AMSR-E/Aqua L1A Raw Observation Counts, Version 3

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Japan Aerospace Exploration Agency (JAXA). 2003, updated daily. *AMSR-E/Aqua L1A Raw Observation Counts, Version 3*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. https://doi.org/10.5067/AMSR-E/AMSREL1A.003. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

FOR CURRENT INFORMATION, VISIT https://nsidc.org/data/AMSREL1A

National Snow and Ice Data Center

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1 DATA DESCRIPTION

1.1 Parameters

See Level-1A data fields table in the appendix for details.

1.2 File Information

1.2.1 Format

Level-1A data are in Hierarchical Data Format (HDF) with the following contents:

1.2.2 AMSR-E Level-1A Header

- Core Metadata
- Product-Specific Attributes

1.2.3 Level-1A Data Fields

- Navigation and attitude data
- Observation counts
- Calibration temperature counts
- Antenna temperature coefficients
- Time
- Latitude
- Longitude
- Sun azimuth
- Sun elevation
- Earth incidence
- Earth azimuth
- Data quality

The dimension of observation count data is 243 observations by approximately 2003 scans for all channels except 89.0 GHz. The dimension of 89.0 GHz data is 486 observations by approximately 2003 scans. The number of scans may fluctuate slightly. Missing data are indicated by a value of -9999.999.

For more information on the data fields' format descriptions, see Aqua AMSR-E Level 1 Product Format Description document.

1.2.4 File Contents

Each half-orbit granule is approximately 37.5 MB. The daily data rate is approximately 1.2 GB.

1.2.5 Naming Convention

This section explains the file naming convention used for this product with an example. The date and time correspond to the first scan of the granule.

Example File Name: `P1AME020602173MA_P01A0000000.00`

`P1AMEYYMMDD###MX_P###0000000.00`

Refer to Table 1 for the valid values for the file name variables listed above.

Where:

Table 1. File Naming Convention Description

Variable	Description
P1	Aqua satellite (PM-1)
AME	AMSR-E sensor
YY	Two-digit year
MM	Two-digit month
DD	2-digit day
###	Path number
MX	Orbital mode (A = ascending pass)
P###	Product type (01A = Level-1A product)

Table 2 provides examples of file name extensions for related files that further describe or supplement data files.

Table 2. Related File Extensions and Descriptions

Extensions for Related Files	Description
.brws	Browse data
.qa	Quality assurance information
.ph	Product history data

1.3 Spatial Information

1.3.1 Coverage

Coverage is global between 89.24°N and 89.24°S, except where gaps occur in a single day of observations, as the spatial coverage map shows. Multiple days of data produce no gaps in

coverage. See AMSR-E Pole Hole for a description of gaps that occur at the North and South Poles.

