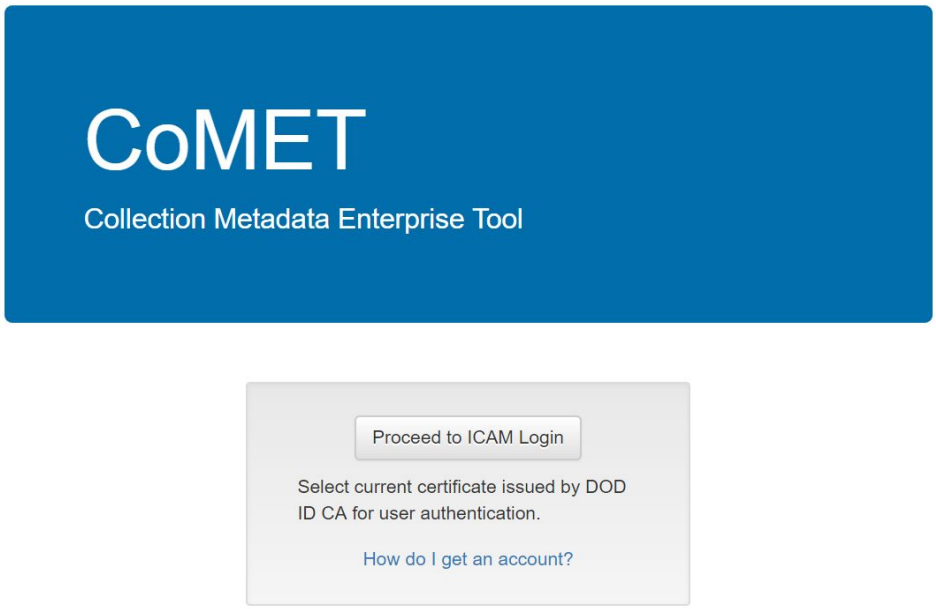
NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



CoMET User Manual

Valid for production version 1.8.0

Prepared by:
Amanda Dean - CASE Consultants Int.
Elizabeth Harper - CASE Consultants Int.
Lori Hager - CASE Consultants Int.

Contact Information

Questions or feedback regarding this manual should be directed to the OneStop Metadata Content Team (Amanda.Dean@noaa.gov, lori.hager@noaa.gov, katherine.mankowski@noaa.gov)

If you encounter issues or need to report a bug in CoMET, please send an email to ncei.collection-manager.support@noaa.gov. In the email, describe the issue or bug and steps required to replicate it. Additionally, provide your name and contact information if you wish to be contacted for issue clarification and/or to receive updates on the status of the issue.

Acknowledgements

This work was built upon earlier efforts completed by Sonny Zinn, Paul Lemieux, Raisa Ionin, and Robert Partee. Special thanks to Jerri Reeves and Charlie Burris for their technical input as well.

Overview

This user manual was developed to assist users with getting up to speed using CoMET quickly and efficiently. Upon completing the manual, the user should be familiar with the base functionality of CoMET and be able to create and edit existing metadata as well as be able to perform a DSMM assessment with the use of the DSMQ form.

Getting Started

Logging In

- To log on, a user points a web browser to: https://data.noaa.gov/cedit/
- If you do not have an account, please follow these steps:

  Send email to ncei.collection-manager.support@noaa.gov with the following details:

Subject: 'New User for [CoMET, Docucomp, and/or Metaserver] for *your name*'

Your contact information

Your associated program or agency

Intended usage

  Once you are set up, your username will be your email (without the @noaa.gov) and the password will be the same as your email password.

  Note: Login is currently limited to users with a NOAA email, but external access is planned for a future release cycle. Send in a request if you'd like to be informed when this capability is available.

- After clicking the Login button, you will be redirected to a page that allows you to use your username and password or the NOAA ICAM SSO. Either enter your username and password; or click the NOAA ICAM SSO button.
- After authentication, a warning banner is displayed.
- Click the green “Accept” button to proceed.

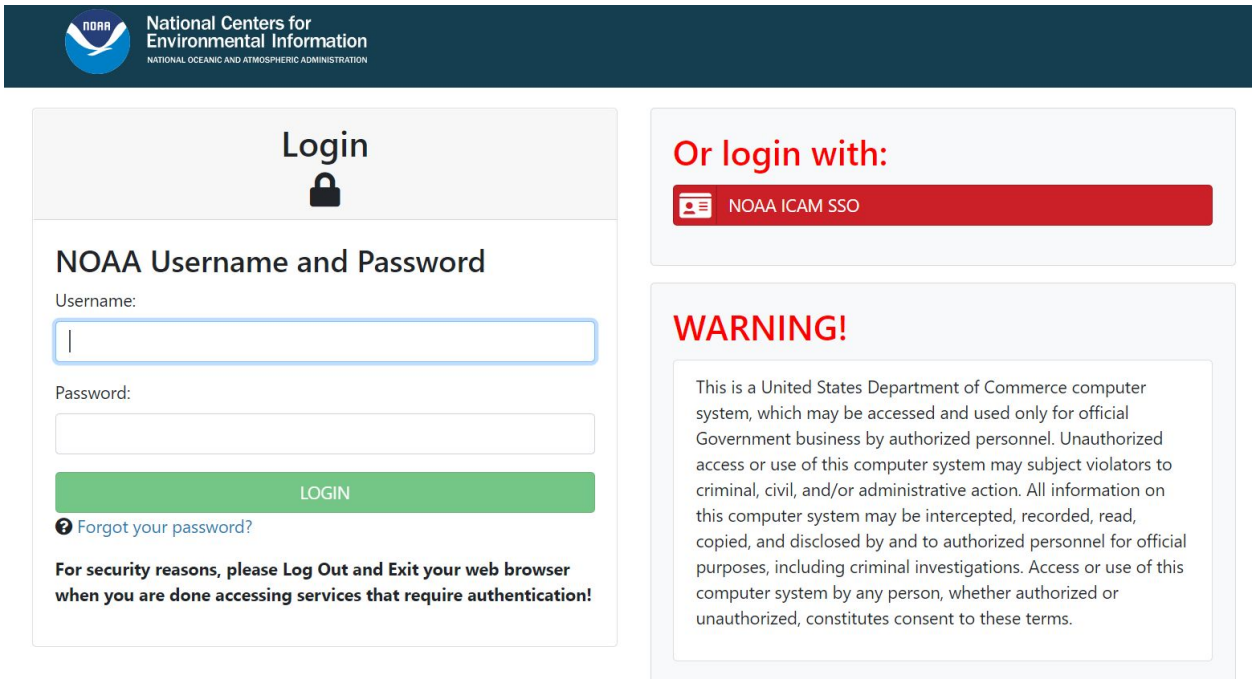


Figure 1.1 The CoMET log in screen

For those who were not previously registered with CoMET, only READ-ONLY access is granted and the following message is shown:

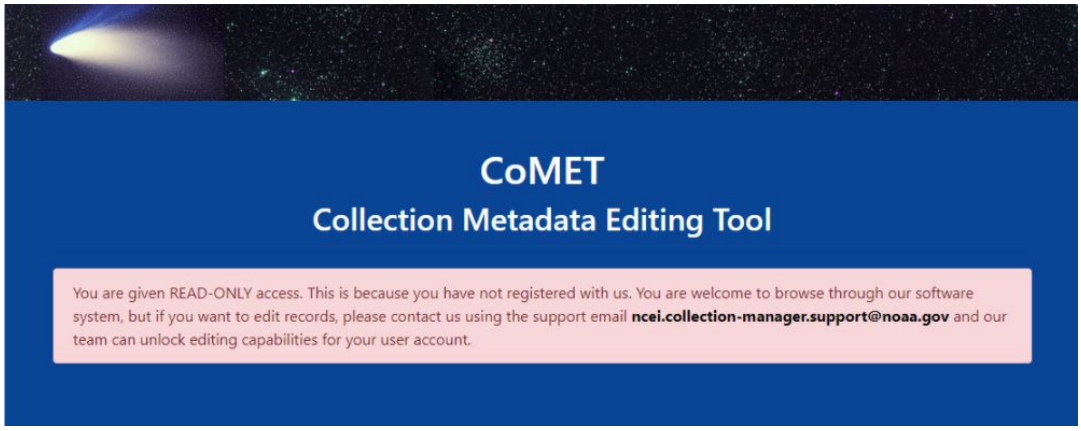


Figure 1.2 The above message is shown when a user logins with READ-ONLY access.

If you need to edit records in CoMET, please send an email as described in the above message.

Once logged in, click on “Access Metadata Records” button to start working with metadata records.

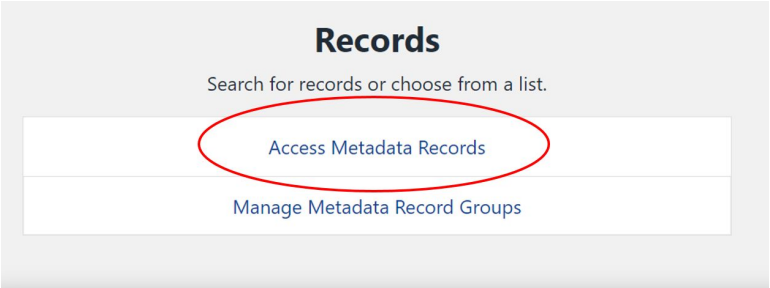


Figure 1.3 The record options on the homepage.

After clicking the Access Metadata Records link, you will be taken to the Metadata Records List page. You must select a record group from the Record Group field to do anything else on this page. Making a selection will populate the page with records in that group as well as any actions available to you*. The page features a Filters panel (1), Record Actions Panel (2), and a list of metadata records (3) on which you can perform various actions.

* Some actions/buttons may not be visible to all users because they do not have permissions to perform these actions.

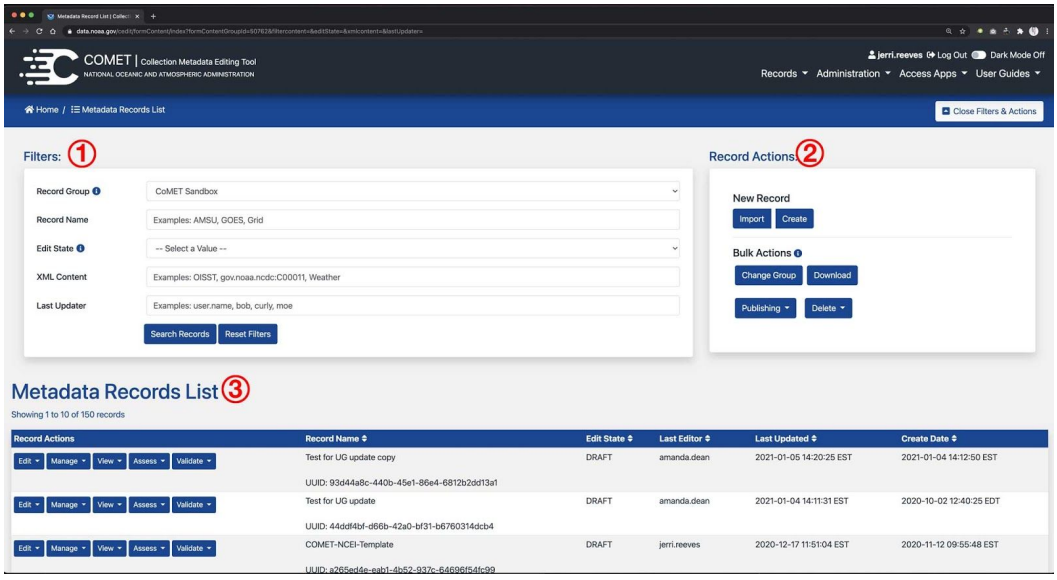


Figure 1.4 The Metadata Records List page.

Filters Panel

The Filters panel allows you to filter the number of records by various criteria. If you choose to further filter your records by Record Name, Edit State, XML Content, or Last Updater, you will need to click the Search Records button to apply your filter. To reset your filter, click the Reset Filters button.

Filters available:

- **Record Name:** filter by the internal CoMET record name. Can be a partial match such as filter records where the record name includes NOAA.
- **Edit State:** filter records by the a record's status such as DRAFT for a draft record; IN REVIEW for records that are ready to be published; or, APPROVED for records that have been approved for publishing
- **XML content:** you can search the XML content and filter records by searching for data such as a DOI, title, or any other content that would be in the XML.
- **Last Updater:** filter records by the person who last updated a record

Record Actions Panel

The Record Actions panel includes common record actions that someone may want to perform such as creating new records, changing records from one record group to another, or approving records to be published. The available functions in this panel include:

New Record

- **Import:** allows you to import one or multiple valid 19115-2 ISO XML files
- **Create:** allows you to create a new record based off of values in the NCEI Template. You would then edit the record's values, delete, or add values necessary for your data.

Bulk Actions

- **Change Group:** allows you to move records from one record group to another
- **Download:** allows you to download one or more XML files for your records
- **Publishing:** allows you to request a draft to be published, publish, and unpublish records
- **Delete:** allows you to delete or permanently delete records

Metadata Records List

The Metadata Records List is a table that contains all records that meet your filtered requirements. It displays the record name, edit status, last editor, date last updated, and date created in sortable columns. Clicking on the column titles will sort the filtered data set by that field. The table also includes a set of buttons that allow you to perform various actions on each record. This list is restricted by user permissions; some options may not be visible to all users.

Edit — allows you to edit a record's data and includes the following options:

- Data Management Plan
- Data Stewardship Maturity Questionnaire (DSMQ)
- ISO Editor

Manage — allows you to perform the following:

- Copy — allows you to use this record as a template to create a new record based off of its data
- Revision History — allows you to review a record's revision history
- Delete Record — allows you to delete the record

View — allows you to see your data in various formats:

- CoMET Format XML — a non-standard specific view of your data
- ISO 19115-2 XML
- Landing Page HTML — view the unresolved HTML landing page. Xlinks are not resolved in this view
- Plain Text HTML

Assess

- Component Analysis
- CSW Rubric
- DOI Rubric
- ISO Rubric V2

Validate

- Validate ISO: your data against the ISO 19115-2 standard

To begin, select your team's record group from the drop-down list. The record group will appear below in the Metadata Records List. You may also use additional filters to find records (explained above), then click "Search Records" .

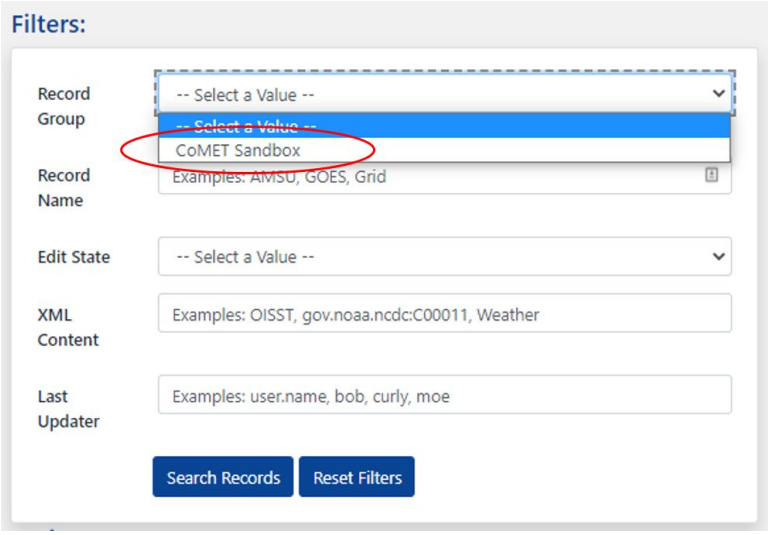


Figure 1.5 The drop-down menu for selecting a record group.

The first 10 records will be listed in the order that they were last updated. Now you are ready to work with metadata. You may also choose to close the filters and actions boxes for a streamlined page.

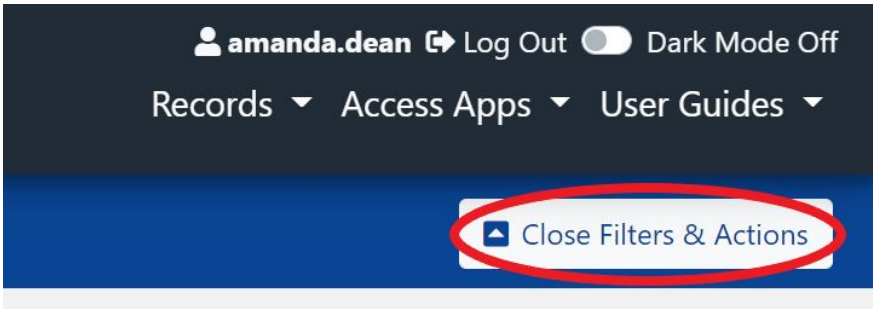


Figure 1.6 The Close Filters & Actions button.

Creating Metadata

There are three ways to create metadata in CoMET. You can create new records by using the **Create** button; this will use the NCEI template to create template data you can then edit. You may **Import** valid ISO 19115-2 file(s). And you can use an existing record as a template and **Copy** its data to make a new record.

Creating a New Metadata Record

1. In the Record Actions panel, click the “Create” button to create a new metadata record based on the NCEI Template:

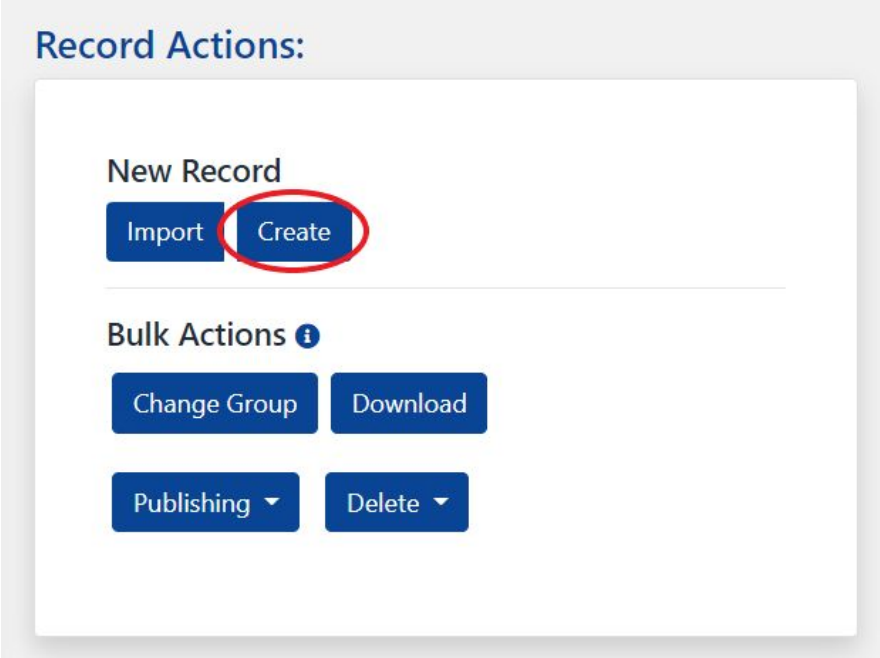


Figure 2.1 The Create button.

2. Using the “Select a form” drop-down list, click “ISO Editor”; then click “Create Record”.

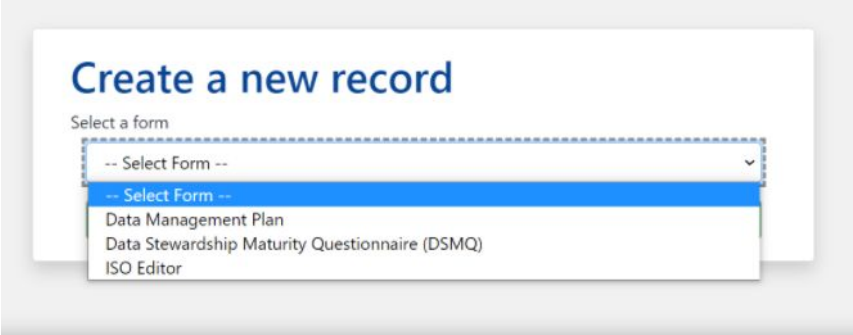


Figure 2.2 The Select a Form menu.

3. Type in a description in the “Internal CoMET Record Name (required)” field at the top of the page. You may want to use the dataset title for the description but you are not required to do so.

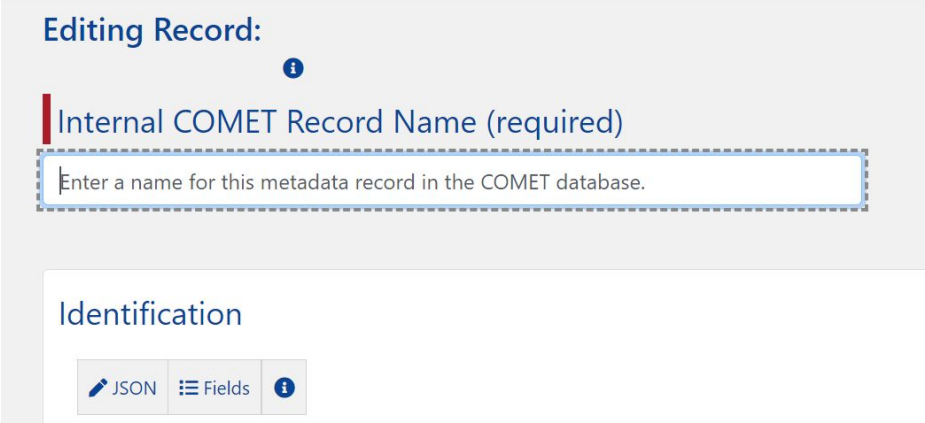


Figure 2.3 The Record Name field.

