

# **MWR L3 Product HDF5 Data Format Reference**

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## 1 Description of Hdf5 Global Metadata Attributes

### 1.1 Group '/'

Root group for the product.

- **hdf5\_especification\_filename**

**description:** Filename of the .xml hdf5 estructure especification file from which this product was created.

**default value:** mwr\_l3\_hdf5\_esp.1\_0.xml

**datatype:** string

### 1.2 Group 'Global Metadata/Level 3'

Information specific to Level 3

- **L3 Period**

**description:** Specified nominal duration for this L3

**datatype:** string

- **Number of L2 Orbits included in this L3 product**

**description:** Number of L2 Orbits included in this L3 product

**datatype:** string

- **Reference End Time for L3 Data**

**description:** UTC time tag used as reference end time for L3 data. All included L2 orbits ends before this datetime.

**datatype:** string

- **Reference Start Time for L3 Data**

**description:** UTC time tag used as reference start time for L3 data. All included L2 orbits starts after this datetime.

**datatype:** string

### 1.3 Group 'Global Metadata/Mission'

Information related to the mission.

- **Name**

**description:** Full name for the mission associated to this product.

**default value:** SAC-D Aquarius

**datatype:** string

## 1.4 Group 'Global Metadata/Platform'

Information related to the platform.

- **Name**

**description:** Full name of the spacecraft platform associated to this product.

**default value:** SAC-D

**datatype:** string

- **Reference Time**

**description:** Main reference time system used in relation with platform information.

**default value:** GPS

**datatype:** string

## 1.5 Group 'Global Metadata/Platform/Orbit'

Information related to the orbit of the platform.

- **Mean Argument Perigee Degrees**

**description:** Mean Argument of Perigee for the orbit of the platform associated to the product

**default value:** 90.0

**datatype:** 4 bytes IEEE floating point

- **Mean Eccentricity**

**description:** Mean Eccentricity for the orbit of the platform associated to the product

**default value:** 0.0012

**datatype:** 4 bytes IEEE floating point

- **Mean Equatorial Altitude Km**

**description:** Mean Altitude, when crossing above the equator, for the orbit of the platform associated to the product

**default value:** 657.0

**datatype:** 4 bytes IEEE floating point

- **Mean Inclination Degrees**

**description:** Mean Inclination for the orbit of the platform associated to the product

**default value:** 98.01

**datatype:** 4 bytes IEEE floating point

- **Mean Local Time of ascending Node**

**description:** Mean Local Time of Ascending Node for the orbit of the platform associated to the product

**default value:** 06:00 PM

**datatype:** string

- **Mean Period Min**

**description:** Mean minutes required by the platform in order to complete a revolution.

**default value:** 98.0

**datatype:** 4 bytes IEEE floating point

- **Mean SemiMajor Axis Km**

**description:** Mean Semimajor Axis for the orbit of the platform associated to the product

**default value:** 7028.87

**datatype:** 4 bytes IEEE floating point

- **Revisit Cycle Days**

**description:** Number of days needed by the platform in order to pass above the same point in earth.

**default value:** 7

**datatype:** 1 byte signed integer

- **Revisit Cycle Revolutions**

**description:** Number of revolutions needed by the platform in order to pass above the same point in earth.

**default value:** 103

**datatype:** 1 byte unsigned integer

- **Type**

**description:** Description of the main characteristics of the orbit of the platform associated to the product

**default value:** Frozen, Almost circular, Dawn-Dusk, Sun Synchronous

**datatype:** string

## 1.6 Group 'Global Metadata/Product'

Information related to the product contents.

