Citations

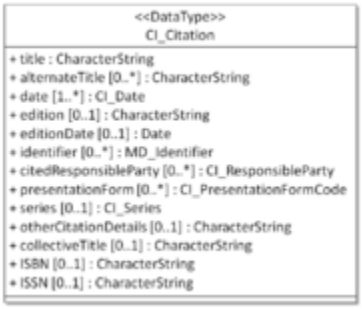
I need to provide references for datasets and associated resources.

Overview

Citations are used to provide information about citing the resource being described in the metadata or to refer to resources outside of the metadata record. These citations are an important part of the identification information and, as such, they are in a special location in the record. In addition, they can provide connection to relevant materials that can not be included in the metadata.

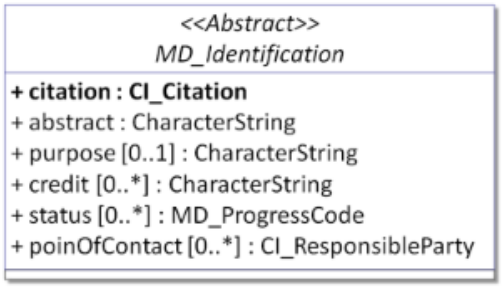
Structure

The CI_Citation includes two required and eleven optional elements and introduces several new objects. The CI_Series object gives the name, issue, and page numbers of an article in a periodical. The ISBN and ISSN elements are internationally recognized identifiers for books and periodicals. The MI_Identifier and CI_Date objects are discussed below.



Usage

CI_Citation serves two purposes in the ISO 19115 Standard. First, it gives the information required to cite the data or the service (the resource) that is being described in the metadata. This CI_Citation can be part of the gmd:MD_DataIdentification or srv:ServiceIdentification objects.

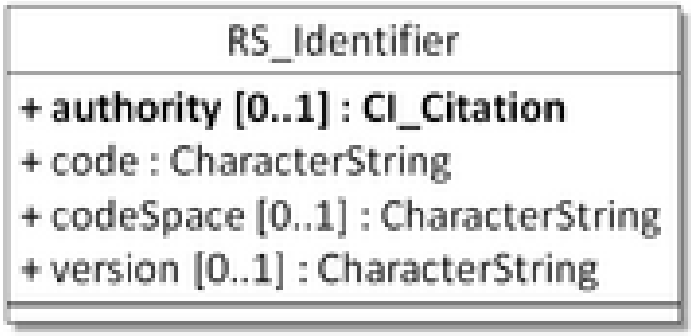
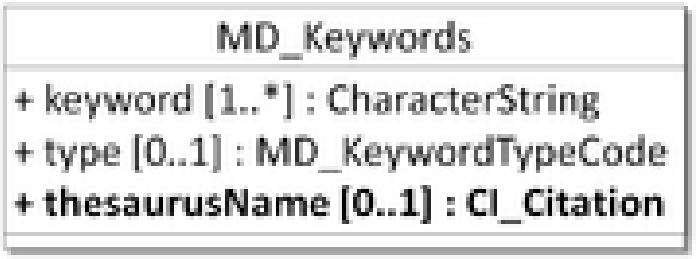
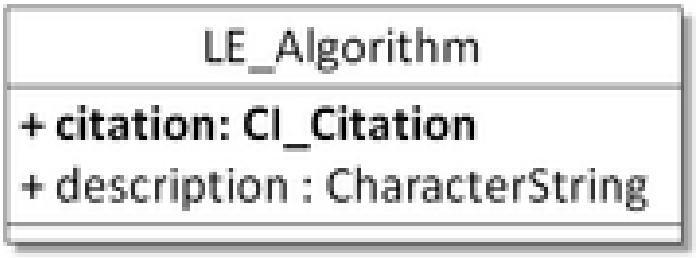
Usage	Description and Xpath
Resource Citation  	The Resource Citation includes information that should be used when citing the resource that is being described by the metadata record. It includes descriptions of the people involved in the creation of the resource. They usually have roles of originator, author, or principleInvestigator. An important enhancement to the CI_Citation object occured in ISO 19115-1. The enhancement includes the addition of OnlineResource and BrowseGraphic fields which enable online digital resources and graphics to be referenced from the CI_Citation object. An expanded description is available in the Revisions section of this page. /gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:citation or /gmi:MI_Metadata/gmd:identificationInfo/srv:ServiceIdentification/gmd:citation