After creating the record, you can begin editing it. To save, click the "Save Record" button at the top. Saving a record for the first time will redirect you back to the Metadata records list.

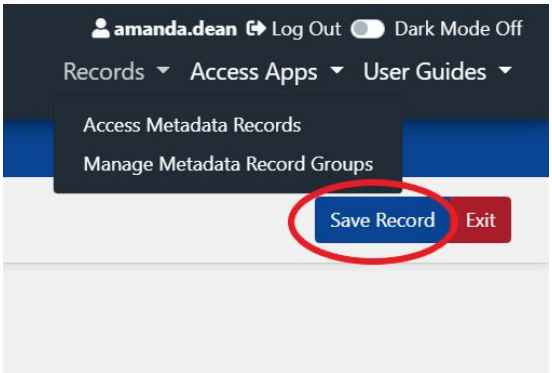


Figure 2.4 The Save Record button.

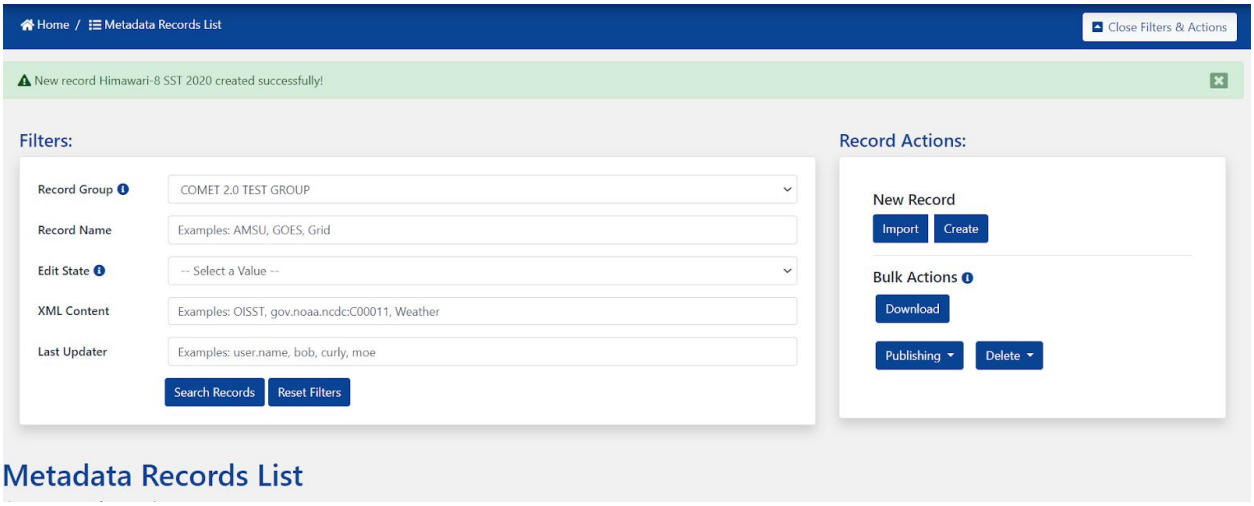


Figure 2.5 The record has been saved

To access your record for editing from the main page, click the “Edit” button to display the drop-down menu and select the form that you want to use to edit the record: Data Management Plan, Data Stewardship Maturity Questionnaire (DSMQ), or ISO Editor.

Figure 2.6 Editing options.

A new window will open displaying the selected editing page. The minimum required fields for a valid ISO metadata record are marked with a red bar as well as the text “(required)”.

You may toggle among each of the headings while editing the forms.

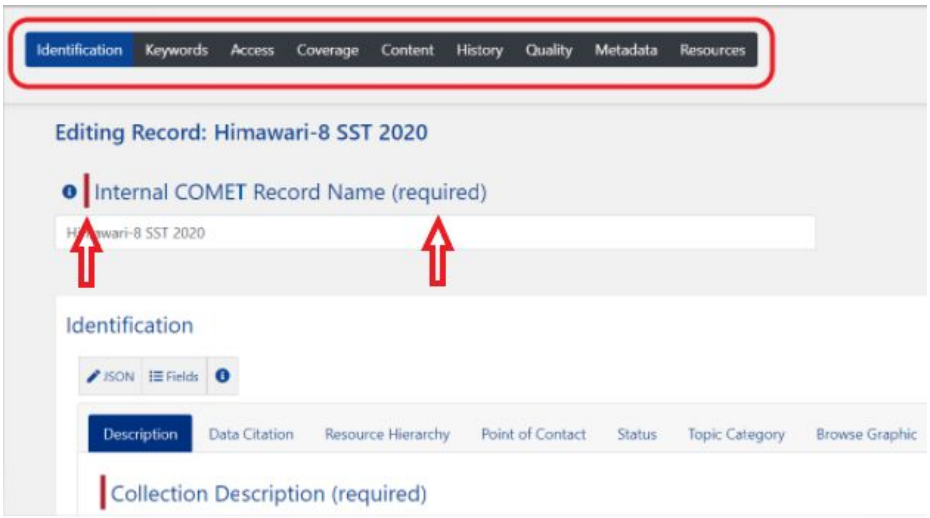


Figure 2.7 Editor tab headings. Red bars and “required” indicate required fields.

Use the tabs to navigate through the form completing as many fields as you can.

Be sure to save frequently because the form will not automatically save your changes.

4. Click “Save” to save your metadata record (located at the top and bottom of page).

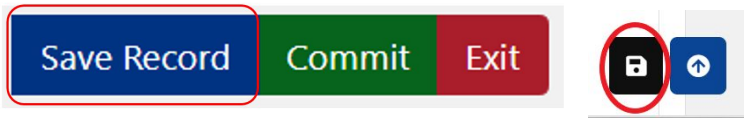


Figure 2.8 The Save button. The Save icon appears at the bottom of the page.

5. Once you are finished with the metadata record, choose “Commit.” Although it is not required, it is a best practice to do so. Commit allows you to save your metadata record with a comment attached. Think of Commit as versioning code changes within a repository.

Figure 2.9 The Commit button.

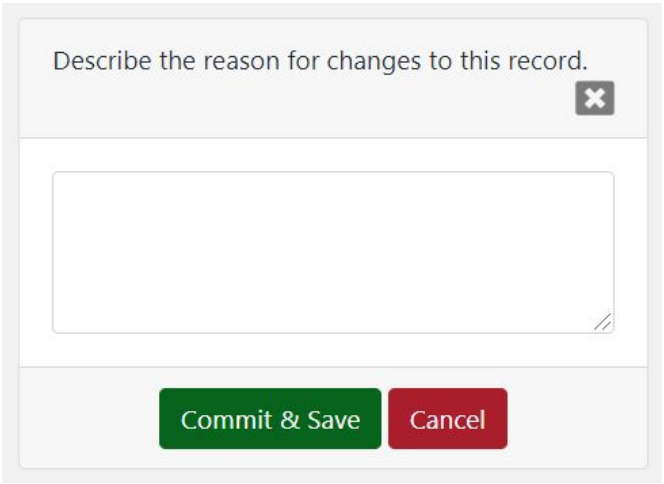


Figure 2.10 The Commit message.

When you view the Revision History under the Manage menu on the Records List page, you will see the commit comment for that revision:

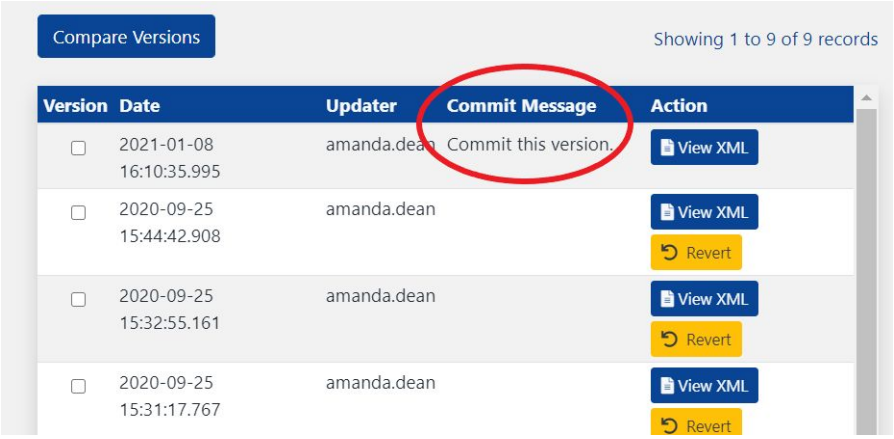


Figure 2.11 The Commit message is found in the Revision History.

NOTE: It is important to note that Xlinks are not resolved in CoMET, so transforms are not the full picture of your record. One shortcut that you can use is to go to "Record Services" in the Collection Manager Metaserver application to resolve the Xlinks in the record. Record services will resolve a record on the fly.

Importing an Existing Metadata Record

Users with metadata editing access can import existing ISO 19115-2 metadata records external to CoMET. Locate and click the "Import" button on the top right of the page:

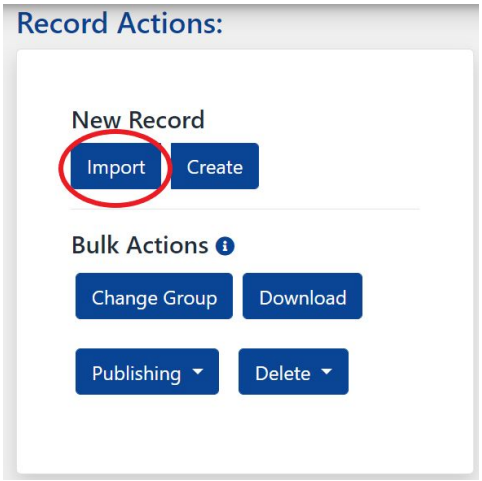


Figure 2.12 The Import button.

The web application will present an import screen:

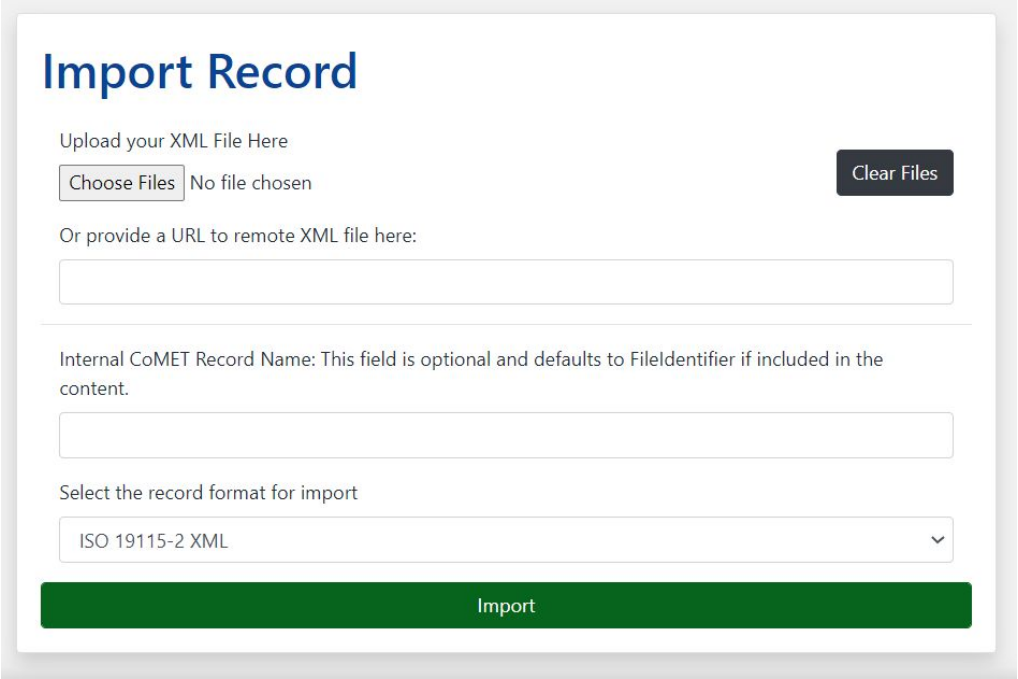


Figure 2.13 The Import user interface. The user uploads a file or provides a URL.

There are two options to specify where the record for import is located. Use the "Choose Files" function if the record is on your computer disk. If the record is available from a web server, a ftp server, etc., use the input field for a URL. If an upload file and a URL are provided, the application will use the URL only.

Importing Metadata in ISO

CoMET stores a metadata record in a standards-neutral format that is compatible with the ISO 19115-2 format. In order to import an ISO record, a format converter needs to be selected (this is required). Select the format that you have, either "ACDD NCML", "CoMET Format XML", or "ISO-19115-2-XML" (shown as the default option in CoMET). When the converter is selected, a description text will appear below the selector:

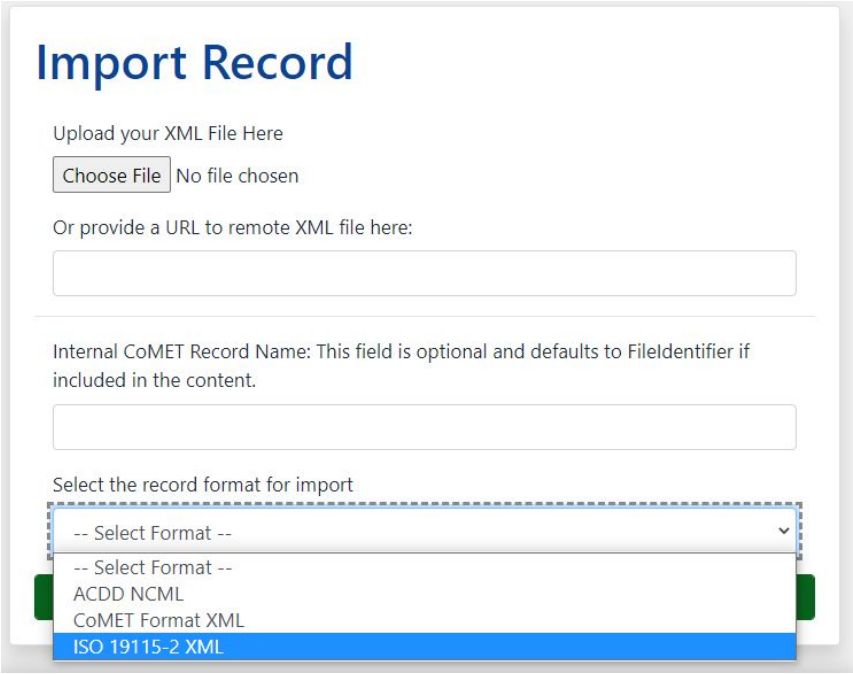


Figure 2.14 Selection of an import view. The example in the above shows an ISO record is to be imported.

Enter the title of the record to be imported to the "Record Name" field. If none is entered, the collection metadata ID from the FieldIdentifier will be used instead. Click the "Import" button. The web application will apply the format converter and convert the ISO record into the standards-neutral format. If the conversion is completed without an error, "Metadata Record uploaded successfully!" will be shown:

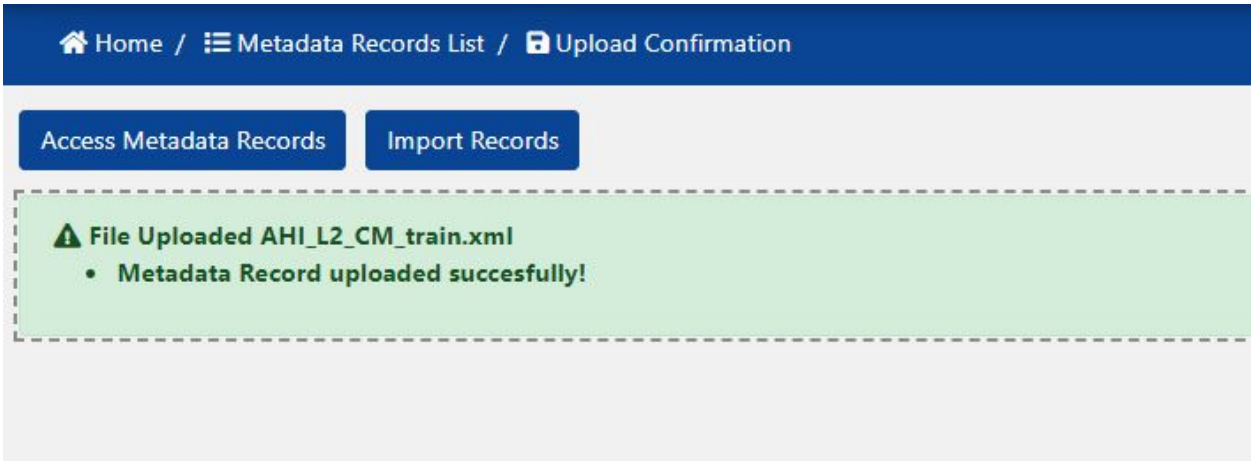


Figure 2.15 A successful import of an XML record

To access the newly created record, click on "Access Metadata Records". To continue importing records, click on "Import Records".

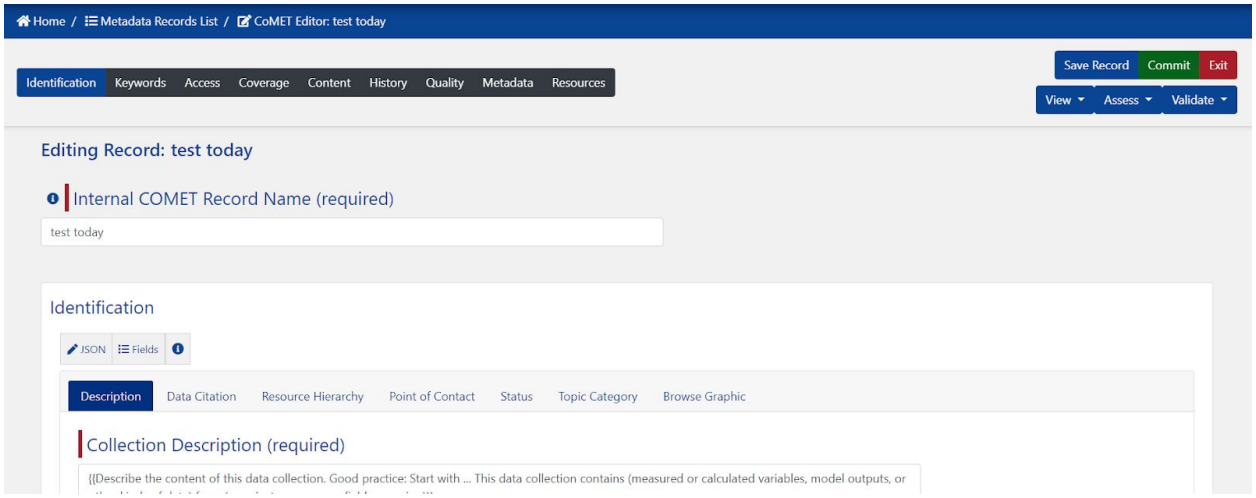


Figure 2.16 The Identification tab is highlighted first when a record is opened in ISO Editor

Input fields are organized by tabs. When CoMET opens a record, the "Identification" tab is shown by default. Explore all tabs and edit the record as necessary. Almost all the features described in "Updating Metadata" are applicable here. Keyword autocompletion and component selection might prove useful. If everything looks good, click the "Create" button. The program will check if all mandatory input fields are populated. If one or more required input fields are empty or they are not in an expected format, required fields will be highlighted in red while the page is being created. The program will ignore the input validation errors and will create a record. Then a list of metadata records will be shown. **Errors will need to be corrected before CoMET will save any new data.**

A banner will be displayed when the record is created:

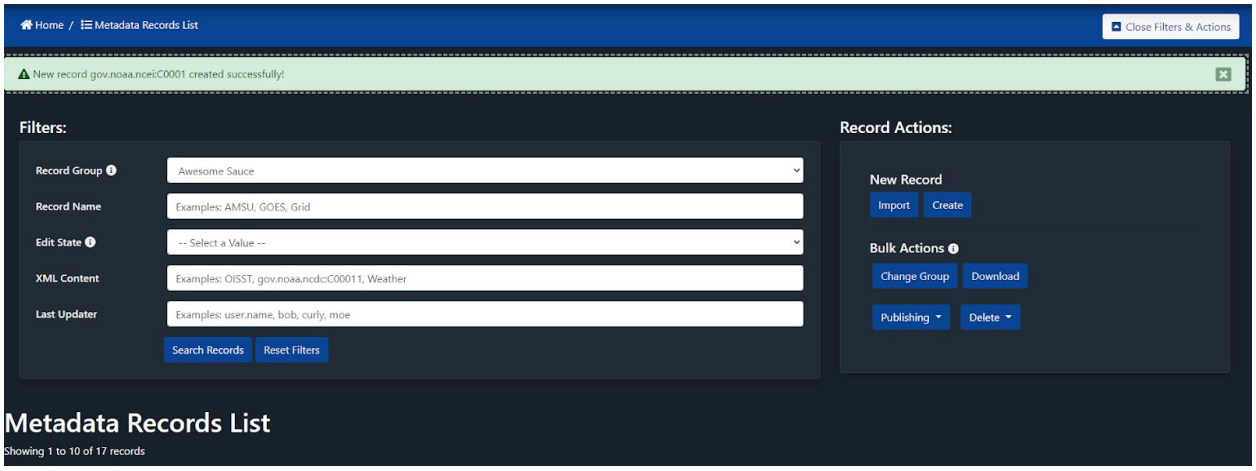


Figure 2.17 The record created banner

Importing Records in Bulk

You may choose to bulk import several records at once. To do this, the initial steps are the same as above. In Record Actions, under New Record, select “Import”:

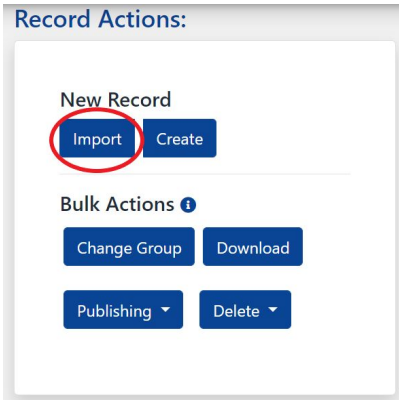


Figure 2.18 The Import record button

Select the files that you want to import. Note: multiple URLs are not supported by bulk importing, so uploading XML files is the only way to import multiple records:

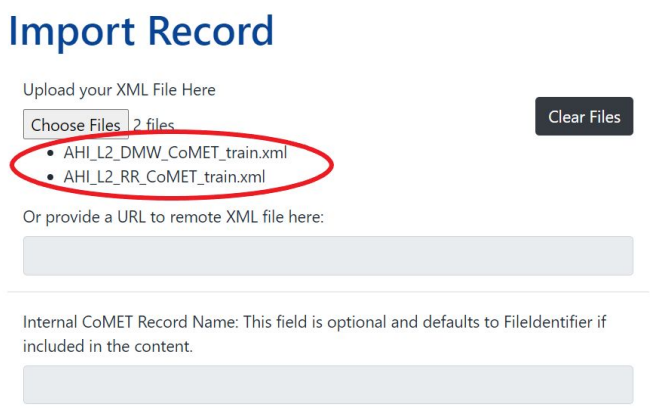


Figure 2.19 Multiple files selected for import

Multiple Internal CoMET record names cannot be added from this page, so CoMET will default to the FieldIdentifier for each record that is being imported. Select the record format for importing (typically ISO 19115-2 XML), and click “Import”.

