Global Hydrology Resource Center

Data User Guide

NRT AMSR2 Daily L3 6.25 km 89 GHz Brightness Temperature (Tb) Polar Grids

Introduction

The GCOM-W1 near real-time (NRT) AMSR2 Level 3 Daily 6.25 km 89 GHz Brightness Temperature (Tb) data set is created using resampled Tb (Level-1R) data provided by the Japanese Aerospace Exploration Agency (JAXA). This Level 3 gridded product includes brightness temperatures at 89.0 GHz and is mapped to a polar stereographic grid at 6.25 km spatial resolution. This product is an intermediate product for processing of LANCE AMSR2 Level 3 sea ice products at 12.5 km and 25 km resolution. NRT products are generated within 3 hours of the last observations in the file by the Land Atmosphere Near real-time Capability for EOS (LANCE) at the AMSR Science Investigator-led Processing System (AMSR SIPS), which is collocated with the Global Hydrology Resource Center (GHRC) Distributed Active Archive Center (DAAC).

Notice:

All LANCE AMSR2 data should be used with the understanding that these are preliminary products. Cross calibration with AMSR-E products has not been performed. As updates are made to the L1R data set, those changes will be reflected in this higher level product.

Citation

Markus, T., W. Meier, and J. C. Comiso. 2015. NRT AMSR2 Daily L3 6.25 km 89 GHz Brightness Temperature (Tb) Polar Grids [indicate subset used]. Dataset available online, [https://lance.nsstc.nasa.gov/amsr2-science/data/level3/seaice6] from NASA LANCE AMSR2 at the GHRC DAAC Huntsville, Alabama, U.S.A. doi: http://dx.doi.org/10.5067/AMSR2/A2_SI6_NRT

Keywords:

Brightness temperature

LANCE

The Land Atmosphere Near real-time Capability for EOS (LANCE) makes EOS data from MODIS, AIRS, MLS, OMI, AMSR2, and MISR available within three hours of satellite overpass to meet the timely needs of applications such as numerical weather and climate prediction; forecasting and monitoring natural hazards, ecological/invasive species, agriculture, and air quality; providing help with disaster relief; and homeland security. Please note that LANCE has a rolling archive life of ten days on the HTTPS server. Once ten days pass following the data acquisition date, users must use the standard products.

If data latency is not a primary concern, please consider using science quality standard products. Science products are created using the best available ancillary, calibration and ephemeris information. Science quality products are an internally consistent, well-calibrated record of the Earth's geophysical properties to support science. The AMSR2 standard science quality data products will be available from the NSIDC DAAC.

Instrument Description

The Advanced Microwave Scanning Radiometer 2 (AMSR2) instrument aboard the Global Change Observation Mission - Water 1 (GCOM-W1) provides global passive microwave measurements of terrestrial, oceanic, and atmospheric parameters for the investigation of global water and energy cycles. Both AMSR2 and GCOM-W1 are built and operated by Japan Exploration Agency (JAXA). Data from this instrument are ingested from JAXA into NASA's LANCE element at the AMSR SIPS to be processed with US AMSR Science Team members' algorithms.

The AMSR instruments improved upon the heritage of the Scanning Multichannel Microwave Radiometer (SMMR), Special Sensor Microwave/Imager (SSM/I) and Tropical Rainfall Measuring Mission (TRMM) Microwave Instrument (TMI) instruments. Major improvements over those instruments included channels spanning the 6.9 GHz to 89 GHz frequency range, and higher spatial resolution from the 1.6 m reflector. More information about AMSR2 can be found at http://global.jaxa.jp/projects/sat/gcom_w/.

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File Naming Convention

The data are formatted using the following file naming convention.

