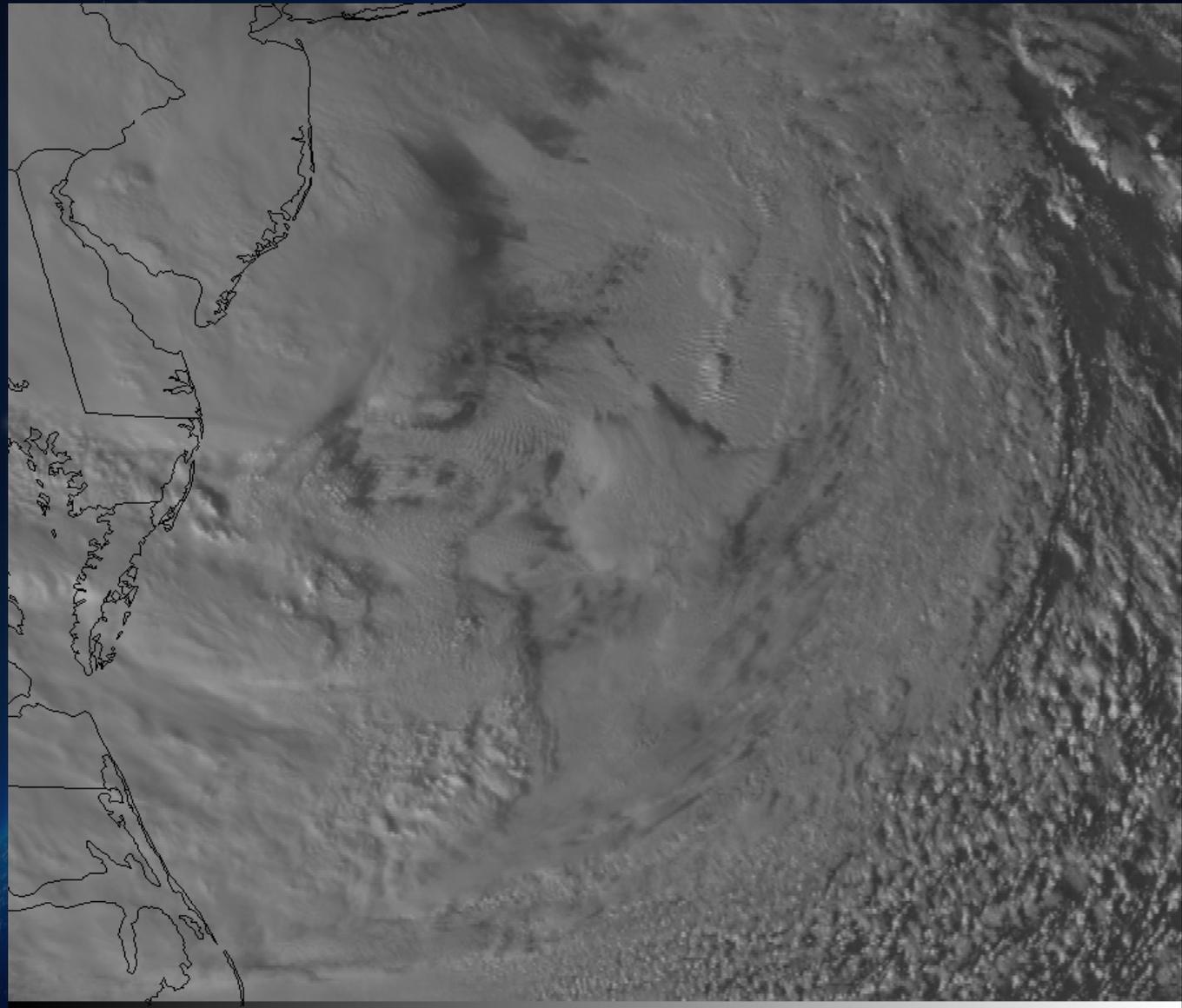
NHC – Miami, FL RGB Air Mass for Hurricane Sandy



GOES-14 SRSOR of Sandy (Visible)



