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**Appendix B. Metadata Requirements Base Reference for Unified Metadata Model Collections (UMM-C)**

**Appendix B. Metadata Requirements Base Reference  
for United Metadata Model Collections (UMM-C)**

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|  |  |  |
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**online at: /** **https://ops1-cm.ems.eosdis.nasa.gov/cm2/**

Preface

This document is under ESDIS Project configuration control. Once this document is approved, ESDIS approved changes are handled in accordance with Class I and Class II change control requirements described in the ESDIS Configuration Management Procedures. Changes to this document shall be verified by a document change notice (DCN) and implemented by change bars or by complete revision.

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Abstract

This document describes the Unified Metadata Model for Collections (UMM-C) to be used by the NASA Earth Science community. This model takes into account standards and specifications (Directory Interchange Format (DIF), Earth Observing System (EOS) Clearing House (ECHO) 10, ISO 19115-2, and ISO 19115-1) used by this community. Implementers of ESDIS CMR, its clients, and data providers should reference this document and the Unified Metadata Model (UMM) as a guide while implementing the system, its clients, or generating metadata.

***Keywords: UMM-C, UMM-Common, UMM-S, UMM-Var, UMM-G, Collections, NASA Earthdata Search, EOSDIS, ESDIS, CMR***

Change History Log

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| V1.0 | June 2014 | Provisional Release. |
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# B.1 Introduction

## B.1.1 Purpose

Earth Observing System Data and Information System (EOSDIS) generates, archives, and distributes enormous amounts of Earth Science data via its Distributed Active Archive Centers (DAACs). These data are accessed and employed by a broad user community. It is therefore imperative that reliable, consistent, and high-quality metadata be maintained in order to enable accurate cataloging, discovery, accessibility, and interpretation. To increase the level of quality and consistency among its metadata holdings, EOSDIS has developed a model for various metadata concepts that it archives and maintains. This model aims to document vital elements that may be represented across various metadata formats and standards and unify them through core fields useful for data discovery and service invocations. This unified model, aptly named the Unified Metadata Model (UMM), has been developed as part of the EOSDIS Metadata Architecture Studies (MAS I and II) conducted between 2012 and 2013.

The UMM will be used by the Common Metadata Repository (CMR) and will drive search and retrieval of metadata cataloged within that system.

This document is intended to serve as a reference profile – a part of the UMM model - for geospatial science metadata for collections. This reference profile is referred to as the UMM-C, where 'C' indicates that this is the collection profile. The UMM-C attempts to unify several metadata specifications (Directory Interchange Format (DIF) 9, DIF 10, Earth Observing System (EOS) Clearing House (ECHO) 10, ESDIS Metrics System **(**EMS), International Organization for Standardization (ISO) 19115-2:2009, and ISO 19115-1:2014). The profile breaks down collections into elements or classes closely aligned to the ISO 19115-\* Geographic Information Metadata schemas. Links to more information about the standards and specifications used in this document can be found in the [related documentation](#_Related_Documentation) section.

For each element, this document provides: a description, analysis, and set of associated tags; specification of any conflicts that were identified by the unification process; and a discussion of applicable recommendations. The set of associated tags can be used to understand various aspects of the field. Some fields are identified as being part of a controlled vocabulary providing a uniform way of classifying and describing all EOSDIS metadata. A reconciliation process will be developed to handle any conflicts specified by the unification process and the details will be developed on a provider-by-provider basis.

This document provides information to the National Aeronautics and Space Administration (NASA) Earth Science community. Distribution is unlimited.

## B.1.2 Scope

This document describes the UMM Collection (UMM-C) model.

## B.1.3 Impact

This document outlines a profile intended to be backward compatible with existing NASA Earth Science metadata implementations. It will impact providers from NASA DAACs, CMR client developers, metadata catalog developers, and users.

## B.1.4 Copyright Notice

The contents of this document are not protected by copyright in the United States and may be used without obtaining permission from NASA.

## B.1.5 Feedback

Questions, comments and recommendations concerning this model should be directed to [support@earthdata.nasa.gov](mailto:support@earthdata.nasa.gov)

## B.1.6 Document Conventions

Each section of this document describes an element of the model and includes the following components:

* Element Name: Specifies the element name.
* Element Specification: Provides the sub-elements, cardinality of the sub-elements, and any other major factors that make up the element.
* Description: Provides background information on the purpose of the element and its intended use. Furthermore, any information about the element's current usage, recommendations for usage, or unresolved issues is also documented here.
* Cardinality: Indicates the expectation of counts for this element, summarized in Table B.1-1:
* Tags: Provide specific, related categorical values associated with this element, which are defined in Appendix B: Tags Glossary.
* Analysis: Provides information pertaining to legacy systems and if data is controlled within those systems.
* Sample Mapping: Gives an XPath mapping for this element in DIF 9, DIF 10, ECHO 10, ISO 19115-2 (MENDS), ISO 19115-1, and EMS Extendable Markup Language (XML) representations. This can be considered as the "crosswalk" for this element. For links to more information on Xpaths please see the [related documentation](#_Related_Documentation_1) section.
* Examples: XML snippets from "cross-walked" data formats documenting sample values for the element. Whenever possible, a URL to the specific service used for the metadata snippet is provided.
* Recommendations: Provides any future recommendations for the element.

Table B‑1. Cardinality

|  |  |
| --- | --- |
| **Value** | Description |
| **1** | Exactly one of this element is required. |
| **0..N** | Optionally, up to and including N number of this element may be present. |
| **0..\*** | Optionally, any number of this element may be present. |
| **1..\*** | At least one of this element is required, any number may be present. |

Unified Modeling Language (UML) class diagrams and element lists are provided for each subcomponent of the model. The [R] after an element name indicates that the element is required.

## B.1.7 Related Documentation

There is a document that fully describes metadata elements that are used in multiple models. This document, the UMM-Common (https://wiki.earthdata.nasa.gov/display/CMR/CMR+Documents) is documented separately. The Collection model makes multiple references to the UMM-Common throughout.

The ISO 19115-2 and ISO 19115-1 mapping paths and extracts of XML encoding of this standard used in this document are derived from the NASA Best Practices ISO translation from ECHO to 19115-2 and a similar ECHO to ISO 19115-1 translation. The translation files can be found online at this site: https://cdn.earthdata.nasa.gov/iso/resources/transforms. These translations resulted from efforts of the group assembled for the Metadata Evolution for NASA Data Systems (MENDS). More information on the Base Metadata Requirements established by the MENDS group can be found online at: https://wiki.earthdata.nasa.gov/display/NASAISO/NASA+Base+Metadata+Requirements.

The latest versions of all documents below should be used. The latest ESDIS Project documents can be obtained from URL: <https://ops1-cm.ems.eosdis.nasa.gov>. ESDIS documents have a document number starting with either 423 or 505. Other documents are available for reference in the ESDIS project library website at: <http://esdisfmp01.gsfc.nasa.gov/esdis_lib/default.php> unless indicated otherwise.

### B.1.7.1 Applicable Documents

The following documents are referenced within or are directly applicable, or contain policies or other directive matters that are binding upon the content of this document.

|  |  |
| --- | --- |
| 423-RQMT-003 | Metadata Requirements – Base Reference for NASA Earth Science Data Products |
| CMR Life Cycle | https://wiki.earthdata.nasa.gov/display/CMR/CMR+Documents |
| UMM-Common | https://wiki.earthdata.nasa.gov/display/CMR/CMR+Documents |
| DIF 9 | https://gcmd.nasa.gov/Aboutus/xml/dif/dif.xsd  https://gcmd.nasa.gov/add/difguide/index.html |
| DIF 10 | https://gcmd.gsfc.nasa.gov/Aboutus/xml/dif/dif\_v10.2.xsd  https://gcmd.gsfc.nasa.gov/DocumentBuilder/defaultDif10/guide/index.html |
| ECHO 10 | https://wiki.earthdata.nasa.gov/display/echo/Earth+Observing+System+Clearing+House+-+ECHO |
| SERF | https://gcmd.nasa.gov/Aboutus/xml/serf/serf.xsd  https://gcmd.nasa.gov/add/serfguide/index.html |
| ISO 19115-2 (MENDS) | http://www.iso.org/iso/catalogue\_detail.htm?csnumber=39229  https://cdn.earthdata.nasa.gov/iso/ |
| ISO 19115-1 | https://github.com/ISO-TC211/XML |

### B.1.7.2 Reference Documents

The following documents are not binding on the content but referenced herein and, amplify or clarify the information presented in this document.

|  |  |
| --- | --- |
| Tags | http://en.wikipedia.org/wiki/Tag\_%28metadata%29 |
| Translators | Translators to ISO can be found at https://cdn.earthdata.nasa.gov/iso/resources/transforms/ |
| XPath | XPath is a language for addressing parts of an XML document, designed for use with XSLT. |
| XLinks | http://en.wikipedia.org/wiki/XLink |
| MENDS | More information on the Base Metadata Requirements established by the MENDS group: https://wiki.earthdata.nasa.gov/display/NASAISO/NASA+Base+Metadata+Requirements  http://www.w3schools.com/schema/el\_choice.asp |

# B.2 Collection Metadata Conceptual Model

As shown in Figure B.2-1, the model has been organized into seven subsections that group related model elements. Each of these subsections and its constituent elements is documented individually.

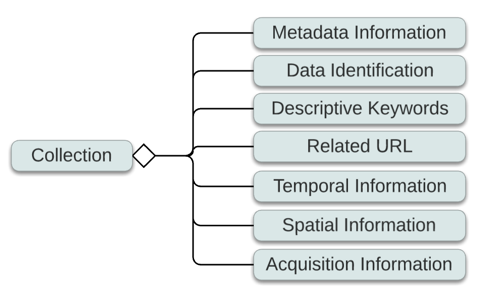


Figure B‑1. Overall Collection Model

## B.2.1 Metadata Information



Figure B‑2. Metadata Information

### B.2.1.1 Metadata Language

This field is only part of ISO 19115. See UMM-Common Metadata Language element for full documentation and examples.

**Tags**

*Controlled Vocabulary, Faceted, Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | N/A |
| DIF 10 | N/A |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:language/gco:CharacterString  with  /gmi:MI\_Metadata/gmd:MD\_CharacterSetCode codeList="http://www.ngdc.noaa.gov  /metadata/published/xsd/schema/resources  /Codelist/gmxCodelists.xml#MD\_CharacterSetCode"  codeListValue= |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:defaultLocale/lan:PT\_Locale/lan:language/lan:LanguageCode  /@codeList="codeListLocation#LanguageCode"  @codeListValue=  with  /mdb:MD\_Metadata/mdb:defaultLocale/lan:PT\_Locale/lan:characterEncoding  /lan:MD\_CharacterSetCode/@codeList="codeListLocation#MD\_CharacterSetCode"  @codeListValue= |
| EMS | N/A |

### B.2.1.2 Metadata Date

This includes any metadata related dates. See UMM-Common Metadata Date element for full documentation and examples.

**Tags**

*Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/DIF\_Creation\_Date  /DIF/Last\_DIF\_Revision\_Date |
| DIF 10 | /DIF/Metadata\_Dates/Metadata\_Creation  /DIF/Metadata\_Dates/Metadata\_Last\_Revision  /DIF/Metadata\_Dates/Metadata\_Future\_Review  /DIF/Metadata\_Dates/Metadata\_Delete |
| ECHO 10 Collection | /Collection/RevisionDate |
| ISO 19115-2 | |  |  | | --- | --- | | /gmi:MI\_Metadata/datestamp | This element can be populated, but not used by the UMM. This element does not contain a date type and therefore it is not known what date is represented by this element. It will be populated with Update Date if it exists. If not it will be populated with Create Date if it exists. |   /gmi:MI\_Metadata/gmd:metadataExtensionInfo/gmd:MD\_MetadataExtensionInformation  /gmd:extendedElementInformation/gmd:MD\_ExtendedElementInformation/gmd:name  /gco:CharacterString=<Metadata Create Date, Metadata Update Date, Metadata Future Review Date, Metadata Delete Date>  with  .../gmd:definition/gco:CharacterString=<Create Date, Update Date, Future Review Date, Delete Date>  .../gmd:dataType/gmd:MD\_DatatypeCode codeList="" codeListValue="" = Date  .../gmd:domainValue/gco:CharacterString= {the actual date} |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:dateInfo/cit:CI\_Date/cit:date/gco:DateTime  /mdb:MD\_Metadata/mdb:dateInfo/cit:CI\_Date/cit:dateType/cit:CI\_DateTypeCode @codeList="codeListLocation#CI\_DateTypeCode" @codeListValue= |
| EMS | N/A |

### B.2.1.3 Directory Name

**Element Specification**

DirectoryName

**Description**

Formerly called Internal Directory Name (IDN) Node (IDN\_Node). This element has been used historically by the Global Change Master Directory (GCMD) internally to identify association, responsibility and/or ownership of the dataset, service or supplemental information. This element uses controlled vocabulary through the GCMD keyword management system and the valid values can be found online at: http://gcmdservices.gsfc.nasa.gov/kms/concepts/concept\_scheme/idnnode. The use of this element is discouraged as it will be deprecated sometime in the future.

*Note: This field only occurs in the DIF. When a DIF record is retrieved in the ECHO10 or ISO 19115 formats, this element will not be translated.*

**Cardinality**

0..\*

**Tags**

*Controlled Vocabulary, Search* Application Processor Identifier *(API)*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/IDN\_Node |
| DIF 10 | /DIF/IDN\_Node |

**Examples**

DIF 9, DIF 10

|  |
| --- |
| <IDN\_Node uuid="edff0791-121c-40aa-adf2-33feb2bc30e5">  <Short\_Name>CEOS</Short\_Name> </IDN\_Node> <IDN\_Node uuid="b131a9e2-e994-41e2-9f61-afcf215f6c39">  <Short\_Name>GERMANY/GFZ</Short\_Name> </IDN\_Node> |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov/search/concepts/C1214586614-SCIOPS

DIF 10 - Since it has the same schema, the DIF 9 example is used.

## B.2.2 Data Identification

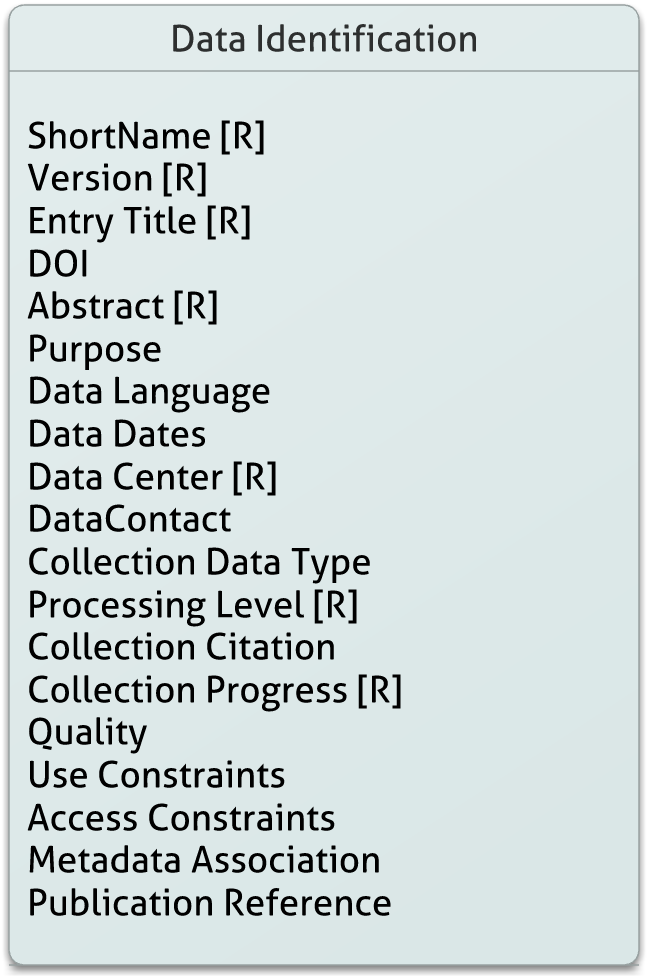
​

Figure B.0‑3. Data Identification

### B.2.2.1 ShortName [R]

**Element Specification**

ShortName (1)

**Description**

This element describes the collection short name. The short name and version id combination must be unique across the CMR.

*Note:* The short name should not be the same as the DOI.