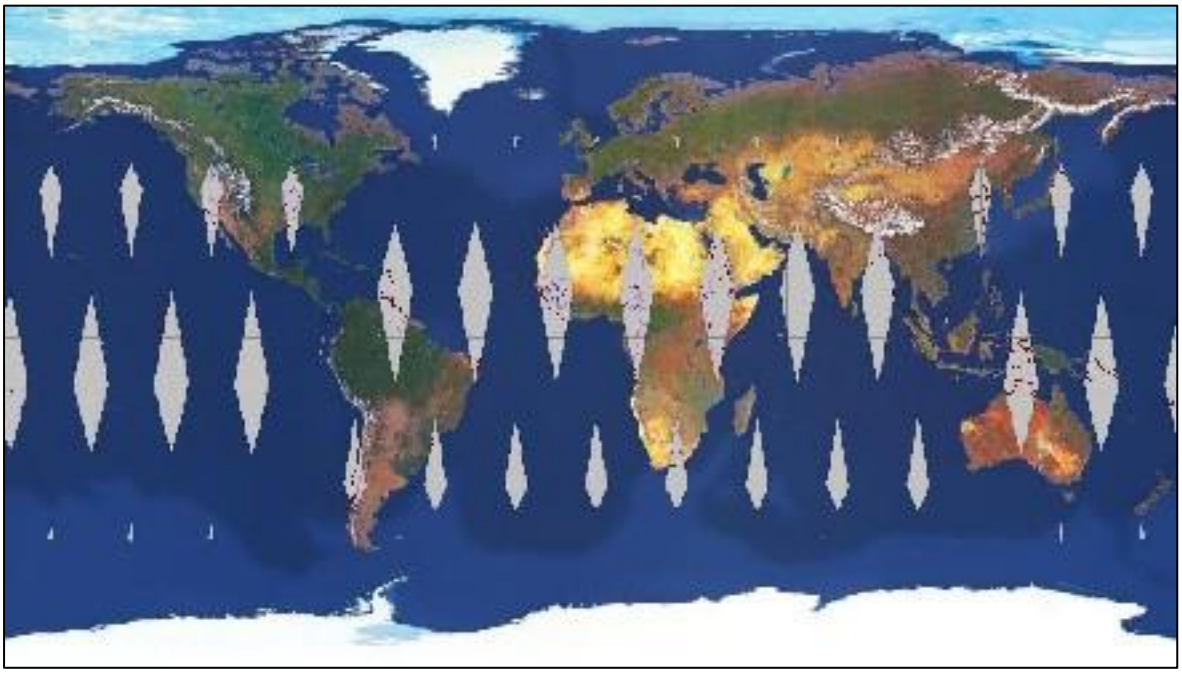

Figure 1. Typical Daily Coverage

1.3.2 Resolution

The sampling interval at the earth's surface is 10 km for the 6.9 GHz to 36.5 GHz channels, and 5 km for the 89.0 GHz channel. Please see 89 GHz Scan Spacing for a figure that summarizes sampling intervals.

1.4 Temporal Information

1.4.1 Coverage

Temporal coverage is from 01 June 2002 to 04 October 2011.

1.4.2 Resolution

The data sampling interval is 2.6 msec for each 1.5 sec scan period for the 6.9 GHz to 36.5 GHz channels, and 1.3 msec for the 89.0 GHz channel. AMSR-E collects 243 data points per scan for the 6.9 GHz to 36.5 GHz channels, and 486 data points for the 89.0 GHz channel.

The number of satellite passes per day is a function of latitude, as shown in AMSR-E Observation Times.

2 DATA ACQUISITION AND PROCESSING

2.1 Acquisition

See the AMSR-E Instrument Description document for more information.

2.2 Processing

2.2.1 Derivation Techniques and Algorithms

Apply the procedures described below to derive brightness temperatures using JAXA's calibration.

Step 1

Convert the observation count data into antenna temperatures by the following formula.

Ta = Asl * Obs + Aof

Where:

Table 3. Step 1 Formula

Variable	Description
Ta	Antenna temperature (K)
Asl	Antenna temperature conversion coefficient (slope value)
Obs	Count value of observation data
Aof	Antenna temperature conversion coefficient (offset value)

The offset and slope values of the antenna temperature conversion coefficient are stored in the Antenna_Temperature_Coef(Of+Sl) attribute of this Level-1A data product.

Step 2

Correct the scan bias for 6 GHz only by using the following formula.

Ta' = Ta * Cog[i]

Where Cog[i] is the scan bias coefficient for 6 GHz only. (i: observation point in the range of the Level-1B product.)

Download a table of scan bias coefficients (Excel file, 28 KB).

Step 3

Correct the non-linear calibration using the following formula.

Ta'' = C0 + C1 Ta' + C2 (Ta')2 + C3 (Ta')3 + C4 (Ta')4

Where:

Table 4. Step 3 Formula

Variable	Description
Ta''	Nonlinear calibrated antenna temperature (K)
C0 – C4	Calibration Curve Coefficient#1 - #5
Ta'	Antenna temperature calculated with antenna temperature coefficients (K)

The calibration curve coefficients #1- #4 are stored in the CalibrationCurveCoeficient#1 -#5 attribute of this Level-1A data product.