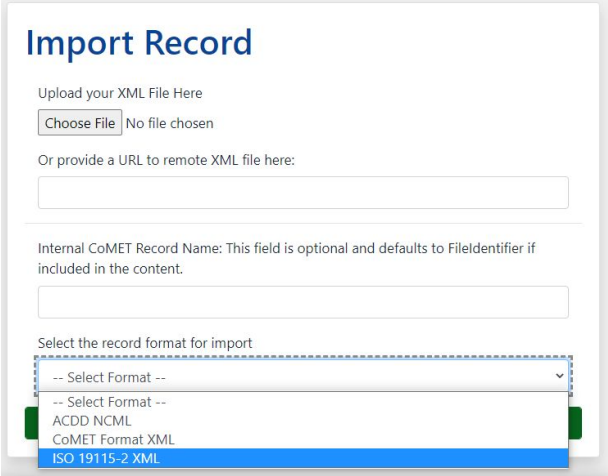


Figure 2.20 Options for selecting the import format.

Copying Existing Metadata

If a new record to be created is similar to an existing one, making a few changes to a copy would be efficient. The "Record List" page shows ten records at a time. Each record has five buttons, namely, "Edit", "Manage", "View", "Assess", and "Validate".

Figure 2.21 The buttons shown for each record on the Record List page.

1. Under the "Manage" button drop-down, click the "Copy" button. The application will show the "Select a form" page.

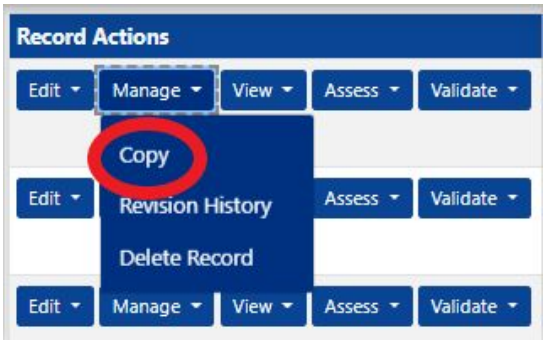


Figure 2.22 The Copy button.

2. Select the appropriate form from the drop-down menu.
3. Click the green "Create Record" button.

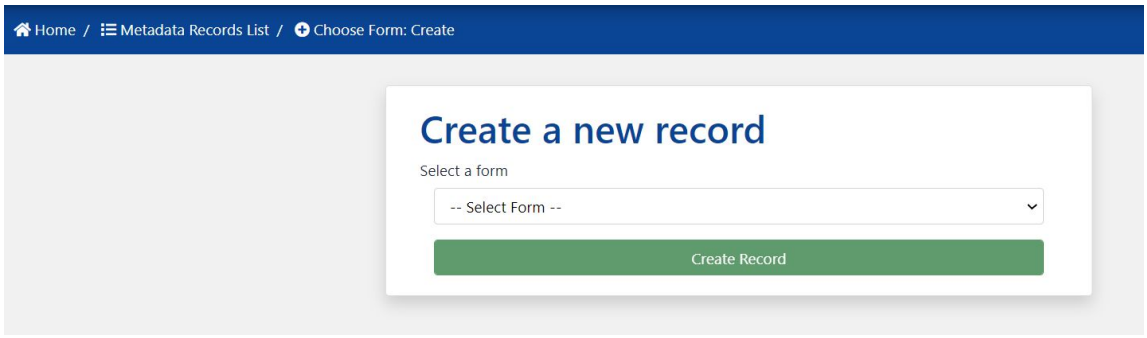


FIgure 2.23 Select a form drop-down menu and "Create Record" button.

4. An identical record will be created and you will be taken to the CoMET ISO Editor to make changes.
5. If you want the form to have a different title, change it in the record name field.

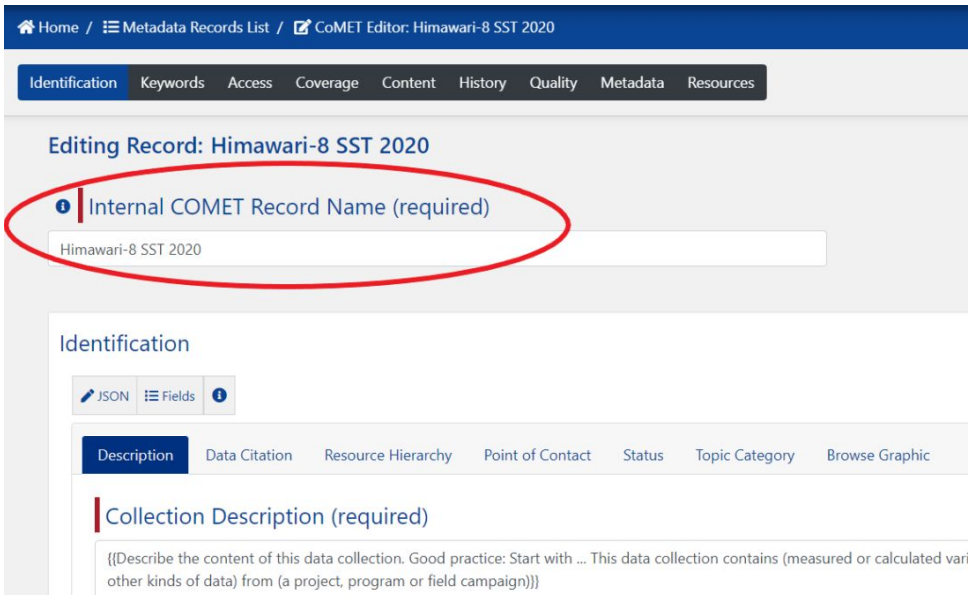


Figure 2.24 The Record Name field.

6. Once you are ready to save your changes, click “Save Record” to create your new record and save it.

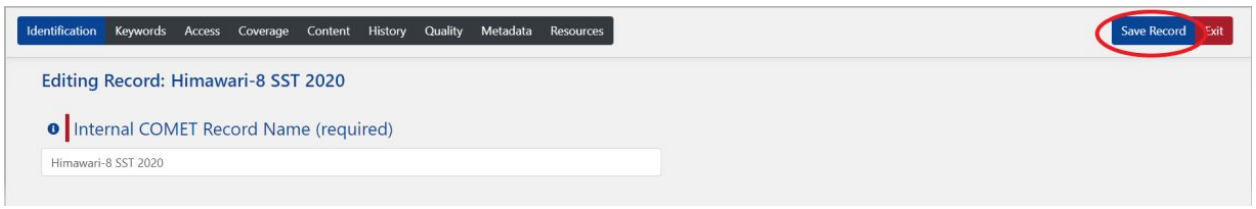


Figure 2.25 The Save Record button.

Using an API

CoMET gives users the ability to use API scripts to import single ISO records or records in a directory.

Login

All endpoints are authenticated endpoints and use LDAP credentials. Therefore, a user must first establish a user session to create, read/view, update, or delete metadata. Establish a user session by sending credentials via an HTTP request to the login URL: https://data.noaa.gov/cedit/wsLogin

A cookie will be created and used while interacting with the COMET API as long as the session stays alive. Login example:

```
#!/usr/bin/env bash

export COMET_LOGIN_URL="https://data.noaa.gov/cedit/login/wsLogin"

DEFAULT_USERNAME="firstname.lastname"
echo -n "Enter username [$DEFAULT_USERNAME]:"
read USERNAME
if [ "$USERNAME" == "" ]; then
    USERNAME=$DEFAULT_USERNAME;
fi

echo -n "Enter password for $USERNAME: "
read -s PASSWORD
echo ""

CREDENTIALS="username=$USERNAME&password=$PASSWORD"

curl --data "$CREDENTIALS" \
    -X "POST" \
    --insecure \
    "$COMET_LOGIN_URL" \
    --cookie-jar cookies.txt \
```

Figure 2.26 Logging in to CoMET via API

Basic CRUD Operations

To perform these operations, a user must be part of the **"recordGroup"** with which they are trying to interact. Please contact the Collection Manager Team at ncei.collection-manager.support@noaa.gov if you need to be added to a record group.

The operations supported by the API are:

- **Create:** Create a metadata record via an HTTP POST request.
- **Read:** View or Export a metadata record via an HTTP GET request. (Export API)
- **Update:** Change an existing record via an HTTP PUT request.
- **Delete:** Remove an existing record via an HTTP DELETE request.

Create — API endpoint - HTTP POST

Operation URL: https://data.noaa.gov/cedit/metadata/import

Optional query parameters:

- **recordGroup —** String value representing the record group in CoMET that records will be imported into.
- **description —** String value of the title of the record in the CoMET database.
- **transform —** String value (typically "convert-iso19115-2-to-comet") which converts ISO metadata into an internal format.
- **format —** String value, options are: xml, json, text
- **uuid —** String value. Only provide this if you want to generate your own uuid value for this record.
- **editState —** String value. Only provide this if you want your metadata published automatically. (&editState=APPROVED)

Create Example:

```
export COMET_URL="https://data.noaa.gov/cedit/"

RECORD_GROUP=`urlencode "TEST_IMPORT_GROUP"`
IMPORT_FILE="$1"
IMPORT_TITLE=`urlencode "$2"`
TRANSFORM="convert-iso19115-2-to-comet"
UUID="$3"

curl --cookie cookies.txt \
    -X "POST" \
    -H "Content-Type: application/xml" \
    -k \
    --data-binary @"$IMPORT_FILE" \
    "$COMET_URL/metadata/import?recordGroup=$RECORD_GROUP&description=$IMPORT_TITLE&transform=$TRANSFORM&format=&uuid=$UUID"
```

Figure 2.27 Create example

Update — API endpoint - HTTP PUT

Operation URL: https://data.noaa.gov/cedit/metadata/*$uuid*

URL Path parameter:

$uuid — String value and only provide this if you want to generate your own uuid value for this record.

Example uuid: 94306b70-1441-458f-83bf-9a338dda4dab

Optional query parameters:

- **editState —** String value and only provide this if you want your metadata published automatically. (&editState=APPROVED)

Update Example:

```
export COMET_URL="https://data.noaa.gov/cedit/"

if [ $# -ne 3 ]; then
    echo "usage: $0 ISO_XML TITLE UUID"
    exit 2
fi

XML_FILE="$1"
DESCRIPTION=`urlencode "$2"`
UUID="$3"
TRANSFORM="convert-iso19115-2-to-comet"

curl --cookie cookies.txt \
    -X "PUT" \
    -H "Content-Type: application/xml" \
    -k \
    --data-binary @"$XML_FILE" \
    "$COMET_URL/metadata/$UUID?description=FAPAR&transform=$TRANSFORM&editState=DRAFT"
```

Figure 2.28 Update example

Export — API endpoint - HTTP GET

Operation URL: https://data.noaa.gov/cedit/metadata/*$uuid*

URL Path parameter:

$uuid — String value and only provide this if you want to generate your own uuid value for this record.

Example uuid: 94306b70-1441-458f-83bf-9a338dda4dab

Optional query parameter:

- **transform —** String value. Typically “transform=convert-comet-to-iso19115-2”, which converts the metadata record from the CoMET internal format to ISO 19115-2

Export Example:

```
export COMET_URL="https://data.noaa.gov/cedit/"

if [ $# -ne 2 ]; then
    echo "Exporting with UUID as Filename."
    FILENAME=$1
    echo -e "\n"
else
    echo "Exporting with $2 as Filename."
    FILENAME=$2
fi

curl --cookie cookies.txt \
    -X "GET" \
    -k\
    "$COMET_URL/metadata/$1?transform=convert-comet-to-iso19115-2" > ${FILENAME}.xml
```

Figure 2.29 Export example

Delete — API endpoint - HTTP DELETE

Operation URL: https://data.noaa.gov/cedit/metadata/*$uuid*

URL Path parameter:

$uuid — String value and only provide this if you want to generate your own uuid value for this record.

Example uuid: 94306b70-1441-458f-83bf-9a338dda4dab

Delete Example:

```
#!/bin/bash

export COMET_URL="https://data.noaa.gov/cedit/"

if [ $# -lt 1 ]; then
    echo "usage: $0 UUID [UUID ...]"
    exit 2
fi

for uuid in $@; do
    curl --cookie cookies.txt \
        -X "DELETE" -k \
        "$COMET_URL/metadata/$uuid?format=text"
done
```

Figure 2.30 Delete example

Search — API endpoint - HTTP GET

Operation URL: https://data.noaa.gov/cedit/metadata/search

Optional query parameters:

recordGroup — String value representing the record group in CoMET.

Since — String value representing a date value (2016-03-01T09:10:00).

max — String value representing the maximum results returned.

format — String value, options are: xml, json, text

Search Example:

```
#!/bin/bash

export COMET_URL="https://data.noaa.gov/cedit"

TIME_SINCE="2016-03-01T09:10:00"
EDIT_STATE="COMPLETED"
MAX_RECORDS="1000"
OUTPUT="xml"

output=$(curl --cookie cookies.txt \
    -X "GET" \
    -k \
    "$COMET_URL/metadata/search?recordGroup=NOAA/NESDIS/ncei/oer/&max=$MAX_RECORDS&format=text")
```

Figure 2.31 Search example

More Examples
If you would like more code examples, please contact us via email at ncei.collection-manager.support@noaa.gov to request access to a code repository used for testing CoMET APIs (**available to NCEI employees only**).

Viewing Metadata

On the "Record List" page, each metadata record is shown with five action buttons. To view the information about your metadata record, follow these steps.

1. Click the "View" button drop-down for the record of interest:

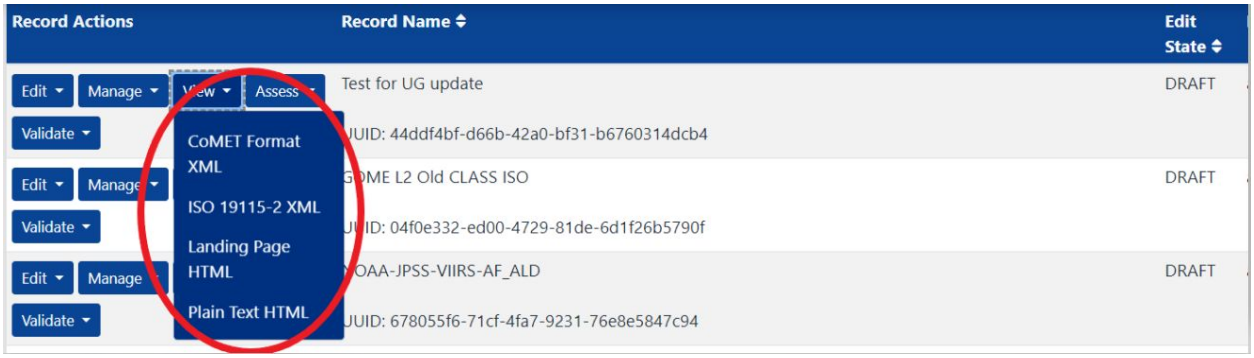


Figure 3.1 The action buttons. They appear on each line for a record in the Record List page.

The application will open a new window with the record format that you chose in the drop-down menu. In the figure below, the "Landing page HTML" was chosen:

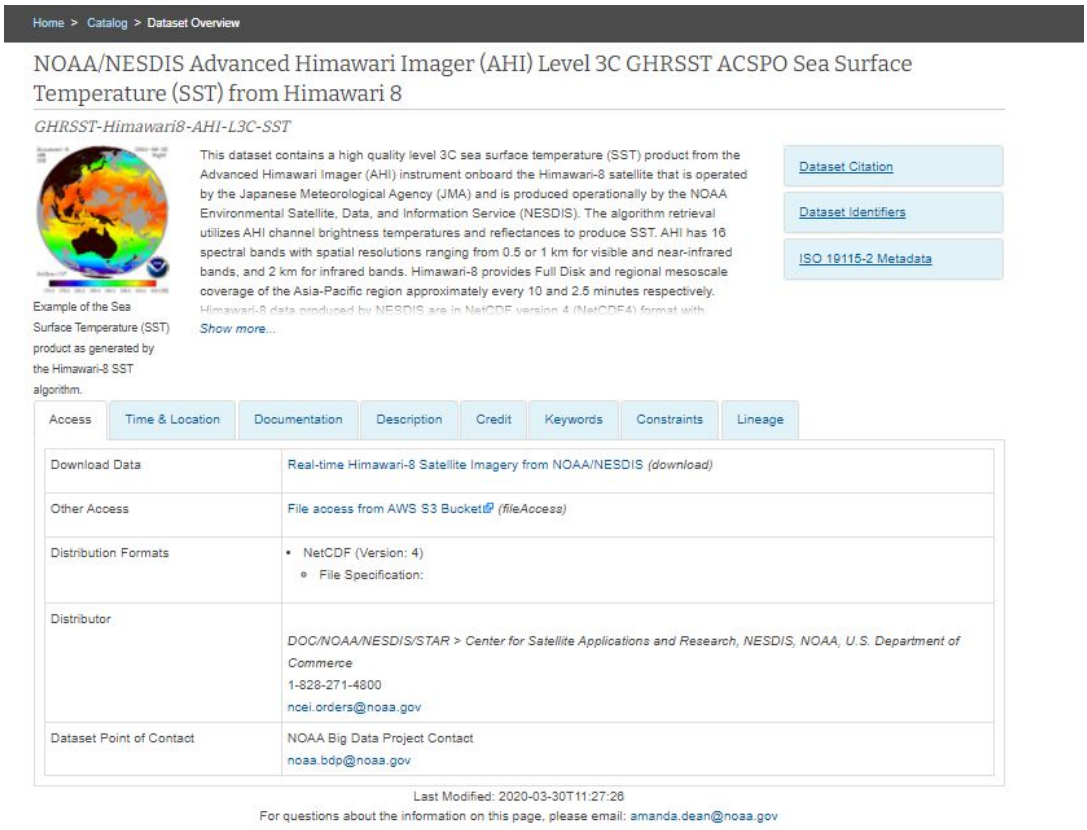


Figure 3.2 The Landing Page XML. The screen capture shows an example record. The title, abstract, version, etc. are shown.

