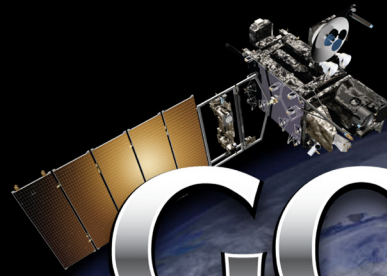




Quarterly Newsletter  
July–September 2014  
Issue 7



# GOES-R

Geostationary Operational Environmental Satellite R-Series

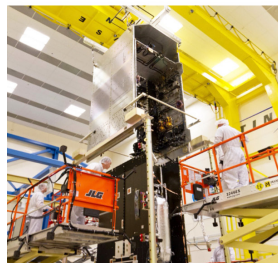


## A Note from Greg Mandt, GOES-R System Program Director

With the delivery of the full suite of instruments, the successful mating of the spacecraft core and system modules, and the completion of key program reviews, the GOES-R satellite officially entered its integration and testing phase this quarter. On the ground segment, the initial applications of the product generation system for the GOES-R series were installed and integrated. Efforts to prepare the user community for GOES-R data continued with GOES-14 providing forecasters with special one-minute imagery in August. I'm truly amazed at all the excellent progress we continue to make across the program. This is an exciting time for GOES-R as we get closer to launch!

## Highlights

**The GOES-R satellite system module and core module were successfully mated** on September 6 and now form the GOES-R spacecraft. This is an important milestone in the development of the satellite, as it merges together the elements that form both the "brain" and the "body" of the satellite. More than 70 electronics boxes mounted within the system module provide the functionality to operate the spacecraft and its six instruments. The core module forms the main central structure of the satellite and carries the propellant needed to maneuver the spacecraft after it is separated from the launch vehicle and operational in geostationary orbit. On September 18, [NESDIS](#) and [NASA](#) issued web features highlighting the accomplishment. With the core spacecraft now complete, preparations for instrument integration are underway.



*These images show the progress of the spacecraft mate as it was underway at the Lockheed Martin facility near Denver.  
Credit: Lockheed Martin*



...that GOES-R will aid search and rescue operations? The GOES-R series will carry a SARSAT (Search and Rescue Aided Tracking) transponder to detect signals from emergency beacons on aircraft, maritime vessels or individuals in distress. The transponder will operate with a lower uplink power than the current system, enabling GOES-R to detect weaker beacon signals.

**The GOES-R Magnetometer instrument boom completed the development and testing phase** in July and is now ready to be integrated with the spacecraft. The boom will extend 26 feet away from the satellite, allowing the sensor to be much more perceptive of the space environment than current magnetometers, resulting in better forecasting of space weather. The instrument also consists of various sensors and electronics elements, which were delivered in June by developer Macintyre Electronic Design Associates, Inc., in Sterling, Virginia. The boom element of the instrument was built by ATK in Goleta, California. [NESDIS](#) and [NASA](#) issued web features on July 15 to mark the completion of the instrument.



*This image captures the first functional deployment of the GOES-R Magnetometer boom. Credit ATK, Goleta*

**The GOES-R Series Program System Integration Review was successfully held** July 22–24 at Lockheed Martin Space Systems Corporation in Littleton, Colorado. The Standing Review Board (SRB) assessed the program on six success criteria. The SRB noted that the instruments have all been delivered and are performing well, the ground system is planned to be ready to support integration and test (I&T), and the available budget is adequate to support I&T and the launch commitment date.

**The GOES-R satellite completed the NOAA-NASA readiness review for GOES-R Key Decision Point-D (KDP-D) in September.** On September 8, a joint NOAA-NASA Science Mission Directorate Program Management Council (DPMC) evaluated the readiness of the GOES-R satellite to proceed into its assembly, integration and test phase. Based on the review and the program's readiness documents, the DPMC recommended approval for the satellite to enter "Phase D." Formal approval to proceed into integration and testing came with the successful completion of the NOAA-NASA Agency Program Management Council KDP-D Readiness Review on September 17.