Step 4

Convert the antenna temperature into a brightness temperature using the following formula.

Tbv = Avv Ta''v + Ahv Ta''h + 2.7 Aov

Where:

Table 5. Step 4 Formula

Variable	Description
Tbv	Observation brightness temperature of the vertical polarization
Avv	Conversion coefficient of the vertical co-polarization
Ta''v	Antenna temperature of the vertical polarization
Ahv	Conversion coefficient of the vertical cross-polarization
Ta''h	Antenna temperature of the horizontal polarization
Aov	Coefficient of the deep space's brightness temperature of the vertical polarization

Tbh = Ahh Ta''h + Avh Ta''v + 2.7 Aoh

Where:

Table 6. Step 4 Formula 4b

Variable	Description
Tbh	Observation brightness temperature of the horizontal polarization
Ahh	Conversion coefficient of the horizontal co-polarization
Ta''h	Antenna temperature of the horizontal polarization

Variable	Description
Avh	Conversion coefficient of the horizontal cross-polarization
Ta''v	Antenna temperature of the vertical polarization
Aoh	Coefficient of the deep space's brightness temperature of the horizontal polarization

These conversion coefficients are stored in the CoefficientAvv – Aoh attribute of this Level-1A data product.

2.2.2 Processing Steps

Under normal operating conditions, Remote Sensing Systems (RSS) in Santa Rosa, California, receives Level-1A data from JAXA via the NASA Jet Propulsion Laboratory (JPL) Physical Oceanography Distributed Active Archive Center (PO.DAAC).

The calibration coefficients and offsets for this data set are determined by JAXA. They are different from those of the AMSR-E/Aqua L2A Global Swath Spatially-Resampled Brightness Temperatures (Tb), which are determined by RSS. The Level-1A data have not been calibrated; specifically, they were not converted from instrument counts to TAs. Coefficients are written to the Level-1A data but not applied.

2.3 Quality, Errors, and Limitations

The AMSR-E Instrument Description document provides details on potential errors associated with radiometer calibration.

Level-1A quality flags are provided with the AMSR-E/Aqua L2A Global Swath Spatially-Resampled Brightness Temperatures (Tb) data set. Users should obtain the corresponding Level-2A data granule to see quality flags for a given Level-1A granule. Note, however, that there is no 1:1 mapping between the two sets of flags. Users should match the Level-1A quality flags with the corresponding time of acquisition.

2.4 Instrumentation

2.4.1 Description

See the AMSR-E Instrument Description document.

2.4.2 Calibration

AMSR-E's calibration system has a cold mirror that provides a clear view of deep space (a known temperature of 2.7 K) and a hot reference load that acts as a blackbody emitter; its temperature is measured by eight precision thermistors. After launch, large thermal gradients due to solar heating developed within the hot load, making it difficult to determine from the thermistor readings the average effective temperature, or the temperature the radiometer sees.

3 VERSION HISTORY

Version 2 (V002) of this Level-1A product was released in March 2005 and uses a non-linear correction. This improved version features empirical corrections to the Aqua scan azimuth and satellite flight direction. With corrected sun azimuth, sun elevation, earth azimuth, and earth incidence angles, the geometric accuracy of AMSR-E 89 GHz data improved to within 2 km.

Version 3 (V003) of this Level-1A product was released in September 2011 and features empirical corrections to the co-registration parameters A1 and A2, and an updated parameter file used for correcting the AMSR-E 89 GHz position information. As a result, Version 3 AMSREL1A data provide improved accuracy for the following: Latitude and longitude, land/ocean flags, earth incidence angle, earth azimuth angle, sun azimuth angle, and sun elevation angle. Additionally, the HDF-EOS version was updated from 4.2r1 to 4.2r4.

4 CONTACTS AND ACKNOWLEDGMENTS

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5 REFERENCES

Japan Aerospace Exploration Agency (JAXA). Aqua AMSR-E Level 1 Product Format Description document.

