



An Overview of the GOES-R Program

Greg Mandt

GOES-R System Program Director



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

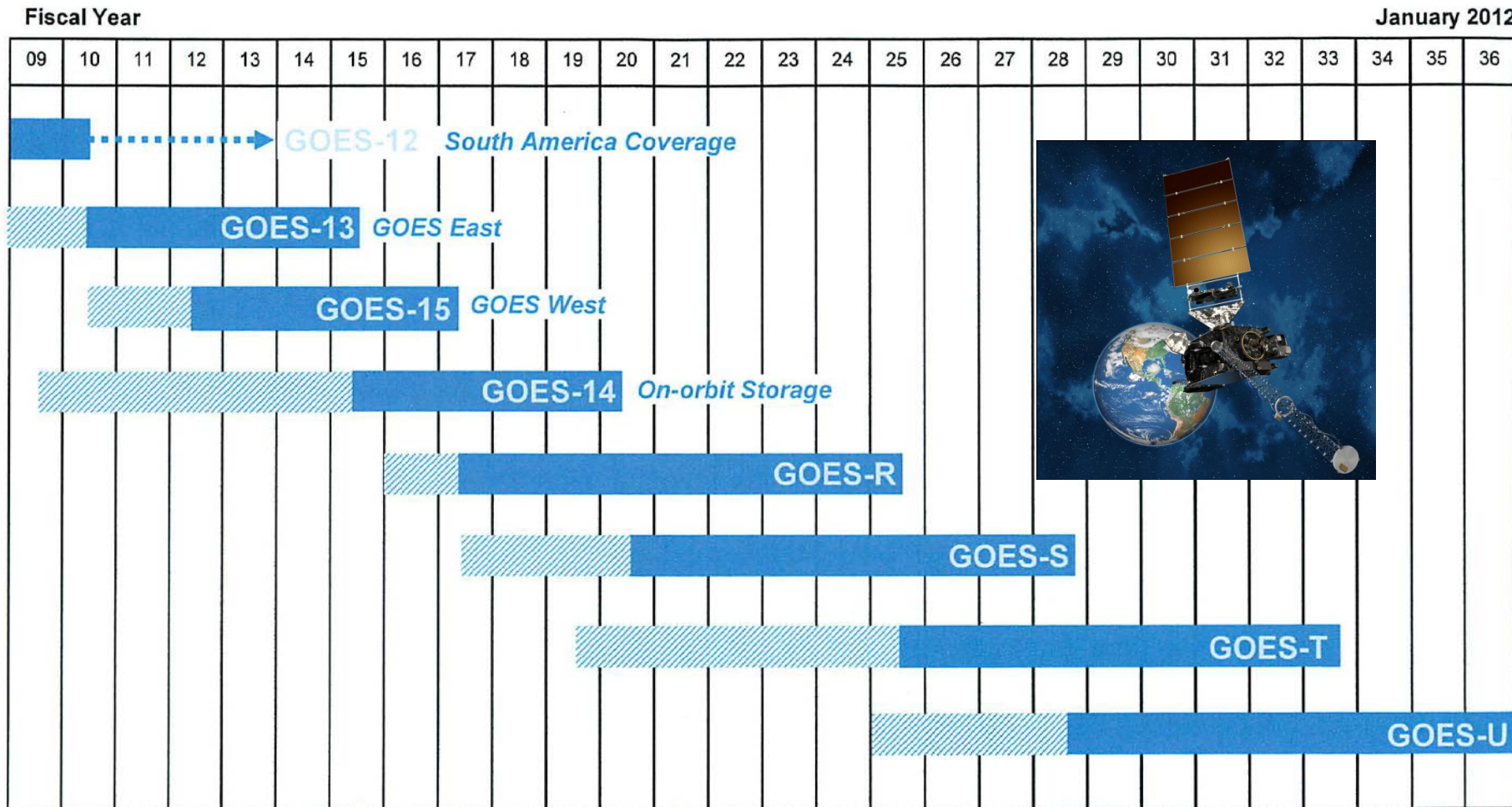


Suomi NPP "Blue Marble"
January 4, 2012



GOES East True Color
December 31, 2012

Continuity of GOES Operational Satellite Program



Approved:
 Assistant Administrator for
