

# Location Keywords

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## Element Description

The Location Keywords element contains keywords that characterize the study area/region where data was collected. This allows users to narrow their searches to areas that suit their geographic interest. The Location Keywords are chosen from a controlled keyword hierarchy maintained in the [Keyword Management System \(KMS\)](#). A list of valid Location Keywords can be found here: [https://gcmd.earthdata.nasa.gov/kms/concepts/concept\\_scheme/locations?format=csv](https://gcmd.earthdata.nasa.gov/kms/concepts/concept_scheme/locations?format=csv)

## Best Practices

Location Keywords identify areas where data collection occurred, and are provided in a hierarchical structure. The keywords can be chosen to classify broad study areas/regions or very specific places. However, it is suggested that location keywords are as specific as possible to aid in data discovery. Providing a Location Keyword is optional. If provided, the top level of the Location Keyword hierarchy must be provided (at a minimum). If a specific location keyword is not already included in the KMS, a request to have it added can be made through the [GCMD Keywords Community Forum](#).

### Examples:

LocationKeywords/Category: "CONTINENT"

LocationKeywords/Topic: "NORTH AMERICA"

LocationKeywords/Subregion1: "UNITED STATES"

LocationKeywords/Subregion2: "ALABAMA"

LocationKeywords/DetailedLocation: "THE UNIVERSITY OF ALABAMA IN HUNTSVILLE"

LocationKeywords/Category: "CONTINENT"

LocationKeywords/Topic: "NORTH AMERICA"

LocationKeywords/Subregion1: "CANADA"

LocationKeywords/Subregion2: "ONTARIO"

LocationKeywords/Category: "GEOGRAPHIC REGION"

LocationKeywords/Topic: "TROPICS"

## Element Specification

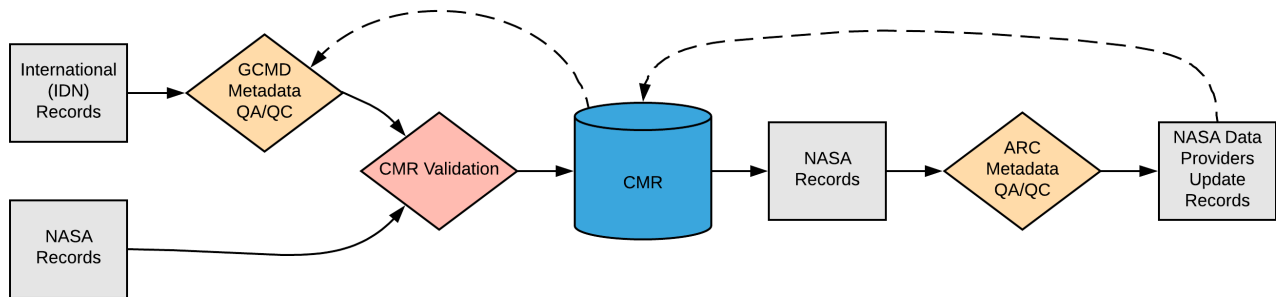
Providing a Location Keyword is optional. Multiple Location Keywords may be provided, if necessary (Cardinality: 0..\*).

Model	Element	Type	Usable Valid Values	Constraints	Required?	Cardinality	Notes
UMM-C	LocationKeywords/Category	String	<a href="#">Location Category Keywords</a>	KMS controlled	Yes, if applicable	1	If a Location Keyword is included in the metadata (it's optional), then a Category keyword must be provided at a minimum.
UMM-C	LocationKeywords/Type	String	<a href="#">Location Type Keywords</a>	KMS controlled	No	0..1	
UMM-C	LocationKeywords/Subregion1	String	<a href="#">Location Subregion1 Keywords</a>	KMS controlled	No	0..1	

UMM-C	LocationKeywords /Subregion2	String	<a href="#">Location Subregion2 Keywords</a>	KMS controlled	No	0..1	
UMM-C	LocationKeywords /Subregion3	String	<a href="#">Location Subregion3 Keywords</a>	KMS controlled	No	0..1	
UMM-C	LocationKeywords /DetailedLocation	String	n/a	1 - 80 characters (Uncontrolled /Free-Text)	No	0..1	

## Metadata Validation and QA/QC

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



Please see the expandable sections below for flowchart details.

- Manual Review
  - Identify errors, discrepancies or omissions.
  - Verify that all pertinent keywords have been applied.
  - Verify that existing facets and other controlled keyword values are consistent and suitable for the data.
- Automated Review
  - Check that the field has been populated.
  - Check that the field is populated with a valid value from KMS.
  - Check that the field value is not a duplicate.
  - Check that the 'Detailed\_Variable' field length is not greater than 80 characters.
- If this element is used, every location keyword must have at least the category sub-element populated.
- All location keyword sub elements except for DetailedLocation must be valid according to the keyword management system.