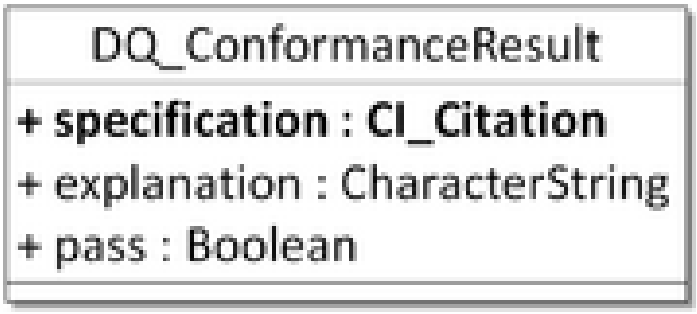
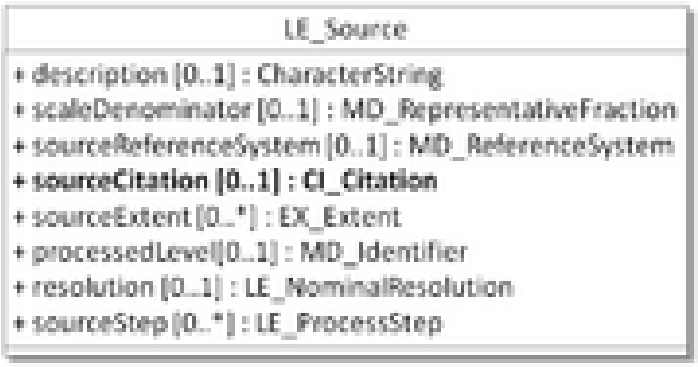
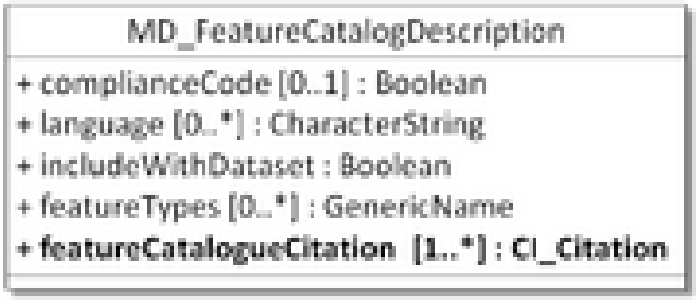
CI_Citation++

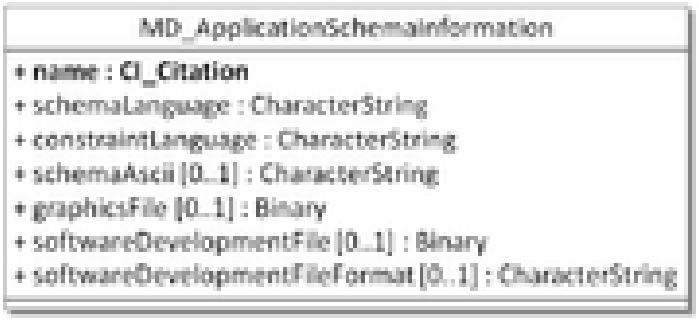
Second, CI_Citations provide information about external references that are related to the resource being described and provide additional documentation. This Figure shows most of the places where CI_Citations occur. Those shown in red were added in ISO 19115-1. In many of these situations the CI_Citation is in an object with a generally small amount of additional annotation information. This additional information is available to the user so they may not need to look up the resource cited in the CI_Citation. These objects are termed CI_Citation++.

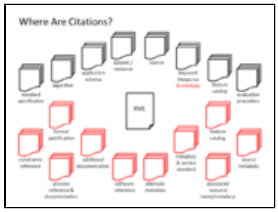
The most straightforward member of this group is the MI_Identifier, which includes a code, the identifier, and a CI_Citation for the authority for the code. The MD_Identifier is used throughout the standard to attach a unique identifier to objects, including CI_Citations.