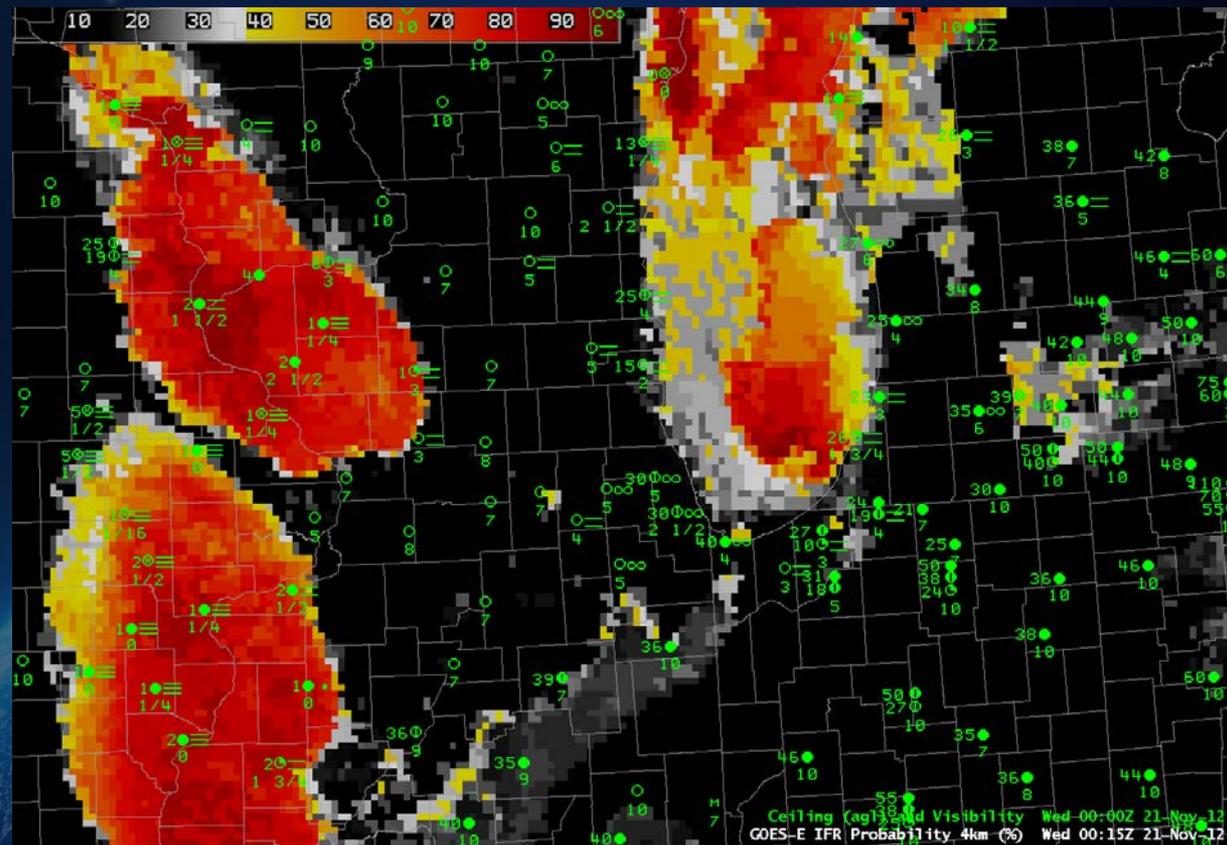
The 1-min interval imagery shows 'what is happening', not 'what has happened.'