### ARC Priority Matrix

Priority Categorization	Justification
Red = High Priority Finding	This element is categorized as highest priority when: <ul style="list-style-type: none"> <li>• The Location Keyword does not align with the <a href="#">KMS</a>.               <ul style="list-style-type: none"> <li>• The Location Keyword does not exist in the <a href="#">KMS</a>.</li> <li>• A keyword(s) is missing from the hierarchy.</li> <li>• A keyword(s) is placed in the incorrect position of the hierarchy (e.g. a Subregion 2 keyword is placed in the Subregion 1 field).</li> </ul> </li> <li>• The Location Keyword is not appropriate for the dataset.</li> </ul>
Yellow = Medium Priority Finding	This element is categorized as medium priority when: <ul style="list-style-type: none"> <li>• A recommendation is made to add to an existing Location Keyword in the metadata (i.e. to extend a keyword hierarchy down to a more detailed keyword).</li> </ul>

Blue = Low Priority Finding	This element is categorized as low priority when: <ul style="list-style-type: none"> <li>A recommendation is made to add a relevant Location Keyword to the metadata.</li> </ul>
Green = No Findings /Issues	The element is provided and follows all applicable criteria specified in the best practices section above.

### ARC Automated Checks

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

## Dialect Mappings

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

### DIF 10

Providing a Location is optional. Multiple Locations may be provided, if necessary (Cardinality: 0..\*).

UMM-C Element	DIF 10 Path	Type	Usable Valid Values	Constraints	Required in DIF 10?	Cardinality	Notes
LocationKeywords /Category	Location /Location_Category	String	<a href="#">Location Category Keywords</a>	KMS controlled	Yes, if applicable	1	If a Location is included in the metadata (it's optional), then a Location_Category must be provided at a minimum.
LocationKeywords /Type	Location /Location_Type	String	<a href="#">Location Type Keywords</a>	KMS controlled	No	0..1	
LocationKeywords /Subregion1	Location /Location_Subregion1	String	<a href="#">Location Subregion1 Keywords</a>	KMS controlled	No	0..1	
LocationKeywords /Subregion2	Location /Location_Subregion2	String	<a href="#">Location Subregion2 Keywords</a>	KMS controlled	No	0..1	
LocationKeywords /Subregion3	Location /Location_Subregion3	String	<a href="#">Location Subregion3 Keywords</a>	KMS controlled	No	0..1	
LocationKeywords /DetailedLocation	Location /Detailed_Location	String	n/a	1 - 80 characters (Uncontrolled/Free-Text)	No	0..1	

### Example Mapping

DIF 10

```
<Location>
  <Location_Category>CONTINENT</Location_Category>
  <Location_Type>NORTH AMERICA</Location_Type>
  <Location_Subregion1>UNITED STATES<
/Location_Subregion1>
  <Location_Subregion2>ALBAMA</Location_Subregion2>
  <Detailed_Location>THE UNIVERSITY OF ALABAMA IN
HUNTSVILLE</Detailed_Location>
</Location>
<Location>
  <Location_Category>CONTINENT</Location_Category>
  <Location_Type>NORTH AMERICA</Location_Type>
  <Location_Subregion1>CANADA</Location_Subregion1>
  <Location_Subregion2>ONTARIO<
/Location_Subregion2>
</Location>
```

UMM

```

LocationKeywords: [
  {
    Category: "CONTINENT",
    Type: "NORTH AMERICA",
    Subregion1: "UNITED STATES",
    Subregion2: "ALABAMA",
    DetailedLocation: "THE UNIVERSITY OF ALABAMA
IN HUNTSVILLE"
  },
  {
    Category: "CONTINENT",
    Type: "NORTH AMERICA",
    Subregion1: "CANADA",
    Subregion2: "ONTARIO"
  }
],

```

## ECHO 10

Providing a Spatial Keyword is optional. Multiple Spatial Keywords may be provided, if necessary (Cardinality: 0..\*).

