

Citations

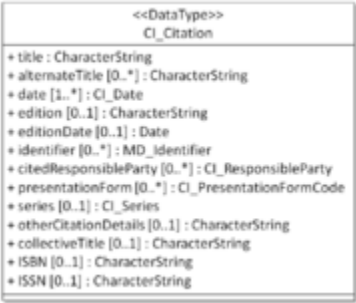
I need to provide references for datasets and associated resources.

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 <<Abstract>> MD_Identifier + citation : CI_Citation + abstract : CharacterString + purpose [0..1] : CharacterString + credit [0..*] : CharacterString + status [0..*] : MD_ProgressCode + poinOfContact [0..*] : CI_ResponsibleParty	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 occurred 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
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Identifier <pre> <<DataType>> MD_Identifier + authority [0..1] : CI_Citation + code : CharacterString </pre>	CI_Citation + code = MD_Identifier The MD_Identifier is the simplest of the CI_Citation++ objects. It includes a code and an authority. The code is an alphanumeric value identifying an object in a namespace that is maintained by the authority. In this case the CI_Citation cites the authority for the code. In many ways this is similar to the namespace for the code. It is the authority which understands and can explain or resolve the code. There is no agreed upon approach for how the namespace is described in the CI_Citation. ISO 19115-1 addresses this limitation by adding a codeSpace field to the MD_Identifier object. The codeSpace field unambiguously defines the namespace for the identifier. ISO 19115-1 also includes description and version fields in the MD_Identifier object. The description field enables a brief description of the code to be documented, and the version field enables the the Identifier version to be documented. //gmd:MD_Identifier
Reference System Identifier <pre> RS_Identifier + authority [0..1] : CI_Citation + code : CharacterString + codeSpace [0..1] : CharacterString + version [0..1] : CharacterString </pre>	CI_Citation + code + codeSpace + version = RS_Identifier The RS_Identifier extends the MD_Identifier by adding a codeSpace and a version for the namespace. These additions address the lack of an agreed upon approach for describing a namespace using the authority /gco:CI_Citation alone. However, the standard only supports RS_Identifiers in the referenceSystemInfo class. Note: In ISO 19115-1 the RS_Identifier object is replaced with an MD_Identifier object which includes codeSpace, version and description fields. See the MD_Identifier description above. //gmd:RS_Identifier
Keyword Thesaurus Citation <pre> MD_Keywords + keyword [1..*] : CharacterString + type [0..1] : MD_KeywordTypeCode + thesaurusName [0..1] : CI_Citation </pre>	CI_Citation + keyword + type = MD_Keywords The MD_Keywords object is similar to an MD_Identifier in that it gives a keyword that is unique in a "namespace" that is maintained by the individual or organization cited in the thesaurusName. In this case, the type codeList is used to group related keywords. Note: In ISO 19115-1, 10 additional GCMD keyword type codes have been added to theodelist. These codes will help improve consistent data discovery, particularly using faceted searches. /gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification srv:ServiceIdentification/gmd:descriptiveKeywords/gmd:MD_Keywords/gmd:thesaurusName
Algorithm Citation <pre> LE_Algorithm + citation: CI_Citation + description : CharacterString </pre>	CI_Citation + description = LE_Algorithm The Algorithm Citation is straightforward. It includes a description that, like the description in the CI_OnlineResource object, should provide information that identifies the algorithm used to process data so that a user can understand that information without following the citation. The description is similar to an abstract for the algorithm referenced in the CI_Citation. /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:MD_DataQuality/gmd:lineage/gmd:LE_Lineage/gmd:processStep/gmd:LE_ProcessStep/gmd:processingInformation/gmd:LE_Processing/gmd:algorithm/LE_Algorithm/gmd:citation
Conformance Standard Specification Citation <pre> DQ_ConformanceResult + specification : CI_Citation + explanation : CharacterString + pass : Boolean </pre>	CI_Citation + explanation + pass = DQ_ConformanceResult The DQ_ConformanceResult is a good example of including critical information in the standard while referencing an external resource for more information. In this case the critical information is a brief explanation of the conformance test and the result of the test. If a user needs more information about the specifics of the test, they can follow the citation to the specification. /gmi:MI_Metadata/gmd:dataQualityInfo/gmd:MD_DataQuality/gmd:report/gmd:DQ_Element/gmd:result/gmd:DQ_Result/gmd:DQ_ConformanceResult/gmd:specification

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 Digital 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:
10.5067/22TFAUSNLO9R</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 information about individuals and organizations (responsible
    parties) in many roles.
    See https://wiki.earthdata.nasa.gov/display/NASAI50/Individuals%2C+Organizations%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_PresentationFormCode>

```

```
</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>
```