# Unified Metadata Model Common Elements

# Status of This Document

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

# Change Explanation

|  |  |  |
| --- | --- | --- |
| V1.0 | Provisional Release | February 2015 |
| V1.1 | Added International Organization for Standardization (ISO) 19115-1, Granule Mappings, Lineage Section. Moved Revision History to Lineage section, Split Responsible Party into Responsibility and Party. | March 2015 |
| V1.2 | Updated from June 2015 Earth Science Data and Information System (ESDIS) Standards Office (ESO) review comments.  Changed the Parameter Search tag to Search API.  Removed Metadata Standard section  Removed Lineage section  Changed Metadata Dates to Metadata Date  Removed Entry ID  Changed Data Dates to Data Date  ResourceCitation/DOI removed sub-elements.  Metadata Association removed Provider ID sub-element  Publication Reference/DOI removed sub-elements  Additional Attributes - added Type and Identifier sub-elements  Temporal Extent - changed the choice of 1..\* to choice of 1. for RangeDateTime, SingleDateTime, or PeriodicDateTime  Changed ResourceCitation/Creator and Editor to Creators and Editors.  Changed PublicationReference/Author to Authors | August 2015 |

# Impact

This document outlines common elements used in the Unified Metadata Model that are intended to be backward-compatible with existing NASA earth science metadata implementations. It will impact providers from NASA Distributed Active Archive Centers (DAAC), Common Metadata Repository (CMR) client developers (both private and commercial), metadata catalog developers, and users.

# Copyright Notice

The contents of this document are not protected by copyright in the United States.

# Abstract

This document describes common elements that are a part of the Unified Metadata Model to be used by the NASA Earth Science community and takes into account standards and specifications (Directory Interchange Format (DIF) 9[[1]](#footnote-1)[[2]](#footnote-2), DIF 10[[3]](#footnote-3), Earth Observing System (EOS) Clearing House (ECHO) 10 Collection and Granule[[4]](#footnote-4), Service Entry Resource Format (SERF)[[5]](#footnote-5)[[6]](#footnote-6), International Organization for Standardization (ISO) 19115-2[[7]](#footnote-7)[[8]](#footnote-8), ISO 19115-1[[9]](#footnote-9)) currently in use. Implementers of Earth Science Data and Information System's (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.

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# Introduction

Earth Observing System Data and Information System (EOSDIS) generates, archives, and distributes enormous amounts of Earth Science data, which in turn are made available to the science community and the public at large. To aid in the search and discovery process, this data must be organized and cataloged, which makes accurate, complete, and consistent metadata a requirement for efficient accessibility. To improve the quality and consistency among its metadata holdings, EOSDIS has developed a model describing metadata that it archives and maintains. This model documents elements that may be represented across various metadata standards and unifies them through core elements useful for discovery. 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 describes common elements used in various UMM reference profiles, which include: collections, granules, services, visualizations, variables, and documents. For each element in this document, the following information is provided:

* an element specification
* description
* profile utilization
* cardinality
* analysis
* a mapping to existing standards
* examples
* future recommendations

# Feedback

Questions, comments and recommendations on the contents of this document should be directed to support@earthdata.nasa.gov

# Metadata Profile Relationships and Related Documentation

Any metadata instance described by a UMM profile may have relationships to other metadata instances. In addition, as shown in Figure 1, each metadata instance may have associations to other metadata instances and may even include a parent metadata instance that can serve as a discovery mechanism for closely related data, services, and products. Furthermore, each metadata instance has a single instance of a "meta-metadata", which has its own profile, the UMM-M. The meta-metadata profile provides information about the metadata to which it is associated. Meta-metadata includes elements such as metadata quality assurance information, associated tags[[10]](#footnote-10), and metadata revision history. Finally, all UMM profiles and the CMR Lifecycle are documented separately. The CMR Lifecycle governs this model and related documentation and facilitates change.

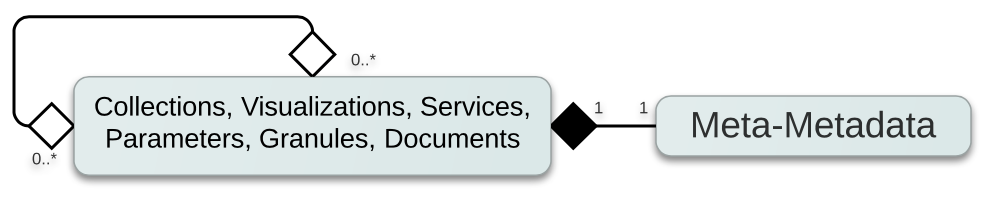


Figure : UMM Relationships

# Document Conventions

This document contains UMM Profile common elements each of which contains the following components:

* Element Name: Provides the element name.
* Element Specification: Provides the sub-elements, cardinality of the sub-elements within (), any valid values within <>, applicable comments and notes within {}, 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.

* Profile Utilization: Lists which profiles use the specific element.
* Cardinality: Indicates the expectation of counts for this element, summarized in Table 1:

|  |  |
| --- | --- |
| 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 |

Table : Cardinality

* Analysis: Gives an analysis of this element where needed and describes any necessary reconciliation.
* Mapping: Gives Extensible Markup Language (XML) Path Language (XPath[[11]](#footnote-11)) mappings for this element to the elements in other specifications. This can be considered as the "crosswalk" for this element.
* Examples: XML snippets from "cross-walked" data standards documenting sample values for the element. Whenever possible, a Uniform Resource Locator (URL) to the specific collection or service used for the metadata snippet, is provided.
* Recommendations: Provides any future recommendations for the element.

## Common Elements

### Metadata Language

**Element Specification**

MetadataLanguage

**Description**

The language used in the metadata record.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..1

**Analysis**

If not supplied the default language of English will be assumed.

**Mapping**

|  |  |
| --- | --- |
| 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= |

**Examples**

ISO 19115-2

|  |
| --- |
| <gmd:language>  <gco:CharacterString>eng</gco:CharacterString>  </gmd:language>  <gmd:MD\_CharacterSetCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_CharacterSetCode"  codeListValue="utf8">utf8</gmd:MD\_CharacterSetCode>  </gmd:characterSet> |

ISO 19115-1

|  |
| --- |
| <mdb:MD\_Metadata …>  <mdb:defaultLocale>  <lan:PT\_Locale>  <lan:language>  <lan:LanguageCode codeList="codeListLocation#LanguageCode"  codeListValue="eng">eng</lan:LanguageCode>  </lan:language>  <lan:characterEncoding>  <lan:MD\_CharacterSetCode codeList="codeListLocation#MD\_CharacterSetCode"  codeListValue="utf8">utf8</lan:MD\_CharacterSetCode>  </lan:characterEncoding>  </lan:PT\_Locale>  </mdb:defaultLocale>  …  </mdb:MD\_Metadata> |

Source Data Information:  
ISO 19115-2 - Snippet manually generated from schema

ISO 19115-1 - Snippet manually generated from schema

**Recommendations**

Recommend that the value for this element be selected from the ISO 639-2 language code list. (http://www.loc.gov/standards/iso639-2/php/code\_list.php)

### Metadata Date

**Element Specification**

MetadataDate/Date (1)  
MetadataDate/Type (1)

**Description**

This element is comprised of dates the *metadata* was created, updated, or deleted. For dates related to the actual data, the element Data Date, included in the Identification section of this document, should be used.

**Profile Utilization**

Collection, Service, Visualization, Variable, Document

**Cardinality**

1..\*

**Analysis**

All metadata dates have been consolidated under this element. They will be typed and will all be represented by the ISO 8601 date time conventions as part of the reconciliation process. A description of the change will permit metadata users to specify why and/or how the metadata was changed on that particular date.

**Mapping**

|  |  |
| --- | --- |
| 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 |
| SERF | SERF/SERF\_Creation\_Date  SERF/Last\_SERF\_Revision\_Date  SERF/Future\_SERF\_Review\_Date |
| ECHO 10 Collection | /Collection/RevisionDate |
| ECHO 10 Granule | N/A |
| ISO 19115-2 | /gmi:MI\_Metadata/datestamp – original creation date or revision date  or  /gmi:MI\_Metadata/gmd:citation/gmd:CI\_Citation/gmd:date/gmd:CI\_Date/gmd:date/gco:DateTime  with  /gmi:MI\_Metadata/gmd:citation/gmd:CI\_Citation/gmd:date/gmd:CI\_Date/gmd:dateType/gmd:CI\_DateTypeCode @codeListValue= |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <DIF\_Creation\_Date>2002-08-21</DIF\_Creation\_Date>  <Last\_DIF\_Revision\_Date>2014-05-28</Last\_DIF\_Revision\_Date> |

DIF 10

|  |
| --- |
| <Metadata\_Dates>  <Metadata\_Creation>2002-08-21</Metadata\_Creation>  <Metadata\_Last\_Revision>2014-05-28</Metadata\_Last\_Revision>  </Metadata\_Dates> |

SERF

|  |
| --- |
| <SERF\_Creation\_Date>2005-06-01</SERF\_Creation\_Date>  <Last\_SERF\_Revision\_Date>2008-06-03</Last\_SERF\_Revision\_Date> |

ECHO 10 Collection

|  |
| --- |
| <RevisionDate>2008-12-02T00:00:00.000Z</RevisionDate> |

ISO 19115-2

|  |
| --- |
| <gmd:dateStamp>  <gco:DateTime>2008-12-02T00:00:00Z</gco:DateTime>  </gmd:dateStamp>  <gmd:date>  <gmd:CI\_Date>  <gmd:date>  <gco:DateTime>2008-12-02T00:00:00.000Z</gco:DateTime>  </gmd:date>  <gmd:dateType>  <gmd:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue="revision">revision</gmd:CI\_DateTypeCode>  </gmd:dateType>  </gmd:CI\_Date>  </gmd:date>  <gmd:date>  <gmd:CI\_Date>  <gmd:date>  <gco:DateTime>2008-12-02T00:00:00.000Z</gco:DateTime>  </gmd:date>  <gmd:dateType>  <gmd:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue="creation">creation</gmd:CI\_DateTypeCode>  </gmd:dateType>  </gmd:CI\_Date>  </gmd:date> |

ISO 19115-1

|  |
| --- |
| <mdb:dateInfo>  <cit:CI\_Date>  <cit:date>  <gco:DateTime>2008-12-02T00:00:00Z</gco:DateTime>  </cit:date>  <cit:dateType>  <cit:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue="creation">creation</cit:CI\_DateTypeCode>  </cit:dateType>  </cit:CI\_Date>  </mdb:dateInfo> |

Source Data Information:

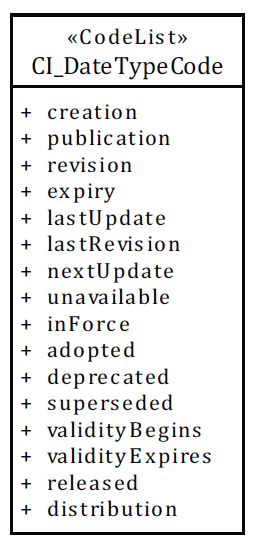
DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL  
DIF 10 - Example based on schema with data from DIF 9.9 record  
SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA-Athena

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179003030-ORNL\_DAAC  
ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179003030-ORNL\_DAAC.iso

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

**Recommendations**

The date types should be reconciled using codes from the ISO 19115-1 CI\_DateTypeCode code list shown in Figure 2.



Source: EN ISO 19115-1:2014 Geographic Information – Metadata – Part 1: Fundamentals

Figure : CI\_DateTypeCode List

### Entry Title

**Element Specification**

EntryTitle

**Description**

The EntryTitle element represents the title of the resource described by the metadata.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

1

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Entry\_Title |
| DIF 10 | /DIF/Entry\_Title |
| SERF | /SERF/Entry\_Title |
| ECHO 10 Collection | /Collection/DataSetId |
| ECHO 10 Granule | /Granule/GranuleUR \* |
| ISO 19115-2 | /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 |

\* Note: GranuleUR is mapped to both the Entry ID and Entry Title because granules only have one granule id/title/name.

**Examples**

DIF 9

|  |
| --- |
| <Entry\_Title>Socioeconomic Data and Applications Center (SEDAC) Collection of Treaty Texts</Entry\_Title> |

DIF 10

|  |
| --- |
| <Entry\_Title>Socioeconomic Data and Applications Center (SEDAC) Collection of Treaty Texts</Entry\_Title> |

SERF

|  |
| --- |
| <Entry\_Title>Project 3D-View: Virtual Interactive Environmental Worlds</Entry\_Title> |

ECHO 10 Collection

|  |
| --- |
| <Collection>  ...  <DataSetId>Global Cyclone Hazard Frequency and Distribution</DataSetId>  ...  </Collection> |

ISO 19115-2

|  |
| --- |
| <gmd:fileIdentifier>  <gco:CharacterString>Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </gmd:fileIdentifier>  …  <gmd:identificationInfo>  <gmd:MD\_DataIdentification>  <gmd:citation>  <gmd:CI\_Citation>  <gmd:title>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD &gt; Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </gmd:title>  …  </gmd:CI\_Citation>  </gmd:citation>  …  </gmd:MD\_DataIdentification>  </gmd:identificationInfo> |

ISO 19115-1

|  |
| --- |
| <mdb:metadataIdentifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </mcc:code>  <mcc:codeSpace>  <gco:CharacterString>gov.nasa.echo</gco:CharacterString>  </mcc:codeSpace>  </mcc:MD\_Identifier>  </mdb:metadataIdentifier>  ...  <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><gmd:CI\_Citation>  </cit:title>  …  </cit:CI\_Citation>  </mri:citation>  ...  </mri:MD\_DataIdentification>  </mdb:identificationInfo> |

EMS Flat File

|  |
| --- |
| Aquarius L3 Gridded 1-Degree Daily Soil Moisture |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL  
DIF 10 - Example based on schema with data from DIF 9 record.

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA\_3D\_VIEW  
ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001766-SEDAC  
ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001766-SEDAC.iso

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

EMS - NSIDCV0 flat file

### Abstract

**Element Specification**

Abstract

**Description**

Abstract provides a brief description of the resource the metadata represents.

**Profile Utilization**

Collection, Service, Visualization, Variable, Document

**Cardinality**

1

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Summary/Abstract |
| DIF 10 | /DIF/Summary/Abstract |
| SERF | /SERF/Summary/Abstract |
| ECHO 10 Collection | /Collection/Description |
| ECHO 10 Granule | N/A |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <Summary>  <Abstract>The Socioeconomic Data and Applications Center (SEDAC) Collection of Treaty Texts consists of environmental treaty texts that are compiled in collaboration with the Columbia University Center for International Earth Science Information Network (CIESIN), United Nations Environmental Programme (UNEP), Tufts University's Fletcher School of Law and Diplomacy (FSLD), British Columbia Ministry of Environment, Lands, and Parks (BCMELP), Antarctic Cooperative Research Centre (ACRC) and American Society of International Law (ASIL).  Full texts or a summary of treaties are available from the Socioeconomic Data and Applications Center (SEDAC) in Hypertext Markup Language (HTML) format via direct download from the Environmental Treaties and Resource Indicators (ENTRI) Query Service at http://sedac.ciesin.columbia.edu/entri/.</Abstract>  ...  </Summary> |

DIF 10

|  |
| --- |
| <Summary>  <Abstract>The Socioeconomic Data and Applications Center (SEDAC) Collection of Treaty Texts consists of environmental treaty texts that are compiled in collaboration with the Columbia University Center for International Earth Science Information Network (CIESIN), United Nations Environmental Programme (UNEP), Tufts University's Fletcher School of Law and Diplomacy (FSLD), British Columbia Ministry of Environment, Lands, and Parks (BCMELP), Antarctic Cooperative Research Centre (ACRC) and American Society of International Law (ASIL).  Full texts or a summary of treaties are available from the Socioeconomic Data and Applications Center (SEDAC) in Hypertext Markup Language (HTML) format via direct download from the Environmental Treaties and Resource Indicators (ENTRI) Query Service at http://sedac.ciesin.columbia.edu/entri/.</Abstract>  ...  </Summary> |

SERF

|  |
| --- |
| <Summary><Abstract>The Minnesota Public Health Data Access Portal (also called the Data Access Portal) provides access to data on a variety of environmental and health topics. Minnesota Public Health Data Access (MNPH Data Access) is an online query and information system designed to provide public access to Minnesota data about health, the environment, and other risk factors that may impact public health. Each topic area on the portal has a web page with information and details about the data. This page identifies the source of the data, as well as the data's strengths and limitations.  Minnesota Public Health Data Access (the Data Access portal) is updated regularly to include new features and data (as data are available). The portal includes data on air quality, asthma, birth defects, cancer, carbon monoxide poisoning, chemicals in people: biomonitoring, childhood immunizations, childhood lead poisoning, chronic obstructive pulmonary disease, drinking water quality, environmental tobacco smoke, health insurance, heart attacks, heat-related illness, obesity, poverty & income, reproductive & birth outcomes, and smoking. Some of the data are available in mapped format.</Abstract>  </Summary> |

ECHO 10 Collection

|  |
| --- |
| <Description>  The AMSR-E/Aqua Level-3 daily Snow Water Equivalent (SWE) product includes global  SWE on Northern and Southern Hemisphere 25 km EASE-Grids, generated by the GSFC algorithm  using Level-2A TBs.  </Description> |

ISO 19115-2

|  |
| --- |
| <gmd:abstract>  <gco:CharacterString>The AMSR-E/Aqua Level-3 daily Snow Water Equivalent (SWE) product  includes global SWE on Northern and Southern Hemisphere 25 km EASE-Grids, generated  by the GSFC algorithm using Level-2A TBs. Version Description: Transitional snow  water equivalent (SWE) corrects for forest attenuation using forest fraction from  MODIS 1 km IGBP Classes and forest density from MODIS 500 m UMD Vegetation Continuous  Field; snow density climatology is used to convert snow depth to  SWE.</gco:CharacterString>  </gmd:abstract> |

ISO 19115-1

|  |
| --- |
| <mri:abstract>  <gco:CharacterString>The AMSR-E/Aqua Level-3 daily Snow Water Equivalent (SWE) product  includes global SWE on Northern and Southern Hemisphere 25 km EASE-Grids, generated  by the GSFC algorithm using Level-2A TBs. Version Description: Transitional snow  water equivalent (SWE) corrects for forest attenuation using forest fraction from  MODIS 1 km IGBP Classes and forest density from MODIS 500 m UMD Vegetation Continuous  Field; snow density climatology is used to convert snow depth to  SWE.</gco:CharacterString>  </mri:abstract> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL

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

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/Minnesota\_Public\_Health\_Data\_Access\_Portal

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179014688-NSIDC\_ECS

ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179014688-NSIDC\_ECS.iso

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

### Purpose

**Element Specification**

Purpose

**Description**

This element contains suggested usage or purpose for the resource.

**Profile Utilization**

Collection, Service, Visualization, Variable, Document

**Cardinality**

0..1

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Summary/Purpose |
| DIF 10 | /DIF/Summary/Purpose |
| SERF | /SERF/Summary/Purpose |
| ECHO 10 Collection | /Collection/SuggestedUsage |
| ECHO 10 Granule | N/A |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <Summary>  ...  <Purpose>To provide search and retrieval of texts of multilateral environmental agreements (MEAs).</Purpose>  </Summary> |

DIF 10

|  |
| --- |
| <Summary>  ...  <Purpose>To provide search and retrieval of texts of multilateral environmental agreements (MEAs).</Purpose>  </Summary> |

SERF

|  |
| --- |
| <Summary  …  <Purpose>MNPH Data Access may be used to:  -Help people and communities make healthy choices  -Protect children, the environment, and future generations  -Evaluate and measure the effectiveness of public health actions and policy  Ultimately, the goal of MNPH Data Access is to support the Minnesota Department of Health's mission -- to protect, maintain, and improve the health of all Minnesotans.</Purpose></Summary> |

ECHO 10 Collection

|  |
| --- |
| <SuggestedUsage>To serve a wide user community by providing composite Landsat images and raw data for urban areas that can be used in interdisciplinary studies of remote sensing and the environment.</SuggestedUsage> |

ISO 19115-2

|  |
| --- |
| <gmd:purpose>  <gco:CharacterString>To serve a wide user community by providing composite Landsat images and raw data for urban areas that can be used in interdisciplinary studies of remote sensing and the environment.</gco:CharacterString>  </gmd:purpose> |

ISO 19115-1

|  |
| --- |
| <mri:purpose>  <gco:CharacterString>To serve a wide user community by providing composite Landsat images and raw data for urban areas that can be used in interdisciplinary studies of remote sensing and the environment.</gco:CharacterString>  </mri:purpose> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL  
DIF 10 - Example based on schema with data from DIF 9 record.  
SERF - http://gcmd.gsfc.nasa.gov/mws/serf/Minnesota\_Public\_Health\_Data\_Access\_Portal

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC  
ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC.iso  
ISO 19115-1 – Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record

### Language

**Element Specification**

Language

**Description**

The language used in the dataset and associated documentation. Note: This is different from the language of the metadata.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

This element is not controlled. If a language is not supplied - English, the default language, will be assumed.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Set\_Language |
| DIF 10 | /DIF/Data\_Set\_Language |
| SERF | /SERF/Service\_Language |
| ECHO 10 Collection | N/A |
| ECHO 10 Granule | 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.ngdc.noaa.gov/metadata/published/xsd/schema/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 |

**Examples**

DIF 9

|  |
| --- |
| <Data\_Set\_Language>English</Data\_Set\_Language> |

DIF 10

|  |
| --- |
| <Data\_Set\_Language>English</Data\_Set\_Language> |

SERF

|  |
| --- |
| <Service\_Language>English</Service\_Language> |

ISO 19115-2

|  |
| --- |
| <gmd:language>  <gco:CharacterString>eng</gco:CharacterString>  </gmd:language>  <gmd:MD\_CharacterSetCode codeList=http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_CharacterSetCode codeListValue=”utf8”>utf8</gmd:MD\_CharacterSetCode>  </gmd:characterSet> |

ISO 19115-1

|  |
| --- |
| <mdb:identificationInfo>  <mri:MD\_DataIdentification>  <mri:defaultLocale>  <lan:PT\_Locale>  <lan:language>  <lan:LanguageCode codeList="codeListLocation#LanguageCode"  codeListValue="eng">eng</lan:LanguageCode>  </lan:language>  <lan:characterEncoding>  <lan:MD\_CharacterSetCode codeList="codeListLocation#MD\_CharacterSetCode"  codeListValue="utf8">utf8</lan:MD\_CharacterSetCode>  </lan:characterEncoding>  </lan:PT\_Locale>  </mri:defaultLocale>  <mri:supplementalInformation/>  </mri:MD\_DataIdentification>  </mdb:identificationInfo> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL

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

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA-Athena  
ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179003030-ORNL\_DAAC.iso

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

**Recommendations**

It is recommend that the value for this element be selected from the ISO 639-2 language code list. (http://www.loc.gov/standards/iso639-2/php/code\_list.php)

### Data Date

**Element Specification**

DataDate/Date (1)  
DataDate/Type (1)

**Description**

This element is made of two sub-elements. The type describes the what the date represents: a future review, or when the resource was created, updated or deleted. The date describes when the resource had an action performed on it or when an action on it will occur as described by the type element. Note: This is not intended to include information about Temporal Extents.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

The future reviewing, deleting, creating, or updating dates exist in various places in the different standards.