 Satellite and Information Services



Satellite is operational
beyond design life

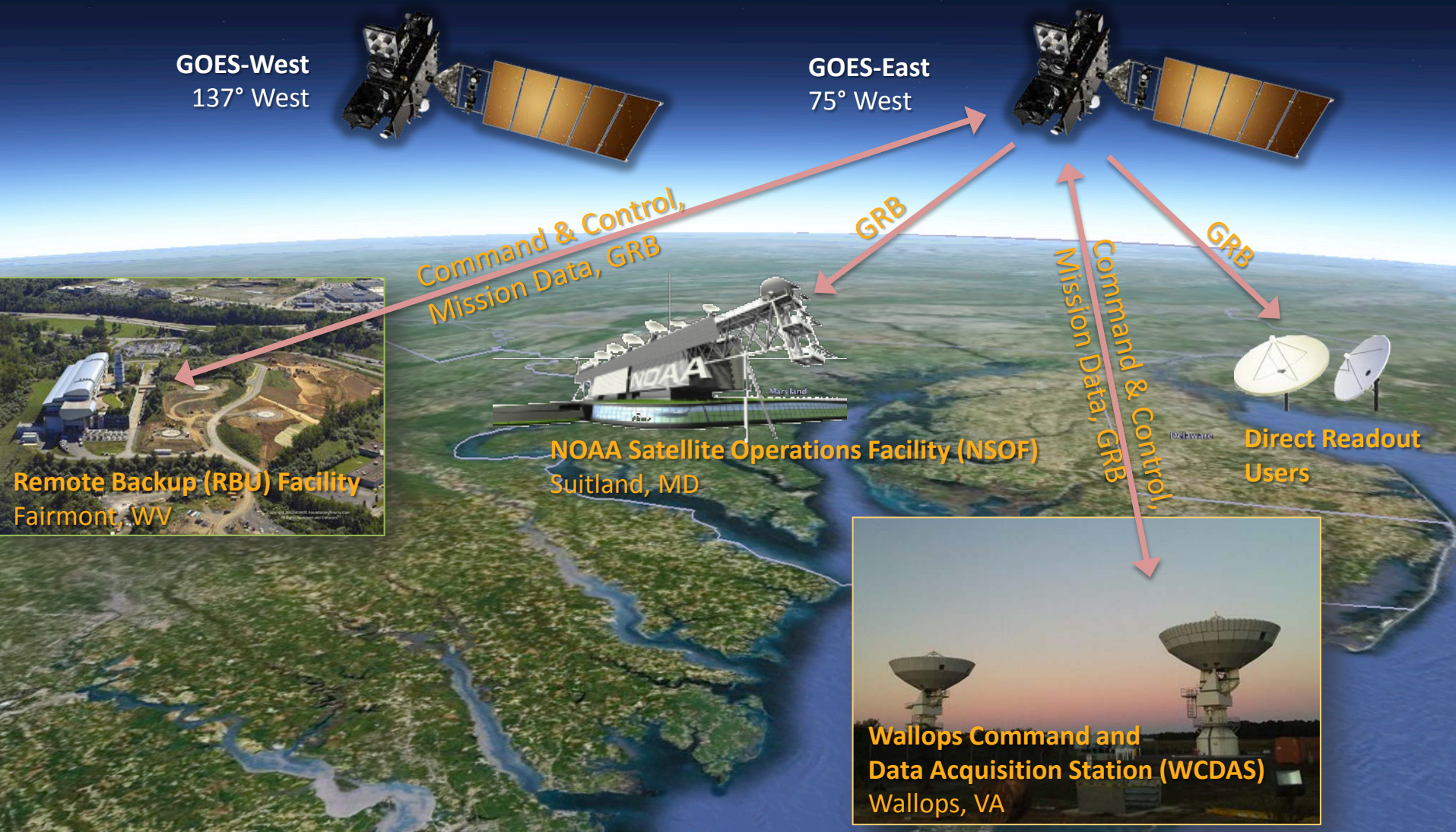


Post Launch Test / On-orbit
storage

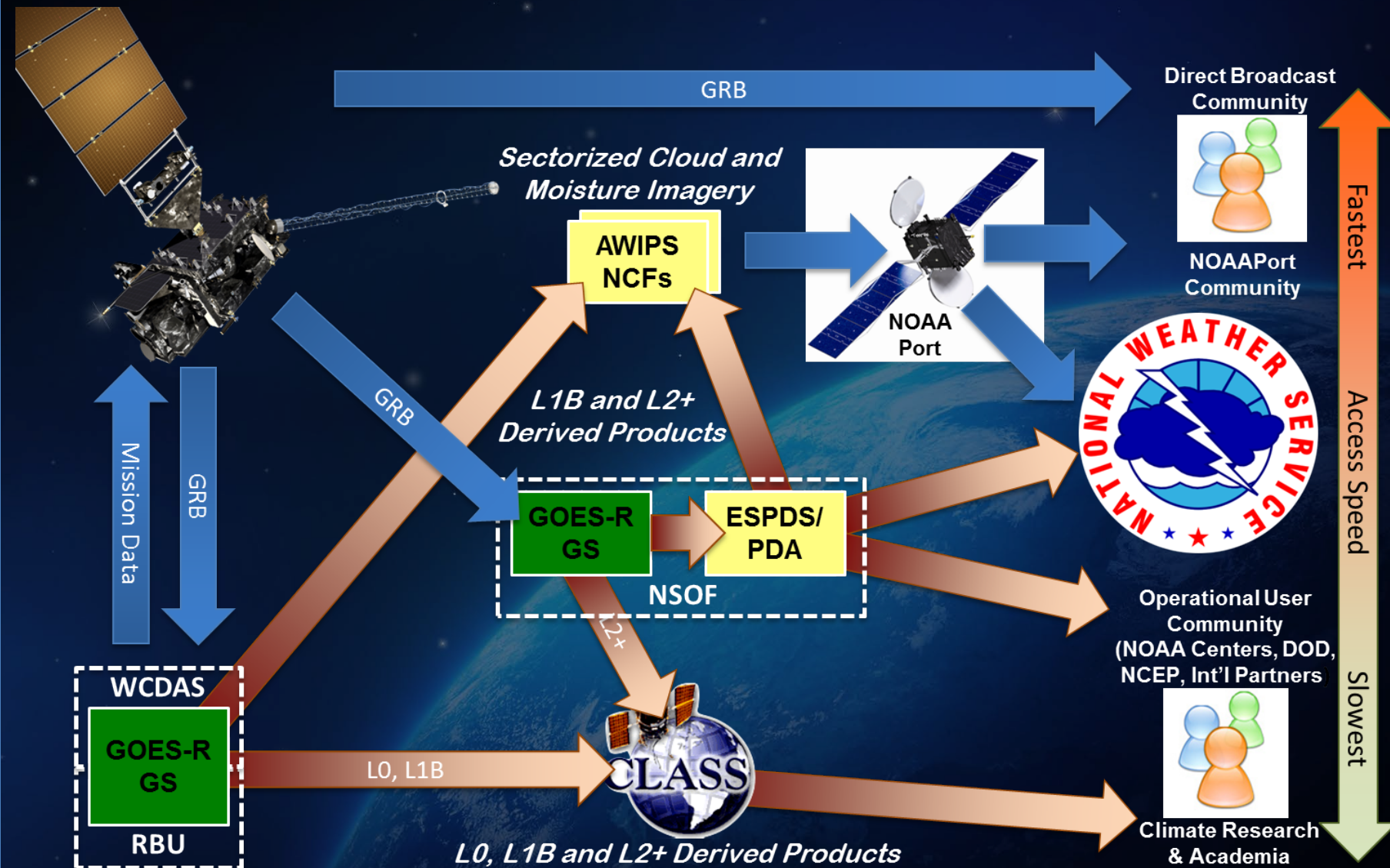


Operational

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

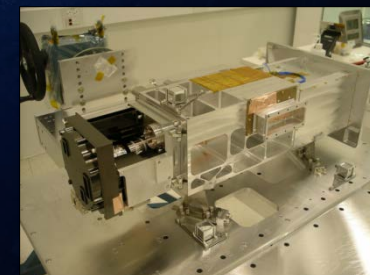
Lockheed Martin Advanced
Technology Center