Viewing Metadata as ISO XML

From the “View” drop-down menu on the selected document, choose the “ISO 19115-2 XML” option.

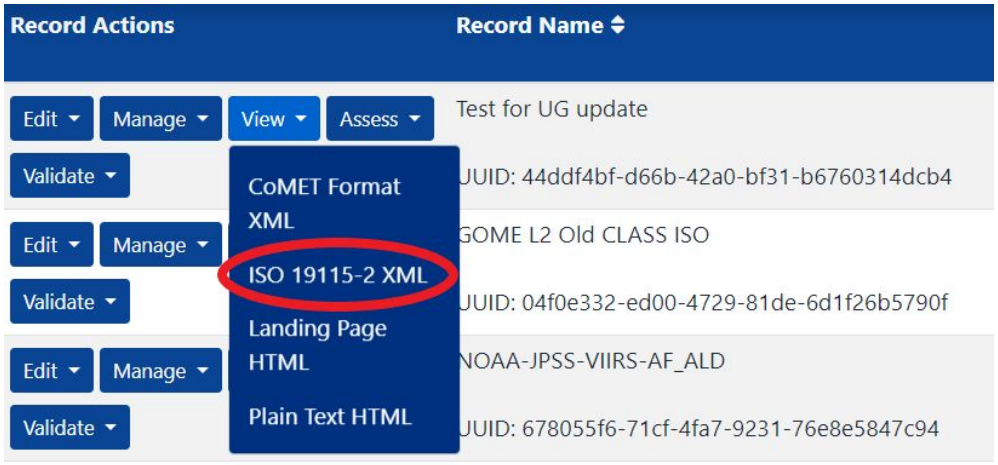


Figure 3.3 The View panel with a selection. The example above shows that a record will be exported in the ISO format.

Mouse over ISO 19115-2 XML and select. The web browser will show the record in the ISO XML format in a new window.

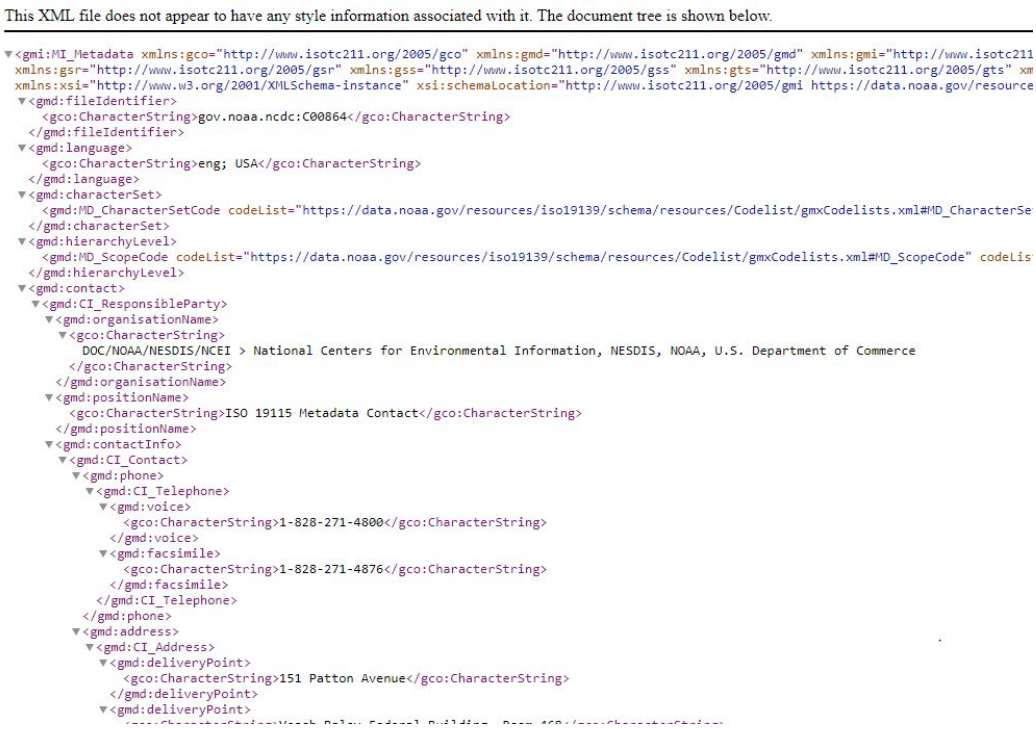


Figure 3.4 View record in the ISO XML format example.

Viewing Metadata in NCEI Landing Page View

To check how the landing page would look from a CoMET record as described in Section 3.1, first select the “Landing Page HTML” view. The view is used to transform a CoMET record to ISO. It would look like:

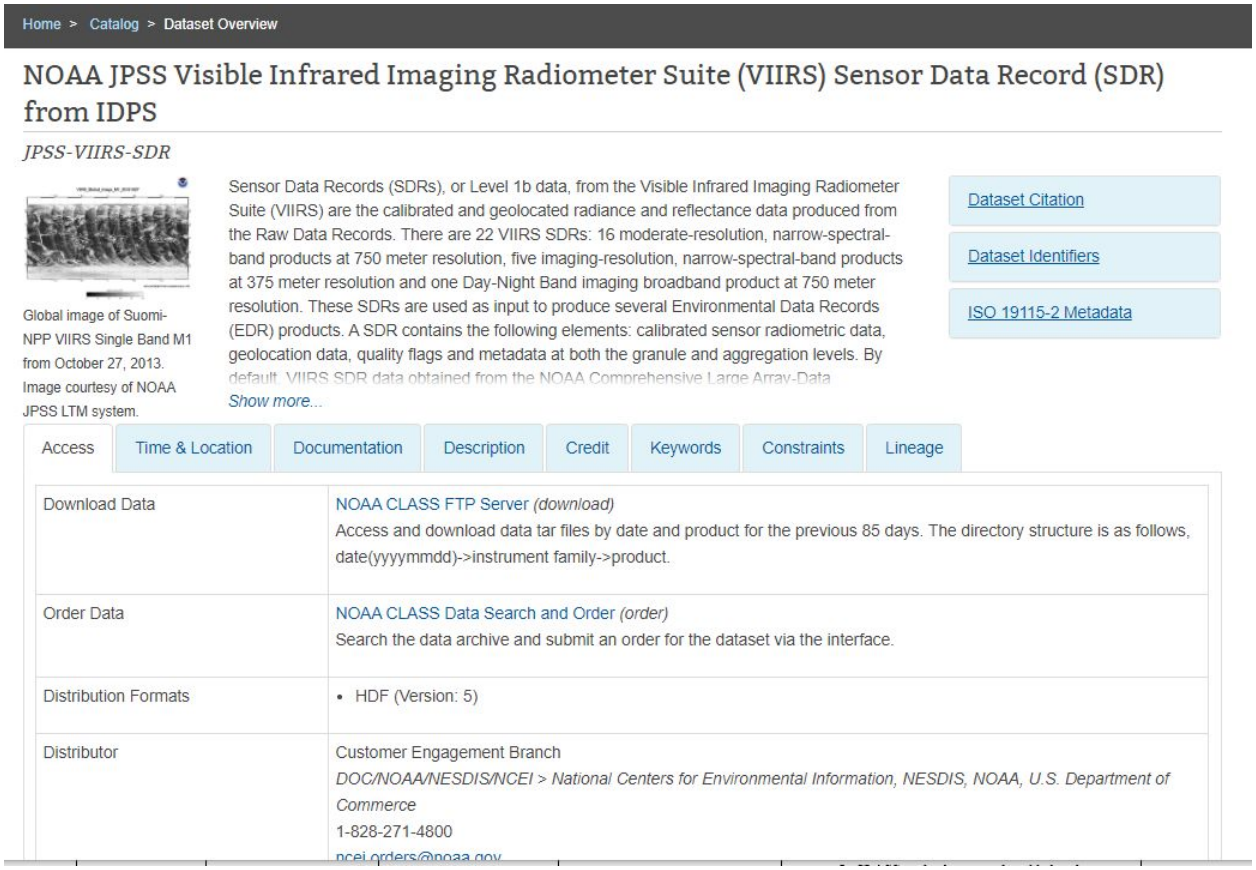


Figure 3.5 Landing Page HTML view.

Viewing Metadata in Plain Text HTML View

From the “View” drop-down menu on the selected record, choose the “Plain Text HTML” option.

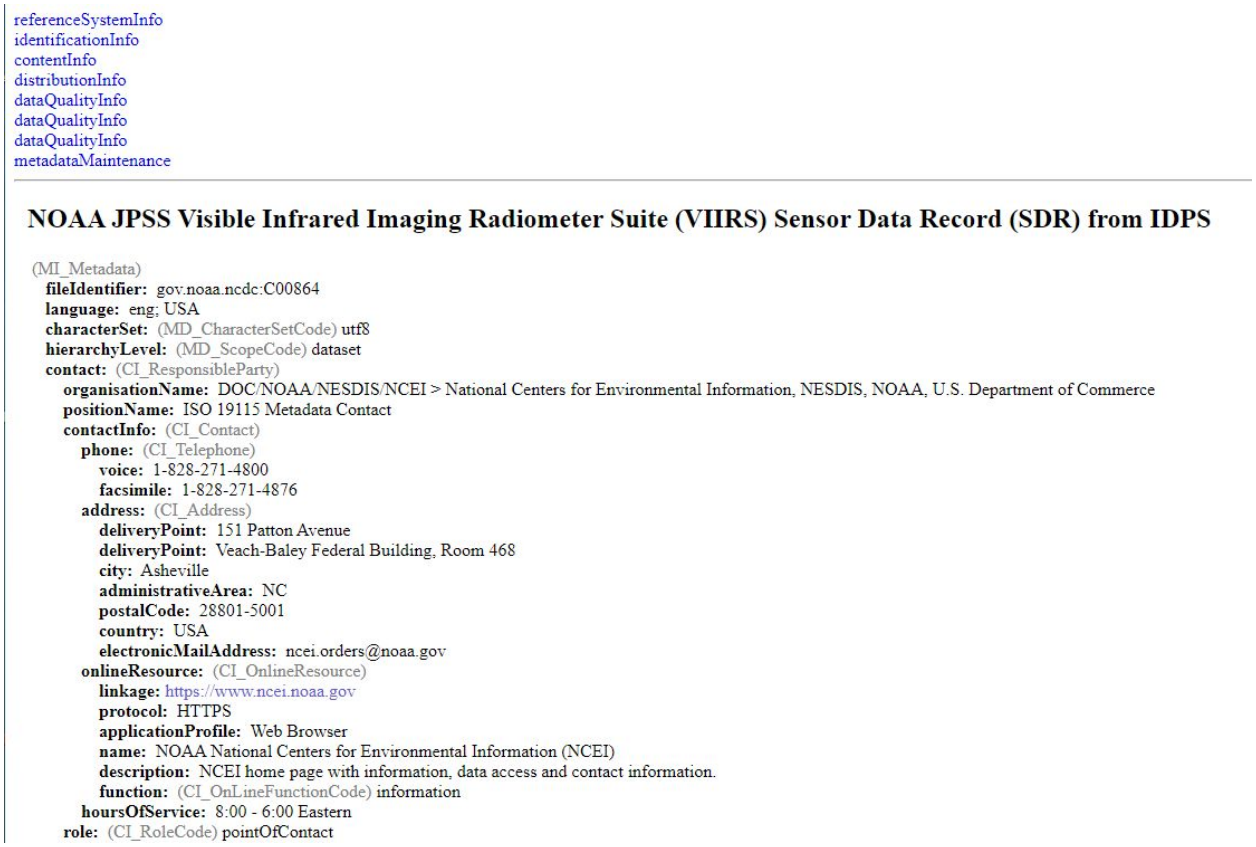


Figure 3.6 Plain Text HTML view of the record.

Note: Xlinks are not currently resolved in CoMET. Any metadata record containing Xlinks will not be fully resolved until published to OneStop or Inventory Manager.

Validating Metadata

ISO Validation

With CoMET, a metadata record can be validated using the XML Schema Definition (XSD) schema. From the "Record List" page, click the "Validate" button associated with the record of interest. Locate the "Validate ISO" button and click it.

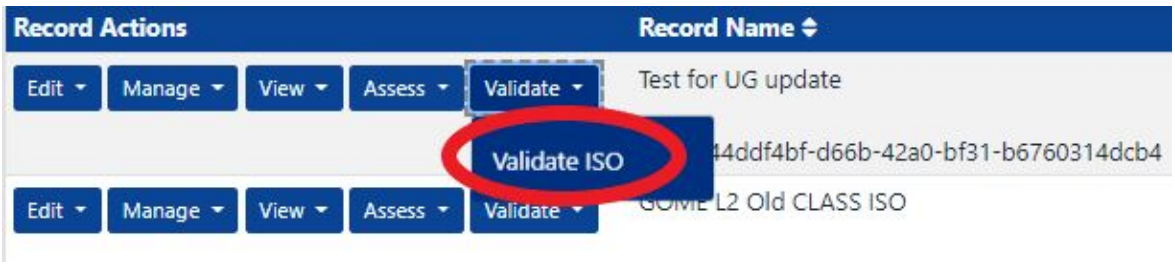


Figure 4.1 Validate button within drop-down menu.

When a validation run finishes, the "Validate" page is shown in a new window. If the record is compliant with the ISO XSD schema and thus no issue is found, the "Validation Result:" field displays "true".

Figure 4.2 The result of an ISO validation test on a record. The example record shows no validation errors and it is fully compliant with ISO.

However, if the record is not compliant with ISO, error messages are shown with line numbers:

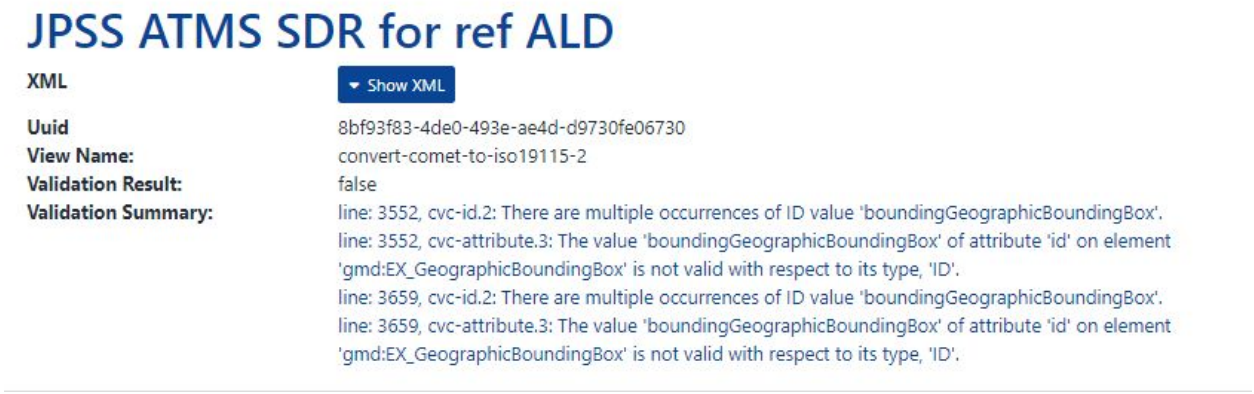


Figure 4.3 Error messages. Error messages are listed when an ISO validation run fails. Line numbers and error messages are listed in the Validation Summary.

An error message line is a link and it is clickable. Click a message line. The metadata record in the ISO format will be shown under the "XML" field:

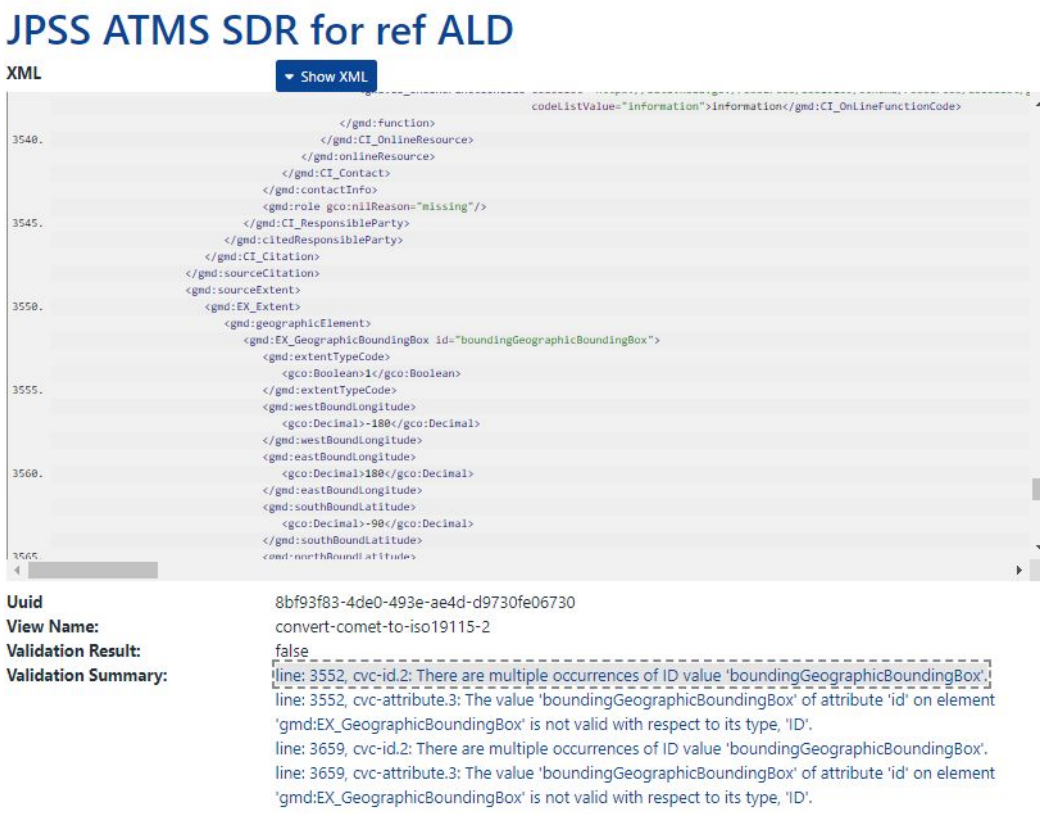


Figure 4.4 Line 3552 is highlighted with a dashed rectangle. When an error message is listed next to the Validation Summary and below, the corresponding line is highlighted on the XML view.

The screenshot above is taken after clicking the first error message on line 3552. Notice that line 3552 on the panel showing the ISO record is highlighted with a dashed border. Try to click another error message. The panel will scroll automatically to show the corresponding line if the line is outside the panel view. When you are finished, you may close the window.

ISO Rubric V2 Assessment

Rubric V2 assessment is a tool to see if a record is adherent to NOAA metadata best practices. ISO Rubric V2 analysis is launched from the record "Assess" page drop-down menu of the Record List page.

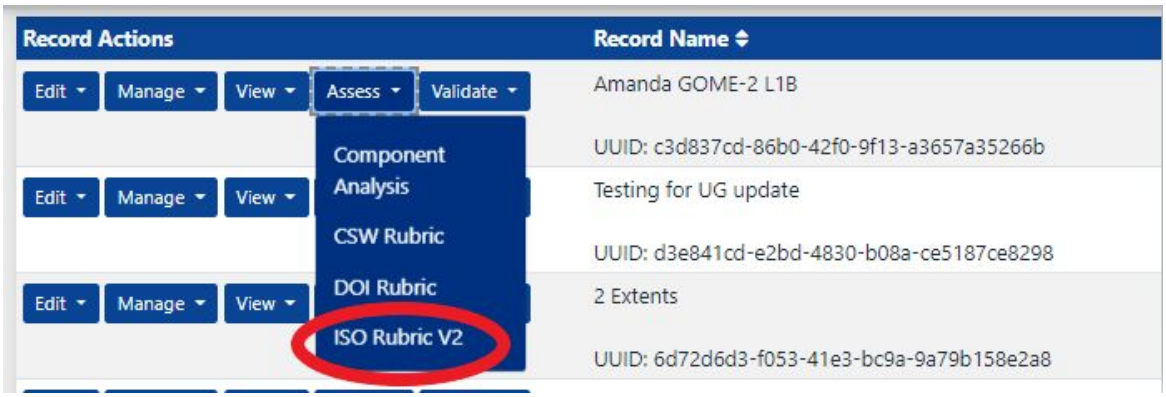
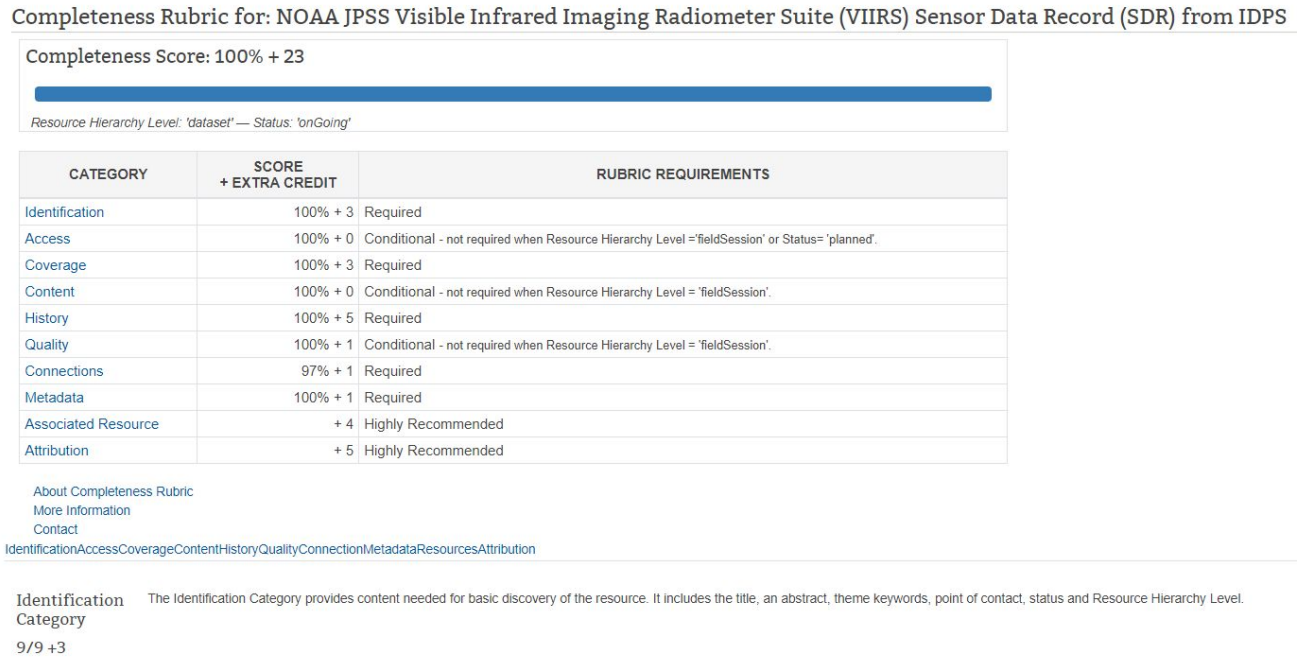


Figure 4.5 "Assess" button with drop-down menu choices.