UMM-C Element	ECHO 10 Path	Type	Usable Valid Values	Constraints	Required in ECHO10?	Cardinality	Notes
LocationKeywords/Category	/Collection/SpatialKeywords/Keyword	String	Any GCMD Location Keyword	KMS controlled	No	0..*	ECHO 10 only has 1 field for spatial keywords. Therefore, a keyword from any position in the GCMD location keyword hierarchy can be provided in this field. If a value is provided that is not in the keyword list, then it will map to Location Category Keyword "OTHER" followed by a Location Type Keyword of the unique value in the UMM (see mapping example below, where the spatial keyword 'THE UNIVERSITY OF ALABAMA IN HUNTSVILLE' is not included in the GCMD location keyword list.)
LocationKeywords/Type							
LocationKeywords/Subregion1							
LocationKeywords/Subregion2							
LocationKeywords/Subregion3							
LocationKeywords/DetailedLocation							

### Example Mapping

ECHO 10

```

<SpatialKeywords>
  <Keyword>ONTARIO</Keyword>
  <Keyword>THE UNIVERSITY OF ALABAMA IN HUNTSVILLE<
/Keyword>
</SpatialKeywords>

```

UMM

```

LocationKeywords:
  {
    Category: "CONTINENT",
    Type: "NORTH AMERICA",
    Subregion1: "CANADA",
    Subregion2: "ONTARIO"
  }
  {
    Category: "OTHER",
    Type: "THE UNIVERSITY OF ALABAMA IN HUNTSVILLE"
  },
],

```

## ISO 19115-2 MENDS

Providing a Location Keyword is optional. Multiple Location Keywords may be provided, if necessary (Cardinality: 0..\*).

UMM-C Element	ISO 19115-2 MENDS Path	Type	Notes
LocationKeywords/Category LocationKeywords/Type LocationKeywords/Subregion1 LocationKeywords/Subregion2 LocationKeywords/Subregion3 LocationKeywords/DetailedLocation	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:descriptiveKeywords/gmd:MD_Keywords/ gmd:keyword/gco:CharacterString (list each value of the keyword hierarchy delimited by &gt; )	String	KMS controlled. Valid Location Keywords can be found here: <a href="https://gcmd.earthdata.nasa.gov/kms/concepts/concept_scheme/locations?format=csv">https://gcmd.earthdata.nasa.gov/kms/concepts/concept_scheme/locations?format=csv</a>  This is where the entire keyword hierarchy should be listed. Each keyword in the hierarchy must be separated by "&gt;". If any keyword is missing and there exists a keyword later in the hierarchy (such as DetailedLocation), use NONE to fill in the values in-between. The CMR will not translate the NONE values as they are only used to place each keyword in its correct space in the hierarchy.
	/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:descriptiveKeywords/gmd:MD_Keywords/ gmd:type/MD_KeywordTypeCode  codeList="https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodestats.xml#MD_KeywordTypeCode" codeListValue="place"	Codelist	codeList= <a href="https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodestats.xml#MD_KeywordTypeCode">https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodestats.xml#MD_KeywordTypeCode</a>  Select the value "place" from the codelist. This codelist value does not directly map to a UMM element; choosing "place" indicates to CMR that the provided value should be mapped to 'Location Keywords'.

### Example Mapping

ISO 19115-2 MENDS

```

<gmi:MI_Metadata>
...
<gmd:identificationInfo>
  <gmd:MD_DataIdentification>
    ...
    <gmd:descriptiveKeywords>
      <gmd:MD_Keywords>
        <gmd:keyword>
          <gco:CharacterString>CONTINENT&gt;
NORTH AMERICA&gt;UNITED STATES&gt;ALABAMA&gt;
NONE&gt;THE UNIVERSITY OF ALABAMA IN HUNTSVILLE<
/CharacterString>
          </gmd:keyword>
        <gmd:keyword>
          <gco:CharacterString>CONTINENT&gt;
NORTH AMERICA&gt;CANADA&gt;ONTARIO<
/CharacterString>
          </gmd:keyword>
        <gmd:type>
          <gmd:MD_KeywordTypeCode codeList="
https://cdn.earthdata.nasa.gov/iso/resources
/Codelist/gmxCodelists.xml#MD_KeywordTypeCode"
codeListValue="place">place</gmd:
MD_KeywordTypeCode>
          </gmd:type>
        </gmd:MD_Keywords>
      </gmd:descriptiveKeywords>
    ...
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
...
</gmi:MI_Metadata>

```

#### UMM

```

LocationKeywords: [
  {
    Category: "CONTINENT",
    Type: "NORTH AMERICA",
    Subregion1: "UNITED STATES",
    Subregion2: "ALABAMA"
    DetailedLocation: "THE UNIVERSITY OF ALABAMA
IN HUNTSVILLE"
  },
  {
    Category: "CONTINENT",
    Type: "NORTH AMERICA",
    Subregion1: "CANADA",
    Subregion2: "ONTARIO"
  }
],

```

### ISO 19115-2 SMAP

Providing a Location Keyword is optional. Multiple Location Keywords may be provided, if necessary (Cardinality: 0..\*).