**GOES-R ground segment Enterprise Infrastructure (EI) formal site testing** at Wallops Command and Data Acquisition Station (WCDAS), Remote Backup (RBU) and NOAA

*October 24, 2014*

Satellite Operations Facility (NSOF) was successfully completed in July. In August, Release EI completed integration and configuration testing of the R-1 antenna at RBU with the core ground system, concluding EI-antenna interface testing at all three ground sites.



*EI installation at RBU. Credit: Harris Corporation*

**The ground segment Release Mission Management Flight Ready (MMFR) formal build test and PSR** were completed in August. Installation and checkout of the MMFR equipment is complete at WCDAS and RBU and underway at NSOF.



*MMFR equipment at RBU. Credit: Harris Corporation*

**The ground segment Release Initial Product Set completed interface verification testing** with the National Weather Service's Advanced Weather Interactive Processing System in August, followed by the completion of formal site testing and day-in-the-life demonstration at WCDAS in September. The Release Final Product Set (FPS) completed factory testing in August, followed by factory day-in-the-life testing and Pre-Shipment Review (PSR)

at Harris Corporation's facility in Melbourne, Florida, in September. Also in September, the Release FPS completed installation at RBU. Installation at WCDAS is underway.

**The upgraded N-2 antenna at NSOF completed its 30-day parallel operations test and antenna station certification review** in August and is now available as a backup system for GOES-N/O/P operations. Also in August, the N-3 antenna station feed and electronics PSR was conducted at NSOF. Upgrades to the N-3 antenna are in progress.

**Significant progress continues on the development of GOES-S instruments.** The Advanced Baseline Imager (ABI) Flight Model 2 (FM2) successfully concluded its PSR on September 10 at Exelis in Fort Wayne, Indiana. The instrument was shipped to Exelis' facility in Rochester, New York, and is now in storage until GOES-S is ready for integration. ABI is the first GOES-S instrument to be completed. In

addition, the Extreme Ultraviolet X-Ray Irradiance Sensor FM2 completed environmental testing in August and was placed into storage in preparation for its PSR in October.

**The GOES-R Transition and Handover Kick-off Summit** was held September 18–19 at NSOF. Participants included the NESDIS Office of the Chief Information Officer, Office of Satellite and Product Operations (OSPO), Office of Satellite Ground Services, Center for Satellite Applications and Research, National Geophysical Data Center, and the GOES-R program. Topics included an overview of the transition approach, roles and responsibilities, program expectations and governance model. Breakout sessions were also held concerning operations handover for mission, flight and ground systems, OSPO readiness, training, IT systems, configuration management and anomaly tracking, algorithm update process, operations and maintenance, and sustainment.

## Conferences and Events

**The annual OCONUS (Outside Contiguous United States) Satellite Proving Ground technical interchange meeting** was held July 29–August 1 at the Inouye Regional Center in Honolulu, Hawaii. The meeting was jointly organized by the GOES-R program, Joint Polar Satellite System, National Weather Service (NWS), and NOAA's Cooperative Institute partners. Presentations focused on capability and product demonstrations with NWS forecasters in the Pacific and Alaska regions where meteorological satellite data is of particular importance. Major topics of discussion included: the GOES-R algorithm demonstration plans with the Japan Meteorological Agency's Himawari imager, product distribution to direct broadcast users, and current Proving Ground demonstrations. Side visits with forecasters and end users were also held at the Honolulu NWS Forecast Office and at the Navy-Air Force Joint Typhoon Warning Center.

*Participants at the OCONUS Satellite Proving Ground technical interchange meeting. Credit: GOES-R program*



October 24, 2014

**The GOES-R program senior scientist gave an invited lecture, "Implementation of the NOAA New Generation of Meteorological Satellites,"** at the 16th session of the World Meteorological Association Regional Association III (South America) meeting held September 15–20 in Asuncion, Paraguay. The presentation was translated into Spanish and will provide additional training content for GOES-R users in Spanish-speaking countries. Participants expressed particular interest in the timing of GOES-R data availability (launch, post-launch testing and pre-operational availability), operational location of the satellite, when to procure the GOES-R Rebroadcast capability, and possible alternate means to receive data.

