



# GOES-R

GEOSTATIONARY OPERATIONAL ENVIRONMENTAL SATELLITE R-SERIES

QUARTERLY NEWSLETTER ■ APRIL - JUNE 2018 ■ ISSUE 22

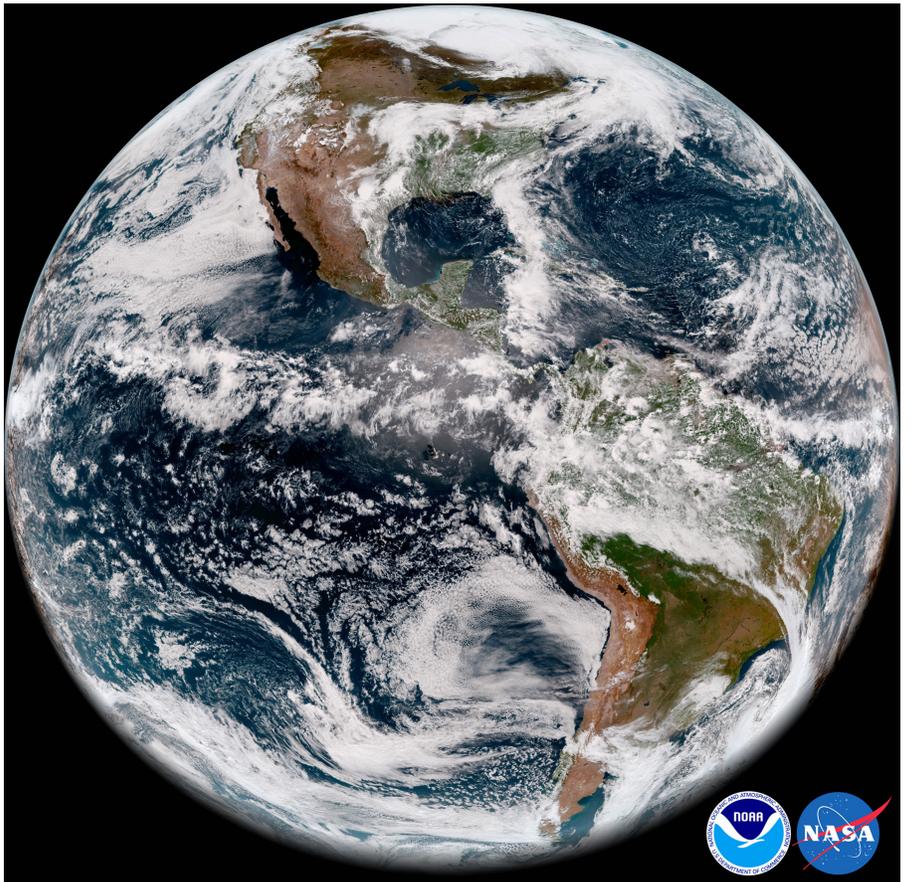
## A Note from Pam Sullivan, GOES-R System Program Director:



Hello GOES-R team! I am excited to take on my new role as GOES-R System Program Director. I look forward to working

with all of you to ensure the continued success of the GOES-R Series mission. We have a great team in place and I appreciate the outstanding effort you put forth every day. On our newest satellite, GOES-17, all six instruments are on and generating science data, and the post-launch test program is underway. We are focused on addressing an issue with the Advanced Baseline Imager cooling system. We have brought in industry experts to help diagnose the problem and our own team is making progress to optimize performance of the instrument. I am confident that we will find a solution that meets the operational needs of the National Weather Service.

## GOES-17 HIGHLIGHTS



Full-disk snapshot of Earth's Western Hemisphere from GOES-17's checkout position on May 20. Credit: NOAA/NASA

**GOES-17 post-launch testing continues with all instruments generating science data.** Post-launch testing validates the capability of the GOES-17 satellite and ground system to perform their mission of providing critical data for forecasts and warnings. This is conducted through a series of tests and demonstrations performed by the key elements of the system. Preliminary, non-operational data and imagery has been released from each of the satellite's six instruments.

