



GOES-R

GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE R-SERIES

QUARTERLY NEWSLETTER ■ JULY-SEPTEMBER 2016 ■ ISSUE 15

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



The future of weather forecasting is just around the corner! Soon, we'll be launching GOES-R,

equipped with revolutionary technology for better severe weather forecasts and warnings. Due to impacts from Hurricane Matthew, we are now looking at a new launch date for GOES-R. The satellite weathered the storm just fine, thanks to extra precautions taken at Astrotech Space Operations, and we continue to work with our launch partners — NOAA, NASA, United Launch Alliance (ULA) and the US Air Force's 45th Space Wing — to fully assess the impacts of the hurricane on launch facilities and equipment. This minor setback does not detract from the tremendous effort, dedication and expertise everyone in the program has displayed to bring us to this momentous occasion. Once we celebrate a successful GOES-R launch, we'll focus our efforts on getting GOES-S into orbit in 2018. There is still plenty of work to accomplish. These historic satellites will be watching over the Western Hemisphere for many years to come!



Due to impacts from Hurricane Matthew, GOES-R is now working toward a November 16, 2016, launch date with additional adjustments possible. GOES-R will reach geostationary orbit approximately two weeks after launch and will then be known as GOES-16. It will be placed in a central checkout orbit of 89.5 degrees west and undergo a period of post-launch testing and extended validation before moving to its operational location approximately one year after launch.

Watch the launch LIVE on [NASA TV](#)! Coverage will begin approximately 1.5 hours before launch and will end approximately 30 minutes after launch, returning to air around 3.5 hours after launch for spacecraft separation. Live updates will be posted on the NESDIS [GOES-R Launch Page](#) and the [NOAA Satellites Twitter](#), [NOAA Satellites Facebook](#), and [GOES-R Facebook](#) accounts. See the [GOES-R launch timeline](#) for details on the launch sequence of events.

GOES-R in the clean room at Astrotech Space Operations Facility in Titusville, Florida, where it is undergoing final preparations for launch. Credit: NOAA



DID YOU KNOW?

... GOES-R will weigh 11,446 pounds, fully fueled, at launch? The launch vehicle itself weighs 1.17 million pounds and its main engine will deliver a more than 860,000 pound force of thrust at liftoff!

HIGHLIGHTS



GOES-R emerges from the aircraft at Kennedy Space Center after its journey from Colorado. Credit: NOAA/NASA



Team members celebrate the arrival of the GOES-R spacecraft at Kennedy Space Center. Credit: NOAA/NASA

On August 22, the GOES-R satellite traveled from Buckley Air Force Base in Aurora, Colorado, to Kennedy Space Center (KSC) in Cape Canaveral, Florida, on board a C-5M Super Galaxy Transport Aircraft. After arrival at KSC, GOES-R was brought to a clean room at Astrotech Space Operations in Titusville, Florida, where it was unpacked and began final testing and preparation for encapsulation on top of the rocket that will carry it to geostationary orbit. On August 23, NASA Goddard issued a [news release](#) on the arrival and NOAA issued a [photo story](#) on August 23. Additional [photos](#) are available on the GOES-R website.

GOES-R gave two national media outlets an exclusive look at the satellite in August.

Washington Post meteorologist Angela Fritz accompanied GOES-R on its flight from Colorado to Florida and published an [online story](#) chronicling the journey on August 25. The story also ran in the Washington Post print edition on August 28. On August 24, NBC meteorologist Al Roker viewed GOES-R in the clean room, interviewed NESDIS Assistant Administrator Dr. Stephen Volz, and expressed his excitement about GOES-R. The [segment](#) aired on NBC Today on August 25.



NBC's Al Roker got an exclusive first look at GOES-R. Credit: NBC



Greg Mandt speaks with media at Astrotech on September 27. Credit: NOAA

On September 27, local Florida media viewed GOES-R in the clean room at Astrotech and conducted interviews with GOES-R System Program Director Greg Mandt, GOES-R User Services Coordinator Kathryn Mozer, and Meteorologist in Charge at the Melbourne National Weather Service Weather Forecast Office Fred Johnson. Nearly 20 broadcast and print media outlets participated and produced segments and stories on the upcoming GOES-R launch.

GOES-R has completed final tests and rehearsals in preparation for launch.