Magnetometer



Lockheed Martin Space Systems
Newtown, PA

Extreme UV/X-Ray Irradiance Sensors (EXIS)



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

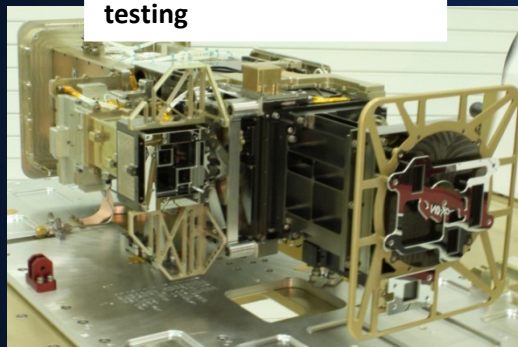
The GOES-R Geostationary Lightning Mapper: A New Eye on Lightning: Steve Goodman– Wed, Jan 9, 8:30 AM

Flight Project Progress

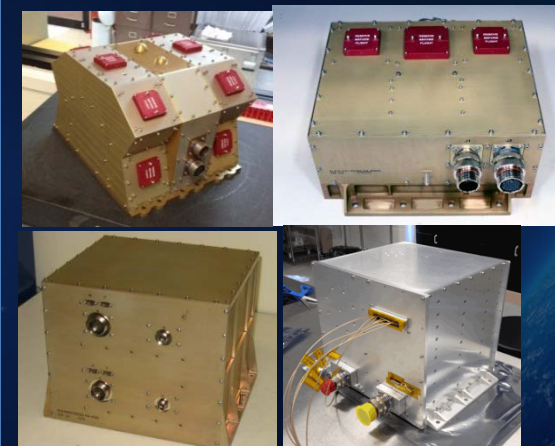
ABI FM1 completed vib testing



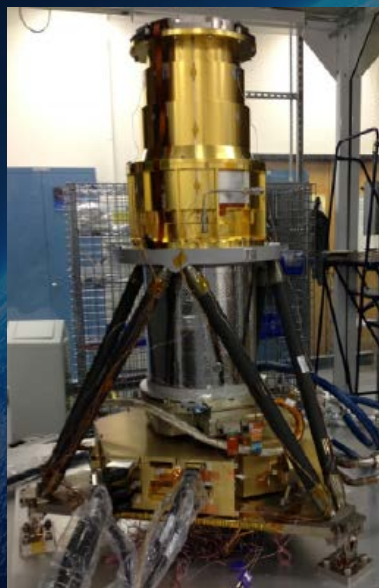
EXIS FM1 in thermal vac testing



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 Site 5 Antenna Installation