All data dates have been consolidated under this element. They will be typed and will all be represented by the ISO 8601 date time conventions as part of the reconciliation process. Any descriptions that go along with the dates can be stored in the description element. In DIF 10 both the metadata and data dates are located under the DIF/Metadata\_Dates element. The difference is that the sub-elements of Metadata\_Creation, Metadata\_Last\_Revision, Metadata\_Future\_Review, and Metadata\_Delete describe the *metadata* dates and the sub-elements of Data\_Creation, Data\_Last\_Revision, Data\_Future\_Review, Data\_Delete describe the resource dates.

**Mapping**

|  |  |
| --- | --- |
| 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 |
| SERF | N/A |
| ECHO 10 Collection | /Collection/InsertTime  /Collection/LastUpdate  /Collection/DeleteTime |
| ECHO 10 Granule | /Granule/InsertTime  /Granule/LastUpdate  /Granule/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 |

**Examples**

DIF 10

|  |
| --- |
| <Metadata\_Dates>  <Data\_Creation>2005-06-01</Data\_Creation>  <Data\_Last\_Revision>2008-06-03</Data\_Last\_Revision>  <Data\_Future\_Review>2015-06-03</Data\_Future\_Review>  <Data\_Delete>2014-06-03</Data\_Delete>  </Metadata\_Dates> |

ECHO 10 Collection

|  |
| --- |
| <InsertTime>2008-12-02T00:00:00.000Z</InsertTime>  <LastUpdate>2008-12-02T00:00:00.000Z</LastUpdate> |

ECHO 10 Granule

|  |
| --- |
| <InsertTime>2008-06-05T19:47:13.000Z</InsertTime>  <LastUpdate>2008-06-05T19:47:13.000Z</LastUpdate> |

ISO 19115-2

|  |
| --- |
| <gmd:date>  <gmd:CI\_Date>  <gmd:date>  <gco:DateTime>2008-06-03T00:00:00.000Z</gco:DateTime>  </gmd:date>  <gmd:dateType>  <gmd:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue="revision">revision</gmd:CI\_DateTypeCode>  </gmd:dateType>  </gmd:CI\_Date>  </gmd:date>  <gmd:date>  <gmd:CI\_Date>  <gmd:date>  <gco:DateTime>2005-06-01T00:00:00.000Z</gco:DateTime>  </gmd:date>  <gmd:dateType>  <gmd:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue="creation">creation</gmd:CI\_DateTypeCode>  </gmd:dateType>  </gmd:CI\_Date>  </gmd:date> |

ISO 19115-1

|  |
| --- |
| <cit:date>  <cit:CI\_Date>  <cit:date>  <gco:DateTime>2008-12-02T00:00:00Z</gco:DateTime>  </cit:date>  <cit:dateType>  <cit:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue="revision">revision</cit:CI\_DateTypeCode>  </cit:dateType>  </cit:CI\_Date>  </cit:date>  <cit:date>  <cit:CI\_Date>  <cit:date>  <gco:DateTime>2008-12-02T00:00:00Z</gco:DateTime>  </cit:date>  <cit:dateType>  <cit:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue="creation">creation</cit:CI\_DateTypeCode>  </cit:dateType>  </cit:CI\_Date>  </cit:date> |

Source Data Information:

DIF 10 - Example based on schema with data from http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179003030-ORNL\_DAAC

ECHO 10 Granule - https://api.echo.nasa.gov/catalog-rest/echo\_catalog/granules/G181127451-ASF

ISO 19115-2 - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179003030-ORNL\_DAAC.iso

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

**Recommendations**

The date types should be reconciled using the ISO 19115-1 CI\_DateTypeCode code list shown in Figure 2.

### Responsibility

**Element Specification**

Responsibility/Role (1..\*)

Responsibility/Party (1..\*)

**Description**

This element describes an organization or person associated with the data through the party element described separately. The role (distributing, archiving, providing, and/or maintaining the data) is placed in the role sub-element and the values are shown in Figure 3.

In order to support components or xlinks[[12]](#footnote-12) in the future, the role was split from the party sub-elements. This permits the data in the party element to be reused and stored independently. Thus, the UMM can reuse the Responsibililty element within other elements... so the same person or organization can be documented as having different roles throughout the metadata.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

1..\*

**Analysis**

During the UMM-C review, it was decided that Organization and Personnel elements would be combined into a merged element called Responsible Party. Later during the UMM-Common review it was decided to separate role with party to allow for components or xlinks and for reusability of the party element.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Center  /DIF/Personnel |
| DIF 10 | /DIF/Organization  /DIF/Personnel  /DIF/Organization/Personnel |
| SERF | /SERF/Service\_Provider  /SERF/Personnel |
| ECHO 10 Collection | /Collection/ProcessingCenter  /Collection/ArchiveCenter  /Collection/Contacts/Contact  /Collection/Contacts/Contact/Role |
| ECHO 10 Granule | 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/  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="8f0271eb-9444-48b9-9796-3f6213e447c3">  <Short\_Name>SEDAC</Short\_Name>  <Long\_Name>Socioeconomic Data and Applications Center</Long\_Name>  </Data\_Center\_Name>  <Data\_Center\_URL>http://sedac.ciesin.columbia.edu/</Data\_Center\_URL>  <Data\_Set\_ID>CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL</Data\_Set\_ID>  <Personnel>  <Role>DATA CENTER 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>  </Data\_Center>  <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

|  |
| --- |
| <Organization>  <Organization\_Type>{TYPE}</Organization\_Type>  <Organization\_Name uuid="8f0271eb-9444-48b9-9796-3f6213e447c3">  <Short\_Name>SEDAC</Short\_Name>  <Long\_Name>Socioeconomic Data and Applications Center</Long\_Name>  </Organization\_Name>  <Organization\_URL>http://sedac.ciesin.columbia.edu/</Organization\_URL>  <Hours\_Of\_Service></Hours\_Of\_Service>  <Data\_Set\_ID>CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL</Data\_Set\_ID>  <Personnel>  <Role>DATA CENTER CONTACT</Role>  <Contact\_Person>  <Last\_Name>SEDAC USER SERVICES</Last\_Name>  <Email>ciesin.info@ciesin.columbia.edu</Email>  <Phone>+1 845-365-8920</Phone>  <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\_Person>  </Personnel>  </Organization>  <DIF>  <Organization>  <Personnel>  <Role>TECHNICAL CONTACT</Role>  <Contact\_Person>  <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>  <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\_Person>  </Personnel>  </Organization>  <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> |

SERF

|  |
| --- |
| <Personnel>  <Role>SERF AUTHOR</Role>  <First\_Name>TYLER</First\_Name>  <Middle\_Name>B.</Middle\_Name>  <Last\_Name>STEVENS</Last\_Name>  <Email>Tyler.B.Stevens@nasa.gov</Email>  <Phone>(301) 614-6898</Phone>  <Fax>301-614-5268</Fax>  <Contact\_Address>  <Address>NASA Goddard Space Flight Center</Address>  <Address>Global Change Master Directory</Address>  <City>Greenbelt</City>  <Province\_or\_State>MD</Province\_or\_State>  <Postal\_Code>20771</Postal\_Code>  <Country>USA</Country>  </Contact\_Address>  </Personnel>  <Personnel>  <Role>TECHNICAL CONTACT</Role>  <Last\_Name>U.S. SATELLITE LABORATORY</Last\_Name>  <Email>info@signalsofspring.net</Email>  <Phone>(800) 707-8519</Phone>  <Contact\_Address>  <Address>32 Elm Pl</Address>  <City>Rye</City>  <Province\_or\_State>NY</Province\_or\_State>  <Postal\_Code>10580</Postal\_Code>  <Country>USA</Country>  </Contact\_Address>  </Personnel>  Service\_Provider>  <Service\_Organization uuid="e6aa49b2-64dc-4e96-95f5-3603bd942325">  <Short\_Name>U.S. SATELLITE LABORATORY</Short\_Name>  <Long\_Name>U.S. Satellite Laboratory</Long\_Name>  </Service\_Organization>  <Service\_Organization\_URL>http://www.us-satellite.net/</Service\_Organization\_URL>  <Personnel>  <Role>SERVICE PROVIDER CONTACT</Role>  <Last\_Name>U.S. SATELLITE LABORATORY</Last\_Name>  <Email>info@signalsofspring.net</Email>  <Phone>(800) 707-8519</Phone>  <Contact\_Address>  <Address>32 Elm Pl</Address>  <City>Rye</City>  <Province\_or\_State>NY</Province\_or\_State>  <Postal\_Code>10580</Postal\_Code>  <Country>USA</Country>  </Contact\_Address>  </Personnel>  </Service\_Provider> |

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> |

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> |

EMS

|  |
| --- |
| NSIDCV0 |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL

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

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA\_3D\_VIEW

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC

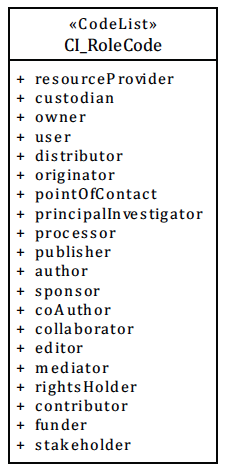
ISO 19115-2 - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001766-SEDAC.iso

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

EMS - NSIDCV0 flat file

**Recommendations**

Roles should be validated against the ISO 19115-1 code list as shown in Figure 3.



Source: EN ISO 19115-1:2014 Geographic Information – Metadata – Part 1: Fundamentals

Figure : CI\_RoleCode List

### Party

**Element Specification**  
{Choice of One}  
1) Party/OrganizationName with uuid  
 Party/OrganizationName/ShortName (1)  
 Party/OrganizationName/LongName (0..1)  
   
2) Party/Person  
 Party/Person/LastName (1)  
 Party/Person/FirstName (0..1)  
 Party/Person/MiddleName (0..1)  
  
Party/ServiceHours (0..1)  
Party/ContactInstructions (0..1)  
Party/Contact (0..\*)  
Party/Contact/Type (0..1)  
Party/Contact/Value (0..1)  
Party/Address (0..\*)  
Party/Address/StreetAddress (0..\*)  
Party/Address/City (0..1)  
Party/Address/StateProvince (0..1)  
Party/Address/PostalCode (0..1)  
Party/Address/Country (0..1)  
Party/RelatedUrl (0..\*)

**Description**

This element - a sub-element of the Responsibility element which is described above - describes an organization or person associated with the resource. In order to support components or xlinks in the future, the role was split from the party sub-elements. This permits the data in the party element to be reused and stored independently. This allows UMM to reuse the Responsiblilty element within other elements to document responsibility for a specific reason. It can reuse the same person or organization with different roles throughout the metadata.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

1..\*

**Analysis**

During the UMM-C review, it was decided that Organization and Personnel elements would be combined into a merged element called Responsible Party. Later during the UMM-Common review it was decided to separate role with party to allow for components or xlinks and for reusability of the party element.

**Mapping**

The mappings are same as the Responsibility element and are documented there.

**Examples**

The examples are the same as the Responsibility element and are documented there.

### Related URL

**Element Specification**

RelatedUrl/ContentType/Type (1)  
RelatedUrl/ContentType/Subtype (0..1)  
RelatedUrl/Protocol (0..1)  
RelatedUrl/URL (1..\*)  
RelatedUrl/Title (0..1)  
RelatedUrl/Description (0..1)  
RelatedUrl/MimeType (0..1)  
RelatedUrl/Caption (0..1)

RelatedUrl/FileSize (0..1)

**Description**

This element describes any resource related URLs that include project home pages, resource information pages, services, related data archives/servers, metadata extensions, direct links to online software packages, web mapping services, links to images, documents, or other data.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

1..\*

**Analysis**

Related online resource information is found in both GCMD and ECHO.

ECHO has OnlineAccessURL, OnlineResource, AssociatedBrowseImages, and AssociatedBrowseImageURLs:

• OnlineAccessURL - stores the online URL(s) for present granules. Those URLs either provide the site where granule data can be obtained or instruct the user on how to obtain the granule data.

• OnlineResource - links to documentation information for the collection.

• AssociatedBrowseImageURLS - contain URLs to browse imagery.

GCMD has RelatedURL and MultimediaSample:

• Related\_URL - element provides both documentation and dataset links and they are differentiated by the Related\_URL/URLContentType sub-element. This value is hierarchical using type and sub type elements to organize the kinds of URLs associated with collection metadata.

• MultimediaSample - allows the author to provide information that will enable the display of a sample image, movie, or sound clip within the DIF.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Related\_URL  /DIF/Multimedia\_Sample |
| DIF 10 | /DIF/Related\_URL  /DIF/Multimedia\_Sample |
| SERF | /SERF/Related\_URL  /SERF/Multimedia\_Sample |
| ECHO 10 Collection | /Collection/OnlineAccessURLs/OnlineAccessURL  /Collection/OnlineResources/OnlineResource  /Collection/AssociatedBrowseImages  /Collection/AssociatedBrowseImageUrls |
| ECHO 10 Granule | /Granule/OnlineAccessURLs/OnlineAccessURL  /Granule/OnlineResources/OnlineResource  /Granule/AssociatedBrowseImages  /Granule/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 |

**Examples**

DIF 9

|  |
| --- |
| <Related\_URL>  <URL\_Content\_Type uuid="6e72d128-7d28-4bd0-bac0-8c5ffd8b31f1">  <Type>VIEW PROJECT HOME PAGE</Type>  </URL\_Content\_Type>  <URL>http://www.waisdivide.unh.edu/</URL>  </Related\_URL>  <Related\_URL>  <URL\_Content\_Type uuid="5ec1bb9d-0efc-4099-9b31-ec791bbd8145">  <Type>VIEW RELATED INFORMATION</Type>  </URL\_Content\_Type>  <URL>http://www.homepage.montana.edu/~lkbonney/</URL>  <Description>  Website for the Priscu Research Group  </Description>  </Related\_URL>  <Multimedia\_Sample>  <URL>http://www.waisdivide.unh.edu/images/sitemap1\_large.jpg</URL>  </Multimedia\_Sample> |

DIF 10

|  |
| --- |
| <Related\_URL>  <URL\_Content\_Type uuid="6e72d128-7d28-4bd0-bac0-8c5ffd8b31f1">  <Type>VIEW PROJECT HOME PAGE</Type>  </URL\_Content\_Type>  <URL>http://www.waisdivide.unh.edu/</URL>  </Related\_URL>  <Related\_URL>  <URL\_Content\_Type uuid="5ec1bb9d-0efc-4099-9b31-ec791bbd8145">  <Type>VIEW RELATED INFORMATION</Type>  </URL\_Content\_Type>  <URL>http://www.homepage.montana.edu/~lkbonney/</URL>  <Description>  Website for the Priscu Research Group  </Description>  </Related\_URL>  <Multimedia\_Sample>  <URL>http://www.waisdivide.unh.edu/images/sitemap1\_large.jpg</URL>  </Multimedia\_Sample> |

SERF

|  |
| --- |
| <Related\_URL>  <URL\_Content\_Type uuid="ca8b62c9-5f31-40bd-92a9-8d30081309e2">  <Type>GET SERVICE</Type>  <Subtype>GET SOFTWARE PACKAGE</Subtype>  </URL\_Content\_Type>  <URL>http://www.mezogis.org/download.html</URL>  <Description>  Download mezoGIS.  </Description>  </Related\_URL>  <Related\_URL>  <URL\_Content\_Type uuid="ca04650e-9e65-4ce6-93ac-597b77afcba6">  <Type>GET RELATED SERVICE METADATA (SERF)</Type>  </URL\_Content\_Type>  <URL>http://gcmd.nasa.gov/getserf.htm?POSTGIS</URL>  <Description>  Get metadata for PostGIS: Geographic Objects for PostgreSQL.  </Description>  </Related\_URL>  <Multimedia\_Sample>  <URL>http://www.mezogis.org/pictures/screenshot\_22\_03\_06.jpg</URL>  <Format>JPEG</Format>  </Multimedia\_Sample> |

ECHO 10 Collection

|  |
| --- |
| <OnlineAccessURLs>  <OnlineAccessURL>  <URL>http://sedac.ciesin.columbia.edu/data/set/ulandsat-cities-from-space/data-download</URL>  <URLDescription>data download page</URLDescription>  </OnlineAccessURL>  </OnlineAccessURLs>  <OnlineResources>  <OnlineResource>  <URL>http://dx.doi.org/10.7927/H4SQ8XB1</URL>  <Description>data set DOI and homepage</Description>  <Type>DOI URL</Type>  </OnlineResource>  </OnlineResources>  <AssociatedBrowseImageUrls>  <ProviderBrowseUrl>  <URL>http://sedac.ciesin.columbia.edu/data/set/ulandsat-cities-from-space/maps</URL>  </ProviderBrowseUrl>  </AssociatedBrowseImageUrls> |

ECHO 10 Granule

|  |
| --- |
| <OnlineAccessURLs>  <OnlineAccessURL>  <URL>http://airsar.asf.alaska.edu/data/cm/cm1449</URL>  </OnlineAccessURL>  </OnlineAccessURLs  <AssociatedBrowseImageUrls>  <ProviderBrowseUrl>  <URL>http://pstor.aadn.alaska.edu/browse/AIRSAR\_POLSAR\_FRAME/cm1449.gif</URL>  <FileSize>0</FileSize>  </ProviderBrowseUrl>  </AssociatedBrowseImageUrls> |

ISO 19115-2

|  |
| --- |
| <gmd:onLine>  <gmd:CI\_OnlineResource>  <gmd:linkage>  <gmd:URL>http://sedac.ciesin.columbia.edu/data/set/ulandsat-cities-from-space/data-download</gmd:URL>  </gmd:linkage>  <gmd:applicationProfile gco:nilReason="missing"/>  <gmd:description>  <gco:CharacterString>data download page</gco:CharacterString>  </gmd:description>  <gmd:function>  <gmd:CI\_OnLineFunctionCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#CI\_OnLineFunctionCode" codeListValue="download">download</gmd:CI\_OnLineFunctionCode>  </gmd:function>  </gmd:CI\_OnlineResource>  </gmd:onLine>  <gmd:onLine>  <gmd:CI\_OnlineResource>  <gmd:linkage>  <gmd:URL>http://dx.doi.org/10.7927/H4SQ8XB1</gmd:URL>  </gmd:linkage>  <gmd:applicationProfile gco:nilReason="missing"/>  <gmd:name>  <gco:CharacterString>DOI URL</gco:CharacterString>  </gmd:name>  <gmd:description>  <gco:CharacterString>data set DOI and homepage</gco:CharacterString>  </gmd:description>  <gmd:function>  <gmd:CI\_OnLineFunctionCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#CI\_OnLineFunctionCode" codeListValue=""/>  </gmd:function>  </gmd:CI\_OnlineResource>  </gmd:onLine>  ...  <gmd:graphicOverview>  <gmd:MD\_BrowseGraphic>  <gmd:fileName>  <gmx:FileName src="http://sedac.ciesin.columbia.edu/data/set/ulandsat-cities-from-space/maps"/>  </gmd:fileName>  <gmd:fileDescription>  <gco:CharacterString>File Size:</gco:CharacterString>  </gmd:fileDescription>  <gmd:fileType gco:nilReason="missing"/>  </gmd:MD\_BrowseGraphic> |

ISO 19115-1

|  |
| --- |
| <mrd:onLine>  <cit:CI\_OnlineResource>  <cit:linkage>  <gco:CharacterString>http://sedac.ciesin.columbia.edu/data/set/ulandsat-cities-from-space/data-download</gco:CharacterString>  </cit:linkage>  <cit:applicationProfile gco:nilReason="missing"/>  <cit:description>  <gco:CharacterString>data download page</gco:CharacterString>  </cit:description>  <cit:function>  <cit:CI\_OnLineFunctionCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#CI\_OnLineFunctionCode"  codeListValue="download">download</cit:CI\_OnLineFunctionCode>  </cit:function>  </cit:CI\_OnlineResource>  </mrd:onLine>  <mrd:onLine>  <cit:CI\_OnlineResource>  <cit:linkage>  <gco:CharacterString>http://dx.doi.org/10.7927/H4SQ8XB1</gco:CharacterString>  </cit:linkage>  <cit:applicationProfile gco:nilReason="missing"/>  <cit:name>  <gco:CharacterString>DOI URL</gco:CharacterString>  </cit:name>  <cit:description>  <gco:CharacterString>data set DOI and homepage</gco:CharacterString>  </cit:description>  <cit:function>  <cit:CI\_OnLineFunctionCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#CI\_OnLineFunctionCode"  codeListValue=""/>  </cit:function>  </cit:CI\_OnlineResource>  </mrd:onLine>  …  <mri:graphicOverview>  <mcc:MD\_BrowseGraphic>  <mcc:fileName>  <gcx:FileName src="http://sedac.ciesin.columbia.edu/data/set/ulandsat-cities-from-space/maps"/>  </mcc:fileName>  <mcc:fileDescription>  <gco:CharacterString>File Size:</gco:CharacterString>  </mcc:fileDescription>  <mcc:fileType gco:nilReason="missing"/>  </mcc:MD\_BrowseGraphic>  </mri:graphicOverview> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/Paleo\_Records\_of\_Biotic\_and\_Abiotic\_Particles\_in\_polar\_Ice\_Cores   
DIF 10 - Example based on schema with data from DIF 9 record.  
SERF - http://gcmd.gsfc.nasa.gov/mws/serf/mezoGIS

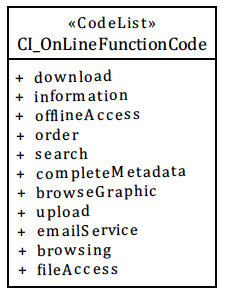
ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC  
ECHO 10 Granule – https:// api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G181127451-ASF

ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC.iso

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

**Recommendations**

The URLs should incorporate function codes using the ISO 19115-1 code list in the diagram below.  
Although it was recommended during UMM-C review to keep URLs and multimedia samples separate, the decision was made to keep them coupled temporarily. Thus, change requests will adhere to the process described in the CMR Life-Cycle. It is recommended that we look to enhance the capabilities of UMM to better serve endpoints, services, and service invocations.



Source: EN ISO 19115-1:2014 Geographic Information – Metadata – Part 1: Fundamentals

Figure : CI\_OnLineFunctionCode List

### Resource Citation

**Element Specification**

ResourceCitation/Creators (0..1)  
ResourceCitation/Editors (0..1)  
ResourceCitation/Title (0..1)  
ResourceCitation/SeriesName (0..1)  
ResourceCitation/ReleaseDate (0..1)  
ResourceCitation/ReleasePlace (0..1)  
ResourceCitation/Publisher (0..1)  
ResourceCitation/Version (0..1)  
ResourceCitation/IssueIdentification (0..1)  
ResourceCitation/DataPresentationForm (0..1)  
ResourceCitation/OtherCitationDetails (0..1)  
ResourceCitation/DOI (0..1)  
ResourceCitation/RelatedUrl (0..1) - {See RelatedUrl for full specification}

**Description**

This element instructs the user how to properly cite the provider and specifies how the resource should be cited in professional scientific literature.

