

# Additional Attributes

- [Element Description](#)
- [Best Practices](#)
- [Element Specification](#)
- [Metadata Validation and QA/QC](#)
- [Dialect Mappings](#)
  - [DIF 10](#)
  - [ECHO 10](#)
  - [ISO 19115-2 MENDS](#)
  - [ISO 19115-2 SMAP](#)
- [UMM Migration](#)
- [History](#)
  - [UMM Versioning](#)
  - [ARC Documentation](#)

## Element Description

The Additional Attribute element is used to describe unique characteristics of the resource which extend beyond those defined in other metadata fields.

## Best Practices

The Additional Attributes metadata concept can be used to describe unique characteristics of a dataset beyond what is covered in the existing metadata model. For example: cloud cover, tile number, or acquisition mode could be provided as additional attributes, since there are no existing metadata fields for these particular characteristics in the Unified Metadata Model (UMM). All Additional Attributes **must** be defined in the collection level metadata and should also be provided in the granule level metadata. If an additional attribute in the granule level metadata has not been defined in the parent collection, then validation errors may occur.

There are twelve sub-elements that comprise Additional Attributes:

**Name:** The name/ label for the additional attribute. Providing a name is required.

**Description:** A free-text description of the additional attribute. Providing a description is required.

**Value:** The value of the additional attribute. Provide the value in the collection level record if it is the same for all granules in the collection. If the value of the additional attribute differs by granule, then leave the value field blank at the collection level (see below for examples).

**DataType:** The data type of the additional attribute value. Providing a data type is required. This is a controlled vocabulary field in UMM-Common with the following options: STRING, FLOAT, INT, BOOLEAN, DATE, TIME, DATETIME, DATE\_STRING, TIME\_STRING, DATETIME\_STRING

**Measurement Resolution:** The smallest unit increment to which the additional attribute value is measured. Providing a measurement resolution is optional.

**Parameter Range Begin:** The minimum value of the additional attribute over the whole collection. This only applies to attributes that are continuous in nature. Providing a parameter range begin is optional.

**Parameter Range End:** The maximum value of the additional attribute over the whole collection. This only applies to attributes that are continuous in nature. Providing a parameter range end is optional.

**Parameter Units Of Measure:** The standard unit of measurement for the additional attribute. For example: meters, hertz. Providing a parameter unit of measure is optional, but is highly recommended if the additional attribute value has an associated unit. Use of SI Base Units are recommended: <https://www.nist.gov/pml/weights-and-measures/metric-si/si-units>

**Parameter Value Accuracy:** An estimate of the accuracy of the values of the additional attribute. The accuracy must be specified as a percentage or the unit with which the parameter is measured. Providing a parameter value accuracy is optional.

**Value Accuracy Explanation:** Describes the method used for determining the parameter value accuracy. Providing a value accuracy explanation is optional.

**Group:** Identifies a namespace for the additional attribute name. Providing a group is optional.

**Update Date:** The date this additional attribute information was updated. Providing an update date is optional.

The Additional Attribute Value might be the same for all data in a collection, or it may vary. This results in 2 possible scenarios:

### Scenario 1

**The Additional Attribute value is the same for all data in the collection.** In this case, the additional attribute "Value" field should be populated in the collection level metadata. Populating the "Value" field at the collection level indicates that the value is the same for all granules in the collection. For example, if cloud cover is the same (let's say 50%) for the entire dataset, the metadata would look like this:

Example 1: Additional Attribute that is the same for all granules in a dataset. Note that the value field is populated at the collection level and that the value remains the same at the granule level.

| Collection Level Metadata                                                                                                                                                     | Granule Level Metadata file 1                                                   | Granule Level Metadata file 2                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <pre>"AdditionalAttributes": [ { "Name": "Cloud Cover", "Description": "Percent cloud cover", "Value": "50", "DataType": "INT", "ParameterUnitsOfMeasure": "Percent" },</pre> | <pre>"AdditionalAttributes": [ { "Name": "Cloud Cover", "Value": "50", },</pre> | <pre>"AdditionalAttributes": [ { "Name": "Cloud Cover", "Value": "50", },</pre> |

## Scenario 2

**The Additional Attribute value varies across the collection.** In this case, the additional attribute "Value" field should be left blank in the collection level metadata. Excluding the "Value" field at the collection level indicates that the value changes from granule to granule, and that the granule level metadata should be referenced to determine the value of the attribute for that particular data file. For example, if cloud cover varies across the dataset, the metadata would look like this:

