



ArcGIS 10.2

Metadata

Standards and Procedure

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Overview

Metadata is information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. Metadata for spatial data may describe and document its subject matter; how, when, where, and by whom the data was collected; availability and distribution information; its projection, scale, resolution, and accuracy; and its reliability with regard to some standard. Metadata consists of properties and documentation. Properties are derived from the data source (for example, the coordinate system and projection of the data), while documentation is entered by a person (for example, keywords used to describe the data).

This document contains basic information for working with metadata in an effort to simplify metadata procedures to encourage the maintenance of metadata, upgrade, update and creation of metadata. However, for a more in-depth explanation of a particular process, refer to Esri's ArcGIS Resource Center that has these steps documented.

Environment Settings

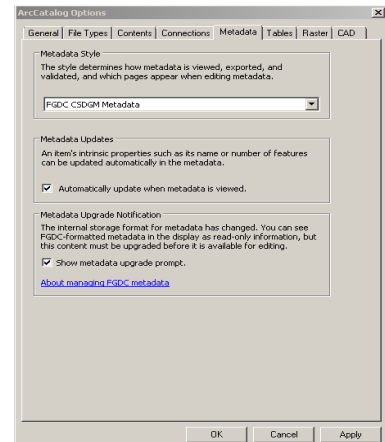
ArcGIS 10.x, metadata has gone through a major rewrite. ESRI changed the metadata appearance and storage in the database. Therefore, it must go through an upgrade process to include the ArcGIS module to properly view, update or create metadata.

As before, there are several [metadata styles](#) that determines the level of metadata content displayed, edited and exported based on the creating organization standard, and each displays varying levels of content like a filter:

- *FGDC CSDGM Metadata*
- INSPIRE Metadata
- ISO 19139 Metadata Implementation Standard
- ISO 19139 Metadata Implementation Standard GML 3.2
- Item Description
- North American Profile of ISO 19115 2003

In **ArcCatalog** perform the following:

- 1) Click on *Customize* from the main menu
- 2) Click on *ArcCatalog Options...*
- 3) Click on *Metadata* tab and under “Metadata Style”,
- 4) Select *FGDC GCDGM Metadata* from the drop down window. *Item Description* style presents much less metadata content than *FGDC GCDGM Metadata* style.
- 5) Make sure “*Automatically update when metadata is viewed.*” is checked under *Metadata Updates* to automatically update metadata information such as name or number of features.
- 6) Make sure “*Show metadata upgrade prompt.*” is checked under *Metadata Upgrade Notification* to be notified when a metadata needs to be upgraded to current ArcGIS version.
- 7) Click OK



In **ArcMap** perform the following:

- 1) Click on *Customize*
- 2) Click on the *ArcMap Options*
- 3) Click on *Metadata* tab
- 4) Select *FGDC CSDGM Metadata* from the drop down window
- 5) Make sure “*Automatically update when metadata is viewed.*” is checked.
- 6) Make sure “*Show metadata upgrade prompt.*” Is checked.
- 7) Click OK.

Click on another layer to refresh the metadata layout/items.

Miami-Dade County uses *FGDC CSDGM Metadata* profile and plans to change to *ISO 19139 Metadata Implementation Standard* metadata style when it is fully adopted.

Upgrade Metadata

[Upgrades](#) has to be performed to an item's metadata or standard-compliant XML files, if metadata was created prior to ArcGIS 10.x and does not have ArcGIS or ESRI-ISO format, to update its current item properties and include ArcGIS metadata elements to existing metadata. You may view the content without upgrading metadata.

Metadata created with FGDC metadata editor or add-in, has to be exported to validate the content using [USGS MP Metadata Translator](#) tool found in ArcTool box. To upgrade:

- 1) Using ArcCatalog: view an ArcGIS item's metadata or stand-alone metadata XML file.
- 2) Click on the *Description* tab.
- 3) If the item's metadata has FGDC-format metadata and has not been upgraded, click on the Upgrade button
- 4) Select FGDC_TO_ARCGIS
- 5) Click OK
- 6) Click on the item again to refresh and see the updated metadata.