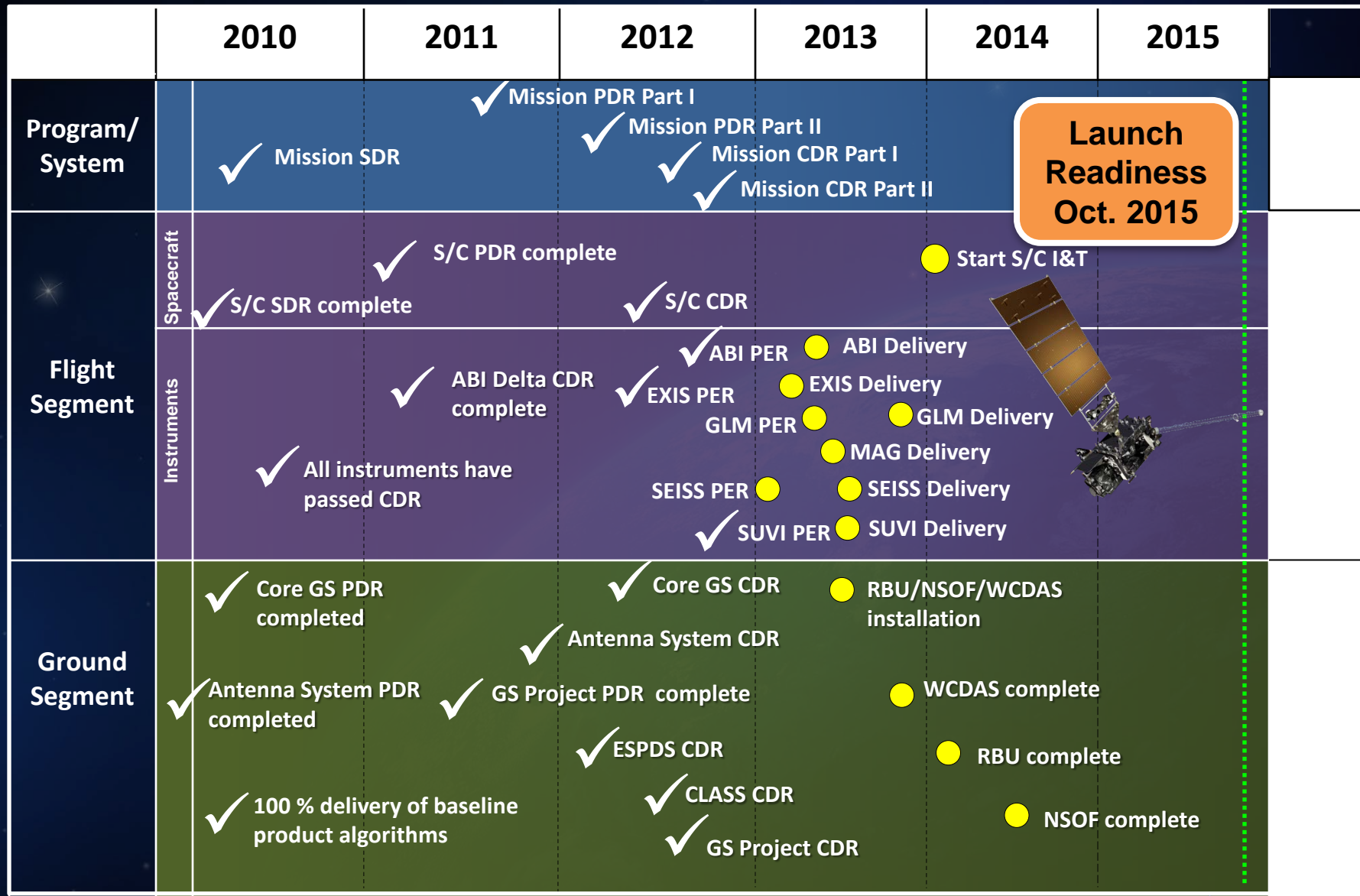


WCDAS Power House Construction



MMP Installation at NSOF

GOES-R Milestones





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)

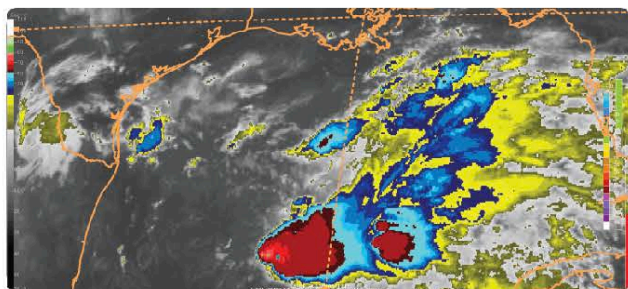
Solar EUV Imagery

Future Capabilities

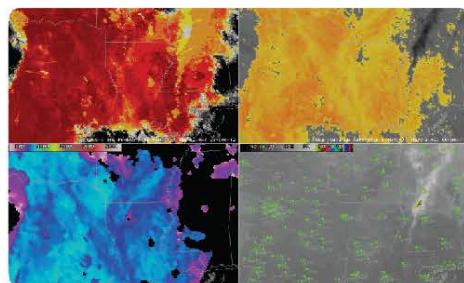
Advanced Baseline Imager (ABI)

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

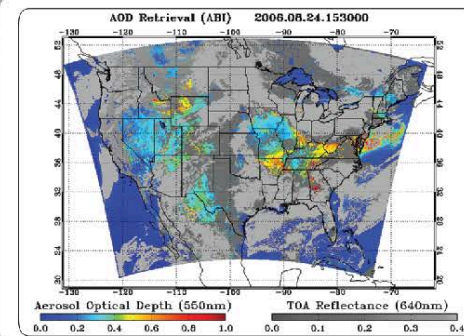
The GOES-R Proving Ground



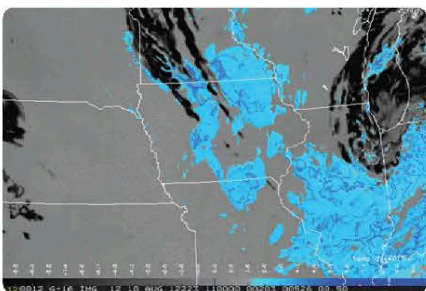
■ **AWC – Kansas City, MO** IR Imagery of Oceanic Storms



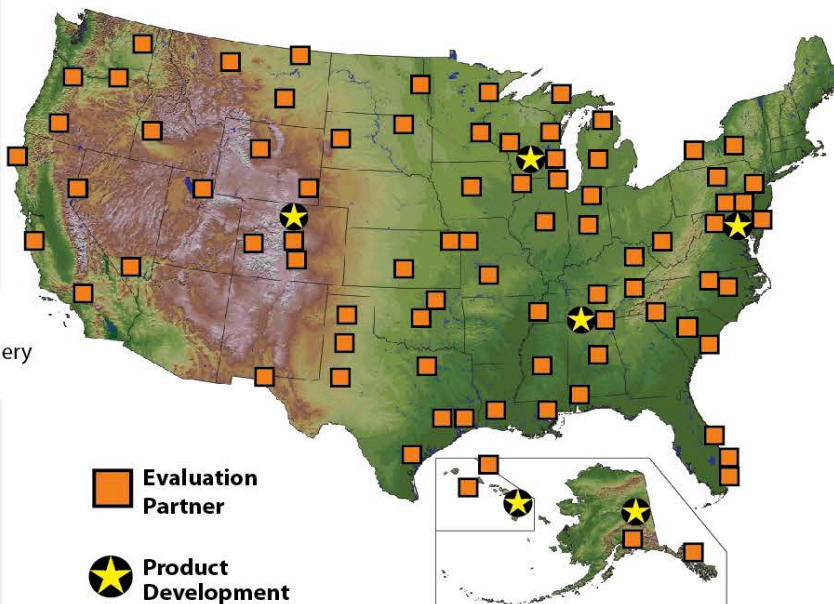
★ **CIMSS/STAR – Madison, WI**
Fog/Low Stratus Product