Example 2: Additional Attribute that varies from granule to granule. Note that the value field is not provided at the collection level and that the value is different for each of the granules.

| Collection Level Metadata                                                                                                                                      | Granule Level Metadata file 1                                                   | Granule Level Metadata file 2                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| <pre>"AdditionalAttributes": [ { "Name": "Cloud Cover", "Description": "Percent cloud cover", "DataType": "INT", "ParameterUnitsOfMeasure": "Percent" },</pre> | <pre>"AdditionalAttributes": [ { "Name": "Cloud Cover", "Value": "30", },</pre> | <pre>"AdditionalAttributes": [ { "Name": "Cloud Cover", "Value": "73", },</pre> |

## Examples:

Name: "Polarization"

Description: "Transmit and receive polarization specification for the SAR file"

Value: "HV"

Data Type: "STRING"

Name: "Band Center Frequency"

Description: "Central transmission frequency of the instrument"

Data Type: "FLOAT"

ParameterUnitsOfMeasure: "GHz"

Name: "MODIS SIN TILE HORIZ"

Description: "The horizontal tile number of the MODIS sinusoidal tile grid"

Type: "INT"

ParameterRangeBegin: "0"

ParameterRangeEnd: "35"

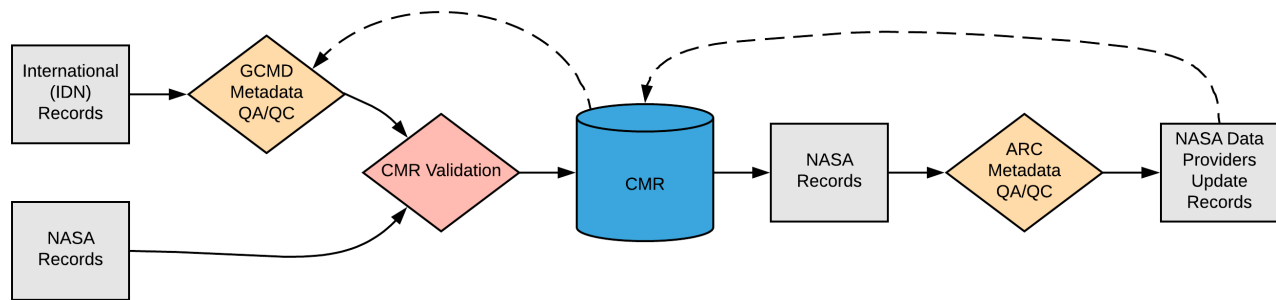
## Element Specification

Providing the Additional Attributes element is optional (Cardinality: 0..\*)

| Model | Element                                      | Type        | Constraints                                                                                                    | Required? | Cardinality | Notes                                                          |
|-------|----------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------|-----------|-------------|----------------------------------------------------------------|
| UMM-C | AdditionalAttribute/Name                     | String      | 1 - 50 characters                                                                                              | Yes       | 1           |                                                                |
| UMM-C | AdditionalAttribute/Description              | String      | 1 - 2048 characters                                                                                            | Yes       | 1           |                                                                |
| UMM-C | AdditionalAttribute/Value                    | String      | 1 - 500 characters                                                                                             | No        | 0..1        |                                                                |
| UMM-C | AdditionalAttribute/DataType                 | Enumeration | STRING<br>FLOAT<br>INT<br>BOOLEAN<br>DATE<br>TIME<br>DATETIME<br>DATE_STRING<br>TIME_STRING<br>DATETIME_STRING | Yes       | 1           |                                                                |
| UMM-C | AdditionalAttribute/MeasurementResolution    | String      | 1 - 80 characters                                                                                              | No        | 0..1        |                                                                |
| UMM-C | AdditionalAttribute/ParameterRangeBegin      | String      | 1 - 80 characters                                                                                              | No        | 0..1        |                                                                |
| UMM-C | AdditionalAttribute/ParameterRangeEnd        | String      | 1 - 80 characters                                                                                              | No        | 0..1        |                                                                |
| UMM-C | AdditionalAttribute/ParameterUnitsOfMeasure  | String      | 1 - 80 characters                                                                                              | No        | 0..1        |                                                                |
| UMM-C | AdditionalAttribute/ParameterValueAccuracy   | String      | 1 - 80 characters                                                                                              | No        | 0..1        |                                                                |
| UMM-C | AdditionalAttribute/ValueAccuracyExplanation | String      | 1 - 2048 characters                                                                                            | No        | 0..1        |                                                                |
| UMM-C | AdditionalAttribute/Group                    | String      | 1 - 50 characters                                                                                              | No        | 0..1        |                                                                |
| UMM-C | AdditionalAttribute/UpdateDate               | date-time   | N/A                                                                                                            | No        | 0..1        | Dates must comply with the <a href="#">ISO 8601 Standard</a> . |