Batch Process: Use the *Upgrade* tool in a [batch process](#) right click on the tool, select *Batch* and provide the Source Metadata and Upgrade Type.

Script: You may also to upgrade multiple XML using a script [python script](#)

Upgrade steps:

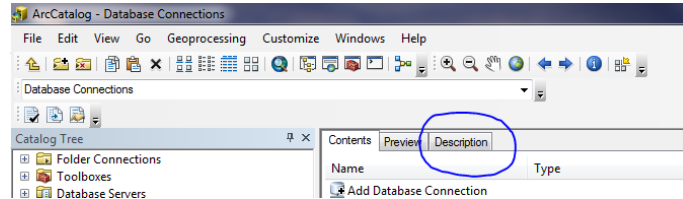
1. Copy and paste the feature class into a test/development SDE instance or a File Geodatabase (FGDB) created with the current ArcGIS version.
2. Open *Arc Toolbox* and locate the Upgrade Metadata tool found under *Conversion Tools, Metadata* toolbox.
3. Double-click on *Upgrade Metadata* tool, navigate to the feature class that is to be upgraded location and select *FGDC_TO_ARCGIS* as the upgrade type.
4. For administrators, you may go directly to step 3.
5. Review upgraded results: Open two sessions of ArcCatalog to compare the before and after upgraded results.
6. Metadata layout: Notice there are 3 main sections: *Overview, Metadata* and *Resource*.
7. Make sure the required fields are populated and the metadata was successfully upgraded.

Now, you are ready to update the metadata to confirm to the new style. Provide the necessary information based on the section.

Viewing Metadata

Metadata can be viewed in *one of two* ways as follows:


- 1) From **ArcCatalog** window, select an item then, click on *Description* tab.



- 2) From **ArcMap**, right-click on an item (layer, table, etc.), click on *Data* and *View Item Description...*

Create Thumbnail:

To create a thumbnail (a snapshot image of the layer) that is displayed in the metadata:

- 1) In ArcCatalog,
- 2) Click on the Feature class
- 3) Click on the *Preview* tab
- 4) Click on the Thumbnail icon  located on the Geography toolbar

Description tab functions:

In ArcCatalog, click on the Description tab and select a feature class, if you have write access, 5 buttons become available:

Print: allows you to print an items metadata based on the selected style

Edit: allows you to edit an items metadata. See the *Editing* section.

Validate: checks the information conforms to the guidelines of metadata standards or profile can be done from, **Description** tab, **Metadata** toolbar and **Geoprocessing** tools. Metadata needs to be exported to an XML before it can be validated.

Export: an item description based on the selected style to an XML.

Import: an items metadata XML file.

Read-only access provides: **Print**, **Validate** and **Export**

In ArcMap, **Print** and **Edit** is available.

Metadata Toolbar

In ArcCatalog, right click in a clear area to active a drop-down list of toolbars, and select Metadata.

Validate Metadata

When it has to conform to a metadata standard before publishing it. This tool indicates where data is missing and is needed. *Validate Metadata* tool can also be accessed from ArcToolbox and the Description tab, and *Validate Metadata Multiple* tool from ArcToolbox.

Click on “*Validate Metadata*” button 

- Source Metadata: provide the layer whose metadata needs to be validated.
- Output file: provide the location where the XML should be written.
- *Translator*, *Schema URL* and *Namespace URI* information is populated by ArcGIS.

Export Metadata (XML format)

Outputs an ArcGIS item’s metadata to an XML file. *Export Metadata* tool can also be accessed from ArcToolbox and the Description tab, and *Export Metadata Multiple* tool can be accessed via ArcToolbox.

Click on “*Export Metadata*” button 

- Source Metadata: navigate to the ArcGIS item whose metadata is to be exported to an XML.
- Translator: this information is prepopulated by ArcGIS.
- Output File (optional): navigate to an output location and provide a file name

Or, click on the item whose metadata is to be exported

- Press the CTRL key while clicking on the *Export Metadata* button. This will populate the Source Metadata value.