UMM-C Element	ISO 19115-2 SMAP Path	Type	Notes
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LocationKeywords/Category LocationKeywords/Type LocationKeywords/Subregion1 LocationKeywords/Subregion2 LocationKeywords/Subregion3 LocationKeywords/DetailedLocation	/gmd:DS_Series/gmd:seriesMetadata/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:descriptiveKeywords/gmd:MD_Keywords/gmd:keyword/gco:CharacterString (list each value of the keyword hierarchy delimited by &gt; ; )	String	KMS controlled. Valid Location Keywords can be found here: <a href="https://gcmd.earthdata.nasa.gov/kms/concepts/concept_scheme/locations?format=csv">https://gcmd.earthdata.nasa.gov/kms/concepts/concept_scheme/locations?format=csv</a>  This is where the entire keyword hierarchy should be listed. Each keyword in the hierarchy must be separated by "&gt;". If any keyword is missing and there exists a keyword later in the hierarchy (such as DetailedLocation), use NONE to fill in the values in-between. The CMR will not translate the NONE values as they are only used to place each keyword in its correct space in the hierarchy.
	/gmd:DS_Series/gmd:seriesMetadata/gmi:MI_Metadata/gmd:identificationInfo/gmd:MD_DataIdentification/gmd:descriptiveKeywords/gmd:MD_Keywords/gmd:type/MD_KeywordTypeCode  codeList=" <a href="https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodelists.xml#MD_KeywordTypeCode">https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodelists.xml#MD_KeywordTypeCode</a> " codeListValue="place"	Codelist	codeList= <a href="https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodelists.xml#MD_KeywordTypeCode">https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodelists.xml#MD_KeywordTypeCode</a>  Select the value "place" from the codelist. This codelist value does not directly map to a UMM element; choosing "place" indicates to CMR that the provided value should be mapped to 'Location Keywords'.

### Example Mapping

#### ISO 19115-2 SMAP

```

<gmd:DS_Series>
  <gmd:seriesMetadata>
    <gmi:MI_Metadata>
      ...
      <gmd:identificationInfo>
        <gmd:MD_DataIdentification>
          ...
          <gmd:descriptiveKeywords>
            <gmd:MD_Keywords>
              <gmd:keyword>
                <gco:CharacterString>CONTINENT&gt;
;
NORTH AMERICA&gt;UNITED STATES&gt;ALABAMA&gt;
NONE&gt;THE UNIVERSITY OF ALABAMA IN HUNTSVILLE<
/CharacterString>
              </gmd:keyword>
              <gmd:keyword>
                <gco:CharacterString>CONTINENT&gt;
;
NORTH AMERICA&gt;CANADA&gt;ONTARIO<
/CharacterString>
              </gmd:keyword>
              <gmd:type>
                <gmd:MD_KeywordTypeCode codeList="
https://cdn.earthdata.nasa.gov/iso/resources
/Codelist/gmxCodelists.xml#MD_KeywordTypeCode"
codeListValue="place">place</gmd:
MD_KeywordTypeCode>
              </gmd:type>
            </gmd:MD_Keywords>
          </gmd:descriptiveKeywords>
          ...
        </gmd:MD_DataIdentification>
      </gmd:identificationInfo>
      ...
    </gmi:MI_Metadata>
  </gmd:seriesMetadata>
</gmd:DS_Series>

```

## UMM

```
LocationKeywords: [  
  {  
    Category: "CONTINENT",  
    Type: "NORTH AMERICA",  
    Subregion1: "UNITED STATES",  
    Subregion2: "ALABAMA"  
    DetailedLocation: "THE UNIVERSITY OF ALABAMA  
IN HUNTSVILLE"  
  },  
  {  
    Category: "CONTINENT",  
    Type: "NORTH AMERICA",  
    Subregion1: "CANADA",  
    Subregion2: "ONTARIO"  
  }  
],
```

## UMM Migration

None

## Future Mappings

### ISO 19115-1

Providing a Location Keyword is optional. Multiple Location Keywords may be provided, if necessary (Cardinality: 0..\*).