This element provides a citation for the item itself, and is not designed for listing bibliographic references of scientific research articles arising from search results. A list of references related to the research results should be in the Publication Reference element. A digital object identifier (DOI) that specifically identifies the service is listed here.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

Citation information is found in DIF 9, DIF 10, SERF, and ECHO. The following elements map to this mapping:  
  
Originators -> Either Creator or Editor - The name of the organization(s) or individual(s)   
with primary intellectual responsibility for the resource’s development.  
Title -> Title - The Title of the resource; this is the same as Entry Title.   
Release\_Date -> ReleaseDate - The date the resource was made available for release.   
Provider -> Publisher - The name of the individual or organization that released the resource.  
Edition -> Version - The edition or version of the resource.   
URL -> RelatedUrl

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Data\_Set\_Citation/ |
| DIF 10 | /DIF/Data\_Set\_Citation/ |
| SERF | /SERF/Service\_Citation/ |
| ECHO 10 Collection | /Collection/CitationForExternalPublication  /Collection/LongName  /Collection/VersionId |
| ECHO 10 Granule | N/A |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <Data\_Set\_Citation>  <Dataset\_Creator>Center for International Earth Science Information Network - CIESIN - Columbia University, United Nations Environmental Programme - UNEP, Fletcher School of Law and Diplomacy - FSLD - Tufts University, British Columbia Ministry of Environment/Lands/Parks - BCMELP, Antarctic Cooperative Research Centre - ACRC, American Society of International Law - ASIL</Dataset\_Creator>  <Dataset\_Title>Socioeconomic Data and Applications Center (SEDAC) Collection of Treaty Texts</Dataset\_Title>  <Dataset\_Release\_Date>2002</Dataset\_Release\_Date>  <Dataset\_Release\_Place>Palisades, NY</Dataset\_Release\_Place>  <Dataset\_Publisher>NASA Socioeconomic Data and Applications Center (SEDAC)</Dataset\_Publisher>  <Version>1.00</Version>  <Data\_Presentation\_Form>document</Data\_Presentation\_Form>  <Dataset\_DOI>http://dx.doi.org/10.7927/H4251G48</Dataset\_DOI>  </Data\_Set\_Citation> |

DIF 10

|  |
| --- |
| <Data\_Set\_Citation>  <Dataset\_Creator>Center for International Earth Science Information Network - CIESIN - Columbia University, United Nations Environmental Programme - UNEP, Fletcher School of Law and Diplomacy - FSLD - Tufts University, British Columbia Ministry of Environment/Lands/Parks - BCMELP, Antarctic Cooperative Research Centre - ACRC, American Society of International Law - ASIL</Dataset\_Creator>  <Dataset\_Title>Socioeconomic Data and Applications Center (SEDAC) Collection of Treaty Texts</Dataset\_Title>  <Dataset\_Release\_Date>2002</Dataset\_Release\_Date>  <Dataset\_Release\_Place>Palisades, NY</Dataset\_Release\_Place>  <Dataset\_Publisher>NASA Socioeconomic Data and Applications Center (SEDAC)</Dataset\_Publisher>  <Version>1.00</Version>  <Data\_Presentation\_Form>document</Data\_Presentation\_Form>  <Dataset\_DOI>http://dx.doi.org/10.7927/H4251G48</Dataset\_DOI>  </Data\_Set\_Citation> |

SERF

|  |
| --- |
| <Service\_Citation>  <Originators>Frederic Back</Originators>  <Title>mezoGIS: A GIS Application and Graphical Interface To Query and Analyze Spatial Data</Title>  <Release\_Date>2006</Release\_Date>  <URL>http://www.mezogis.org/index.html</URL>  <Service\_Citation> |

ECHO 10 Collection

|  |
| --- |
| <VersionId>1.0</VersionId>  <LongName>U.S. Census Grids (Summary File 3), 1990</LongName>  <CitationForExternalPublication> Seirup, L., G. Yetman, and L. Razafindrazay. 2012. U.S. Census  Grids (Summary File 3), 1990. Palisades, NY: Socioeconomic Data and Applications Center  (SEDAC), Columbia University.  http://dx.doi.org/10.7927/H4JS9NC2  </CitationForExternalPublication> |

ISO 19115-2

|  |
| --- |
| <gmd:citation>  <gmd:CI\_Citation>  <gmd:title>  <gco:CharacterString>CIESIN\_CHRR\_NDH\_CYCLONE\_HFD &gt; Global Cyclone Hazard Frequency and Distribution</gco:CharacterString>  </gmd:title>  <gmd:date>  …  </gmd:date>  <gmd:edition>  …  </gmd:edition>  <gmd:identifier>  …  </gmd:identifier>  <gmd:otherCitationDetails>  <gco:CharacterString>Center for Hazards and Risk Research - CHRR - Columbia University, Center for International Earth Science Information Network - CIESIN - Columbia University, International Bank for Reconstruction and Development - The World Bank, and United Nations Environment Programme Global Resource Information Database Geneva - UNEP GRID-Geneva. 2005. Global Cyclone Hazard Frequency and Distribution. Palisades, NY:NASA Socioeconomic Data and Applications Center (SEDAC). http://dx.doi.org/10.7927/H4CZ353K</gco:CharacterString>  </gmd:otherCitationDetails>  </gmd:CI\_Citation>  </gmd:citation> |

ISO 19115-1

|  |
| --- |
| <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:date>  …  </cit:date>  <cit:edition>  …  </cit:edition>  <cit:identifier>  …  </cit:identifier>  <cit:otherCitationDetails>  <gco:CharacterString>Center for Hazards and Risk Research - CHRR - Columbia University, Center for International Earth Science Information Network - CIESIN - Columbia University, International Bank for Reconstruction and Development - The World Bank, and United Nations Environment Programme Global Resource Information Database Geneva - UNEP GRID-Geneva. 2005. Global Cyclone Hazard Frequency and Distribution. Palisades, NY:NASA Socioeconomic Data and Applications Center (SEDAC). http://dx.doi.org/10.7927/H4CZ353K</gco:CharacterString>  </cit:otherCitationDetails>  </cit:CI\_Citation>  </mri:citation> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL

DIF 10 - Example based on schema with data from DIF 9.9 record.

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/mezoGIS  
ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179003030-ORNL\_DAAC

ISO 19115-2 - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001766-SEDAC.iso  
ISO 19115-1 – Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record

### Quality

**Element Specification**

QualityAssessment

**Description**

This element permits the author to provide the following information about a resource (collection, granule, service, visualization, variable, etc.) described in the metadata: 1) Quality of the resource; and 2) Any quality assurance procedures followed in producing the resource. Examples of appropriate element information include: A) succinct description; B) indicators of resource quality or quality flags - both validated or invalidated; C) recognized or potential problems with quality; D) established quality control mechanisms; and E) established quantitative quality measurements.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..1

**Analysis**

This element is found only in GCMD and its value is an uncontrolled block of text describing the quality assessment. Both ISO conventions (19115-1 & 2) have sub-fielded text that more precisely describe the quality assessment of a resource. Please refer to ISO 19157 (Geographic information – Data quality) for more information about data quality in ISO.

**Mapping**

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

**Examples**

DIF 9

|  |
| --- |
| <Quality>  Taxonomy has been checked against ITIS, Catalogue of Life and World Register of Marine Species databases  </Quality> |

DIF 10

|  |
| --- |
| <Quality>  Taxonomy has been checked against ITIS, Catalogue of Life and World Register of Marine Species databases  </Quality> |

SERF

|  |
| --- |
| <Quality>  Metavist is available on request with the understanding that the U.S. Department of Agriculture cannot assure its accuracy, completeness, reliability, or suitability for any other purpose than that reported. The recipient may not assert any proprietary rights thereto nor represent it to anyone as other than a Government-produced computer program.  </Quality> |

ISO 19115-2

|  |
| --- |
| <gmd:dataQualityInfo>  <gmd:DQ\_DataQuality>  <gmd:scope>  <gmd:DQ\_Scope>  <gmd:level>  <gmd:MD\_ScopeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_ScopeCode"  codeListValue="series">series</gmd:MD\_ScopeCode>  </gmd:level>  </gmd:DQ\_Scope>  </gmd:scope>  <gmd:report>  <gmd:DQ\_AccuracyOfATimeMeasurement>  <gmd:measureIdentification>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>PrecisionOfSeconds</gco:CharacterString>  </gmd:code>  </gmd:MD\_Identifier>  </gmd:measureIdentification>  <gmd:result>  <gmd:DQ\_QuantitativeResult>  <gmd:valueUnit/>  <gmd:value>  <gco:Record xsi:type="gco:Real\_PropertyType">  <gco:Real>1</gco:Real>  </gco:Record>  </gmd:value>  </gmd:DQ\_QuantitativeResult>  </gmd:result>  </gmd:DQ\_AccuracyOfATimeMeasurement>  </gmd:report>  <gmd:lineage>  <gmd:LI\_Lineage>  <gmd:processStep>  <gmi:LE\_ProcessStep>  <gmd:description gco:nilReason="unknown"/>  <gmd:processor>  <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="processor">processor</gmd:CI\_RoleCode>  </gmd:role>  </gmd:CI\_ResponsibleParty>  </gmd:processor>  </gmi:LE\_ProcessStep>  </gmd:processStep>  </gmd:LI\_Lineage>  </gmd:lineage>  </gmd:DQ\_DataQuality>  </gmd:dataQualityInfo> |

ISO 19115-1

|  |
| --- |
| <mdb:dataQualityInfo>  <mdq:DQ\_DataQuality>  <mdq:scope>  <mcc:MD\_Scope>  <mcc:level>  <mcc:MD\_ScopeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_ScopeCode"  codeListValue="series">series</mcc:MD\_ScopeCode>  </mcc:level>  </mcc:MD\_Scope>  </mdq:scope>  <mdq:report>  <mdq:DQ\_DomainConsistency>  <mdq:result>  <mdq:DQ\_DescriptiveResult>  <mdq:statement>  <gco:CharacterString>Taxonomy has been checked against ITIS, Catalogue of Life and World Register of Marine Species databases</gco:CharacterString>  </mdq:statement >  </mdq:DQ\_DescriptiveResult>  </mdq:result>  </mdq:DQ\_DomainConsistency>  <mdq:DQ\_AccuracyOfATimeMeasurement>  <mdq:measure>  <mdq:DQ\_MeasureReference>  <mdq:measureIdentification>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>PrecisionOfSeconds</gco:CharacterString>  </mcc:code>  </mcc:MD\_Identifier>  </mdq:measureIdentification>  </mdq:DQ\_MeasureReference>  </mdq:measure>  <mdq:evaluationMethod>  <mdq:DQ\_FullInspection>  <mdq:evaluationProcedure/>  </mdq:DQ\_FullInspection>  </mdq:evaluationMethod>  <mdq:result>  <mdq:DQ\_QuantitativeResult>  <mdq:value>  <gco:Record xsi:type="gco:Real\_PropertyType">  <gco:Real>1</gco:Real>  </gco:Record>  </mdq:value>  <mdq:valueUnit/>  </mdq:DQ\_QuantitativeResult>  </mdq:result>  </mdq:DQ\_AccuracyOfATimeMeasurement>  </mdq:report>  </mdq:DQ\_DataQuality>  </mdb:dataQualityInfo> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/Dinoflagellates\_Tintinnids\_Score\_Central

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

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/metavisit

ISO 19115-2 - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC.iso

ISO 19115-1 – Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record and everything within the mdq:DQ\_DomainConsistency element is manually generated from DIF 9 record.

**Recommendations**

The CMR team recommends that a future focus group explore the possibility of enhancing the element to include controlled vocabulary and structured sub-elements. This would align the Quality element more with ISO 19157 (Geographic information – Data quality). We would also potentially be incorporating recommendations emerging from the BEDI/CDI metadata quality efforts. It is also recommended that the ISO 19115-1 translation be changed into a descriptive report just as in the example within the mdq:DQ\_DomainConsistency element.

### Use Constraints

**Element Specification**

UseContraints

**Description**

The UseConstraints element is designed to protect privacy and/or intellectual property by allowing the author to specify how the item (collection, granule, service, visualization, variable, etc.) may or may not be used after access is granted. This includes any special restrictions, legal prerequisites, terms and conditions, and/or limitations on using the item. Providers may request acknowledgement of the item from users and claim no responsibility for quality and completeness. Note: Use Constraints describe how the item may be used once access has been granted; and is distinct from AccessConstraints, which refers to any constraints in accessing the item.

**Profile Utilization**

Collection, Granule, Service, Visualization, Document

**Cardinality**

0..1

**Analysis**

This element’s value is an uncontrolled block of text describing the use constraint.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Use\_Constraints |
| DIF 10 | /DIF/Use\_Constraints |
| SERF | /SERF/Use\_Constraints |
| ECHO 10 Collection | N/A |
| ECHO 10 Granule | N/A |
| ISO 19115-2 | /gmd:MD\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:resourceConstraints/gmd:MD\_LegalConstraints/gmd:useLimitation/gco:CharacterString |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:identificationInfo/mri:MD\_DataIdentification/mri:resourceConstraints/mco:MD\_LegalConstraints/mco:useConstraints/mco:MD\_RestrictionCode/gco:CharacterString |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Use\_Constraints>  The United Nations Environment Program (UNEP), Tufts University's Fletcher School of Law and Diplomacy (FSLD), British Columbia Ministry of Environment, Lands and Parks (BCMELP), Antarctic Research Center (ARC), American Society of International Law (ASIL), and Trustees of Columbia University in the City of New York hold the copyright of this dataset. Users are prohibited from any commercial, non-free resale, or redistribution without explicit written permission from UNEP, FSLD, BCMELP, ACRC, ASIL and CIESIN. Users should acknowledge UNEP, FSLD, BCMELP, ACRC, ASIL and CIESIN as the source used in the creation of any reports, publications, new data sets, derived products, or services resulting from the use of this data set. UNEP, FSLD, BCMELP, ACRC, ASIL or CIESIN also request reprints of any publications and notification of any redistributing efforts.  </Use\_Constraints> |

DIF 10

|  |
| --- |
| <Use\_Constraints>  The United Nations Environment Program (UNEP), Tufts University's Fletcher School of Law and Diplomacy (FSLD), British Columbia Ministry of Environment, Lands and Parks (BCMELP), Antarctic Research Center (ARC), American Society of International Law (ASIL), and Trustees of Columbia University in the City of New York hold the copyright of this dataset. Users are prohibited from any commercial, non-free resale, or redistribution without explicit written permission from UNEP, FSLD, BCMELP, ACRC, ASIL and CIESIN. Users should acknowledge UNEP, FSLD, BCMELP, ACRC, ASIL and CIESIN as the source used in the creation of any reports, publications, new data sets, derived products, or services resulting from the use of this data set. UNEP, FSLD, BCMELP, ACRC, ASIL or CIESIN also request reprints of any publications and notification of any redistributing efforts.  </Use\_Constraints> |

SERF

|  |
| --- |
| <Use\_Constraints>  The Tool is written in Java and XML and is distributed under the Apache Public License (version 2).  </Use\_Constraints> |

ISO 19115-2

|  |
| --- |
| <gmd:resourceConstraints>  <gmd:MD\_LegalConstraints>  <gmd:useLimitation>  <gco:CharacterString>  The United Nations Environment Program (UNEP), Tufts University's Fletcher School of Law and Diplomacy (FSLD), British Columbia Ministry of Environment, Lands and Parks (BCMELP), Antarctic Research Center (ARC), American Society of International Law (ASIL), and Trustees of Columbia University in the City of New York hold the copyright of this dataset. Users are prohibited from any commercial, non-free resale, or redistribution without explicit written permission from UNEP, FSLD, BCMELP, ACRC, ASIL and CIESIN. Users should acknowledge UNEP, FSLD, BCMELP, ACRC, ASIL and CIESIN as the source used in the creation of any reports, publications, new data sets, derived products, or services resulting from the use of this data set. UNEP, FSLD, BCMELP, ACRC, ASIL or CIESIN also request reprints of any publications and notification of any redistributing efforts.  </gco:CharacterString>  </gmd:useLimitation>  </gmd:MD\_LegalConstraints>  </gmd:resourceConstraints> |

ISO 19115-1

|  |
| --- |
| <mri:resourceConstraints>  <mco:MD\_LegalConstraints>  <mri:resourceConstraints>  <mco:MD\_LegalConstraints>  <mco:useLimitation>  <gco:CharacterString>The United Nations Environment Program (UNEP), Tufts University's Fletcher School of Law and Diplomacy (FSLD), British Columbia Ministry of Environment, Lands and Parks (BCMELP), Antarctic Research Center (ARC), American Society of International Law (ASIL), and Trustees of Columbia University in the City of New York hold the copyright of this dataset. Users are prohibited from any commercial, non-free resale, or redistribution without explicit written permission from UNEP, FSLD, BCMELP, ACRC, ASIL and CIESIN. Users should acknowledge UNEP, FSLD, BCMELP, ACRC, ASIL and CIESIN as the source used in the creation of any reports, publications, new data sets, derived products, or services resulting from the use of this data set. UNEP, FSLD, BCMELP, ACRC, ASIL or CIESIN also request reprints of any publications and notification of any redistributing efforts.  </gco:CharacterString>  </mco:useLimitation>  </mco:MD\_LegalConstraints>  </mri:resourceConstraints>  </mco:MD\_LegalConstraints>  </mri:resourceConstraints> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL  
DIF 10 - Example based on schema with data from DIF 9 record

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/met

ISO 19115-2 - Example based on schema with data from DIF 9 record

ISO 19115-1 – Example based on schema with data from DIF 9 record

### Access Constraints

**Element Specification**

AccessConstraints/Description (1)  
AccessConstraints/Value (0..1)

**Description**

Through use of a Description element, this element allows the author to provide information concerning accessing constraints. This includes any special restrictions, legal prerequisites, limitations and/or warnings on obtaining the data. Examples of values include: Public, In-house, Limited, and None. The value element is used for special access control list (ACL) rules (<http://en.wikipedia.org/wiki/Access_control_list)> - for example, to hide metadata when it isn't ready for public consumption.

**Profile Utilization**

Collection, Granule, Service, Document

**Cardinality**

0..1

**Analysis**

Providers use the AccessConstraint/Value element to specify various restriction levels with ACLs. For example: A provider might specify a service Level ACL that hides all items (collections for this example) with a value element set to '15.0'. There is no controlled mapping for what the values represent. ECHO has the exact same feature and there are many ACLs built in off these types of rules.  
  
Not only can the AccessConstraint element be used to hide data from guest users, it may also be used to permit access exclusively to certain groups of users (these groups can be created and managed within UMM metadata management tool). For example, if groups of people are approved to view metadata that has not been fully released to the public by a NASA DAAC, these individuals can be identified by their Earthdata login (User Registration System - URS) account name and granted access using the value element.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Access\_Constraints |
| DIF 10 | /DIF/Access\_Constraints |
| SERF | /SERF/Access\_Constraints |
| ECHO 10 Collection | /Collection/RestrictionComment  /Collection/RestrictionFlag |
| ECHO 10 Granule | /Granule/RestrictionComment  /Granule/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 |

**Examples**

DIF 9

|  |
| --- |
| <Access\_Constraints>  None  </Access\_Constraints> |

DIF 10

|  |
| --- |
| <Access\_Constraints>  None  </Access\_Constraints> |

SERF

|  |
| --- |
| <Access\_Constraints>  There are no fees for training, materials, rubrics, and assessments. Each  participant must complete the online form to access materials.  </Access\_Constraints> |

ECHO 10 Collection

|  |
| --- |
| <RestrictionFlag>0</RestrictionFlag>  <RestrictionComment>None</RestrictionComment> |

ECHO 10 Granule

|  |
| --- |
| <RestrictionFlag>0</RestrictionFlag>  <RestrictionComment>  This product have full public access  </RestrictionComment> |

ISO 19115-2

|  |
| --- |
| <gmd:resourceConstraints>  <gmd:MD\_LegalConstraints>  <gmd:useLimitation>  <gco:CharacterString>Restriction Comment: There are no fees for training, materials, rubrics, and assessments. Each  participant must complete the online form to access materials.</gco:CharacterString>  </gmd:useLimitation>  <gmd:otherConstraints>  <gco:CharacterString>Restriction Flag:0</gco:CharacterString>  </gmd:otherConstraints>  </gmd:MD\_LegalConstraints>  </gmd:resourceConstraints> |

ISO 19115-1

|  |
| --- |
| <mri:resourceConstraints>  <mco:MD\_LegalConstraints>  <mco:useLimitation>  <gco:CharacterString> Restriction Comment: There are no fees for training, materials, rubrics, and assessments. Each  participant must complete the online form to access materials.</gco:CharacterString>  </mco:useLimitation>  <mco:otherConstraints>  <gco:CharacterString>Restriction Flag:0</gco:CharacterString>  </mco:otherConstraints>  </mco:MD\_LegalConstraints>  </mri:resourceConstraints> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL  
DIF 10 - Example based on schema with data from DIF 9 record.  
SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA\_3D\_VIEW  
ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C193423808-GSFCS4PA

ECHO 10 Granule – https://api.echo.nasa.gov/catalog-rest/echo\_catalog/granules/G194800622-GSFCS4PA

ISO 19115-2 - Example manually generated from schema and SERF record

ISO 19115-1 – Example manually generated from schema and SERF record

**Recommendations**  
Metadata that is meant for EMS use only should carry a restricted flag that allows only data provider and EMS to use it.

### Metadata Association

**Element Specification**

MetadataAssociation/EntryId (0..1)   
MetadataAssociation /Type (0..1)  
MetadataAssociation /Description (0..1)

**Description**

This element is used to identify other metadata resources including but not limited to services, collections, visualizations, variables, granules, documents, etc. that are associated with or dependent on the data described by the metadata. This element is also used to identify a parent metadata record if it exists. This usage should be reserved for instances where a group of metadata records are subsets that can be better represented by one parent metadata record, which describes the entire set. In some instances, a child may point to more than one parent.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

This element represents dependent relationships in the UMM. Since data within the profiles can reference each other, it would be convenient to search for items based on associated items.

