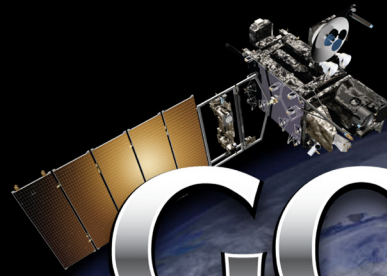




Quarterly Newsletter  
October–December 2014  
Issue 8



# GOES-R

Geostationary Operational Environmental Satellite R-Series

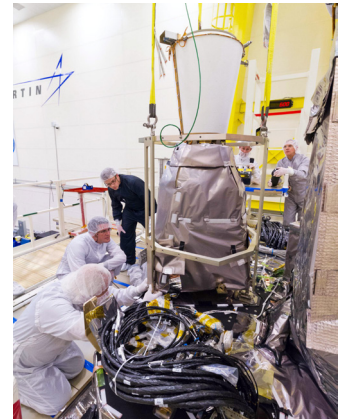


## A Note from Greg Mandt, GOES-R System Program Director

The last few months of 2014 were an exciting time for the GOES-R Series Program! All six instruments that will fly on the GOES-R satellite were integrated with the spacecraft, which is now preparing for environmental testing. We are also pleased to announce that GOES-R will launch in March 2016 and transition immediately into operations after post-launch testing and validation. I'm looking forward to 2015 and the busy year we have ahead of us as we continue to prepare for the launch of GOES-R.

## Highlights

**All six instruments that will fly on the GOES-R satellite** have now completed integration with the spacecraft. The Advanced Baseline Imager (ABI) and Geostationary Lightning Mapper (GLM) were installed on the Earth-pointing platform (EPP) of the satellite in October, while the Space Environment In-Situ Suite (SEISS) and Magnetometer were integrated with the spacecraft in November. The GOES-R instrument suite also includes the Extreme Ultraviolet and X-ray Irradiance Sensors (EXIS) and Solar Ultraviolet Imager, which were mounted on the sun-pointing platform (SPP) of the spacecraft earlier in 2014. The GOES-R satellite is now preparing for the environmental testing phase which will ensure that it is prepared to withstand the rigors of launch and operation in the extreme environment of space. [NESDIS](#) and [NASA Goddard](#) issued feature stories highlighting the milestone.



The GOES-R SEISS (upper left), GLM (upper right) and ABI (lower) are installed on the GOES-R spacecraft at Lockheed Martin in Littleton, Colorado. Credit: Lockheed Martin



...that the GOES-R series ABI will scan the Earth five times faster than the current GOES imager and will be able to take detailed mesoscale images as often as every 30 seconds?

**Additional GOES-R spacecraft integration activities were underway this quarter.** In November, the GLM electronics unit was powered on for the first time after installation onto the spacecraft and the GOES-R command and telemetry processor completed all testing. In December, the EPP was successfully deployed for the first time, and the SPP and solar array yoke were mated. Lockheed Martin also completed all testing of the GOES-R spacecraft in the vertical orientation and successfully rotated the spacecraft to horizontal.



The GOES-R spacecraft is rotated to the horizontal position in a cleanroom at Lockheed Martin in Littleton, Colorado. Credit: Lockheed Martin

**Considerable progress has been made on the GOES-R ground system.** In October, the ground system data simulator completed integration with the core ground segment's product generation system at the Consolidated Backup (CBU) facility in Fairmont, West Virginia. The system's first GOES-R data operations exercise was successfully completed in early November. The product generation and product distribution functions performed well in the exercise, and data products were successfully delivered to the Advanced Weather Interactive Processing System. Other highlights from the ground segment include: installation of the Release Final Product Set (FPS) on the Wallops Command and Data Acquisition Station (WCDAS) operations environment in October, processing of GOES-East and GOES-West data through the Release FPS product generation system in November, completion of Release Mission Management Flight Ready installation activities at WCDAS and CBU, and the successful completion of the Release Readiness Review for the Release Enterprise Infrastructure and Release Initial Product Set in November.

**On the GOES-R antenna system,** the N-3 antenna at NSOF completed its site acceptance test, operationalization and handover to the NOAA Office of Satellite and Product Operations in October. In December, the N-3 parallel operations test concluded, and the antenna successfully passed its Antenna Station Certification Review. N-3 is now supporting GOES-East operations.

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**In December,** NOAA Administrator Kathryn Sullivan, Ph.D., and NOAA Assistant Administrator for Satellite and Information Services Stephen Volz, Ph.D., visited Lockheed Martin's (LM) facility in Littleton, Colorado, to meet with LM's GOES-R team and view the spacecraft. Volz also visited the Laboratory for Atmospheric and Space Physics (LASP) in Boulder, Colorado, to tour the facility and get an overview of the development activities for the GOES-R series EXIS instruments.