Mitsubishi Electric Corporation. 2000. EOS-PM *AMSR-E Data Processing System: Level 1A Format Description* document. GAMSRE-E-037. Tokyo: Mitsubishi Electric Corporation.

6 DOCUMENT INFORMATION

6.1 Publication Date

Feburary 2003

6.2 Date Last Updated

01 April 2021

APPENDIX A – AMSR-E LEVEL-1A FOR HEADER VERSION 3 DATA

The AMSR-E Level-1A product includes core metadata and product-specific attributes. The following tables show examples of typical metadata fields (Mitsubishi 2000). Some fields, such as ProductionDateTime, will vary among files.

Table A - 1. Core Metadata

Object Name	Example Value	Definition
ShortName	AMSREL1A	Abbreviated name of a product
VersionID	RELEASE3	Product version
SizeMBECSDataGranule	37.7	Size of the product (MB)
LocalGranuleID	P1AME050410047MA_P01A0000000	Granule ID based on JAXA EOC ID convention
ProcessingLevelID	L1A	Processing level
ReprocessingActual	n/a	Re-processing date
ProductionDateTime	2011-09-28T14:25:14.00Z	Production time
RangeBeginningTime	06:15:50.07Z	Start time of 89 GHz A-horn's observation
RangeBeginningDate	2011-09-28	Start date of 89 GHz A-horn's observation
RangeEndingTime	11:47:14.15Z	End time of 89 GHz A-horn's observation
RangeEndingDate	2011-09-29	End date of 89 GHz A-horn's observation
GRingPointLatitude	-72.99,-83.32,-36.92,22.99,73.78,85.31,25.23,-34.36	Eight representative latitudes and longitudes of the outline for the observation

Object Name	Example Value	Definition
GringPointLongitude	151.78,-146.13,31.31,18.76,-46.94,16.13,34.49,49.23	Eight representative latitudes and longitudes of the outline for the observation
PGEName	L1A_Process_Software	Product generation software name
PGEVersion	333*33****33330333	Version number of the AMSR-E level 1 processing system
InputPointer	R1540402SG30510011402800.RBD,R1540402SKS0510013185000.RBD	Science data file names used for processing
ProcessingCenter	JAXA EOC	Offer organization of the level 1 product
ContactOrganizationName	JAXA 1401 Ohashi, Hatoyama-machi, Hiki-gun Saitama 350-0393 JAPAN +81-49-298-1307 orderdesk@eos.jaxa.jp	Contact of JAXA/EOC
StartOrbitNumber	15614	Orbit number of satellite in a start position for product
StopOrbitNumber	15615	Orbit number of satellite in a stop position for product
EquatorCrossingLongitude	31.92	Equator Crossing Longitude
EquatorCrossingDate	2005-04-10	Equator Crossing Date
EquatorCrossingTime	11:24:21.75Z	Equator Crossing Time
OrbitDirection	ASCENDING	Direction (ASCENDING/DECENDING) of the product
EphemerisGranulePointer	R1540957sg30510011402800.RBD	Orbit data file names used for processing

Object Name	Example Value	Definition
EphemerisType	ELMP	Type of orbit information used for processing
PlatformShortName	EOS-PM1	Abbreviated name of the satellite (platform)
SensorShortName	AMSR-E	Abbreviated name of the observation sensor
NumberofScans	2002	Number of scans of the observation data in the product
NumberofMissingScan	0	Number of missing scans in the product
ECSDataModel	B.0	Fixed value “B.0” is the version of metadata model defined in ECS
DiscontinuityVirtualChannel	DEAD Encounter	Status of continuous receiving of inputted science data's packets
QALocationOfPacket	continuation	Packet continuity state of the product
NumberofPackets	32032	Total packet number of the product
NumberofInputFiles	2	Number of science data files used for processing
NumberofMissingPackets	0	Number of missing packets in the product
NumberofGoodPackets	32032	Number of normal packets in the product
ReceivingCondition		
EphemerisQA	OK	Quality judged by checking the orbit data and attitude data