**Cardinality**

1

**Tags**

*Required, Free Text Search, Parameter Search*

**Analysis**

The metadata author or data center contact personnel determine the Entry ID for the GCMD DIF 9 specification. The Entry ID may be identical to identifiers used by the data provider's data center or organization. For ECHO 10 and DIF 10, the data providers supply both ShortName and Version of the product, which combined, uniquely identify the metadata record. EMS has an element called Product provided by the data providers, which refers to a product identifier and is equivalent to the ShortName.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Entry\_ID |
| DIF 10 | /DIF/Short\_Name |
| ECHO 10 Collection | /Collection/ShortName |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:citation  /gmd:CI\_Citation/gmd:identifier/gmd:MD\_Identifier/gmd:code/gco:CharacterString |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/cit:identifier/mcc:MD\_Identifier/mcc:code/gco:CharacterString |
| EMS | Product |

**Examples**

DIF 9

|  |
| --- |
| <Entry\_ID>GLCF\_GLC\_1km</Entry\_ID> |

DIF 10

|  |
| --- |
| <Entry\_ID>  <Short\_Name>MYBARS</Short\_Name>  <Version>5</Version>  </Entry\_ID> |

ECHO 10 Collection

|  |
| --- |
| <Collection>  <ShortName>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD</ShortName>  ...  </Collection> |

ISO 19115-2

|  |
| --- |
| <gmi:MI\_Metadata>  <gmd:identificationInfo>  <gmd:MD\_DataIdentification>  <gmd:citation>  <gmd:CI\_Citation>  <gmd:identifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD</gco:CharacterString>  </gmd:code>  <gmd:description>  CIESIN\_CHRR\_NDH\_CYCLONE\_HFD &gt; Global Cyclone Hazard Frequency and Distribution  </gmd:description>  </gmd:MD\_Identifier>  </gmd:identifier>  <gmd:title>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD &gt; Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </gmd:title>  <gmd:edition>  <gco:CharacterString>1.0</gco:CharacterString>  </gmd:edition>  </gmd:CI\_Citation>  </gmd:citation>  </gmd:MD\_DataIdentification>  </gmd:identificationInfo> </gmi:MI\_Metadata> |

ISO 19115-1

|  |
| --- |
| <mdb:MD\_Metadata>  <mdb:identificationInfo>  <mri:MD\_DataIdentification>  <mri:citation>  <cit:CI\_Citation>  <cit:title>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD &gt; Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </cit:title>  …  <cit:edition>  <gco:CharacterString>1.0</gco:CharacterString>  </cit:edition>  <cit:identifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD</gco:CharacterString>  </mcc:code>  <mcc:description>  <gco:CharacterString>Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </mcc:description>  </mcc:MD\_Identifier>  </cit:identifier>  </cit:CI\_Citation>  </mri:citation>  </mri:MD\_DataIdentification>  </mdb:identificationInfo> </mdb:MD\_Metadata> |

EMS Flat File

|  |
| --- |
| aq3\_dysm |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov/search/concepts/C1214608509-SCIOPS

DIF 10 - https://cmr.earthdata.nasa.gov/search/concepts/C1225368560-LAADS

ECHO 10 Collection - https://cmr.earthdata.nasa.gov:443/search/concepts/C179001766-SEDAC

ISO 19115-2 - https://cmr.earthdata.nasa.gov:443/search/concepts/C179001766-SEDAC.iso and manually added responsible party from ISO 19115-2 schema.

ISO 19115-1 - Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record and manually added responsible party from ISO 19115-1 schema.

EMS - NSIDCV0 flat file

### B.2.2.2 Version [R]

**Element Specification**

Version (1)

**Description**

The Version element will indicate the version associated with the collection. The short name and version ID combination must be unique across the CMR.

**Cardinality**

1

**Tags**

*Required, Free Text Search, Parameter Search, Normalize*

**Analysis**

The Data\_Set\_Citation/Version element, if it exists in the DIF 9 metadata record, is used by the CMR as the version of the data set when translating from DIF 9 to another specification. For ECHO 10 and DIF 10, both the short name and version ID of the product in combination uniquely identify the metadata record.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Set\_Citation/Version |
| DIF 10 | /DIF/Entry\_ID/Version |
| ECHO 10 Collection | /Collection/VersionId |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:citation  /gmd:CI\_Citation/gmd:edition |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/cit:edition |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Data\_Set\_Citation>  ...  <Version>1.0</Version>  <Online\_Resource>http://glcf.umd.edu/data/landcover/</Online\_Resource>  </Data\_Set\_Citation> |

DIF 10

|  |
| --- |
| <Entry\_ID>  <Short\_Name>MYBARS</Short\_Name>  <Version>5</Version> </Entry\_ID> |

ECHO 10 Collection

|  |
| --- |
| <Collection>  <ShortName>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD</ShortName>  <VersionId>1.0</VersionId>  ...  </Collection> |

ISO 19115-2

|  |
| --- |
| <gmi:MI\_Metadata>  <gmd:identificationInfo>  <gmd:MD\_DataIdentification>  <gmd:citation>  <gmd:CI\_Citation>  <gmd:identifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD</gco:CharacterString>  </gmd:code>  <gmd:description>  CIESIN\_CHRR\_NDH\_CYCLONE\_HFD &> Global Cyclone Hazard Frequency and Distribution  </gmd:description>  </gmd:MD\_Identifier>  </gmd:identifier>  <gmd:title>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD &> Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </gmd:title>  <gmd:edition>  <gco:CharacterString>1.0</gco:CharacterString>  </gmd:edition>  </gmd:CI\_Citation>  </gmd:citation>  </gmd:MD\_DataIdentification>  </gmd:identificationInfo>  </gmi:MI\_Metadata> |

ISO 19115-1

|  |
| --- |
| <mdb:MD\_Metadata>  <mdb:identificationInfo>  <mri:MD\_DataIdentification>  <mri:citation>  <cit:CI\_Citation>  <cit:title>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD &> Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </cit:title>  ...  <cit:edition>  <gco:CharacterString>1.0</gco:CharacterString>  </cit:edition>  <cit:identifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD</gco:CharacterString>  </mcc:code>  <mcc:description>  <gco:CharacterString>Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </mcc:description>  </mcc:MD\_Identifier>  </cit:identifier>  </cit:CI\_Citation>  </mri:citation>  </mri:MD\_DataIdentification>  </mdb:identificationInfo>  </mdb:MD\_Metadata> |

EMS Flat File

|  |
| --- |
| 004 |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov/search/concepts/C1214608509-SCIOPS

DIF 10 - https://cmr.earthdata.nasa.gov/search/concepts/C1225368560-LAADS

ECHO 10 Collection - https://cmr.earthdata.nasa.gov/search/concepts/C179001766-SEDAC

ISO 19115-2 - https://cmr.earthdata.nasa.gov/search/concepts/C179001766-SEDAC.iso and manually added responsible party from ISO 19115-2 schema.

ISO 19115 - Example based on ISO19139 to19115-3.xsl translation of ISO 19115-2 record and manually added responsible party from ISO 19115-1 schema.

EMS - NSIDCV0 flat file

### B.2.2.3 Entry Title [R]

See UMM-Common Entry Title element for full documentation and examples.

**Tags**

*Required, Free Text Search, Search API, Normalize*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Entry\_Title |
| DIF 10 | /DIF/Entry\_Title |
| ECHO 10 Collection | /Collection/DataSetId |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:fileIdentifier/gco:CharacterString  and  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:citation  /gmd:CI\_Citation/gmd:title/gco:CharacterString |
| ISO 19115-1 | /gmi:MI\_Metadata/mdb:metadataIdentifier/mcc:MD\_Identifier/mcc:code/gco:CharacterString  and  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/cit:title/gco:CharacterString |
| EMS | MetaDataLongName |

### B.2.2.4 DOI [R]

**Element Specification**

DOI/DOI (1)

DOI/Authority (0..1)

**Description**

This element stores the DOI (Digital Object Identifier) that identifies the collection. Note: The values should start with the directory indicator which in ESDIS' case is 10. If the DOI was registered through ESDIS, the beginning of the string should be 10.5067. The DOI URL is not stored here; it should be stored as a RelatedURL. The DOI organization that is responsible for creating the DOI is described in the Authority element. For ESDIS records the value of http://dx.doi.org/ should be used.

**Cardinality**

1

**Tags**

*Free Text Search, Parameter Search*

**Analysis**

This element was moved from the ResourceCitation section to the identification section to signify its importance in identifying the collection.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Set\_Citation/Dataset\_DOI |
| DIF 10 | /DIF/DataSet\_Citation/Persistent\_Identifier/Identifier where type=DOI |
| ECHO 10 Collection | /Collection/OnlineResources/OnlineResource/URL where Type includes  DOI in its value. |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:citation/gmd:CI\_Citation/  gmd:identifier/gmd:MD\_Identifier/gmd:code/gco:CharacterString  where  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:citation/gmd:CI\_Citation/  gmd:identifier/gmd:MD\_Identifier/gmd:description/gco:CharacterString = DOI |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:citation/cit:CI\_Citation/  cit:identifier/mcc:MD\_Identifier/mcc:code/gco:CharacterString  where  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/  cit:identifier/mcc:MD\_Identifier/mcc:description/gco:CharacterString = DOI |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Data\_Set\_Citation>  ...  <Dataset\_DOI>10.7927/H4SQ8XB1</Dataset\_DOI>  </Data\_Set\_Citation> |

DIF 10

|  |
| --- |
| <Dataset\_Citation>  <Dataset\_Creator>SEDAC</Dataset\_Creator>  <Dataset\_Title>Global Cyclone Hazard Frequency and Distribution</Dataset\_Title>  ...  <Persistent\_Identifier>  <Type>DOI</Type>  <Identifier>10.7927/H4SQ8XB1</Identifier>  </Persistent\_Identifier>  <Online\_Resource>http://dx.doi.org/10.7927/H4SQ8XB1</Online\_Resource>  </Dataset\_Citation> |

ECHO 10 Collection

|  |
| --- |
| <DOI>10.7927/H4SQ8XB1</DOI>  ...  <OnlineResources>  <OnlineResource>  <URL>http://dx.doi.org/10.7927/H4SQ8XB1</URL>  <Description>data set DOI URL and homepage</Description>  <Type>DOI URL</Type>  </OnlineResource>  </OnlineResources> |

ISO 19115-2

|  |
| --- |
| <gmi:MI\_Metadata>  <gmd:identificationInfo>  <gmd:MD\_DataIdentification>  <gmd:citation>  <gmd:CI\_Citation>  <gmd:identifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>10.7927/H4SQ8XB1</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>DOI</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </gmd:identifier>  ....  </gmd:CI\_Citation>  </gmd:citation>  </gmd:MD\_DataIdentification>  </gmd:identificationInfo>  </gmi:MI\_Metadata> |

ISO 19115-1

|  |
| --- |
| <mdb:MD\_Metadata>  <mdb:identificationInfo>  <mri:MD\_DataIdentification>  <mri:citation>  <cit:CI\_Citation>  ...  <cit:identifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>10.7927/H4SQ8XB1</gco:CharacterString>  </mcc:code>  <mcc:description>  <gco:CharacterString>DOI</gco:CharacterString>  </mcc:description>  </mcc:MD\_Identifier>  </cit:identifier>  </cit:CI\_Citation>  </mri:citation>  </mri:MD\_DataIdentification>  </mdb:identificationInfo>  </mdb:MD\_Metadata> |

Source Data Information:

DIF 9 - Example based on schema with data from the ECHO 10 record.

DIF 10 - Example based on schema with data from the ECHO 10 record.

ECHO 10 Collection - https://cmr.earthdata.nasa.gov/search/concepts/C179001954-SEDAC - DOI will be added to the ECHO 10 schema.

ISO 19115-2 - Example based on https://cmr.earthdata.nasa.gov/search/concepts/C179001954-SEDAC.iso with the DOI information added.

ISO 19115-1 - Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record and manually added DOI

### B.2.2.5 Abstract [R]

See UMM-Common Abstract element for full documentation and examples.

**Tags**

*Required, Free Text Search, Markdown Support*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Summary/Abstract |
| DIF 10 | /DIF/Summary/Abstract |
| ECHO 10 Collection | /Collection/Description |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:abstract  /gco:CharacterString |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:abstract  /gco:CharacterString |
| EMS | N/A |

### B.2.2.6 Data Language

This element represents the language of the data (not the metadata). See UMM-Common Language element for full documentation and examples.

**Tags**

*Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Set\_Language |
| DIF 10 | /DIF/Data\_Set\_Language |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/ gmd:language  /gco:CharacterString  with  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/  gmd:MD\_CharacterSetCode codeList="http://www.isotc211.org/2005/resources  /Codelist/gmxCodelists.xml#MD\_CharacterSetCode"  codeListValue= |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:defaultLocale  /lan:PT\_Locale/lan:language/lan:LanguageCode codeList="codeListLocation#LanguageCode"  codeListValue=    /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:defaultLocale  /lan:PT\_Locale/lan:characterEncoding/lan:MD\_CharacterSetCode codeList="codeListLocation#MD\_CharacterSetCode" codeListValue= |
| EMS | N/A |

### B.2.2.7 Data Dates

See UMM-Common Data Date element for full documentation and examples.

**Tags**

*Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | N/A |
| DIF 10 | /DIF/Metadata\_Dates/Data\_Creation  /DIF/Metadata\_Dates/Data\_Last\_Revision  /DIF/Metadata\_Dates/Data\_Future\_Review  /DIF/Metadata\_Dates/Data\_Delete |
| ECHO 10 Collection | /Collection/InsertTime  /Collection/LastUpdate  /Collection/DeleteTime |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:citation  /gmd:CI\_Citation/gmd:date/gmd:CI\_Date/gmd:date/gco:DateTime  with  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:citation  /gmd:CI\_Citation/gmd:date/gmd:CI\_Date/gmd:dateType/gmd:CI\_DateTypeCode  codeListValue varies. |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/cit:date/cit:CI\_Date/cit:date/gco:DateTime  with  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/cit:date/cit:CI\_Date/cit:dateType/cit:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue varies. |
| EMS | N/A |

### B.2.2.8 DataCenter [R]

**Element Specification**

DataCenter (1..\*)

DataCenter/Roles (1..\*) <ARCHIVER, DISTRIBUTOR, ORIGINATOR, PROCESSOR>

DataCenter/ShortName (1)

DataCenter/LongName (0..1)

DataCenter/Uuid (0..1)

DataCenter/ContactInformation (0..1)

DataCenter/ContactInformation/RelatedURL (0..\*)

DataCenter/ContactInformation/ServiceHours (0..1)

DataCenter/ContactInformation/ContactInstructions (0..1)

DataCenter/ContactInformation/ContactMechanism (0..\*)

DataCenter/ContactInformation/ContactMechanism/Type (1) <Direct Line, Email, Facebook, Fax, Mobile, Modem, Primary, TDD/TTY Phone, Telephone, Twitter, U.S. toll free, Other>

DataCenter/ContactInformation/ContactMechanism/Value (1)

DataCenter/ContactInformation/Address (0..\*)

DataCenter/ContactInformation/Address/StreetAddresses (0..\*)

DataCenter/ContactInformation/Address/City (0..1)

DataCenter/ContactInformation/Address/StateProvince (0..1)

DataCenter/ContactInformation/Address/PostalCode (0..1)

DataCenter/ContactInformation/Address/Country (0..1)

CHOICE OF:

DataCenter/ContactPerson (0..\*)

DataCenter/ContactPerson/Roles (1..\*) <DATA CENTER CONTACT, TECHNICAL CONTACT, SCIENCE CONTACT, INVESTIGATOR, METADATA AUTHOR, USER SERVICES, SCIENCE SOFTWARE DEVELOPMENT>

DataCenter/ContactPerson/NonDataCenterAffiliation (0..1)

DataCenter/ContactPerson/FirstName (0..1)

DataCenter/ContactPerson/MiddleName (0..1)

DataCenter/ContactPerson/LastName (1)

DataCenter/ContactPerson/Uuid (0..1)

DataCenter/ContactPerson/ContactInformation (0..1)

DataCenter/ContactPerson/ContactInformation/RelatedURL (0..\*)

DataCenter/ContactPerson/ContactInformation/ServiceHours (0..1)

DataCenter/ContactPerson/ContactInformation/ContactInstructions (0..1)