★ **STAR/UMBC – College Park, MD**
Aerosol Optical Depth

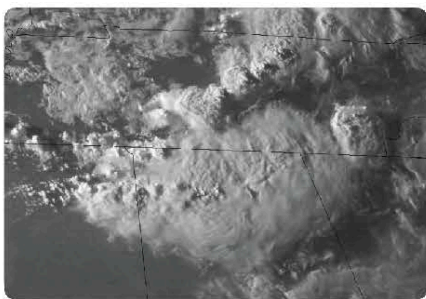


★ **CIRA/STAR – Ft. Collins, CO**
ABI Synthetic Low Cloud Enhancement Imagery

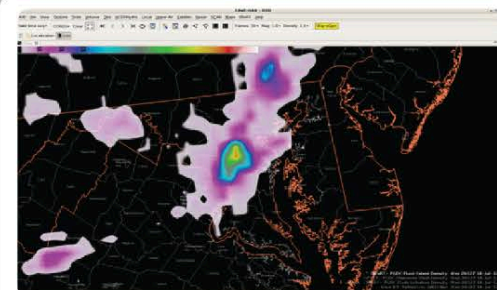


■ Evaluation Partner

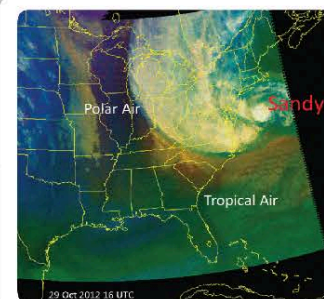
★ Product Development Partner



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



★ **SPoRT/NASA – Huntsville, AL**
GLM Lightning Density



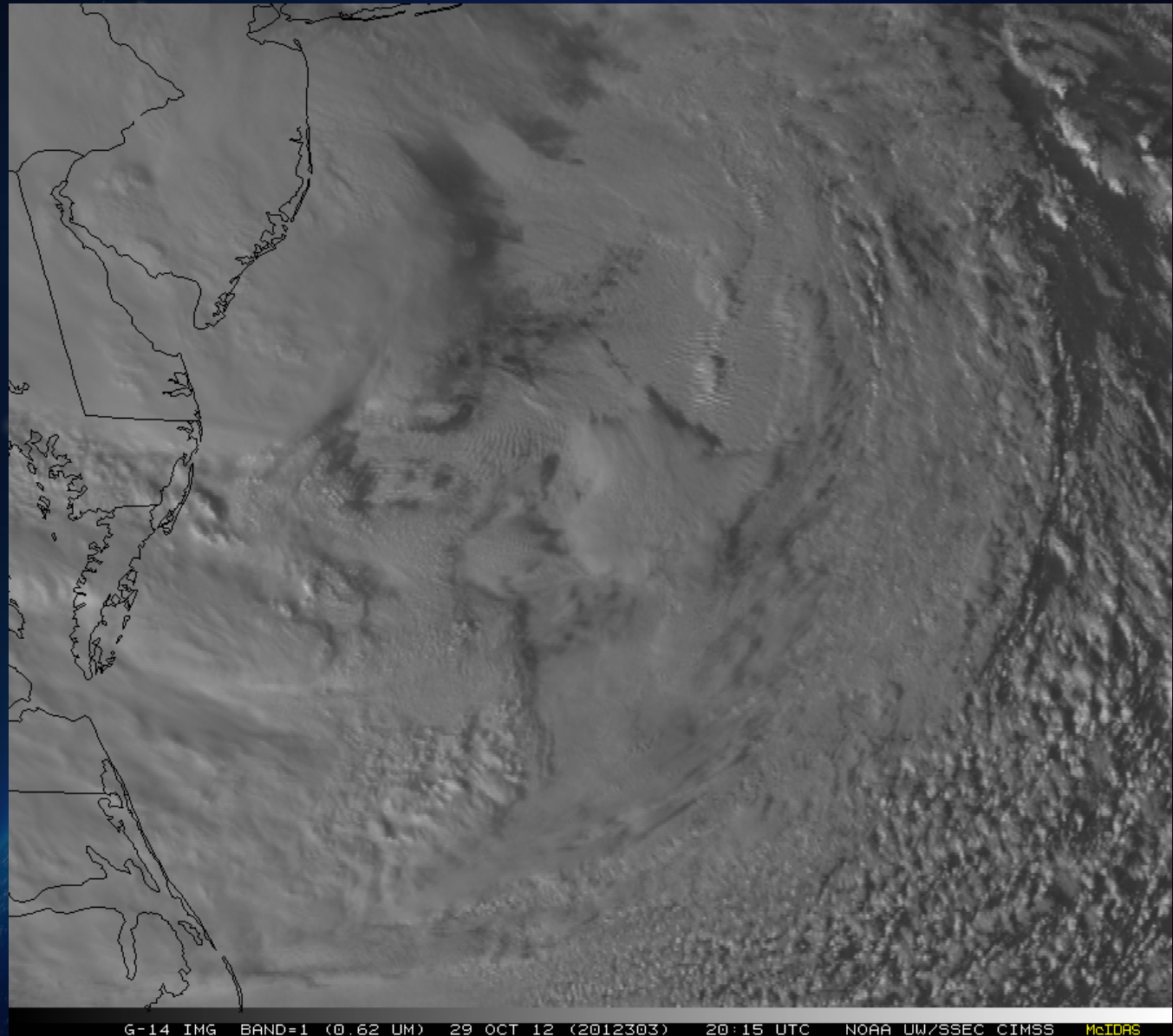
■ **NHC – Miami, FL**
RGB Air Mass for Hurricane Sandy



GOES-14 SRSOR of Sandy (Visible)