Object Name	Example Value	Definition
AutomaticQAFlag	PASS	Automatic inspection result of data processing
AutomaticQAFlagExplanation	MissingDataQA: Less than 20 is available -->OK, AntennaRotationQA: Less than 20 is available -->OK, HotCalibrationSourceQA: Less than 20 is available -->OK, AttitudeDataQA: Less than 20 is available -->OK, EphemerisDataQA: Less than 20 is available -->OK, QualityofGeometricInformationQA: Less than 0 is available -->OK, BrightnessTemperatureQA: Less than 20 is available -->OK, All items are OK, 'PASS' is employed	Contents of automatic inspection and its thresholds
ScienceQualityFlag	Not being investigated	Blank for level 1
ScienceQualityFlagExplanation	Not selected for investigation	Blank for level 1
QAPercentMissingData	0	Percentage of the missing data in a product
QAPercentOutofBoundsData	0	Percentage of the limit error to all data
QAPercentParityErrorData	0	Percentage of a parity error data to all data
ProcessingQADescription	PROC_COMP	Error message generated by data-processing software
ProcessingQAAttribute	NumberofMissingPackets	

Table A - 2. Product Specific Attributes

Attribute Name	Sample Value	Definition
SatelliteOrbit	Sun-synchronous_sub-recurrent	Characteristic of Aqua
Altitude	707.9km	Characteristic of Aqua

Attribute Name	Sample Value	Definition
OrbitSemiMajorAxis	7085.858km	Characteristic of Aqua
OrbitEccentricity	0.00095	Characteristic of Aqua
OrbitArgumentPerigee	106.480deg	Characteristic of Aqua
OrbitInclination	98.15deg	Characteristic of Aqua
OrbitPeriod	98minutes	Characteristic of Aqua
RevisitTime	16days	Characteristic of Aqua
AMSRChannel	6.925GHz 10.65GHz 18.7GHz 23.8GHz 36.5GHz 89.0GHz-A 89.0GHz-B	Observing channels of AMSR-E
AMSRBandWidth	6G-350MHz 10G-100MHz 18G-200MHz 23G-400MHz 36G-1000MHz 50.3G-0 52G-0 89GA-3000MHz 89GB-3000MHz	Bandwidth for each frequency
AMSRBeamWidth	6G-1.8deg 10G-1.2deg 18G-0.64deg 23G-0.75deg 36G-0.35deg 50.3G-0 52G-0 89GA-0.15deg 89GB-0.15deg	Beam width for each frequency
OffNadir	47.0deg : 89GB, 47.5deg : others	The off-nadir angle of 89 GHz A-horn and 89 GHz B-horn

Attribute Name	Sample Value	Definition
SpatialResolution(AzXEI)	6G-43.2kmX75.4km 10G-29.4kmX51.4km 18G-15.7kmX27.4km 23G-18.1kmX31.5km 36G-8.2kmX14.4km 50.3G- 52G- 89GA-3.7kmX6.5km 89GB-3.5kmX5.9km	Characteristic of AMSR-E
ScanningPeriod	1.5sec	Scanning period
SwathWidth	1450km	Swath width
DynamicRange	2.7K-340K	Dynamic range
DataFormatType	NCSA-HDF	AMSR-E Product Format Type
HDFFormatVersion	Ver4.2r4	Version number of HDF Format
EllipsoidName	WGS84	Earth ellipsoid name
SemiMajorAxisofEarth	6378.1km	Semi major axis of the earth
FlatteningRatioofEarth	0.00335	Flattening ratio of the earth
SensorAlignment	Rx=0.00000, Ry=0.00000, Rz=0.00000	Alignment values between Aqua body coordinate system and the AMSR-E coordinate system
ThermistorCountRangeWx	60 585 770 872 924 952 961 1023	Thermistor conversion table applied range
ThermistorConversionTableWa	0.000000 0.000015 0.000161 0.000618 0.002331 0.011459 0.010101 0.000000	Thermistor conversion coefficients Wa