Data: AMSR_2_L3_SeaIce6km_X##_yyyymmdd.he5
Browse: AMSR_2_L3_SeaIce6km_X##_yyyymmdd_f_89G.png
QA Summary Files: AMSR_2_L3_SeaIce6km_X##_yyyymmdd.qa

Table 1: File naming convention variables

Variable	Description
X	Product Maturity code (Refer to table 2)
##	Two-digit file version number
yyyy	Four-digit year
mm	Two-digit month
dd	Two-digit day
f	N = Northern Hemisphere, S = Southern Hemisphere
G	H = Horizontal daily average V = Vertical daily average
.he5	HDF-EOS5 format
.xml	Metadata file
.met	Metadata file
.png	Portable Network Graphics format
.qa	GPS Quality Assessment Data

As NRT data are received from JAXA, partial daily products are generated and identified with a product maturity code of "P" in the filename. Once all Level-1R inputs are available, the complete daily product contains product maturity code "R" (near real-time) in the filename. Incremental processing makes data available to the user as it is received, rather than at the end of the day. Table 2 outlines the product maturity code variables used in the file naming convention.

Table 2: Product Maturity Code Variables

Variable	Description
P	Partial daily product
R	Near real-time

Data Format Description

Data are stored in HDF-EOS5 format and are available via HTTP from the EOSDIS LANCE system at https://lance.nsstc.nasa.gov/amsr2-science/data/level3/seaice6/ or https://lance.itsc.uah.edu/amsr2-science/data/level3/seaice6/. Please refer to Table 3 for information on the dataset characteristics.

Table 3: Dataset Characteristics

Characteristic	Description
Platform	Global Change Observation Mission - Water 1 (GCOM-W1)
Sensor	Advanced Microwave Scanning Radiometer 2 (AMSR2)
Projection	Polar Stereographic Projection*
Spatial Coverage	**North Polar Grid** N: 90, S: 30.98, E: 180, W: -180 **South Polar Grid** N: -39.23, S: -90, E: 180, W: -180
Spatial Resolution	6.25 km x 6.25km
Temporal Coverage	Start date: 09-06-2015 Stop date: Ongoing
Temporal Resolution	Daily averages, daily ascending average, daily descending average
Parameter	Brightness temperature
Processing Level	Level 3
Data Format	HDF-EOS5

*For more information on the polar stereographic projection used for this dataset, please refer to the Spatial Coverage section within the corresponding AMSR-E NSIDC documentation.

Data Parameters

Each data file contains core metadata, product-specific attributes, and data fields in 2-byte signed integer format, where missing data values are indicated by 0. Please note that a scale factor has been applied to the data. To obtain the brightness temperature in kelvins (K), multiply data values by 0.1. The valid range of brightness temperature is approximately 50 to 300 K. Please refer to Table 4 and Table 5 for additional data field information relevant to the northern and southern hemisphere grids.

Table 4. Northern Hemisphere Data Fields

Field Name	Description	Data Type	Unit	Scale Factor
SI_06km_NH_89H_ASC	89.0 GHz horizontal daily average ascending Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_NH_89H_DAY	89.0 GHz horizontal daily average Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_NH_89H_DSC	89.0 GHz horizontal daily average descending Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_NH_89V_ASC	89.0 GHz vertical daily average ascending Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_NH_89V_DAY	89.0 GHz vertical daily average Tbs	2-byte signed integer	Kevin (K)	0.1

SI_06km_NH_89V_DSC	89.0 GHz vertical daily average descending Tbs	2-byte signed integer	Kevin (K)	0.1

Table 5. Southern Hemisphere Data Fields

Field Name	Description	Format	Units	Scale
SI_06km_SH_89H_ASC	89.0 GHz horizontal daily average ascending Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_SH_89H_DAY	89.0 GHz horizontal daily average Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_SH_89H_DSC	89.0 GHz horizontal daily average descending Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_SH_89V_ASC	89.0 GHz vertical daily average ascending Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_SH_89V_DAY	89.0 GHz vertical daily average Tbs	2-byte signed integer	Kevin (K)	0.1
SI_06km_SH_89V_DSC	89.0 GHz vertical daily average descending Tbs	2-byte signed integer	Kevin (K)	0.1

Quality Assessment

A Quality Assessment (QA) XML metadata summary file is provided for each data file. The QA summary file denotes whether or not the file passed the science quality flag.

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