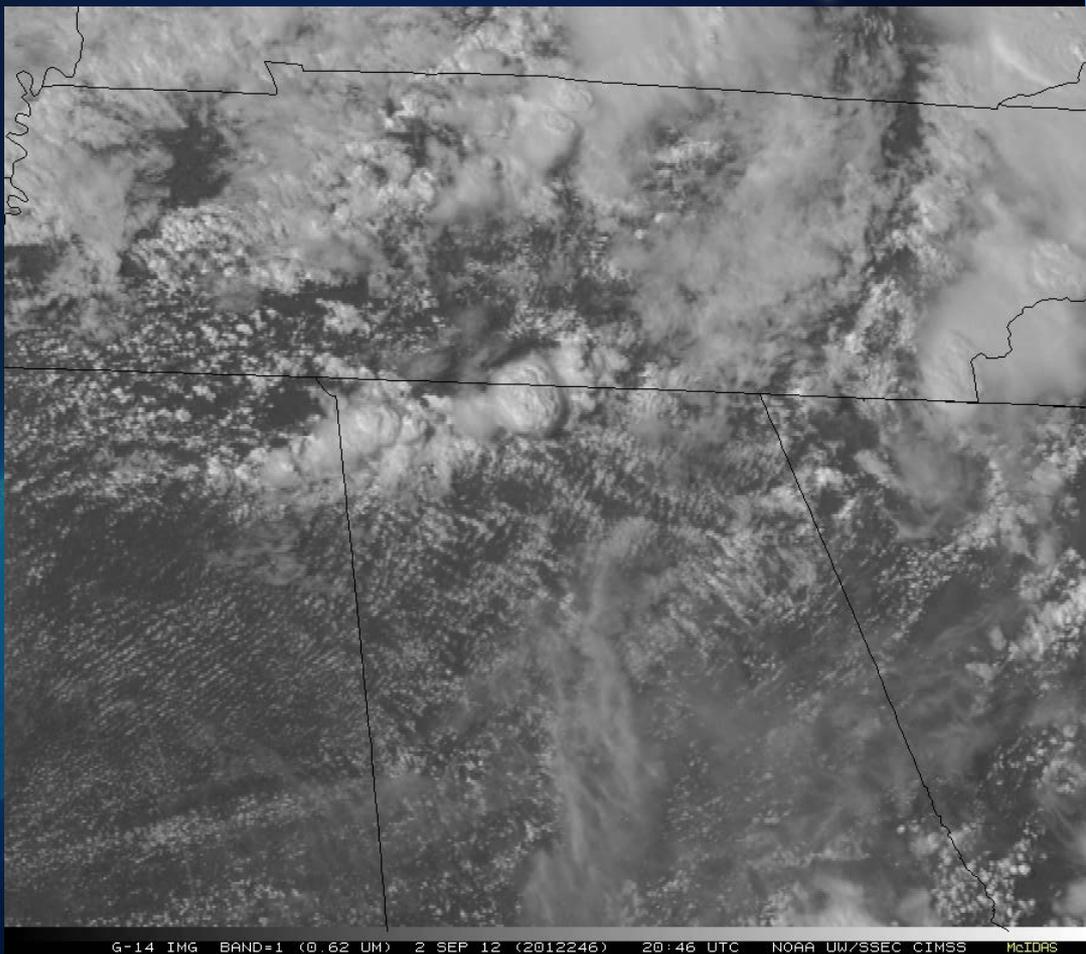
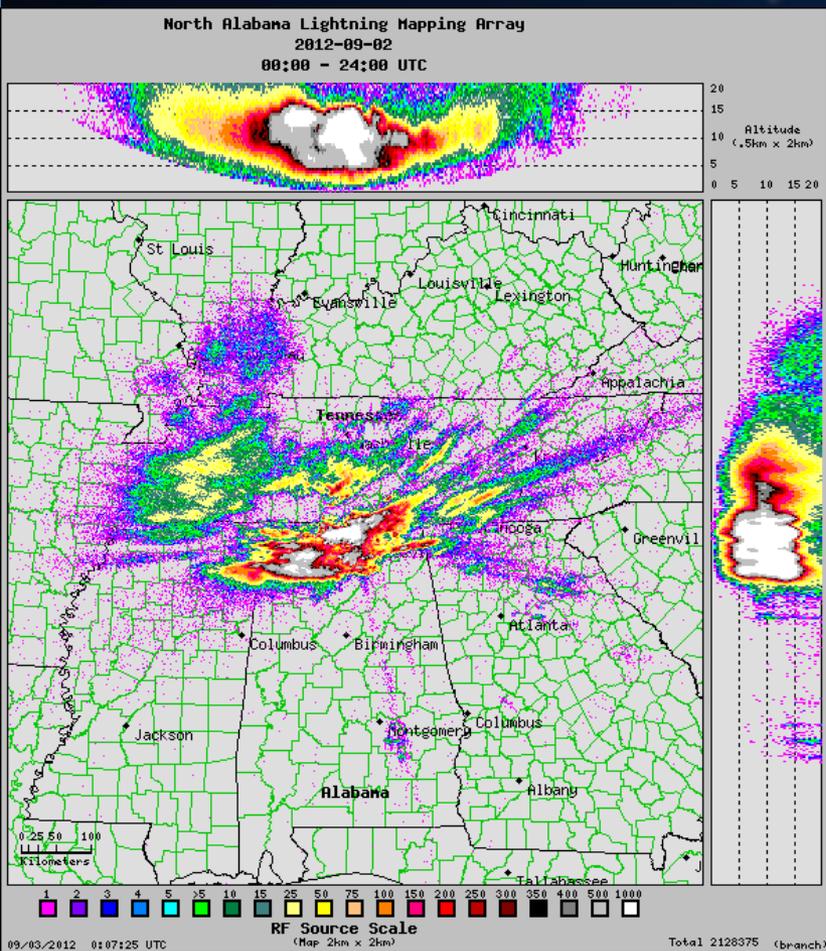
G-14 IMG BAND=1 (0.62 UM) 29 OCT 12 (2012303) 20:15 UTC NOAA UW/SSEC CIMSS McIDAS