Metadata Properties

Provides the ability to enclose attachments for a given ArcGIS items’ metadata.

Click on the “*Metadata Properties*” button 



- Add: click the “Add” (browse to desire file) button to enclose a file.
- Delete: select a file and click the “Delete” button to omit an enclosure.
- Save As: select a file and click “Save As...” to save a copy of an attachment to a specified folder.
- Viewing: double-click an attachment to view its content.

If a metadata has attachments, this information will be indicated in the metadata under *Thumbnail and Enclosures*. Attachments do affect the item size.

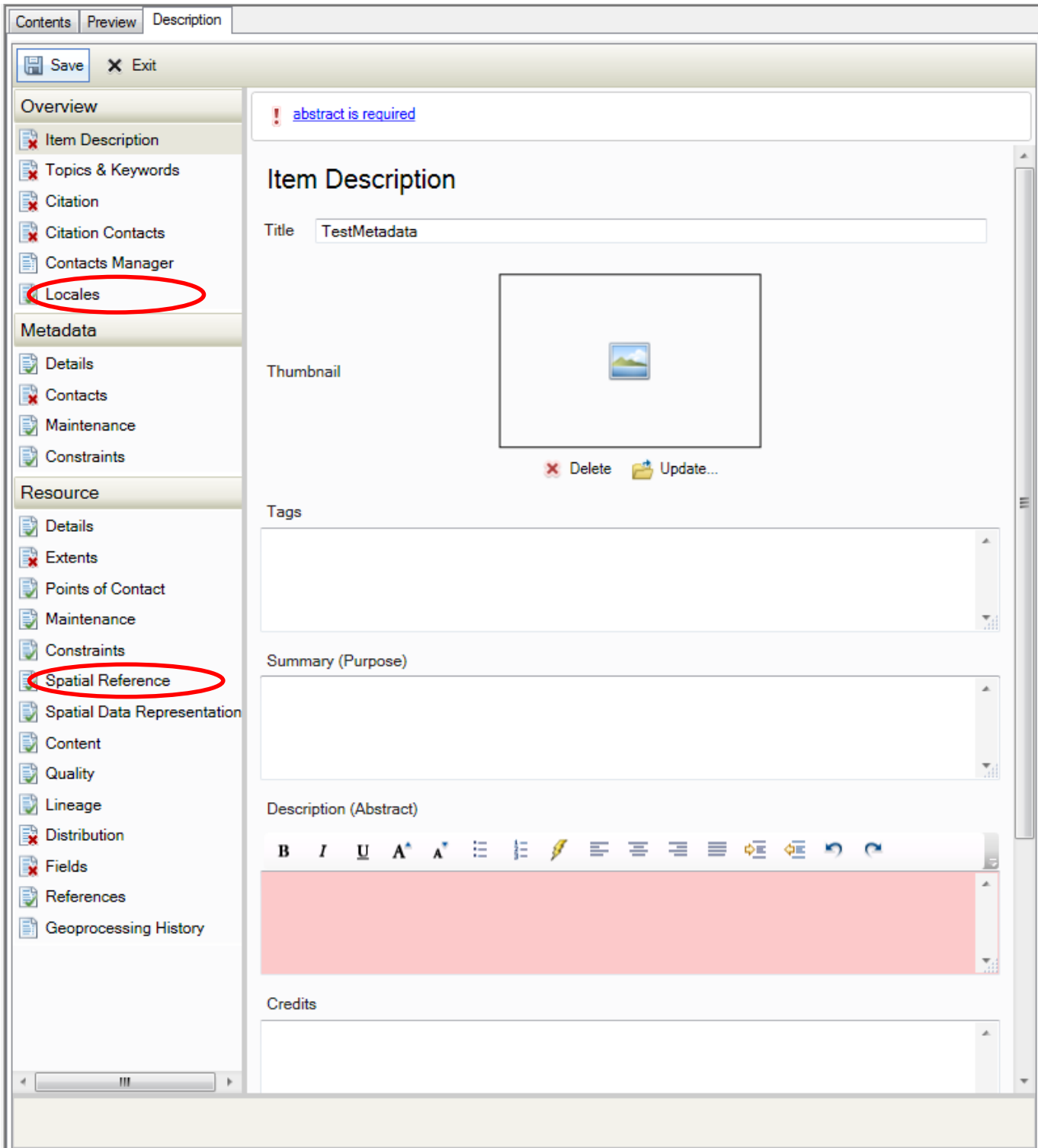
Edit Metadata

Once the metadata has been [upgraded](#) you may edit the metadata, but make sure the metadata [style](#) is set to FGDC CSDGM Metadata.

Before beginng:

- a) **Creating metadata?** Use the attached [form](#) to collect essential information users and future data maintainer (your successor) needs to know about the data. The form will aid in the metadata creation process, making it more efficient and less frustrating.
- b) **Updating metadata?** Gather information regarding the updated before proceeding. The [form](#) may be helpful, if a lot of information will be updated. Another method available for updating several feature class with the same information is [creating an XSLT](#) (see ArcGIS).
- c) **Editing:**
 1. Open ArcCatalog and locate the feature class whose metadata needs to be edited and you have write access.
 2. Click on “*Description*” tab.
 3. Click on the “*Edit*” button (if *Edit* button is not visible, you do not have write access to the metadata)
 - The metadata style sheet is divided into three sections:
 - Overview – general information that displays in the basic metadata stylesheet “Item Description” and is used for ArcGIS Online metadata.
 - Metadata - information about the metadata contact and limitation.
 - Resource – detail information about the item (data).
 - Metadata elements: a pink background indicate mandatory section or has an error.
 - Warnings: avoid leaving warnings, they are marked by a red X  to the left of the section, and above the Item Description section by (!)
 - If a section was generated by clicking the  delete it, if it is not applicable
 - Help: pace cursor over an input cell and a description will appear at the bottom of the screen.
 4. **Stop editing:**
 - Save: click the “Save” button to stop editing and save.
 - Exit: click the “Exit” button to stop editing without saving.