DataCenter/ContactPerson/ContactInformation/ContactMechanism (0..\*)

DataCenter/ContactPerson/ContactInformation/ContactMechanism/Type (1) <Direct Line, Email, Facebook, Fax, Mobile, Modem, Primary, TDD/TTY Phone, Telephone, Twitter, U.S. toll free, Other>

DataCenter/ContactPerson/ContactInformation/ContactMechanism/Value (1)

DataCenter/ContactPerson/ContactInformation/Address (0..\*)

DataCenter/ContactPerson/ContactInformation/Address/StreetAddresses (0..\*)

DataCenter/ContactPerson/ContactInformation/Address/City (0..1)

DataCenter/ContactPerson/ContactInformation/Address/StateProvince (0..1)

DataCenter/ContactPerson/ContactInformation/Address/PostalCode (0..1)

DataCenter/ContactPerson/ContactInformation/Address/Country (0..1)

OR

DataCenter/ContactGroup (0..\*)

DataCenter/ContactGroup/Roles (1..\*) <DATA CENTER CONTACT, TECHNICAL CONTACT, SCIENCE CONTACT, INVESTIGATOR, METADATA AUTHOR, USER SERVICES, SCIENCE SOFTWARE DEVELOPMENT>

DataCenter/ContactGroup/NonDataCenterAffiliation (0..1)

DataCenter/ContactGroup/GroupName (1)

DataCenter/ContactGroup/Uuid (0..1)

DataCenter/ContactGroup/ContactInformation (0..1)

DataCenter/ContactGroup/ContactInformation/RelatedURL (0..\*)

DataCenter/ContactGroup/ContactInformation/ServiceHours (0..1)

DataCenter/ContactGroup/ContactInformation/ContactInstructions (0..1)

DataCenter/ContactGroup/ContactInformation/ContactMechanism (0..\*)

DataCenter/ContactGroup/ContactInformation/ContactMechanism/Type (1) <Direct Line, Email, Facebook, Fax, Mobile, Modem, Primary, TDD/TTY Phone, Telephone, Twitter, U.S. toll free, Other>

DataCenter/ContactGroup/ContactInformation/ContactMechanism/Value (1)

DataCenter/ContactGroup/ContactInformation/Address (0..\*)

DataCenter/ContactGroup/ContactInformation/Address/StreetAddresses (0..\*)

DataCenter/ContactGroup/ContactInformation/Address/City (0..1)

DataCenter/ContactGroup/ContactInformation/Address/StateProvince (0..1)

DataCenter/ContactGroup/ContactInformation/Address/PostalCode (0..1)

DataCenter/ContactGroup/ContactInformation/Address/Country (0..1)

**Description**

This element describes data centers and their personnel or internal groups responsible for originating, processing, archiving, and/or distributing the data and metadata.

**Cardinality**

1..\*

**Tags**

*Required, Free Text Search, Parameter Search*

**Analysis**

The Metadata Management Tool (MMT) collection forms are organized based on the current UMM-C/UMM-Common metadata model. During MMT alpha and beta testing, some metadata providers indicated that they were confused by the Organization, Personnel and Party elements on the MMT collection record forms. Issues and areas of confusion included:

* Roles:
  + pick lists include roles that apply to organizations and roles that apply to individuals.
  + role values are not the same for DIF and for ECHO.
  + current collection records in CMR have non-standardized values for roles (including different variations of the same word (ARCHIVER, archive, archive data center), different words for the same concept (PRODUCER, PROCESSOR).
  + ECHO 10 records have Organization role built into field names (Processing Center, Archive Center) rather than as field values.
  + EDSC shows Processing Center and Archiving Center on Collection Information panel, but these are blank for DIF collections.
* Contact Types:
  + contact type lists associated with organizations and personnel are not standardized.
  + contact type lists associated with organizations and personnel do not include 'modern' values.

Based on that feedback, we revisited the metadata model for these field groupings, giving consideration to how the metadata model can best reflect the physical model of organizations responsible for earth science datasets and people or groups who can be contacted with questions about those datasets. Based on this additional analysis, we are now recommending a collection metadata model which moves away from the Organization, Responsibility, and Party concepts, and moves back to the Data Center concept that better reflects the physical model of NASA DAACs and makes translation between GCMD collection record values and UMM-C values more straightforward and intuitive.

In addition, we are recommending changing the current UMM-C Personnel element to DataContact. The re-naming of this element emphasizes the function of a contact person, and the corresponding new role assigned to a DataContact better addresses whom to contact for answers to different types of dataset questions (e.g., TECHNICAL CONTACT, SCIENCE CONTACT, USER SERVICES, etc.)

A DataContact may be associated with a DataCenter, as described in this element, or may be independent of a DataCenter, as described in the DataContact element.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Center |
| DIF 10 | /DIF/Organization |
| ECHO 10 Collection | /Collection/ProcessingCenter  /Collection/ArchiveCenter  /Collectoin/Contacts/Contact |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:contact/gmd:CI\_ResponsibleParty  or  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:CI\_Citation  /gmd:citedResponsibleParty/gmd:CI\_ResponsibleParty/  or  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:pointOfContact  /gmd:CI\_ResponsibleParty/  or  /gmi:MI\_Metadata/gmd:distributionInfo/gmd:MD\_Distribution/gmd:distributor  /gmd:MD\_Distributor/gmd:distributorContact/gmd:CI\_ResponsibleParty/  or  /gmi:MI\_Metadata/gmd:dataQualityInfo/gmd:DQ\_DataQuality/gmd:lineage/gmd:LI\_Lineage  /gmd:processStep/gmd:LI\_ProcessStep/gmd:processor |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:contact/cit:CI\_Responsibility  or  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/cit:citedResponsibleParty/cit:CI\_Responsibility  or  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:pointOfContact  /cit:CI\_Responsibility  or  /mdb:MD\_Metadata/mdb:distributionInfo/mrd:MD\_Distribution/mrd:distributor  /mrd:MD\_Distributor/mrd:distributorContact/cit:CI\_Responsibility>  or  /mdb:MD\_Metadata/mdb:resourceLineage/mrl:LI\_Lineage/mrl:processStep  /mrl:LI\_ProcessStep/mrl:processor |
| EMS | processingCenter  archiveCenter |

**Examples**

DIF 9

|  |
| --- |
| <Data\_Center>  <Data\_Center\_Name uuid="09fc17b0-6aa2-47a2-87e4-dd005c4d52ab">  <Short\_Name>DE/GFZ/ISDC</Short\_Name>  <Long\_Name>Information System and Data Center, GeoForschungszentrum Potsdam, Germany</Long\_Name>  </Data\_Center\_Name>  <Data\_Center\_URL>http://isdc.gfz-potsdam.de/</Data\_Center\_URL>  <Data\_Set\_ID>doi:10.1594/GFZ/ISDC/CHAMP/CH-OG-1-GPS-10S</Data\_Set\_ID>  <Personnel>  <Role>DATA CENTER CONTACT</Role>  <First\_Name>BERND</First\_Name>  <Last\_Name>RITSCHEL</Last\_Name>  <Email>rit@gfz-potsdam.de</Email>  <Phone>+49-331-288-1685</Phone>  <Fax>+49-331-288-1703</Fax>  <Contact\_Address>  <Address>GeoForschungsZentrum Potsdam</Address>  <Address>Daten- und Rechenzentrum</Address>  <Address>Telegrafenberg A3</Address>  <City>Potsdam</City>  <Postal\_Code>14473</Postal\_Code>  <Country>GERMANY</Country>  </Contact\_Address>  </Personnel>  </Data\_Center> |

DIF 10

|  |
| --- |
| <Organization>  <Organization\_Type>ARCHIVER</Organization\_Type>  <Organization\_Name>  <Short\_Name>ASDC</Short\_Name>  <Long\_Name>Atmospheric Science Data Center</Long\_Name>  </Organization\_Name>  <Organization\_URL>http://eosweb.larc.nasa.gov</Organization\_URL>  <Personnel>  <Role>DATA CENTER CONTACT</Role>  <Contact\_Person>  <First\_Name>ASDC</First\_Name>  <Last\_Name>USER SERVICES</Last\_Name>  <Address>  <Street\_Address>NASA Langley Atmospheric Science Data Center</Street\_Address>  <Street\_Address>User and Data Services</Street\_Address>  <Street\_Address>NASA Langley Research Center</Street\_Address>  <Street\_Address>Mail Stop 157D</Street\_Address>  <City>Hampton</City>  <State\_Province>VA</State\_Province>  <Postal\_Code>23681-2199</Postal\_Code>  <Country>USA</Country>  </Address>  <Phone>  <Number>757-864-8656</Number>  <Type>Telephone</Type>  </Phone>  <Email>support-asdc@earthdata.nasa.gov</Email>  </Contact\_Person>  </Personnel>  </Organization> |

ECHO 10 Collection

|  |
| --- |
| <ProcessingCenter>SEDAC</ProcessingCenter>  <ArchiveCenter>SEDAC</ArchiveCenter>    <Contacts>  <Contact>  <Role>Archive</Role>  <HoursOfService>9:00 A.M. to 5:00 P.M., Monday to Friday</HoursOfService>  <OrganizationName>Socioeconomic Data and Applications Center (SEDAC)</OrganizationName>  <OrganizationAddresses>  <Address>  <StreetAddress>CIESIN, Columbia University, 61 Route 9W, P.O. Box 1000</StreetAddress>  <City>Palisades</City>  <StateProvince>NY</StateProvince>  <PostalCode>10964</PostalCode>  <Country>USA</Country>  </Address>  </OrganizationAddresses>  <OrganizationPhones>  <Phone>  <Number>+1 845-365-8920</Number>  <Type>Telephone</Type>  </Phone>  <Phone>  <Number>+1 845-365-8922</Number>  <Type>Fax</Type>  </Phone>  </OrganizationPhones>  <OrganizationEmails>  <Email>ciesin.info@ciesin.columbia.edu</Email>  </OrganizationEmails>  <ContactPersons>  <ContactPerson>  <FirstName>SEDAC</FirstName>  <MiddleName>User</MiddleName>  <LastName>Services</LastName>  </ContactPerson>  </ContactPersons>  </Contact>  </Contacts> |

ISO 19115-2

|  |
| --- |
| <gmd:CI\_ResponsibleParty>  <gmd:organisationName>  <gco:CharacterString>SEDAC</gco:CharacterString>  </gmd:organisationName>  <gmd:role>  <gmd:CI\_RoleCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#CI\_RoleCode"  codeListValue="pointOfContact">pointOfContact</gmd:CI\_RoleCode>  </gmd:role>  </gmd:CI\_ResponsibleParty>  <gmd:CI\_ResponsibleParty>  <gmd:individualName>  <gco:CharacterString>SEDAC User Services</gco:CharacterString>  </gmd:individualName>  <gmd:organisationName>  <gco:CharacterString>Socioeconomic Data and Applications Center (SEDAC)</gco:CharacterString>  </gmd:organisationName>  <gmd:positionName gco:nilReason="missing"/>  <gmd:contactInfo>  <gmd:CI\_Contact>  <gmd:phone>  <gmd:CI\_Telephone>  <gmd:voice>  <gco:CharacterString>+1 845-365-8920</gco:CharacterString>  </gmd:voice>  <gmd:voice>  <gco:CharacterString>+1 845-365-8922</gco:CharacterString>  </gmd:voice>  </gmd:CI\_Telephone>  </gmd:phone>  <gmd:address>  <gmd:CI\_Address>  <gmd:deliveryPoint>  <gco:CharacterString>CIESIN, Columbia University, 61 Route 9W, P.O. Box 1000</gco:CharacterString>  </gmd:deliveryPoint>  <gmd:city>  <gco:CharacterString>Palisades</gco:CharacterString>  </gmd:city>  <gmd:administrativeArea>  <gco:CharacterString>NY</gco:CharacterString>  </gmd:administrativeArea>  <gmd:postalCode>  <gco:CharacterString>10964</gco:CharacterString>  </gmd:postalCode>  <gmd:country>  <gco:CharacterString>USA</gco:CharacterString>  </gmd:country>  <gmd:electronicMailAddress>  <gco:CharacterString>ciesin.info@ciesin.columbia.edu</gco:CharacterString>  </gmd:electronicMailAddress>  </gmd:CI\_Address>  </gmd:address>  <gmd:hoursOfService>  <gco:CharacterString>9:00 A.M. to 5:00 P.M., Monday to Friday</gco:CharacterString>  </gmd:hoursOfService>  <gmd:contactInstructions gco:nilReason="missing"/>  </gmd:CI\_Contact>  </gmd:contactInfo>  <gmd:role>  <gmd:CI\_RoleCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#CI\_RoleCode"  codeListValue="distributor">distributor</gmd:CI\_RoleCode>  </gmd:role>  </gmd:CI\_ResponsibleParty> |

ISO 19115-1

|  |
| --- |
| <mri:pointOfContact>  <cit:CI\_Responsibility>  <cit:role>  <cit:CI\_RoleCode codeList="codeListLocation#CI\_RoleCode" codeListValue="anyValidURI">Archive</cit:CI\_RoleCode>  </cit:role>  <cit:party>  <cit:CI\_Organisation>  <cit:name>  <gco:CharacterString>Socioeconomic Data and Applications Center (SEDAC)</gco:CharacterString>  </cit:name>  <cit:contactInfo>  <cit:CI\_Contact>  <cit:phone>  <cit:CI\_Telephone>  <cit:number>  <gco:CharacterString>+1 845-365-8920</gco:CharacterString>  </cit:number>  <cit:numberType>  <cit:CI\_TelephoneTypeCode codeList="codeListLocation#CI\_TelephoneTypeCode"  codeListValue="anyValidURI">Telephone</cit:CI\_TelephoneTypeCode>  </cit:numberType>  </cit:CI\_Telephone>  </cit:phone>  <cit:phone>  <cit:CI\_Telephone>  <cit:number>  <gco:CharacterString>+1 845-365-8922</gco:CharacterString>  </cit:number>  <cit:numberType>  <cit:CI\_TelephoneTypeCode codeList="codeListLocation#CI\_TelephoneTypeCode"  codeListValue="anyValidURI">Fax</cit:CI\_TelephoneTypeCode>  </cit:numberType>  </cit:CI\_Telephone>  </cit:phone>  <cit:address>  <cit:CI\_Address>  <cit:deliveryPoint>  <gco:CharacterString>CIESIN, Columbia University, 61 Route 9W, P.O. Box 1000</gco:CharacterString>  </cit:deliveryPoint>  <cit:city>  <gco:CharacterString>Palisades</gco:CharacterString>  </cit:city>  <cit:administrativeArea>  <gco:CharacterString>NY</gco:CharacterString>  </cit:administrativeArea>  <cit:postalCode>  <gco:CharacterString>10964</gco:CharacterString>  </cit:postalCode>  <cit:country>  <gco:CharacterString>USA</gco:CharacterString>  </cit:country>  <cit:electronicMailAddress>  <gco:CharacterString>ciesin.info@ciesin.columbia.edu</gco:CharacterString>  </cit:electronicMailAddress>  </cit:CI\_Address>  </cit:address>  <cit:hoursOfService>  <gco:CharacterString>9:00 A.M. to 5:00 P.M., Monday to Friday</gco:CharacterString>  </cit:hoursOfService>  <cit:contactInstructions gco:nilReason="missing"/>  </cit:CI\_Contact>  </cit:contactInfo>  <cit:individual>  <cit:CI\_Individual>  <cit:name>  <gco:CharacterString>SEDAC User Services</gco:CharacterString>  </cit:name>  <cit:positionName gco:nilReason="missing"/>  </cit:CI\_Individual>  </cit:individual>  </cit:CI\_Organisation>  </cit:party>  </cit:CI\_Responsibility>  </mri:pointOfContact> |

EMS

|  |
| --- |
| NSIDCV0 |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov/search/concepts/C1214586614-SCIOPS

DIF 10 - https://cmr.earthdata.nasa.gov/search/concepts/C179031504-LARC

ECHO 10 Collection - https://cmr.earthdata.nasa.gov:443/search/concepts/C179001954-SEDAC

ISO 19115-2 - https://cmr.earthdata.nasa.gov:443/search/concepts/C179001954-SEDAC.iso

ISO 19115-1 – Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record

EMS - NSIDCV0 flat file

### B.2.2.9 DataContact

DataContact is a parent element to the ContactPerson and the ContactGroup elements. Its purpose is to hold shared elements that its children will use. The DataContact element must exist with at least 1 of its children; it cannot exist on its own. Below is a diagram showing the relationships between the classes and their elements.

