Detailed AMSR-E Direct Broadcast Soil Moisture Level 2B Data Description

Note this is slightly modified from the DACC version found at:

(httP://nsidc.org/data/docs/daac/ae_land_l2b.gd.html#format)

Format

Level-2B data are unique to AMSR-E products. They consist of HDF-EOS point data where the resulting grid is in table format, rather than a grid that image processing programs can easily visualize. Files contain core metadata, product-specific attributes, and the following data fields in 2-byte signed integer format:

Data Fields

Field	Description
Time	Float64. Scan start time in TAI 93 (seconds since midnight, 01 January 1993)
Latitude	Float32 (-90.0 to 90.0)
Longitude	Float32 (-180.0 to 180.0)
Row_Index	16-bit integer. EASE-Grid row index (0-585)
Column_Index	16-bit integer. EASE-Grid column index (0-1382)
TB_QC_Flag	16-bit integer. Brightness temperature (T_B) quality control flag. A non-zero value indicates a given channel is out of limits for a given pixel, as the following values indicate. These values indicate the first bad channel detected, though more than one channel may be bad. 0: Good T_B in all channels -89: Bad T_B in 89H GHz +89: Bad T_B in 89V GHz -36: Bad T_B in 36.5H GHz +36: Bad T_B in 36.5V GHz -23: Bad T_B in 23.8H GHz +23: Bad T_B in 23.8V GHz -18: Bad T_B in 18.7H GHz +18: Bad T_B in 18.7V GHz -10: Bad T_B in 10.7H GHz +10: Bad T_B in 10.7V GHz -06: Bad T_B in 6.9H GHz +06: Bad T_B in 6.9V GHz
Heterogeneity_Index	16-bit integer. As part of the Level-2B processing, a heterogeneity index is computed as the standard deviation of the 36.5H GHz, 11 km resolution data points within each 25 km EASE-Grid cell. The index is used as an output data quality flag. Divide data values by 100 to obtain units in Kelvins (K). A value of -9999 implies bad T_B data in any channel (TB_QC_Flag).
Surface_Type	16-bit integer. Indicates surface type classification.
Soil_Moisture	16-bit integer. Soil moisture at 6.9 GHz resolution. Divide data values by 1000 to obtain soil moisture in g cm^{-3}. Range: 0 to 500. A value of -9999 indicates no retrieval, due to bad T_B data in the retrieval channels (TB_QC_Flag) or screening by land surface classification (Inversion_QC_Flag_1).
Veg_Water_Content	16-bit integer. Vegetation and surface roughness parameter at 6.9 GHz resolution. This term incorporates effects of vegetation and surface roughness together (see Derivation Techniques and Algorithms). Divide data values by 100 to obtain vegetation water content in kg m^{-2}. Range: 0-1000. A value of -9999 indicates no retrieval.
Land_Surface_Temp	16-bit integer. Land surface temperature is not calculated because of radio frequency interference (RFI) contamination in the 6.9 GHz channels. The field contains only fill values (-9999).
Inversion_QC_Flag_1	16-bit integer. Inversion quality control flag. Values are as follows: 10: Good retrieval using empirical algorithm 12: Bad retrieval using empirical algorithm 14: No retrieval 20: Good retrieval using iterative algorithm 22: Questionable retrieval using iterative algorithm 24: Bad retrieval using iterative algorithm 26: No retrieval
Inversion_QC_Flag_2	16-bit integer. Not currently used.
Inversion_QC_Flag_3	16-bit integer. Not currently used.

Following is a subset of sample Level-2B data. The columns, as described above, represent time, latitude, longitude, EASE-Grid row index, EASE-Grid column index, brightness temperature quality control flag, heterogeneity index, surface type, soil moisture, vegetation/roughness parameter, land surface temperature (no longer calculated; these are fill values of -9999 only), inversion quality control flag 1, inversion quality control flag 2, and inversion quality control flag 3.

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   390744652.696752  -3.0274389  17.180042  309  758  0  729  128   146    196  -9999  10  -9999
-9999
   390744649.696959  -3.2229576  17.180042  310  758  0  856  128   149    248  -9999  10  -9999
-9999
   390744646.697279  -3.4185135  17.180042  311  758  0  243  128   156    371  -9999  10  -9999
-9999
   390744643.697870  -3.6141095  17.180042  312  758  0  281  128   160    419  -9999  10  -9999
-9999
   390744640.698190  -3.8097482  17.180042  313  758  0  202  128   157    346  -9999  10  -9999
-9999
   390744637.698510  -4.0054310  17.180042  314  758  0  232  128   157    281  -9999  10  -9999
-9999
   390744636.198606  -4.2011600  17.180042  315  758  0  138  128   158    326  -9999  10  -9999
-9999
   390744633.199024  -4.3969393  17.180042  316  758  0  109  128   163    369  -9999  10  -9999
-9999
   390744630.199344  -4.5927690  17.180042  317  758  0  158  128   163    382  -9999  10  -9999
-9999
   390744627.199536  -4.7886530  17.180042  318  758  0  122  128   167    443  -9999  10  -9999
-9999
   390744624.199600  -4.9845934  17.180042  319  758  0  135   64  -9999  -9999  -9999  14  -9999
-9999
   390744621.199536  -5.1805916  17.180042  320  758  0  147   64  -9999  -9999  -9999  14  -9999
-9999
```