Metadata layout (sections differ slightly among metadata styles – *Locales* and *Spatial Reference* are additional section included in the ISO style)



Overview

This section requires general information about the item (data).

- Item Description
 - Title - enter the item's (feature class, table, etc.) name
 - **Tags** - words or phrases that describe the item
 - **Summary (Purpose)** - explain briefly the purpose the item serves
 - **Description (Abstract)** - provide an abstract of the item
 - Credit - note individuals and contact information who contributed to the item's creation.
 - New Use Limitation - click the plus sign **+** to note the data use limitations; note restricted information (sensitive, public or internal use) data user should be aware of.
 - Appropriate Scale Range - slide the bar to the appropriate extent of the data.
 - **New Bounding Box** - click the plus sign **+** to expand section and check "Extent contains the resources?"
- Topics and Keywords
 - **Topic Categories** - select categories that best describes the data
 - Content Type - select the appropriate type for the data content.
 - New Theme Keywords - click the **+** sign to enter keywords that describe the content.
 - New Place Keywords - click the **+** sign to enter the data general location, for example Miami-Dade County.
 - New Temporal Keywords - click the **+** sign to enter the data time-period.
- Citation
 - Title - should be populated from previous section
 - Alternate Title - enter other titles of the data, if known.
 - Presentation Form (ISO) - is populated, but select the form that best represents the item.
 - FGDC Geospatial Data Presentation Form - is populated, but select the form that best represents the item.
 - Dates - click the down arrow to expand section and select the Created and **Published** (or added to production) date.
- Citation Contacts
 - Load a contact - click the down arrow to select a contact from the drop-down list (exist if contact was previously created) then, click the **+** to load contact information.
 - Click the down-arrow next to the loaded contact to modify information and select the **Role** (an originator – source of data is required).
 - New Contact - click the **+** sign to create a new contact that request the Name, Organization, **Role**
 - Contact Information - click the **+** sign to populate Email, Address Type, Address, City, State, Postal Code, Country and Phone,

- Add as many contacts as needed. It is helpful to users and aids maintenance efforts and inquires.
- Contacts Manager - allows you to view and save created contacts.