- **Data Format**

**description:** Base product data format.

**default value:** NCSA-HDF5

**datatype:** string

- **Data Format Version**

**description:** Base product data format version.

**datatype:** string

- **Data Type**

**description:** Identifies the kind of data present in the product. One of IC ...

**datatype:** string

- **Geometric Tables Update Id**

**description:** Update Id of Geometric Calibration Tables used to generate this product

**datatype:** string

- **Geophysical Retrieval Tables Update Id**

**description:** Update Id of Geophysical Retrieval Calibration Tables used to generate this product

**datatype:** string

- **Level**

**description:** Indication of the production level.

**default value:** L3

**datatype:** string

- **Level Version**

**description:** Version number for the level of this product.

**default value:** 1.0

**datatype:** string

- **Name**

**description:** Full name of the product, used also in file names. Format: EO\_YYYYMMDD.HHMMSS\_SERVICE\_SPACECRAFT\_SENSOR\_LEVEL\_PERIOD\_DATA.SUBTYPE\_VERSION. Where time info refers to UTC time tag associated to the start of the period, SERVICE is Production Service Id, SPACECRAFT is Platform Name, SENSOR is Sensor Name, LEVEL is Product Level, PERIOD refers to time period contained in product (W=Week, M=Month), DATA is Product Data Type (especific geophysical variables), ORBIT is mwr reference number inside orbit cycle, SUBTYPE is particular subtype id assigned inside the Product Level, VERSION is the production system update id.

**datatype:** string

- **Production System Update Id**

**description:** Update Id of the Production System. Incremented when there are changes relevant to the end user: calibration tables, data format, or algorithms.

**datatype:** string

- **Radiometric Tables Update Id**

**description:** Update Id of Radiometric Calibration Tables used to generate this product

**datatype:** string

- **Reference Coordinate System**

**description:** Reference coordinate system used to generate geographical information for this product.

**default value:** J2000

**datatype:** string

- **Reference Datum**

**description:** Reference datum used to generate geographical information for this product.

**default value:** WGS84

**datatype:** string

- **Title**

**description:** Identifies Sensor Name, and Product Level.

**default value:** MWR Level-3 Data

**datatype:** string

## 1.7 Group 'Global Metadata/Product/Stats'

Statistics for the product contents.

- **Number of MWR Sea Ice Concentration L3 Values**  
**description:** Number of Sea Ice Concentration L3 Values  
**datatype:** 4 bytes unsigned integer

## 1.8 Group 'Global Metadata/Production'

Information related to the production activity.

- **Agency Id**  
**description:** Identification of space agency that generated this product  
**datatype:** string
- **Center**  
**description:** Identification of the facility and agency that generated this product.  
**datatype:** string
- **Center Reference Time**  
**description:** Main reference time system used in the results of the production.  
**default value:** UTC  
**datatype:** string
- **Contact Organization Name**  
**description:** Address of the Production Center  
**datatype:** string
- **Control Parameters**  
**description:** Command line arguments of the program used to generate this product.  
**datatype:** string
- **Country Id**  
**description:** Identification of the country the space agency that generated this product belongs to.  
**datatype:** string
- **Facility Id**  
**description:** Identification of the facility inside the space agency that generated this product.  
**datatype:** string
- **Input Files**  
**description:** List of input files used to generate this product.  
**datatype:** string

- **Service Id**

**description:** Identification of the service inside the space agency that generated this product.

**datatype:** string

- **Start Time UTC**

**description:** UTC time tag for the start of the generation of this product.

**datatype:** string

## 1.9 Group 'Global Metadata/Sensor'

Information related to the sensor.