GOES-R series EXIS Team with NOAA Assistant Administrator for Satellite and Information Services Stephen Volz at LASP. Credit: LASP

**Significant progress continues in the development of the GOES-S, T and U satellites.** In October, the EXIS for GOES-S completed its pre-shipment review at instrument developer LASP in Boulder, Colorado. The instrument is now in storage awaiting integration with the GOES-S spacecraft. The GOES-T EXIS is currently undergoing post-environmental testing calibration, and EXIS for GOES-U will undergo environmental testing in early 2015. Integration of the GOES-S spacecraft system module began in November. The full GOES-S SEISS suite completed its pre-environmental review (PER) in December, and the GOES-S Magnetospheric Particle Sensor – High Energy Range was shipped to Goddard Spaceflight Center for calibration testing. In addition, the SEISS Data Processing Unit, Energetic Heavy Ion Sensor and Magnetospheric Particle Sensor – Low Energy Range for GOES-T are complete and ready for environmental testing. The ABI that will fly on GOES-T completed sensor unit integration in November and underwent baseline performance testing in preparation for its PER in late January.

## Awards and Accolades

In November, NOAA announced that **Michael J. Pavolonis, Ph.D.**, a physical scientist with NOAA's Satellite and Information Service, will receive the agency's prestigious [David S. Johnson Award](#), which recognizes young scientists for their innovative use of environmental satellite data. Pavolonis is being honored for developing cutting-edge methods to convert satellite data into actionable information for mitigating hazards caused by volcanic eruptions and severe convection. His work has been instrumental in developing the GOES-R volcanic ash



NOAA David S. Johnson Award recipient Michael J. Pavolonis. Credit: NOAA Satellite and Information Service

detection product. These new remote sensing techniques improve the timeliness and accuracy of volcanic ash cloud advisories and severe weather warnings. Pavolonis will receive the award on March 13, 2015, at the 58th Annual Goddard Memorial Dinner in Washington, D.C.

In December, NOAA announced that **Monica Todirita will receive a Department of Commerce 2015 Bronze Medal** for exceptional leadership in managing the development and delivery of the GOES-R EXIS and Magnetometer instruments. The Bronze Medal recognizes superior performance by federal employees and is the highest honor award granted by the Under Secretary of Commerce for Oceans and Atmosphere. Todirita will be recognized along with other Bronze Medal recipients at a ceremony on February 3, 2015, at NOAA's Silver Spring, Maryland, headquarters.

## Proving Ground and Program Science

The **GOES-R System Program Director** and Chief Scientist provided a GOES-R Series Program update to the Federal Aviation Administration (FAA) Weather Plans and Requirements Division on October 15. Conversation followed concerning how the FAA and its Aviation Weather Research Program can work more closely with the GOES-R science teams and GOES-R Proving Ground. The FAA is particularly interested in rapid refresh cloud and moisture imagery, aircraft turbulence, aircraft icing, ceiling and visibility, thunderstorms and volcanic ash applications. The GOES-R program invited the FAA to participate in 2015 satellite science and user readiness technical interchange meetings and NOAA Testbed demonstrations.

In December, the **GOES-R and Joint Polar Satellite System (JPSS) Risk Reduction research programs** chose 15 scientists to participate in the 2015 Visiting Scientist Program. The program funds scientists to exchange ideas and initiate collaborations applicable to their current research with other scientists and data users. The visits, lasting between one and four weeks, emphasize future capabilities, including the use of decision tools, integrated observations and numerical weather prediction. NOAA scientists as well as academic and international partners of GOES-R and JPSS are eligible to participate in the program.

## Education and Outreach

The **GOES-R Series Program released a new animated video, "So You Want to Build a Weather Satellite,"** which explains in a fun way how weather satellites like GOES-R are developed. Building a vital national asset like GOES-R takes teams of meteorologists and engineers working together to improve upon the nation's fleet of environmental satellites. This video describes how new science and technology will enable the GOES-R series satellites to provide significant advancements in the observation and forecasting of severe weather. NASA Goddard Media Studios produced the video.

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**The Cooperative Program for Operational Meteorology, Education and Training (COMET)** published a new training module, "[GOES-R GLM: Introduction to the Geostationary Lightning Mapper](#)" in October. The lesson describes the need for real-time lightning information, introduces the capabilities of the GLM, and explores some of the many applications that will benefit from GLM observations including convection and severe weather nowcasting, warning of lightning ground strike hazards, aviation, atmospheric chemistry, quantitative precipitation estimation, tropical cyclones, fire ignitions, numerical weather prediction, and climate and global studies. COMET also released a new "[GOES-R Satellites Orientation Course](#)" in December which combines three GOES-R self-paced lessons currently available from COMET. The distance learning course introduces forecasters, students, researchers and other interested learners to the capabilities, products and applications anticipated with the next-generation GOES-R series satellites. The course will also help prepare learners for future exploration and use of GOES-R products in meteorological analysis and forecasting as well as environmental monitoring and prediction.