Metadata

This section requires information about the metadata, not the data.

- Details - No information is required
- **Contacts** - at least one metadata contact is required. Follow the same steps as Citation Contacts.
- Maintenance
 - **Update Frequency** – select an update frequency from the dropdown list.
 - **Custom Frequency** – type an update frequency, if it is not available
 - Load a contact – load or create a metadata contact, if it differs from Contact
 - New Maintenance Note – describe efforts required to maintain the data.
- Constraints
 - New General Constraints – click the **+** to describe the data limitation or general restrictions regarding when or how it should not be used.
 - New Legal Constraints: click the **+** to select legal
 - Access Constraints - select the appropriate legal constraints
 - Use Constraints - select the appropriate use constraints
 - New Security Constraints - click the **+** to select classification, if applicable
 - **Classification** – select the appropriate value (Restricted, Confidential, etc)
 - **Classification System** – provide the name of the system
 - **Handling Description** – describe possible restriction handling the data

Resource

This section documents the data

- Details
 - New Status – click the **+**
 - **Status** – select status from drop-down list
 - New Credit – note individuals who contributed toward the data creation
 - Scale Resolution – enter the scale used to create the data seen on a hard copy map
 - Distance Resolution – enter the ground sample distance
 - Empty – click “Empty” to select ground unit used to generate the data
 - Supplemental information – provide additional information about the data

- Extents –
 - New Extent - click the +
 - New Bounding Box - click the +
 - **Extent contains the resources?** – this should be checked
 - New Temporal Period Extent
 - **Extent** – state the extent of the data
 - **Begin Date/Time:** click calendar to select start date of the data
 - **End Date/Time:** click calendar to select date of the data
- **Points of Contact**
 - Load or create a data contact, if it differs from Contact Maintenance
- Maintenance
 - **Update Frequency** – select data update frequency from drop-down list
 - New Maintenance Contact – enter if differ from any of the above contacts
 - **New Maintenance Note** – describe requirements for maintaining the data
- Constraints – resource
 - New General Constraints – click the + to describe the data limitation or general restrictions regarding when or how it should not be used.
 - New Legal Constraints: click the + to select legal
 - Access Constraints - select the appropriate legal constraints
 - Use Constraints - select the appropriate use constraints
 - New Security Constraints - click the + to select classification, if applicable
 - **Classification** – select the appropriate value (Restricted, Confidential, etc)
 - **Classification System** – provide the name of the system
 - **Handling Description** – describe possible restriction handling the data
- Spatial Data Representation – is populated, but for raster data appropriate cells should be updated
- Content – this section should be updated more for raster data
 - New Coverage Description
 - New Image Description
 - New Feature Catalogue
- Quality
 - Scope Level – click “Empty” to select scope type
 - New Level Description
 - New Extent
 - New Report - click the +
 - **Report Type** – click “Empty” and select report type (Completeness omission is important)
 - Dimension – select horizontal or vertical
 - Evaluation Method – click the down arrow
 - New Conformance Result – complete if needed

- New Quantitative Result – complete for measured, bio and scientific test
- Lineage
 - **Statement** – provide a general description of the data step, if below process is not completed
 - New Process Step - click the **+**
 - **Process Description** – describe the process used to create the data
 - **Process Step Date** – click calendar to select the date
- Distribution – complete if applicable
 - New Distribution Format – require distribution information
 - New Distributor – state the ordering process
 - New Digital Transfer Options – state the transfer size
- Fields – this section is important
 - **Details** - click the down arrow; it generates information for each field that needs to be populated
 - click the down arrow for each field to enter the Definition and Definition source
 - New Entity and Attributes Details – some information is auto populated
 - **New Overview** – click the **+**
 - **Summary** – enter coded and range values here
 - Expand each field attribute and enter
- References – populated if needed.
 - New Aggregate Information – select association and initiative type
 - New Portrayal Citation – enter online and series information
 - New Application Schema Information – application related information
- Geoprocessing History – this is auto populated to reflect item history.

