CGIAR

RESEARCH PROGRAM ON
Forests, Trees and Agroforestry

THE GEOSPATIAL DATA QUALITY AND METADATA

Handbook | 2021

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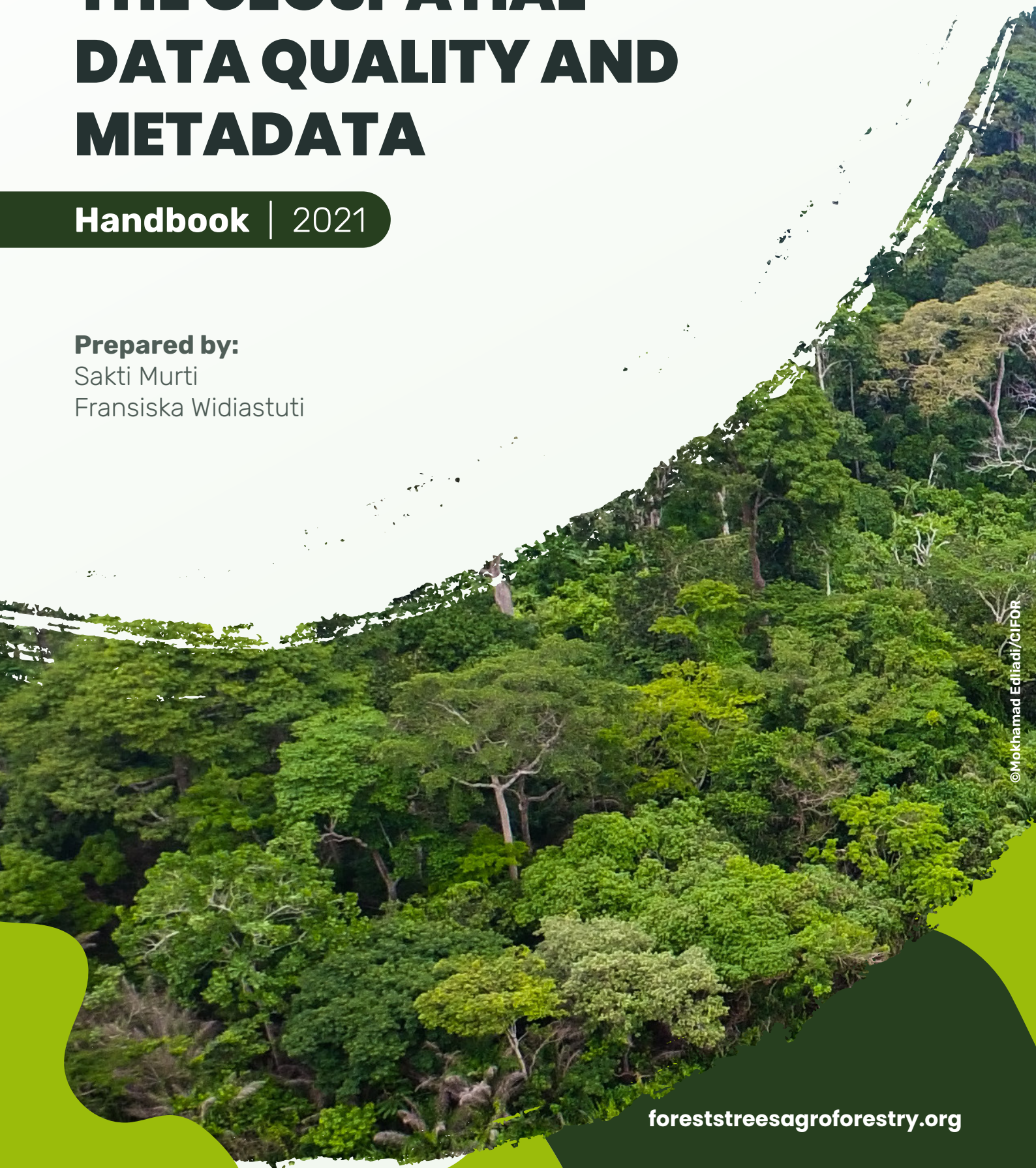