## Metadata Validation and QA/QC

All metadata entering the CMR goes through the below process to ensure metadata quality requirements are met. All records undergo CMR validation before entering the system. The process of QA/QC is slightly different for NASA and non-NASA data providers. Non-NASA providers include interagency and international data providers and are referred to as the International Directory Network (IDN).



Please see the expandable sections below for flowchart details.

- Manual Review
  - Identify errors, discrepancies or omissions.
  - Proof all content for conciseness and readability.
- Automated Review
  - Checks that the field length is not greater than that established in the schema for each "Additional Attribute" sub-group.
  - Checks "DIF/Additional\_Attributes/DataType" for enumerations; "STRING", "FLOAT", "INT", "BOOLEAN", "DATE", "TIME", "DATETIME", "DATE\_STRING", "TIME\_STRING", "DATETIME\_STRING".

Checks to determine if string falls within maximum field lengths.

#### ARC Priority Matrix

| Priority Categorization          | Justification                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Red = High Priority Finding      | This element is categorized as highest priority when: <ul style="list-style-type: none"> <li>• Any Additional Attribute sub-element contains a major spelling or grammatical error.</li> <li>• An incorrect or invalid Additional Attribute/Data Type is provided.</li> <li>• An Additional Attribute is provided at the granule level that is not defined at the collection level.</li> </ul> |
| Yellow = Medium Priority Finding | This element is categorized as medium priority when: <ul style="list-style-type: none"> <li>• A recommendation is made to improve the readability and/or consistency of the Additional Attribute.</li> </ul>                                                                                                                                                                                   |
| Blue = Low Priority Finding      | This element is categorized as low priority when: <ul style="list-style-type: none"> <li>• The Additional Attribute contains a URL which needs to be updated from http to https.</li> <li>• Any other miscellaneous suggestions (minor in nature).</li> </ul>                                                                                                                                  |
| Green = No Findings/Issues       | The element is provided and follows all applicable criteria specified in the best practices section above.                                                                                                                                                                                                                                                                                     |

#### ARC Automated Checks

ARC uses the [pyQuARC library](#) for automated metadata checks. Please see the [pyQuARC GitHub](#) for more information.

## Dialect Mappings

**DIF 9** (Note: DIF-9 is being phased out and will no longer be supported after 2018)

### DIF 10

Providing the `Additional_Attributes` element is optional in DIF 10 (Cardinality: 0..\*)

DIF 10 also supports an element called `Extended_Metadata` which cross-walks to `Additional_Attributes` when being converted from DIF 10 to the UMM. Providing the `Extended_Metadata` element is optional (Cardinality: 0..\*).

| UMM-C Element             | DIF 10 Path                      | Type   | Constraints | Required in DIF 10? | Cardinality | Notes |
|---------------------------|----------------------------------|--------|-------------|---------------------|-------------|-------|
| AdditionalAttribute/Group | Extended_Metadata/Metadata/Group | String |             | No                  | 0..1        |       |