**In October, the GOES-R Series Program, along with the Cooperative Institute for Meteorological Satellite Studies**, introduced a new series of fact sheets detailing each of the ABI channels. These [ABI](#)

[Bands Quick Information Guides](#) are designed as reference tools to provide National Weather Service forecasters with information on each of the spectral bands on the GOES-R series ABI. Currently, a [Band 1 \("Blue" visible\) fact sheet](#) is available. Additional ABI band fact sheets will be released in the coming months.

**The GOES-R Program Chief Scientist and Flight Project Manager** participated in a media event at Lockheed Martin in Littleton, Colorado, on October 22. Local broadcast meteorologists from Denver and Colorado Springs were invited to LM's facility for informational briefings on the GOES-R series and the improvements the satellites will bring to weather forecasts and warnings. The meteorologists were also given a tour of the facility and had the opportunity to view the GOES-R satellite. Click [here](#) for sample coverage of the event.



GOES-R Program Chief Scientist Steve Goodman is interviewed by KMGH-TV at the GOES-R media event at Lockheed Martin in Littleton, Colorado. Credit: Lockheed Martin

## Conferences and Events

**The GOES-R Program Chief Scientist and Algorithm Working Group Manager** presented lectures and participated in side meetings with the Chinese Meteorological Agency (CMA) and Japanese Meteorological Agency (JMA) at the 5th Asia/Oceania Satellite Meteorology Conference held November 19–21 in Shanghai, China. NESDIS programmatic and research collaboration with CMA and JMA was discussed at the conference, including opportunities with the Himawari satellite, which flies an imager similar to the GOES-R ABI. JMA will begin providing data in January 2015, with the Internet Cloud Service for full data distribution to NOAA beginning in March.

**The GOES-R Program Chief Scientist** gave a presentation about GOES-R operational satellite capabilities at the

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Lactec Institute's first Technical Seminar on Environmental Monitoring held December 5 at the National University of Parana State in Curitiba, Brazil. There is interest in the GOES-R GLM's capability to support forecasts and alerts of lightning impacts to the countrywide electricity transmission line system. Prior to the Lactec seminar, the Chief Scientist visited the Itaipu Dam and gave a lecture on GOES-R to the hydrology research department. As a result of this visit, additional Brazilian government organizations and private energy companies plan to upgrade their GOES receiving stations to the GOES-R Rebroadcast capability to receive the low latency full-resolution data. In addition, scientific collaboration is envisioned during the post-launch testing and operation of GOES-R.

## Meet the Team

In this issue, we profile Sandra Cauffman, the new GOES-R Series Program Deputy System Program Director (SPD). Sandra joins us from NASA's Mars Atmosphere and Volatile Evolution (MAVEN) Mission, where she was Deputy Project Manager. She is already very familiar with GOES-R,



as she was previously Instrument Systems Manager and Deputy Project Manager with the program. Her experience with GOES dates back to 1992, working as an Instrument Manager on the GOES-I/M and GOES-N/P programs. As GOES-R Deputy SPD, Sandra's job is to assist the

Program Director in every aspect necessary to to maintain complete visibility of the program and to help clear the path for the project teams to efficiently perform their jobs.

Coming back to GOES-R is like "coming back home" for Sandra. She loves the people and believes in the mission. When asked why her job is important and how it makes an impact on the public, Sandra replied, "We provide technologies that are used to improve life here on Earth. The data that we gather saves lives. Most people are not aware of this. We have to continually educate the public about what we do." A neighbor once asked Cauffman why we need weather satellites when we have The Weather Channel!

Sandra wanted to work for NASA since she was seven years old. There's never been a day when didn't want to come to work. Even when things are difficult, she says, "If it's not hard, then there is no point in doing it. Our job is all about tackling the impossible and working to see the impossible become a reality. Every day is an achievement!"

Cauffman was born in Costa Rica and received a B.S. in Physics, a B.S. in Electrical Engineering and an M.S. in Electrical Engineering, all from George Mason University. She has been awarded the NASA Exceptional Achievement Medal and the NASA Exceptional Leadership Medal. She is also a four-time recipient of the NASA Acquisition Improvement Award. We are excited to welcome Sandra back to the GOES-R family. Stop by and say hello – her enthusiasm for her job will be immediately apparent.

## Upcoming Events

The [2015 NOAA Satellite Conference](#) will be held April 27–May 1 in Greenbelt, Maryland. The theme for the event is "Preparing for the Future of Environmental Satellites." This conference will bring together users and providers of polar-orbiting and geostationary satellite data, products and applications from the public, private and academic sectors. Oral and poster presentations will focus on environmental satellite technology, science, education and training opportunities, and direct readout and rebroadcast services to raise awareness of upcoming enhancements and prepare for their use. The conference will also feature a special panel of distinguished leaders from satellite information user communities discussing the societal benefits of NOAA satellites. Click [here](#) to register.