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Contents

Preface **4**

What is the purpose of this handbook? 4

Who should use this handbook? 4

How should this handbook be used? 4

Chapter 1. Geospatial data quality **5**

What is meant by spatial data quality? 5

Why is the quality of geospatial data important? 5

How to examine geospatial data quality 5

Chapter 2 Geospatial metadata **16**

What is meant by metadata? 16

Why is metadata important? 16

How can we access the metadata of geospatial data? 16

How can we create metadata in ArcCatalog? 19

Does a data quality report need to be generated in metadata? 25

Why is lineage essential information in metadata? 30

How important distribution information is entered into metadata 30

How data attributes can be explained in metadata 31

How can we export metadata to xml format? 33

Is there a tool for developing metadata? 35

Can metadata in XML format be edited in CatMDEdit? 36

How to edit Metadata in CatMDEdit following ISO 19115 standards 38

How to enter the data distribution in CatMDedit 49

How to enter the data quality information in CatMDedit 49

How to validate Metadata if it has been entered completely 52

Preface

What is the purpose of this handbook?

This handbook is intended to provide guidance on geospatial data quality and metadata management. While it can provide the reader with answers to basic questions on the latter, it does not have all the answers. The reader should also find the information and guidance helpful when dealing with important questions on geospatial data quality and metadata.

Who should use this handbook?

The CGIAR-FTA Researchers and GIS Officers will find this handbook beneficial, particularly those who are not familiar with geospatial data management including metadata creation and standardization in data quality. Thus, it can support decision making at CGIAR-FTA, especially in activities related to forests, trees and agroforestry.

How should this handbook be used?

This handbook does not need to be read from beginning to end because it has been arranged based on topics that are in accordance with geospatial data quality and metadata management. If the reader is not familiar with geospatial data quality and metadata management, it is necessary to read from the beginning to the part that is really needed. If readers are familiar with geospatial data quality and metadata, they can go directly to the topic they need. We want this handbook to be a general guide in geospatial data quality and metadata, not only within the scope of CGIAR-FTA.

Chapter

1

Geospatial Data Quality

What is meant by spatial data quality?

Spatial data quality can be described as a character of the data that allows users to evaluate 'fitness to use'. Usually specified along with information about the completeness, consistency and accuracy of the data.

Why is the quality of geospatial data important?

Spatial data quality is a pillar in the implementation of GIS and its applications where reliable data will enable data users to obtain satisfactory and appropriate results for the intended use of the data.

How to examine geospatial data quality

One element to check the data quality is topology consistency. A tool for this has been provided in the ArcGIS toolbox. We can use this tool to test the completeness and consistency of features using the following steps:

1. Topology error check should be conducted in a 'file geodatabase'. To start the topology check, we need to create a geodatabase in ArcCatalog. Figure 1 is a sample of the pages used to create a topology error geodatabase.