## DID YOU KNOW?

Volcanic eruptions can generate lightning. [The GOES-16 Geostationary Lightning Mapper observed this rare phenomenon in the ash plume from the Fuego Volcano in Guatemala on June 3.](#)

## GOES-17 HIGHLIGHTS (CONTINUED)

During the commissioning of GOES-17, the GOES-R Program encountered an issue with the Advanced Baseline Imager's (ABI's) cooling system. [The cooling system is an integral part of the ABI and is not operating at its designed capacity.](#) A team of experts from NOAA, NASA, the ABI contractor team, and industry are investigating the issue and pursuing several possible corrective actions and options for maximizing the operational utility of the instrument. The issue affects infrared (IR) and near-infrared channels on the ABI.

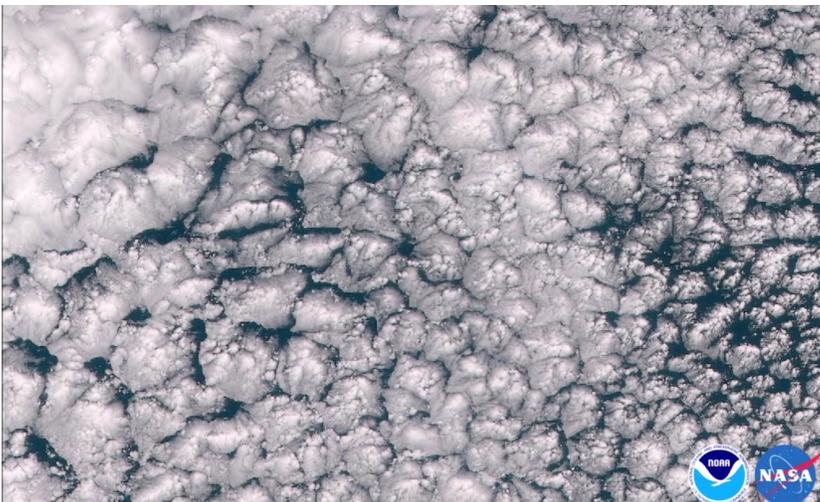
Infrared signals with long wavelengths can be swamped by infrared light emitted by warm parts of the imager, degrading the signal. Cooling the detectors reduces this thermal "noise" in observations.

The team that is working on optimizing performance has been successful at finding techniques that increase the available observing time of the infrared channels. The independent review team has narrowed down the number of possibilities to a few likely causes. A series of ground-based tests underway to try to isolate the specific root cause.

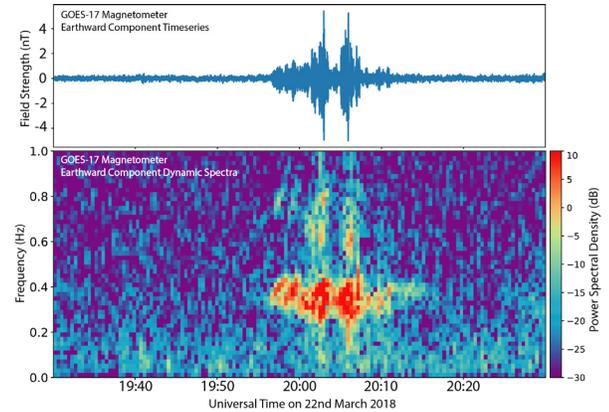
Even during the checkout phase, GOES-17 is observing with more channels at a higher resolution with more rapid refresh than what we have with the current GOES-West satellite.

NOAA plans to provide an update on the situation later in July. Information will be posted to the [GOES-R Program](#) and [NOAA Satellite and Information Service](#) websites.