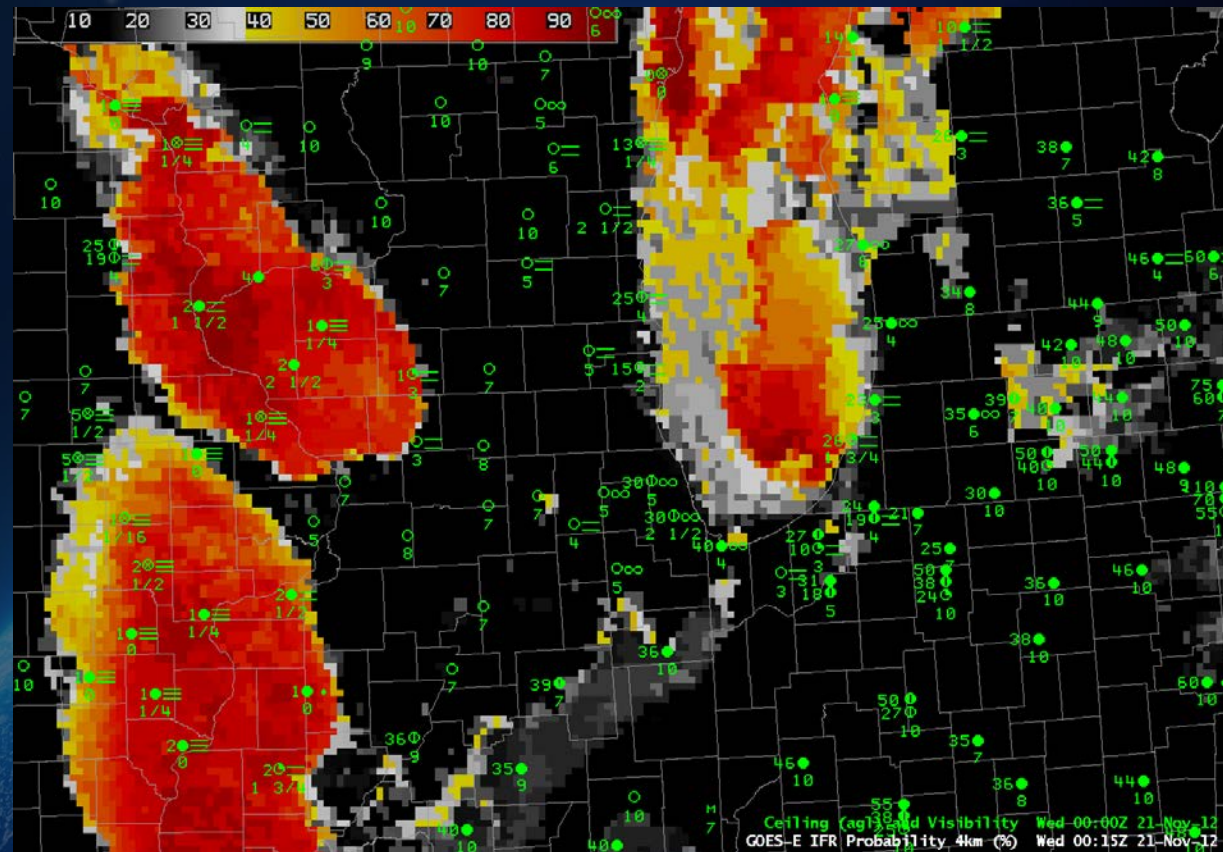
The 1-min interval imagery shows
'what is
happening', not
'what has
happened.'



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

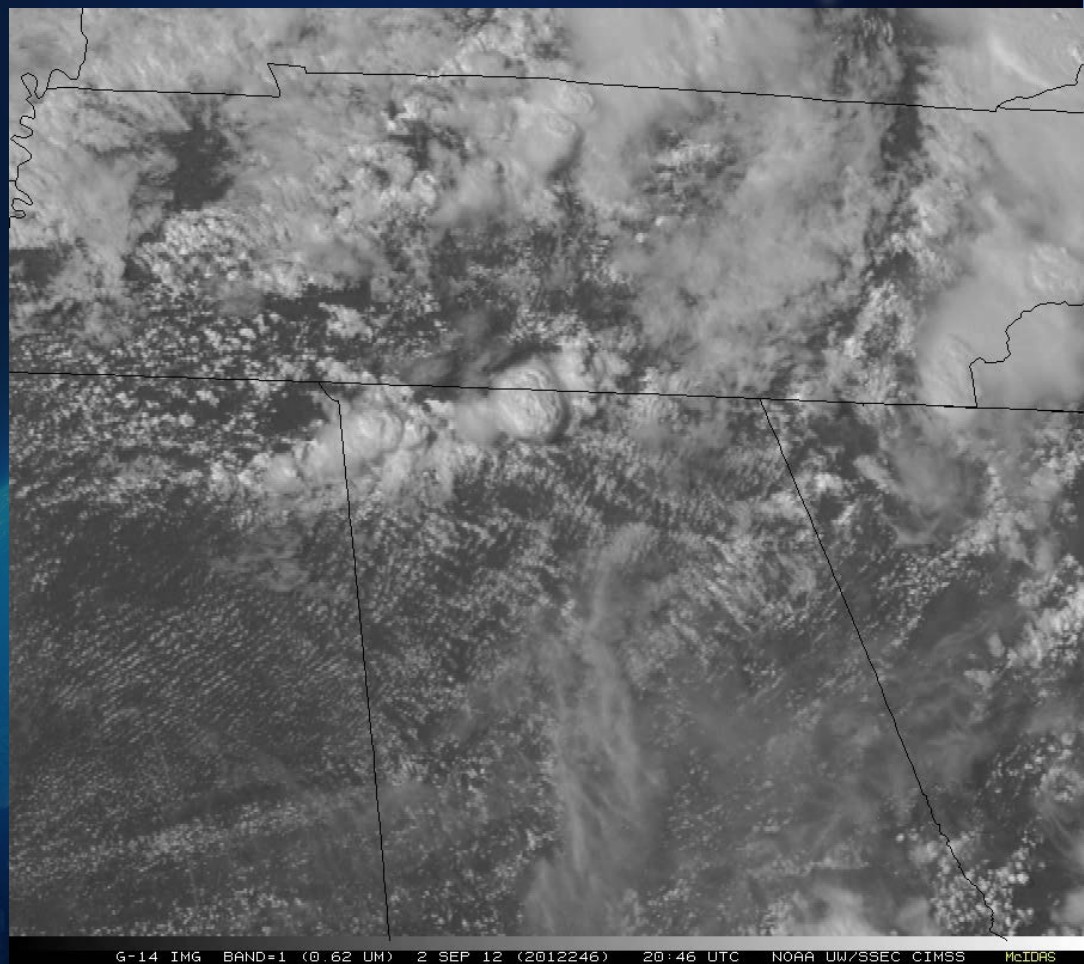
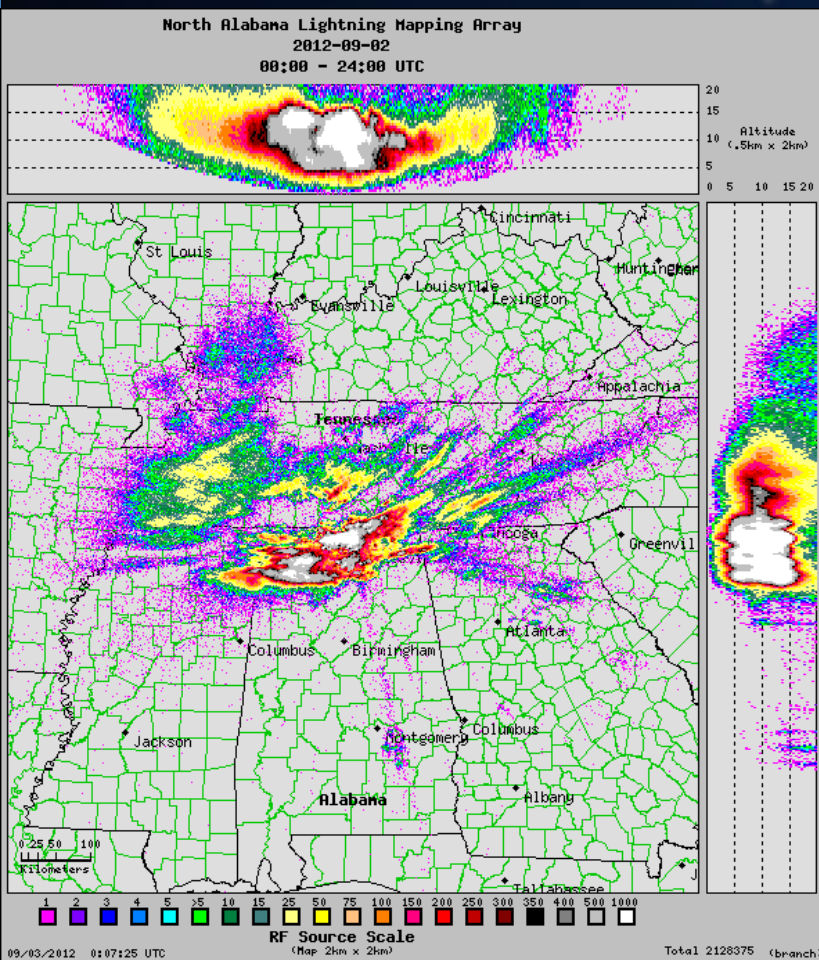
GOES-R IFR Probability