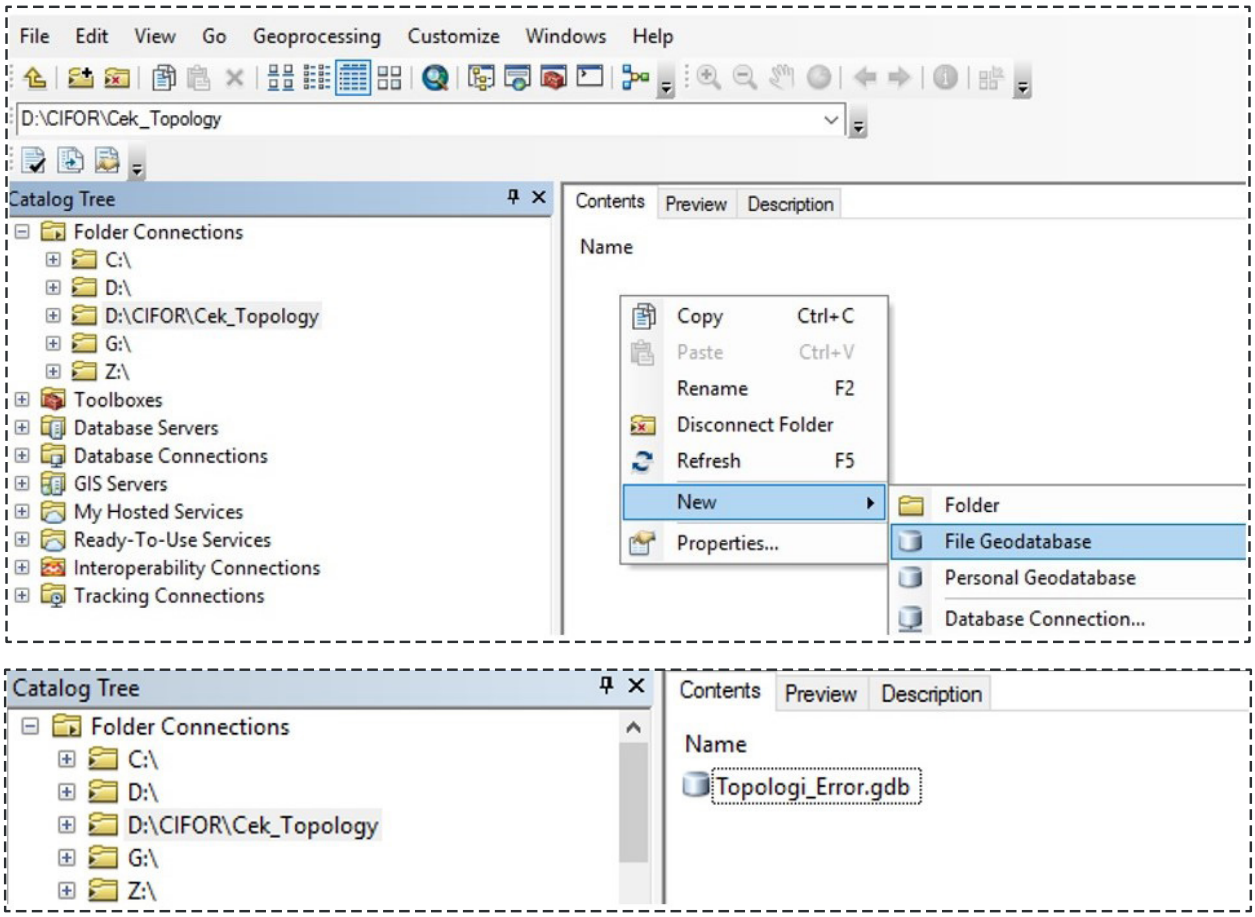


Figure 1. The creation of a 'file geodatabase' in ArcCatalog for checking topology errors