A new window opens with the Rubric assessment. Once the analysis finishes, the web browser shows the overall completeness score as well as the scores for each category.



Completeness Rubric for: NOAA JPSS Visible Infrared Imaging Radiometer Suite (VIIRS) Sensor Data Record (SDR) from IDPS

Completeness Score: 100% + 23

Resource Hierarchy Level: 'dataset' — Status: 'onGoing'

CATEGORY	SCORE + EXTRA CREDIT	RUBRIC REQUIREMENTS
Identification	100% + 3	Required
Access	100% + 0	Conditional - not required when Resource Hierarchy Level ='fieldSession' or Status= 'planned'.
Coverage	100% + 3	Required
Content	100% + 0	Conditional - not required when Resource Hierarchy Level = 'fieldSession'.
History	100% + 5	Required
Quality	100% + 1	Conditional - not required when Resource Hierarchy Level = 'fieldSession'.
Connections	97% + 1	Required
Metadata	100% + 1	Required
Associated Resource	+ 4	Highly Recommended
Attribution	+ 5	Highly Recommended

About Completeness Rubric
More Information
Contact

IdentificationAccessCoverageContentHistoryQualityConnectionMetadataResourcesAttribution

Identification Category

9/9 +3

The Identification Category provides content needed for basic discovery of the resource. It includes the title, an abstract, theme keywords, point of contact, status and Resource Hierarchy Level.

Figure 4.6 ISO Rubric V2 completeness score page.

Updating Metadata

A metadata record is opened for updating by clicking an “Edit” button:

Figure 5.1 Edit button with drop-down menu.

To edit, find the record to be updated by using the input fields in the Filters area or by using the page navigation bar appearing at the end of the record list. Click the “Edit” button associated with the record.

From the “Edit” menu, select “ISO Editor” to be taken to the edit form:

Figure 5.2 Select a form view.

As mentioned in an earlier Section, input fields are organized by tabs. When CoMET opens a record, the “Identification” tab is shown by default.

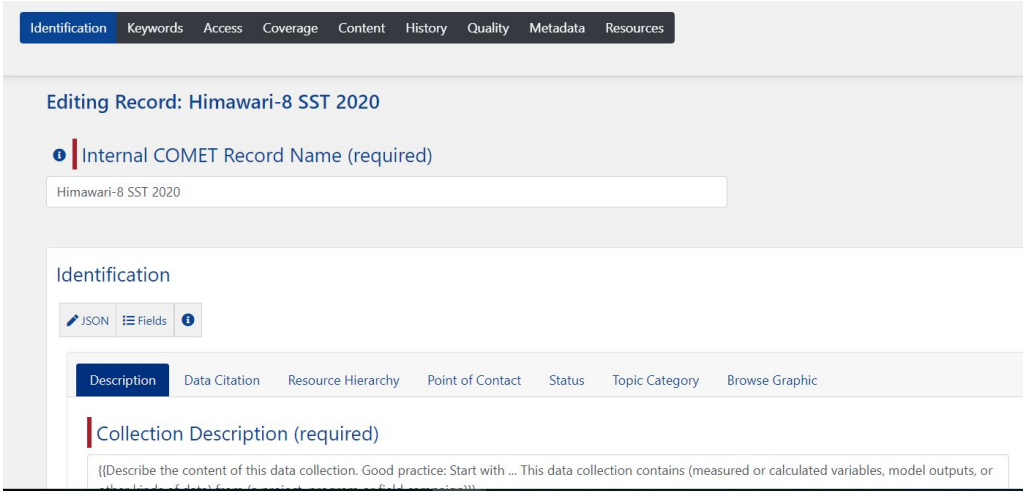


Figure 5.3 CoMET Editor record view: Identification tab.

Make necessary changes across all tabs. Once editing is completed, click the “Save” or “Commit” button appearing in the top center or near the bottom right:

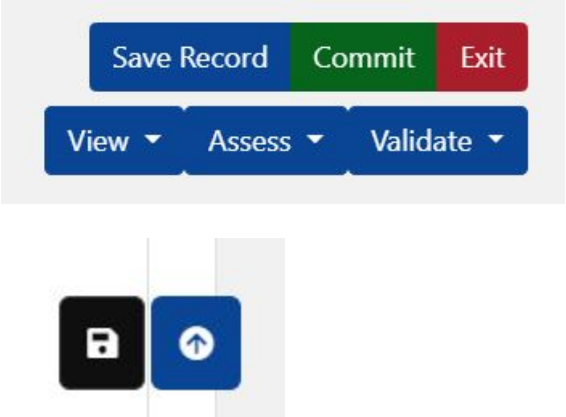


Figure 5.4 The Save and Commit buttons. See text for the difference between the two buttons.

Both buttons would save the record. The difference is that, when a record is committed, a dialogue appears to collect “Reason for Change.” The Reason for Change is saved along with the record and a flag indicating this particular version is committed.

Keyword Autocompletion

Keywords are listed under the “Keywords” tab. To help users to easily enter keywords, CoMET provides the keyword auto completion feature. The GCMD keywords are provided by default for the first Keywords group. Check the left side of the page to find the appropriate group, and click on the group where your keywords should be found. Any keywords thesauri that are not needed should be deleted by opening that thesauri and clicking the trash icon for Keywords Group at the bottom of the page.

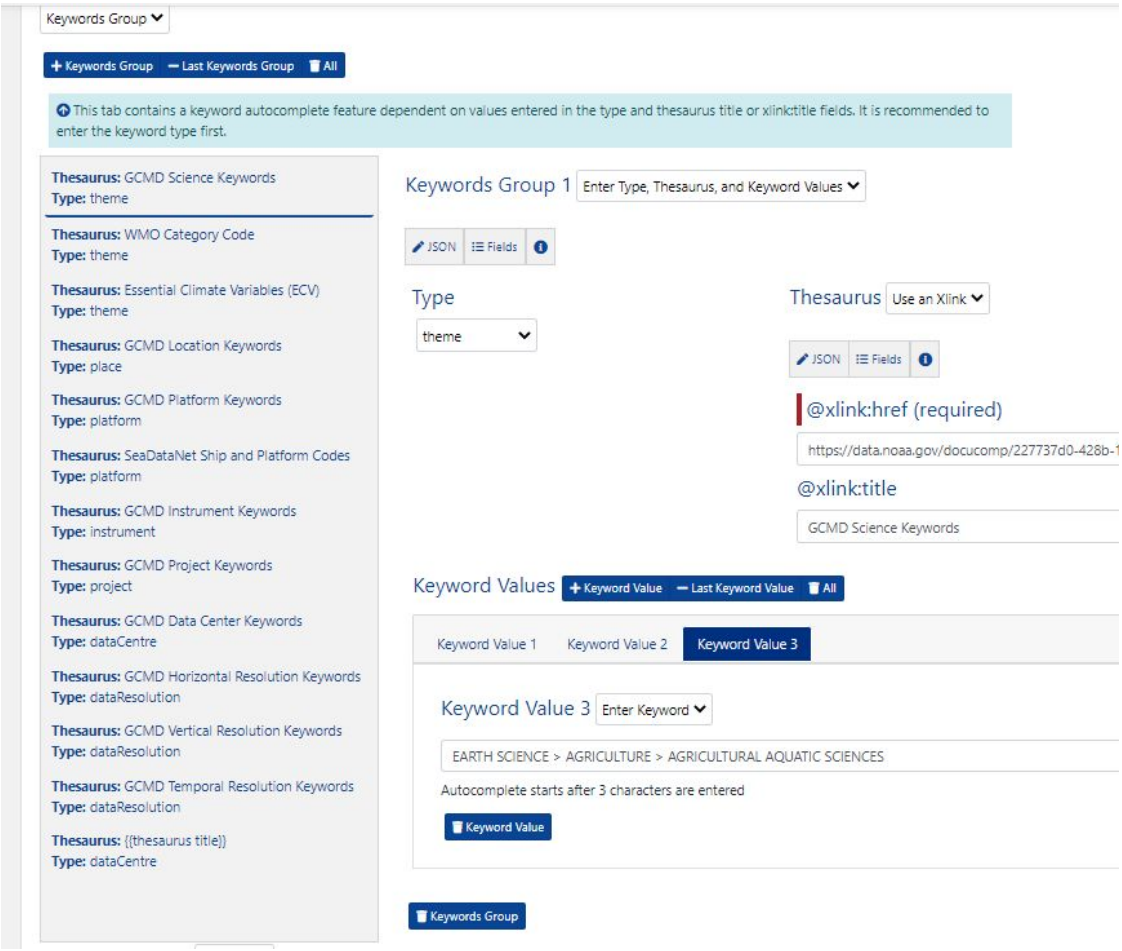


Figure 5.5 An input field for entering a keyword. The left side of the screen is a list of thesauri from which to choose keywords.

Keywords can be autocompleted. For example, we want to enter the “NITRATE PARTICLES” keyword. Type “NIT” and pause for a few seconds. CoMET searches keywords within the given vocabulary and displays the first 20 keywords containing “NIT.” Continue typing so that the input field contains “NITRATE.” There are only four keywords containing the word:

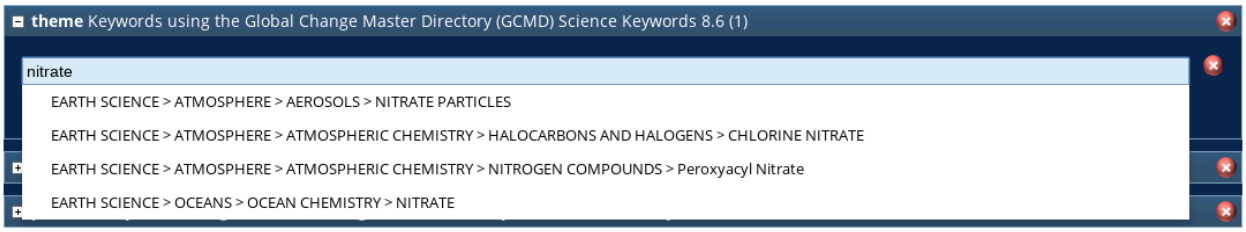


Figure 5.6 Autocompletion feature. When the user enters one or more search terms, the autocomplete feature shows keywords containing the search terms.

At this point, you can place your mouse cursor over the “NITRATE PARTICLES” option and click it. Or add another word to the input field to narrow the search. The input field shows the selected keyword:

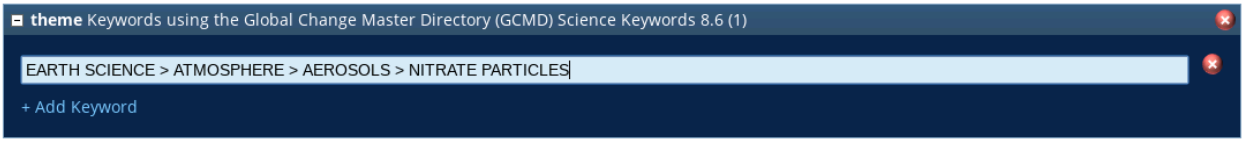


Figure 5.7 Keyword entry with autocompletion. When a keyword is selected from a drop-down menu returned by the autocomplete feature, the keyword is entered to the input field and the drop-down menu disappears.

Using Docucomp Components

Component selection works much like the keyword autocompletion described in Subsection 5.1. In CoMET, there are many areas where Xlinks can be used. The following screenshot shows the Xlink field in the Identification tab for the responsible party:

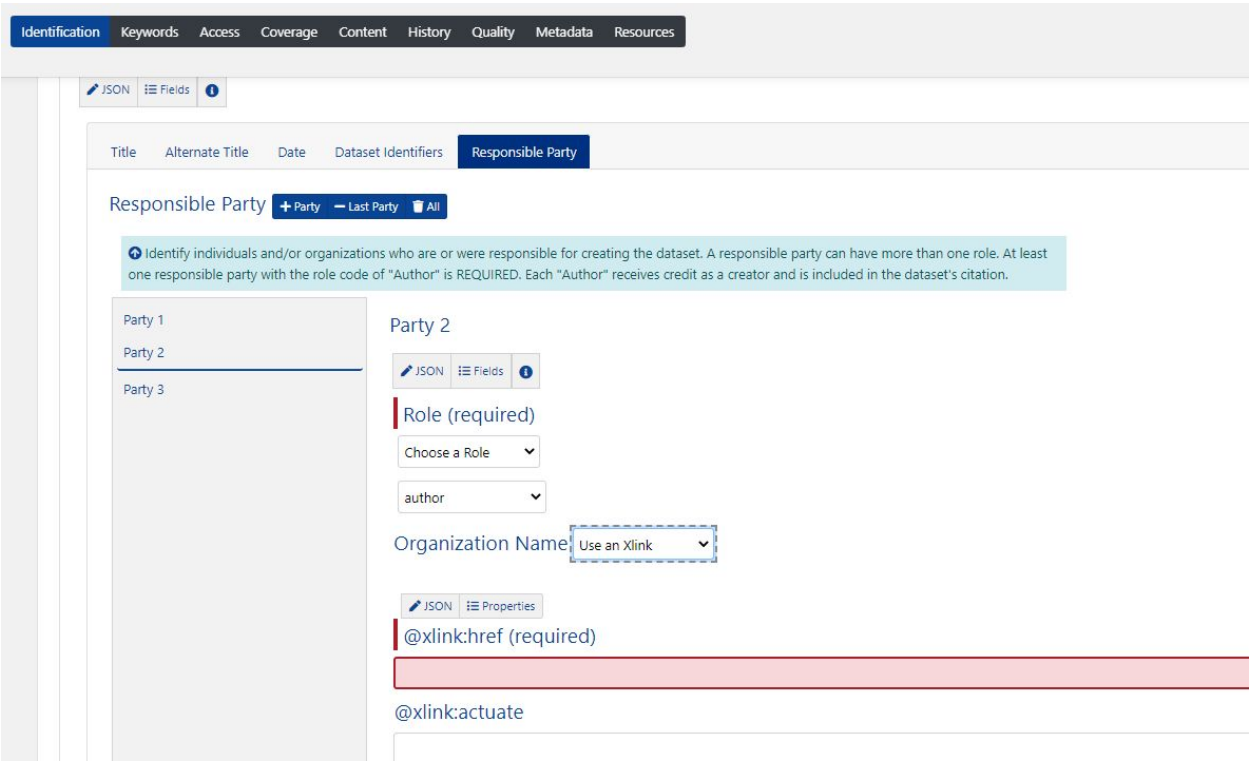


Figure 5.8 The Xlink field for Organization Name (in red).

The role of Author is chosen in this instance. When you select “Use an Xlink” from the drop-down menu and begin typing in the organization name, information that is linked from Docucomp will begin to appear after typing in the first three letters of the organization name. Below, NOAA/NESDIS was typed in:

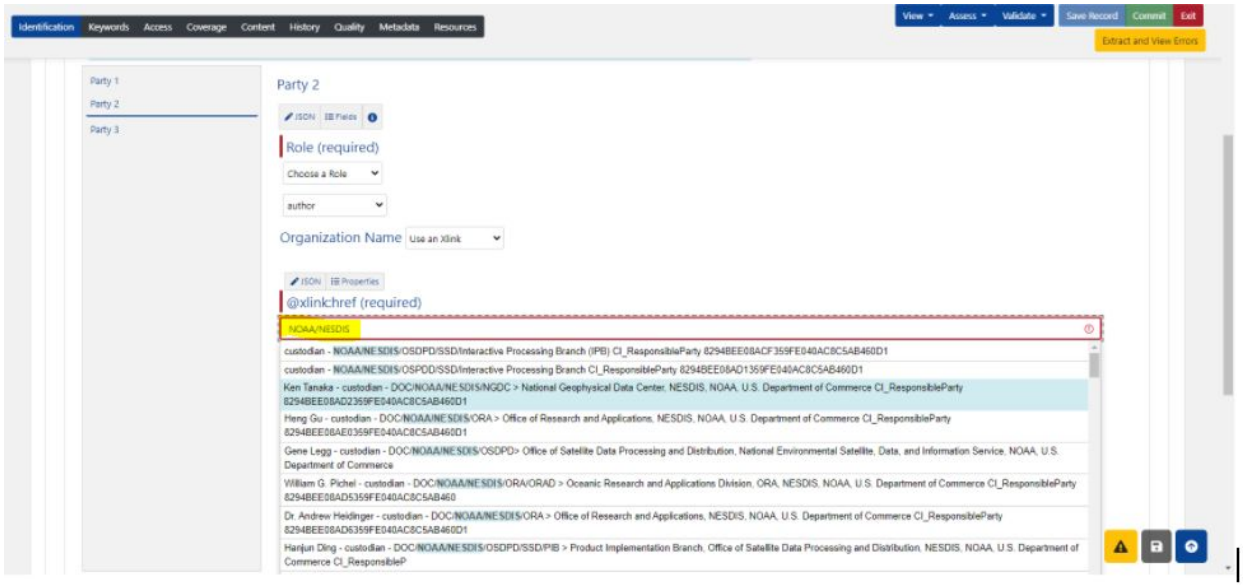


Figure 5.9 An input field for entering a reference to a component. Autocompletion is enabled.

A search is done by using the brief column of Docucomp. Enter any combination of words appearing in the brief of a component you want to use. An example search with “bob” responded with a drop-down:

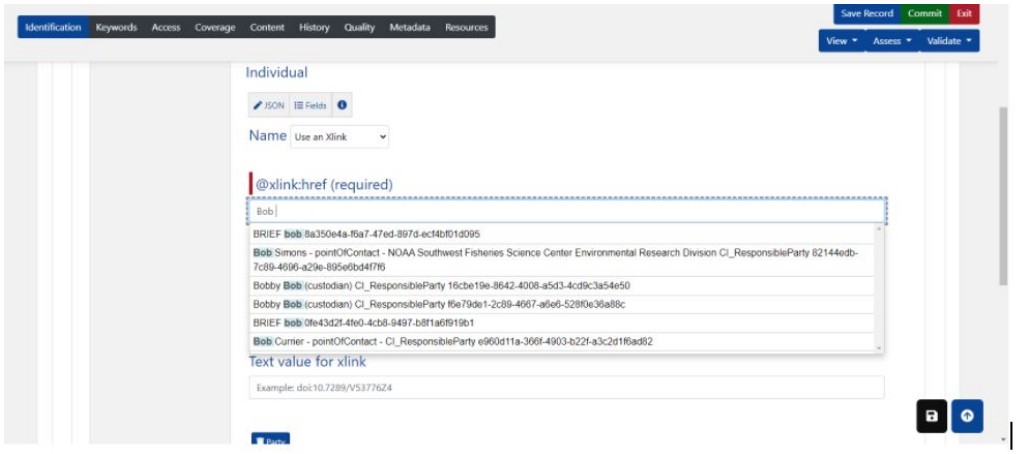


Figure 5.10 drop-down menu with autocomplete matching feature. When one or more search terms are entered, the autocomplete feature makes a query to an external database and shows matches on a drop-down menu.