Usage	Description and Xpath

Identifier 	CI_Citation + code = MD_Identifier The MD_Identifier is the simplest of the CI_Citation++ objects. It CI_Citation cites the authority for the code. In many ways this is s the namespace is described in the CI_Citation. ISO 19115-1 addresses this limitation by adding a codeSpace fie version fields in the MD_Identifier object. The description field e //gmd:MD_Identifier
Reference System Identifier  	CI_Citation + code + codeSpace + version = RS_Identifier The RS_Identifier extends the MD_Identifier by adding a codeSp authority/gco:CI_Citation alone. However, the standard only supp Note: In ISO 19115-1 the RS_Identifier object is replaced with an //gmd:RS_Identifier
Keyword Thesaurus Citation  	CI_Citation + keyword + type = MD_Keywords The MD_Keywords object is similar to an MD_Identifier in that it g is used to group related keywords. Note: In ISO 19115-1, 10 additional GCMD keyword type codes l /gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentificat
Algorithm Citation  	CI_Citation + description = LE_Algorithm The Algorithm Citation is straightforward. It includes a descriptior understand that information without following the citation. The de /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:MD_DataQuality/gm

Conformance Standard Specification Citation  	CI_Citation + explanation + pass = DQ_ConformanceResult The DQ_ConformanceResult is a good example of including criti conformance test and the result of the test. If a user needs more /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:MD_DataQuality/gm
Source Citation  	CI_Citation + description + scaleDenominator + sourceReference to be described and referenced. Sources are both used and proc metadata. /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:MD_DataQuality/gm
Data Quality Evaluation Procedure Citation 	/gmi:MI_Metadata/gmd:dataQualityInfo/gmd:MD_DataQuality/gm
Feature Catalog Citation  	/gmi:MI_Metadata/gmd:contentinfo/gmd:MD_ContentInformation

Application Schema Citation  	CI_Citation + schemaLanguage + constraintLanguage + schema /gmi:MI_Metadata/gmd:applicationSchemaInfo/gmd:MD_Applica



Citations in CMR Metadata

- Resource Citations
- Acquisition Information Citations

Notes

CodeLists as Types

As described earlier, codeLists provide shared vocabularies throughout the ISO Standard. The fact that these vocabularies are shared makes it possible to use them as well known tags for content in the standard. An excellent example of this occurs in the CI_Date object that gives dates for CI_Citations. That object includes a date string and the CI_DateTypeCode codeList that can be either creation, publication, or revision. This single date, along with the codeList, covers three common types of dates that are required in citations. Contrast this with the editionDate attribute that is a single date the purpose of which is expressed in the name of the attribute rather than with a tag.

Revisions

The ISO 19115 CI_Citation object works well for citing physical objects (books, articles, scientific papers, etc), but is not well suited for referencing online digital resources. These important resources can only be associated with a CI_Citation using a rather circuitous path: //gmd:CI_Citation/gmd:citedResponsibleParty/gmd:CI_ResponsibleParty/gmd:contactInfo/gmd:CI_Contact/gmd:onlineResource and it is not at all clear that a URL in the contact information for the citedResponsibleParty is actually the URL for the resource being cited. In short, the ISO 19115 CI_Citation does not work well for citations to online resources.

ISO 19115 -1 has addressed this shortcoming by adding an OnlineResource field to the CI_Citation object. Also included in the 19115-1 revision is the BrowseGraphic field for referencing online images.

