GOES-17 MAG Level 2 (L2)
High-resolution and 1-minute averages L2 products
Read-Me for Data Users February 21, 2023.

The products contained here are the GOES-17 magnetometer Level 2 (L2) full-resolution and 1-minute average data validated to full maturity level. GOES-17 is the second satellite of the GOES-R series that was launched on March 1, 2018 and was the operational GOES West satellite (137 W) between February 12, 2019 and January 04, 2023, when it was replaced by GOES-18. GOES-17 was called GOES-S prior to launch and remains in orbit as GOES West backup.

GOES-17 MAG subsystem consists of two tri-axis fluxgate magnetometer instruments sensors mounted on an 8-meter boom (one in-board - at 6.3 meter from the spacecraft - and the other, out-board at the end of the boom), monitoring three orthogonal components of the geomagnetic field at geosynchronous orbit (L = 6.6) with sampling rate of 10 Hz. The GOES-17 inboard measurements (represented by IB_* variables in the L2 high-resolution files) suffered anomalous bias shifts and should not be used in science and technical investigations.

On March 14th, 2023, the magnetometer instrument on GOES-17 will enter storage mode. During this time, the magnetometer will be turned off and not producing operational or scientific datasets. In preparation for storage the magnetometer will be configured to only produce limited data products from February 27th - March 14th, 2023. Storage mode will continue until GOES-17 is decommissioned or should an operational GOES magnetometer become unusable.

GOES-17 MAG L2 data products are derived from the L1b data products and represent the best out-board sensor measurements of the geomagnetic field in the ECI (Earth-centered inertial), EPN (earthward, poleward, normal/eastward), GSE (geocentric solar ecliptic), GSM (geocentric solar magnetospheric), VDH (dipole aligned), and BRF (body reference frame) coordinate systems. The data support the following GOES-R mission objectives:

- Measures the magnitude and direction of Earth's ambient magnetic field in the geosynchronous equatorial orbit.
- Determines the general level of geomagnetic activity.
- Detects disturbances such as: geostationary magnetopause crossings, storm sudden commencements, substorms and ultra-low-frequency (ULF) waves.
- Maps the space environment that controls charged particle dynamics in the outer region of the magnetosphere.

Users must be aware that spacecraft arcjets contaminate the MAG data. We recommend the use of the arcjet flag available for identification of the contaminated periods. More information concerning the available variables and flags can be found at the netCDF file metadata. Data inquiries can be submitted to goesr.mag@noaa.gov. Please contact NCEI personal below for specific information on the GOES-17 MAG L2 data and before using data from periods that might have arcjet contamination in science:

Paul Loto'aniu paul.lotoaniu@noaa.gov

Alessandra Pacini alessandra.pacini@noaa.gov
Pamela Wyatt pamela.wyatt@noaa.gov