**The first imagery from GOES-17's ABI made its public debut on May 31.** While experts address an issue with the instrument's cooling system, [new views from GOES-17](#) show that the ABI is providing beautiful – and useful – imagery of the Western Hemisphere. This imagery was created using the instrument's two visible bands (blue and red) and one near-infrared "vegetation" band that are functional with the current cooling system performance. The imagery also incorporates input from one of the ABI's "longwave" infrared bands that is functional during a portion of the day despite the cooling system issue. Visit the [data and imagery section](#) of the GOES-R website for more GOES-17 imagery.

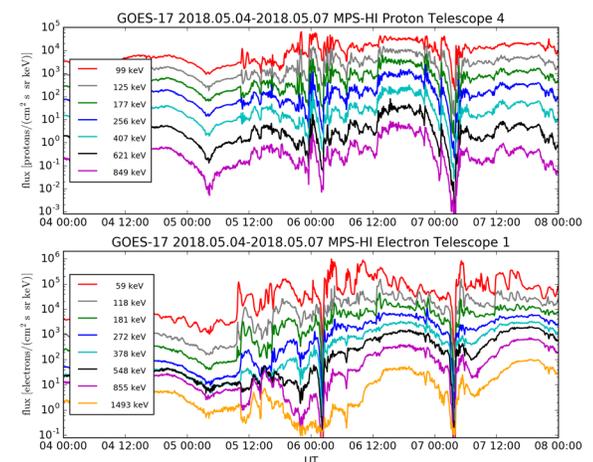


GOES-17 monitors clouds in our atmosphere with amazing detail and clarity. These dynamic marine stratocumulus cloud patterns off the western coast of Chile in the southeastern Pacific Ocean were revealed by the ABI on May 20. Credit: NOAA/NASA



First GOES-17 Magnetometer data. Credit: NOAA/NASA

**The first GOES-17 Magnetometer data was released on April 4.** The figure, from March 22, shows data from the outboard Magnetometer instrument. The data was filtered to highlight a space weather phenomenon known as plasma waves. These waves play a significant role in controlling the levels of dangerous energetic particles that can cause damage to satellites and harm astronauts. An important characteristic of these waves is how fast they oscillate up and down or their frequency (shown in the bottom panel of the figure). The Magnetometers on the GOES-R Series satellites, with five times higher resolution, can observe more wave frequencies allowing for research into new space weather products to help forecasters better determine the likelihood that elevated levels of dangerous energetic particles will occur during space weather events.

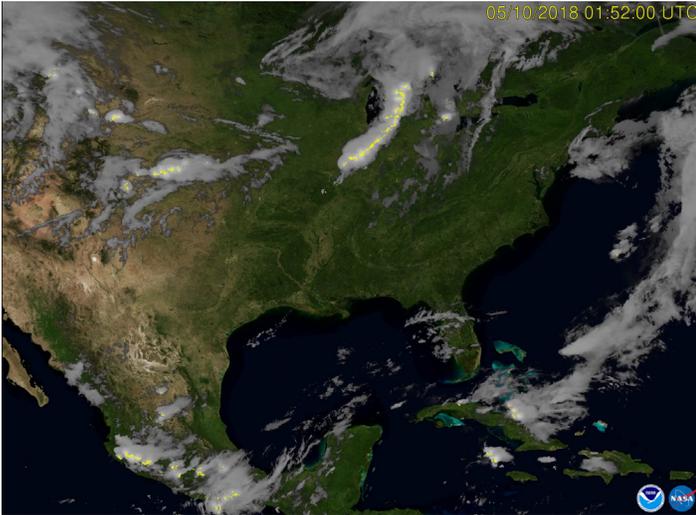


First data from the GOES-17 SEISS. Credit: NOAA/NASA

**The first data from the GOES-17 Space Environment In-Situ Suite (SEISS) instrument was released on May 15.** [The plot shows four days of SEISS data from May 4 through May 7](#)

## GOES-17 HIGHLIGHTS (CONTINUED)

[when the instrument observed electrons and protons associated with a geomagnetic storm.](#) The source of this storm was first detected by NOAA's DSCOVR (Deep Space Climate Observatory) satellite. The GOES-17 SEISS observed the complex response of radiation belt electrons and protons to this geomagnetic storm. SEISS is better able to detect energy fluxes in the magnetosphere than the previous generation of NOAA geostationary satellites.