Examples

SMAP Level 4

```
<gmd:citation xmlns:gco="http://www.isotc211.org/2005/gco"
    xmlns:gmd="http://www.isotc211.org/2005/gmd"
xmlns:gmx="http://www.isotc211.org/2005/gmx"
    xmlns:eos="http://earthdata.nasa.gov/schema/eos"
xmlns:xlink="http://www.w3.org/1999/xlink">
    <!--
        This sample citation from a SMAP Level 4 Product is included
here as a real-world example of
        an ISO citation that addresses the related NASA metadata
requirements.
        See https://wiki.earthdata.nasa.gov/display/NASAISO/Citations
for more citation information.
    -->
    <gmd:CI_Citation>
        <gmd:title>
            <!-- Requirement: CI_Citation/title -->
            <gco:CharacterString>SMAP L4 Global Daily 9 km Carbon Net
Ecosystem Exchange</gco:CharacterString>
        </gmd:title>
        <gmd:date>
            <!--
                 A citation can include any number of dates.
                 ISO supports a variety of date types
(https://wiki.earthdata.nasa.gov/display/NASAISO/Dates)
            -->
            <gmd:CI_Date>
                <gmd:date>
                    <gco:Date>2015-06-01</gco:Date>
                </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:edition>
            <!-- Requirement: CI_Citation/edition -->
            <gco:CharacterString>V10002</gco:CharacterString>
        </gmd:edition>
        <!--
            Requirement: CI_Citation/Identifier
            A citation can include any number of identifiers.
            Each identifier includes a code (the identifier) as well as
information
            about the source of the identifier (a codeSpace, i.e.
namespace, or a
            citation to an authority), and a description..
        -->
        <gmd:identifier>
            <gmd:MD_Identifier>
                <gmd:code>
                    <gco:CharacterString>SPL4CMDL</gco:CharacterString>
```

```
                </gmd:code>
                <gmd:codeSpace>

<gco:CharacterString>http://gmao.gsfc.nasa.gov</gco:CharacterString>
                </gmd:codeSpace>
                <gmd:description>
                    <gco:CharacterString>The ECS Short
Name</gco:CharacterString>
                </gmd:description>
            </gmd:MD_Identifier>
        </gmd:identifier>
        <gmd:identifier>
            <gmd:MD_Identifier>
                <gmd:code>
                    <gco:CharacterString>001</gco:CharacterString>
                </gmd:code>
                <gmd:codeSpace>

<gco:CharacterString>http://gov.nasa.esdis</gco:CharacterString>
                </gmd:codeSpace>
                <gmd:description>
                    <gco:CharacterString>The ECS Version
ID</gco:CharacterString>
                </gmd:description>
            </gmd:MD_Identifier>
        </gmd:identifier>
        <gmd:identifier>
            <gmd:MD_Identifier>
                <!--
                    The Dgital Object Identifier is a special identifier
resolved by a well known service (http://dx.doi.org).
                    It is included in the metadata along with a URL
(Anchor) to the landing page for the dataset
                -->
                <gmd:code>
                    <gmx:Anchor xlink:actuate="onRequest"

xlink:href="http://dx.doi.org/10.5067/22TFAUSNLO9R">doi:10.5067/22TFAUSN
LO9R</gmx:Anchor>
                </gmd:code>
                <gmd:codeSpace>

<gco:CharacterString>http://gov.nasa.esdis</gco:CharacterString>
                </gmd:codeSpace>
                <gmd:description>
                    <gco:CharacterString>A Digital Object Identifier
(DOI) that provides a persistent interoperable means to
     locate the SMAP Level 4 Radar data product.</gco:CharacterString>
                </gmd:description>
            </gmd:MD_Identifier>
        </gmd:identifier>
        <!--
          The ISO metadata standards include infomation about
```

individuals and organizations (responsible parties) in many roles.
          See
https://wiki.earthdata.nasa.gov/display/NASAISO/Individuals%2C+Organizat
ions%2C+and+Roles for more information
          Responsible parties in the citation should include originating
organizations, authors and principle investigators.
        -->
        <gmd:citedResponsibleParty>
            <gmd:CI_ResponsibleParty>
                <gmd:organisationName>
                    <gco:CharacterString>National Aeronautics and Space
Administration</gco:CharacterString>
                </gmd:organisationName>
                <gmd:role>
                    <gmd:CI_RoleCode
codeList="codeListLocation#CI_RoleCode"
codeListValue="resourceProvider">resourceProvider</gmd:CI_RoleCode>
                </gmd:role>
            </gmd:CI_ResponsibleParty>
        </gmd:citedResponsibleParty>
        <gmd:citedResponsibleParty>
            <gmd:CI_ResponsibleParty>
                <gmd:organisationName>
                    <gco:CharacterString>Global Modeling and
Assimilation Office</gco:CharacterString>
                </gmd:organisationName>
                <gmd:role>
                    <gmd:CI_RoleCode
codeList="codeListLocation#CI_RoleCode"
codeListValue="originator">originator</gmd:CI_RoleCode>
                </gmd:role>
            </gmd:CI_ResponsibleParty>
        </gmd:citedResponsibleParty>
        <gmd:presentationForm>
            <gmd:CI_PresentationFormCode
codeList="codeListLocation#CI_PresentationFormCode"
codeListValue="documentDigital">documentDigital</gmd:CI_PresentationForm
Code>
        </gmd:presentationForm>
        <gmd:series>
            <gmd:CI_Series>
                <gmd:name>
                    <gco:CharacterString>L4_C</gco:CharacterString>
                </gmd:name>
            </gmd:CI_Series>
        </gmd:series>
        <gmd:otherCitationDetails>
            <gco:CharacterString>The launch ready Release of the SMAP
Level 4 Surface and Root Zone Soil Moisture Science Processing
Software.</gco:CharacterString>

```
        </gmd:otherCitationDetails>
    </gmd:CI_Citation>
</gmd:citation>
```