In September, the fifth end-to-end test was conducted, demonstrating telemetry and command connectivity, new flight software capabilities, and new guidance, navigation and control commands. The sixth and final GOES-R mission rehearsal was also completed in September. Mission rehearsals simulated specific phases of the GOES-R mission using a satellite simulator and the ground system to train the operations personnel and test the readiness of the operational products and ground system. The rehearsals simulated both nominal and contingency operations. Mission rehearsal six covered pre-launch, launch, separation, apogee engine burns, deployment and health and safety.

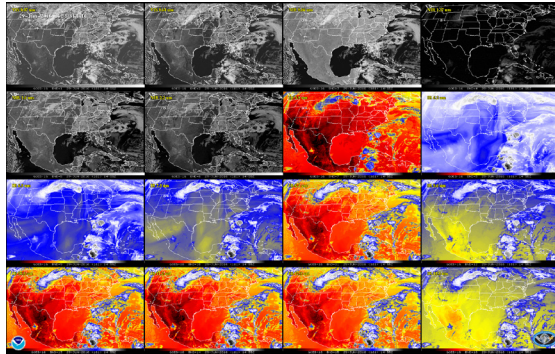
GOES-R also completed a series of reviews to ensure that the program and the satellite are ready for launch and operations. The GOES-R Operational Readiness

HIGHLIGHTS (CONTINUED)

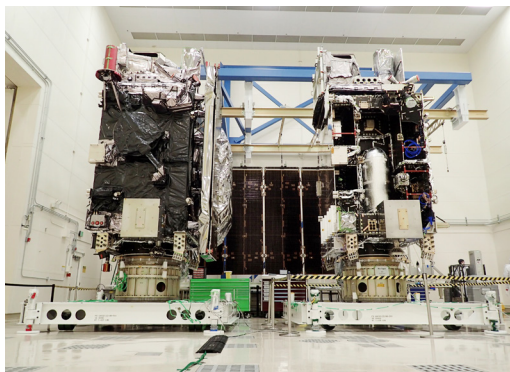
Review (ORR) successfully concluded on September 24, with all criteria rated "green." On September 28, the Launch Vehicle Readiness Review was completed at Kennedy Space Center, certifying the readiness to proceed with spacecraft/launch vehicle integration activities. The final program-level review before launch, the Mission Readiness Review (MRR), was completed on September 30. The MRR assessed the readiness status of spacecraft systems prior to launch, covering all activities required for a successful launch.

The GOES-R ground system is fully equipped and ready to support satellite operations.

The ground system received authorization to operate from NOAA in August, and 100% of pre-launch requirements have been verified. Also in August, the final pre-launch data operations exercise was conducted, successfully processing simulated GOES-R data via the new GOES-R ground system and delivering it to the National Weather Service through the new Advanced Weather Interactive Processing System II.



Simulated imagery of each of the GOES-R Advanced Baseline Imager's 16 bands from the data operations exercise in August. Credit: CIMSS



GOES-S (right) in a clean room at Lockheed Martin alongside GOES-R. Credit: Lockheed Martin

As we prepare to launch GOES-R, we are also busy getting GOES-S ready for launch in 2018. The GOES-S Pre-Environmental Review was successfully completed September 21-22. The review assessed the spacecraft test activities completed to-date and the completeness and adequacy of the environmental test plans. An independent review team

determined that the spacecraft is ready to proceed with environmental testing. GOES-S will begin vibration testing in late October.

The Pre-shipment Review for the ABI instrument that will fly on GOES-U

was successfully completed on August 31 at Harris Corporation in Fort Wayne, Indiana. The review confirmed the GOES-U ABI design has been fully qualified and will support the GOES-U mission needs. The instrument will be held in storage until integration activities begin for GOES-U. This is the fourth and final ABI instrument in the GOES-R series to complete development.



The ABI development team was honored with a plaque commemorating the completion of all GOES-R series ABI instruments. Credit: Harris

CONFERENCES AND EVENTS

The American Meteorological Society (AMS) Joint 21st Satellite Meteorology, Oceanography and Climatology Conference and 20th Conference on Air-Sea Interaction

was held August 15-19 in Madison, Wisconsin. The satellite conference included a special session honoring the career of GOES-R System Program Director Greg Mandt and additional sessions covered a range of GOES-R topics including capabilities, post-launch tests, data distribution and training.