In SERF, the metadata associations are not directly mappable. To determine the metaociations, the Related\_URL/Content\_Type must be read for a string equaling "GET RELATED DATA SET METADATA (DIF)" or “GET RELATED SERVICE METADATA (SERF)”, and the URL obtained from the Related\_URL/URL element. The element can then be accessed for information.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Parent\_DIF |
| DIF 10 | /DIF/Parent\_DIF  /DIF/MetadataAssociation/ |
| SERF | /DIF/Parent\_SERF  Other metadata associations are not directly mappable |
| ECHO 10 Collection | /Collection/CollectionAssociations/CollectionAssociation/ |
| ECHO 10 Granule | Not yet mapped |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <Parent\_DIF>CNDP-ESP\_IPY\_POL2006-11139-C02-01CGL\_ESASSI</Parent\_DIF> |

DIF 10

|  |
| --- |
| <Parent\_DIF>CNDP-ESP\_IPY\_POL2006-11139-C02-01CGL\_ESASSI</Parent\_DIF>  <DIF>  <MetadataAssociation>  <EntryId>CIESIN\_SEDAC\_E,NTRI\_TEXTS\_COL</EntryId>  <Type>Science Associated</Type>  <Description>Some description of the association</Description>  </MetadataAssociation>  </DIF> |

SERF

|  |
| --- |
| <Parent\_SERF>METOFFICE\_UKMET</Parent\_SERF> |

ECHO 10 Collection

|  |
| --- |
| Parent Association:  <CollectionAssociation>  <ShortName>g3atb</ShortName>  <VersionId>4</VersionId>  <CollectionType>Parent Association</CollectionType>  <CollectionUse>This is the SAGE III Level 1B solar transmission file containing 85 profiles from zero to 100 km in 0.5 km intervals that are used in inversion algorithms to extract the measured species associated with the transmission wavelengths.</CollectionUse>  </CollectionAssociation>  Metadata Association:  <CollectionAssociation>  <ShortName>g3arepqa</ShortName>  <VersionId>4</VersionId>  <CollectionType>Science Associated</CollectionType>  <CollectionUse>The weekly quality assurance report containing information that might be useful in gaining insight into the quality of these data.</CollectionUse>  </CollectionAssociation> |

ISO 19115-2

|  |
| --- |
| Parent Association:  <gmd:aggregationInfo>  <gmd:MD\_AggregateInformation>  <gmd:aggregateDataSetName>  <gmd:CI\_Citation>  <gmd:title>  <gco:CharacterString>g3atb</gco:CharacterString>  </gmd:title>  <gmd:date gco:nilReason="unknown"/>  <gmd:edition>  <gco:CharacterString>4</gco:CharacterString>  </gmd:edition>  <gmd:otherCitationDetails>  <gco:CharacterString>This is the SAGE III Level 1B solar transmission file containing 85 profiles from zero to 100 km in 0.5 km intervals that are used in inversion algorithms to extract the measured species associated with the transmission wavelengths.</gco:CharacterString>  </gmd:otherCitationDetails>  </gmd:CI\_Citation>  </gmd:aggregateDataSetName>  <gmd:aggregateDataSetIdentifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>g3atb</gco:CharacterString>  </gmd:code>  </gmd:MD\_Identifier>  </gmd:aggregateDataSetIdentifier>  <gmd:associationType>  <gmd:DS\_AssociationTypeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#DS\_AssociationTypeCode"  codeListValue="largerWorkCitation">largerWorkCitation</gmd:DS\_AssociationTypeCode>  </gmd:associationType>  </gmd:MD\_AggregateInformation>  </gmd:aggregationInfo>  Metadata Association:  <gmd:aggregationInfo>  <gmd:MD\_AggregateInformation>  <gmd:aggregateDataSetName>  <gmd:CI\_Citation>  <gmd:title>  <gco:CharacterString>g3atb</gco:CharacterString>  </gmd:title>  <gmd:date gco:nilReason="unknown"/>  <gmd:edition>  <gco:CharacterString>4</gco:CharacterString>  </gmd:edition>  <gmd:otherCitationDetails>  <gco:CharacterString>This is the SAGE III Level 1B solar transmission file containing 85 profiles from zero to 100 km in 0.5 km intervals that are used in inversion algorithms to extract the measured species associated with the transmission wavelengths.</gco:CharacterString>  </gmd:otherCitationDetails>  </gmd:CI\_Citation>  </gmd:aggregateDataSetName>  <gmd:aggregateDataSetIdentifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>g3atb</gco:CharacterString>  </gmd:code>  </gmd:MD\_Identifier>  </gmd:aggregateDataSetIdentifier>  <gmd:associationType>  <gmd:DS\_AssociationTypeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#DS\_AssociationTypeCode"  codeListValue="Science Associated">Science Associated</gmd:DS\_AssociationTypeCode>  </gmd:associationType>  </gmd:MD\_AggregateInformation>  </gmd:aggregationInfo> |

ISO 19115-1

|  |
| --- |
| Parent Association:  <mri:associatedResource>  <mri:MD\_AssociatedResource>  <mri:name>  <cit:CI\_Citation>  <cit:title>  <gco:CharacterString>g3atb</gco:CharacterString>  </cit:title>  <cit:date gco:nilReason="missing"/>  <cit:edition>  <gco:CharacterString>4</gco:CharacterString>  </cit:edition>  <cit:otherCitationDetails>  <gco:CharacterString>This is the SAGE III Level 1B solar transmission file containing 85 profiles from zero to 100 km in 0.5 km intervals that are used in inversion algorithms to extract the measured species associated with the transmission wavelengths.</gco:CharacterString>  </cit:otherCitationDetails>  </cit:CI\_Citation>  </mri:name>  <mri:associationType>  <mri:DS\_AssociationTypeCode codeList="codeListLocation#DS\_AssociationTypeCode"  codeListValue="largerWorkCitation”>largerWorkCitation</mri:DS\_AssociationTypeCode>  </mri:associationType>  </mri:MD\_AssociatedResource>  </mri:associatedResource>  Metadata Associaiton:  <mri:associatedResource>  <mri:MD\_AssociatedResource>  <mri:name>  <cit:CI\_Citation>  <cit:title>  <gco:CharacterString>g3arepqa</gco:CharacterString>  </cit:title>  <cit:date gco:nilReason="missing"/>  <cit:edition>  <gco:CharacterString>4</gco:CharacterString>  </cit:edition>  <cit:otherCitationDetails>  <gco:CharacterString>The weekly quality assurance report containing information that might be useful in gaining insight into the quality of these data.</gco:CharacterString>  </cit:otherCitationDetails>  </cit:CI\_Citation>  </mri:name>  <mri:associationType>  <mri:DS\_AssociationTypeCode codeList="codeListLocation#DS\_AssociationTypeCode"  codeListValue="Science Associated">Science Associated</mri:DS\_AssociationTypeCode>  </mri:associationType>  </mri:MD\_AssociatedResource>  </mri:associatedResource> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CNDP-ESP\_IPY\_POL2006-11139-C02-01CGL\_ESSASI\_ADCP\_HE125

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

- Metadata Assoc. - Example manually created based on schema.

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/METOFFICE\_UKCP

ECHO 10 Collection – Parent Assoc. – Example manually created from Metadata Assoc.

- Metadata Assoc. - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C184964545-LARC

ISO 19115-2 – Parent Assoc. – Example manually created from Metadata Assoc.

- Metadata Assoc. https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C184964545-LARC.iso

ISO 19115-1 – Parent Assoc. – Example manually created from Metadata Assoc.

- Metadata Assoc. - Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record

**Recommendations**

The MetadataAssociation should include a controlled Type attribute used to indicate the basis (justification) for relating one resource to another. A unique identifier and authority should be added to formalize these associations. In a future release we will add and merge the granule parent association mappings. An association type code list needs to be created to use for the ISO 19115-1 tranlation.

### Publication Reference

**Element Specification**

PublicationReference/Authors (0..1)  
PublicationReference/PublicationDate (0..1)  
PublicationReference/Title (0..1)  
PublicationReference/Series (0..1)  
PublicationReference/Edition (0..1)  
PublicationReference/Volume (0..1)  
PublicationReference/Issue (0..1)  
PublicationReference/ReportNumber (0..1)  
PublicationReference/PublicationPlace (0..1)  
PublicationReference/Publisher (0..1)  
PublicationReference/Pages (0..1)  
PublicationReference/ISBN (0..1)  
PublicationReference/DOI (0..1)  
PublicationReference/RelatedUrl (0..1)  
PublicationReference/OtherReferenceDetails (0..1)

**Description**

This element describes key bibliographic citations pertaining to the data. The Authors element contains all the authors for the publication.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

Reference information is found in GCMD. The Reference element includes a way to specify reference as a block of text or include individual reference attributes as part of the ISO 19115 Reference model.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Reference/ |
| DIF 10 | /DIF/Reference/ |
| SERF | /SERF/Reference/ |
| ECHO 10 Collection | N/A |
| ECHO 10 Granule | N/A |
| ISO 19115-2 | /gmd:MD\_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 |

**Examples**

DIF 9

|  |
| --- |
| <Reference>  <Author>International Union for the Conservation of Nature and Natural Resources - IUCN</Author>  <Publication\_Date>2012</Publication\_Date>  <Title>Environmental Treaty Status Data Set, 2012 Release</Title>  <Publication\_Place>Palisades, NY</Publication\_Place>  <Publisher>NASA Socioeconomic Data and Applications Center (SEDAC)</Publisher>  <DOI>http://dx.doi.org/10.7927/H4DZ067Z</DOI>  </Reference> |

DIF 10

|  |
| --- |
| <Reference>  <Author>International Union for the Conservation of Nature and Natural Resources - IUCN</Author>  <Publication\_Date>2012</Publication\_Date>  <Title>Environmental Treaty Status Data Set, 2012 Release</Title>  <Publication\_Place>Palisades, NY</Publication\_Place>  <Publisher>NASA Socioeconomic Data and Applications Center (SEDAC)</Publisher>  <DOI>http://dx.doi.org/10.7927/H4DZ067Z</DOI>  </Reference> |

SERF

|  |
| --- |
| <Reference>  <Author>P.J. Werdell, S.W. Bailey, G.S. Fargion, C. Pietras, K.D. Knobelspiesse, G.C. Feldman, and C.R. McClain</Author>  <Publication\_Date>2003</Publication\_Date>  <Title>Unique data repository facilitates ocean color satellite validation</Title>  <Series>EOS Trans</Series>  <Volume>84</Volume>  <Issue>38</Issue>  <Publisher>AGU</Publisher>  <Pages>377</Pages>  </Reference> |

ISO 19115-2

|  |
| --- |
| <gmd:aggregateDataSetName>  <gmd:CI\_Citation>  <gmd:title>  <gco:CharacterString>  Unique data repository facilitates ocean color satellite validation  </gco:CharacterString>  </gmd:title>  <gmd:date>  <gmd:CI\_Date>  <gmd:date>  <gco:Date>2003</gco:Date>  </gmd:date>  <gmd:dateType>  <gmd:CI\_DateTypeCode codeList="http://www.isotc211.org/2005/resources/Codelist/gmxCodelists.xml#CI\_DateTypeCode" codeListValue="publication">publication</gmd:CI\_DateTypeCode>  </gmd:dateType>  </gmd:CI\_Date>  </gmd:date>  <gmd:citedResponsibleParty>  <gmd:CI\_ResponsibleParty>  ...  </gmd:CI\_ResponsibleParty>  </gmd:citedResponsibleParty>  <gmd:series>  <gmd:CI\_Series>  <gmd:name>  <gco:CharacterString>EOS Trans</gco:CharacterString>  </gmd:name>  <gmd:issueIdentification>  <gco:CharacterString>38</gco:CharacterString>  </gmd:issueIdentification>  </gmd:CI\_Series>  </gmd:series>  <gmd:otherCitationDetails>  <gco:CharacterString>337</gco:CharacterString>  </gmd:otherCitationDetails>  </gmd:CI\_Citation>  </gmd:aggregateDataSetName> |

ISO 19115-1

|  |
| --- |
| <mri:additionalDocumentation >  <cit:CI\_Citation>  <cit:title>  <gco:CharacterString>Spline functions, interpolation, and numerical quadrature</gco:CharacterString>  </cit:title>  <cit:date>  <cit:CI\_Date>  <cit:date>  <gco:DateTime>1967-01-01T00:00:00</gco:DateTime>  </cit:date>  <cit:dateType>  <cit:CI\_DateTypeCode codeList="codeListLocation#CI\_DateTypeCode" codeListValue="publication">publication</cit:CI\_DateTypeCode>  </cit:dateType>  </cit:CI\_Date>  </cit:date>  <cit:citedResponsibleParty>  <cit:CI\_Responsibility>  <cit:role>  <cit:CI\_RoleCode codeList="codeListLocation#CI\_RoleCode" codeListValue="publisher">publisher</cit:CI\_RoleCode>  </cit:role>  <cit:party>  <cit:CI\_Organisation>  <cit:name>  <gco:CharacterString>John Wiley and Sons, Inc.</gco:CharacterString>  </cit:name>  <cit:contactInfo>  <cit:CI\_Contact>  <cit:address>  <cit:CI\_Address>  <cit:administrativeArea>  <gco:CharacterString>NY</gco:CharacterString>  </cit:administrativeArea>  </cit:CI\_Address>  </cit:address>  </cit:CI\_Contact>  </cit:contactInfo>  </cit:CI\_Organisation>  </cit:party>  </cit:CI\_Responsibility>  </cit:citedResponsibleParty>  <cit:citedResponsibleParty>  <cit:CI\_Responsibility>  <cit:role>  <cit:CI\_RoleCode codeList="codeListLocation#CI\_RoleCode" codeListValue="originator">originator</cit:CI\_RoleCode>  </cit:role>  <cit:party>  <cit:CI\_Organisation>  <cit:name>  <gco:CharacterString>Greville, T.N.E.</gco:CharacterString>  </cit:name>  </cit:CI\_Organisation>  </cit:party>  </cit:CI\_Responsibility>  </cit:citedResponsibleParty>  <cit:citedResponsibleParty>  <cit:CI\_Responsibility>  <cit:role>  <cit:CI\_RoleCode codeList="codeListLocation#CI\_RoleCode" codeListValue="originator">originator</cit:CI\_RoleCode>  </cit:role>  <cit:party>  <cit:CI\_Organisation>  <cit:name>  <gco:CharacterString>Ralston, A. (ed.)</gco:CharacterString>  </cit:name>  </cit:CI\_Organisation>  </cit:party>  </cit:CI\_Responsibility>  </cit:citedResponsibleParty>  <cit:citedResponsibleParty>  <cit:CI\_Responsibility>  <cit:role>  <cit:CI\_RoleCode codeList="codeListLocation#CI\_RoleCode" codeListValue="originator">originator</cit:CI\_RoleCode>  </cit:role>  <cit:party>  <cit:CI\_Organisation>  <cit:name>  <gco:CharacterString>Wilf, H.S. (ed.)</gco:CharacterString>  </cit:name>  </cit:CI\_Organisation>  </cit:party>  </cit:CI\_Responsibility>  </cit:citedResponsibleParty>  <cit:series>  <cit:CI\_Series>  <cit:name>  <gco:CharacterString>MATHEMATICAL METHODS OF DIGITAL COMPUTERS</gco:CharacterString>  </cit:name>  <cit:issueIdentification>  <gco:CharacterString>Volume 2</gco:CharacterString>  </cit:issueIdentification>  </cit:CI\_Series>  </cit:series>  </cit:CI\_Citation>  </mri:additionalDocumentation> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL

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

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/SeaBASS   
ISO 19115-2 - Example manually generated from schema and SERF

ISO 19115-1 - Example based on ISO19139to19115-3.xsl translation of http://www.ngdc.noaa.gov/metadata/published/NOAA/NESDIS/NCDC/Geoportal/iso/xml/C00823.xml record

**Recommendations**

During the UMM-C review, it was decided that the text inside this element must be deconstructed and the various components placed into the correct elements. If the metadata still retains a block of text in this element upon migration to the CMR, the text will be placed into the PublicationReference/OtherReferenceDetails element.

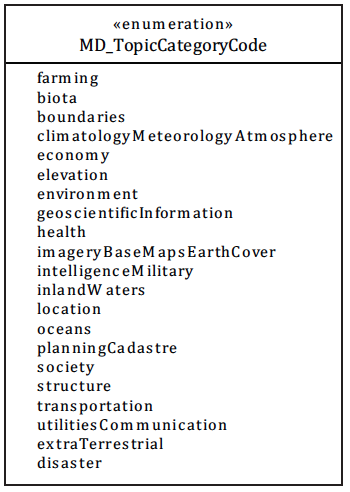
### ISO Topic Category

**Element Specification**

ISOTopicCategory

**Description**

This element is used to identify the keywords from the EN ISO 19115-1:2014 Geographic Information – Metadata – Part 1: Fundamentals (http://www.isotc211.org/) Topic Category Code List. It is a high-level thematic classification to assist in the grouping and search of available services.



Source: EN ISO 19115-1:2014 Geographic Information – Metadata – Part 1: Fundamentals

Figure : MD\_TopicCategoryCode List

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

Based on selected science keywords, the ISO Topic Category keywords should be auto-populated into the metadata by the CMR at ingest time. Metadata authors will also have the option to manually add/edit the ISOTopicCategory keywords in the metadata record using docBUILDER, Metadata Management Tool (MMT), or any alternate preferred XML editor.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/ISO\_Topic\_Category |
| DIF 10 | /DIF/ISO\_Topic\_Category |
| SERF | /SERF/ISO\_Topic\_Category |
| ECHO 10 Collection | N/A |
| ECHO 10 Granule | 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 |

**Examples**

DIF 9

|  |
| --- |
| <ISO\_Topic\_Category uuid="81a52fa1-4a8f-4c4d-9736-7aaf0859df9d">ENVIRONMENT</ISO\_Topic\_Category> |

DIF 10

|  |
| --- |
| <ISO\_Topic\_Category uuid="81a52fa1-4a8f-4c4d-9736-7aaf0859df9d">ENVIRONMENT</ISO\_Topic\_Category> |

SERF

|  |
| --- |
| <ISO\_Topic\_Category uuid="26173055-5433-42b3-bd00-9a1f6ba294e1">FARMING</ISO\_Topic\_Category>  <ISO\_Topic\_Category uuid="c3d9cf68-90b1-46be-914c-38ecb2e70097">BIOTA</ISO\_Topic\_Category> |

ISO 19115-2

|  |
| --- |
| <gmd:topicCategory>  <gmd:MD\_TopicCategoryCode>farming</gmd:MD\_TopicCategoryCode>  <gmd:MD\_TopicCategoryCode>biota</gmd:MD\_TopicCategoryCode>  </gmd:topicCategory> |

ISO 19115-1

|  |
| --- |
| <mri:topicCategory>  <mri:MD\_TopicCategoryCode>farming</mri:MD\_TopicCategoryCode>  <mri:MD\_TopicCategoryCode>biota</mri:MD\_TopicCategoryCode>  </mri:topicCategory> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL  
DIF 10 - Example based on schema with data from DIF 9 record.

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA\_3D\_VIEW  
ISO 19115-2 - Example manually generated from schema and SERF

ISO 19115-1 – Example manually generated from schema and SERF

### Science Keywords

**Element Specification**

ScienceKeywords/Category (1)  
ScienceKeywords/Topic (1)  
ScienceKeywords/Term (1)  
ScienceKeywords/VariableLevel1 (0..1)  
ScienceKeywords/VariableLevel2 (0..1)  
ScienceKeywords/VariableLevel3 (0..1)  
ScienceKeywords/DetailedVariable (0..1)

**Description**

This element enables specification of Earth science keywords.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

1..\*

**Analysis**

The keywords are controlled.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Parameters/ |
| DIF 10 | /DIF/ScienceKeywords/ |
| SERF | /SERF/Science\_Parameters/ |
| ECHO 10 Collection | /Collection/ScienceKeywords/ScienceKeyword/ |
| ECHO 10 Granule | N/A |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <Parameters uuid="dd316647-9043-40c3-9329-f22f9215fefa">  <Category>EARTH SCIENCE</Category>  <Topic>ATMOSPHERE</Topic>  <Term>ATMOSPHERIC CHEMISTRY</Term>  <Variable\_Level\_1>OXYGEN COMPOUNDS</Variable\_Level\_1>  <Variable\_Level\_2>OZONE</Variable\_Level\_2>  </Parameters> |

DIF 10

|  |
| --- |
| <Science\_Keywords>  <Category>EARTH SCIENCE</CategoryKeyword>  <Topic>ATMOSPHERE</TopicKeyword>  <Term>ATMOSPHERIC CHEMISTRY</TermKeyword>  <Variable\_Level\_1>OXYGEN COMPOUNDS</Variable\_Level\_1>  <Variable\_Level\_2>OZONE</Variable\_Level\_2>  </Science\_Keywords> |

SERF

|  |
| --- |
| <Science\_Parameters uuid="5066def0-b14b-4a2c-b40f-dc9953860366">  <Science\_Category>EARTH SCIENCE</Science\_Category>  <Science\_Topic>HUMAN DIMENSIONS</Science\_Topic>  <Science\_Term>ENVIRONMENTAL GOVERNANCE/MANAGEMENT</Science\_Term>  <Science\_Variable\_Level\_1>LAND MANAGEMENT</Science\_Variable\_Level\_1>  <Science\_Variable\_Level\_2>LAND USE/LAND COVER CLASSIFICATION</Science\_Variable\_Level\_2>  </Science\_Parameters>  <Science\_Parameters uuid="ec0e2762-f57a-4fdc-b395-c8d7d5590d18">  <Science\_Category>EARTH SCIENCE</Science\_Category>  <Science\_Topic>HUMAN DIMENSIONS</Science\_Topic>  <Science\_Term>NATURAL HAZARDS</Science\_Term>  </Science\_Parameters> |

ECHO 10 Collection

|  |
| --- |
| <ScienceKeywords>  <ScienceKeyword>  <CategoryKeyword>EARTH SCIENCE</CategoryKeyword>  <TopicKeyword>HYDROSPHERE</TopicKeyword>  <TermKeyword>SURFACE WATER</TermKeyword>  <VariableLevel1Keyword>  <Value>DISCHARGE/FLOW</Value>  </VariableLevel1Keyword>  </ScienceKeyword>  <ScienceKeyword>  <CategoryKeyword>EARTH SCIENCE</CategoryKeyword>  <TopicKeyword>HYDROSPHERE</TopicKeyword>  <TermKeyword>SURFACE WATER</TermKeyword>  <VariableLevel1Keyword>  <Value>STAGE HEIGHT</Value>  </VariableLevel1Keyword>  </ScienceKeyword>  </ScienceKeywords> |

ISO 19115-2

|  |
| --- |
| <gmd:descriptiveKeywords>  <gmd:MD\_Keywords>  <gmd:keyword>  <gco:CharacterString>EARTH SCIENCE&gt;HYDROSPHERE&gt;SURFACE WATER&gt;DISCHARGE/FLOW&gt;NONE&gt;NONE&gt;NONE</gco:CharacterString>  </gmd:keyword>  <gmd:keyword>  <gco:CharacterString>EARTH SCIENCE&gt;HYDROSPHERE&gt;SURFACE WATER&gt;STAGE HEIGHT&gt;NONE&gt;NONE&gt;NONE</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="theme">theme</gmd:MD\_KeywordTypeCode>  </gmd:type>  <gmd:thesaurusName>  <gmd:CI\_Citation>  <gmd:title>  <gco:CharacterString>NASA/GCMD Science Keywords</gco:CharacterString>  </gmd:title>  …  </gmd:CI\_Citation>  </gmd:thesaurusName>  </gmd:MD\_Keywords>  </gmd:descriptiveKeywords> |

ISO 19115-1

|  |
| --- |
| <mri:descriptiveKeywords>  <mri:MD\_Keywords>  <mri:keyword>  <gco:CharacterString>EARTH SCIENCE&gt;HYDROSPHERE&gt;SURFACE WATER&gt;DISCHARGE/FLOW&gt;NONE&gt;NONE&gt;NONE</gco:CharacterString>  </mri:keyword>  <mri:keyword>  <gco:CharacterString>EARTH SCIENCE&gt;HYDROSPHERE&gt;SURFACE WATER&gt;STAGE HEIGHT&gt;NONE&gt;NONE&gt;NONE</gco:CharacterString>  </mri:keyword>  <mri:type>  <mri:MD\_KeywordTypeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_KeywordTypeCode"  codeListValue="theme">theme</mri:MD\_KeywordTypeCode>  </mri:type>  <mri:thesaurusName>  …  </mri:thesaurusName>  </mri:MD\_Keywords>  </mri:descriptiveKeywords> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL  
DIF 10 - Example based on schema with data from DIF 9.9 record  
SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA\_3D\_VIEW

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179003030-ORNL\_DAAC  
ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179003030-ORNL\_DAAC.iso

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

**Recommendations**

Science keywords should be reconciled by adopting the currently controlled and vetted GCMD Science Keyword Vocabulary - enabling all keywords within the CMR to be controlled. It is recommended that this element be part of the UMM and its value be selected from a controlled list of keywords, which are managed by the Keyword Management System (KMS).   
  