The ContactPerson and the ContactGroup elements are described in detail in their respective sub-sections.

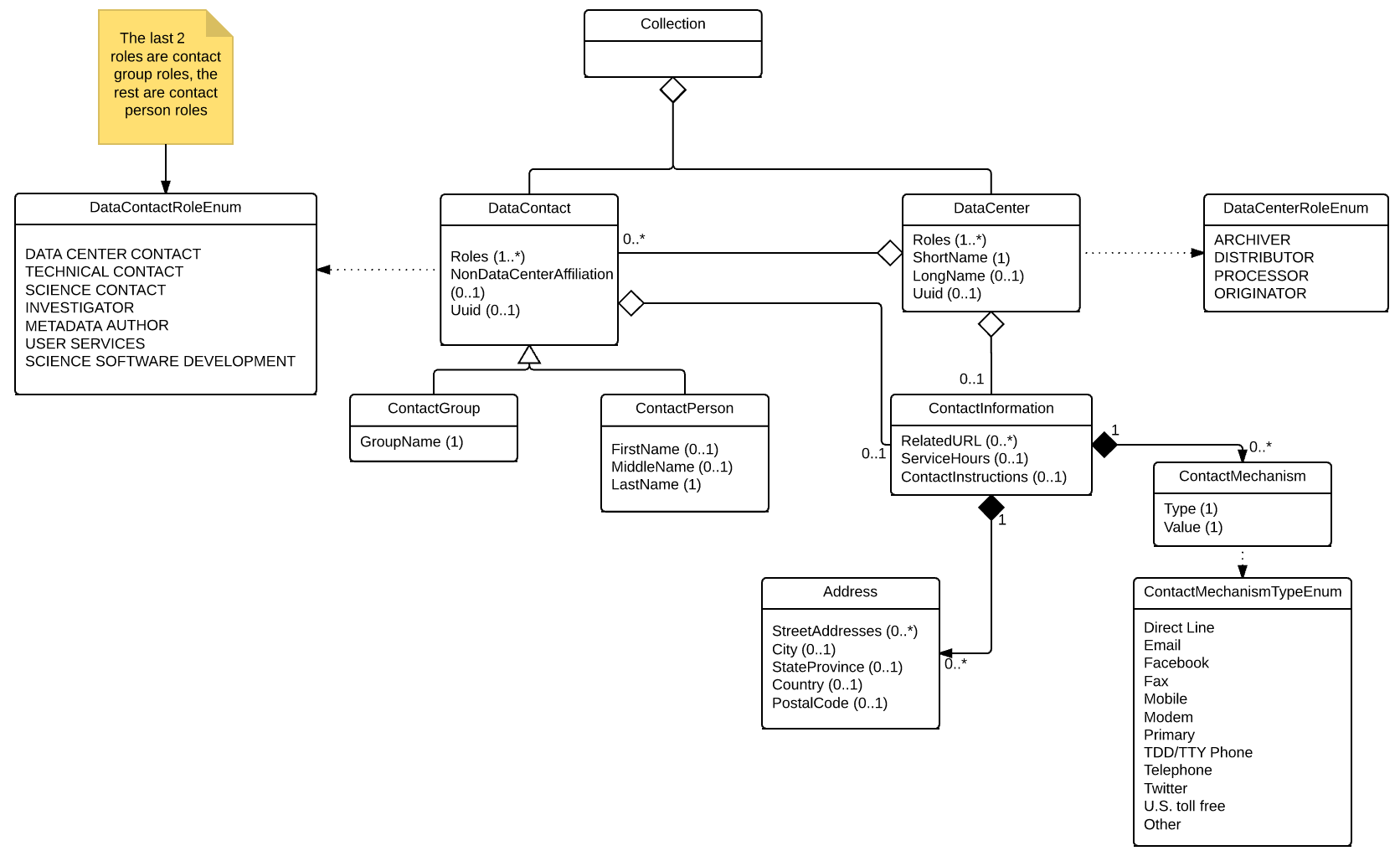
​

Figure B.0‑4. Data Contact

**Description:**

This element includes metadata that describes who to contact to get information about the dataset. There may be zero to many contacts. A data contact can be either a ContactPerson or a ContactGroup.

**Analysis:**

As stated in the DataCenter analysis section the old UMM Personnel element was changed to the DataContact element group including its children of ContactPerson and ContactGroup. The DataContact element only holds shared sub-elements for its children elements and cannot be used on its own. Either ContactPerson or ContactGroup must be used. This change emphasizes the contact function and expertise of the person or group described. The corresponding new role assigned to DataContact gives a dataset user better information on whom to contact for answers to different types of dataset questions (e.g., TECHNICAL CONTACT, SCIENCE CONTACT, USER SERVICES, etc.)

A DataContact may be independent of a DataCenter. In that case, the NonDataCenterAffiliation field may be used to indicate the independent affiliation of the DataContact contact person or group.

#### B.2.2.9.1 ContactPerson

**Element Specification:**

ContactPerson (0..\*)

ContactPerson/Roles (1..\*) <Data Center Contact, Technical Contact, Science Contact, Investigator, Metadata Author>

ContactPerson/NonDataCenterAffiliation (0..1)

ContactPerson/FirstName (0..1)

ContactPerson/MiddleName (0..1)

ContactPerson/LastName (1)

ContactPerson/Uuid (0..1)

ContactPerson/ContactInformation (0..1)

ContactPerson/ContactInformation/RelatedURL (0..\*)

ContactPerson/ContactInformation/ServiceHours (0..1)

ContactPerson/ContactInformation/ContactInstructions (0..1)

ContactPerson/ContactInformation/ContactMechanism (0..\*)

ContactPerson/ContactInformation/ContactMechanism/Type (1) <Direct Line, Email, Facebook, Fax, Mobile, Modem, Primary, TDD/TTY Phone, Telephone, Twitter, U.S. toll free, Other>

ContactPerson/ContactInformation/ContactMechanism/Value (1)

ContactPerson/ContactInformation/Address (0..\*)

ContactPerson/ContactInformation/Address/StreetAddresses (0..\*)

ContactPerson/ContactInformation/Address/City (0..1)

ContactPerson/ContactInformation/Address/StateProvince (0..1)

ContactPerson/ContactInformation/Address/PostalCode (0..1)

ContactPerson/ContactInformation/Address/Country (0..1)

**Description:**

This element includes metadata telling a dataset user whom they may contact to get information about that dataset, and how they may contact that person. There may be zero to many contact persons. There may be both a contact person or persons and a contact group or groups for a given dataset.

**Tags**

*Recommended*

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Personnel |
| DIF 10 | /DIF/Personnel |
| ECHO 10 Collection | /Collection/Contacts/Contact |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:contact/gmd:CI\_ResponsibleParty  or  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:CI\_Citation  /gmd:citedResponsibleParty/gmd:CI\_ResponsibleParty/  or  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:pointOfContact  /gmd:CI\_ResponsibleParty/ |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:contact/cit:CI\_Responsibility  or  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/cit:citedResponsibleParty/cit:CI\_Responsibility  or  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:pointOfContact  /cit:CI\_Responsibility |
| EMS | N/A |

Examples

DIF 9

|  |
| --- |
| <DIF>  <Personnel>  <Role>TECHNICAL CONTACT</Role>  <Last\_Name>SEDAC USER SERVICES</Last\_Name>  <Email>ciesin.info@ciesin.columbia.edu</Email>  <Phone>+1 845-365-8920</Phone>  <Fax>+1 845-365-8922</Fax>  <Contact\_Address>  <Address>61 Route 9W, P.O. Box 1000</Address>  <City>Palisades</City>  <Province\_or\_State>NY</Province\_or\_State>  <Postal\_Code>10964</Postal\_Code>  <Country>USA</Country>  </Contact\_Address>  </Personnel>  <Personnel>  <Role>DIF AUTHOR</Role>  <Last\_Name>CIESIN METADATA ADMINISTRATION</Last\_Name>  <Email>metadata@ciesin.columbia.edu</Email>  <Phone>+1 845-365-8988</Phone>  <Fax>+1 845-365-8922</Fax>  <Contact\_Address>  <Address>61 Route 9W, P.O. Box 1000</Address>  <City>Palisades</City>  <Province\_or\_State>New York</Province\_or\_State>  <Postal\_Code>10964</Postal\_Code>  <Country>USA</Country>  </Contact\_Address>  </Personnel>  </DIF> |

DIF 10

|  |
| --- |
| <Personnel>  <Role>DIF AUTHOR</Role>  <Contact\_Person>  <Last\_Name>CIESIN METADATA ADMINISTRATION</Last\_Name>  <Email>metadata@ciesin.columbia.edu</Email>  <Phone>+1 845-365-8988</Phone>  <Fax>+1 845-365-8922</Fax>  <Address>  <Street\_Address>61 Route 9W, P.O. Box 1000</Street\_Address>  <City>Palisades</City>  <State\_Province>New York</State\_Province>  <Postal\_Code>10964</Postal\_Code>  <Country>USA</Country>  </Address>  </Contact\_Person>  </Personnel>  </DIF> |

ECHO 10 Collection

|  |
| --- |
| <Contacts>  <Contact>  <Role>INVESTIGATOR</Role>  <OrganizationEmails>  <Email>someone@larc.nasa.gov</Email>  </OrganizationEmails>  <ContactPersons>  <ContactPerson>  <FirstName>some</FirstName>  <MiddleName>P.</MiddleName>  <LastName>one</LastName>  </ContactPerson>  </ContactPersons>  </Contact> |

ISO 19115-2

|  |
| --- |
| <gmd:citedResponsibleParty>  <gmd:CI\_ResponsibleParty>  <gmd:individualName>  <gco:CharacterString>Some P. One</gco:CharacterString>  </gmd:individualName>  <gmd:organisationName gco:nilReason="missing"/>  <gmd:positionName gco:nilReason="missing"/>  <gmd:contactInfo>  <gmd:CI\_Contact>  <gmd:phone>  <gmd:CI\_Telephone/>  </gmd:phone>  <gmd:address>  <gmd:CI\_Address>  <gmd:deliveryPoint gco:nilReason="missing"/>  <gmd:city gco:nilReason="missing"/>  <gmd:administrativeArea gco:nilReason="missing"/>  <gmd:postalCode gco:nilReason="missing"/>  <gmd:country gco:nilReason="missing"/>  <gmd:electronicMailAddress>  <gco:CharacterString>some.p.one@larc.nasa.gov</gco:CharacterString>  </gmd:electronicMailAddress>  </gmd:CI\_Address>  </gmd:address>  <gmd:hoursOfService gco:nilReason="missing"/>  <gmd:contactInstructions gco:nilReason="missing"/>  </gmd:CI\_Contact>  </gmd:contactInfo>  <gmd:role>  <gmd:CI\_RoleCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#CI\_RoleCode"  codeListValue="principalInvestigator">principalInvestigator</gmd:CI\_RoleCode>  </gmd:role>  </gmd:CI\_ResponsibleParty>  </gmd:citedResponsibleParty> |

ISO 19115-1

|  |
| --- |
| <cit:CI\_Responsibility>  <cit:role>  <cit:CI\_RoleCode codeList="codeListLocation#CI\_RoleCode" codeListValue="anyValidURI">INVESTIGATOR</cit:CI\_RoleCode>  </cit:role>  <cit:party>  <cit:CI\_Organisation>  <cit:name gco:nilReason="missing"/>  <cit:contactInfo>  <cit:CI\_Contact>  <cit:address>  <cit:CI\_Address>  <cit:deliveryPoint gco:nilReason="missing"/>  <cit:city gco:nilReason="missing"/>  <cit:administrativeArea gco:nilReason="missing"/>  <cit:postalCode gco:nilReason="missing"/>  <cit:country gco:nilReason="missing"/>  <cit:electronicMailAddress>  <gco:CharacterString>some.p.one@larc.nasa.gov</gco:CharacterString>  </cit:electronicMailAddress>  </cit:CI\_Address>  </cit:address>  <cit:hoursOfService gco:nilReason="missing"/>  <cit:contactInstructions gco:nilReason="missing"/>  </cit:CI\_Contact>  </cit:contactInfo>  <cit:individual>  <cit:CI\_Individual>  <cit:name>  <gco:CharacterString>Some P. One</gco:CharacterString>  </cit:name>  <cit:positionName gco:nilReason="missing"/>  </cit:CI\_Individual>  </cit:individual>  </cit:CI\_Organisation>  </cit:party>  </cit:CI\_Responsibility> |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov:443/search/concepts/C179001949-SEDAC

DIF 10 - Example based on schema with data from DIF 9 record.

ECHO 10 Collection - https://cmr.earthdata.nasa.gov/search/concepts/C184964545-LARC.echo10

ISO 19115-2 - https://cmr.earthdata.nasa.gov/search/concepts/C184964545-LARC.iso

ISO 19115-1 – Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record

#### B.2.2.9.2 ContactGroup

**Element Specification:**

ContactGroup (0..\*)

ContactGroup/Roles (1..\*) <User Services, Science Software Development>

ContactGroup/NonDataCenterAffiliation (0..1)

ContactGroup/GroupName (1)

ContactGroup/Uuid (0..1)

ContactGroup/ContactInformation (0..1)

ContactGroup/ContactInformation/RelatedURL (0..\*)

ContactGroup/ContactInformation/ServiceHours (0..1)

ContactGroup/ContactInformation/ContactInstructions (0..1)

ContactGroup/ContactInformation/ContactMechanism (0..\*)

ContactGroup/ContactInformation/ContactMechanism/Type (1) <Direct Line, Email, Facebook, Fax, Mobile, Modem, Primary, TDD/TTY Phone, Telephone, Twitter, U.S. toll free, Other>

ContactGroup/ContactInformation/ContactMechanism/Value (1)

ContactGroup/ContactInformation/Address (0..\*)

ContactGroup/ContactInformation/Address/StreetAddresses (0..\*)

ContactGroup/ContactInformation/Address/City (0..1)

ContactGroup/ContactInformation/Address/StateProvince (0..1)

ContactGroup/ContactInformation/Address/PostalCode (0..1)

ContactGroup/ContactInformation/Address/Country (0..1)

**Description:**

This element includes metadata telling a dataset user which group they may contact to get information about that dataset, including how they may contact that group. There may be zero to many contact groups.

There may be both a contact person or persons and a contact group or groups for a given dataset.

**Tags**

*Recommended*

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | N/A |
| DIF 10 | /DIF/Personnel under Contact\_Group |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:contact/gmd:CI\_ResponsibleParty  or  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:CI\_Citation  /gmd:citedResponsibleParty/gmd:CI\_ResponsibleParty/  or  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:pointOfContact  /gmd:CI\_ResponsibleParty/ |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:contact/cit:CI\_Responsibility  or  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation/cit:citedResponsibleParty/cit:CI\_Responsibility  or  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:pointOfContact  /cit:CI\_Responsibility |
| EMS | N/A |

Examples

DIF 10

|  |
| --- |
| <DIF>  <Personnel>  <Role>TECHNICAL CONTACT</Role>  <Contact\_Group>  <Name>SEDAC USER SERVICES</Name>  <Email>ciesin.info@ciesin.columbia.edu</Email>  <Phone>+1 845-365-8920</Phone>  <Fax>+1 845-365-8922</Fax>  <Address>  <Street\_Address>61 Route 9W, P.O. Box 1000</Street\_Address>  <City>Palisades</City>  <State\_Province>NY</State\_Province>  <Postal\_Code>10964</Postal\_Code>  <Country>USA</Country>  </Address>  </Contact\_Group>  </Personnel>  </DIF> |

ISO 19115-2

|  |
| --- |
| <gmd:CI\_ResponsibleParty>  <gmd:organisationName>  <gco:CharacterString>SEDAC</gco:CharacterString>  </gmd:organisationName>  <gmd:role>  <gmd:CI\_RoleCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#CI\_RoleCode"  codeListValue="pointOfContact">pointOfContact</gmd:CI\_RoleCode>  </gmd:role>  </gmd:CI\_ResponsibleParty> |

ISO 19115-1

|  |
| --- |
| <cit:CI\_Responsibility>  <cit:role>  <cit:CI\_RoleCode codeList="codeListLocation#CI\_RoleCode" codeListValue="pointOfContact">pointOfContact</cit:CI\_RoleCode>  </cit:role>  <cit:party>  <cit:CI\_Organisation>  <cit:name>  <gco:CharacterString>SEDAC</gco:CharacterString>  </cit:name>  </cit:CI\_Organisation>  </cit:party>  </cit:CI\_Responsibility> |

Source Data Information:

DIF 10 - Example based on schema with data from https://cmr.earthdata.nasa.gov:443/search/concepts/C179001949-SEDAC

ISO 19115-2 - https://cmr.earthdata.nasa.gov/search/concepts/C179001766-SEDAC.iso

ISO 19115-1 – Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record​

### B.2.2.10 Collection Data Type

**Element Specification**

CollectionDataType <NEAR\_REAL\_TIME, SCIENCE\_QUALITY, OTHER>

**Description**

This element identifies non-science-quality products such as Near-Real-Time collections. If a collection does not contain this field, it will be assumed to be of science-quality.