***Red** denote – required by FGDC/ISO standards

***Blue** denote – required by MDC

Metadata Tools and Usage

- 1) Esri Metadata Translator
- 2) Export Metadata
- 3) Export Metadata Multiple
- 4) Import Metadata
- 5) Metadata Importer
- 6) Metadata Publisher
- 7) Synchronize Metadata
- 8) Upgrade Metadata
- 9) USGS MP Metadata Translator
- 10) Validate Metadata
- 11) Validate Metadata Multiple
- 12) XML Schema Validation
- 13) XSLT Transformation

ArcGIS Metadata Toolkit 10.2.1

Provides tools and documentation that enable you to create and share customize metadata styles.

Notes

- Create a template whereby only items that are common to all your layers are populated, then import the metadata template and populate items specific to that layer.
- Metadata is read-only unless it is

<http://www.esri.com/library/whitepapers/pdfs/metadata-and-gis.pdf>

Metadata Form

Overview

Displays general information about the entire feature class that also satisfies ArcGIS Online documentation.

- **Item Description**

- Tags (words or terms used to search for the resource)

- Summary (Purpose)*

- Description (Abstract)*

E.g. A (*point, line, polygon, raster,*) feature class of Miami-Dade County...

- Credits (who contributed towards the creation of the layer)

- Use Limitation (restrictions affecting the use of the data e.g. "Not to be used for navigation.")

- Scale Range

- Slide the bar to *County* zoom level

- **Topics & Keywords**

- | | |
|---|--|
| <input type="checkbox"/> Farming | <input type="checkbox"/> Military & Intelligence |
| <input type="checkbox"/> Biota | <input type="checkbox"/> Inland Waters |
| <input type="checkbox"/> Boundaries | <input type="checkbox"/> Location |
| <input type="checkbox"/> Atmospheric Sciences | <input type="checkbox"/> Oceans |
| <input type="checkbox"/> Economy | <input type="checkbox"/> Planning & Cadastral |
| <input type="checkbox"/> Elevation | <input type="checkbox"/> Society |
| <input type="checkbox"/> Environment | <input type="checkbox"/> Structure |
| <input type="checkbox"/> Geoscientific | <input type="checkbox"/> Transportation |
| <input type="checkbox"/> Health | <input type="checkbox"/> Utilities & Communication |
| <input type="checkbox"/> Imagery & Base Maps | |

Check all that applies

- Content Type (Select one that best describes the data type)

- Empty, Live Data and Maps, **Downloadable Data**, Offline Data, Static Map Images, Other Documents, Applications, Geographic Services, Clearinghouses, Map Files, Geographic Activities

- **New Theme Keywords *** (terms that associate the data with other subject matter)

-
- **New Place Keywords*** (data location)
Eg. "Miami-Dade
County"
 - **New Temporal Keywords*** (timeframe in which the data is valid)
-
- **Citation**
 - **Dates***
 - Select Created date
 - Select Published date
 - **Citation Contacts***
 - Enter the Originator contact information (create a new contact or select from the list)
 - Name _____
 - Organization _____
 - Position _____
 - Role _____
 - **Contacts Manager** (enter all contacts information)
 - Name _____
 - Organization _____
 - Position _____
 - Role _____
 - **Locales**
 - **Language*:** English

Metadata

Displays information about the metadata.

- **Details**
 - Information is prepopulated
- **Contacts*** (At least one metadata contact is required)
 - Name _____
 - Organization _____
 - Position _____
 - Role _____
- **Maintenance***
 - How often should the metadata be updated? (Select one)
 - **Continual, Daily, Weekly, Fortnightly, Monthly, Quarterly, Biannually, Annually, As Needed, Irregular, Not Planned, Unknown**
- **Constraints**
 - New General Constraints (enter metadata constraints)

 - New Legal Constraints (enter legal constraints on the metadata)

-
-
- New Security Constraints (select security classification)
 - New Use Limitation (enter instruction) _____
 - **Classification*** (select one)
 - Empty, Unclassified, Restricted, Confidential, Secret and Top Secret

Resource

Information about the data.