- **BeamWidth Degrees**

**description:** Length in degrees of the beam received by a horn.

**default value:** 1.7

**datatype:** 4 bytes IEEE floating point

- **Frequency Bands**

**description:** List of frequency bands of the sensor.

**default value:** 23.8 GHz (K) - 36.5 GHz (Ka)

**datatype:** string

- **K Band BandWidth MHz**

**description:** Measured bandwidth around the central frequency for the K band H polarization

**default value:** 400.0

**datatype:** 4 bytes IEEE floating point

- **Ka Band BandWidth MHz**

**description:** Measured bandwidth around the central frequency for the Ka band at all polarizations

**default value:** 1000.0

**datatype:** 4 bytes IEEE floating point

- **Name**

**description:** Name of the sensor.

**default value:** MWR

**datatype:** string

- **Number of beams per channel**

**description:** Number of beams/horns per channel

**default value:** 8

**datatype:** 1 byte unsigned integer

- **Number of channels**

**description:** Number of channels measured by the sensor

**default value:** 5

**datatype:** 1 byte unsigned integer



- **Off Nadir Pointing Degrees**

**description:** Off nadir central pointing for each band.

**default value:** 23.8 GHz 47.95El/143.73Az - 36.5 GHz 47.95El/36.27Az

**datatype:** string

- **Polarizations**

**description:** List of all central frequencies and associated polarizations.

**default value:** 23.8 GHz H - 36.5 GHz H - 36.5 GHz V - 36.5 GHz +45 - 36.5 GHz -45

**datatype:** string

- **Spatial Resolution Km**

**description:** Length of the footprint of a horn at the earth surface.

**default value:** 54.23

**datatype:** 4 bytes IEEE floating point

- **Swath Width Km**

**description:** Total distance covered at the earth surface by the 8 horns of a band and polarization pair.

**default value:** 367.89

**datatype:** 4 bytes IEEE floating point

## 1.10 Group 'Global Metadata/Software'

Information related to the software used to generate the product.

- **Name**

**description:** Name of the software that generated this product

**datatype:** string

- **Release**

**description:** Configuration control release name of the software that generated this product

**datatype:** string

- **Version**

**description:** Version of the software that generated this product

**datatype:** string

## 2 Description of Hdf5 Datasets

### 2.1 Group 'Geolocation Data'

Contains geodesic grid info for L3 data

#### Datasets

- **geodesic\_grid\_coast\_distance**  
**description:** Distance to coast id for geodesic grid cell.  
**valid values:** [1=coast, 2,...,8=incrementally far from coast, 9=ocean]  
**datatype:** 1 byte unsigned integer  
**size:** Number of MWR Sea Ice Concentration L3 Values
- **geodesic\_grid\_index**  
**description:** Geodesic grid index associated to L3 data.  
**valid values:** [-1,0,...,655362]  
**datatype:** 4 bytes signed integer  
**size:** Number of MWR Sea Ice Concentration L3 Values
- **geodesic\_grid\_latitude**  
**description:** Latitude of geodesic grid cell.  
**units:** degrees  
**valid values:** [-90,...,90]  
**datatype:** 4 bytes IEEE floating point  
**size:** Number of MWR Sea Ice Concentration L3 Values
- **geodesic\_grid\_longitude**  
**description:** Longitude of geodesic grid cell.  
**units:** degrees  
**valid values:** [-180,...,180]  
**datatype:** 4 bytes IEEE floating point  
**size:** Number of MWR Sea Ice Concentration L3 Values

### 2.2 Group 'Level 3 Data'

Contains L3 data derived from L2 products

#### Datasets

- **sea\_ice\_concentration\_l2\_count**  
**description:** MWR Sea Ice Concentration L3 number of l2 values belonging to the geodesic grid cell and the detime period  
**valid values:** [0,...,]  
**datatype:** 4 bytes unsigned integer  
**size:** Number of MWR Sea Ice Concentration L3 Values
- **sea\_ice\_concentration\_mean**  
**description:** MWR Sea Ice Concentration L3 mean of values belonging to the geodesic grid cell and the detime period

**units:** percent  
**valid values:** [0,...,100]  
**datatype:** 4 bytes IEEE floating point  
**size:** Number of MWR Sea Ice Concentration L3 Values

- **sea\_ice\_concentration\_mode**

**description:** MWR Sea Ice Concentration L3 mode (most frequent value) of values belonging to the geodesic grid cell and the detime period  
**units:** percent  
**valid values:** [0,...,100]  
**datatype:** 4 bytes IEEE floating point  
**size:** Number of MWR Sea Ice Concentration L3 Values

- **sea\_ice\_concentration\_stdev**

**description:** MWR Sea Ice Concentration L3 standard deviation of values belonging to the geodesic grid cell and the detime period  
**units:** percent  
**valid values:** [0,...,100]  
**datatype:** 4 bytes IEEE floating point  
**size:** Number of MWR Sea Ice Concentration L3 Values