2. We then need to create a new feature class inside the topology error geodatabase (**Figure 2**).

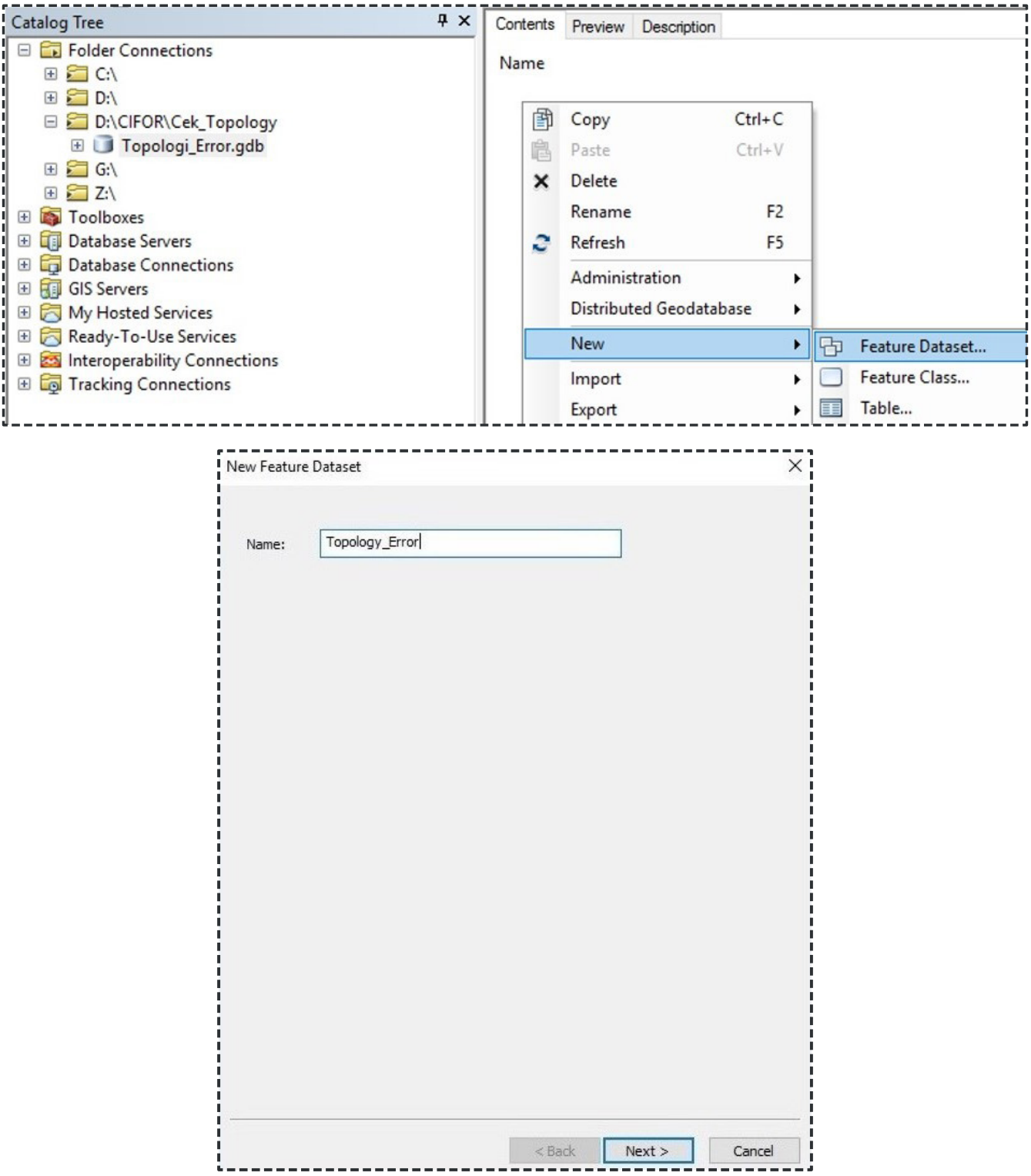


Figure 2. The creation of a feature dataset

3. Setting the coordinates is an essential step in a topology check. We need to define the coordinate system to be used in the processing. We can use WGS 1984 as the coordinate system, which is the most frequently used in mapping. (**Figure 3**)