Attribute Name	Sample Value	Definition
ThermistorConversionTableWb	0.000000 0.056460 -0.109878 -0.819170 -3.801865 -20.783040 -18.212120 0.000000	Thermistor conversion coefficients Wb
ThermistorConversionTableWc	-35.000000 -38.250000 9.220000 284.170000 1582.770000 9480.000000 8263.350000 90.000000	Thermistor conversion coefficients Wc
ThermistorConversionTableWd	0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000	Thermistor conversion coefficients Wd
Platinum#1CountRangeWx	1168 1296 1536 1752 4095	Platinum #1 Table applied range
Platinum#1ConversionTableWa	0.000000 0.000000 0.000000 0.000000 0.000000	Platinum #1 conversion coefficients Wa
Platinum#1ConversionTableWb	0.000000 0.039000 0.042000 0.039000 0.042000	Platinum #1 conversion coefficients Wb
Platinum#1ConversionTableWc	-35000000 -80.625000 -84.000000 -80.000000 -84.667000	Platinum #1 conversion coefficients Wc

Attribute Name	Sample Value	Definition
Platinum#1ConversionTableWd	0.000000 0.000000 0.000000 0.000000 0.000000	Platinum #1 conversion coefficients Wd
Platinum#2CountRangeWx	272 1536 1792 2032 2288 3248 3712 4095	Platinum #2 Table applied range
Platinum#2ConversionTableWa	0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000	Platinum #2 conversion coefficients Wa
Platinum#2ConversionTableWb	0.000000 0.078300 0.078000 0.083000 0.078000 0.083000 0.085300 0.000000	Platinum #2 conversion coefficients Wb
Platinum#2ConversionTableWc	-140.000000 -161.440000 -160.000000 -169.333000 -158.750000 -170.667000 -177.640000 140.000000	Platinum #2 conversion coefficients Wc
Platinum#2ConversionTableWd	0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000	Platinum #2 conversion coefficients Wd

Attribute Name	Sample Value	Definition
Platinum#3CountRangeWx	349 1454 2000 2555 3059 3566 4020 4095	Platinum #3 Table applied range
Platinum#3ConversionTableWa	0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000	Platinum #3 conversion coefficients Wa
Platinum#3ConversionTableWb	0.000000 0.009100 0.009100 0.009100 0.009900 0.009900 0.008500 0.000000	Platinum #3 conversion coefficients Wb
Platinum#3ConversionTableWc	10.000000 6.845000 6.803800 6.803800 4.719500 4.719500 9.835000 44.000000	Platinum #3 conversion coefficients Wc
Platinum#3ConversionTableWd	0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000 0.000000	Platinum #3 conversion coefficients Wd

Attribute Name	Sample Value	Definition
CoefficientAvv	6G-1.037 10G-1.032 18G-1.025 23G-1.0321 36G-1.029 50G-0.000 89GA-1.025 89GB-1.029	The conversion coefficient of the vertical co-polarization
CoefficientAhv	6G-0.003 10G-0.003 18G-0.003 23G-0.004 36G-0.004 50G-0.000 89GA-0.003 89GB-0.004	The conversion coefficient of the vertical cross-polarization
CoefficientAov	6G-0.034 10G-0.029 18G-0.022 23G-0.028 36G-0.024 50G-0.000 89GA-0.022 89GB-0.024	The coefficient of the deep space's brightness temperature of the vertical polarization
CoefficientAhh	6G-1.037 10G-1.031 18G-1.025 23G-1.034 36G-1.029 52G-0.000 89GZ-1.028 89GB-1.031	The conversion coefficient of the horizontal co-polarization
CoefficientAvh	6G-0.003 10G-0.002 18G-0.003 23G-0.006 36G-0.004 50G-0.000 89GA-0.006 89GB-0.006	The conversion coefficient of the horizontal cross-polarization