- 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

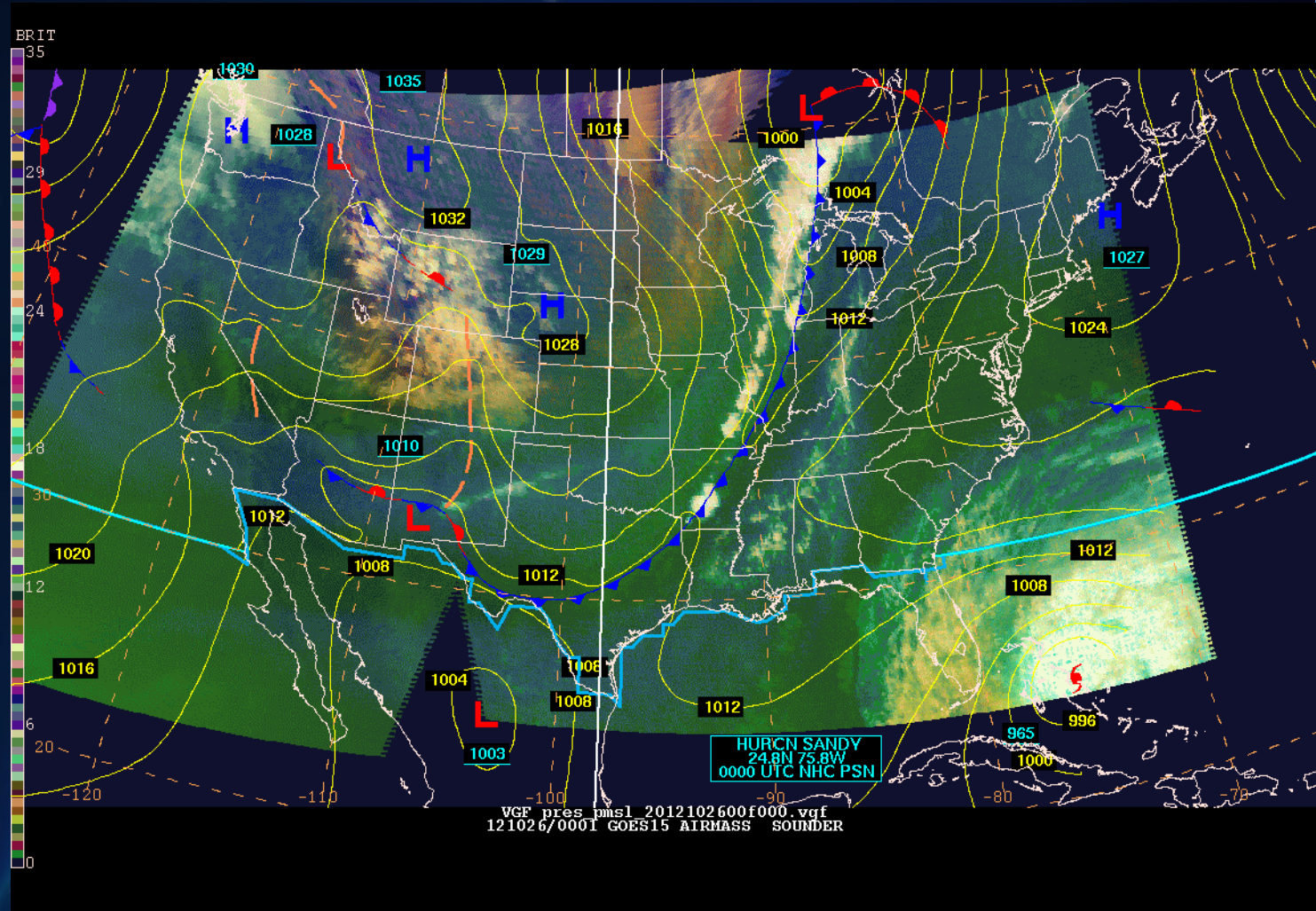


Integration of the total lightning jump algorithm into current operational warning environment: Chris Schultz – Wed, Jan 9, 9:15 AM