|                                              |                                                |        |  |     |      |                                                                                                                                                                                                                                                                                           |
|----------------------------------------------|------------------------------------------------|--------|--|-----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AdditionalAttribute/Name                     | Extended_Metadata/Metadata/Name                | String |  | Yes | 1    |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/DataType                 | Extended_Metadata/Metadata/Type                | String |  | No  | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/Description              | Extended_Metadata/Metadata/Description         | String |  | No  | 0..1 | "AdditionalAttribute/Description" is required by the UMM. If no description is provided in the extended metadata, a value of "Not provided" will automatically be populated in the "AdditionalAttribute/Description" field upon conversion from DIF 10 to the UMM-JSON metadata standard. |
| AdditionalAttribute/UpdateDate               | Extended_Metadata/Metadata/Update_Date         | String |  | No  | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/Value                    | Extended_Metadata/Metadata/Value               | String |  | No  | 0..* |                                                                                                                                                                                                                                                                                           |
| Additional_Attributes/Name                   | Additional_Attributes/Name                     | String |  | Yes | 1    |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/DataType                 | Additional_Attributes/DataType                 | String |  | Yes | 1    | This sub element "Path/Type" will change from "String" to "Enumeration" in future versions. The usable valid values for the enumeration will map to UMM-C (STRING, FLOAT, INT, BOOLEAN, DATE, TIME, DATETIME, DATE_STRING, TIME_STRING, DATETIME_STRING)                                  |
| AdditionalAttribute/Description              | Additional_Attributes/Description              | String |  | Yes | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/MeasurementResolution    | Additional_Attributes/MeasurementResolution    | String |  | No  | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/ParameterRangeBegin      | Additional_Attributes/ParameterRangeBegin      | String |  | Yes | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/ParameterRangeEnd        | Additional_Attributes/ParameterRangeEnd        | String |  | No  | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/ParameterUnitsOfMeasure  | Additional_Attributes/ParameterUnitsOfMeasure  | String |  | No  | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/ParameterValueAccuracy   | Additional_Attributes/ParameterValueAccuracy   | String |  | No  | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/ValueAccuracyExplanation | Additional_Attributes/ValueAccuracyExplanation | String |  | No  | 0..1 |                                                                                                                                                                                                                                                                                           |
| AdditionalAttribute/Value                    | Additional_Attributes/Value                    | String |  | No  | 0..1 |                                                                                                                                                                                                                                                                                           |

### Example Mapping

DIF 10

```

<Additional_Attributes>
  <Name>Geolocated</Name>
  <Description>Denotes whether the data is
geolocated.</Description>
  <DataType>STRING</DataType>
  <Value>False</Value>
</Additional_Attributes>
<Additional_Attributes>
  <Name>Laser Footprint</Name>
  <Description>The diameter of the laser beam that
reaches the ground.</Description>
  <DataType>FLOAT</DataType>
  <ParameterUnitsOfMeasure>Meters<
/ParameterUnitsOfMeasure>
</Additional_Attributes>
----- with -----
<Extended_Metadata>
  <Metadata>
    <Group>gov.nasa.gsfc.gc</Group>
    <Name>metadata.keyword_version</Name>
    <Value>8.1</Value>
  </Metadata>
  <Metadata>
    <Group>gov.nasa.gsfc.disc</Group>
    <Name>Data Granularity</Name>
    <Description>The time coverage of individual
data granules.</Description>
    <Value>1 day</Value>
  </Metadata>
</Extended_Metadata>

```

## UMM

```

"AdditionalAttributes": [
  {
    "Value": "False",
    "Name": "Geolocated",
    "Description": "Denotes whether the data is
geolocated.",
    "DataType": "STRING"
  },
  {
    "Name": "Laser Footprint",
    "Description": "The diameter of the laser beam
that reaches the ground.",
    "DataType": "FLOAT",
    "ParameterUnitsOfMeasure": "Meters"
  },
  {
    "Group": "gov.nasa.gsfc.gc",
    "Value": "8.1",
    "Name": "metadata.keyword_version",
    "Description": "Not provided"
  },
  {
    "Group": "gov.nasa.gsfc.disc",
    "Value": "1 day",
    "Name": "Data Granularity",
    "Description": "The time coverage of
individual data granules."
  }
]

```

## ECHO 10

Providing the Additional Attributes element is optional (Cardinality: 0..\*)