UMM-C Element	ISO 19115-1 Path	Type	Notes
LocationKeywords/Category	/mdb:MD_Metadata/mdb:identificationInfo/mri:MD_DataIdentification/mri:descriptiveKeywords/mri:MD_Keywords/ mri:keyword/gco:CharacterString	String	KMS controlled. Valid Location Keywords can be found here: <a href="https://gcmd.earthdata.nasa.gov/kms/concepts/concept_scheme/locations?format=csv">https://gcmd.earthdata.nasa.gov/kms/concepts/concept_scheme/locations?format=csv</a>
LocationKeywords/Type	(list each value of the keyword hierarchy delimited by &gt; ; )		This is where the entire keyword hierarchy should be listed. Each keyword in the hierarchy must be separated by "&gt;". If any keyword is missing and there exists a keyword later in the hierarchy (such as DetailedLocation), use NONE to fill in the values in-between. The CMR will not translate the NONE values as they are only used to place each keyword in its correct space in the hierarchy.
LocationKeywords/Subregion1			
LocationKeywords/Subregion2			
LocationKeywords/Subregion3			
LocationKeywords/DetailedLocation			
	/mdb:MD_Metadata/mdb:identificationInfo/mri:MD_DataIdentification/mri:descriptiveKeywords/mri:MD_Keywords/ mri:type/mri:MD_KeywordTypeCode  codeList="https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodelists.xml#MD_KeywordTypeCode" codeListValue="place"	Codelist	codeList= <a href="https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodelists.xml#MD_KeywordTypeCode">https://cdn.earthdata.nasa.gov/iso/resources/Codelist/gmxCodelists.xml#MD_KeywordTypeCode</a>  Select the value "place" from the codelist. This codelist value does not directly map to a UMM element; choosing "place" indicates to CMR that the provided value should be mapped to 'Location Keywords'.

### Example Mapping

ISO 19115-1



```

<mdb:MD_Metadata>
...
<mdb:identificationInfo>
  <mri:MD_DataIdentification>
    ...
    <mri:descriptiveKeywords>
      <mri:MD_Keywords>
        <mri:keyword>
          <gco:CharacterString>CONTINENT&gt;
NORTH AMERICA&gt;UNITED STATES&gt;ALABAMA&gt;
NONE&gt;THE UNIVERSITY OF ALABAMA IN HUNTSVILLE<
/CharacterString>
          </mri:keyword>
        <mri:keyword>
          <gco:CharacterString>CONTINENT&gt;
NORTH AMERICA&gt;CANADA&gt;ONTARIO<
/CharacterString>
          </mri:keyword>
        <mri:type>
          <mri:MD_KeywordTypeCode codeList="
https://cdn.earthdata.nasa.gov/iso/resources
/Codelist/gmxCodelists.xml#MD_KeywordTypeCode"
codeListValue="place">place</gmd:
MD_KeywordTypeCode>
          </mri:type>
        </mri:MD_Keywords>
      </mri:descriptiveKeywords>
    ...
  </mri:MD_DataIdentification>
</mdb:identificationInfo>
...
</mdb:MD_Metadata>

```

## UMM

```

LocationKeywords: [
  {
    Category: "CONTINENT",
    Type: "NORTH AMERICA",
    Subregion1: "UNITED STATES",
    Subregion2: "ALABAMA"
    DetailedLocation: "THE UNIVERSITY OF ALABAMA
IN HUNTSVILLE"
  },
  {
    Category: "CONTINENT",
    Type: "NORTH AMERICA",
    Subregion1: "CANADA",
    Subregion2: "ONTARIO"
  }
],

```

## History

### UMM Versioning

Version	Date	What Changed
1.15.5	12/3/2020	No changes were made for Location Keywords during the transition from version 1.15.4 to 1.15.5
1.15.4	9/18/2020	No changes were made for Location Keywords during the transition from version 1.15.3 to 1.15.4
1.15.3	7/1/2020	No changes were made for Location Keywords during the transition from version 1.15.2 to 1.15.3
1.15.2	5/20/2020	No changes were made for Location Keywords during the transition from version 1.15.1 to 1.15.2

1.15.1	3/25/2020	No changes were made for Location Keywords during the transition from version 1.15.0 to 1.15.1
1.15.0	2/26/2020	No changes were made for Location Keywords during the transition from version 1.14.0 to 1.15.0
1.14.0	10/21/2019	No changes were made for Location Keywords during the transition from version 1.13.0 to 1.14.0
1.13.0	04/11/2019	No changes were made for Location Keywords during the transition from version 1.12.0 to 1.13.0
1.12.0	01/22/2019	No changes were made for Location Keywords during the transition from version 1.11.0 to 1.12.0
1.11.0	11/28/2018	No changes were made for Location Keywords during the transition from version 1.10.0 to 1.11.0
1.10.0	05/02/2018	No changes were made for Location Keywords during the transition from version 1.9.0 to 1.10.0

## ARC Documentation

Version	Date	What Changed	Author
1.0	02/01/2018	Recommendations/priority matrix transferred from internal ARC documentation to wiki space	<a href="#">Jeanne' le Roux</a>