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

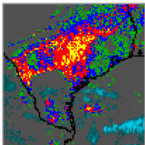
Training and User Education



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

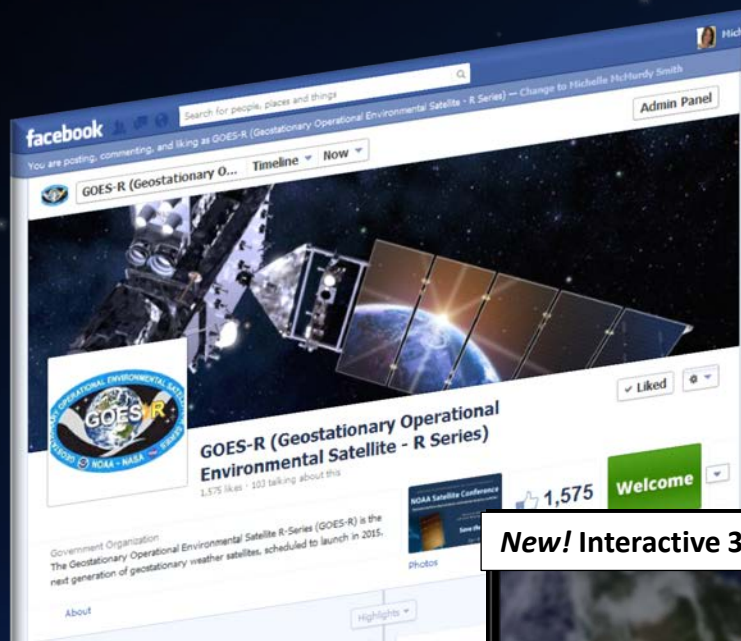
¹ Cooperative Institute for Research in the Atmosphere, Colorado State University
² NOAA/NESDIS Satellite Applications Research
³ Advanced Satellite Products Branch
⁴ Regional and Mesoscale Meteorology Branch
⁵ NOAA/NESDIS/OSD GOES-R Program Office
⁶ NOAA/NWS Space Weather Prediction Center
⁷ Cooperative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

Outreach Projects (with NWSFOs)

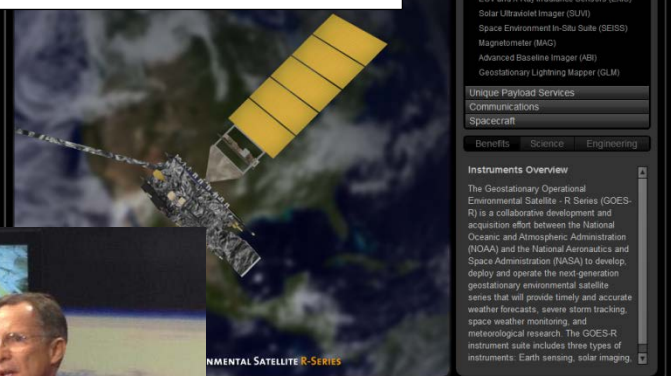
- COMET will reach out to the GOES-R Proving Ground Partners and connect them with university faculty to use current and prototype data products for the purpose of building a bridge from products that are currently available to those that will become available when GOES-R is launched.



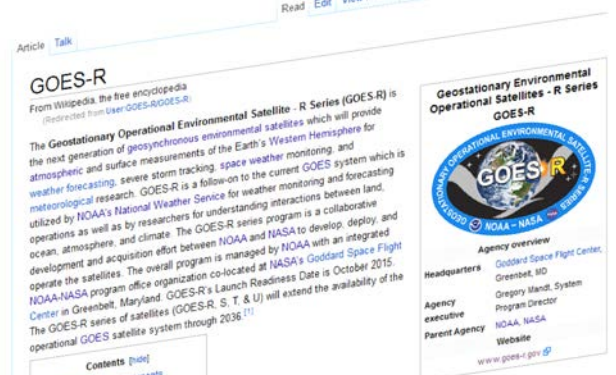
Education and Public Outreach



New! Interactive 3D Model

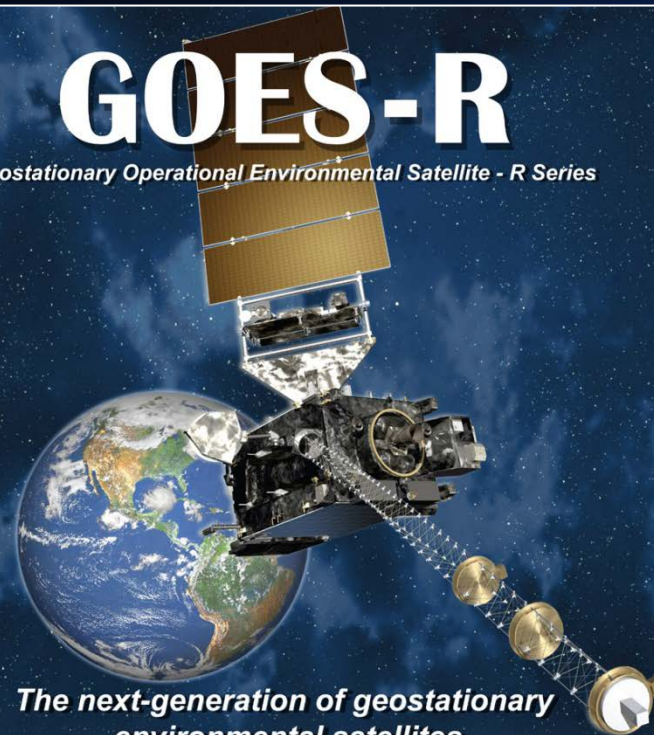


**Live Media Event
April 3, 2012
Goddard TV Studio**




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



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GOESRsatellite](http://www.facebook.com/GOESRsatellite)