Greg Mandt accepts a plaque for outstanding service to the nation's weather satellite programs and leadership of the GOES-R Series Program at the AMS Satellite Meteorology, Oceanography and Climatology Conference. Credit: NOAA

The National Weather Association 41st Annual Meeting

was held September 10-15 in Norfolk, Virginia, bringing together operational meteorologists. The meeting theme was "Better Science, Better Communication, Better Results." There were 15 presentations and posters about GOES-R capabilities and user readiness as well as a GOES-R/JPSS satellite workshop during the conference.

The 2016 EUMETSAT Meteorological Satellite Conference

was held September 26-30 in Darmstadt, Germany. The meeting brought together meteorologists, scientists and researchers from around the world to share their experience and knowledge during plenary, poster and workshop sessions to discuss advances in nowcasting and short-range numerical weather prediction. The conference included 15 presentations focusing on GOES-R capabilities, user readiness, data access and post-launch testing activities.

The 2016 GLM (Geostationary Lightning Mapper) Science Team Meeting took place September 27-29 at the University of Alabama in Huntsville. Topics included

CONFERENCES AND EVENTS (CONTINUED)



GLM Science Team Meeting attendees. Credit: NOAA

program and instrument status, vendor and Calibration Working Group post-launch test and post-launch product test tools, validation reference data, field campaign plans, pre-launch validation studies, Proving Ground demonstrations and forecaster training.

MEET THE TEAM



In this issue, we welcome Ed Grigsby as the new Deputy System Program Director (SPD). Ed transitioned from GOES-R

Program Systems Engineering (PSE) Lead to the program office in September. As PSE lead, he was the technical authority, overseeing overall mission systems integration, planning, verification/validation, and engineering processes and products for the GOES-R program since 2010. Prior to joining the GOES-R program, Ed worked within NASA, DoD and the commercial sector serving in several technical and engineering management positions. He holds a Master of Science degree in Electro-Optic Engineering and a Bachelor of Science degree in Electronic/Computer Engineering from the University of Wyoming.

Ed looks forward to his new role as Deputy SPD, helping prepare the program for launch of the GOES-R series satellites. His main motivation for taking on this new role is to continue to be a part of a historical contribution to the world with the GOES-R satellites. The data from these satellites will have far-reaching impact, not only in improved weather forecasts and warnings, but also for Earth and space science for many years to come. "The GOES-R series satellites will provide data to help protect current and future generations of our families and that makes this job worth it," said Ed.

EDUCATION AND OUTREACH

A new educational initiative, GOES-R: Global Weather Watchers, is now part of the **Global Learning and Observations to Benefit the Environment (GLOBE)** program. GOES-R Global Weather Watchers is a K-14 collaborative GLOBE classroom project. Students will investigate and document hazardous and severe weather in their region utilizing visualizations tools and satellite imagery and share with other participants around the world. The GOES-R satellite will be the first geostationary satellite introduced within the GLOBE collaborating satellite missions, providing opportunity for teachers and students to engage in more in-depth study and investigation into satellite and remote sensing.

AWARDS AND ACCOLADES

Peter Phillips, GOES-R ground system Deputy Chief Project Engineer, was honored with an **Aerospace Corporation President's Achievement Award** on September 14. Phillips was honored for outstanding leadership in program execution on several high-priority NASA programs, including GOES-R.

Brad Pierce, NOAA Satellite and Information Service Center for Satellite Applications and Research scientist, was the recipient of a **NOAA Administrator's and Technology Transfer Award** in August. Pierce was recognized for providing robust, real-time, simulated GOES-R imager data through a series of ground system data exercises, reducing risk in post-launch operations.

Two GOES-R Education Proving Ground educators were honored with Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) in August. Vicky Gorman of Medford Memorial Middle School in Medford, New Jersey, and Juan Botella of Monona Grove High School in Madison, Wisconsin, received the highest recognition that a kindergarten through 12th grade mathematics or science teacher may receive for outstanding teaching in the United States.

Upcoming Events

**American Geophysical Union
49th Annual Fall Meeting**
December 12-16, 2016
San Francisco, California

**AMS Short Course: GOES-R
Preview for Users
American Meteorological Society
97th Annual Meeting**
January 22, 2017

**American Meteorological Society 97th
Annual Meeting and 13th Annual
Symposium on New Generation Operational
Environmental Satellite Systems**
January 22-26, 2017
Seattle, Washington

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