- **Details**

- **Status***
 - **Completed, Historical Archive, Obsolete, On Going, Planning, Required, Under Development**
- New Credit (recognition of those who created or contributed towards the data creation)
 - _____
- **Languages*** (select from list) _____
- **Distance Resolution*** _____ **Empty*** (select from list) _____
- **Supplemental information** (provide additional information such as revisions, process, etc.) _____

- **Extents**

- Extent Description _____
- **Bounding Box*** (check Extent contains the resource? Or enter data extent)

West _____ East _____ South _____ North _____
- **New Temporal Period Extent*** (select start and end of the time period associated with the data)
 - Begin Date/Time: _____
 - End Date/Time: _____

- **Points of Contact** (who should be contact for information on this data?)

- Name _____
- Organization _____
- Position _____
- Role _____

- **Maintenance**

- **Update Frequency*** (select how often the data should be updated)
 - Continual, Daily, Weekly, Fortnightly, Monthly, Quarterly, Biannually, Annually, As Needed, Irregular, Not Planned, Unknown
- **New Maintenance Note*** _____

- **Constraints**

- **New General Constraints*** (describe limitation affecting the application and use of the data)

-
-
- New Legal constraints

 - New Security Constraints
 - New Use Limitation (enter data instruction)

 - **Classification*** (select one)
 - Empty, Unclassified, Restricted, Confidential, Secret and Top Secret
 - **Spatial Reference** (some information is automatically populated by ArcGIS)
 - **Spatial Data Representation** (RASTER - some information is automatically populated by ArcGIS)
 - Georectified Representation
 - **Number of Dimensions** _____
 - **Cell Geometry** _____
 - **Point In Pixel (select one)**
 - Center, Lower right, Lower left, Upper right and Upper left
 - Georeferenceable Representation
 - **Number of Dimensions** _____
 - **Cell Geometry** _____
 - **Georeference Parameters**
 - Center, Lower right, Lower left, Upper right and Upper left
 - **Content** (Coverage, Image and Feature raster related information)
 - **Quality** (describe the quality of the data)
 - Scope Level
 - Attribute, Attribute Type, Collection Hardware, Collection Session, Dataset, Series, Non-Geographic Dataset, Dimension Group, Feature, Feature Type, Property Type, Field Session, Software, Service, Model, Tile, Initiative, Stereomate, Sensor, PlatformSeries, SensorSeries, ProductionSeries, TransferAggregate, OtherAggregate
 - **Lineage:** (general description of how the resource's lineage)
 - **Statement**

 - **Distribution**
 - Format version _____
 - **Fields***
 - Details - click the down arrow; it generates information for each field that needs to be populated
 - click the down arrow for each field to enter the Definition and Definition source
 - New Enumerated, New Range and New Codeset Domain values could be entered under *Overview Description* section
 - New Entity and Attributes Details – some information is auto populated
 - **New Overview** – click the **+**
 - **Summary** – enter coded and range values here
 - Expand each field attribute and enter

Attribute layout:

Attribute: DEPTH

Label	DEPTH
Alias	BUOY DEPTH
Definition	
Definition Source	
Type	Double
Width	8
Precision	0
Scale	0
Indexed	
Value Explanation	
Value Accuracy	
Value Measurement Frequency	Empty
Beginning Date of Values	15
Ending Date of Values	15
+ New Enumerated Domain	
+ New Range Domain	
+ New Codeset Domain	
+ New Unrepresentable Domain	

- **References tracks** Aggregate, Portrayal Citation and Application Schema Information)
- **Geoprocessing History** (processing information is capture during the creation of the resource)

The Metadata template has more fields, but only the above are enforced by Miami-Dade County. Each user should assess the needed metadata requirements for their department or organization.