When an entity from the drop-down is selected, the component lookup UI displays its title and URL:

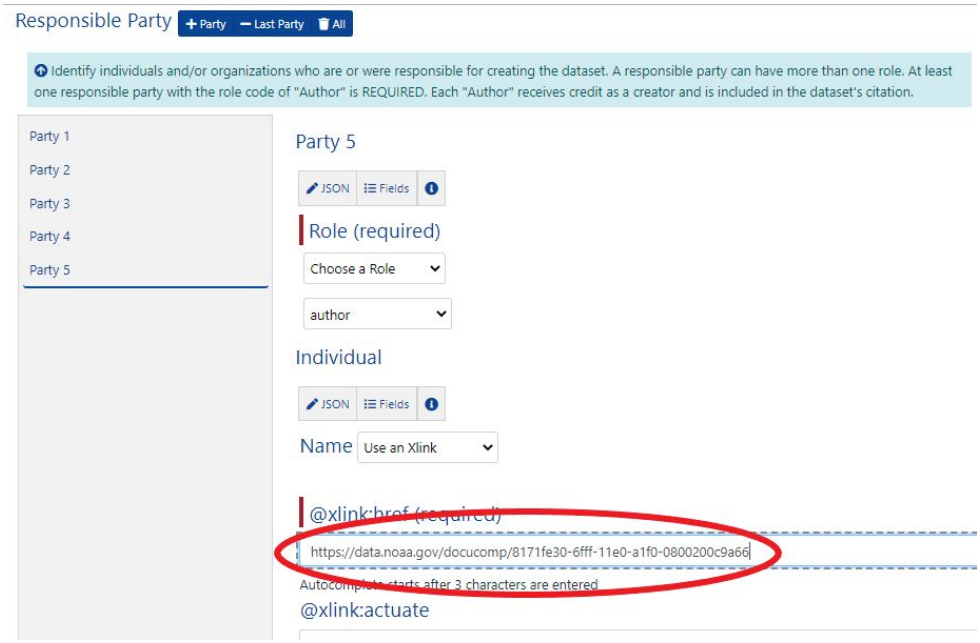


Figure 5.11 External reference URL automatically entered. When a component is selected from a drop-down menu shown by the autocomplete feature, reference to the selected component is automatically entered.

When and How to specify a "Nil Reason"

ISO metadata format allows to specify a reason when the value of a field is empty. The specification is done by using the "gco:nilReason" attribute. CoMET provides a mechanism to enter a nil reason. For example, let's say the contact information of a responsible party is not provided because it is withheld (by user request, for example). An empty box for entering a Responsible Party looks like:

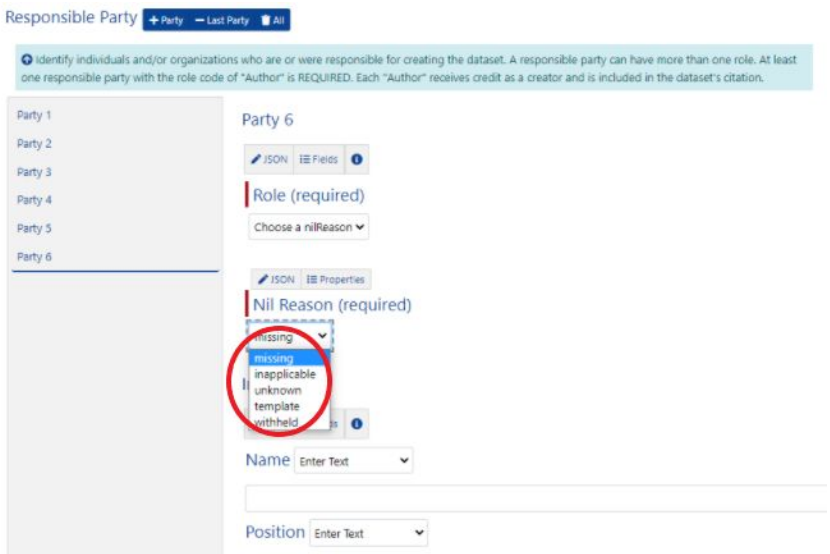


Figure 5.12 A blank section for editing a responsible party. Each input field shown here has a clickable icon to specify a nil reason.

Click the link. It adds a box within the Responsible Party:

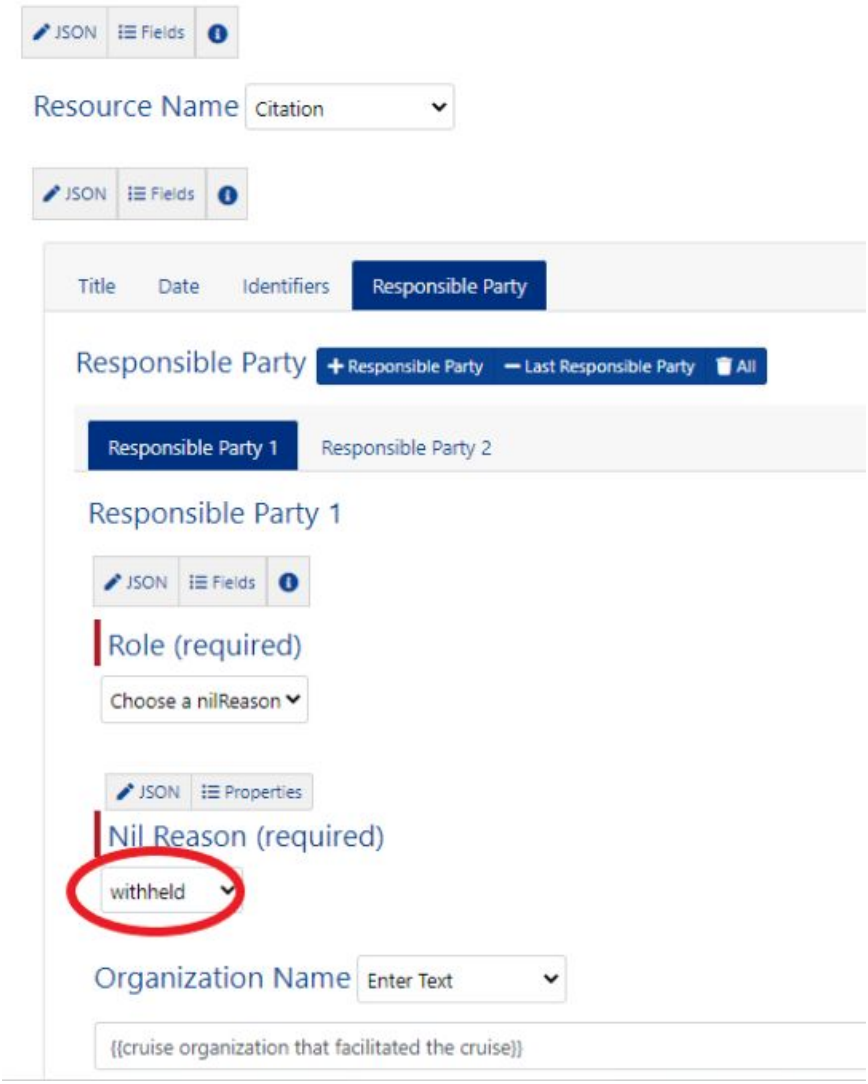


Figure 5.13 The nil reason selector. The drop-down contains a list of predefined values for a nil reason.

The selector lists all options supported by ISO. Use the selector to choose the “withheld” option for this example.

Undo a Change Using Revision History

Whenever a record is updated from the “Edit” page by using the “Save” or “Commit” button, the prior version is saved using the revision history feature. In fact, CoMET keeps all

updates. It is possible to recall an earlier version and to make it the current version. For example, let's say a record has 10 versions. The version numbers would be 1 through 10 with 10 being the latest. If version 9 is recalled, a copy of version 9 becomes version 11. Next time when the record is edited, version 11 will be used.

1. In order to view the revision history of a record, go to the "Manage" page of a record. This is done from the "Form Content: Record List" page by clicking the "Manage" drop-down menu button for the record of interest.

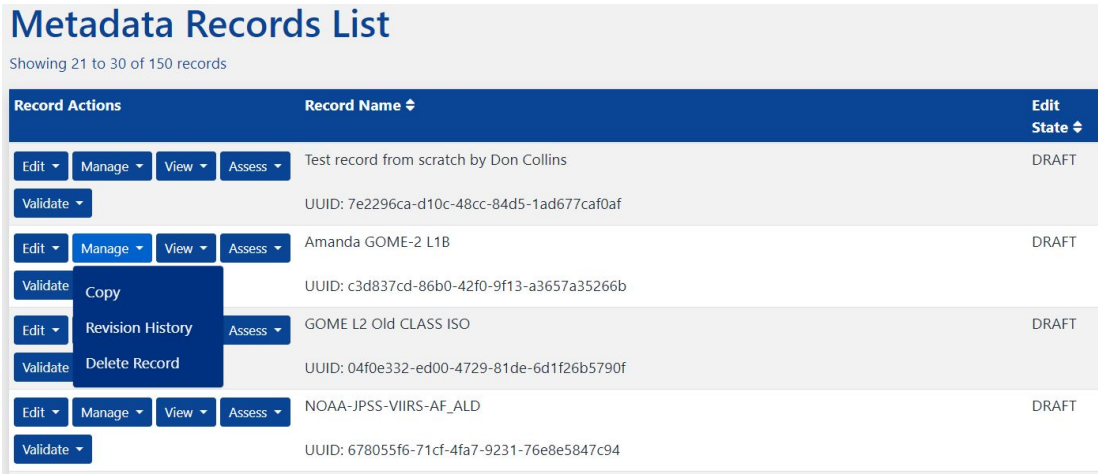


Figure 6.1 The Manage button.

2. Then click The Revision History button.

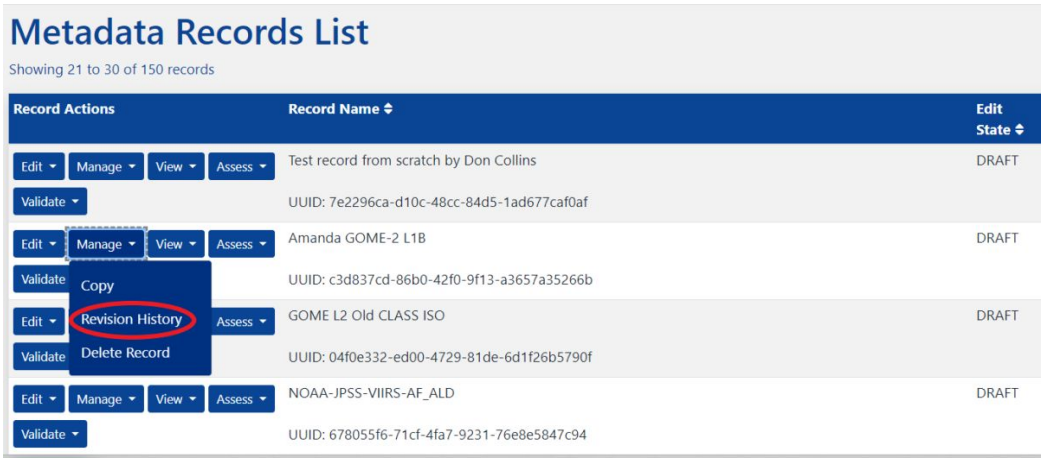


Figure 6.2 The Revision History button.

3. You can select a version or versions by checking a box next to the version number.

Figure 6.3 Checkboxes to select and compare different versions.

4. You can revert to a previous version or compare any 2 versions.

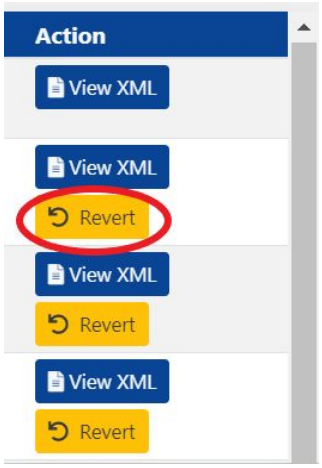


Figure 6.4 The Revert Button.

Publishing Metadata

Once the record is completed, it is ready to be published.

1. From the Record List view, click on “Record Actions” so that a drop-down menu appears. Select “Request to Publish” shown below:

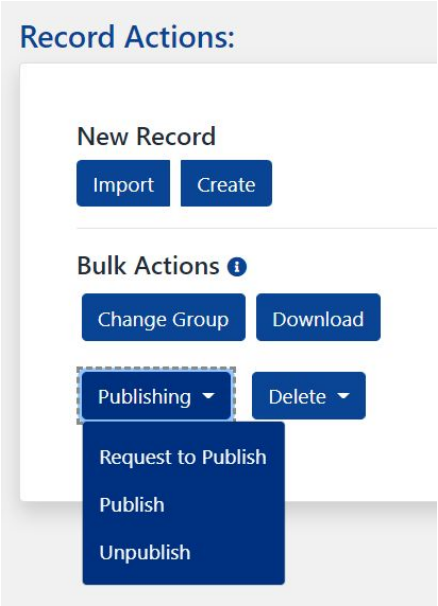


Figure 7.1 The Request to Publish button.

2. Select the record or records you wish to publish by placing a checkmark next to it, and then click the green “Request to Publish” button on the bottom right of the form list.

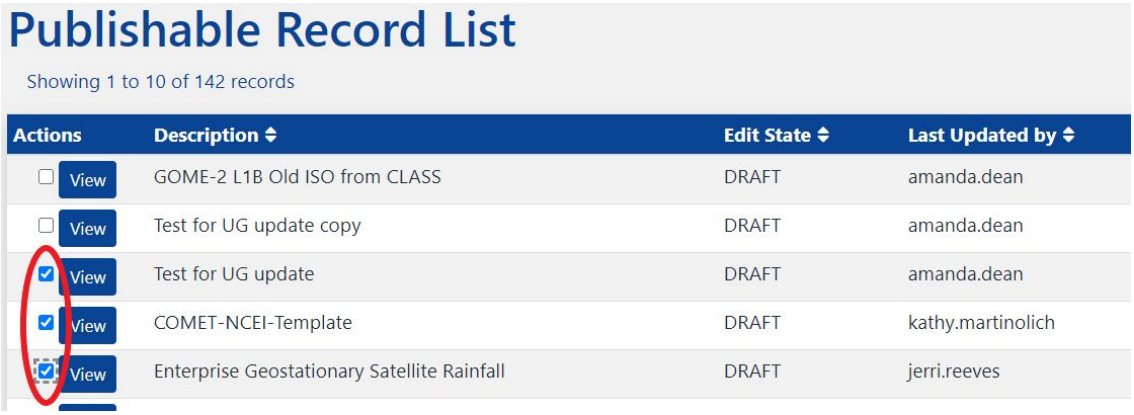


Figure 7.2 The checkbutton next to the View record(s).

Figure 7.3 The Request to Publish button is found on the bottom right of the page.

3. A box will pop up requesting information. Provide an optional comment (highly recommended) about the publishing request for the reviewer, and click OK.

Figure 7.4 The Provide optional comment text field.

You will be returned to the Record List view where your records that were requested to be published will change to an edit state of “In Review”:

Figure 7.5 The record has been submitted and is in review.

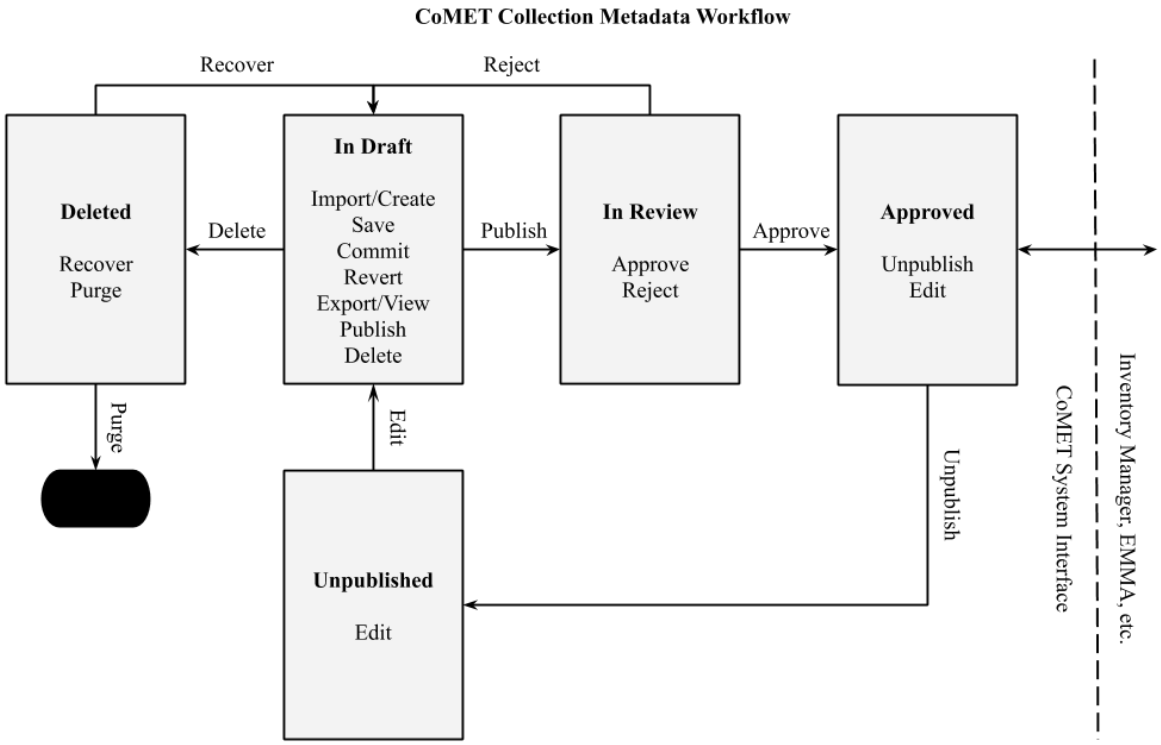


Figure 7.6 CoMET Collection Metadata Workflow showing record states and transitions.

Unpublishing Metadata

There may come a time when you need to delete metadata for various reasons. These steps will walk you through that process.

1. From the Record List view, click the “Record Actions” drop-down menu towards the right of the screen.
    a. **Note:** You cannot unpublish a record until your original publish request was approved.
    b. **Note:** If you only see “Request to Publish” and “Undelete Records” in the drop-down menu, your current user access does not allow for certain permissions to change records. Please contact ncei.collection-manager.support@noaa.gov for assistance.

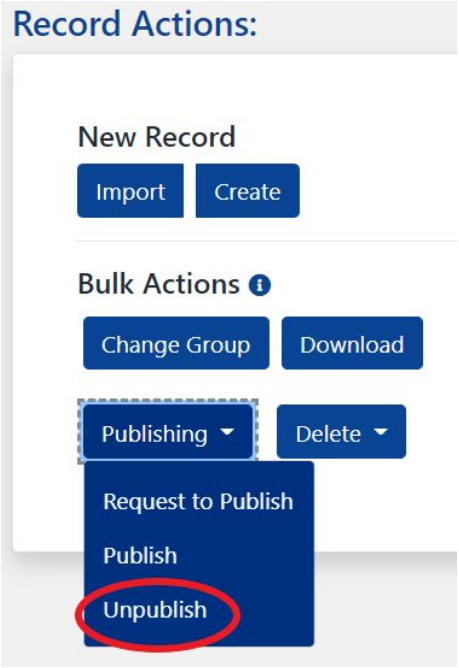


Figure 7.7 The Unpublish Records button.

2. On the unpublish list view page, place a checkmark next to the record(s) you wish to unpublish and click the green “Unpublish” button on the bottom right of the page.

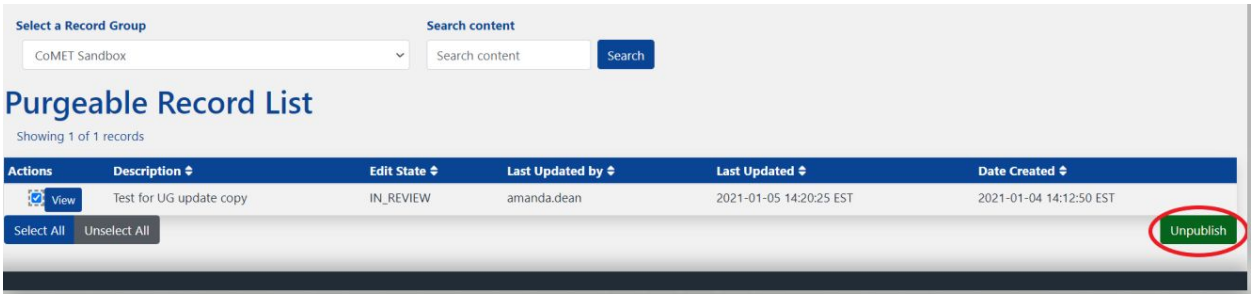


Figure 7.8 Checkmarks to unpublish records and Unpublish button.