GOES-R IFR Probability

- This image shows dense fog forming in the upper midwest (including over Chicago O'Hare airport) on the busiest travel day of the year (the day before Thanksgiving).
- NWS forecasters used these products operationally to forecast when the fog would dissipate.



GOES-14 SRSOR Experiment : GLM Testbed Lightning Detection

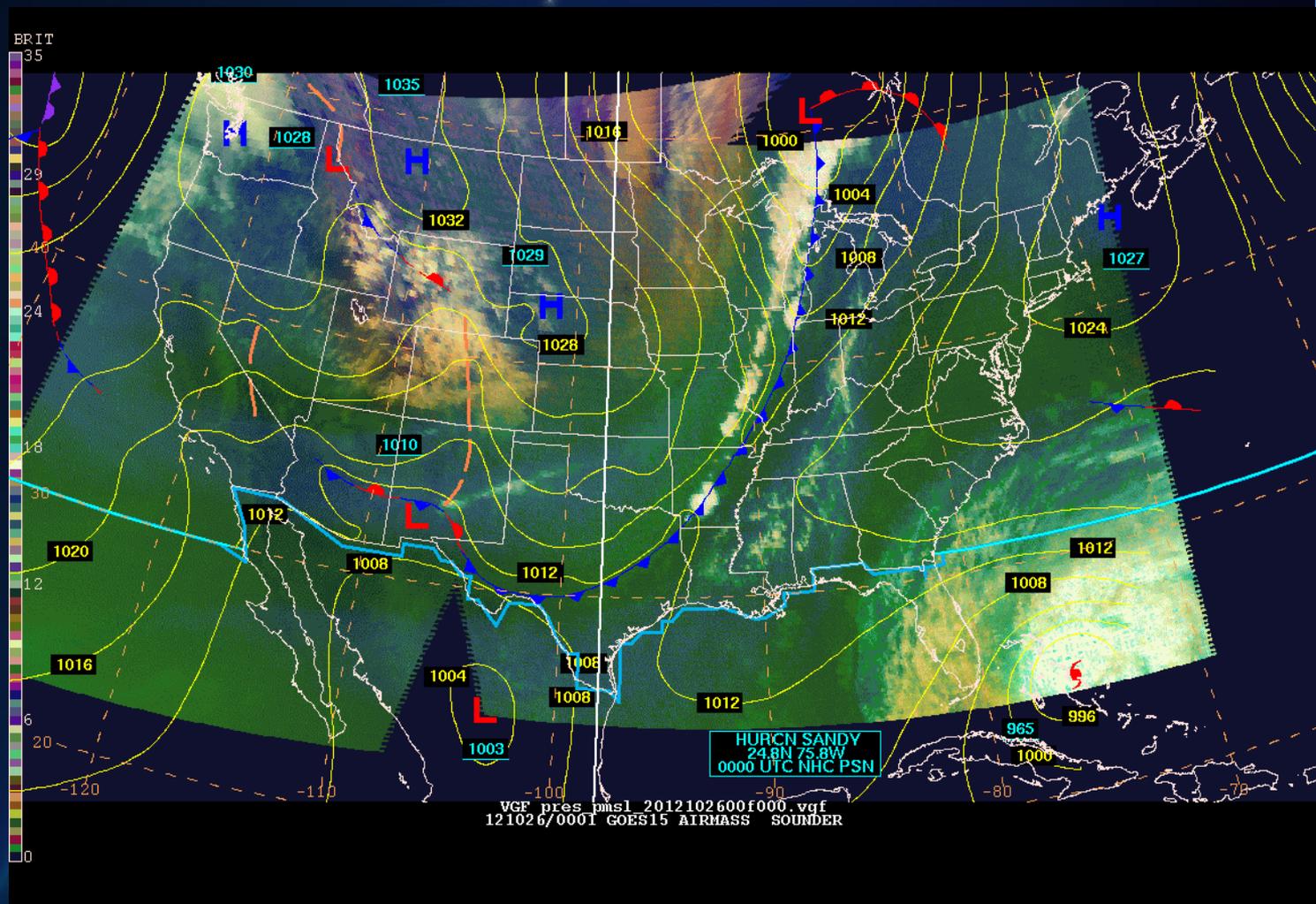


Integration of the total lightning jump algorithm into current operational warning environment: Chris Schultz – Wed, Jan 9, 9:15 AM

Lightning Jump Algorithm for Proxy GOES-R Lightning Mapper Data: Daniel Cecil – Wed, Jan 9, 9:30 AM

GOES Sounder RGB Air Mass Product during Hurricane Sandy

- Animation of the GOES-Sounder RGB Air Mass product with HPC surface analyses overlaid showing Hurricane Sandy's transition into a Superstorm as it made landfall in southern NJ.
- This product allowed forecasters and analysts to identify the large-scale weather systems that would interact with Sandy prior to landfall, therefore leading to improved forecast confidence.



Courtesy of CIRA/NASA SPoRT

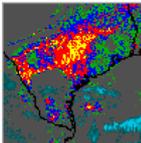
Training and User Education



Online Training Modules

- GOES-R: Benefits of Next-Generation Environmental Monitoring (COMET)
- GOES-R 101
- Satellite Hydrology and Meteorology for Forecasters (SHyMet)
- SPoRT product training modules
- Commerce Learning Center

TRAINING



GOES Fog Depth Download (for NWS users)
[Launch in browser](#)
[\(user guide\)](#)

This training module focuses on the use of the Fog Depth product within the GOES Aviation suite provided through a collaboration between SPoRT and NESDIS. The use of this product along with the Low Cloud Base product is demonstrated in support of aviation forecasts of ceiling and visibility. This module takes 16 minutes to complete and requires the flash plug-in. (May 2008)

Printed Materials

- GOES-R Fact Sheets (17)
- GOES-R Tri-fold

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 Studies, University of Wisconsin-Madison

Outreach Projects (with NWSFOs)

- COMET will reach out to the GOES-R Proving Ground Partners and connect them with university faculty to use current and prototype data products for the purpose of building a bridge from products that are currently available to those that will become available when GOES-R is launched.