EMS should drop its discipline element from product requirements in favor of using these keywords and mapping them to existing discipline elements.

CMR should look to create components for common data and permit users to manage them through the MMT. For more information about components please see https://geo-ide.noaa.gov/wiki/index.php?title=ISO\_Components

### Ancillary Keywords

**Element Specification**

AncillaryKeywords

**Description**

This element allows authors to provide words or phrases to further describe the data.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Keyword |
| DIF 10 | /DIF/Ancillary\_Keyword |
| SERF | /SERF/Keyword |
| ECHO 10 Collection | N/A |
| ECHO 10 Granule | 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 |

**Examples**

DIF 9

|  |
| --- |
| <Keyword>Air</Keyword>  <Keyword>Animal Species</Keyword>  <Keyword>Civil Rights</Keyword>  <Keyword>COE</Keyword>  <Keyword>Consumer Protection</Keyword>  <Keyword>EC</Keyword> |

DIF 10

|  |
| --- |
| <Ancillary\_Keyword>Air</Ancillary\_Keyword>  <Ancillary\_Keyword>Animal Species</Ancillary\_Keyword>  <Ancillary\_Keyword>Civil Rights</Ancillary\_Keyword>  <Ancillary\_Keyword>COE</Ancillary\_Keyword>  <Ancillary\_Keyword>Consumer Protection</Ancillary\_Keyword>  <Ancillary\_Keyword>EC</Ancillary\_Keyword> |

SERF

|  |
| --- |
| <Keyword>Science Curriculum</Keyword>  <Keyword>Science Studies</Keyword>  <Keyword>Classroom Activities</Keyword> |

ISO 19115-2

|  |
| --- |
| <gmd:descriptiveKeywords>  <gmd:MD\_Keywords>  <gmd:keyword>  <gco:CharacterString>Science Curriculum</gco:CharacterString>  </gmd:keyword>  <gmd:keyword>  <gco:CharacterString>Science Studies</gco:CharacterString>  </gmd:keyword>  <gmd:keyword>  <gco:CharacterString>Classroom Activities</gco:CharacterString>  </gmd:keyword>  ...  </gmd:MD\_Keywords>  </gmd:descriptiveKeywords> |

ISO 19115-1

|  |
| --- |
| <mri:descriptiveKeywords>  <mri:MD\_Keywords>  <mri:keyword>  <gco:CharacterString>Science Curriculum</gco:CharacterString>  </mri:keyword>  <mri:keyword>  <gco:CharacterString>Science Studies</gco:CharacterString>  </mri:keyword>  <mri:keyword>  <gco:CharacterString>Classroom Activities</gco:CharacterString>  </mri:keyword>  …  </mri:MD\_Keywords>  </mri:descriptiveKeywords> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL

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

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA\_3D\_VIEW  
ISO 19115-2 - Example manually generated from schema and SERF

ISO 19115-1 – Example manually generated from schema and SERF

**Recommendations**

The UMM should include an attribute as part of the Ancillary Keyword element that can specify a Uniform Resource Identifier (URI) to reference an external vocabulary system's keyword.

### Additional Attributes

**Element Specification**

AdditionalAttribute/Name (1)

AdditionalAttribute/Type (0..1)

AdditionalAttribute/Identifier (0..1)  
AdditionalAttribute/DataType (1)  
AdditionalAttribute/Description (1)  
AdditionalAttribute/MeasurementResolution (0..1)  
AdditionalAttribute/ParameterRangeBegin (0..1)  
AdditionalAttribute/ParameterRangeEnd (0..1)  
AdditionalAttribute/ParameterUnitsOfMeasure (0..1)  
AdditionalAttribute/ParameterValueAccuracy (0..1)  
AdditionalAttribute/ValueAccuracyExplanation (0..1)  
AdditionalAttribute/Value (0..1)  
AdditionalAttribute/Group (0..1)  
AdditionalAttribute/UpdateDate (0..1)

**Description**

This entity stores the data’s distinctive attributes (i.e. attributes used to describe the unique characteristics of the service which extend beyond those defined in this mapping).

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

ECHO uses AdditionalAttributes to describe the data represented in each granule within a collection. These values are important search criteria for the granules. Example attributes include values for cloud cover, MODIS Tile grid coordinates, and elevation information. All additional attribute definitions are included in the collection metadata. A collection may also specify a value, to be understood as the value for all granules. Granules reference defined additional attributes and supply a value that is associated to that granule. Granules may not define a new additional attribute that is not defined by the collection. In DIF 9 and SERF there is no AdditionalAttributes element similar to ECHO. Recognizing there is no equivalence between Extended Metadata, that does not have a well defined structure, and additional attributes which does, there still needs to be a way to translate the data from one standard to DIF 9 or SERF. The proposal is to use ExtendedMetadata to store this kind of information in key value pairs. DIF 10 has additional attributes and is directly mappable. If the additional attribute type is known it can be mapped to the correct section of ISO. Currently additional attributes are mapped to several sections within ISO depending if the attribute is geographical, describes coverage, describes data quality, describes acquisition, or maps to a keyword.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/ExtendedMetadata/Metadata/ |
| DIF 10 | /DIF/Additional\_Attributes/ |
| SERF | /SERF/ExtendedMetadata/Metadata/ |
| ECHO 10 Collection | /Collection/AdditionalAttributes/AdditionalAttribute/ |
| ECHO 10 Granule | /Granule/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  or  /gmi:MI\_Metadata/gmd:contentInfo/gmd:MD\_CoverageDescription/gmd:dimension/gmd:MD\_Band/gmd:otherProperty/gco:Record/eos:AdditionalAttributes/eos:AdditionalAttribute  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  or  /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation/gmi:instrument/eos:EOS\_Instrument/eos:otherProperty/gco:Record/eos:AdditionalAttributes/eos:AdditionalAttribute  or  /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation/gmi:platform/eos:EOS\_Platform/eos:otherProperty/gco:Record/eos:AdditionalAttributes/eos:AdditionalAttribute |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <Extended\_Metadata>  ...  <Metadata>  <Group>EMS</Group>  <Name>EMS\_Product</Name>  <Value>MOD09Q1N</Value>  </Metadata>  <Metadata>  <Group>gov.nasa.gsfc.gcmd</Group>  <Name>metadata.extraction\_date</Name>  <Value>2014-11-05 10:00:22</Value>  </Metadata>  <Metadata>  <Group>gov.nasa.gsfc.gcmd</Group>  <Name>metadata.keyword\_version</Name>  <Value>8.0</Value>  </Metadata>  </Extended\_Metadata> |

DIF 10

|  |
| --- |
| <Additional\_Attributes>  <Name>SuccessCloudPhaseRtrPct\_IR</Name>  <DataType>FLOAT</DataType>  <Description>None</Description>  </Additional\_Attributes> |

SERF

|  |
| --- |
| <Extended\_Metadata>  <Extended\_Metadata>/n <Metadata>  <Group>gov.nasa.gsfc.gcmd</Group>  <Name>metadata.extraction\_date</Name>  <Value>2014-12-05 10:36:11</Value>  </Metadata>  <Metadata>  <Group>gov.nasa.gsfc.gcmd</Group>  <Name>metadata.keyword\_version</Name>  <Value>8.0</Value>  </Metadata>  </Extended\_Metadata> |

ECHO 10 Collection

|  |
| --- |
| <AdditionalAttribute>  <Name>SuccessCloudPhaseRtrPct\_IR</Name>  <DataType>FLOAT</DataType>  <Description>None</Description>  </AdditionalAttribute> |

ECHO 10 Granule

|  |
| --- |
| <AdditionalAttributes>  <AdditionalAttribute>  <Name>AIRSAR\_FLIGHT\_LINE</Name>  <Values>  <Value>mammoth\_138.90021</Value>  </Values>  </AdditionalAttribute>  </AdditionalAttributes> |

ISO 19115-2

|  |
| --- |
| <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode  codeList=http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="contentInformation"  >contentInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>SuccessCloudPhaseRtrPct\_IR</gco:CharacterString>  </eos:name>  <eos:description>  <gco:CharacterString>None</gco:CharacterString>  </eos:description>  <eos:dataType>  <eos:EOS\_AdditionalAttributeDataTypeCode  codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeDataTypeCode"  codeListValue="FLOAT">FLOAT</eos:EOS\_AdditionalAttributeDataTypeCode>  </eos:dataType>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  </eos:AdditionalAttribute> |

ISO 19115-1

|  |
| --- |
| <mrc:AdditionalAttributes>  <mrc:AdditionalAttribute>  <mrc:reference>  <mrc:EOS\_AdditionalAttributeDescription>  <mrc:type>  <mrc:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="contentInformation">contentInformation</mrc:EOS\_AdditionalAttributeTypeCode>  </mrc:type>  <mrc:name>  <gco:CharacterString>SuccessCloudPhaseRtrPct\_IR</gco:CharacterString>  </mrc:name>  <mrc:description>  <gco:CharacterString>None</gco:CharacterString>  </mrc:description>  <mrc:dataType>  <mrc:EOS\_AdditionalAttributeDataTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeDataTypeCode"  codeListValue="FLOAT">FLOAT</mrc:EOS\_AdditionalAttributeDataTypeCode>  </mrc:dataType>  </mrc:EOS\_AdditionalAttributeDescription>  </mrc:reference>  </mrc:AdditionalAttribute>  …  </ mrc:AdditionalAttributes> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/MOD09Q1N\_C5\_NRT  
DIF 10 - Example manually generated based on schema and ECHO data.  
SERF - http://gcmd.gsfc.nasa.gov/mws/serf/NASA\_3D\_VIEW

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C90762185-LAADS  
ECHO 10 Granule – https://api.echo.nasa.gov/catalog-rest/echo\_catalog/granules/G181127451-ASF

ISO 19115-2 - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C90762185-LAADS.iso

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

### Distribution

**Element Specification**

Distribution/Media (0..1)  
Distribution/Size (0..1)  
Distribution/Format (0..1)  
Distribution/Fees (0..1)

**Description**

This element describes media options, size, data format, and fees involved in distributing or accessing the data.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Distribution/ |
| DIF 10 | /DIF/Distribution/ |
| SERF | /SERF/Distribution/ |
| ECHO 10 Collection | /Collection/DataFormat  /Collection/Price |
| ECHO 10 Granule | /Granule/DataFormat  /Granule/Price  /Granule/DataGranule/SizeMBDataGranule |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:distributionInfo/gmd:MD\_Distribution/gmd:distributor/gmd:MD\_Distributor/gmd:distributionOrderProcess/gmd:MD\_StandardOrderProcess/gmd:fees/gco:CharacterString  /gmi:MI\_Metadata/gmd:distributionInfo/gmd:MD\_Distribution/gmd:distributor/gmd:MD\_Distributor/gmd:distributorFormat/gmd:MD\_Format/gmd:name/gco:CharacterString  /gmi:MI\_Metadata/gmd:distributionInfo/gmd:MD\_Distribution/gmd:distributor/gmd:MD\_Distributor/gmd:distributorFormat/gmd:MD\_Format/gmd:specification/gco:CharacterString  /gmi:MI\_Metadata/gmd:distributionInfo/gmd:MD\_Distribution/gmd:distributor/gmd:MD\_Distributor/gmd:distributorTransferOptions/gmd:MD\_DigitalTransferOptions |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:distributionInfo/mrd:MD\_Distribution/mrd:distributor/mrd:MD\_Distributor/mrd:distributionOrderProcess/mrd:MD\_StandardOrderProcess/mrd:fees/gco:CharacterString  /mdb:MD\_Metadata/mdb:distributionInfo/mrd:MD\_Distribution/mrd:distributor/mrd:MD\_Distributor/mrd:distributorFormat/mrd:MD\_Format/mrd:formatSpecificationCitation>  /mdb:MD\_Metadata/mdb:distributionInfo/mrd:MD\_Distribution/mrd:distributor/mrd:MD\_Distributor/mrd:distributorTransferOptions/mrd:MD\_DigitalTransferOptions |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Distribution>  <Distribution\_Media>Online Internet (HTTP)</Distribution\_Media>  <Distribution\_Format>HTML</Distribution\_Format>  <Fees>0</Fees>  </Distribution> |

DIF 10

|  |
| --- |
| <Distribution>  <Distribution\_Media>Online Internet (HTTP)</Distribution\_Media>  <Distribution\_Format>HTML</Distribution\_Format>  <Fees>0</Fees>  </Distribution> |

SERF

|  |
| --- |
| <Distribution>  <Distribution\_Media>electronic or ftp</Distribution\_Media>  <Distribution\_Size>590K to 853K depending on platform</Distribution\_Size>  <Distribution\_Format>self extracting DOS executable or UNIX tar file</Distribution\_Format>  </Distribution> |

ECHO 10 Collection

|  |
| --- |
| <Price>0</Price>  <DataFormat>BSQ, PDF, PNG</DataFormat> |

ECHO 10 Granule

|  |
| --- |
| <DataGranule><SizeMBDataGranule>481.59578705</SizeMBDataGranule>  <Price>0</Price>  <DataFormat>HDFEOS-5</DataFormat> |

ISO 19115-2

|  |
| --- |
| <gmd:distributionOrderProcess>  <gmd:MD\_StandardOrderProcess>  <gmd:fees>  <gco:CharacterString>0</gco:CharacterString>  </gmd:fees>  </gmd:MD\_StandardOrderProcess>  </gmd:distributionOrderProcess>  <gmd:distributorFormat>  <gmd:MD\_Format>  <gmd:name>  <gco:CharacterString>BSQ, PDF, PNG</gco:CharacterString>  </gmd:name>  <gmd:version gco:nilReason="unknown"/>  </gmd:MD\_Format>  </gmd:distributorFormat> |

ISO 19115-1

|  |
| --- |
| <mdb:distributionInfo>  <mrd:MD\_Distribution>  <mrd:distributor>  <mrd:MD\_Distributor>  <mrd:distributorContact>  …  </mrd:distributorContact>  <mrd:distributionOrderProcess>  <mrd:MD\_StandardOrderProcess>  <mrd:fees>  <gco:CharacterString>0</gco:CharacterString>  </mrd:fees>  </mrd:MD\_StandardOrderProcess>  </mrd:distributionOrderProcess>  <mrd:distributorFormat>  <mrd:MD\_Format>  <mrd:formatSpecificationCitation>  <cit:CI\_Citation>  <cit:title>  <gco:CharacterString>BSQ, PDF, PNG</gco:CharacterString>  </cit:title>  <cit:alternateTitle/>  <cit:date gco:nilReason="unknown"/>  <cit:edition/>  <cit:identifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>BSQ, PDF, PNG</gco:CharacterString>  </mcc:code>  </mcc:MD\_Identifier>  </cit:identifier>  </cit:CI\_Citation>  </mrd:formatSpecificationCitation>  </mrd:MD\_Format>  </mrd:distributorFormat>  <mrd:distributorTransferOptions>  <mrd:MD\_DigitalTransferOptions>  …  </mrd:MD\_DigitalTransferOptions>  </mrd:distributorTransferOptions>  </mrd:MD\_Distributor>  </mrd:distributor>  </mrd:MD\_Distribution>  </mdb:distributionInfo> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/CIESIN\_SEDAC\_ENTRI\_TEXTS\_COL

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

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/modflow-99

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC

ECHO 10 Granule - https://api.echo.nasa.gov/catalog-rest/echo\_catalog/granules/G7108549-LARC\_ASDC

ISO 19115-2 - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC.iso

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

**Recommendations**

The format should be normalized and added to the controlled vocabulary items.

### Platform

**Element Specification**

Platform with uuid (1..\*)  
Platform/Type (0..1)  
Platform/ShortName (1)  
Platform/LongName (0..1)  
Platform/Characteristics (0..\*)  
Platform/Characteristics/Name (1)  
Platform/Characteristics/Description (1)  
Platform/Characteristics/DataType (1)  
Platform/Characteristics/Unit (1)  
Platform/Characteristics/Value (1)  
Platform/Instrument (1..\*) {See Instrument for full specification}

**Description**

This element describes the relevant platforms used to acquire the data. Platform types are controlled and include Spacecraft, Aircraft, Vessel, Buoy, Station, Network, Human, etc.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

This class is found in ECHO, GCMD, and EMS. It is controlled within GCMD and EMS, but not within ECHO. ECHO's Platform includes the following attributes: ShortName, LongName, Type, Characteristics, and Instruments. GCMD's Platform does not nest the Instrument attributes or include a Characteristics attribute. Some of the characteristics information is captured in the GCMD ancillary platform metadata document. The EMS attribute "Mission" is mapped to UMM/Platform/ShortName; EMS "Mission" can also be mapped to UMM/Project/Campaign if applicable. EMS intends to use only one value; and employ mission, platform and project (in this order) based on the availability of the information.

The ISO 19115-2 MI\_Platform class was extended to EOS\_Platform in order to facilitate the addition of ECHO additional attributes and sensors to the platform descriptions.

**Mapping**

|  |  |
| --- | --- |
| DIF | /DIF/Source\_Name |
| Extended DIF | /DIF/Platform/ |
| SERF | /SERF/Source\_Name |
| ECHO 10 Collection | /Collection/Platforms/Platform/ |
| ECHO 10 Granule | /Granule/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" |

**Examples**

DIF 9

|  |
| --- |
| <Source\_Name uuid="e66a90c4-3a5c-4e52-b039-bc93857642bf">  <Short\_Name>GPS</Short\_Name>  <Long\_Name>Global Positioning System Satellites</Long\_Name>  </Source\_Name> |

DIF 10

|  |
| --- |
| <Platform>  <Short\_Name>ICESat</Short\_Name>  <Long\_Name>Ice, Cloud, and Land Elevation Satellite</Long\_Name>  <Type>Spacecraft</Type>  <Characteristics>  <Name>OrbitInclination</Name>  <Description>Angle between the orbit plane and the Earth's equatorial plane</Description>  <DataType>float</DataType>  <Unit>Degrees</Unit>  <Value>94.0</Value>  </Characteristics>  <Characteristics>  <Name>OrbitalPeriod</Name>  <Description>Orbital period in decimal minutes.</Description>  <DataType>float</DataType>  <Unit>Minutes</Unit>  <Value>96.7</Value>  </Characteristics>  ...  </Platform> |

SERF

|  |
| --- |
| <Source\_Name uuid="3c5df34c-b231-460d-b3b6-4145c1fa8f25">  <Short\_Name>BUOYS</Short\_Name>  </Source\_Name> |

ECHO 10 Collection

|  |
| --- |
| <Platforms>  <Platform>  <ShortName>ICESat</ShortName>  <LongName>Ice, Cloud, and Land Elevation Satellite</LongName>  <Type>Spacecraft</Type>  <Characteristics>  <Characteristic>  <Name>OrbitInclination</Name>  <Description>Angle between the orbit plane and the Earth's equatorial  plane</Description>  <DataType>float</DataType>  <Unit>Degrees</Unit>  <Value>94.0</Value>  </Characteristic>  <Characteristic>  <Name>OrbitalPeriod</Name>  <Description>Orbital period in decimal minutes.</Description>  <DataType>float</DataType>  <Unit>Minutes</Unit>  <Value>96.7</Value>  </Characteristic>  </Characteristics>  <Instruments>  …  </Instruments>  </Platform>  </Platforms> |

ECHO 10 Granule

|  |
| --- |
| <Platforms>  <Platform>  <ShortName>AIRCRAFT</ShortName>  <Instruments…</Instruments>  </Platform> </Platforms> |

ISO 19115-2

|  |
| --- |
| <gmi:platform>  <eos:EOS\_Platform id="d142e304">  <gmi:identifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>ICESat</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>Ice, Cloud, and Land Elevation Satellite</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </gmi:identifier>  <gmi:description>  <gco:CharacterString>Spacecraft</gco:CharacterString>  </gmi:description>  <gmi:instrument xlink:href="#d142e335"/>  <gmi:instrument xlink:href="#d142e423"/>  <eos:otherPropertyType>  <gco:RecordType xlink:href="http://earthdata.nasa.gov/metadata/schema/eos/1.0/eos.xsd#xpointer(//element[@name='AdditionalAttributes'])">Echo Additional Attributes</gco:RecordType>  </eos:otherPropertyType>  <eos:otherProperty>  <gco:Record>  <eos:AdditionalAttributes><!--Platform Characteristic-->  <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>OrbitInclination</gco:CharacterString>  </eos:name>  <eos:description>  <gco:CharacterString>Angle between the orbit plane and the Earth's equatorial plane</gco:CharacterString>  </eos:description>  <eos:dataType>  <eos:EOS\_AdditionalAttributeDataTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeDataTypeCode"  codeListValue="float">float</eos:EOS\_AdditionalAttributeDataTypeCode>  </eos:dataType>  <eos:parameterUnitsOfMeasure>  <gco:CharacterString>Degrees</gco:CharacterString>  </eos:parameterUnitsOfMeasure>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  <eos:value>  <gco:CharacterString>94.0</gco:CharacterString>  </eos:value>  </eos:AdditionalAttribute>  …  </eos:AdditionalAttributes>  </gco:Record>  </eos:otherProperty>  </eos:EOS\_Platform>  </gmi:platform>  ---------------------------------------------------  <gmd:descriptiveKeywords>  <gmd:MD\_Keywords>  <gmd:keyword>  <gco:CharacterString>ICESat &gt; Ice, Cloud, and Land Elevation Satellite</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="platform">platform</gmd:MD\_KeywordTypeCode>  </gmd:type>  <gmd:thesaurusName>  ...  </gmd:thesaurusName>  </gmd:MD\_Keywords>  </gmd:descriptiveKeywords> |

ISO 19115-1

|  |
| --- |
| <mdb:MD\_Metadata>  <mdb:acquisitionInformation>  <mac:MI\_AcquisitionInformation>  <mac:platform>  <mac:EOS\_Platform id="d142e304">  <mac:identifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>ICESat</gco:CharacterString>  </mcc:code>  <mcc:description>  <gco:CharacterString>Ice, Cloud, and Land Elevation Satellite</gco:CharacterString>  </mcc:description>  </mcc:MD\_Identifier>  </mac:identifier>  <mac:description>  <gco:CharacterString>Spacecraft</gco:CharacterString>  </mac:description>  <mac:instrument xlink:href="#d142e335"/>  <mac:instrument xlink:href="#d142e423"/>  <mac:otherPropertyType>  <gco:RecordType xlink:href="http://earthdata.nasa.gov/metadata/schema/eos/1.0/eos.xsd#xpointer(//element[@name='AdditionalAttributes'])">Echo Additional Attributes</gco:RecordType>  </mac:otherPropertyType>  <mac:otherProperty>  <gco:Record>  <mac:AdditionalAttributes>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>OrbitInclination</gco:CharacterString>  </mac:name>  <mac:description>  <gco:CharacterString>Angle between the orbit plane and the Earth's equatorial plane</gco:CharacterString>  </mac:description>  <mac:dataType>  <mac:EOS\_AdditionalAttributeDataTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeDataTypeCode"  codeListValue="float">float</mac:EOS\_AdditionalAttributeDataTypeCode>  </mac:dataType>  <mac:parameterUnitsOfMeasure>  <gco:CharacterString>Degrees</gco:CharacterString>  </mac:parameterUnitsOfMeasure>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>94.0</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  …  </mac:AdditionalAttributes>  </gco:Record>  </mac:otherProperty>  </mac:EOS\_Platform>  </mac:platform>  </mac:MI\_AcquisitionInformation>  </mdb:acquisitionInformation>  </mdb:MD\_Metadata>  ----------------------------------  <mri:descriptiveKeywords>  <mri:MD\_Keywords>  <mri:keyword>  <gco:CharacterString>ICESat &gt; Ice, Cloud, and Land Elevation Satellite</gco:CharacterString>  </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">platform</mri:MD\_KeywordTypeCode>  </mri:type>  <mri:thesaurusName>  …  </mri:thesaurusName>  </mri:MD\_Keywords>  </mri:descriptiveKeywords> |

EMS

|  |
| --- |
| AQUARIUS |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/macayeal\_cont\_GPS\_Ross\_Ice\_Shelf\_0229546

DIF 10 – Manually generated from ECHO 10 Collection data

SERF - http://gcmd.gsfc.nasa.gov/mws/serf/01-buoy-99

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C1000000444-NSIDC\_ECS

ECHO 10 Granule - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G7108549-LARC\_ASDC

ISO 19115-2 - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/ C1000000444-NSIDC\_ECS.iso

ISO 19115-1 - Example based on ISO19139to19115-3.xsl translation of ISO 19115-2 record  
EMS - NSIDCV0 flat file

**Recommendations**

Platforms should be reconciled so all keywords are controlled within the CMR through the keyword management system. To be consistent UMM Platform structure should be used.