*Note: The NASA MENDS ISO 19115-2 and ISO 19115-1 mappings do not yet incorporate Collection Data Type.*

**Cardinality**

0..1

**Tags**

*Recommended, Controlled Vocabulary, Free Text Search, Search API*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Extended\_Metadata.Metadata.Name='CollectionDataType' |
| DIF 10 | /DIF/Collection\_Data\_Type |
| ECHO 10 Collection | /Collection/CollectionDataType |
| ISO 19115-2 | TBD |
| ISO 19115-1 | TBD |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Extended\_Metadata>  ...  <Metadata>  <Group>ECHO</Group>  <Name>CollectionDataType</Name>  <Value>NEAR\_REAL\_TIME</Value>  </Metadata>  ...  </Extended\_Metadata> |

DIF 10

|  |
| --- |
| <Collection\_Data\_Type>SCIENCE\_QUALITY</Collection\_Data\_Type> |

ECHO/DIF 10

|  |
| --- |
| <CollectionDataType>NEAR\_REAL\_TIME</CollectionDataType> |

Source Data Information:

DIF 9 - Example metadata manually generated

DIF 10 - https://cmr.earthdata.nasa.gov/search/concepts/C1239898009-GES\_DISC

ECHO 10 - https://cmr.earthdata.nasa.gov/search/concepts/C1000000121-OMINRT

### B.2.2.11 Processing Level [R]

**Element Specification**

ProcessingLevel/ID (1)

ProcessingLevel/Description (0..1)

**Description**

This element contains the level identifier as described at: http://science.nasa.gov/earth-science/earth-science-data/data-processing-levels-for-eosdis-data-products. The processing levels will be described using a controlled vocabulary. The controlled vocabulary will include keywords "Not Available", "Not Applicable", and "Unknown".

*Note: This element is not currently required in any metadata format schema, but should be included in all EOSDIS collections.*

**Cardinality**

1

**Tags**

*Required, Controlled Vocabulary, Search API, Faceted*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Extended\_Metadata.Metadata.Name='ProcessingLevelId'  /DIF/Extended\_Metadata.Metadata.Name='ProcessingLevelDescription' |
| DIF 10 | /DIF/Product\_Level\_Id |
| ECHO 10 Collection | /Collection/ProcessingLevelId  /Collection/ProcessingLevelDescription |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:processingLevel  /gmd:MD\_Identifier/gmd:code/gco:CharacterString  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:processingLevel  /gmd:MD\_Identifier/gmd:description/gco:CharacterString  and  /gmi:MI\_Metadata/gmd:contentInfo/gmd:MD\_ImageDescription/gmd:processingLevelCode  /gmd:MD\_Identifier/gmd:code/gco:CharacterString  /gmi:MI\_Metadata/gmd:contentInfo/gmd:MD\_ImageDescription/gmd:processingLevelCode  /gmd:MD\_Identifier/gmd:description/gco:CharacterString |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:processingLevel  /mcc:MD\_Identifier/mcc:code/gco:CharacterString  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:processingLevel  /mcc:MD\_Identifier/mcc:description/gco:CharacterString  and  /mdb:MD\_Metadata/mdb:contentInfo/mdb:MD\_ImageDescription/mdb:processingLevelCode  /mcc:MD\_Identifier/mcc:code/gco:CharacterString  /mdb:MD\_Metadata/mdb:contentInfo/mdb:MD\_ImageDescription/mdb:processingLevelCode  /mcc:MD\_Identifier/mcc:description/gco:CharacterString |
| EMS | productLevel |

**Examples**

DIF 9

|  |
| --- |
| <Extended\_Metadata>  …  <Metadata>  <Group>CMR</Group>  <Name>ProcessingLevelId</Name>  <Value>3</Value>  </Metadata>  <Metadata>  <Group>CMR</Group>  <Name>ProcessingLevelDescription</Name>  <Value>Sensor Measurements</Value>  </Metadata>  … </Extended\_Metadata> |

DIF 10

|  |
| --- |
| <Product\_Level\_Id>2</Product\_Level\_Id> |

ECHO 10

|  |
| --- |
| <ProcessingLevelId>3</ProcessingLevelId> <ProcessingLevelDescription>Data or retrieved environmental variables that have been spatially and/or temporally resampled (i.e., derived from Level 1 or Level 2 data products). Such resampling may include averaging and compositing</ProcessingLevelDescription> |

ISO 19115-2

|  |
| --- |
| <gmd:identificationInfo>  <gmd:MD\_DataIdentification>  ...  <gmd:processingLevel>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>3</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>Data or retrieved environmental variables that have been spatially and/or temporally resampled (i.e., derived from Level 1 or Level 2 data products). Such resampling may include averaging and compositing</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </gmd:processingLevel>  </gmd:MD\_DataIdentification>  </gmd:identificationInfo>  <gmd:contentInfo>  <gmd:MD\_ImageDescription>  ...  <gmd:processingLevelCode>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>3</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>Data or retrieved environmental variables that have been spatially and/or temporally resampled (i.e., derived from Level 1 or Level 2 data products). Such resampling may include averaging and compositing</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </gmd:processingLevelCode>  </gmd:MD\_ImageDescription>  </gmd:contentInfo> |

ISO 19115-1

|  |
| --- |
| <mdb:identificationInfo>  <mri:MD\_DataIdentification>  ...  <mri:processingLevel>  <mcc:MD\_Identifier>  <gcc:code>  <gco:CharacterString>3</gco:CharacterString>  </gcc:code>  <mcc:description>  <gco:CharacterString>Data or retrieved environmental variables that have been spatially and/or temporally resampled (i.e., derived from Level 1 or Level 2 data products). Such resampling may include averaging and compositing</gco:CharacterString>  </mcc:description>  </mcc:MD\_Identifier>  </mri:processingLevel>  </mri:MD\_DataIdentification>  </mdb:identificationInfo>  <mdb:contentInfo>  <mdb:MD\_ImageDescription>  ...  <mdb:processingLevelCode>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>3</gco:CharacterString>  </mcc:code>  <mcc:description>  <gco:CharacterString>Data or retrieved environmental variables that have been spatially and/or temporally resampled (i.e., derived from Level 1 or Level 2 data products). Such resampling may include averaging and compositing</gco:CharacterString>  </mcc:description>  </mcc:MD\_Identifier>  </mdb:processingLevelCode>  </mdb:MD\_ImageDescription>  </mdb:contentInfo> |

Source Data Information:

DIF 9 - Example metadata generated  
DIF 10 - https://cmr.earthdata.nasa.gov:443/search/concepts/C1236224151-GES\_DISC

ECHO 10 - https://cmr.earthdata.nasa.gov:443/search/concepts/C179003030-ORNL\_DAAC  
ISO 19115-2 - https://cmr.earthdata.nasa.gov:443/search/concepts/C179003030-ORNL\_DAAC.iso

ISO 19115-1 - Manually generated with ISO 19115-1 schema using ECHO 10 example record.

### B.2.2.12 Collection Citation

See UMM-Common Resource Citation element for full documentation and examples.

**Tags**

*Recommended, Free Text Search*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Set\_Citation/ |
| DIF 10 | /DIF/Data\_Set\_Citation/ |
| ECHO 10 Collection | /Collection/CitationForExternalPublication |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:citation  /gmd:CI\_Citation |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:citation  /cit:CI\_Citation |
| EMS | N/A |

### B.2.2.13 Collection Progress [R]

**Element Specification**

CollectionProgress <PLANNED, ACTIVE, COMPLETE, NOT APPLICABLE, NOT PROVIDED>

**Description**

Describes the production status of the dataset. There are five choices:

**PLANNED** refers to data sets to be collected in the future and are thus unavailable at the present time. For Example: The Hydro spacecraft has not been launched, but information on planned data sets may be available.

**ACTIVE** refers to data sets currently in production or data that is continuously being collected or updated. For Example: data from the AIRS instrument on Aqua is being collected continuously. Another example is when one version of a dataset is continuously collection data such as CERES EBAF-TOA Ed2.8.

**COMPLETE** refers to data sets in which no updates or further data collection will be made. For Example: Nimbus-7 SMMR data collection has been completed. Another example is when a legacy version of a product has been completed and no further updates will be made; such as with CERES EBAF-TOA Ed2.7.

**NOT APPLICABLE** use this entry only if this element is not applicable to the collection, such as a calibration collection.

**NOT PROVIDED** Do not use this value. This value is needed by the CMR when translating older records that don't have a value for this element. Once all the records provide a value, this value will be removed.

**Cardinality**

1

**Tags**

*Required, Controlled Vocabulary, Faceted, Normalize*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Set\_Progress |
| DIF 10 | /DIF/Dataset\_Progress |
| ECHO 10 Collection | /Collection/CollectionState |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:status  /gmd:MD\_ProgressCode  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:status  /gmd:MD\_ProgressCode/@codeListValue |
| ISO 19115-1 | /mai:MI\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:status  /mri:MD\_ProgressCode |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Data\_Set\_Progress>COMPLETE</Data\_Set\_Progress> |

DIF 10

|  |
| --- |
| <Dataset\_Progress>IN WORK</Dataset\_Progress> |

ECHO

|  |
| --- |
| <CollectionState>COMPLETED</CollectionState> |

ISO 19115-2

|  |
| --- |
| <gmd:MD\_DataIdentification>  ...  <gmd:status>  <gmd:MD\_ProgressCode codeList="http://www.isotc211.org/2005/resources/Codelist/gmxCodelists.xml#MD\_ProgressCode" codeListValue="completed">COMPLETED</gmd:MD\_ProgressCode>  </gmd:status>  ...  </gmd:MD\_DataIdentification> |

ISO 19115-1

|  |
| --- |
| <mri:MD\_DataIdentification>  <mri:citation>  ...  <mri:status>  <mri:MD\_ProgressCode codeList="codeListLocation#MD\_ProgressCode"  codeListValue="onGoing">IN WORK</mri:MD\_ProgressCode>  </mri:status>  ...  </mri:citation>  </mri:MD\_DataIdentification> |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov/search/concepts/C1214422215-SCIOPS

DIF 10 - https://cmr.earthdata.nasa.gov/search/concepts/C1225368560-LAADS  
ECHO 10 - https://cmr.earthdata.nasa.gov/search/concepts/C179003030-ORNL\_DAAC  
ISO 19115-2 - https://cmr.earthdata.nasa.gov/search/concepts/C179003030-ORNL\_DAAC.iso

ISO 19115-1 - Example built from ECHOtoISO19115-1.xsl translation of ECHO 10 collection https://cmr.earthdata.nasa.gov:443/search/concepts/C199387948-GSFCS4PA

### B.2.2.14 Quality

See UMM-Common Quality element for full documentation and examples.

**Tags**

*Normalize, Markdown Support*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Quality |
| DIF 10 | /DIF/Quality |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:dataQualityInfo/gmd:DQ\_DataQuality/gmd:report  /gmd:DQ\_QuantitativeAttributeAccuracy/gmd:evaluationMethodDescription  /gco:CharacterString |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:dataQualityInfo/mdq:DQ\_DataQuality/mdq:report  /mdq:DQ\_DomainConsistency/mdq:result/mdq:DQ\_DescriptiveResult/mdq:statement  /gco:CharacterString |

### B.2.2.15 Use Constraints

See UMM-Common Use Constraints element for full documentation and examples.

**Tags**

*Recommended, Free Text Search, Markdown Support*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Use\_Constraints |
| DIF 10 | /DIF/Use\_Constraints |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:resourceConstraints |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:resourceConstraints |
| EMS | N/A |

### B.2.2.16 Access Constraints

See UMM-Common Access Constraints element for full documentation and examples.

**Tags**

*Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Access\_Constraints  /DIF/Extended\_Metadata/Metadata |
| DIF 10 | /DIF/Access\_Constraints  /DIF/Extended\_Metadata/Metadata |
| ECHO 10 Collection | /Collection/RestrictionComment  /Collection/RestrictionFlag |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:resourceConstraints/gmd:MD\_LegalConstraints/gmd:useLimitation  /gco:CharacterString (prefix: 'Restriction Comment:' )  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:resourceConstraints/gmd:MD\_LegalConstraints/gmd:otherConstraints  /gco:CharacterString (prefix: 'Restriction Flag:' ) |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:resourceConstraints /mco:MD\_LegalConstraints/mco:useLimitation  /gco:CharacterString (prefix:'Restriction Comment: ')  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:resourceConstraints/mco:MD\_LegalConstraints/mco:otherConstraints  /gco:CharacterString (prefix:'Restriction Flag: ') |
| EMS | N/A |

### B.2.2.17 Metadata Association

See UMM-Common Metadata Association element for full documentation and examples.

**Tags**

*Controlled Vocabulary, Validated Relationship*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Parent\_DIF |
| DIF 10 | /DIF/Parent\_DIF  /DIF/MetadataAssociation/ |
| ECHO 10 Collection | /Collection/CollectionAssociations/CollectionAssociation/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:aggregationInfo/gmd:MD\_AggregateInformation/gmd:aggregateDataSetName  /gmd:CI\_Citation  Metadata Associations:  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:aggregationInfo/gmd:MD\_AggregateInformation/gmd:associationType  /gmd:DS\_AssociationTypeCode codeListValue="Science Associated"  Parent Associations:  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:aggregationInfo/gmd:MD\_AggregateInformation/gmd:associationType  /gmd:DS\_AssociationTypeCode codeListValue="largerWorkCitation" |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:associatedResource/mri:MD\_AssociatedResource/mri:name  Metadata Associations:  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:associatedResource/mri:MD\_AssociatedResource/mri:associationType  /mri:DS\_AssociationTypeCode codeList="codeListLocation#DS\_AssociationTypeCode"  codeListValue="Science Associated"  Parent Associations:  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:associatedResource/mri:MD\_AssociatedResource/mri:associationType  /mri:DS\_AssociationTypeCode codeList="codeListLocation#DS\_AssociationTypeCode"  codeListValue="largerWorkCitation" |
| EMS | N/A |

### B.2.2.18 Publication Reference

See UMM-Common Publication Reference element for full documentation and examples.

**Tags**

*Free Text Search, Normalize*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Reference/ |
| DIF 10 | /DIF/Reference/ |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:aggregationInfo/gmd:MD\_AggregateInformation/gmd:aggregateDataSetName  /gmd:CI\_Citation |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:additionalDocumentation/cit:CI\_Citation |
| EMS | N/A |

### B.2.2.19 Purpose

See UMM-Common Purpose element for full documentation examples.

**Tags**

*Free Text Search, Recommended, Markdown Support*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Summary/Purpose |
| DIF 10 | /DIF/Summary/Purpose |
| ECHO 10 Collection | /Collection/SuggestedUsage |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:purpose  /gco:CharacterString |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:purpose  /gco:CharacterString |
| EMS | N/A |

## B.2.3 Descriptive Keywords

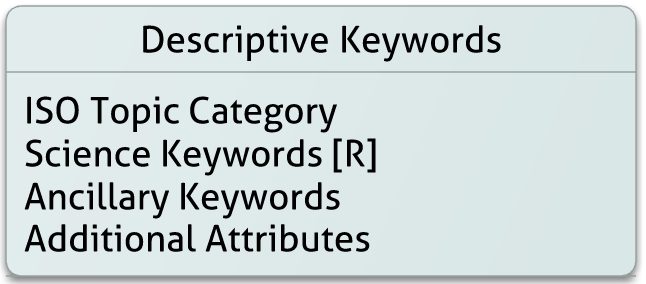


Figure B.0‑5. Descriptive Keywords

### B.2.3.1 ISO Topic Category

See UMM-Common ISO Topic Category element for full documentation and examples.