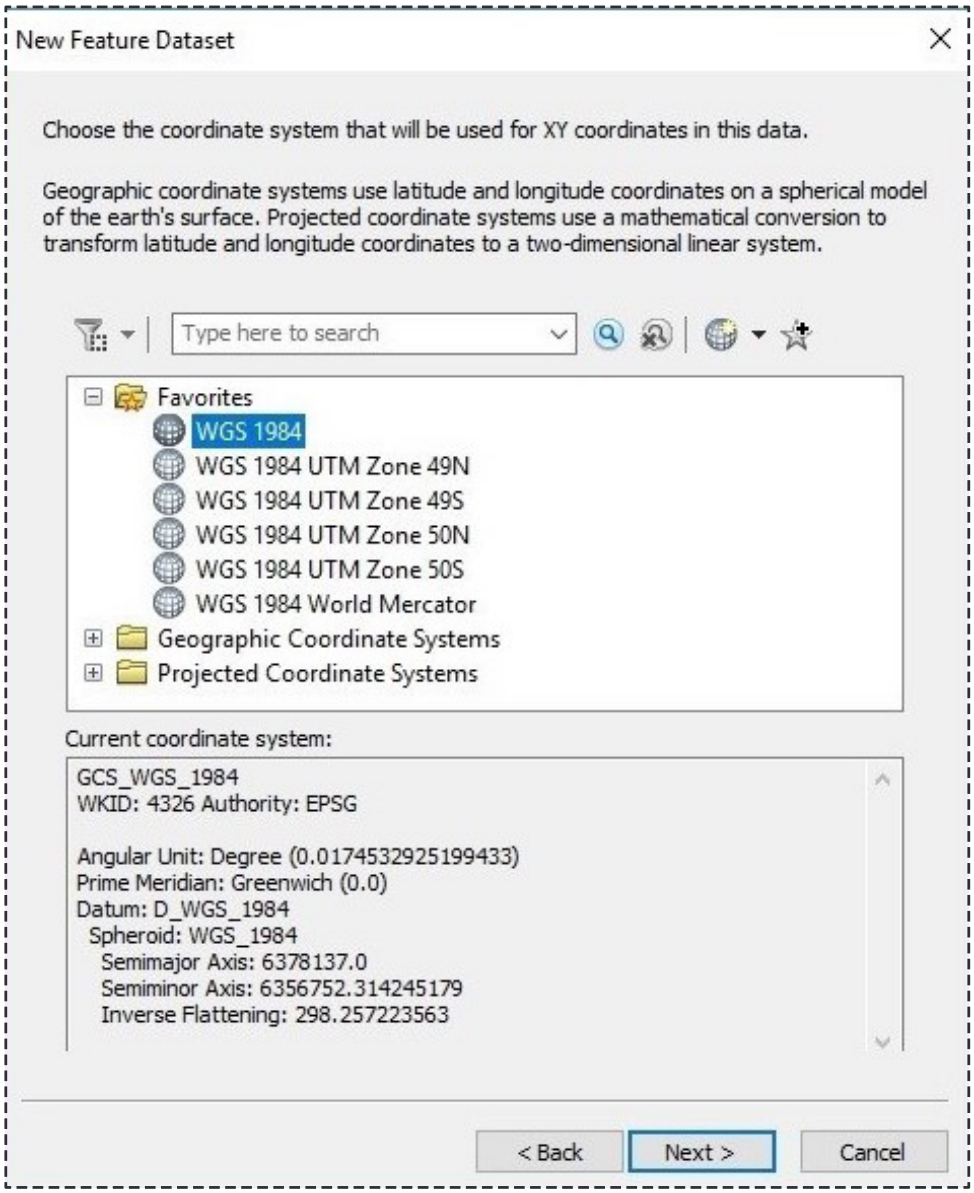


Figure 3. Setting the coordinate system

4. The next step is to import the feature class (polygon) that will be checked for topology errors. (**Figure 4**)

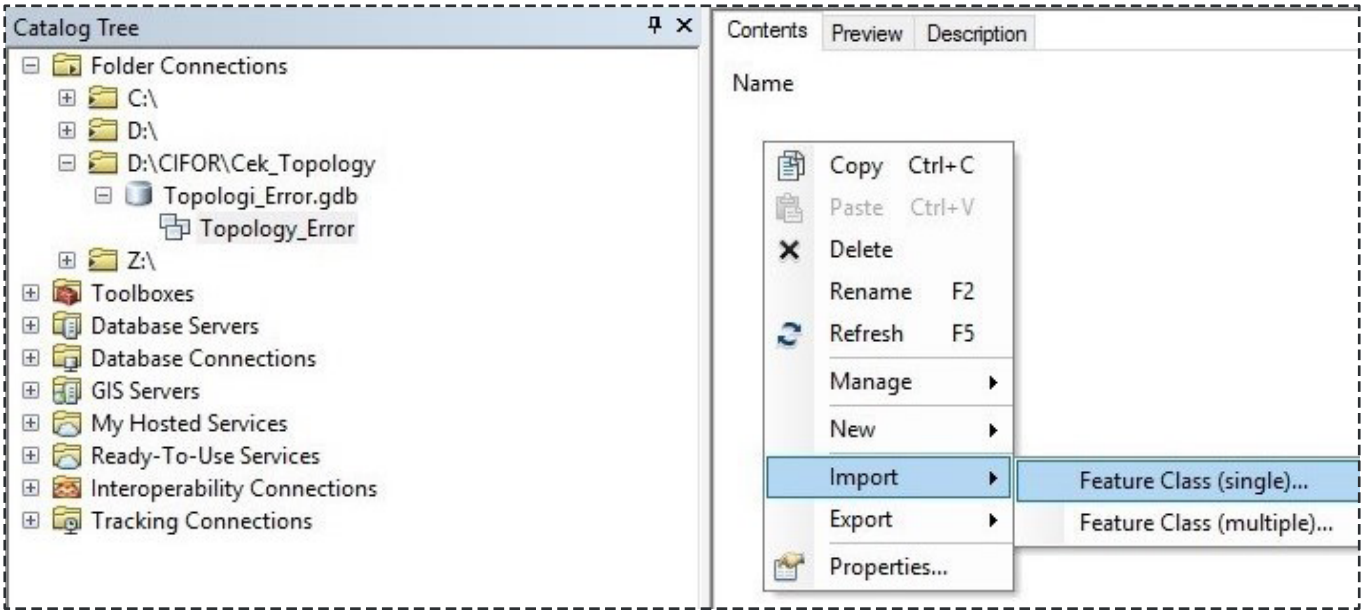


Figure 4. Import the feature class for data input

5. We then need to specify the name and enter this in the output feature class (**Figure 5**)

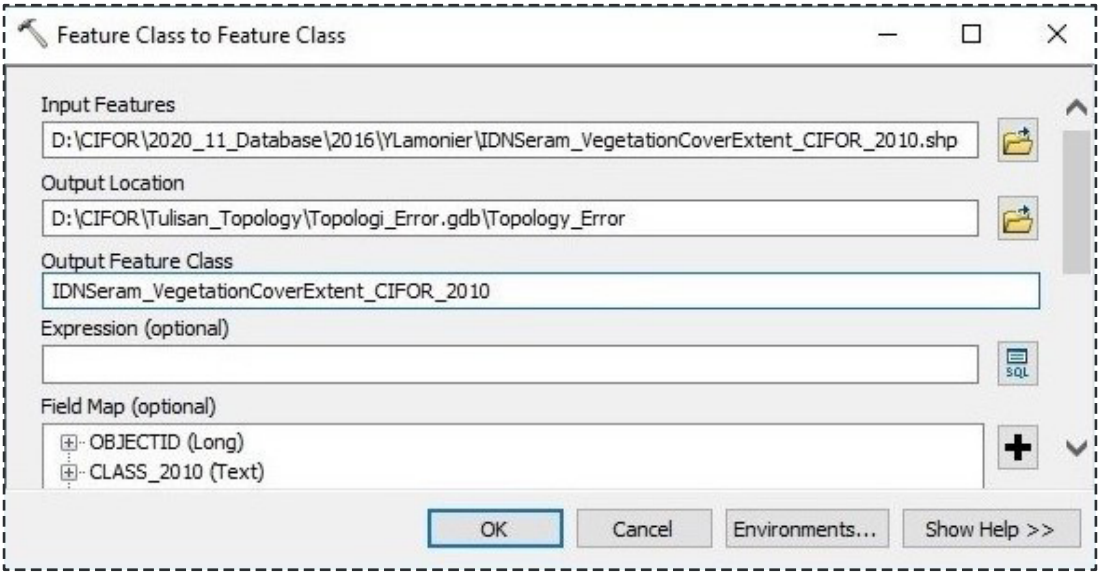