| UMM-C Element                                | ECHO 10 Path                                                      | Type        | Constraints                                                                                 | Required in ECHO10? | Cardinality |
|----------------------------------------------|-------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------------|---------------------|-------------|
| AdditionalAttribute/Name                     | AdditionalAttributes/AdditionalAttribute/Name                     | String      | 1 - 80 characters                                                                           | Yes                 | 1           |
| AdditionalAttribute/DataType                 | AdditionalAttributes/AdditionalAttribute/DataType                 | Enumeration | STRING<br>FLOAT<br>INT<br>BOOLEAN<br>DATE<br>TIME<br>DATETIME<br>DATE_STRING<br>TIME_STRING | Yes                 | 1           |
| AdditionalAttribute/Description              | AdditionalAttributes/AdditionalAttribute/Description              | String      | 1 - 2048 characters                                                                         | Yes                 | 1           |
| AdditionalAttribute/MeasurementResolution    | AdditionalAttributes/AdditionalAttribute/MeasurementResolution    | String      | 1 - 80 characters                                                                           | No                  | 0..1        |
| AdditionalAttribute/ParameterRangeBegin      | AdditionalAttributes/AdditionalAttribute/ParameterRangeBegin      | String      | 1 - 80 characters                                                                           | No                  | 0..1        |
| AdditionalAttribute/ParameterRangeEnd        | AdditionalAttributes/AdditionalAttribute/ParameterRangeEnd        | String      | 1 - 80 characters                                                                           | No                  | 0..1        |
| AdditionalAttribute/ParameterUnitsOfMeasure  | AdditionalAttributes/AdditionalAttribute/ParameterUnitsOfMeasure  | String      | 1 - 80 characters                                                                           | No                  | 0..1        |
| AdditionalAttribute/ParameterValueAccuracy   | AdditionalAttributes/AdditionalAttribute/ParameterValueAccuracy   | String      | 1 - 80 characters                                                                           | No                  | 0..1        |
| AdditionalAttribute/ValueAccuracyExplanation | AdditionalAttributes/AdditionalAttribute/ValueAccuracyExplanation | String      | 1 - 2048 characters                                                                         | No                  | 0..1        |
| AdditionalAttribute/Value                    | AdditionalAttributes/AdditionalAttribute/Value                    | String      | 1 - 500 characters                                                                          | No                  | 0..1        |

### Example Mapping

#### ECHO 10

```

<AdditionalAttributes>
  <AdditionalAttribute>
    <Name>Geolocated</Name>
    <DataType>STRING</DataType>
    <Description>Denotes whether the data is
geolocated.</Description>
    <Value>False</Value>
  </AdditionalAttribute>
  <AdditionalAttribute>
    <Name>Laser Footprint</Name>
    <DataType>FLOAT</DataType>
    <Description>The diameter of the laser beam that
reaches the ground.</Description>
    <ParameterUnitsOfMeasure>Meters<
/ParameterUnitsOfMeasure>
  </AdditionalAttribute>
</Additional_Attributes>

```

#### UMM

```

"AdditionalAttributes": [
  {
    "Value": "False",
    "Name": "Geolocated",
    "Description": "Denotes whether the data is
geolocated.",
    "DataType": "STRING"
  },
  {
    "Name": "Laser Footprint",
    "Description": "The diameter of the laser beam
that reaches the ground.",
    "DataType": "FLOAT",
    "ParameterUnitsOfMeasure": "Meters"
  }
]

```

## ISO 19115-2 MENDS

**Disclaimer:** ISO to UMM mapping for Additional Attributes subject to change

Providing the Additional Attributes element is optional (Cardinality: 0..\*)

If the additional attribute type is known it can be mapped to the correct section of ISO. Currently additional attributes are mapped to several sections within ISO depending on if the attribute is geographical, describes coverage, describes data quality, describes acquisition, or maps to a keyword.

| UMM-C Element                                 | ISO Path                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Type   |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Additional Attribute /Name                    | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/ eos:name/gco:CharacterString                                                                                                                                                                                                                                                                                                                                                                            | String |
| Additional Attribute /DataType                | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/ eos:dataType/eos:EOS_AdditionalAttributeDataTypeCode codeList=" <a href="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS_AdditionalAttributeDataTypeCode">http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS_AdditionalAttributeDataTypeCode</a> " codeListValue="*dataType*">*dataType*</eos:EOS_AdditionalAttributeDataTypeCode> where *dataType* = STRING,FLOAT,INT, etc. | String |
| Additional Attribute /Description             | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/eos:description/gco:CharacterString                                                                                                                                                                                                                                                                                                                                                                      | String |
| Additional Attribute /MeasurementResolution   | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/ eos:measurementResolution/gco:CharacterString                                                                                                                                                                                                                                                                                                                                                           | String |
| Additional Attribute /ParameterRangeBegin     | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/ eos:parameterRangeBegin/gco:CharacterString                                                                                                                                                                                                                                                                                                                                                             | String |
| Additional Attribute /ParameterRangeEnd       | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/ eos:parameterRangeEnd/gco:CharacterString                                                                                                                                                                                                                                                                                                                                                               | String |
| Additional Attribute /ParameterUnitsOfMeasure | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/ eos:parameterUnitsOfMeasure/gco:CharacterString                                                                                                                                                                                                                                                                                                                                                         | String |

