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PNSWSH

Service Change Notice 19-95 Updated  
National Weather Service Headquarters Silver Spring MD  
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To:           Subscribers:  
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From:         Bruce Entwistle  
              Chief, Aviation and Space Weather Services Branch

Subject: Updated: Changes to GOES Data at the SWPC: Effective December 9, 2019

Updated to correct notice.

Geostationary Orbiting Environmental Satellite (GOES)-16 will become operationally available to the NWS Space Weather Prediction Center (SWPC) in Boulder, CO on December 9, 2019. At that time, GOES-16 will become the primary satellite for geostationary space weather observations.

GOES-16 offers a number of improvements and changes to space weather measurements, as outlined below:

1) X-ray Sensor (XRS)

- The new XRS is more sensitive, measuring more variability during low solar activity.
- The new XRS is significantly more sensitive to contamination from electrons; however, algorithms are in place to remove most of this contamination.
- The GOES-16 and 17 XRS data values will read about 30 percent higher than older GOES satellite measurements eliminating the need for scale corrections. Confidence in these new measurements, in terms of accuracy, comes in part due to the GOES-16 and 17 XRS calibration occurring at the NIST calibration facility.

2) Energetic Particles

- >0.8 MeV electron channel is no longer available.
- >500 MeV proton channel is now available.

3) Magnetometer

- Arcjet thruster firings cause interference with the magnetometer measurements but are flagged in the data and plots.

4) Solar Imaging

- The Solar Ultraviolet Imager (SUVI) is a new instrument replacing the Solar X-ray Imager (SXI). While SUVI images similar regions of the lower corona as the SXI, many measurement characteristics are different. The SUVI is similar to the National Aeronautics and Space Administration's

(NASA's) Solar Dynamics Observatory's Atmospheric Imaging Assembly instrument.

In addition to the measurement changes, SWPC has updated the ways in which it displays delivered data. Line plots are now fully interactive and available on our webpages: X-rays, Magnetometer, Electrons, and Protons. With these plots, you can select different date ranges, select and deselect items displayed, zoom on the time axis, and export data and chart images. Currently, GOES-14 and/or GOES-15 data are shown on these plots because those are the current operational satellites. The SUVI data display remains similar to the SXI data display; however, this page is currently displaying live SUVI data.

On November 18, 2019, all line plots of GOES data (X-rays, electrons, protons, magnetometer) were replaced with the new dynamic plots.

On December 9, 2019, the following changes will be made to SWPC GOES data sources:

- X-rays: GOES-16 XRS data will become primary.
- Electrons: GOES-16 >2 MeV electrons will become primary.
- Protons: GOES-16 protons will become primary.
- Magnetometer: GOES-16 magnetometer will become primary.
- GOES-16 SUVI data will become the primary solar imager.

Numerical data will be served as JavaScript Object Notation (JSON) files in a new format and folder structure. GOES-16 data will only be available from JSON files in primary and secondary folders, which may contain data from any combination of GOES-14 to 17. Designations for which satellites are primary and secondary are available in each JSON file and from the instrument sources. Satellite locations are also available. An experimental preview of GOES-16 data can be found on the SWPC website.

Send comments on the changes to GOES data at SWPC, please contact:

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