3. Type a reason for unpublishing the record in the dialog box that appears (optional) and click OK.

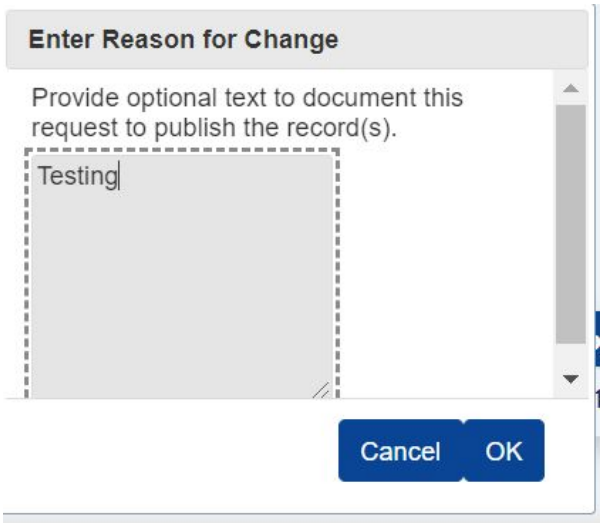


Figure 7.9 Reason for Change optional comment text field.

4. You will be returned to the Record List page, and a green banner will appear when the record has been reverted to the draft status.

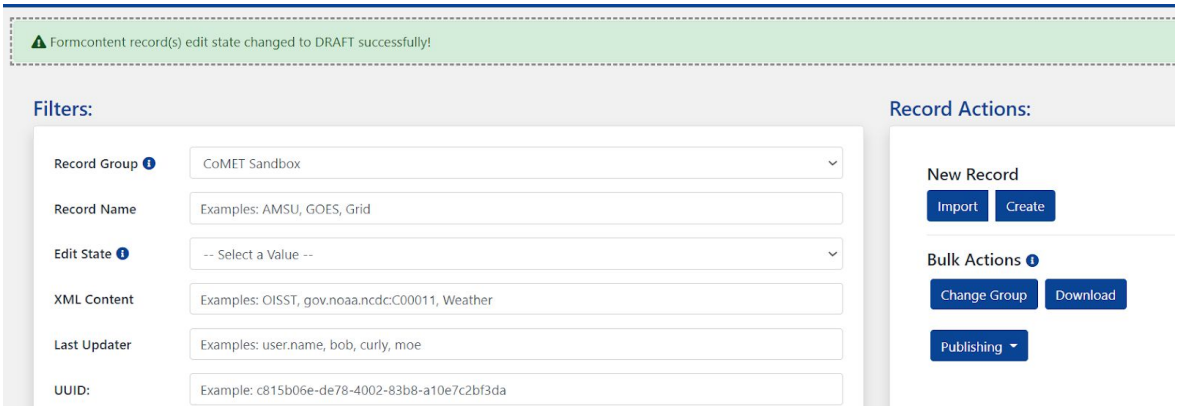


Figure 7.10 Green banner with status change back to Draft.

Deleting Metadata

A metadata record may be deleted from CoMET. A “Delete” button is available from several pages. The obvious choice is the Record List page. From the Record List view click the “Manage” button for the record you wish to delete.

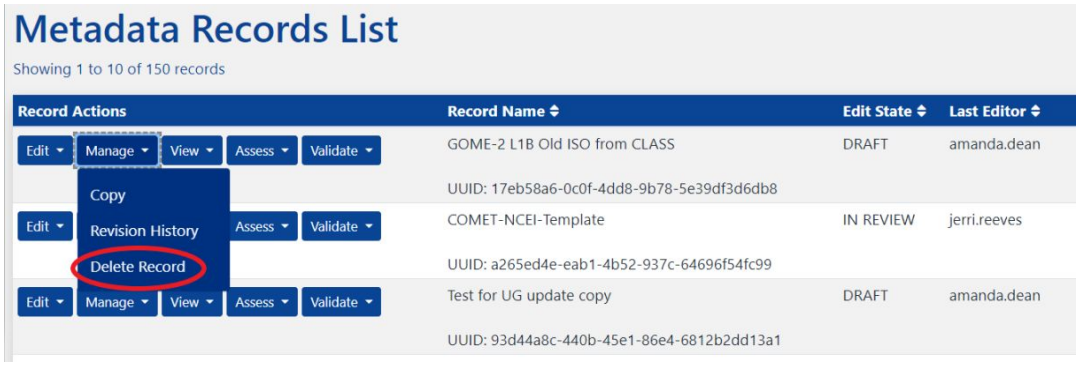


Figure 8.1 The Manage button with drop-down menu.

From the Manage option, click the “Delete Record” button.

When the “Delete Record” button is clicked, the application asks for a confirmation with “Cancel” or “OK”:

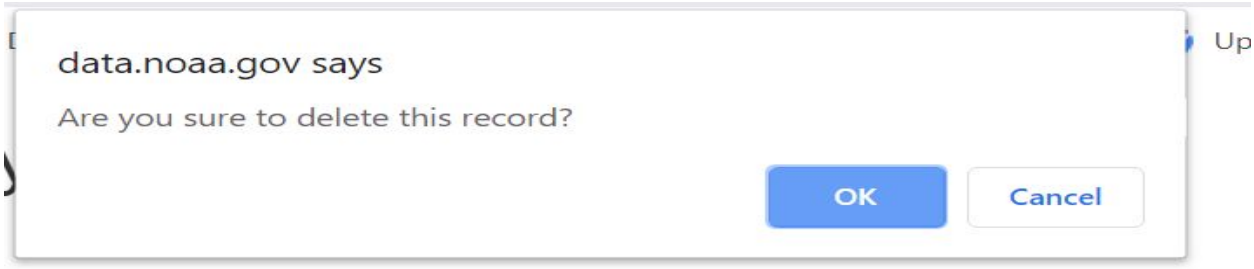


Figure 8.2 The Delete Confirmation dialog.

The confirmation dialogue is to prevent a record from being accidentally deleted. When the “OK” button is clicked, the record is deleted and the web browser changes to the “Record List” page.

Using the Data Stewardship Maturity Questionnaire (DSMQ)

Background

The application of the Data Stewardship Maturity Matrix (DSMM) is an essential part of making NOAA data and metadata *OneStop* ready. It allows for greater transparency and discoverability of data sets. The DSMM assessment can be carried out either by using the DSMM template or by answering the Data Stewardship Maturity Questionnaire (DSMQ). However, DSMQ offers a more consistent and scalable approach to the DSMM assessment and ratings integration process. To help utilize DSMQ, this guide attempts to shed some light on commonly used terms in the DSMQ as well as answer some frequently asked questions by early beta testers. Suggestions for improving this document are encouraged and can be sent to the OneStop Metadata Content Editor Team (paul.lemieux@noaa.gov and amanda.dean@noaa.gov)

Workflows

1. Request CoMET account if you do not already have one by following these steps:

   Send email to ncei.collection-manager.support@noaa.gov with the following details:

Subject: 'New User for [CoMET, Docucomp, and/or Metaserver] for *your name*'

Your contact information

Your associated program or agency

Intended usage

   Once you are set up, your login name will be your email (without the @noaa.gov) and the password will be the same as your email password.

   Note: Login is currently limited to users with a NOAA email, but external access is planned for a future release cycle. Send in a request if you'd like to be informed when this capability is available.

- After clicking the Login button, you will be redirected to a page that allows you to use your username and password or the NOAA ICAM SSO. Either enter your username and password; or click the NOAA ICAM SSO button.
- After authentication, a warning banner is displayed.
- Click the green “Accept” button to proceed.

2. When you login, please select “Records: Access Metadata Records”

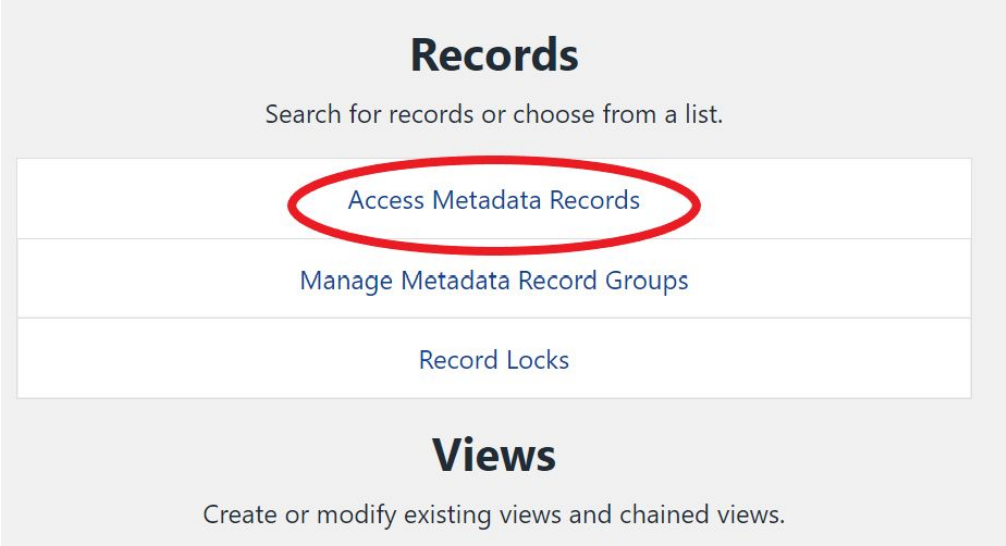


Figure 1.1 Main Menu.

3. From the “Select a Record Group”, choose the desired group from the drop-down menu.

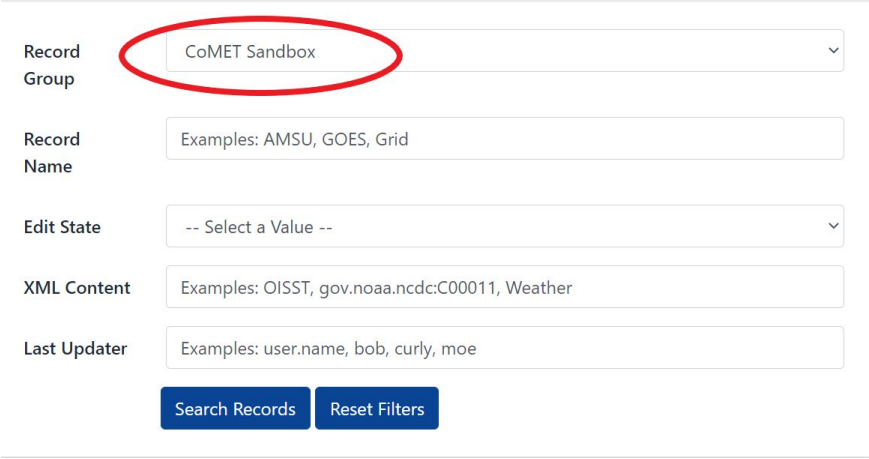


Figure 1.2 CoMET Sandbox selection from drop-down menu.

4. If you want to create a new DSMQ record, click "Create Record".

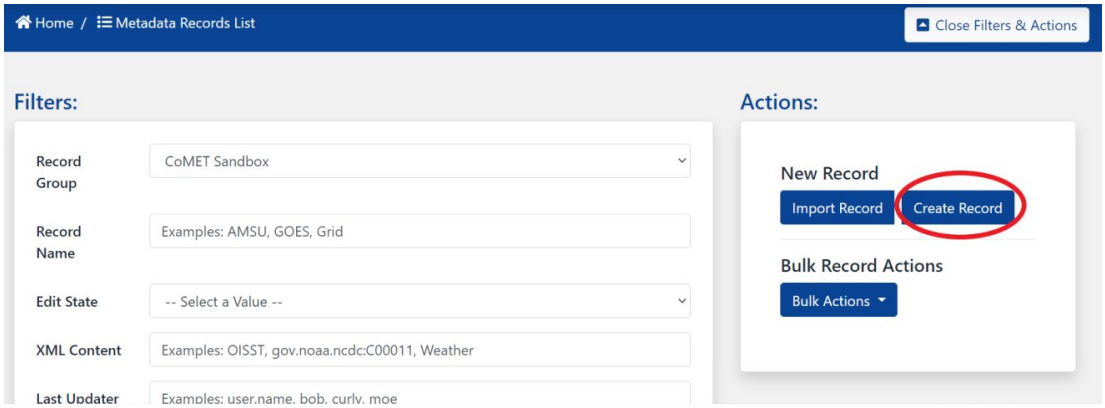


Figure 1.3 The Create Record button.

5. From "Select a form" menu, choose "Data Stewardship Maturity Questionnaire (DSMQ) and click "Create Record"

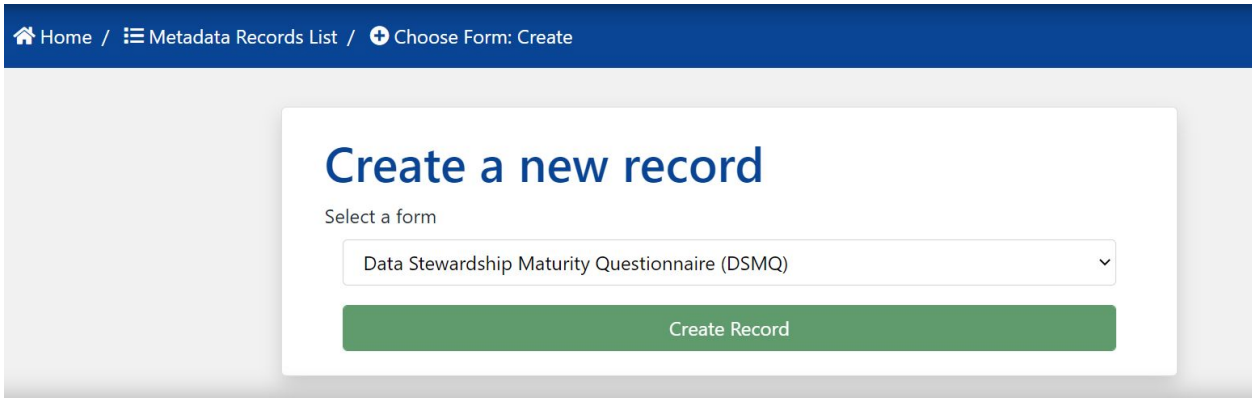


Figure 1.4 Select a form menu.

6. Once the form loads, your default view will show the "General" tab.

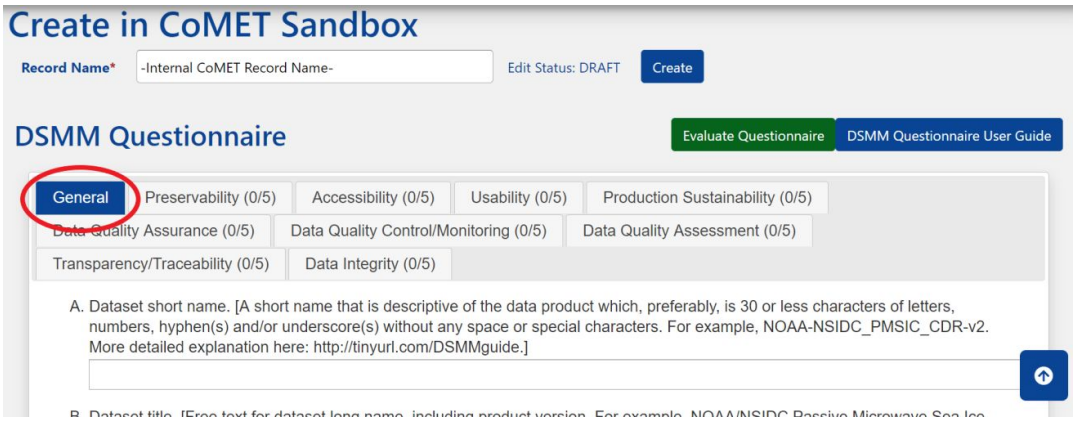


Figure 1.5 General Tab of the Questionnaire.

While you are free to complete the tabs in any order you choose, we recommend starting with “General” and working your way to the right through all the tabs in their displayed order.

7. Follow steps 9-17 to complete, save and commit the form.
8. If you have already created a DSMQ, and would like to pick up where you left off previously, then locate the form you want to edit and click “Edit.”

Figure 1.6 The Edit button.

9. From “Edit” menu, choose “Data Stewardship Maturity Questionnaire (DSMQ) and a new window will open.

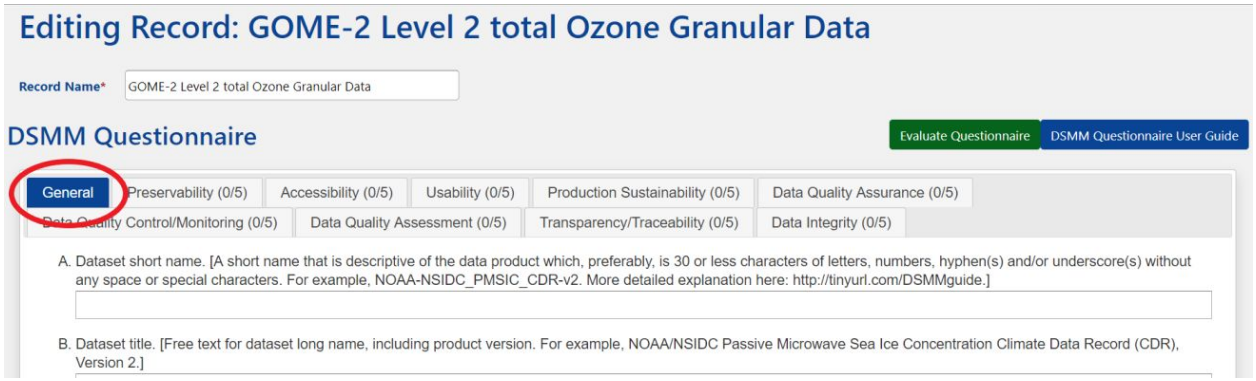


Figure 1.7 General Tab View.

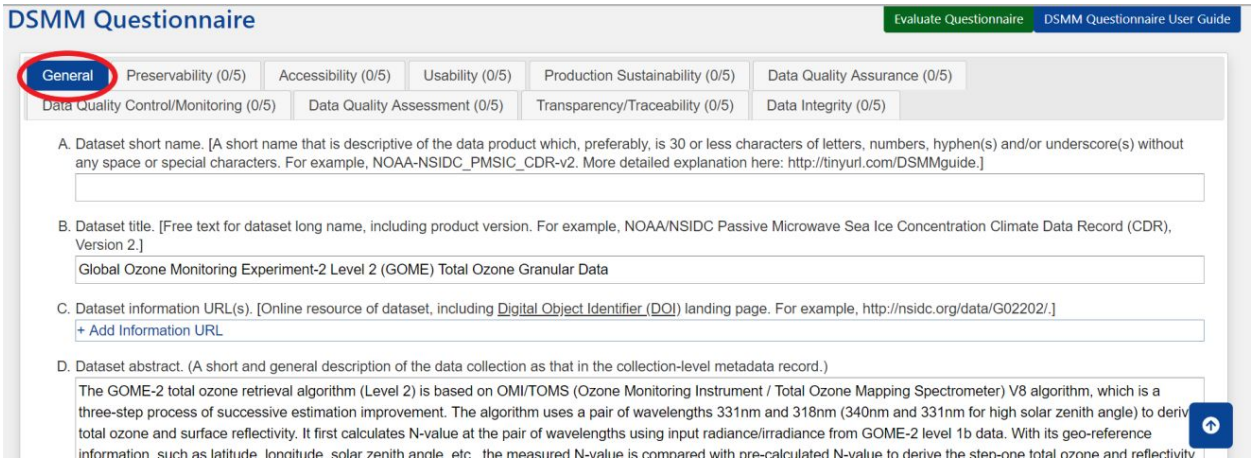


Figure 1.8 Extended General Tab View.

10. Complete the tabs. Please insert both Dataset short name and title as shown below:

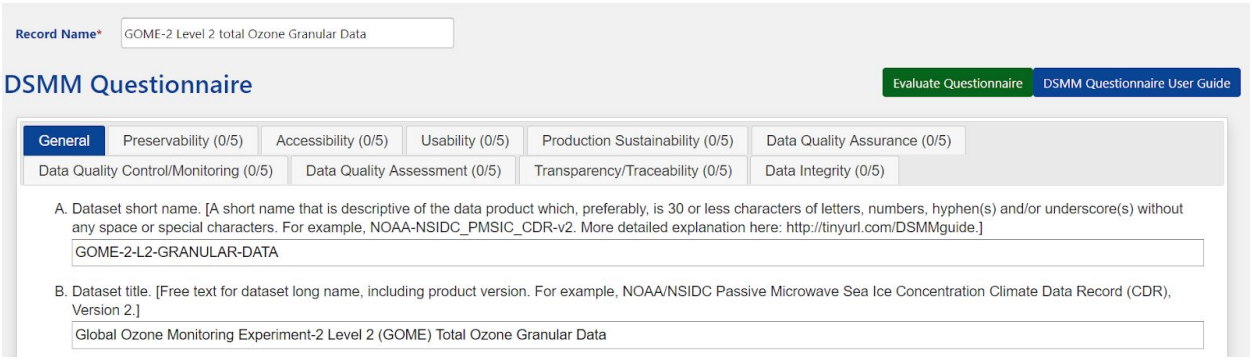


Figure 1.9 Completed Fields View, General Tab.