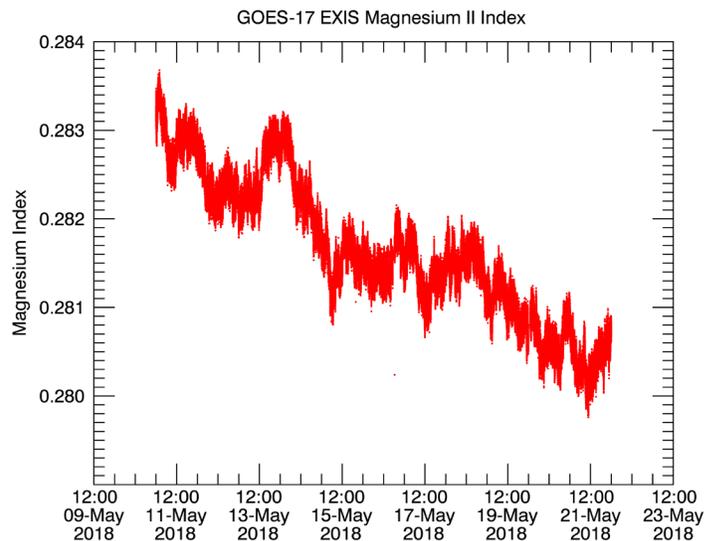


GOES-17 imagery of severe storms over the Plains on May 9. The lightning can be seen in yellow within the white cloud imagery. Credit: NOAA/NASA

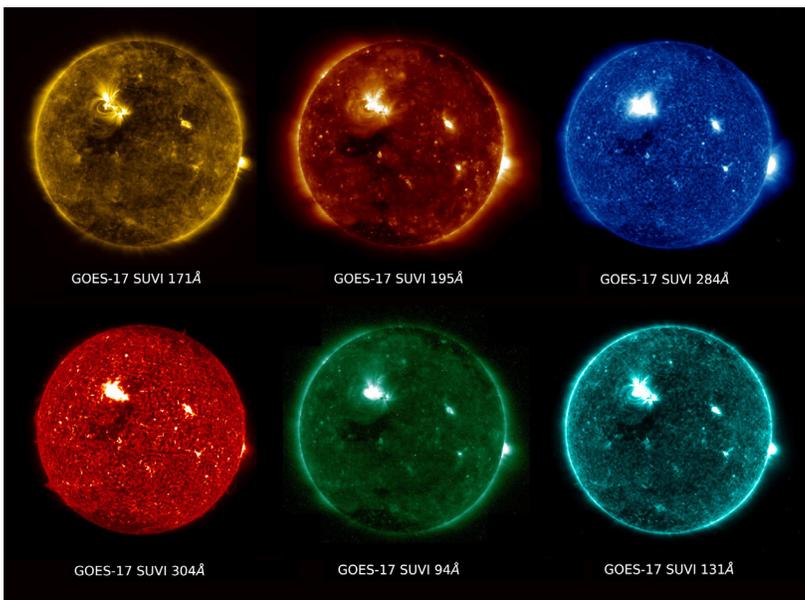
**On May 21, the first lightning imagery from GOES-17 debuted.** [The initial imagery from the Geostationary Lightning Mapper \(GLM\) captured lighting associated with a line of severe storms forming over the Plains on May 9.](#) These storms quickly grew and persisted into the evening and overnight hours, producing large hail, high winds, and a few tornadoes.