**Tags**

*Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/ISO\_Topic\_Category |
| DIF 10 | /DIF/ISO\_Topic\_Category |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | /gmd:MD\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:topicCategory  /gmd:MD\_TopicCategoryCode |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:topicCategory  /mri:MD\_TopicCategoryCode |
| EMS | N/A |

### B.2.3.2 Science Keywords [R]

See UMM-Common Science Keywords element for full documentation and examples.

**Tags**

*Required, Controlled Vocabulary, Faceted, Search API, Free Text Search*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Parameters/ |
| DIF 10 | /DIF/Science\_Keywords/ |
| ECHO 10 Collection | /Collection/ScienceKeywords/ScienceKeyword/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gco:CharacterString  with  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gmd:type  /MD\_KeywordTypeCode[@codeListValue="theme"] |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/gco:CharacterString  with  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/mri:type  /mri:MD\_KeywordTypeCode codeList=http://www.isotc211.org/2005/resources/Codelist/gmxCodelists.xml  #MD\_KeywordTypeCode codeListValue="theme" |
| EMS | N/A |

### B.2.3.3 Ancillary Keywords

See UMM-Common Ancillary Keywords element for full documentation and examples.

**Tags**

*Free Text Search, Search API*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Keyword |
| DIF 10 | /DIF/Ancillary\_Keyword |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gco:CharacterString |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/gco:CharacterString |
| EMS | Discipline |

### B.2.3.4 Additional Attributes

See UMM-Common Additional Attributes element for full documentation and examples.

**Tags**

*Free Text Search, Search API, Validated Relationship, Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/ExtendedMetadata/Metadata/ |
| DIF 10 | /DIF/Additional\_Attributes/ |
| ECHO 10 Collection | /Collection/AdditionalAttributes/AdditionalAttribute/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gco:CharacterString  or  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  \/gmd:extent/gmd:EX\_Extent/gmd:geographicElement/gmd:EX\_GeographicDescription  /gmd:geographicIdentifier/gmd:MD\_Identifier/gmd:code/gco:CharacterString  or  /gmi:MI\_Metadata/gmd:contentInfo/gmd:MD\_CoverageDescription/gmd:dimension  /gmd:MD\_Band/gmd:otherProperty/gco:Record/eos:AdditionalAttributes  /eos:AdditionalAttribute/eos:reference/eos:EOS\_AdditionalAttributeDescription  /eos:name/gco:CharacterString  or  /gmi:MI\_Metadata/gmd:dataQualityInfo/gmd:DQ\_DataQuality/gmd:report/  gmd:DQ\_QuantitativeAttributeAccuracy/gmd:result/gmd:DQ\_QuantitativeResult  /gmd:value/gco:Record/eos:AdditionalAttributes/eos:AdditionalAttribute/eos:reference  /eos:EOS\_AdditionalAttributeDescription/eos:name/gco:CharacterString  or  /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation  /gmi:instrument/eos:EOS\_Instrument/eos:otherProperty/gco:Record/eos:AdditionalAttributes  /eos:AdditionalAttribute/eos:value/gco:CharacterString  or  /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation  /gmi:platform/eos:EOS\_Platform/eos:otherProperty/gco:Record/eos:AdditionalAttributes  /eos:AdditionalAttribute/eos:reference/eos:EOS\_AdditionalAttributeDescription/eos:type  /eos:EOS\_AdditionalAttributeTypeCode |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/gco:CharacterString  or  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:extent  /gex:EX\_Extent id="boundingExtent"/gex:geographicElement/gex:EX\_GeographicDescription  /gex:geographicIdentifier/mcc:MD\_Identifier  or  /mdb:MD\_Metadata/mdb:contentInfo/mrc:MD\_CoverageDescription  /mrc:attributeDescription/mrc:attributeGroup/mrc:MD\_AttributeGroup/mrc:attribute  /mrc:MD\_SampleDimension/mrc:otherProperty/gco:Record/mrc:AdditionalAttributes  /mrc:AdditionalAttribute  or  /mdb:MD\_Metadata/mdb:dataQualityInfo/mdq:DQ\_DataQuality/mdq:report  /mdq:DQ\_QuantitativeAttributeAccuracy/mdq:result/mdq:DQ\_QuantitativeResult  /mdq:value/gco:Record/mdq:AdditionalAttributes/mdq:AdditionalAttribute  or  /mdb:MD\_Metadata/mdb:acquisitionInformation/mac:MI\_AcquisitionInformation  /mac:instrument/mac:EOS\_Instrument id="d226e165"/mac:otherPropertyType  /mac:otherProperty/gco:Record  /mac:AdditionalAttributes/mac:AdditionalAttribute  or  /mdb:MD\_Metadata/mdb:acquisitionInformation/mac:MI\_AcquisitionInformation  /mac:platform/mac:EOS\_Platform id="d226e145"/mac:otherPropertyType/mac:otherProperty/gco:Record  /mac:AdditionalAttributes/mac:AdditionalAttribute |
| EMS | N/A |

## B.2.4 Related URL

See UMM-Common Related URL element for full documentation and examples.

**Tags**

*Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Related\_URL  /DIF/Multimedia\_Sample |
| DIF 10 | /DIF/Related\_URL  /DIF/Multimedia\_Sample |
| ECHO 10 Collection | /Collection/OnlineAccessURLs/OnlineAccessURL  /Collection/OnlineResources/OnlineResource  /Collection/AssociatedBrowseImages  /Collection/AssociatedBrowseImageUrls |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:distributionInfo/gmd:MD\_Distribution/gmd:distributor  /gmd:MD\_Distributor/gmd:distributorTransferOptions/gmd:MD\_DigitalTransferOptions  /gmd:onLine/gmd:CI\_OnlineResource  and/or  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:graphicOverview  /gmd:MD\_BrowseGraphic/gmd:fileName/gmx:FileName src= |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:distributionInfo/mrd:MD\_Distribution/mrd:distributor  /mrd:MD\_Distributor/mrd:distributorTransferOptions/mrd:MD\_DigitalTransferOptions  /mrd:online/cit:CI\_OnlineResource  and/or  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:graphicOverview/mcc:MD\_BrowseGraphic/mcc:filename/gcx:FileName/@src= |
| EMS | N/A |

## B.2.5 Temporal Information

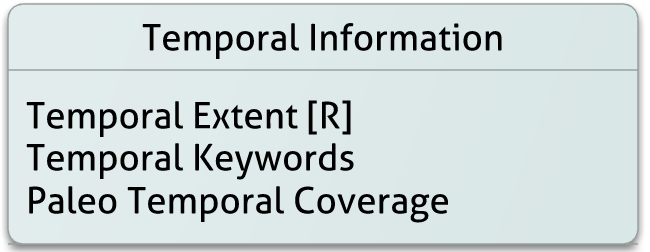
​​

Figure B.0‑6. Temporal Information

### B.2.5.1 Temporal Extent [R]

See UMM-Common Temporal Extent element for full documentation and examples.

**Tags**

Required, Search API, Validated Relationship

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Temporal\_Coverage |
| DIF 10 | {Choice of one}  1) /DIF/Temporal\_Coverage/Range\_DateTime/  2) /DIF/Temporal\_Coverage/Single\_DateTime/  3) /DIF/Temporal\_Coverage/Periodic\_DateTime/ |
| ECHO 10 Collection | /Collection/Temporal/TimeType  /Collection/Temporal/DateType  /Collection/Temporal/TemporalRangeType  /Collection/Temporal/PrecisionOfSeconds  /Collection/Temporal/EndsAtPresentFlag    {Choice of one}  1) /Collection/Temporal/RangeDateTime  2) /Collection/Temporal/SingleDateTime  3) /Collection/Temporal/PeriodicDateTime |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:extent  /gmd:EX\_Extent/gmd:temporalElement/gmd:EX\_TemporalExtent |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:extent  /gex:EX\_Extent/gex:description/gco:CharacterString    /mdb:MD\_Metadata/mdb:dataQualityInfo/mdq:DQ\_DataQuality/mdq:report  /mdq:DQ\_AccuracyOfATimeMeasurement/mdq:measure/mdq:DQ\_MeasureReference  /mdq:measureIdentification/mcc:MD\_Identifier/mcc:code/gco:CharacterString  PrecisionOfSeconds  /mdb:MD\_Metadata/mdb:dataQualityInfo/mdq:DQ\_DataQuality/mdq:report  /mdq:DQ\_AccuracyOfATimeMeasurement/mdq:result/mdq:DQ\_QuantitativeResult  /mdq:value/gco:Record xsi:type="gco:Real\_PropertyType"/gco:Real PrecisionOfSeconds  Value    1)/mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:extent  /gex:EX\_Extent/gex:temporalElement/gex:EX\_TemporalExtent/gex:extent/gml:TimePeriod  /gml:beginPosition  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:extent  /gex:EX\_Extent/gex:temporalElement/gex:EX\_TemporalExtent/gex:extent/gml:TimePeriod  /gml:endPosition    2)/mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:extent  /gex:EX\_Extent/gex:temporalElement/gex:EX\_TemporalExtent/gex:extent/ gml:TimeInstant/gml:timePosition |
| EMS | N/A |

### B.2.5.2 Temporal Keywords

**Element Specification**

TemporalKeyword

**Description**

This attribute specifies a word or phrase that describes the temporal resolution of the dataset.

**Cardinality**

0..\*

**Tags**

*Free Text Search, Search API, Recommended, Normalize*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Resolution/Temporal\_Resolution  /DIF/Data\_Resolution/Temporal\_Resolution\_Range |
| DIF 10 | /DIF/TemporalCoverage/TemporalInfo/Ancillary\_Temporal\_Keyword( the first TemporalCoverage element will be used.) |
| ECHO 10 Collection | /Collection/TemporalKeywords/Keyword |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gco:CharacterString  with  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gmd:type  /MD\_KeywordTypeCode[@codeListValue="temporal"] |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/gco:CharacterString  with  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:type  /mri:MD\_KeywordTypeCode[@codeListValue="temporal"] |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Data\_Resolution>  ...  <Temporal\_Resolution>15-sec sample rate, standard geodetic GPS resolution</Temporal\_Resolution>  <Temporal\_Resolution\_Range uuid="48ff676f-836c-4cff-bc88-4c4cc06b2e1b">1 second - &lt; 1 minute</Temporal\_Resolution\_Range> </Data\_Resolution> |

DIF 10

|  |
| --- |
| <Temporal\_Info>  <Ancillary\_Temporal\_Keyword>Ancillary\_Temporal\_Keyword0</Ancillary\_Temporal\_Keyword>  <Ancillary\_Temporal\_Keyword>Ancillary\_Temporal\_Keyword1</Ancillary\_Temporal\_Keyword> </Temporal\_Info> |

ECHO 10

|  |
| --- |
| <TemporalKeywords>  <Keyword>DAILY</Keyword> </TemporalKeywords> |

ISO 19115-2

|  |
| --- |
| <gmd:descriptiveKeywords>  <gmd:MD\_Keywords>  <gmd:keyword>  <gco:CharacterString>DAILY</gco:CharacterString>  </gmd:keyword>  <gmd:type>  <gmd:MD\_KeywordTypeCode codeList="http://www.isotc211.org/2005/resources/Codelist/gmxCodelists.xml#MD\_KeywordTypeCode" codeListValue="temporal">temporal</gmd:MD\_KeywordTypeCode>  </gmd:type>  <gmd:thesaurusName gco:nilReason="unknown”/>  </gmd:MD\_Keywords> </gmd:descriptiveKeywords> |

ISO 19115-1

|  |
| --- |
| <mri:descriptiveKeywords>  <mri:MD\_Keywords>  <mri:keyword>  <gco:CharacterString>HOURLY</gco:CharacterString>  </mri:keyword>  <mri:type>  <mri:MD\_KeywordTypeCode codeList="codeListLocation#MD\_KeywordTypeCode”  codeListValue="temporal">temporal</mri:MD\_KeywordTypeCode>  </mri:type>  <mri:thesaurusName/>  </mri:MD\_Keywords> </mri:descriptiveKeywords> |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov/search/concepts/C1214591238-SCIOPS  
DIF 10 - Example based on the DIF 10 schema and manually generated metadata.

ECHO 10 - https://cmr.earthdata.nasa.gov/search/concepts/C230264-GHRC  
ISO 19115-2 - https://cmr.earthdata.nasa.gov/search/concepts/C230264-GHRC.iso

ISO 19115-1 - Example built from ECHOtoISO19115-1.xsl translation of modified ECHO 10 collection

**Recommendations**

This element should utilize controlled vocabulary and ISO 19115 keyword type codes documented athttps://github.com/ISO-TC211/XML/blob/master/standards.iso.org/19115/resources/Codelist/gml/MD\_KeywordTypeCode.xml

Specifically, Temporal Keywords should use the "temporal" code as shown in the examples.

### B.2.5.3 Paleo Temporal Coverage

**Element Specification**

PaleoTemporalCoverage/StartDate (0..1)

PaleoTemporalCoverage/EndDate (0..1)

PaleoTemporalCoverage/ChronostratigraphicUnit (0..\*)

PaleoTemporalCoverage/ChronostratigraphicUnit/Eon (1)

PaleoTemporalCoverage/ChronostratigraphicUnit/Era (0..1)

PaleoTemporalCoverage/ChronostratigraphicUnit/Period (0..1)

PaleoTemporalCoverage/ChronostratigraphicUnit/Epoch (0..1)

PaleoTemporalCoverage/ChronostratigraphicUnit/Stage (0..1)

PaleoTemporalCoverage/ChronostratigraphicUnit/Detailed\_Classification (0..1)

**Description**

For paleoclimate or geologic data, this element represents the collected data's time span. This element should be used when the data spans time frames earlier than yyyy-mm-dd = 0001-01-01. All of the ChronostratigraphicUnit elements except for the Detailed\_Classification are controlled through the GCMD KMS. The valid values can be found at: http://gcmdservices.gsfc.nasa.gov/static/kms/chronounits/chronounits.csv.

**Cardinality**

0..1

**Tags**

*Controlled Vocabulary, Free Text Search, Search API*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Paleo\_Temporal\_Coverage |
| DIF 10 | /DIF/Temporal\_Coverage/Paleo\_DateTime |
| ECHO 10 Collection | N/A |
| ISO 19115-2 | TBD |
| ISO 19115-1 | TBD |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Paleo\_Temporal\_Coverage>  <Paleo\_Start\_Date>560 ka</Paleo\_Start\_Date>  <Paleo\_Stop\_Date>60 ka</Paleo\_Stop\_Date>  <Chronostratigraphic\_Unit uuid="e000088a-8252-4603-ba55-38189c45612c">  <Eon>PHANEROZOIC</Eon>  <Era>CENOZOIC</Era>  <Period>QUATERNARY</Period>  <Epoch>HOLOCENE</Epoch>  </Chronostratigraphic\_Unit>  <Chronostratigraphic\_Unit uuid="a686e751-3639-4cd0-840b-c8ad25c441c1">  <Eon>PHANEROZOIC</Eon>  <Era>CENOZOIC</Era>  <Period>QUATERNARY</Period>  <Epoch>PLEISTOCENE</Epoch>  </Chronostratigraphic\_Unit>  <Chronostratigraphic\_Unit uuid="c7e7fb38-44ef-4c5b-aa1d-b3fdcf89d838">  <Eon>PHANEROZOIC</Eon>  <Era>CENOZOIC</Era>  <Period>QUATERNARY</Period>  </Chronostratigraphic\_Unit>  </Paleo\_Temporal\_Coverage> |

DIF 10

|  |
| --- |
| <Temporal\_Coverage>  <Paleo\_DateTime>  <Paleo\_Start\_Date>31ka</Paleo\_Start\_Date>  <Paleo\_Stop\_Date>40ka</Paleo\_Stop\_Date>  </Paleo\_DateTime>  </Temporal\_Coverage> |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov/search/concepts/C1214622013-SCIOPS

DIF 10 - https://cmr.earthdata.nasa.gov/search/concepts/C1282835544-SCIOPS

## B.2.6 Spatial Information

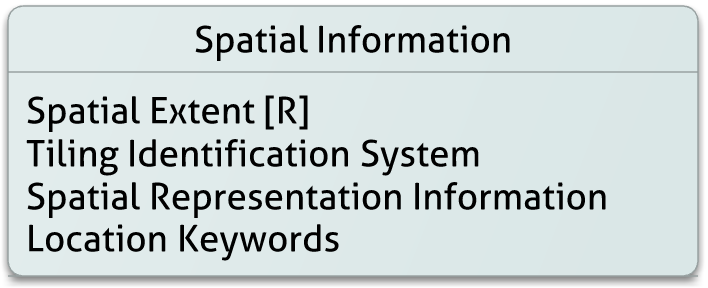


Figure B.0‑7. Spatial Information

### B.2.6.1 Tiling Identification System

*Formerly Two Dimensional Coordinate System.* See UMM-Common Tiling Identification System element for full documentation and examples.