11. Required fields that are empty will turn red while the record is being created.
12. Once a tab is completed to your satisfaction, you may advance to the next tab by simply selecting the tab or by clicking the “Next” button at the bottom of the page.

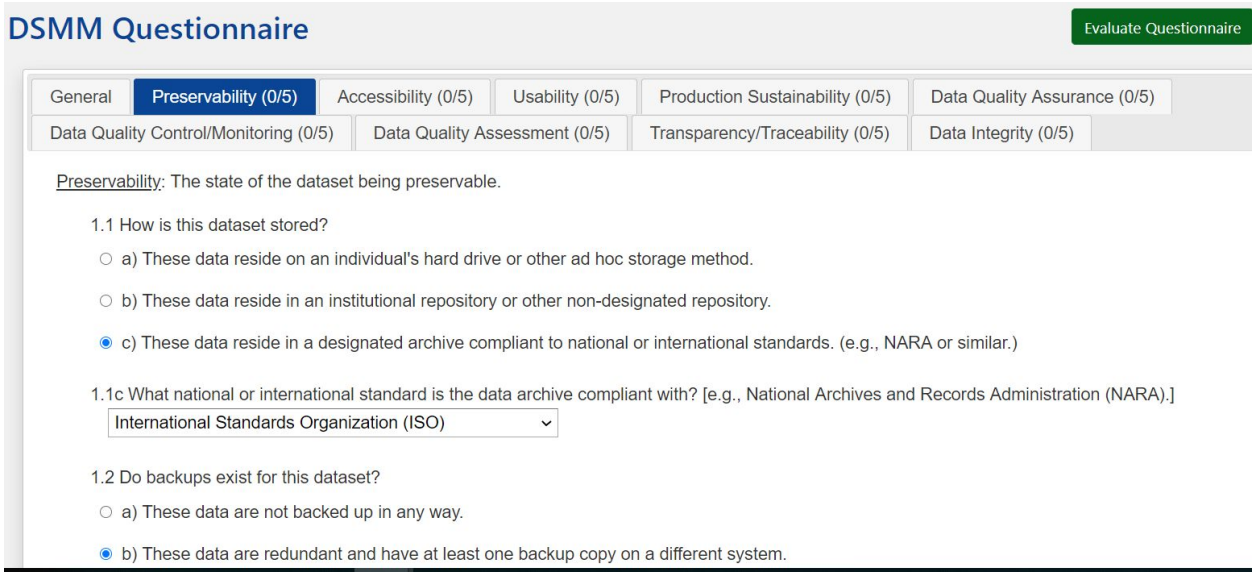


Figure 1.10 The Preservability Tab View.

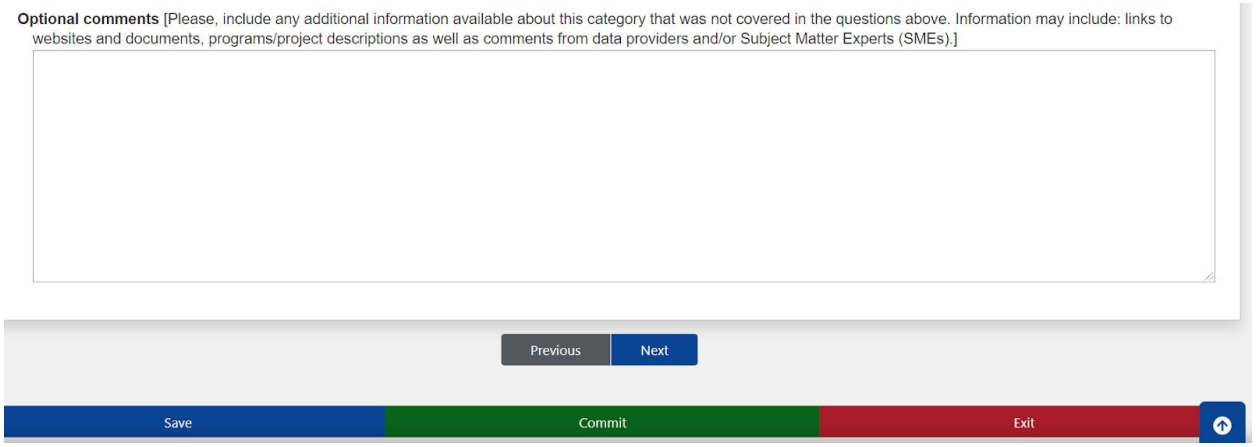
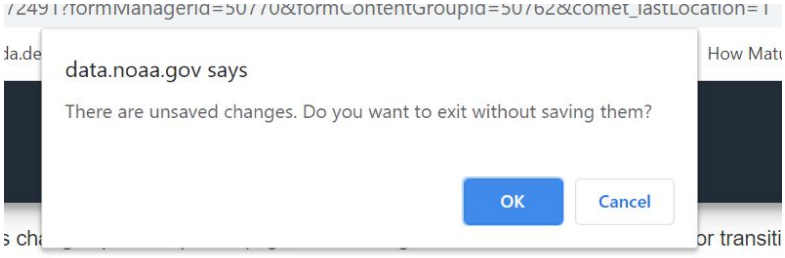


Figure 1.11 The Optional Comments Text Box View.

13. If at any time you need to quit and return later, be sure to select "Save" at the top of the page. Clicking "Exit" will exit the editor without saving, so be sure to save before you exit. A pop-up will notify you if you attempt to exit the screen without saving.



itored and future archiving standard changes are planned.

Figure 1.12 Pop-up that notifies that changes will not be saved.

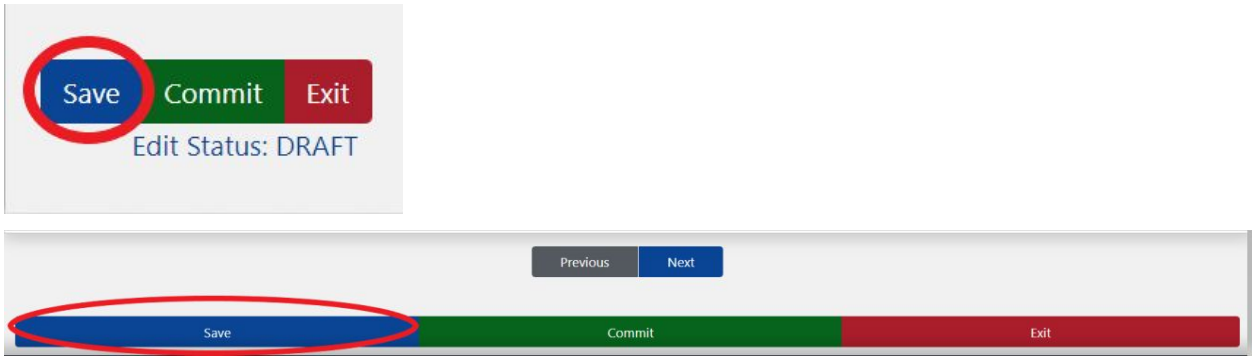


Figure 1.13 The Save Button.

14. Once the form is finished, click the “Commit” button.

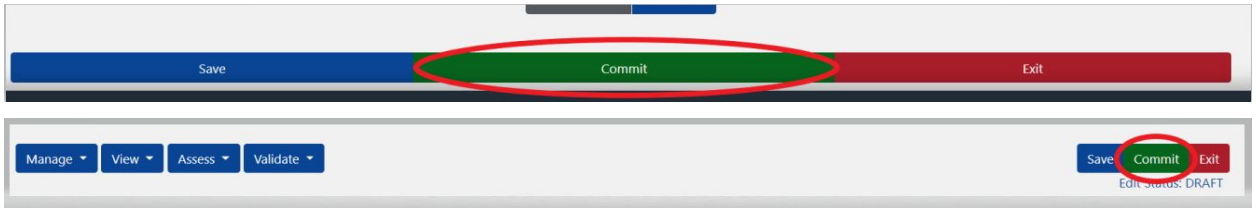


Figure 1.14 The Commit Button.

15. Enter a reason for a change in the pop-up window.

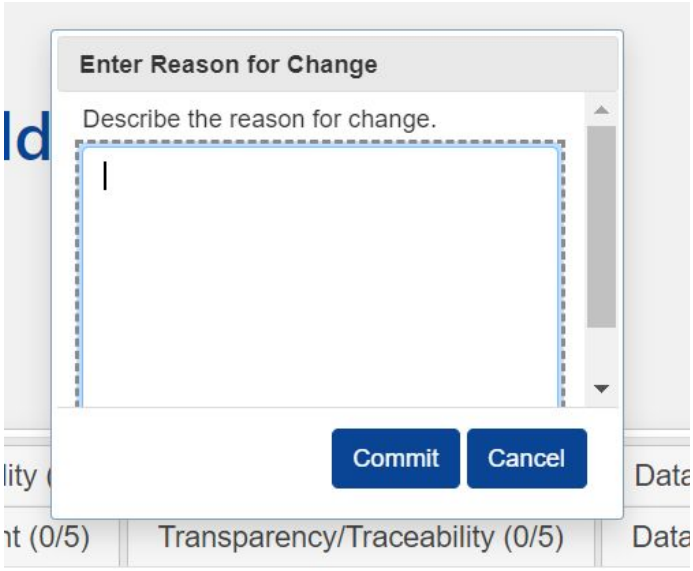


Figure 1.15 The Commit message.

16. Click “Commit” button. This will save your form, baseline it, and return you to your record DSMQ form view.
17. Click “Save” button.

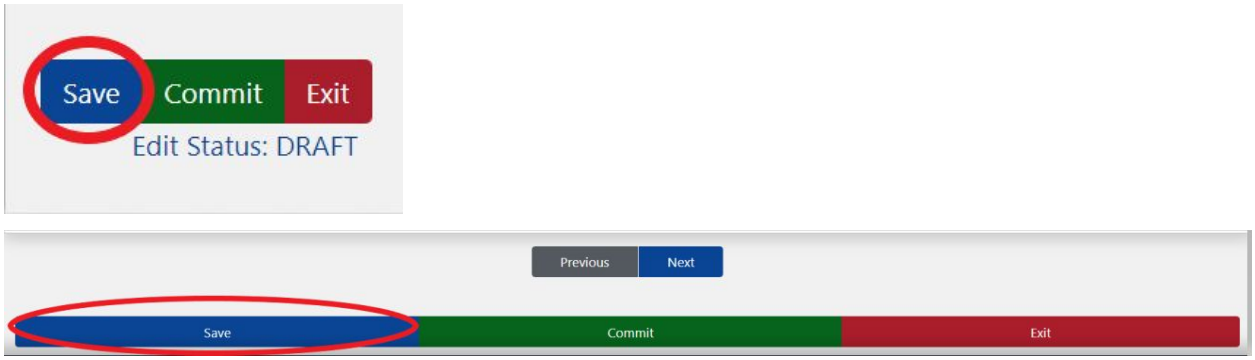


Figure 1.16 The Save Button.

18. Click “Record List” link to return to your Record List View.

Figure 1.20 The Record List Menu Link

19. Once you complete filling in the information in all the tabs and you want to see the score of your dataset, press the “Evaluate Questionnaire” button.

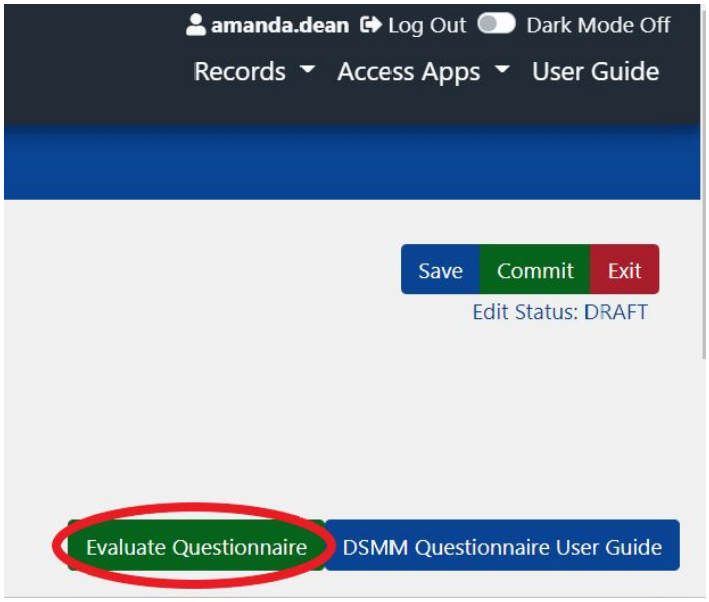


Figure 1.21 The Evaluate Questionnaire Button.

References

Li., Y., Milan, A., and Jones, P., (2017). Light under ISOLite. 2017 NOAA Environmental Data Management Workshop, 9–10 January 2017, Bethesda, MD.

Peng, G., Privette, J. L., Kearns, E. J., Ritchey, N. A., & Ansari, S. (2015). A unified framework for measuring stewardship practices applied to digital environmental datasets. *Data Science Journal*, *13*, 231-253. DOI: https://doi.org/10.2481/dsj.14-049

Glossary of Terms

1. **User Roles**
    a. Viewer - default role assigned to external users that provides read only access to forms and records.
    b. Editor - default role assigned to internal users that provides edit capabilities to records.
    c. Group - role assigned to group leaders that allows form editing and adding/removing users from the form group
    d. Publisher - role assigned to specially trained metadata specialists that allow them to approve publish requests from editors and also affords them the ability to unpublish records upon request.
    e. Admin - role saved for developers and product owners that grants additional administrative abilities such as user permissions, form manipulation, thesaurus maintenance, etc.
2. **Record Group** - a collection of records that share the same provenance, structure and content. Record groups can also be created that only certain users can access.
3. **Publish** - saves a metadata record and sends it to the review queue for a reviewer (publisher role) to approve it (or not) for addition to the WAF(s) and discovery portals.
4. **Edit States**
    a. Draft - The default state once a record is imported or created. It signifies that the record is available for editing.
    b. In Review - After requesting to publish a record, this state designates that the record is awaiting approval by a reviewer.
    c. Approved - Once a reviewer approves a publication request, your record is sent to the WAF for publication and harvest.
    d. Unpublished - A state of limbo that appears once a record has been removed from the WAF and is awaiting editing and republishing. Once a change has been saved, the record will return to draft status.
5. **Checksum Technology** - Checksum technology verifies data fixation and confirms that those data are not corrupted during data ingest, storage, and dissemination procedures. Checksum files created using the MD5 algorithm usually have .md5 extension. It implies that any user receives this checksum file electronically, runs it and generates the same string of characters. If the generated checksum string is identical to that in the original file, then it meets the integrity check standards.
6. **Citability** - Within the context of the DSMM, citability refers to whether or not a persistent identifier (i.e., DOI) is assigned to the dataset. Note however, that the existence of a DOI is not the sole determining factor of a dataset's citability. A fully

formed reference is necessary in order to track and monitor dataset use across other research spectrums.

7. **Collection** - A collection is a grouping of environmental data or products that share common characteristics, is represented by a single metadata record, and consists of one or more granules. Collections are also referred to as datasets. *OneStop* refers to a data collection as the minimum citable unit of data (Li et al, 2017).
8. **Configuration Management** - A technical and management process applying appropriate resources, processes, and tools to establish and maintain consistency between the product requirements, the product, and associated product configuration information.
9. **Cross-Validation of Temporal and Spatial Characteristics** - Refers to data being validated across different periods of time (temporal) or across different areas (spatial) or both areas (Information can be located in documentation and publications).
10. **Data Characterization** - Characterization denotes spatial and temporal characteristics such as global or regional means; seasonal or annual means; decadal trends. May include power spectral density distributions of time series. May be captured in the metadata.
11. **Data Customization** - Customization revolves around being able to search data by temporal and/or spatial distributions, the ability to aggregate or disaggregate granules, and to be able to download data in multiple formats. The more customization options are available to the user the more mature the data set is considered to be.
12. **Data Integrity** - Maintenance of, and the assurance of the accuracy and consistency of, data over its entire life-cycle, and is a critical aspect to the design, implementation and usage of any system which stores, processes, or retrieves data. Checksum technology is applied to verify Data Integrity. Data integrity also refers to how the file is fixed, what proves that it is unchanged over time, and that the file is not corrupt during its transfer.
13. **Data Quality Assessment** - Refers to the availability of data set assessment results online. For example, scholarly publications describing the algorithm theoretical basis, the research product and/or the operational product.
14. **Data Quality Assurance** - A set of activities or procedures focused on defect prevention to be followed in order to ensure product quality during development (Peng et al, 2015).
15. **Data Quality Assurance (DQA) Procedures** - Information on error, error budget, quality flags and/or validation and the procedures to identify/quantify them. Usually found in Algorithm documents, user manuals, technical manuals, handbooks and other related documents.
16. **Data Quality Control/Monitoring** - Monitoring for updates and generating reports in order to alert users about quality issues when those arise. (Could include issues with the quality flags). The same documentation is used for Data Quality Control/Monitoring as for Data Quality Assurance. (Algorithm documents, user

manuals, technical manuals, handbooks). In addition, quality monitor information could be found on other websites.

17. **Data Provenance** - Provenance refers to data's origin and history of entities, as well as people involved in producing a piece of data; and also refers to where they have moved over time to reach their current state; data lineage is one of the entities in the ISO 19115 metadata that can be used for this purpose.
18. **Digital Object Identifier (DOI)** - Persistent unique identifier assigned by an external organization and standardized by the International Organization for Standardization (ISO).
19. **Dissemination Report** - An analysis of weblogs from ftp and web servers. These reports or logs document the number of times a given file or product was downloaded. Data dissemination information captures the statistics about the distribution or transmitting data to end users. For example, data file download counts from ftp servers. These reports may also contain information on data download volume and/or unique data users.
20. **External Audit/Ranking** - Ranking performed by outside organizations. It ranks data for being complete or useful. External ranking must rank the stewardship of the dataset and not just the usefulness of the dataset. No known NCEI data sets have any external ranking applied.
21. **Granule** - A granule is the smallest aggregation of data that can be independently managed (described, inventoried, and retrieved) in the *OneStop* system. Granules are often referred to as inventory or file level metadata though granules can actually be pieces of files. Granules cannot exist without being associated with a collection. Granules may have a different metadata model than the parent collection in order to support values for additional attributes as needed for those granules.
22. **Limited Quality Assurance Metadata** - This special type of metadata may include but is not limited to, file level quality flags, and any other information included in the ISO 19115 data quality section that allows the user to recognize unreliable data in the collection.
23. **Limited Quality Monitoring Metadata** - Information in the metadata record specifically about the methods and/or results associated with the quality control/monitoring as it applies to the dataset. Usually found in ISO 19115 metadata or in an auxillary text file.
24. **National/International Monitoring Metrics** - Statistical methods employed to identify defects according to national/international standards. (Peng et al, 2015).
25. **Open Archival Information System Reference Model (OAIS RM)** - The OAIS is an archive consisting of an organization of people and systems, that has accepted the responsibility to preserve information and make it available for a designated community. NCEI follows the OAIS conceptual framework outlined by the OAIS Reference Model.
26. **Operational Assessment** - The difference between a research and an operational product lies in the maturity of the product (Peng et al, 2015). An operational product also underlines a managed and reliable process associated with its production.

Common ways of assessing operational products are through technical reports or other scholarly literature that assesses the operational readiness of the product.

27. **Physical Consistency Checks** - Internal consistency tests to identify values in the data that appear atypical when compared to values from the entire data set. Also compares current data with historical data to verify consistency over time.
28. **Preservability** - In the context of the DSMQ the focus of preservability is on assessing the practices associated with data storage requirements and compliance to community-accepted archive practices and metadata standards (Peng et al, 2015).
29. **Production Sustainability** - Describes the various degrees of commitment for and associated requirements on the product (Peng et al, 2015).
30. **Quality Metadata for Data Quality Assessment** - Data quality assessment metadata capture and provide information on methods or procedures used for evaluating and validating data products and the results from those analyses (Peng et al, 2015).
31. **Quality Flag** - Information that is used to help identify non-nominal data as a result of poor-calibration, pixel saturation, and other data artifacts. Commonly found in NetCDF variables and can also be identified in ISO 19115 metadata in the <contentInfo> section.
32. **Standard-Based Metrics for Data Quality Control** - Data quality checks that employ statistical tools with well-established standard-based (e.g., AIMQ, SAS, etc...) metrics (e.g., accuracy, consistency, completeness, integrity, timeliness, etc...) for the user community.
33. **Traceability** - Synonymous with provenance. Data provenance can be used to form assessment about its quality, reliability, or trustworthiness.
34. **Trackability** - Data sets with OID's and/or DOI's are considered to have better overall trackability than data sets that do not have those unique identifiers.
35. **Unique Object Identifier (OID)** - OID's are usually non-DOI numbers that are unique to an organization that are used to identify the data set in some way. DSI numbers are examples of OID's used by NCEI. They are used to identify the location of the dataset within the archive.