|                                                |                                                                                                                                                                                                                                                                                                                                                           |        |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Additional Attribute /ParameterValueAccuracy   | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/ eos:parameterValueAccuracy/gco:CharacterString   | String |
| Additional Attribute /ValueAccuracyExplanation | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:reference/eos:EOS_AdditionalAttributeDescription/ eos:valueAccuracyExplanation/gco:CharacterString | String |
| Additional Attribute /Value                    | /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:DQ_DataQuality/gmd:lineage/gmd:LI_Lineage/gmd:processStep/gmi:LE_ProcessStep/gmi:processingInformation/ eos:EOS_Processing/eos:otherProperty/gco:Record/eos:AdditionalAttributes /eos:AdditionalAttribute/eos:value/gco:CharacterString                                                                          | String |

#### Example Mapping

ISO 19115-2 MENDS

```

<gmi:MI_Metadata>
...
  <gmd:dataQualityInfo>
    <gmd:DQ_DataQuality>
      <gmd:lineage>
        <gmd:LI_Lineage>
          <gmd:processStep>
            <gmi:LE_ProcessStep>
              <gmi:processingInformation>
                <eos:EOS_Processing>
                  <eos:otherProperty>
                    <gco:Record>
                      <eos:AdditionalAttributes>
                        <eos:AdditionalAttribute>
                          <eos:reference>
                            <eos:
EOS_AdditionalAttributeDescription>
                              <eos:name>
                                <gco:
CharacterString>Geolocated</gco:CharacterString>
                                  </eos:name>
                                  <eos:dataType>
                                    <eos:
EOS_AdditionalAttributeDataTypeCode codeList="
http://earthdata.nasa.gov/metadata/resources
/CodeLists.xml#EOS_AdditionalAttributeDataTypeCode"
codeListValue="STRING">STRING
                                      </eos:
EOS_AdditionalAttributeDataTypeCode>
                                      </eos:dataType>
                                      <eos:description>
                                        <gco:
CharacterString>Denotes whether the data is
geolocated.</gco:CharacterString>
                                          </eos:description>
                                          </eos:
EOS_AdditionalAttributeDescription>
                                          </eos:reference>
                                          <eos:value>
                                            <gco:CharacterString>False<
/gco:CharacterString>
                                              </eos:value>
                                              </eos:AdditionalAttribute>
                                              </eos:AdditionalAttributes>
                                              </gco:Record>
                                              </eos:otherProperty>
                                              </eos:EOS_Processing>
                                              </gmi:processingInformation>
                                              </gmi:LE_ProcessStep>
                                              </gmd:processStep>
                                              </gmd:LI_Lineage>
                                              </gmd:lineage>
                                              </gmd:DQ_DataQuality>
                                              </gmd:dataQualityInfo>
...
</gmi:MI_Metadata>

```

UMM

```

"AdditionalAttributes": [
  {
    "Value": "False",
    "Name": "Geolocated",
    "Description": "Denotes whether the data is
geolocated.",
    "DataType": "STRING"
  },
]

```

## ISO 19115-2 SMAP

**Disclaimer:** ISO to UMM mapping for Additional Attributes subject to change

Providing the Additional Attributes element is optional (Cardinality: 0..\*)

| UMM-C Element                                | ISO Path | Type   |
|----------------------------------------------|----------|--------|
| AdditionalAttribute/Name                     | TBD      | String |
| AdditionalAttribute/Name                     | TBD      | String |
| AdditionalAttribute/Type                     | TBD      | String |
| AdditionalAttribute/Identifier               | TBD      | String |
| AdditionalAttribute/DataType                 | TBD      | String |
| AdditionalAttribute/Description              | TBD      | String |
| AdditionalAttribute/MeasurementResolution    | TBD      | String |
| AdditionalAttribute/ParameterRangeBegin      | TBD      | String |
| AdditionalAttribute/ParameterRangeEnd        | TBD      | String |
| AdditionalAttribute/ParameterUnitsOfMeasure  | TBD      | String |
| AdditionalAttribute/ParameterValueAccuracy   | TBD      | String |
| AdditionalAttribute/ValueAccuracyExplanation | TBD      | String |