Attribute Name	Sample Value	Definition
CoefficientAoh	6G-0.034 10G-0.029 18G-0.022 23G-0.028 36G-0.024 52G-0.000 89GA-0.022 89GB-0.024	The coefficient of the deep space's brightness temperature of the horizontal polarization
CSM Temperature	6GV-2.800 6GH-2.800 10GV-2.800 10GH-2.800 18GV-2.800 18GH-2.800 23GV-2.800 23GH-2.800 36GV-2.800 36GH-2.800 50GV-0.000 52GV-0.000 89GAV-2.800 89GAH-2.800 89GBV-2.800 89GBH-2.800	The antenna temperature of deep space is stored for each frequency
CoRegistrationParameterA1	6G-1.15500 10G-0.85700 18G-0.81800 23G-0.80800 36G-0.72200 50G-0.00000	Co-registration parameter of the ex-ey plane
CoRegistrationParameterA2	6G-0.67800 10G-0.42900 18G-0.03100 23G-0.18500 36G-0.06900 50G-0.00000	Co-registration parameter of the ex-ez plane

Attribute Name	Sample Value	Definition
CalibrationCurveCoefficient#1	6GV--0.2099101 6GH--0.2054645 10GV--0.0580782 10GH--0.0103279 18GV--0.0853578 18GH--0.0435186 23GV--0.1288643 23GH--0.1288643 36GV--0.0475611 36GH--0.0536047 50GV-0.0000000 52GV-0.000000 89GAV--0.0278573 89GAH--0.0447590 89GBV--0.0273764 89GBH-0.0316265	Coefficient for 0-th order
CalibrationCurveCoefficient#2	6GV-1.0756783 6GH-1.0740756 10GV-1.0209393 10GH-1.0037236 18GV-1.0307711 18GH-1.0156885 23GV-1.0464586 23GH-1.0464586 36GV-1.0171470 36GH-1.0193259 50GV-0.0000000 52GV-0.0000000 89GAV-1.0100426 89GAH-1.0161356 89GBV-1.0098693 89GBH-1.0114014	Coefficient for 1st order

Attribute Name	Sample Value	Definition
CalibrationCurveCoefficient#3	6GV--0.0002537 6GH--0.0002483 10GV--0.0000704 10GH--0.0000125 18GV--0.0001022 18GH--0.0000522 23GV--0.0001556 23GH--0.0001556 36GV--0.0000575 36GH--0.0000648 50GV-0.0000000 52GV-0.000000 89GAV--0.0000334 89GAH--0.0000537 89GBV--0.0000329 89GBH-0.0000379	Coefficient for 2nd order
CalibrationCurveCoefficient#4	6GV-0.0000000 6GH-0.0000000 10GV-0.0000000 10GH-0.0000000 18GV-0.0000000 18GH-0.0000000 23GV-0.0000000 23GH-0.0000000 36GV-0.0000000 36GH-0.0000000 50GV-0.0000000 52GV-0.0000000 89GAV-0.0000000 89GAH-0.0000000 89GBV-0.0000000 89GBH-0.0000000	Coefficient for 3rd order

Attribute Name	Sample Value	Definition
CalibrationCurveCoefficient#5	6GV-0.0000000 6GH-0.0000000 10GV-0.0000000 10GH-0.0000000 18GV-0.0000000 18GH-0.0000000 23GV-0.0000000 23GH-0.0000000 36GV-0.0000000 36GH-0.0000000 50GV-0.0000000 52GV-0.0000000 89GAV-0.0000000 89GAH-0.0000000 89GBV-0.0000000 89GBH-0.0000000	Coefficient for 4-th order
CalibrationMethod	RxTemperatureReferenced SpillOver CSMInterpolation Absolute89GPositioning NonlinearityCorrection	When no calibration method is chosen, a blank is stored
HTSCorrectionParameterVersion	ver0002	Version of the parameter file used in order to calibrate the temperature of HTS
SpillOverParameterVersion	ver0001	Version of the parameter file used in order to calibrate the ground radiation mixed into the 6 GHz CSM data
CSMInterpolationParameterVersion	ver0001	Version of the parameter file used in order to calibrate the items for CSM data
Absolute89GPositioningParameterVersion	ver0002	Version of the parameter file used in order to correct the 89 GHz position information

APPENDIX B – LEVEL-1A DATA FIELDS

For more information on the data fields' format descriptions, see Aqua AMSR-E Level 1 Product Format Description document.