**GOES-17 shared the first data from its Extreme Ultraviolet and X-ray Irradiance Sensors (EXIS) on May 30.** [The data shows the first 10 days of the Magnesium Index from GOES-17 EXIS measurements.](#)

The Magnesium Index is a number that represents the ultraviolet variability of the sun. It is used for monitoring long-term and day-to-day changes in solar activity and the resulting upper atmosphere changes at Earth. This EXIS data shows that solar activity slightly decreased during the the time period, with no major solar flares. EXIS makes measurements of the index every three seconds and can be used to monitor rapid changes in the sun associated with solar flares.



First GOES-17 EXIS data showing 10 days of the Magnesium Index. Credit: NOAA/NASA



**GOES-17 captured a solar flare on May 28.** [The first imagery from its Solar Ultraviolet Imager, released June 7, shows a moderate C3 class solar flare.](#) The flare is seen in the SUVI images as the bright active region in the top left quadrant of the sun. SUVI observes the sun's atmosphere using six extreme ultraviolet channels to gain a complete picture of the temperature structure of the corona. Depending on the size and the trajectory of solar eruptions, the possible effects to near-Earth space and Earth's magnetosphere can cause geomagnetic storms which can disrupt power utilities as well as communication and navigation systems, and may cause radiation damage to orbiting satellites and the International Space Station.

GOES-17 SUVI view of the sun in six extreme ultraviolet wavelengths during a solar flare on May 28. Credit: NOAA/NASA

## GOES-17 HIGHLIGHTS (CONTINUED)

The **GOES-17 EXIS products completed the Beta Peer-Stakeholder Product Validation Review (PS-PVR)** on June 27. The solar flux: extreme ultraviolet and solar flux: X-ray irradiance products are now minimally validation and available to users to gain familiarity with data formats and parameters. These products are not yet optimized for operational use.

## GOES-16 HIGHLIGHTS

**GOES-16 product validation continues.** On May 4, the SUVI solar extreme ultraviolet imagery product completed its PS-PVR. Now that the product is provisionally validated, it's ready for operational use but is not yet fully validated. The GOES-16 ABI cloud and moisture imagery product completed its full PS-PVR on June 1. That product is now fully validated and operational.

**GOES-16 captured the first hurricane of 2018 in the eastern Pacific Ocean.** Tropical Storm Aletta was upgraded to a hurricane on June 7. The storm rapidly intensified over 24 hours to a category 4 hurricane on June 8 with maximum sustained winds near 140 mph.



Hurricane Aletta as seen by GOES-16 on June 8. Credit: NOAA/CIRA

## GOES-T AND GOES-U PROGRESS

**Progress continues on GOES-T integration and testing.** All of the instruments are integrated with the spacecraft and the antenna wing assembly is installed. All pre-environmental comprehensive performance tests are complete. The satellite is ready for the Pre-Environmental

Review, pending resolution of the GOES-17 ABI cooling system issue.

**GOES-U spacecraft development continues.**

Integration of the system module and core propulsion module are underway.

## CONFERENCES AND EVENTS

The **American Meteorological Society's 33rd Conference on Hurricanes and Tropical Meteorology** was held April 16-20 in Ponte Vedra, Florida. Several presentations at the conference highlighted GOES-16 applications for hurricane forecasting. In



Participants of the GOES-R Series Workshop at CMOS in June. Credit: CMOS

addition, a GOES-R Series Tropical Applications for Users workshop was held on April 17. The workshop communicated the new capabilities made possible by the GOES-R Series and highlighted derived products for improved environmental intelligence, forecasts and warnings. Workshop participants had the opportunity to work with tropical case studies using GOES-16 data, showcasing the many applications to help improve forecasts and warnings of high-impact weather and environmental phenomena.

The **Canadian Meteorological and Oceanographic Society's 52nd Congress** was held June 10-14 in Halifax, Nova Scotia. The theme of the meeting was "marine and environmental risks and impacts." There were several GOES-R Series presentations at the congress as well as a GOES-R Series workshop. The workshop included presentations, case studies, and hands-on exercises demonstrating the many capabilities of these advanced satellites.