**Tags**

*Search API, Faceted, Validated Relationship*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | N/A |
| DIF 10 | /DIF/Spatial\_Coverage/Spatial\_Info/TwoD\_Coordinate\_System/ |
| ECHO 10 Collection | /Collection/TwoDCoordinateSystems/TwoDCoordinateSystem |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:extent  /gmd:EX\_Extent/gmd:geographicElement/gmd:EX\_GeographicDescription  /gmd:geographicIdentifier/gmd:MD\_Identifier/gmd:code/gco:CharacterString  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:extent  /gmd:EX\_Extent/gmd:geographicElement/gmd:EX\_GeographicDescription  /gmd:geographicIdentifier/gmd:MD\_Identifier/gmd:description/gco:CharacterString |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:exten  t/gex:EX\_Extent/gex:geographicElement/gex:EX\_GeographicDescription  /gex:geographicIdentifier/mcc:MD\_Identifier/mcc:code/gco:CharacterString  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:extent  /gex:EX\_Extent/gex:geographicElement/gex:EX\_GeographicDescription  /gex:geographicIdentifier/mcc:MD\_Identifier/mcc:description/gco:CharacterString |
| EMS | N/A |

### B.2.6.2 Spatial Extent [R]

See UMM-Common Spatial Extent element for full documentation and examples.

**Tags**

*Required (with option), Search API, Validated Relationship*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Spatial\_Coverage/  or  /DIF/Extended\_Metadata/ for more complicated geometries |
| DIF 10 | /DIF/Spatial\_Coverage/ |
| ECHO 10 Collection | /Collection/Spatial/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:extent  /gmd:EX\_Extent/gmd:description/gco:CharacterString  with format:  VerticalSpatialDomainType= {type}, VerticalSpatialDomainValue= {value}    BASE\_XPATH=/gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:extent/gmd:EX\_Extent/gmd:geographicElement    This section is used by collections – used by granules options 1-7  BASE\_XPATH/gmd:EX\_GeographicBoundingBox/gmd:westBoundLongitude/gco:Decimal  BASE\_XPATH/gmd:EX\_GeographicBoundingBox/gmd:eastBoundLongitude/gco:Decimal  BASE\_XPATH/gmd:EX\_GeographicBoundingBox/gmd:southBoundLatitude/gco:Decimal  BASE\_XPATH/gmd:EX\_GeographicBoundingBox/gmd:northBoundLatitude/gco:Decimal    and    BASE\_XPATH/gmd:EX\_BoundingPolygon/gmd:polygon/gml:Point/gml:pos  - Used by Granule Option 1,5  or  BASE\_XPATH/gmd:EX\_BoundingPolygon/gmd:polygon/gml:LineString/gml:posList  - Used by Granule Option 2,6  or  BASE\_XPATH/gmd:EX\_BoundingPolygon/gmd:polygon/gml:Polygon/gml:exterior  /gml:LinearRing/gml:posList - Used by Granule Option 3,6,7  BASE\_XPATH/gmd:EX\_BoundingPolygon/gmd:polygon/gml:Polygon/gml:exterior  /gml:LinearRing/gml:posList - Used by Granule Option 7  BASE\_XPATH/gmd:EX\_BoundingPolygon/gmd:extentTypeCode/gco:Boolean set to 0 (Holes) - Used by Granule Option 7    Granule Option 8  /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation  /gmi:platform/eos:EOS\_Platform/eos:otherProperty/gco:Record/eos:AdditionalAttributes  /eos:AdditionalAttribute/eos:value/gco:CharacterString  with  eos:EOS\_AdditionalAttributeTypeCode[@codeListValue="platformInformation"] |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:extent  /gex:EX\_Extent[@id='boundingExtent']/gex:description/gco:CharacterString    with format:  VerticalSpatialDomainType= {type}, VerticalSpatialDomainValue= {value}    BASE\_XPATH=/mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:extent/EX\_Extent[@id='boundingExtent']/gex:geographicElement/    This section is used by collections – used by granules options 1-7  /BASE\_XPATH/gex:EX\_GeographicBoundingBox/gex:westBoundLongitude/gco:Decimal  /BASE\_XPATH/gex:EX\_GeographicBoundingBox/gex:eastBoundLongitude/gco:Decimal  /BASE\_XPATH/gex:EX\_GeographicBoundingBox/gex:southBoundLatitude/gco:Decimal  /BASE\_XPATH/gex:EX\_GeographicBoundingBox/gex:northBoundLatitude/gco:Decimal    and    /BASE\_XPATH/gex:EX\_BoundingPolygon/gex:polygon/gml:Point/gml:pos  - Used by Granule Option 1,5  /BASE\_XPATH/gex:EX\_BoundingPolygon/gex:polygon/gml:LineString/gml:posList  - Used by Granule Option 2,6  BASE\_XPATH/gex:EX\_BoundingPolygon/gex:polygon/gml:Polygon/gml:exterior  /gml:LinearRing/gml:posList - Used by Granule Option 3,6,7  BASE\_XPATH/gex:EX\_BoundingPolygon/gex:polygon/gml:Polygon/gml:interior  /gml:LinearRing/gml:posList - Used by Granule Option 7    Granule Option 8  /mdb:MD\_Metadata/mdb:acquisitionInformation/mac:MI\_AcquisitionInformation  /mac:platform/mac:EOS\_Platform/mac:otherProperty/gco:Record/mac:AdditionalAttributes  /mac:AdditionalAttribute/mac:value/gco:CharacterString  with  eos:EOS\_AdditionalAttributeTypeCode[@codeListValue="platformInformation"]  eos:EOS\_AdditionalAttributeTypeCode[@codeListValue="AscendingCrossing "]  eos:EOS\_AdditionalAttributeTypeCode[@codeListValue="StartLat"]  eos:EOS\_AdditionalAttributeTypeCode[@codeListValue="StartDirection"]  eos:EOS\_AdditionalAttributeTypeCode[@codeListValue="EndLat"]  eos:EOS\_AdditionalAttributeTypeCode[@codeListValue="EndDirection"] |
| EMS | N/A |

### B.2.6.3 Spatial Representation Information

**Element Specification**

SpatialRepresentationInfo/SpatialCoverageType (1) <>

SpatialRepresentationInfo/Latitude\_Resolution (0..1)

SpatialRepresentationInfo/Longitude\_Resolution (0..1)

SpatialRepresentationInfo/Horizontal\_Resolution\_Range (0..1)

SpatialRepresentationInfo/Vertical\_Resolution (0..1)

SpatialRepresentationInfo/Vertical\_Resolution\_Range (0..1)

SpatialRepresentationInfo/VerticalCoordinateSystem (0..1)

SpatialRepresentationInfo/VerticalCoordinateSystem/AltitudeSystemDefinition (0..1)

SpatialRepresentationInfo/VerticalCoordinateSystem/DepthSystemDefinition (0..1)

SpatialRepresentationInfo/HorizontalCoordinateSystem (0..1)

SpatialRepresentationInfo/HorizontalCoordinateSystem/GeodeticModel (0..1)

{Choice of 0..1}

1) SpatialRepresentationInfo/HorizontalCoordinateSystem/GeographicCoordinateSystem (0..1)

2) SpatialRepresentationInfo/HorizontalCoordinateSystem/PlanarCoordinateSystems (0..\*)

3) SpatialRepresentationInfo/HorizontalCoordinateSystem/LocalCoordinateSystem (0..1)

**Description**

This element stores the reference frame or system in which altitudes (elevations) are given. The information contains the datum name, distance units, and encoding method - which provide the definition for the system. This element also stores the characteristics of the reference frame or system from which depths are measured. Additional information in this element is geometry reference data.

*Note: This element is currently underutilized in ECHO10 holdings. Out of over 4000 collections only 15 records include more information than <SpatialCoverageType>Horizontal</SpatialCoverageType>.*

**Cardinality**

0..1

**Tags**

*Recommended*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Resolution/  /DIF/Spatial\_Coverage/ |
| DIF 10 | /DIF/Data\_Resolution/  /DIF/Spatial\_Coverage/Spatial\_Info/ |
| ECHO 10 Collection | /Collection/SpatialInfo/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:spatialRepresentationInfo/gmd:MD\_Georeferenceable  /gmd:numberOfDimensions/gco:Integer  /gmi:MI\_Metadata/gmd:spatialRepresentationInfo/gmd:MD\_Georeferenceable  /gmd:axisDimensionProperties/gmd:MD\_Dimension/gmd:dimensionName  /gmd:MD\_DimensionNameTypeCode codeListValue="column"  /gmi:MI\_Metadata/gmd:spatialRepresentationInfo/gmd:MD\_Georeferenceable  /gmd:axisDimensionProperties/gmd:MD\_Dimension/gmd:resolution  /gco:Measure uom="Decimal%20Degrees"  /gmi:MI\_Metadata/gmd:spatialRepresentationInfo/gmd:MD\_Georeferenceable  /gmd:axisDimensionProperties/gmd:MD\_Dimension/gmd:dimensionName  /gmd:MD\_DimensionNameTypeCode codeListValue="row"  /gmi:MI\_Metadata/gmd:spatialRepresentationInfo/gmd:MD\_Georeferenceable  /gmd:axisDimensionProperties/gmd:MD\_Dimension/gmd:dimensionName  /gmd:MD\_DimensionNameTypeCode codeListValue="vertical" |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:spatialRepresentationInfo/msr:MD\_Georeferenceable  /msr:numberOfDimensions/gco:Integer  /mdb:MD\_Metadata/mdb:spatialRepresentationInfo/msr:MD\_Georeferenceable  /msr:axisDimensionProperties/msr:MD\_Dimension/msr:dimensionName  /msr:MD\_DimensionNameTypeCode codeListValue="column"  /mdb:MD\_Metadata/mdb:spatialRepresentationInfo/msr:MD\_Georeferenceable  /msr:axisDimensionProperties/msr:MD\_Dimension/msr:resolution  /gco:Measure uom="Decimal%20Degrees"  /mdb:MD\_Metadata/mdb:spatialRepresentationInfo/msr:MD\_Georeferenceable  /msr:axisDimensionProperties/msr:MD\_Dimension/msr:dimensionName  /msr:MD\_DimensionNameTypeCode codeListValue="row"  /mdb:MD\_Metadata/mdb:spatialRepresentationInfo/msr:MD\_Georeferenceable  /msr:axisDimensionProperties/msr:MD\_Dimension/msr:dimensionName  /msr:MD\_DimensionNameTypeCode codeListValue="vertical" |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Data\_Resolution>  <Latitude\_Resolution>.05 m</Latitude\_Resolution>  <Longitude\_Resolution>.05 m</Longitude\_Resolution>  <Horizontal\_Resolution\_Range uuid="08e4b31c-0be3-49cd-9374-caac345e7402">&lt; 1 meter</Horizontal\_Resolution\_Range>  <Vertical\_Resolution>.1 m</Vertical\_Resolution>  <Vertical\_Resolution\_Range uuid="08e4b31c-0be3-49cd-9374-caac345e7402">&lt; 1 meter</Vertical\_Resolution\_Range>  <Temporal\_Resolution>15-sec sample rate, standard geodetic GPS resolution</Temporal\_Resolution>  <Temporal\_Resolution\_Range uuid="48ff676f-836c-4cff-bc88-4c4cc06b2e1b">1 second - &lt; 1 minute</Temporal\_Resolution\_Range> </Data\_Resolution> |

DIF 10

|  |
| --- |
| <Data\_Resolution>  <Latitude\_Resolution>13 km</Latitude\_Resolution>  <Longitude\_Resolution>13 km</Longitude\_Resolution>  <Horizontal\_Resolution\_Range>10 km - &lt; 50 km or approximately .09 degree - &lt; .5 degree</Horizontal\_Resolution\_Range>  <Temporal\_Resolution\_Range>Daily - &lt; Weekly</Temporal\_Resolution\_Range>  </Data\_Resolution>    <Spatial\_Coverage> ...  <Spatial\_Info>  <Spatial\_Coverage\_Type>Horizontal</Spatial\_Coverage\_Type> ...  </Spatial\_Info>  </Spatial\_Coverage> |

ECHO 10

|  |
| --- |
| <SpatialInfo>  <SpatialCoverageType>HORIZ&amp;VERT</SpatialCoverageType>  <VerticalCoordinateSystem>  <AltitudeSystemDefinition>  <DatumName>Not Applicable</DatumName>  <DistanceUnits>kilometers</DistanceUnits>  <EncodingMethod>Implicit coordinate</EncodingMethod>  <Resolutions>  <Resolution>0.5</Resolution>  </Resolutions>  </AltitudeSystemDefinition>  </VerticalCoordinateSystem>  <HorizontalCoordinateSystem>  <GeodeticModel>  <EllipsoidName>IAU 1976</EllipsoidName>  <SemiMajorAxis>6378140.0</SemiMajorAxis>  <DenominatorOfFlatteningRatio>298.257</DenominatorOfFlatteningRatio>  </GeodeticModel>  <GeographicCoordinateSystem>  <GeographicCoordinateUnits>Decimal Degrees</GeographicCoordinateUnits>  <LatitudeResolution>0.01</LatitudeResolution>  <LongitudeResolution>0.01</LongitudeResolution>  </GeographicCoordinateSystem>  </HorizontalCoordinateSystem>  </SpatialInfo> |

ISO 19115-2

|  |
| --- |
| <gmd:spatialRepresentationInfo>  <gmd:MD\_Georeferenceable>  <gmd:numberOfDimensions>  <gco:Integer>3</gco:Integer>  </gmd:numberOfDimensions>  <gmd:axisDimensionProperties>  <gmd:MD\_Dimension>  <gmd:dimensionName>  <gmd:MD\_DimensionNameTypeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_DimensionNameTypeCode" codeListValue="column">column</gmd:MD\_DimensionNameTypeCode>  </gmd:dimensionName>  <gmd:dimensionSize gco:nilReason="unknown"/>  <gmd:resolution>  <gco:Measure uom="Decimal%20Degrees">0.01</gco:Measure>  </gmd:resolution>  </gmd:MD\_Dimension>  </gmd:axisDimensionProperties>  <gmd:axisDimensionProperties>  <gmd:MD\_Dimension>  <gmd:dimensionName>  <gmd:MD\_DimensionNameTypeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_DimensionNameTypeCode" codeListValue="row">row</gmd:MD\_DimensionNameTypeCode>  </gmd:dimensionName>  <gmd:dimensionSize gco:nilReason="unknown"/>  <gmd:resolution>  <gco:Measure uom="Decimal%20Degrees">0.01</gco:Measure>  </gmd:resolution>  </gmd:MD\_Dimension>  </gmd:axisDimensionProperties>  <gmd:axisDimensionProperties>  <gmd:MD\_Dimension>  <gmd:dimensionName>  <gmd:MD\_DimensionNameTypeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_DimensionNameTypeCode" codeListValue="vertical">vertical</gmd:MD\_DimensionNameTypeCode>  </gmd:dimensionName>  <gmd:dimensionSize gco:nilReason="unknown"/>  <gmd:resolution>  <gco:Measure uom="kilometers">0.5</gco:Measure>  </gmd:resolution>  </gmd:MD\_Dimension>  </gmd:axisDimensionProperties>  <gmd:cellGeometry/>  <gmd:transformationParameterAvailability/>  <gmd:controlPointAvailability/>  <gmd:orientationParameterAvailability/>  <gmd:georeferencedParameters/>  </gmd:MD\_Georeferenceable>  </gmd:spatialRepresentationInfo> |

