

GOES-18 GMAG Level 2 (L2)  
High-resolution and 1-minute averages L2 products  
Read-Me for Data Users  
January 19, 2023.

The products contained here are the GOES-18 magnetometer Level 2 (L2) full-resolution and 1-minute average data validated to provisional level. GOES-18 is the third satellite of the GOES-R series that was launched on March 1, 2022 and became the operational GOES West satellite (137 W) on January 4, 2023, replacing GOES-17. GOES-18 was called GOES-T prior to launch.

GOES-18 carries an upgraded magnetometer instrument that includes two tri-axis Goddard Magnetometer (GMAG) sensors mounted in a 8-meter boom (one in-board - at 6.3 meter from the spacecraft - and the other, out-board - at the end of the boom). The GOES-18 GMAG provides improved performance for measuring three orthogonal components of the geomagnetic field at geosynchronous orbit (L = 6.6) with sampling rate of 10 Hz.

GOES-18 GMAG L2 data products are derived from the L1b data products and represent the best 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 might contaminate the GMAG 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](mailto:goesr.mag@noaa.gov). Please contact NCEI personal below for specific information on the GOES-18 GMAG L2 data and before using data from periods that might have arcjet contamination in science:

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