## AWARDS AND ACCOLADES

**In April, GOES-R Program Mission Operations Manager Chris Wheeler received a 2018 NOAA Bronze Medal.** He was honored for exemplary leadership of pre-launch, launch, orbit-raising, and early mission operations leading to the successful GOES-16 satellite deployment.

**Lockheed Martin received a 2018 Edison Silver Award** for the Geostationary Lightning Mapper in the Space Technologies Innovation category. The team was honored at a gala in New York, New York, on April 11. Edison Awards recognize excellence in new product and service development, marketing, human-centered design, and innovation.

**In May, Tim Schmit, Satellite Research Meteorologist at NOAA, was named a finalist for the 2018 Samuel J. Heyman Service to America Medal** in the Science and Environment category. The “Sammies,” known as the Oscars of government service, highlight excellence in the federal workforce. Schmit’s work to make the Geostationary Operational Environmental Satellites increasingly sophisticated and effective has revolutionized weather forecasting. His work has focused on advancing the imaging technology of the satellites, primarily through the development of the Advanced Baseline Imager on the GOES-R Series. Winners will be announced at a black-tie gala in October.



Tim Schmit, finalist for the 2018 Samuel J. Heyman Service to America Medal. Credit: Partnership for Public Service

**Several GOES-R Program team members were recipients of 2018 NASA Agency Honor Awards in June.** The Agency Honor Awards are approved by the Administrator and presented to the most highly-deserving individuals and groups who have distinguished themselves by making outstanding contributions to the Agency’s mission. These are NASA’s most prestigious awards.

*Outstanding Leadership Medal*

**Dennis Chesters**

*Exceptional Achievement Medal*

**Heather Keller**

*Exceptional Engineering Achievement Medal*

**Derrick Early  
Kimberly Hawkins**

*Early Career Achievement Medal*

**Michelle Rizzo**

*Exceptional Public Service Medal*

**Michael Kimberling**

**Randall Race**

**Marc Rafal**

*Silver Achievement Medal*

**Jim Valenti**

*Group Achievement Award*

**GOES-16 Flight and Ground Mission Operations Support Team/Christopher Wheeler**

## MEET THE TEAM



**In this issue, meet Kevin Fryar, new GOES-R Series Program Chief of Staff.**

Kevin joined the program in May from the National Weather Service (NWS), where he was the Meteorologist in Charge at the Aurora, Illinois, Center Weather Service Unit. In that role, Kevin provided interpretive weather and decision support services to the Federal Aviation Administration.

Before joining NWS in 2004, Kevin served in the U.S. Air Force, where he held several positions including Wing Weather Officer, Joint Meteorological Officer, Combat Weather Flight Commander, and Aerial Reconnaissance Weather Officer.

Kevin is excited about his new role and helping program management ensure the smooth and efficient operation of the GOES-R program. He looks forward to the challenge of effectively coordinating and communicating across line offices and to program partners and the public. "I'm fortunate to lean on a team of highly professional specialists," Kevin said.

Kevin holds an associate degree in physical science, a Bachelor of Science in meteorology and a master's degree in information technology. His personal interests include automotive sports, travel, technology and gaming. Kevin is also an avid comic art fan and collector.

If you haven't met Kevin yet, stop by the program office, introduce yourself, and welcome him to the GOES-R Series team.

## UPCOMING EVENTS

**GOES-16/GEONETCast Americas Workshops**

July 23-27

Mexico City, Mexico

**GOES-16/GEONETCast Americas Workshops**

August 6-10

São Paulo, Brazil

**43rd Annual National Weather Association Meeting**

August 25-30

St. Louis, Missouri

**2018 EUMETSAT Meteorological Satellite Conference**

September 17-21

Tallinn, Estonia

## CONNECT WITH US!