The following notations are used throughout this document:

- Double: 64-bit double-precision floating point
- Float32: 32-bit (4-byte) floating point
- Int8: 8-bit (1-byte) signed integer
- Int16: 16-bit (2-byte) signed integer
- Int32: 32-bit (4-byte) signed integer
- Uint8: 8-bit (1-byte) unsigned integer
- Uint16: 16-bit (2-byte) unsigned integer
- Uint16: 16-bit (2-byte) unsigned integer

Table A - 3. Level-1A Data Fields

Field	Type	Dimension Per Scan	Units	Scale Factor
Position_in_Orbit	Double	1		1
6GHz-V_Observation_Count_Data	Int16	243	count	1
6GHz-H_Observation_Count_Data	Int16	243	count	1
10.65GHz-V_Observation_Count_Data	Int16	243	count	1
10.65GHz-H_Observation_Count_Data	Int16	243	count	1
18.7GHz-V_Observation_Count_Data	Int16	243	count	1
18.7GHz-H_Observation_Count_Data	Int16	243	count	1
23.8GHz-V_Observation_Count_Data	Int16	243	count	1
23.8GHz-H_Observation_Count_Data	Int16	243	count	1
36.5GHz-V_Observation_Count_Data	Int16	243	count	1
36.5GHz-H_Observation_Count_Data	Int16	243	count	1
50.3GHz-V_Observation_Count_Data	Int16	243	count	1
52.8GHz-V_Observation_Count_Data	Int16	243	count	1
89.0GHz-V-A_Observation_Count_Data	Int16	486	counts	1
89.0GHz-H-A_Observation_Count_Data	Int16	486	counts	1
89.0GHz-V-B_Observation_Count_Data	Int16	486	counts	1
89.0GHz-H-B_Observation_Count_Data	Int16	486	counts	1
Hot_Load_Count_6_to_52	Int16	16 x 12	count	1
Hot_Load_Count_89	Int16	32 x 4	count	1
Cold_Sky_Mirror_Count_6_to_52	Int16	16 x 12	count	1

Field	Type	Dimension Per Scan	Units	Scale Factor
Cold_Sky_Mirror_Count_89	Int16	32 x 4	count	1
Antenna_Temp_Coef(Of+Sl)	Float32	32	K+K/count	1
Rx_Offset/Gain_Count	Uint16	32	count	1
Navigation_Data	Float32	6	m, m/s	1
Attitude_Data	Float32	3	deg	1
Lat_of_Observation_Point_Except_89B	Int16	486	deg	0.01
Long_of_Observation_Point_Except_89B	Int16	486	deg	0.01
Lat_of_Observation_Point_for_89B	Int16	486	deg	0.01
Long_of_Observation_Point_for_89B	Int16	486	deg	0.01
Sun_Azimuth	Int16	243	deg	0.1
Sun_Elevation	Int16	243	deg	0.1
Earth_Incidence	Int8	243	deg	0.02 with offset of 55°
Earth_Azimuth	Int8	243	deg	0.01
Land/Ocean_Flag_for_6_10_18_23_36_50_89A	Uint8	243 x 7	percent	1
Observation_Supplement	Uint16	27		1
SPC_Temperature_Count	Int16	20	count	1
SPS_Temperature_Count	Int16	32	count	1
Data_Quality	Float32	128		1
Interpolation_Flag_6_to_52	Int8	16 x 12		1
Interpolation_Flag_89	Int8	32 x 4		1
Spill_Over	Float32	243 x 200 x 2	mV	1
Scan_Time	Double	1	TAI93 (seconds since midnight, 01 January 1993)	N/A