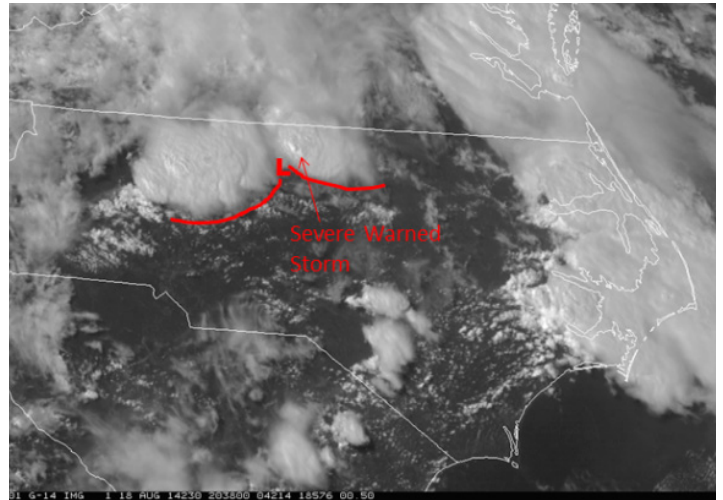
**Three GOES-R satellite liaisons presented six briefings at the 2014 EUMETSAT (European Organization for the Exploitation of Meteorological Satellites) Meteorological Satellite Conference** held September 22–26 in Geneva, Switzerland. The satellite liaisons spoke about their work with the GOES-R Proving Ground, highlighting demonstrations related to aviation hazards, maritime thunderstorms, and fog and low cloud products and provided updates on training techniques and using GOES-R demonstration products to bridge the gap between severe weather watches and warnings. The satellite liaisons also participated in a Convection Working Group meeting during the conference to share lessons learned and training information and to discuss GOES-R Proving Ground collaboration with international partners.

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# Proving Ground and Program Science

**The GOES-14 Super Rapid Scan Operations for GOES-R (SRSOR) experiment** successfully conducted phase two of its 2014 campaign August 14–28. During this time, special [one-minute data sets](#) were collected for GOES-R algorithm developers, research partners, forecasters and GOES-R Proving Ground participants to assess the utility of the one-minute imagery that will routinely be available from the GOES-R series ABI. An example highlighting the utility of the SRSOR imagery to forecasters was posted to the Collaboration for Improved Meteorology in the Mid-Atlantic and Southeast [blog](#). GOES-14 SRSOR one-minute imagery aided forecasters at the NWS Weather Forecast Office (WFO) in Raleigh, North Carolina, during severe weather warning operations on August 18. From this example it was noted that the SRSOR imagery increased confidence in warning decisions and ultimately made the process more efficient because evidence was coming in faster than ever before. A GOES-14 SRSOR experiment is

planned for May and August 2015 in partnership with the NOAA Testbeds.



GOES-14 visible image from August 18, showing progression of a boundary along with a surface meso-low near Greensboro, North Carolina. Credit: Raleigh WFO

## Meet the Team

**In this issue, we meet Mike Stringer, who joined the GOES-R team in June as Assistant System Program Director (ASPD) for NOAA.** Prior to this position, Mike spent 28 years as a civil servant with the United States Air Force. Most recently, Mike was the Branch Chief Systems Engineer for the Global Command and Control Systems Branch at Peterson Air Force Base in Colorado Springs, Colorado. He received his undergraduate degree in aeronautical/astronautical engineering from The Ohio State University and a master's degree in astronautical engineering from the University of Cincinnati.

As the GOES-R ASPD, Mike supports the System Program Director, Greg Mandt, with oversight of the program and ground and flight projects. He is currently assessing the roles and responsibilities of the various organizations within NESDIS and determining staffing requirements for operating GOES-R. He is excited to be part of the GOES-R program and witness the development of the satellites and the ground system coming together. In the past, he worked on ground system design and operations but never had the opportunity to be part of a satellite build. Mike also looks forward to getting to know the full GOES-R team.

Mike and his wife have four daughters (three grown and one teenage) and are guardians of a six-year-old girl and four-year-old boy. When he's not busy working or chasing little ones around the house, Mike's hobby is woodworking.

He crafts a variety of items, from pens to dressers. Please join us in welcoming Mike to GOES-R!



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