GOES-18 ABI L2+ Derived Motion Winds Release
Beta Data Quality
May 23, 2022
Read-Me for Data Users

The GOES-18 Advanced Baseline Imager (ABI) L2+ Derived Motion Winds (DMW) product was declared Beta maturity on May 11, 2022. No formal review was conducted because the algorithms are identical to the ones running with GOES-16 and GOES-17, so the Beta declaration of the ABI L1b and CMI flows down to the ABI L2+ products.

The GOES-R series ABI DMW product is generated from a sequence of images and provides an estimate of atmospheric motion (Speed, Direction, Height) for a set of targeted tracers (cloud edges or moisture gradients in clear air conditions) viewed in selected spectral bands. Winds are retrieved separately from ABI bands 2 (0.64um), 7 (3.9um), 8 (6.2um), 9 (6.9um), 10 (7.3um), and 14 (11.2um). Collectively, the winds retrieved from all of these bands make up the DMW product. The DMW product is generated once an hour for every ABI Full Disk (FD) of the Earth, every 15 minutes over the contiguous United States (CONUS) region, and every 5 minutes over the Mesoscale (MESO) regions.

A full description and format of the DMW product can be found in the Product Definition and User's Guide (PUG) document (http://www.goes-r.gov/products/docs/PUG-L2+-vol5.pdf). The algorithm used to derive the DMW product from ABI observations is described in detail in the "GOES-R Advanced Baseline Imager (ABI) Algorithm Theoretical Basis Document for Derived Motion Winds" (https://www.star.nesdis.noaa.gov/goesr/documents/ATBDs/Baseline/ATBD_GOES-R_Winds_v3.1_Feb2019.pdf).

Beta maturity, by definition, means that:

- Rapid changes in product input tables / algorithms can be expected;
- Product quick looks and initial comparisons with ground truth data were not adequate to determine product quality;
- Anomalies may be found in the product and the resolution strategy may not exist;
- Product is made available to users to gain familiarity with data formats and parameters;
- Product has been minimally validated and may still contain significant errors; and
- Product is not optimized for operational use.

Beta users bear all responsibility for inspecting the data prior to use and for the manner in which the data are utilized. Persons desiring to use the GOES-18 ABI Beta maturity DMW products for any reason, including but not limited to scientific and technical investigations, are encouraged to consult the NOAA algorithm working group (AWG) scientists for feasibility of the planned applications.

The DMW product is dependent on the L1b product and a number of L2+ products (e.g., cloud mask, cloud phase, and cloud-top pressure). The quality of the DMW product, therefore, is sensitive to the quality of these predecessor products.

Status of GOES-18 DMW products (as of May 23, 2022):

1. All GOES-18 Winds (derived from ABI Bands 2, 7, 8, 9, 10, and 14)
   a. May contain some height assignment errors due to impacts of co-registration errors between the ABI mid-wave and longwave focal planes which can impart errors on the upstream cloud type and cloud height products

2. The Long-wave (LWIR) Band 14 (11.2um) Winds
   a. Can be slightly mis-navigated due to GOES-18 ABI bands 12 - 16 (9.6 - 13.3 µm) navigation errors of 3.6 km to the west and 2.3 km to the north
   b. May contain elevated tracking errors due to slightly elevated Frame-to-Frame Registration (FFR) errors associated with the long-wave infrared bands

3. The availability and quality of GOES-18 winds are comparable to those from GOES-16 as determined from comparisons done with spatially and temporally collocated rawinsonde wind observations over the period May 8 – 14, 2022.

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Contacts for specific information on the ABI L2+ DMW product:
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