### Instrument

**Element Specification**

Platform/Instrument with uuid (1..\*)  
Platform/Instrument/ShortName (1)  
Platform/Instrument/LongName (0..1)  
Platform/Instrument/Technique (0..1)  
Platform/Instrument/NumberOfSensors (0..1)  
Platform/Instrument/Characteristics (0..\*)  
Platform/Instrument/Characteristics/Name (1)  
Platform/Instrument/Characteristics/Description (1)  
Platform/Instrument/Characteristics/DataType (1)  
Platform/Instrument/Characteristics/Unit (1)  
Platform/Instrument/Characteristics/Value (1)  
Platform/Instrument/OperationalMode (0..\*)

Platform/Instrument/Sensor (0..\*) {See Sensor for full specification}  
  
**Description**

The Instrument element is nested within the Platform element and is used to register the device that measured or recorded the data, including direct human observation. This is useful to find data from a specific instrument.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

This element is found in ECHO, GCMD, and EMS. It is controlled within GCMD but not within ECHO or EMS. ECHO's Instrument element includes the following sub-elements: ShortName, LongName, Technique, NumberOfSensors, Characteristics, Sensors, and OperationModes. GCMD's Source\_Name element does not nest the Instrument sub-element or include any of the other elements found in ECHO. Some of the characteristics information is captured in the GCMD ancillary instrument metadata document. The extended DIF will rename the Source\_Name to platform and nests the instrument element. Because this is a newly required element in the UMM and not all collections have associated instruments, the keywords "Not Available", "Not Applicable", and "Unknown" will be added to the controlled keyword list for collections that are not associated with an instrument.

The ISO 19115-2 MI\_Instrument class was extended to EOS\_Instrument in order to facilitate the addition of ECHO additional attributes to the instrument descriptions.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Sensor\_Name/ |
| DIF 10 | /DIF/Platform/Instrument/ |
| SERF | /SERF/Sensor\_Name/ |
| ECHO 10 Collection | /Collection/Platforms/Platform/Instruments/Instrument/ |
| ECHO 10 Granule | /Granule/Platforms/Platform/Instruments/Instrument/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation/gmi:instrument/eos:EOS\_Instrument/  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: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 |

**Examples**

DIF 9

|  |
| --- |
| <Sensor\_Name uuid="e5fde4c4-15cd-4278-b922-005488df096f">  <Short\_Name>GPS</Short\_Name>  <Long\_Name>Global Positioning System</Long\_Name>  </Sensor\_Name>  <Sensor\_Name uuid="029feed6-79dc-4316-b8ac-be8f1e557f89">  <Short\_Name>GPS RECEIVERS</Short\_Name>  </Sensor\_Name> |

DIF 10

|  |
| --- |
| <Instrument uuid="uuid25">  <Short\_Name> GPS </Short\_Name>  <Long\_Name>Global Positioning System</Long\_Name>  <Technique>Technique1</Technique>  <Characteristics>  <Name>Name4</Name>  <Description>Description4</Description>  <DataType>DataType4</DataType>  <Unit>Unit4</Unit>  <Value>Value4</Value>  </Characteristics>  <Characteristics>  <Name>Name5</Name>  <Description>Description5</Description>  <DataType>DataType5</DataType>  <Unit>Unit5</Unit>  <Value>Value5</Value>  </Characteristics>  </Instrument > |

SERF

|  |
| --- |
| <Sensor\_Name uuid="d0cf9340-dc51-447f-a151-f6cdad265d9a">  <Short\_Name>ANEMOMETERS</Short\_Name>  </Sensor\_Name> |

ECHO 10 Collection

|  |
| --- |
| <Instruments>  <Instrument>  <ShortName>GLAS</ShortName>  <LongName>Geoscience Laser Altimeter System</LongName>  <Technique>Laser Altimetry and Light Detection and Radar</Technique>  <Characteristics>  <Characteristic>  <Name>SwathWidth</Name>  <Description>The width of the sensor scan as the satellite moves along  the ground track.</Description>  <DataType>int</DataType>  <Unit>kilometers</Unit>  <Value>2</Value>  </Characteristic>  </Characteristics>  <Sensors>  …  </Sensors>  </Instrument>  <Instrument>  <ShortName>GPS</ShortName>  <LongName>Global Positioning System Receiver</LongName>  <Technique>Radionavigation</Technique>  <Sensors>  <Sensor>  <ShortName>GPS Receiver</ShortName>  <LongName>Dual frequency GPS receiver</LongName>  <Technique>Pseudorange and carrier phase</Technique>  </Sensor>  </Sensors>  </Instrument>  </Instruments> |

ECHO 10 Granule

|  |
| --- |
| <Instruments>  <Instrument>  <ShortName>AIRMSPI INSTRUMENT</ShortName>  <Characteristics/>  <Sensors…</Sensors  </Instrument>  </Instruments> |

EOS Extension of ISO 19115-2

|  |
| --- |
| <gmi:instrument>  <eos:EOS\_Instrument id="d142e335">  <gmi:citation>  <gmd:CI\_Citation>  <gmd:title>  <gco:CharacterString>GLAS&gt;Geoscience Laser Altimeter System</gco:CharacterString>  </gmd:title>  <gmd:date gco:nilReason="unknown"/>  </gmd:CI\_Citation>  </gmi:citation>  <gmi:identifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>GLAS</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>Geoscience Laser Altimeter System</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </gmi:identifier>  <gmi:type>  <gco:CharacterString>Laser Altimetry and Light Detection and Radar</gco:CharacterString>  </gmi:type>  <gmi:description gco:nilReason="missing"/>  <gmi:mountedOn xlink:href="#d142e304"/>  <eos:otherPropertyType>  <gco:RecordType xlink:href="http://earthdata.nasa.gov/metadata/schema/eos/1.0/eos.xsd#xpointer(//element[@name='AdditionalAttributes'])">Echo Additional Attributes</gco:RecordType>  </eos:otherPropertyType>  <eos:otherProperty>  <gco:Record>  <eos:AdditionalAttributes><!--Instrument Characteristic-->  <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="instrumentInformation">instrumentInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>SwathWidth</gco:CharacterString>  </eos:name>  <eos:description>  <gco:CharacterString>The width of the sensor scan as the satellite moves along the ground track.</gco:CharacterString>  </eos:description>  <eos:dataType>  <eos:EOS\_AdditionalAttributeDataTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeDataTypeCode"  codeListValue="int">int</eos:EOS\_AdditionalAttributeDataTypeCode>  </eos:dataType>  <eos:parameterUnitsOfMeasure>  <gco:CharacterString>kilometers</gco:CharacterString>  </eos:parameterUnitsOfMeasure>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  <eos:value>  <gco:CharacterString>2</gco:CharacterString>  </eos:value>  </eos:AdditionalAttribute>  …  </eos:AdditionalAttributes>  </gco:Record>  </eos:otherProperty>  …  </eos:EOS\_Instrument>  </gmi:instrument>  -------------------------------------------  <gmd:descriptiveKeywords>  <gmd:MD\_Keywords>  <gmd:keyword>  <gco:CharacterString>GLAS &gt; Geoscience Laser Altimeter System</gco:CharacterString>  </gmd:keyword>  <gmd:keyword>  <gco:CharacterString>GPS &gt; Global Positioning System Receiver</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="instrument">instrument</gmd:MD\_KeywordTypeCode>  </gmd:type>  <gmd:thesaurusName>  ...  </gmd:thesaurusName>  </gmd:MD\_Keywords>  </gmd:descriptiveKeywords> |

ISO 19115-1

|  |
| --- |
| <mdb:acquisitionInformation>  <mac:MI\_AcquisitionInformation>  <mac:instrument>  <mac:EOS\_Instrument id="d142e335">  <mac:citation>  <cit:CI\_Citation>  <cit:title>  <gco:CharacterString>GLAS&gt;Geoscience Laser Altimeter System</gco:CharacterString>  </cit:title>  <cit:date gco:nilReason="missing"/>  </cit:CI\_Citation>  </mac:citation>  <mac:identifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>GLAS</gco:CharacterString>  </mcc:code>  <mcc:description>  <gco:CharacterString>Geoscience Laser Altimeter System</gco:CharacterString>  </mcc:description>  </mcc:MD\_Identifier>  </mac:identifier>  <mac:type>  <gco:CharacterString>Laser Altimetry and Light Detection and Radar</gco:CharacterString>  </mac:type>  <mac:description gco:nilReason="missing"/>  <mac:mountedOn xlink:href="#d142e304"/>  <mac:otherPropertyType>  <gco:RecordType xlink:href="http://earthdata.nasa.gov/metadata/schema/eos/1.0/eos.xsd#xpointer(//element[@name='AdditionalAttributes'])">Echo Additional Attributes</gco:RecordType>  </mac:otherPropertyType>  <mac:otherProperty>  <gco:Record>  <mac:AdditionalAttributes>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="instrumentInformation">instrumentInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>SwathWidth</gco:CharacterString>  </mac:name>  <mac:description>  <gco:CharacterString>The width of the sensor scan as the satellite moves along the ground track.</gco:CharacterString>  </mac:description>  <mac:dataType>  <mac:EOS\_AdditionalAttributeDataTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeDataTypeCode"  codeListValue="int">int</mac:EOS\_AdditionalAttributeDataTypeCode>  </mac:dataType>  <mac:parameterUnitsOfMeasure>  <gco:CharacterString>kilometers</gco:CharacterString>  </mac:parameterUnitsOfMeasure>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>2</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  …  </mac:AdditionalAttributes>  </gco:Record>  </mac:otherProperty>  <mac:sensor>  ...  </mac:sensor>  </mac:EOS\_Instrument>  </mac:instrument>  ----------------------------------  <mri:descriptiveKeywords>  <mri:MD\_Keywords>  <mri:keyword>  <gco:CharacterString>GLAS &gt; Geoscience Laser Altimeter System</gco:CharacterString>  </mri:keyword>  <mri:keyword>  <gco:CharacterString>GPS &gt; Global Positioning System Receiver</gco:CharacterString>  </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">instrument</mri:MD\_KeywordTypeCode>  </mri:type>  ….  </mri:MD\_Keywords>  </mri:descriptiveKeywords> |

EMS

|  |
| --- |
| AQUARIUS\_RADIOMETER,AQUARIUS\_SCATTEROMETER |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/macayeal\_cont\_GPS\_Ross\_Ice\_Shelf\_0229546  
DIF 10 - Generated sample data from DIF 9  
SERF - http://gcmd.gsfc.nasa.gov/mws/serf/CLIMLIST

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C1000000444-NSIDC\_ECS  
ECHO 10 Granule - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G7108549-LARC\_ASDC

ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/ C1000000444-NSIDC\_ECS.iso

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

EMS - NSIDCV0 flat file

**Recommendations**

Instruments should be reconciled so all keywords are controlled within the CMR through the keyword management system.

### Sensor

**Element Specification**

Platform/Instrument/Sensor with uuid (1..\*)  
Platform/Instrument/Sensor/ShortName (1)  
Platform/Instrument/Sensor/LongName (0..1)  
Platform/Instrument/Sensor/Technique (0..1)  
Platform/Instrument/Sensor/Characteristics (0..\*)  
Platform/Instrument/Sensor/Characteristics/Name (1)  
Platform/Instrument/Sensor/Characteristics/Description (1)  
Platform/Instrument/Sensor/Characteristics/DataType (1)  
Platform/Instrument/Sensor/Characteristics/Unit (1)  
Platform/Instrument/Sensor/Characteristics/Value (1)  
  
**Description**

This element is nested within the Instrument element and describes the referential information for collection source/sensor configuration - including sensor variable settings such as technique etc.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

This element is found in both ECHO and GCMD. In the GCMD DIF 9, the DIF/Sensor\_Name element is used to record both Instrument and Sensor information. Unlike in ECHO, there is no delineation between Instrument and Sensor. The DIF/Sensor\_Name element is controlled within GCMD but the Sensor element is not controlled in ECHO. ECHO's Sensor includes the following sub-elements: ShortName, LongName, Technique, and Characteristics. GCMD's DIF 9 Platform/Instrument hierarchy does not nest this information or include any of the other sub-elements found in ECHO; DIF 10 will nest the information and include the other sub-elements. Some of the characteristics information is captured in the GCMD ancillary instrument metadata document.

The ISO 19115-2 MI\_AcquisitionInformation class was extended by adding EOS\_Sensor in order to describe instruments with multiple sensors.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | DIF/Sensor\_Name |
| DIF 10 | /DIF/Platform/Instrument/Sensor/ |
| SERF | N/A |
| ECHO 10 Collection | /Collection/Platforms/Platform/Instruments/Instrument/Sensors/Sensor |
| ECHO 10 Granule | /Granule/Platforms/Platform/Instruments/Instrument/Sensors/Sensor |
| NASA Profile of ISO 19115-2 | /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation/gmi:instrument/eos:EOS\_Instrument/eos:sensor/eos:EOS\_Sensor/ |
| ISO 19115-1 | /mdb:MD\_Metadata/mdb:acquisitionInformation/mac:MI\_AcquisitionInformation/mac:instrument/eos:EOS\_Instrument/eos:sensor/eos:EOS\_Sensor |
| EMS | N/A |

**Examples**

DIF 9

|  |
| --- |
| <Sensor\_Name uuid="e5fde4c4-15cd-4278-b922-005488df096f">  <Short\_Name>GPS</Short\_Name>  <Long\_Name>Global Positioning System</Long\_Name>  </Sensor\_Name>  <Sensor\_Name uuid="029feed6-79dc-4316-b8ac-be8f1e557f89">  <Short\_Name>GPS RECEIVERS</Short\_Name>  </Sensor\_Name> |

DIF 10

|  |
| --- |
| <Sensor uuid="uuid25">  <Short\_Name>Short\_Name2</Short\_Name>  <Long\_Name>Long\_Name2</Long\_Name>  <Technique>Technique1</Technique>  <Characteristics>  <Name>Name4</Name>  <Description>Description4</Description>  <DataType>DataType4</DataType>  <Unit>Unit4</Unit>  <Value>Value4</Value>  </Characteristics>  <Characteristics>  <Name>Name5</Name>  <Description>Description5</Description>  <DataType>DataType5</DataType>  <Unit>Unit5</Unit>  <Value>Value5</Value>  </Characteristics>  </Sensor> |

ECHO 10 Collection

|  |
| --- |
| <Sensors>  <Sensor>  <ShortName>LA</ShortName>  <LongName>Laser Altimeter</LongName>  <Technique>Exact Measurement of Time between Transmit Pulse and receive  ground return</Technique>  <Characteristics>  <Characteristic>  <Name>wavelength</Name>  <Description>transmission</Description>  <DataType>varchar</DataType>  <Unit>nanometer</Unit>  <Value>1064 nm</Value>  </Characteristic>  <Characteristic>  <Name>waveform</Name>  <Description>digitizer</Description>  <DataType>varchar</DataType>  <Unit>counts</Unit>  <Value>0-255</Value>  </Characteristic>  </Characteristics>  </Sensor>  <Sensor>  <ShortName>PC</ShortName>  <LongName>Photon Counter for the 532 nm Aerosol Returns</LongName>  <Technique>Counting of 532nm photon return in 75m bins 40km to  surface</Technique>  <Characteristics>  <Characteristic>  <Name>wavelength</Name>  <Description>detector</Description>  <DataType>varchar</DataType>  <Unit>nanometer</Unit>  <Value>532nm</Value>  </Characteristic>  </Characteristics>  </Sensor>  <Sensor>  <ShortName>CD</ShortName>  <LongName>Cloud LIDAR</LongName>  <Technique>Measure of 1064nm return energy in 75m bins from 20km to  surface</Technique>  <Characteristics>  <Characteristic>  <Name>wavelength</Name>  <Description>detector</Description>  <DataType>varchar</DataType>  <Unit>nanometer</Unit>  <Value>1064 nm</Value>  </Characteristic>  </Characteristics>  </Sensor>  </Sensors> |

ECHO 10 Granule

|  |
| --- |
| <Sensors>  <Sensor>  <ShortName>AIRMSPI INSTRUMENT</ShortName>  <Characteristics />  </Sensor>  </Sensors> |

EOS Extension of ISO 19115-2

|  |
| --- |
| <eos:sensor>  <eos:EOS\_Sensor id="d142e355">  <eos:citation>  <gmd:CI\_Citation>  <gmd:title>  <gco:CharacterString>LA&gt;Laser Altimeter</gco:CharacterString>  </gmd:title>  <gmd:date gco:nilReason="unknown"/>  </gmd:CI\_Citation>  </eos:citation>  <eos:identifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>LA</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>Laser Altimeter</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </eos:identifier>  <eos:type>  <gco:CharacterString>Exact Measurement of Time between Transmit Pulse and receive ground return</gco:CharacterString>  </eos:type>  <eos:mountedOn xlink:href="#d142e335"/>  <eos:otherPropertyType>  <gco:RecordType xlink:href="http://earthdata.nasa.gov/metadata/schema/eos/1.0/eos.xsd#xpointer(//element[@name='AdditionalAttributes'])">Echo Additional Attributes</gco:RecordType>  </eos:otherPropertyType>  <eos:otherProperty>  <gco:Record>  <eos:AdditionalAttributes>  <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="sensorInformation">sensorInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>wavelength</gco:CharacterString>  </eos:name>  <eos:description>  <gco:CharacterString>transmission</gco:CharacterString>  </eos:description>  <eos:dataType>  <eos:EOS\_AdditionalAttributeDataTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeDataTypeCode"  codeListValue="varchar">varchar</eos:EOS\_AdditionalAttributeDataTypeCode>  </eos:dataType>  <eos:parameterUnitsOfMeasure>  <gco:CharacterString>nanometer</gco:CharacterString>  </eos:parameterUnitsOfMeasure>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  <eos:value>  <gco:CharacterString>1064 nm</gco:CharacterString>  </eos:value>  </eos:AdditionalAttribute>  …  </eos:AdditionalAttributes>  </gco:Record>  </eos:otherProperty>  </eos:EOS\_Sensor>  </eos:sensor> |

ISO 19115-1

|  |
| --- |
| <mac:sensor>  <mac:EOS\_Sensor id="d142e355">  <mac:citation>  <cit:CI\_Citation>  <cit:title>  <gco:CharacterString>LA&gt;Laser Altimeter</gco:CharacterString>  </cit:title>  <cit:date gco:nilReason="missing"/>  </cit:CI\_Citation>  </mac:citation>  <mac:identifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>LA</gco:CharacterString>  </mcc:code>  <mcc:description>  <gco:CharacterString>Laser Altimeter</gco:CharacterString>  </mcc:description>  </mcc:MD\_Identifier>  </mac:identifier>  <mac:type>  <gco:CharacterString>Exact Measurement of Time between Transmit Pulse and receive ground return</gco:CharacterString>  </mac:type>  <mac:mountedOn xlink:href="#d142e335"/>  <mac:otherPropertyType>  <gco:RecordType xlink:href="http://earthdata.nasa.gov/metadata/schema/eos/1.0/eos.xsd#xpointer(//element[@name='AdditionalAttributes'])">Echo Additional Attributes</gco:RecordType>  </mac:otherPropertyType>  <mac:otherProperty>  <gco:Record>  <mac:AdditionalAttributes>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="sensorInformation">sensorInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>wavelength</gco:CharacterString>  </mac:name>  <mac:description>  <gco:CharacterString>transmission</gco:CharacterString>  </mac:description>  <mac:dataType>  <mac:EOS\_AdditionalAttributeDataTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeDataTypeCode"  codeListValue="varchar">varchar</mac:EOS\_AdditionalAttributeDataTypeCode>  </mac:dataType>  <mac:parameterUnitsOfMeasure>  <gco:CharacterString>nanometer</gco:CharacterString>  </mac:parameterUnitsOfMeasure>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>1064 nm</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  …  </mac:AdditionalAttributes>  </gco:Record>  </mac:otherProperty>  </mac:EOS\_Sensor>  </mac:sensor> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/macayeal\_cont\_GPS\_Ross\_Ice\_Shelf\_0229546

DIF 10 - Generated sample data

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C1000000444-NSIDC\_ECS

ECHO 10 Granule - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G7108549-LARC\_ASDC

ISO 19115-2 - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/ C1000000444-NSIDC\_ECS.iso

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

**Recommendations**

The Sensor information should be controlled within the CMR through the keyword management system. A reconciliation process should be done to pull out specific sensor information found in GCMD metadata records specific to each Instrument. The GCMD Instrument Ancillary document provides a list of sensors that could help this effort. ECHO's hierarchical structure for Platform/Instrument/Sensor should be included as part of the UMM.

### Project

**Element Specification**

Project with uuid  
Project/ShortName (1)  
Project/Campaign (0..\*)  
Project/LongName (0..1)  
Project/StartDate (0..1)  
Project/EndDate (0..1)

**Description**

The project element describes the name of the scientific program, field campaign, or project from which the data were collected. This element may also cover a long term project that continuously creates new data sets — like MEaSUREs from ISCCP and NVAP or CMARES from MISR.

Project also includes the Campaign sub-element to support multiple campaigns under the same project.