### Example Mapping

ISO 19115-2 SMAP

```

<gmd:DS_Series>
<gmd:seriesMetadata>
<gmi:MI_Metadata>
...
  <gmd:dataQualityInfo>
    <gmd:DQ_DataQuality>
      <gmd:lineage>
        <gmd:LI_Lineage>
          <gmd:processStep>
            <gmi:LE_ProcessStep>
              <gmi:processingInformation>
                <eos:EOS_Processing>
                  <eos:otherProperty>
                    <gco:Record>
                      <eos:AdditionalAttributes>
                        <eos:AdditionalAttribute>
                          <eos:reference>
                            <eos:
EOS_AdditionalAttributeDescription>
                              <eos:name>
                                <gco:
CharacterString>Geolocated</gco:CharacterString>
                                  </eos:name>
                                  <eos:dataType>
                                    <eos:
EOS_AdditionalAttributeDataTypeCode codeList="
http://earthdata.nasa.gov/metadata/resources
/CodeLists.xml#EOS_AdditionalAttributeDataTypeCode"
codeListValue="STRING">STRING
                                  </eos:
EOS_AdditionalAttributeDataTypeCode>
                                    </eos:dataType>
                                    <eos:description>
                                      <gco:
CharacterString>Denotes whether the data is
geolocated.</gco:CharacterString>
                                      </eos:description>
                                      </eos:
EOS_AdditionalAttributeDescription>
                                        </eos:reference>
                                        <eos:value>
                                          <gco:CharacterString>False<
/gco:CharacterString>
                                          </eos:value>
                                        </eos:AdditionalAttribute>
                                      </eos:AdditionalAttributes>
                                    </gco:Record>
                                  </eos:otherProperty>
                                </eos:EOS_Processing>
                              </gmi:processingInformation>
                            </gmi:LE_ProcessStep>
                          </gmd:processStep>
                        </gmd:LI_Lineage>
                      </gmd:lineage>
                    </gmd:DQ_DataQuality>
                  </gmd:dataQualityInfo>
                ...
              </gmi:MI_Metadata>
            </gmd:seriesMetadata>
          </gmd:DS_Series>

```

```

"AdditionalAttributes": [
  {
    "Value": "False",
    "Name": "Geolocated",
    "Description": "Denotes whether the data is
geolocated.",
    "DataType": "STRING"
  },
]

```

## UMM Migration

| UMM Version 1.9.0 | Translation Direction | UMM Version 1.10.0 |
|-------------------|-----------------------|--------------------|
|                   |                       |                    |

## History

### UMM Versioning

| Version | Date       | What Changed                                                                                                       |
|---------|------------|--------------------------------------------------------------------------------------------------------------------|
| 1.15.5  | 12/3/2020  | No changes were made for Additional Attributes during the transition from version 1.15.4 to 1.15.5                 |
| 1.15.4  | 9/18/2020  | No changes were made for Additional Attributes during the transition from version 1.15.3 to 1.15.4                 |
| 1.15.3  | 7/1/2020   | No changes were made for Additional Attributes during the transition from version 1.15.2 to 1.15.3                 |
| 1.15.2  | 5/20/2020  | No changes were made for Additional Attributes during the transition from version 1.15.1 to 1.15.2                 |
| 1.15.1  | 3/25/2020  | No changes were made for Additional Attributes during the transition from version 1.15.0 to 1.15.1                 |
| 1.15.0  | 2/26/2020  | No changes were made for Additional Attributes during the transition from version 1.14.0 to 1.15.0                 |
| 1.14.0  | 10/21/2019 | No changes were made for Additional Attributes during the transition from version 1.13.0 to 1.14.0                 |
| 1.13.0  | 04/11/2019 | No changes were made for Additional Attributes during the transition from version 1.12.0 to 1.13.0                 |
| 1.12.0  | 01/22/2019 | No changes were made for Additional Attributes during the transition from version 1.11.0 to 1.12.0.                |
| 1.11.0  | 11/28/2018 | No changes were made for Additional Attributes during the transition from version 1.10.0 to 1.11.0.                |
| 1.10.0  | 05/02/2018 | During the transition from version 1.9.0 to 1.10.0, the sub element 'AdditionalAttributesDataType' was enumerated. |
| 1.9.0   |            |                                                                                                                    |

## ARC Documentation

| Version | Date     | What Changed                                                                              | Author                                                                  |
|---------|----------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| 1.0     | 11/16/18 | Recommendations/priority matrix transferred from internal ARC documentation to wiki space | <a href="#">Jeanne' le Roux</a><br><a href="#">Ingrid Garcia-Solera</a> |