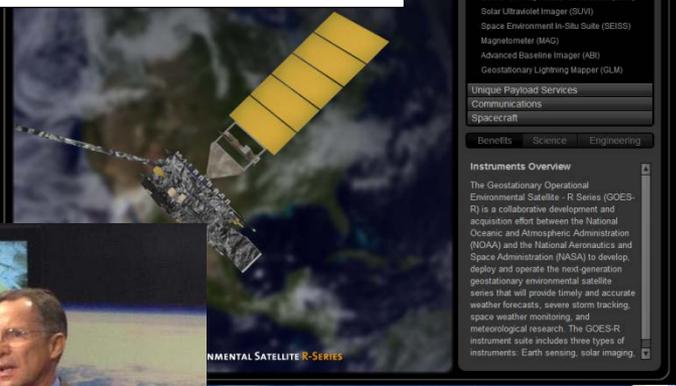




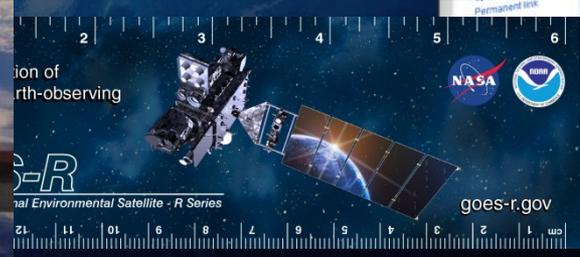
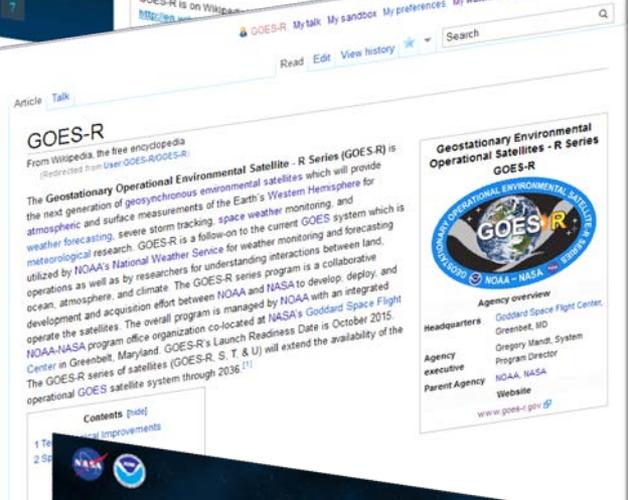
Education and Public Outreach



New! Interactive 3D Model

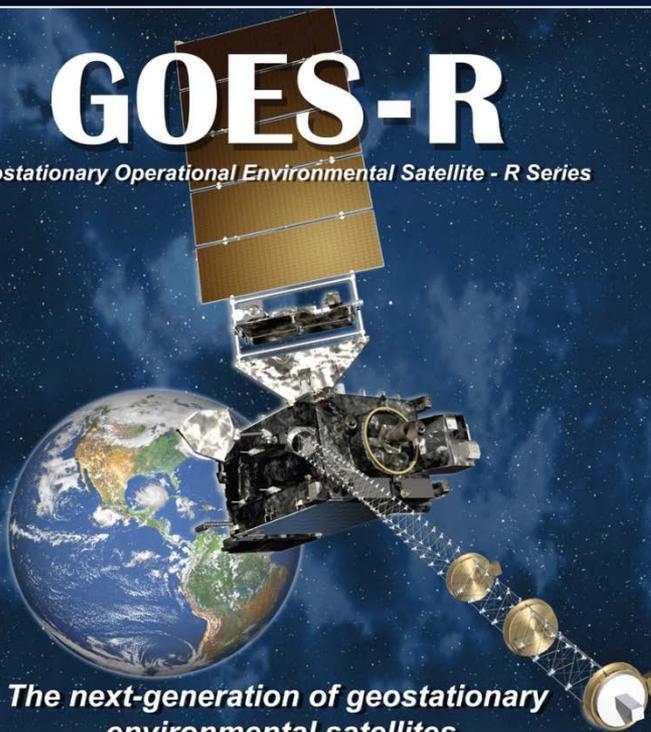


**Live Media Event
April 3, 2012
Goddard TV Studio**



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 ???

For more information visit www.goes-r.gov



www.facebook.com/GOESRsatellite