**Profile Utilization**

Collection, Granule, Service, Visualization, Variable, Document

**Cardinality**

0..\*

**Analysis**

This element is found in both ECHO, where it is not controlled, and within GCMD, where it is controlled. Multiple campaigns can be associated with the same project, which is not represented in either GCMD or ECHO (keyword with no hierarchy in either format). The EMS element is mapped to UMM/Platform/ShortName; EMS "Mission" can also be mapped to UMM/Project/Campaign if applicable. EMS intends to use only one value and employ mission, platform and project (in this order) based on the availability of the information. Because the Project element is required in the UMM-C, EMS may not have to use platform or any other element; thus, no mapping is required.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | /DIF/Project/ |
| DIF 10 | /DIF/Project/ |
| SERF | /SERF/Project/ |
| ECHO 10 Collection | /Collection/Campaigns/Campaign/ |
| ECHO 10 Granule | /Granule/Campaigns/Campaign/ |
| ISO 19115-2 | /gmi:MI\_Metadata/gmi:acquisitionInformation/gmi:MI\_AcquisitionInformation/gmi:operation/gmi:MI\_Operation/  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="project"] |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <Project uuid="f560fb6c-341d-4626-969f-2978d261f161">  <Short\_Name>OBIS</Short\_Name>  <Long\_Name>OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM</Long\_Name>  </Project>  <Project uuid="bb4e35cc-520c-4d24-984f-d81cb2965a85">  <Short\_Name>COML</Short\_Name>  <Long\_Name>CENSUS OF MARINE LIFE</Long\_Name>  </Project> |

DIF 10

|  |
| --- |
| <Project uuid="f560fb6c-341d-4626-969f-2978d261f161">  <Short\_Name>OBIS</Short\_Name>  <Campaign>Campaign</Campaign>  <Long\_Name>OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM</Long\_Name>  </Project>  <Project uuid="bb4e35cc-520c-4d24-984f-d81cb2965a85">  <Short\_Name>COML</Short\_Name>  <Long\_Name>CENSUS OF MARINE LIFE</Long\_Name>  </Project> |

SERF

|  |
| --- |
| <Project uuid="5f139d40-4050-4a8e-bd2b-fcae1cfe3d01">  <Short\_Name>ESIP</Short\_Name>  <Long\_Name>Earth Science Information Partners Program</Long\_Name>  </Project> |

ECHO 10 Collection

|  |
| --- |
| <Campaign>  <ShortName>EOSDIS</ShortName>  <LongName>Earth Observing System Data Information System</LongName>  </Campaign> |

ECHO 10 Granule

|  |
| --- |
| <Campaigns><Campaign><ShortName>AIRMSPI</ShortName></Campaign></Campaigns> |

ISO 19115-2

|  |
| --- |
| <gmi:operation>  <gmi:MI\_Operation>  <gmi:description>  <gco:CharacterString>EOSDIS &gt; Earth Observing System Data Information System</gco:CharacterString>  </gmi:description>  <gmi:identifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>EOSDIS</gco:CharacterString>  </gmd:code>  </gmd:MD\_Identifier>  </gmi:identifier>  <gmi:status/>  <gmi:parentOperation gco:nilReason="inapplicable"/>  </gmi:MI\_Operation>  </gmi:operation>  -----------------------  <gmd:descriptiveKeywords>  <gmd:MD\_Keywords>  <gmd:keyword>  <gco:CharacterString>TOVS PATHFINDER &gt; TOVS Path A</gco:CharacterString>  </gmd:keyword>  <gmd:keyword>  <gco:CharacterString>ESIP &gt; Earth Science Information Partners Program</gco:CharacterString>  </gmd:keyword>  <gmd:keyword>  <gco:CharacterString>EOSDIS &gt; Earth Observing System Data Information System</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="project">project</gmd:MD\_KeywordTypeCode>  </gmd:type>  …  </gmd:MD\_Keywords>  </gmd:descriptiveKeywords> |

ISO 19115-1

|  |
| --- |
| <mac:operation>  <mac:MI\_Operation>  <mac:description>  <gco:CharacterString>TOVS PATHFINDER &gt; TOVS Path A</gco:CharacterString>  </mac:description>  <mac:identifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>TOVS PATHFINDER</gco:CharacterString>  </mcc:code>  </mcc:MD\_Identifier>  </mac:identifier>  <mac:status/>  <mac:parentOperation gco:nilReason="inapplicable"/>  </mac:MI\_Operation>  </mac:operation>  -----------------------------------  <mri:descriptiveKeywords>  <mri:MD\_Keywords>  <mri:keyword>  <gco:CharacterString>TOVS PATHFINDER &gt; TOVS Path A</gco:CharacterString>  </mri:keyword>  <mri:keyword>  <gco:CharacterString>ESIP &gt; Earth Science Information Partners Program</gco:CharacterString>  </mri:keyword>  <mri:keyword>  <gco:CharacterString>EOSDIS &gt; Earth Observing System Data Information System</gco:CharacterString>  </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">project</mri:MD\_KeywordTypeCode>  </mri:type>  …  </mri:MD\_Keywords>  </mri:descriptiveKeywords> |

EMS Flat File

|  |
| --- |
| IceBridge |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/Dinoflagellates\_Tintinnids\_Score\_Central  
DIF 10 - Example based on schema with data from DIF 9 record.   
SERF - http://gcmd.gsfc.nasa.gov/mws/serf/ClimateDiscovery

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C78036130-GSFCS4PA  
ECHO 10 Granule - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G7108549-LARC\_ASDC

ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C78036130-GSFCS4PA.iso

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

EMS - NSIDCV0 flat file

**Recommendations**

Project keywords should be reconciled with the GCMD project keywords so all keywords are controlled within the CMR through the keyword management system.

### Temporal Extent

**Element Specification**

TemporalExtent/TemporalRangeType (0..1)  
TemporalExtent/PrecisionOfSeconds (0..\*)  
TemporalExtent/EndsAtPresentFlag (0..1)

{Choice of 1}  
1) TemporalExtent/RangeDateTime (0..\*)

TemporalExtent/RangeDateTime/BeginningDateTime (1)

TemporalExtent/RangeDateTime/EndingDateTime (0..1)

2) TemporalExtent/SingleDateTime (0..\*)

3) TemporalExtent/PeriodicDateTime (1..\*)

TemporalExtent/PeriodicDateTime/Name (1)

TemporalExtent/PeriodicDateTime/StartDate (1)

TemporalExtent/PeriodicDateTime/EndDate (1)

TemporalExtent/PeriodicDateTime/DurationUnit (1)

TemporalExtent/PeriodicDateTime/DurationValue (1)

TemporalExtent/PeriodicDateTime/PeriodCycleDurationUnit (1)

TemporalExtent/PeriodicDateTime/PeriodCycleDurationValue (1)

**Description**

The temporal extent element contains elements, which describe the temporal range of a specific collection.  
This extent can be represented in a variety of ways: Range Date Time, Single Date Time, Periodic Date Time

**Profile Utilization**

Collection, Granule

**Cardinality**

1..\*

**Analysis**

This element is found in both ECHO and GCMD. The GCMD Temporal\_Coverage element is described here:  
<http://gcmd.gsfc.nasa.gov/add/difguide/temporal_coverage.html> and supports range date times.   
  
ECHO's Temporal element is defined here:  
  
<https://api.echo.nasa.gov/ingest/schema/collection/Temporal.html> and supports single date times, range date times, and period date times, among other attributes. The Temporal element also supports temporal resolution data.

**Mapping**

|  |  |
| --- | --- |
| 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/ |
| SERF | N/A |
| 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 |
| ECHO 10 Granule | {Choice of one}  1)/Granule/Temporal/RangeDateTime/BeginningDateTime  /Granule/Temporal/RangeDateTime/EndingDateTime  2)/Granule/Temporal/SingleDateTime |
| ISO 19115-2 | /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:extent/gmd:EX\_Extent id=”boundingExtent”/gmd:description/gco:CharacterString - TimeType and TemporalRangeType  /gmi:MI\_Metadata/gmd:dataQualityInfo/gmd:DQ\_DataQuality/gmd:report/gmd:DQ\_AccuracyOfATimeMeasuremen/gmd:measureIdentification/gmd:MD\_Identifier/gmd:code/gco:CharacterString PrecisionOfSeconds    /gmi:MI\_Metadata/gmd:dataQualityInfo/gmd:DQ\_DataQuality/gmd:report/gmd:DQ\_AccuracyOfATimeMeasuremen/gmd:result/gmd:DQ\_QuantitativeResult/gmd:value/gco:Record xsi:type="gco:Real\_PropertyType"/gco:Real - PrecisionOfSeconds Value  1)/gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:extent/gmd:EX\_Extent/gmd:temporalElement/gmd:EX\_TemporalExtent/gmd:extent/gml:TimePeriod/gml:beginPosition /gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:extent/gmd:EX\_Extent/gmd:temporalElement/gmd:EX\_TemporalExtent/gmd:extent/gml:TimePeriod/gml:endPosition  2/gmi:MI\_Metadata/gmd:identificationInfo/gmd:MD\_DataIdentification/gmd:extent/gmd:EX\_Extent/gmd:temporalElement/gmd:EX\_TemporalExtent/gmd:extent/gml:TimeInstant/gml:timePosition |
| 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 |

**Examples**

DIF 9

|  |
| --- |
| <Temporal\_Coverage>  <Start\_Date>2005-10-29</Start\_Date>  <Stop\_Date>2005-11-21</Stop\_Date>  </Temporal\_Coverage> |

DIF 10

|  |
| --- |
| <Temporal\_Coverage>  <Time\_Type>Universal Time</Time\_Type>  <Date\_Type>Eastern Daylight</Date\_Type>  <Temporal\_Range\_Type>Long Range</Temporal\_Range\_Type>  <Precision\_Of\_Seconds>1</Precision\_Of\_Seconds>  <Ends\_At\_Present\_Flag>true</Ends\_At\_Present\_Flag>  <Range\_DateTime>  <Beginning\_Date\_Time>1990-01-01T00:00:00Z</Beginning\_Date\_Time>  <Ending\_Date\_Time>2003-12-31T00:00:00Z</Ending\_Date\_Time>  </Range\_DateTime>  </Temporal\_Coverage> |

ECHO 10 Collection

|  |
| --- |
| <Temporal>  <TimeType>Universal Time</TimeType>  <DateType>Eastern Daylight</DateType>  <TemporalRangeType>Long Range</TemporalRangeType>  <PrecisionOfSeconds>1</PrecisionOfSeconds>  <EndsAtPresentFlag>true</EndsAtPresentFlag>  <RangeDateTime>  <BeginningDateTime>1990-01-01T00:00:00Z</BeginningDateTime>  <EndingDateTime>2003-12-31T00:00:00Z</EndingDateTime>  </RangeDateTime>  </Temporal> |

ECHO 10 Granule

|  |
| --- |
| <RangeDateTime>  <BeginningDateTime>2006-01-15T00:00:00.000Z</BeginningDateTime>  <EndingDateTime>2006-01-23T00:00:00.000Z</EndingDateTime>  </RangeDateTime>  <SingleDateTime>2002-02-27T23:49:24.0000000Z</SingleDateTime> |

ISO 19115-2

|  |
| --- |
| <gmd:extent>  <gmd:EX\_Extent id="boundingExtent">  <gmd:description>  <gco:CharacterString>SpatialCoverageType=Horizontal, SpatialInfoCoverageType=Horizontal, SpatialGranuleSpatialRepresentation=CARTESIAN, Temporal Range Type=Long Range, Time Type=Universal Time</gco:CharacterString>  </gmd:description>  <!--Bounding Rectangle--><gmd:geographicElement>  <gmd:EX\_GeographicBoundingBox>  <gmd:westBoundLongitude>  <gco:Decimal>-180</gco:Decimal>  </gmd:westBoundLongitude>  <gmd:eastBoundLongitude>  <gco:Decimal>180</gco:Decimal>  </gmd:eastBoundLongitude>  <gmd:southBoundLatitude>  <gco:Decimal>-55</gco:Decimal>  </gmd:southBoundLatitude>  <gmd:northBoundLatitude>  <gco:Decimal>90</gco:Decimal>  </gmd:northBoundLatitude>  </gmd:EX\_GeographicBoundingBox>  </gmd:geographicElement>  <gmd:temporalElement><!--RangeDateTime--><gmd:EX\_TemporalExtent id="boundingTemporalExtent">  <gmd:extent>  <gml:TimePeriod gml:id="w16aac43c11">  <gml:beginPosition frame="Eastern Daylight">1990-01-01T00:00:00Z</gml:beginPosition>  <gml:endPosition frame="Eastern Daylight" indeterminatePosition="now"/>  </gml:TimePeriod>  </gmd:extent>  </gmd:EX\_TemporalExtent>  </gmd:temporalElement>  </gmd:EX\_Extent>  </gmd:extent>  <gmd:dataQualityInfo>  <gmd:DQ\_DataQuality>  <gmd:scope>  <gmd:DQ\_Scope>  <gmd:level>  <gmd:MD\_ScopeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_ScopeCode"  codeListValue="series">series</gmd:MD\_ScopeCode>  </gmd:level>  </gmd:DQ\_Scope>  </gmd:scope>  <gmd:report>  <gmd:DQ\_AccuracyOfATimeMeasurement>  <gmd:measureIdentification>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>PrecisionOfSeconds</gco:CharacterString>  </gmd:code>  </gmd:MD\_Identifier>  </gmd:measureIdentification>  <gmd:result>  <gmd:DQ\_QuantitativeResult>  <gmd:valueUnit/>  <gmd:value>  <gco:Record xsi:type="gco:Real\_PropertyType">  <gco:Real>1</gco:Real>  </gco:Record>  </gmd:value>  </gmd:DQ\_QuantitativeResult>  </gmd:result>  </gmd:DQ\_AccuracyOfATimeMeasurement>  </gmd:report> |

ISO 19115-1

|  |
| --- |
| <mri:extent>  <gex:EX\_Extent id="boundingExtent">  <gex:description>  <gco:CharacterString>SpatialCoverageType=Horizontal, SpatialInfoCoverageType=Horizontal, SpatialGranuleSpatialRepresentation=CARTESIAN, Temporal Range Type=Long Range, Time Type=Universal Time</gco:CharacterString>  </gex:description>  <gex:geographicElement>  <gex:EX\_GeographicBoundingBox>  <gex:westBoundLongitude>  <gco:Decimal>-180</gco:Decimal>  </gex:westBoundLongitude>  <gex:eastBoundLongitude>  <gco:Decimal>180</gco:Decimal>  </gex:eastBoundLongitude>  <gex:southBoundLatitude>  <gco:Decimal>-55</gco:Decimal>  </gex:southBoundLatitude>  <gex:northBoundLatitude>  <gco:Decimal>90</gco:Decimal>  </gex:northBoundLatitude>  </gex:EX\_GeographicBoundingBox>  </gex:geographicElement>  <gex:temporalElement>  <gex:EX\_TemporalExtent id="boundingTemporalExtent">  <gex:extent>  <gml:TimePeriod gml:id="d94e190">  <gml:beginPosition frame="Eastern Daylight">1990-01-01T00:00:00Z</gml:beginPosition>  <gml:endPosition frame="Eastern Daylight" indeterminatePosition="now"/>  </gml:TimePeriod>  </gex:extent>  </gex:EX\_TemporalExtent>  </gex:temporalElement>  </gex:EX\_Extent>  </mri:extent>  <mdb:dataQualityInfo>  <mdq:DQ\_DataQuality>  <mdq:scope>  <mcc:MD\_Scope>  <mcc:level>  <mcc:MD\_ScopeCode codeList="http://www.ngdc.noaa.gov/metadata/published/xsd/schema/resources/Codelist/gmxCodelists.xml#MD\_ScopeCode"  codeListValue="series">series</mcc:MD\_ScopeCode>  </mcc:level>  </mcc:MD\_Scope>  </mdq:scope>  <mdq:report>  <mdq:DQ\_AccuracyOfATimeMeasurement>  <mdq:measure>  <mdq:DQ\_MeasureReference>  <mdq:measureIdentification>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>PrecisionOfSeconds</gco:CharacterString>  </mcc:code>  </mcc:MD\_Identifier>  </mdq:measureIdentification>  </mdq:DQ\_MeasureReference>  </mdq:measure>  <mdq:evaluationMethod>  <mdq:DQ\_FullInspection>  <mdq:evaluationProcedure/>  </mdq:DQ\_FullInspection>  </mdq:evaluationMethod>  <mdq:result>  <mdq:DQ\_QuantitativeResult>  <mdq:value>  <gco:Record xsi:type="gco:Real\_PropertyType">  <gco:Real>1</gco:Real>  </gco:Record>  </mdq:value>  <mdq:valueUnit/>  </mdq:DQ\_QuantitativeResult>  </mdq:result>  </mdq:DQ\_AccuracyOfATimeMeasurement>  </mdq:report> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/macayeal\_cont\_GPS\_Ross\_Ice\_Shelf\_0229546  
DIF 10 - Example based on schema with data from ECHO Collection record.

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC  
ECHO 10 Granule - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G187435093-LARC

ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C179001954-SEDAC.iso

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

**Recommendations**

ECHO's Temporal element should be adopted by the UMM - as it is a superset of what GCMD supports and can capture single date times, range date/times, and periodic date times, as well as temporal resolution data.

Finally, any dates, times, or temporal ranges specified in the TemporalCoverage element should use the ISO 8601 format. Unknown dates can also be represented in the ISO 8601 format.

There are several elements in the ECHO schema (such as /Collection/Temporal/DateType and TimeType) that need cleanup, revision, or deprecation.

### Spatial Extent

**Element Specification**

SpatialExtent/SpatialCoverageType (0..1)  
SpatialExtent/HorizontaSpatialDomain (0..1)

SpatialExtent/HorizontaSpatialDomain/ZoneIdentifier (0..1)  
SpatialExtent/HorizontaSpatialDomain/Geometry (1)  
SpatialExtent/HorizontaSpatialDomain/Geometry/CoordinateSystem (1)

{choice of 1..\*}

1)SpatialExtent/HorizontaSpatialDomain/Geometry/Point

2)SpatialExtent/HorizontaSpatialDomain/Geometry/BoundingRectangle

3)SpatialExtent/HorizontaSpatialDomain/Geometry/GPolygon

4)SpatialExtent/HorizontaSpatialDomain/Geometry/Line

SpatialExtent/VerticalSpatialDomain (0..\*)

SpatialExtent/VerticalSpatialDomain/Type (1)

SpatialExtent/VerticalSpatialDomain/Value (1)

SpatialExtent/VerticalSpatialDomain/Unit (1)

SpatialExtent/OrbitParameters (0..1)

SpatialExtent/OrbitParameters/SwathWidth (1)

SpatialExtent/OrbitParameters/Period (1)

SpatialExtent/OrbitParameters/InclinationAngle (0..1)

SpatialExtent/OrbitParameters/NumberOfOrbits (0..1)

SpatialExtent/OrbitParameters/StartCircularLatitude (0..1)

SpatialExtent/GranuleSpatialRepresentation (1)

**Description**

Specifies the geographic and vertical (altitude, depth) coverage of the data.

**Profile Utilization**

Collection, Granule

**Cardinality**

1..\*

**Analysis**

This element is found in both GCMD and ECHO. Spatial metadata describes the area of Earth that a collection covers. In DIF 9, the spatial extent is represented as a bounding box using a Cartesian coordinate system. In ECHO, spatial data can be represented in both Cartesian and Geodetic coordinate systems or as orbits. The Cartesian and geodetic (World Geodetic System 84) coordinate systems accept spatial data types of Point, Line, Bounding Rectangle and Polygon. See ECHO's Data Partner User Guide for more details on ECHO's support for spatial data.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | The first four are Bounding\_Rectangle in DIF 10.  /DIF/Spatial\_Coverage/Southernmost\_Latitude  /DIF/Spatial\_Coverage/Northernmost\_Latitude  /DIF/Spatial\_Coverage/Westernmost\_Longitude  /DIF/Spatial\_Coverage/Easternmost\_Longitude  Minimum\_Altitude  Maximum\_Altitude  Minimum\_Depth  Maximum\_Depth  or  /DIF/Extended\_Metadata for more complicated geometries |
| DIF 10 | /DIF/Spatial\_Coverage/Spatial\_Coverage\_Type  /DIF/Spatial\_Coverage/Granule\_Spatial\_Representation  /DIF/Spatial\_Coverage/Zone\_Identifier  /DIF/Spatial\_Coverage/Geometry/Coordinate\_System  {Choice of 1}  1)/DIF/Spatial\_Coverage/Geometry/Bounding\_Rectangle  2)/DIF/Spatial\_Coverage/Geometry/Point  3)/DIF/Spatial\_Coverage/Geometry/Line  4)/DIF/Spatial\_Coverage/Geometry/Polygon  /DIF/Spatial\_Coverage/Orbit\_Parameters/Swath\_Width  /DIF/Spatial\_Coverage/Orbit\_Parameters/Period  /DIF/Spatial\_Coverage/Orbit\_Parameters/Inclination\_Angle  /DIF/Spatial\_Coverage/Orbit\_Parameters/Number\_Of\_Orbits  /DIF/Spatial\_Coverage/Orbit\_Parameters/Start\_Circular\_Latitude  /DIF/Spatial\_Coverage/Vertical\_Spatial\_Info/Type  /DIF/Spatial\_Coverage/Vertical\_Spatial\_Info/Value  /DIF/Spatial\_Coverage/Minimum\_Altitude  /DIF/Spatial\_Coverage/Maximum\_Altitude  /DIF/Spatial\_Coverage/Altitude\_Unit  /DIF/Spatial\_Coverage/Minimum\_Depth  /DIF/Spatial\_Coverage/Maximum\_Depth  /DIF/Spatial\_Coverage/Depth\_Unit  /DIF/Spatial\_Coverage/Spatial\_Info |
| SERF | N/A |
| ECHO 10 Collection | /Collection/Spatial/SpatialCoverageType  /Collection/Spatial/HorizontalSpatialDomain  /Collection/Spatial/HorizontalSpatialDomain/ZoneIdentifier  /Collection/Spatial/HorizontalSpatialDomain/Geometry/CoordinateSystem  {Choice of 1..\*}  1) /Collection/Spatial/HorizontalSpatialDomain/Geometry/Point  2) /Collection/Spatial/HorizontalSpatialDomain/Geometry/BoundingRectagle  3) /Collection/Spatial/HorizontalSpatialDomain/Geometry/GPolygon  4) /Collection/Spatial/HorizontalSpatialDomain/Geometry/Line  /Collection/Spatial/VerticalSpatialDomain  /Collection/Spatial/VerticalSpatialDomain/Type  /Collection/Spatial/VerticalSpatialDomain/Value  /Collection/Spatial/OrbitParameters/SwathWidth  /Collection/Spatial/OrbitParameters/Period  /Collection/Spatial/OrbitParameters/InclinationAngle  /Collection/Spatial/OrbitParameters/NumberOfOrbits  /Collection/Spatial/OrbitParameters/StartCircularLatitude  /Collection/Spatial/GranuleSpatialRepresentation |
| ECHO 10 Granule | /Granule/Spatial/VerticalSpatialDomains/VerticalSpatialDomain/Type  /Granule/Spatial/VerticalSpatialDomains/VerticalSpatialDomain/Value  OPTION  1)/Granule/Spatial/HorizontalSpatialDomain/Geometry/Point/PointLongitude  /Granule/Spatial/HorizontalSpatialDomain/Geometry/Point/PointLatitude  2)/Granule/Spatial/HorizontalSpatialDomain/Geometry/Line/Point/PointLongitude  /Granule/Spatial/HorizontalSpatialDomain/Geometry/Line/Point/PointLatitude  3)/Granule/Spatial/HorizontalSpatialDomain/Geometry/GPolygon/Boundary/Point/PointLongitude  /Granule/Spatial/HorizontalSpatialDomain/Geometry/GPolygon/Boundary/Point/PointLatitude  4)/Granule/Spatial/HorizontalSpatialDomain/Geometry/BoundingRectangle/WestBoundingCoordinate  /Granule/Spatial/HorizontalSpatialDomain/Geometry/BoundingRectangle/NorthBoundingCoordinate  /Granule/Spatial/HorizontalSpatialDomain/Geometry/BoundingRectangle/EastBoundingCoordinate  /Granule/Spatial/HorizontalSpatialDomain/Geometry/BoundingRectangle/SouthBoundingCoordinate  5)/Granule/Spatial/HorizontalSpatialDomain/Geometry/BoundingRectangle/CenterPoint/PointLongitude /Granule/Spatial/HorizontalSpatialDomain/Geometry/BoundingRectangle/CenterPoint/PointLatitude  6)/Granule/Spatial/HorizontalSpatialDomain/Geometry/GPolygon/CenterPoint/PointLongitude  /Granule/Spatial/HorizontalSpatialDomain/Geometry/GPolygon/CenterPoint/PointLatitude  7)/Granule/Spatial/HorizontalSpatialDomain/Geometry/GPolygon/Boundary  with /Granule/Spatial/HorizontalSpatialDomain/Geometry/GPolygon/ExclusiveZone/Boundary  8)/Granule/Spatial/HorizontalSpatialDomain/Orbit |
| 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/eos: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 |