ISO 19115-1

|  |
| --- |
| <mdb:spatialRepresentationInfo>  <msr:MD\_Georeferenceable>  <msr:numberOfDimensions>  <gco:Integer>3</gco:Integer>  </msr:numberOfDimensions>  <msr:axisDimensionProperties>  <msr:MD\_Dimension>  <msr:dimensionName>  <msr:MD\_DimensionNameTypeCode codeList="codeListLocation#MD\_DimensionNameTypeCode"  codeListValue="anyValidURI">column</msr:MD\_DimensionNameTypeCode>  </msr:dimensionName>  <msr:dimensionSize gco:nilReason="unknown"/>  <msr:resolution>  <gco:Measure uom="Decimal%20Degrees">0.01</gco:Measure>  </msr:resolution>  </msr:MD\_Dimension>  </msr:axisDimensionProperties>  <msr:axisDimensionProperties>  <msr:MD\_Dimension>  <msr:dimensionName>  <msr:MD\_DimensionNameTypeCode codeList="codeListLocation#MD\_DimensionNameTypeCode"  codeListValue="anyValidURI">row</msr:MD\_DimensionNameTypeCode>  </msr:dimensionName>  <msr:dimensionSize gco:nilReason="unknown"/>  <msr:resolution>  <gco:Measure uom="Decimal%20Degrees">0.01</gco:Measure>  </msr:resolution>  </msr:MD\_Dimension>  </msr:axisDimensionProperties>  <msr:axisDimensionProperties>  <msr:MD\_Dimension>  <msr:dimensionName>  <msr:MD\_DimensionNameTypeCode codeList="codeListLocation#MD\_DimensionNameTypeCode"  codeListValue="anyValidURI">vertical</msr:MD\_DimensionNameTypeCode>  </msr:dimensionName>  <msr:dimensionSize gco:nilReason="unknown"/>  <msr:resolution>  <gco:Measure uom="kilometers">0.5</gco:Measure>  </msr:resolution>  </msr:MD\_Dimension>  </msr:axisDimensionProperties>  <msr:cellGeometry/>  <msr:transformationParameterAvailability/>  <msr:controlPointAvailability/>  <msr:orientationParameterAvailability/>  <msr:georeferencedParameters/>  </msr:MD\_Georeferenceable>  </mdb:spatialRepresentationInfo> |

Source Data Information:

DIF 9 - Data\_Resolution - https://cmr.earthdata.nasa.gov/search/concepts/C1214591238-SCIOPS  
DIF 10 - Data\_Resolution - https://cmr.earthdata.nasa.gov/search/concepts/C1236224153-GES\_DISC

Spatial\_Coverage - https://cmr.earthdata.nasa.gov/search/concepts/C183897339-LARC  
ECHO 10 - https://cmr.earthdata.nasa.gov/search/concepts/C182161249-LARC  
ISO 19115-2 - https://cmr.earthdata.nasa.gov/search/concepts/C182161249-LARC.iso

ISO 19115-1 - Example based on EchoToISO-1.xsl translation of ECHO 10 record

### B.2.6.4 Location Keywords

**Element Specification**

LocationKeywords

LocationKeywords/Category (1)

LocationKeywords/Type (0..1)

LocationKeywords/Subregion1 (0..1)

LocationKeywords/Subregion2 (0..1)

LocationKeywords/Subregion3 (0..1)

LocationKeywords/DetailedLocation (0..1)

**Description**

This element specifies the name of a place on the Earth, within Earth's atmosphere, within Earth's magnetic field, or regions of the Sun. All of the sub-elements except for DetailedVariable are controlled and use the GCMD Location Keyword vocabulary. The vocabulary is managed by the Keyword Management System (KMS) and it can be found at this location: http://gcmdservices.gsfc.nasa.gov/static/kms/locations/locations.csv. The DetailedVariable is an uncontrolled free text element that allows the metadata author to include another location keyword to more fully describe the data.

When translating from specifications that use a single keyword such as ECHO 10, the value of the keyword is looked up in the KMS. The highest level hierarchy found that matches the value will be used to fill in the UMM hierarchy. For example there is an ECHO 10 collection record that contains:

<SpatialKeywords>  
...  
 <Keyword>Australia</Keyword>  
...  
</SpatialKeywords>

The keyword of Australia is looked up using the data of the KMS system. As of 10/13/2016 the top three values exist in the KMS that contain the keyword Australia plus I have added the last one for the purpose of this example:

"CONTINENT","AUSTRALIA/NEW ZEALAND","","","","02156a5c-5ea1-43e3-acf1-a89e99027555"

"CONTINENT","AUSTRALIA/NEW ZEALAND","AUSTRALIA","","","ce0984da-1151-41ff-8d92-ab551c9d08bc"

"CONTINENT","AUSTRALIA/NEW ZEALAND","NEW ZEALAND","","","d225920a-b027-4931-83d4-b60918251b59"

"CONTINENT","AUSTRALIA/NEW ZEALAND","AUSTRALIA","NEW SOUTH WALES","","xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx"

The CMR will use the second one and fill in the higher elements in the UMM structure. So the UMM record will look like the following:

LocationKeywords/Category = CONTINENT

LocationKeywords/Type = AUSTRALIA/NEW ZEALAND

LocationKeywords/Subregion1 = AUSTRALIA

**Cardinality**

0..\*

**Tags**

*Recommended, Controlled Vocabulary, Faceted, Search API, Free Text Search*

**Analysis**

This class is found in both ECHO and GCMD. It is controlled within GCMD but not controlled in ECHO. GCMD's location is a hierarchical structure whereas in ECHO it is a single keyword. GCMD's location hierarchies were primarily obtained from the following reference:  
https://www.cia.gov/library/publications/the-world-factbook/and it has since moved away from using the World Factbook in favor of the international standard ISO 3166-1.

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Location/ |
| DIF 10 | /DIF/Location/ |
| ECHO 10 Collection | /Collection/SpatialKeywords/Keyword |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gco:CharacterString  with  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:type/gmd:MD\_KeywordTypeCode[@codeListValue="place"] |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/gco:CharacterString  with  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:descriptiveKeywords/mri:MD\_Keywords/mri:type/mri:MD\_KeywordTypeCode[@codeListValue="place"] |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Location uuid="d0081284-5cef-484d-b1ee-a6787b197a33">  <Location\_Category>CONTINENT</Location\_Category>  <Location\_Type>NORTH AMERICA</Location\_Type>  <Location\_Subregion1>CANADA</Location\_Subregion1>  <Detailed\_Location>BOWEN ISLAND</Detailed\_Location> </Location> <Location uuid="88bc8b39-ad19-4415-b426-e7d37450341a">  <Location\_Category>CONTINENT</Location\_Category>  <Location\_Type>NORTH AMERICA</Location\_Type>  </Location> <Location uuid="46769685-522d-49c3-ad81-22e1cc8c0c2b">  <Location\_Category>GEOGRAPHIC REGION</Location\_Category>  <Location\_Type>MID-LATITUDE</Location\_Type> </Location> |

DIF 10

|  |
| --- |
| <Location>  <Location\_Category>OCEAN</Location\_Category>  <Location\_Type>SOUTHERN OCEAN</Location\_Type>  <Location\_Subregion1>SOUTH SHETLAND ISLANDS</Location\_Subregion1> </Location> <Location>  <Location\_Category>CONTINENT</Location\_Category>  <Location\_Type>ANTARCTICA</Location\_Type> </Location> |

ECHO 10

|  |
| --- |
| <SpatialKeywords>  <Keyword>Africa</Keyword>  <Keyword>Asia</Keyword>  <Keyword>Australia</Keyword>  <Keyword>Equatorial</Keyword>  <Keyword>Europe</Keyword>  <Keyword>Global</Keyword>  <Keyword>Mid-Latitude</Keyword>  <Keyword>North America</Keyword>  <Keyword>Oceania</Keyword>  <Keyword>Polar</Keyword>  <Keyword>South America</Keyword> </SpatialKeywords> |

ISO 19115-2

|  |
| --- |
| <gmd:descriptiveKeywords>  <gmd:MD\_Keywords>  <gmd:keyword>  <gco:CharacterString>Africa</gco:CharacterString>  </gmd:keyword>  <gmd:keyword>  <gco:CharacterString>Asia</gco:CharacterString>  </gmd:keyword>  …  <gmd:type>  <gmd:MD\_KeywordTypeCode codeList=http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_KeywordTypeCode codeListValue="place">place</gmd:MD\_KeywordTypeCode>  </gmd:type>  <gmd:thesaurusName>  …  </gmd:thesaurusName>  </gmd:MD\_Keywords> </gmd:descriptiveKeywords> |

ISO 19115-1

|  |
| --- |
| <mri:descriptiveKeywords>  <mri:MD\_Keywords>  <mri:keyword>  <gco:CharacterString>Africa</gco:CharacterString>  </mri:keyword>  <mri:type>  <mri:MD\_KeywordTypeCode codeList="codeListLocation#MD\_KeywordTypeCode”  codeListValue="place">place</mri:MD\_KeywordTypeCode>  </mri:type>  <mri:thesaurusName/>  </mri:MD\_Keywords> </mri:descriptiveKeywords> |

Source Data Information:

DIF 9 - https://cmr.earthdata.nasa.gov/search/concepts/C1214621811-SCIOPS  
DIF 10 - https://cmr.earthdata.nasa.gov/search/concepts/C1232343424-SCIOPS  
ECHO 10 - https://cmr.earthdata.nasa.gov/search/concepts/C1000000121-SEDAC  
ISO 19115-2 - https://cmr.earthdata.nasa.gov/search/concepts/C1000000121-SEDAC.iso

ISO 19115-1 - Example built from ECHOtoISO19115-1.xsl translation of ECHO 10 collection

## B.2.7 Acquisition Information

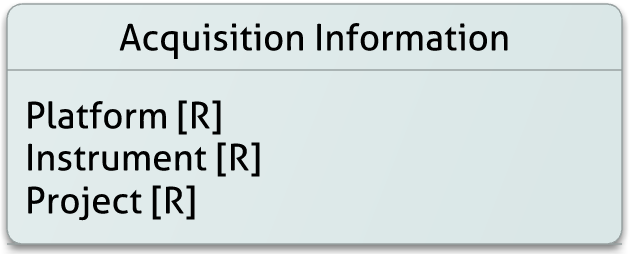
​​

Figure B.0‑8. Acquisition Information

### B.2.7.1 Platform [R]

See UMM-Common Platform element for full documentation and examples.

**Tags**

*Required, Free Text Search, Search API, Controlled Vocabulary, Faceted, Validated Relationship*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Source\_Name |
| DIF 10 | /DIF/Platform/ |
| ECHO 10 Collection | /Collection/Platforms/Platform/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation/gmi:platform  /eos:EOS\_Platform/  and  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gco:CharacterString  with  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gmd:type  /MD\_KeywordTypeCode[@codeListValue="platform"] |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:acquisitionInformation/mac:MI\_AcquisitionInformation  /mac:platform/eos:EOS\_Platform/  and  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/gco:CharacterString  with  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/mri:type  /mri:MD\_KeywordTypeCode codeList="http://www.ngdc.noaa.gov/metadata  /published/xsd/schema/resources  /Codelist/gmxCodelists.xml#MD\_KeywordTypeCode"  codeListValue="platform" |
| EMS | Sometimes maps to mission/platform/program. Otherwise, "N/A" or "Not Applicable" |

### B.2.7.2 Instrument [R]

See UMM-Common Instrument element for full documentation and examples.

**Tags**

*Required, Free Text Search, Search API, Controlled Vocabulary, Faceted, Validated Relationship*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Sensor\_Name/ |
| DIF 10 | /DIF/Platform/Instrument/  and  /DIF/Platform/Instrument/Sensor |
| ECHO | /Collection/Platforms/Platform/Instruments/Instrument/  and  /Collection/Platforms/Platform/Instruments/Instrument/Sensors/Sensor |
| ISO 19115-2 | /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation  /gmi:instrument/eos:EOS\_Instrument/  and  /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation  /gmi:instrument/eos:EOS\_Instrument/eos:sensor/eos:EOS\_Sensor  and  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gco:CharacterString  with  /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification  /gmd:descriptiveKeywords/gmd:MD\_Keywords/gmd:keyword/gmd:type  /MD\_KeywordTypeCode[@codeListValue="instrument"] |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:acquisitionInformation/mac:MI\_AcquisitionInformation  /mac:instrument/eos:EOS\_Instrument  and  /mdb:MD\_Metadata/mdb:acquisitionInformation/mac:MI\_AcquisitionInformation  /mac:instrument/eos:EOS\_Instrument/eos:sensor/eos:EOS\_Sensor  and  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/gco:CharacterString  with  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/mri:type/mri:MD\_KeywordTypeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources  /Codelist/gmxCodelists.xml#MD\_KeywordTypeCode"  codeListValue="instrument" |
| EMS | instrument |

### B.2.7.3 Project

See UMM-Common Project element for full documentation and examples.

**Tags**

*Recommended, Free Text Search, Search API, Controlled Vocabulary, Faceted, Validated Relationship*

**Sample Mappings**

|  |  |
| --- | --- |
| DIF | /DIF/Project/ |
| DIF 10 | /DIF/Project/ |
| ECHO 10 Collection | /Collection/Campaigns/Campaign/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation  /gmi:operation/gmi:MI\_Operation/ |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:acquisitionInformation/mac:MI\_AcquisitionInformation  /mac:operation/mac:MI\_Operation  and  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/gco:CharacterString  with  /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification  /mri:descriptiveKeywords/mri:MD\_Keywords/mri:keyword/mri:type  /mri:MD\_KeywordTypeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources  /Codelist/gmxCodelists.xml#MD\_KeywordTypeCode"  codeListValue="project" |
| EMS | mission |

**Appendix B-1 Deprecated Fields**

**DIF**

* Discipline

**ECHO**

* Orderable
* Visible
* CSDTDescriptions
* AlgorithmPackages
* MaintenanceAndUpdateFrequency

**EMS**

* EOSFlag

**Appendix B-2 Tags Glossary**

|  |  |
| --- | --- |
| **Tag Name** | Description |
| **Required** | This element is required. |
| **Free Text Search** | This element will be indexed by the CMR as part of the Free Text Search. |
| **Search API** | This element will be indexed by the CMR and will be exposed via the CMR. For example, the CMR will expose a "platform" search option, so the "Platform" element will have this tag. This is not to be confused with parameters (or variables) that are part of a collection's science data. |
| **Controlled Vocabulary** | This element will have a vocabulary that will be used to validate the value. This will most likely be done via a vocabulary management service. |
| **Faceted** | This element should be exposed by the CMR catalog via a faceted search response. |
| **Markdown Support** | This element supports markdown-formatted text. Additional information on markdown can be found at http://en.wikipedia.org/wiki/Markdown. |
| **Recommended** | This element is recommended. |
| **Validated Relationship** | Any associated granules use this element for validation against the collection, or associated collections are checked for validity. |
| **Normalize** | The values contained in this element should be normalized (via enumerations or controlled vocabulary). |

**Appendix B-3 Abbreviations and Acronyms**

|  |  |
| --- | --- |
| API | Application Programming Interface |
| CMR | Common Metadata Repository |
| DAAC | Distributed Active Archive Center |
| DCN | Document Change Notice |
| DIF | Directory Interchange Format |
| DOI | Digital Object Identifier |
| ECHO | Earth Observing System (EOS) Clearing House |
| EMS | ESDIS Metric System |
| EOS | Earth Observing System |
| EOSDIS | Earth Observing System Data and Information System |
| ESDIS | Earth Science Data and Information System |
| ESO | ESDIS Standards Office |
| GCMD | Global Change Master Directory |
| GSFC | Goddard Space Flight Center |
| IDN | Internal Directory Name |
| ISO | International Organization for Standardization |
| KMS | Keyword Management System |
| MAS | Metadata Architecture Studies |
| MENDS | Metadata Evolution for NASA Data Systems |
| MMT | Metadata Management Tool |
| NASA | National Aeronautics and Space Administration |
| NOAA | National Oceanic and Atmospheric Administration |
| TBD | To Be Determined |
| UML | Unified Modeling Language |
| UMM | Unified Metadata Model |
| UMM-C | Unified Metadata Model - Collections |
| UMM-Common | Unified Metadata Model - Common Elements |
| URI | Uniform Resource Identifier |
| URL | Uniform Resource Locator |
| XML | Extensible Markup Language |
| XPath | XML Path Language |