**Examples**

DIF 9

|  |
| --- |
| <Spatial\_Coverage>  <Southernmost\_Latitude>-78.0</Southernmost\_Latitude>  <Northernmost\_Latitude>-78.0</Northernmost\_Latitude>  <Westernmost\_Longitude>-178.0</Westernmost\_Longitude>  <Easternmost\_Longitude>-178.0</Easternmost\_Longitude>  </Spatial\_Coverage> |

DIF 10

|  |
| --- |
| <Spatial\_Coverage>  <Spatial\_Coverage\_Type>Horizontal</Spatial\_Coverage\_Type>  <Geometry>  <Coordinate\_System>CARTESIAN</Coordinate\_System>  <Bounding\_Rectangle>  <Southernmost\_Latitude>20</Southernmost\_Latitude>  <Northernmost\_Latitude>53</Northernmost\_Latitude>  <Westernmost\_Longitude>-130</Westernmost\_longituge>  <Easternmost\_Longitude>-60</Easternmost\_Longitude>  </Bounding\_Rectangle>  </Geometry>  <Granule\_Spatial\_Representation>CARTESIAN</Granule\_Spatial\_Representation>  </Spatial\_Coverage> |

ECHO 10 Collection

|  |
| --- |
| <Spatial>  <SpatialCoverageType>Horizontal</SpatialCoverageType>  <HorizontalSpatialDomain>  <Geometry>  <CoordinateSystem>CARTESIAN</CoordinateSystem>  <BoundingRectangle>  <WestBoundingCoordinate>-130</WestBoundingCoordinate>  <NorthBoundingCoordinate>53</NorthBoundingCoordinate>  <EastBoundingCoordinate>-60</EastBoundingCoordinate>  <SouthBoundingCoordinate>20</SouthBoundingCoordinate>  </BoundingRectangle>  </Geometry>  </HorizontalSpatialDomain>  <GranuleSpatialRepresentation>CARTESIAN</GranuleSpatialRepresentation>  </Spatial> |

ECHO 10 Granule

|  |
| --- |
| <VerticalSpatialDomain>  <Type>Maximum Altitude</Type>  <Value>0.1mb, or appr. 50km</Value>  </VerticalSpatialDomain>  <Spatial>  …  <HorizontalSpatialDomain>  <ZoneIdentifier>Universal Transverse Mercator (UTM)</ZoneIdentifier>  </HorizontalSpatialDomain>  …  </Spatial>  Option 1  <Point>  <PointLongitude>-80.1187</PointLongitude>  <PointLatitude>72.5477</PointLatitude>  </Point>  Option 8  <Orbit>  <AscendingCrossing>-118.11119</AscendingCrossing>  <StartLat>50.0</StartLat>  <StartDirection>A</StartDirection>  <EndLat>50.0</EndLat>  <EndDirection>A</EndDirection>  </Orbit> |

ISO 19115-2

|  |
| --- |
| <gmd:extent>  <gmd:EX\_Extent id="boundingExtent">  <gmd:description>  <gco:CharacterString>SpatialCoverageType=Horizontal, SpatialGranuleSpatialRepresentation=CARTESIAN</gco:CharacterString>  </gmd:description>  <!--Bounding Rectangle--><gmd:geographicElement>  <gmd:EX\_GeographicBoundingBox>  <gmd:westBoundLongitude>  <gco:Decimal>-130</gco:Decimal>  </gmd:westBoundLongitude>  <gmd:eastBoundLongitude>  <gco:Decimal>-60</gco:Decimal>  </gmd:eastBoundLongitude>  <gmd:southBoundLatitude>  <gco:Decimal>20</gco:Decimal>  </gmd:southBoundLatitude>  <gmd:northBoundLatitude>  <gco:Decimal>53</gco:Decimal>  </gmd:northBoundLatitude>  </gmd:EX\_GeographicBoundingBox>  </gmd:geographicElement>  <gmd:temporalElement><!--RangeDateTime--><gmd:EX\_TemporalExtent id="boundingTemporalExtent">  <gmd:extent>  <gml:TimePeriod gml:id="w16aac14a">  <gml:beginPosition>1995-01-01T00:00:00.000Z</gml:beginPosition>  <gml:endPosition/>  </gml:TimePeriod>  </gmd:extent>  </gmd:EX\_TemporalExtent>  </gmd:temporalElement>  </gmd:EX\_Extent>  </gmd:extent>  Granule  Vertical:  <gmd:description>  <gco:CharacterString>VerticalSpatialDomainType=Maximum Altitude, VerticalSpatialDomainValue=0.1mb, or appr. 50km, VerticalSpatialDomainType=Minimum Altitude, VerticalSpatialDomainValue=SFC, VerticalSpatialDomainType=Atmosphere Layer, VerticalSpatialDomainValue=Atmosphere Profile</gco:CharacterString>  </gmd:description>  ZoneIdentifier:  <gmd:geographicElement>  <gmd:EX\_GeographicDescription>  <gmd:geographicIdentifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>Universal Transverse Mercator (UTM)</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>ZoneIdentifier</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </gmd:geographicIdentifier>  </gmd:EX\_GeographicDescription>  </gmd:geographicElement>  Option 1  <gmd:geographicElement><!--Point Bounds-->  <gmd:EX\_GeographicBoundingBox>  <gmd:westBoundLongitude>  <gco:Decimal>-80.1187</gco:Decimal>  </gmd:westBoundLongitude>  <gmd:eastBoundLongitude>  <gco:Decimal>-80.1187</gco:Decimal>  </gmd:eastBoundLongitude>  <gmd:southBoundLatitude>  <gco:Decimal>72.5477</gco:Decimal>  </gmd:southBoundLatitude>  <gmd:northBoundLatitude>  <gco:Decimal>72.5477</gco:Decimal>  </gmd:northBoundLatitude>  </gmd:EX\_GeographicBoundingBox>  </gmd:geographicElement>  <gmd:geographicElement><!--Point-->  <gmd:EX\_BoundingPolygon>  <gmd:polygon>  <gml:Point gml:id="d2e39">  <gml:pos srsName="http://www.opengis.net/def/crs/EPSG/4326" srsDimension="2">72.5477 -80.1187</gml:pos>  </gml:Point>  </gmd:polygon>  </gmd:EX\_BoundingPolygon>  </gmd:geographicElement>  Option 8  <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>AscendingCrossing</gco:CharacterString>  </eos:name>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  <eos:value>  <gco:CharacterString>-118.11119</gco:CharacterString>  </eos:value>  </eos:AdditionalAttribute>  <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>StartLat</gco:CharacterString>  </eos:name>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  <eos:value>  <gco:CharacterString>50.0</gco:CharacterString>  </eos:value>  </eos:AdditionalAttribute>  <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>StartDirection</gco:CharacterString>  </eos:name>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  <eos:value>  <gco:CharacterString>A</gco:CharacterString>  </eos:value>  </eos:AdditionalAttribute>  <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>EndLat</gco:CharacterString>  </eos:name>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  <eos:value>  <gco:CharacterString>50.0</gco:CharacterString>  </eos:value>  </eos:AdditionalAttribute>  <eos:AdditionalAttribute>  <eos:reference>  <eos:EOS\_AdditionalAttributeDescription>  <eos:type>  <eos:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</eos:EOS\_AdditionalAttributeTypeCode>  </eos:type>  <eos:name>  <gco:CharacterString>EndDirection</gco:CharacterString>  </eos:name>  </eos:EOS\_AdditionalAttributeDescription>  </eos:reference>  <eos:value>  <gco:CharacterString>A</gco:CharacterString>  </eos:value>  </eos:AdditionalAttribute> |

ISO 19115-1

|  |
| --- |
| <mri:extent>  <gex:EX\_Extent id="boundingExtent">  <gex:description>  <gco:CharacterString>SpatialCoverageType=Horizontal, SpatialGranuleSpatialRepresentation=CARTESIAN</gco:CharacterString>  </gex:description>  <gex:geographicElement>  <gex:EX\_GeographicBoundingBox>  <gex:westBoundLongitude>  <gco:Decimal>-130</gco:Decimal>  </gex:westBoundLongitude>  <gex:eastBoundLongitude>  <gco:Decimal>-60</gco:Decimal>  </gex:eastBoundLongitude>  <gex:southBoundLatitude>  <gco:Decimal>20</gco:Decimal>  </gex:southBoundLatitude>  <gex:northBoundLatitude>  <gco:Decimal>53</gco:Decimal>  </gex:northBoundLatitude>  </gex:EX\_GeographicBoundingBox>  </gex:geographicElement>  <gex:temporalElement>  <gex:EX\_TemporalExtent id="boundingTemporalExtent">  <gex:extent>  <gml:TimePeriod gml:id="d13e34">  <gml:beginPosition>1995-01-01T00:00:00.000Z</gml:beginPosition>  <gml:endPosition/>  </gml:TimePeriod>  </gex:extent>  </gex:EX\_TemporalExtent>  </gex:temporalElement>  </gex:EX\_Extent>  </mri:extent>  Granule  Vertical:  <gex:description>  <gco:CharacterString>VerticalSpatialDomainType=Maximum Altitude, VerticalSpatialDomainValue=0.1mb, or appr. 50km, VerticalSpatialDomainType=Minimum Altitude, VerticalSpatialDomainValue=SFC, VerticalSpatialDomainType=Atmosphere Layer, VerticalSpatialDomainValue=Atmosphere Profile</gco:CharacterString>  </gex:description>  ZoneIdentifier:  <gex:geographicElement>  <gex:EX\_GeographicDescription>  <gex:geographicIdentifier>  <mcc:MD\_Identifier>  <gex:code>  <gco:CharacterString>Universal Transverse Mercator (UTM)</gco:CharacterString>  </gex:code>  <gex:description>  <gco:CharacterString>ZoneIdentifier</gco:CharacterString>  </gex:description>  </mcc:MD\_Identifier>  </gex:geographicIdentifier>  </gex:EX\_GeographicDescription>  </gex:geographicElement>  Option 1  <gex:geographicElement><!--Point Bounds-->  <gex:EX\_GeographicBoundingBox>  <gex:westBoundLongitude>  <gco:Decimal>-80.1187</gco:Decimal>  </gex:westBoundLongitude>  <gex:eastBoundLongitude>  <gco:Decimal>-80.1187</gco:Decimal>  </gex:eastBoundLongitude>  <gex:southBoundLatitude>  <gco:Decimal>72.5477</gco:Decimal>  </gex:southBoundLatitude>  <gex:northBoundLatitude>  <gco:Decimal>72.5477</gco:Decimal>  </gex:northBoundLatitude>  </gex:EX\_GeographicBoundingBox>  </gex:geographicElement>  <gex:geographicElement><!--Point-->  <gex:EX\_BoundingPolygon>  <gex:polygon>  <gml:Point gml:id="d2e39">  <gml:pos srsName="http://www.opengis.net/def/crs/EPSG/4326" srsDimension="2">72.5477 -80.1187</gml:pos>  </gml:Point>  </gex:polygon>  </gex:EX\_BoundingPolygon>  </gex:geographicElement>  Option 8  <mdb:acquisitionInformation>  <mac:MI\_AcquisitionInformation>  <mac:platform>  <mac:EOS\_Platform>  <mac:identifier gco:nilReason="missing"/>  <mac:description gco:nilReason="missing"/>  <mac:instrument gco:nilReason="missing"/>  <mac:otherPropertyType>  <gco:RecordType xlink:href="http://earthdata.nasa.gov/metadata/schema/eos/1.0/eos.xsd#xpointer(//element[@name='AdditionalAttributes'])">Echo Additional Attributes</gco:RecordType>  </mac:otherPropertyType>  <mac:otherProperty>  <gco:Record>  <mac:AdditionalAttributes>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>OrbitalModelName</gco:CharacterString>  </mac:name>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>WRS-2</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode 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codeListValue="platformInformation">platformInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>EquatorCrossingDateTime</gco:CharacterString>  </mac:name>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>2002-06-19T00:56:48.48Z</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>AscendingCrossing</gco:CharacterString>  </mac:name>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>-158.10</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>StartLat</gco:CharacterString>  </mac:name>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>81.8</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>StartDirection</gco:CharacterString>  </mac:name>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>D</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>EndLat</gco:CharacterString>  </mac:name>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>-81.8</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  <mac:AdditionalAttribute>  <mac:reference>  <mac:EOS\_AdditionalAttributeDescription>  <mac:type>  <mac:EOS\_AdditionalAttributeTypeCode codeList="http://earthdata.nasa.gov/metadata/resources/Codelists.xml#EOS\_AdditionalAttributeTypeCode"  codeListValue="platformInformation">platformInformation</mac:EOS\_AdditionalAttributeTypeCode>  </mac:type>  <mac:name>  <gco:CharacterString>EndDirection</gco:CharacterString>  </mac:name>  </mac:EOS\_AdditionalAttributeDescription>  </mac:reference>  <mac:value>  <gco:CharacterString>D</gco:CharacterString>  </mac:value>  </mac:AdditionalAttribute>  </mac:AdditionalAttributes>  </gco:Record>  </mac:otherProperty>  </mac:EOS\_Platform>  </mac:platform>  </mac:MI\_AcquisitionInformation>  </mdb:acquisitionInformation> |

Source Data Information:

DIF 9 - http://gcmd.gsfc.nasa.gov/mws/dif/macayeal\_cont\_GPS\_Ross\_Ice\_Shelf\_0229546  
DIF 10 - Example based on schema with data from ECHO10 record.

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C230264-GHRC  
ECHO 10 Granule - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G205050987-GSFCS4PA, ZoneIdentifier – Manually created, https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G187452045-LARC, https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/granules/G183870388-NSIDC\_ECS

ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C230264-GHRC.iso

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

**Recommendations**

ECHO's Spatial element should be used in the UMM - as it is a superset of what GCMD includes. DIF 10 has included extra elements to allow for more complicated geometries and granule spatial information.

### Tiling Identification System

**Element Specification**

TilingIdentificationSystem/TilingIdentificationSystemName (1)  
TilingIdentificationSystem/Coordinate1 (1)

TilingIdentificationSystem/Coordinate1/MinimumValue (0..1)

TilingIdentificationSystem/Coordinate1/MaximumValue (0..1)

TilingIdentificationSystem/Coordinate2 (1)

TilingIdentificationSystem/Coordinate2/MinimumValue (0..1)

TilingIdentificationSystem/Coordinate2/MaximumValue (0..1)

**Description**

Defines a named two-dimensional tiling system.

**Profile Utilization**

Collection, Granule

**Cardinality**

0..1

**Analysis**

This element exists in ECHO and has been added to DIF 10. See the Tiling Identification System Appendix for more information about specific coordinate system translations.

**Mapping**

|  |  |
| --- | --- |
| DIF 9 | N/A |
| DIF 10 | /DIF/Spatial\_Coverage/Spatial\_Info/TwoD\_Coordinate\_System |
| SERF | N/A |
| ECHO 10 Collection | /Collection/TwoDCoordinateSystems/TwoDCoordinateSystem |
| ECHO 10 Granule | /Granule/TwoDCoordinateSystem/StartCoordinate1  /Granule/TwoDCoordinateSystem/EndCoordinate1 /Granule/TwoDCoordinateSystem/StartCoordinate2  /Granule/TwoDCoordinateSystem/EndCoordinate2 |
| 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:extent/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 |

**Examples**

DIF 10

|  |
| --- |
| <TwoD\_Coordinate\_System>  <TwoD\_Coordinate\_System\_Name>CALIPSO</TwoD\_Coordinate\_System\_Name>  <Coordinate1>  <Minimum\_Value>1</Minimum\_Value>  <Maximum\_Value>75000</Maximum\_Value>  </Coordinate1>  <Coordinate2>  <Minimum\_Value>1</Minimum\_Value>  <Maximum\_Value>233</Maximum\_Value>  </Coordinate2>  </TwoD\_Coordinate\_System> |

ECHO 10 Collection

|  |
| --- |
| <TwoDCoordinateSystems>  <TwoDCoordinateSystem>  <TwoDCoordinateSystemName>CALIPSO</TwoDCoordinateSystemName>  <Coordinate1>  <MinimumValue>1</MinimumValue>  <MaximumValue>75000</MaximumValue>  </Coordinate1>  <Coordinate2>  <MinimumValue>1</MinimumValue>  <MaximumValue>233</MaximumValue>  </Coordinate2>  </TwoDCoordinateSystem>  </TwoDCoordinateSystems> |

ECHO 10 Granule

|  |
| --- |
| <TwoDCoordinateSystem>  <StartCoordinate1>116</StartCoordinate1>  <StartCoordinate2>24</StartCoordinate2>  <EndCoordinate2>167</EndCoordinate2>  <TwoDCoordinateSystemName>MISR</TwoDCoordinateSystemName>  </TwoDCoordinateSystem> |

ISO 19115-2

|  |
| --- |
| <gmd:geographicElement>  <gmd:EX\_GeographicDescription>  <gmd:geographicIdentifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>o1,75000p1,233</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>CALIPSO</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </gmd:geographicIdentifier>  </gmd:EX\_GeographicDescription>  </gmd:geographicElement>  -Granule  <gmd:geographicElement>  <gmd:EX\_GeographicDescription>  <gmd:geographicIdentifier>  <gmd:MD\_Identifier>  <gmd:code>  <gco:CharacterString>p116b24-167</gco:CharacterString>  </gmd:code>  <gmd:description>  <gco:CharacterString>MISR</gco:CharacterString>  </gmd:description>  </gmd:MD\_Identifier>  </gmd:geographicIdentifier>  </gmd:EX\_GeographicDescription>  </gmd:geographicElement> |

ISO 19115-1

|  |
| --- |
| <gex:geographicElement>  <gex:EX\_GeographicDescription>  <gex:geographicIdentifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString> o1,75000p1,233</gco:CharacterString>  </mcc:code>  <gex:description>  <gco:CharacterString>CALIPSO</gco:CharacterString>  </gex:description>  </mcc:MD\_Identifier>  </gex:geographicIdentifier>  </gex:EX\_GeographicDescription>  </gex:geographicElement>  - Granule  <gex:geographicElement>  <gex:EX\_GeographicDescription>  <gex:geographicIdentifier>  <mcc:MD\_Identifier>  <mcc:code>  <gco:CharacterString>p116b24-167</gco:CharacterString>  </mcc:code>  <gex:description>  <gco:CharacterString>MISR</gco:CharacterString>  </gex:description>  </mcc:MD\_Identifier>  </gex:geographicIdentifier>  </gex:EX\_GeographicDescription>  </gex:geographicElement> |

Source Data Information:

DIF 10 - Example based on schema with data from ECHO10 record.

ECHO 10 Collection - https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C5862864-LARC\_ASDC  
ECHO 10 Granule - https://api.echo.nasa.gov/catalog-rest/echo\_catalog/granules/G183655594-LARC

ISO 19115-2- https://api.echo.nasa.gov:443/catalog-rest/echo\_catalog/datasets/C5862864-LARC\_ASDC.iso

https://api.echo.nasa.gov/catalog-rest/echo\_catalog/granules/G183655594-LARC.iso

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

**Recommendations**

Two Dimensional Coordinate Systems should be identified via controlled vocabulary.

# **Appendix A: Tiling Identification System**

The following table outlines all tiling identification systems used currently in ECHO and their corresponding format in the ISO translation. This table also includes information on a generic translation used if none of the known systems are applicable.

|  |  |
| --- | --- |
| Tiling Identification System | Sample ISO Translated Format |
| CALIPSO | o29309,29310p171,171 |
| MISR | p232b1-180 |
| MODIS Tile EASE | h12v14 |
| MODIS Tile SIN | h0v9 |
| WRS-2 | p158r4 |
| WRS-1 | p24-24r28-28 |
| WELD Alaska tile | uses generic translation |
| WELD CONUS tile | uses generic translation |
| generic ISO to ECHO translation | x2-12y3-18 |

More information may be found at the following link related to the Metadata Evolution for NASA Data Systems (MENDS) Working Group documentation (Earthdata Login Required): <https://wiki.earthdata.nasa.gov/display/NASAISO/Two-Dimensional+Coordinate+Systems>

# Appendix B: Abbreviations and Acronyms

ACL – Access Control List

CMR – Common Metadata Repository

DAAC - Distributed Active Archive Center

DOI – Digital Object Identifier

ECHO - Earth Observing System (EOS) Clearing House

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

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

SERF - Service Entry Resource Format

UMM – Unified Metadata Model

UMM-C – Unified Metadata Model – Collections

UMM-Common – Unified Metadata Model – Common Elements

UMM-D – Unified Metadata Model - Documents

UMM-G - Unified Metadata Model – Granules

UMM-M – Unified Metadata Model – Meta-metadata

UMM-S - Unified Metadata Model – Services

UMM-Var - Unified Metadata Model – Variables

UMM-Vis - Unified Metadata Model – Visualization

URI – Uniform Resource Identifier

URL – Uniform Resource Locator

URS - User Registration System

XML - Extensible Markup Language

XPath - XML Path Language

1. http://gcmd.nasa.gov/Aboutus/xml/dif/dif.xsd [↑](#footnote-ref-1)
2. http://gcmd.nasa.gov/add/difguide/index.html [↑](#footnote-ref-2)
3. https://git.earthdata.nasa.gov/projects/EMFD/repos/unified-metadata-model/browse/collection/1.0/dif\_v10.0.xsd [↑](#footnote-ref-3)
4. https://wiki.earthdata.nasa.gov/display/echo/Earth+Observing+System+Clearing+House+-+ECHO [↑](#footnote-ref-4)
5. http://gcmd.nasa.gov/add/serfguide/index.html [↑](#footnote-ref-5)
6. http://gcmd.nasa.gov/Aboutus/xml/serf/serf.xsd [↑](#footnote-ref-6)
7. http://www.iso.org/iso/catalogue\_detail.htm?csnumber=39229 [↑](#footnote-ref-7)
8. https://cdn.earthdata.nasa.gov/iso/ [↑](#footnote-ref-8)
9. https://github.com/ISO-TC211/XML [↑](#footnote-ref-9)
10. <http://en.wikipedia.org/wiki/Tag_%28metadata%29> [↑](#footnote-ref-10)
11. XPath is a language for addressing parts of an XML document, designed for use with XSLT. For more information: <http://www.w3.org/TR/xpath/> [↑](#footnote-ref-11)
12. http://en.wikipedia.org/wiki/XLink [↑](#footnote-ref-12)