Figure 5. Entering the name of the data input

6. After completing the import process, we can check the feature class IDNSeram_VegetationCoverExtent_CIFOR_2010 has been imported into the file geodatabase of the topology error (**Figure 6**).

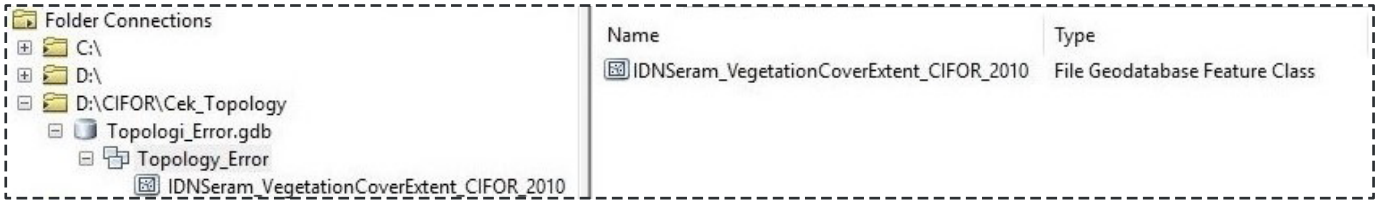


Figure 6. The results of importing data for checking topology

7. We can then start to check the topology using a right click on the feature class > new > topology > (**Figure 7**)

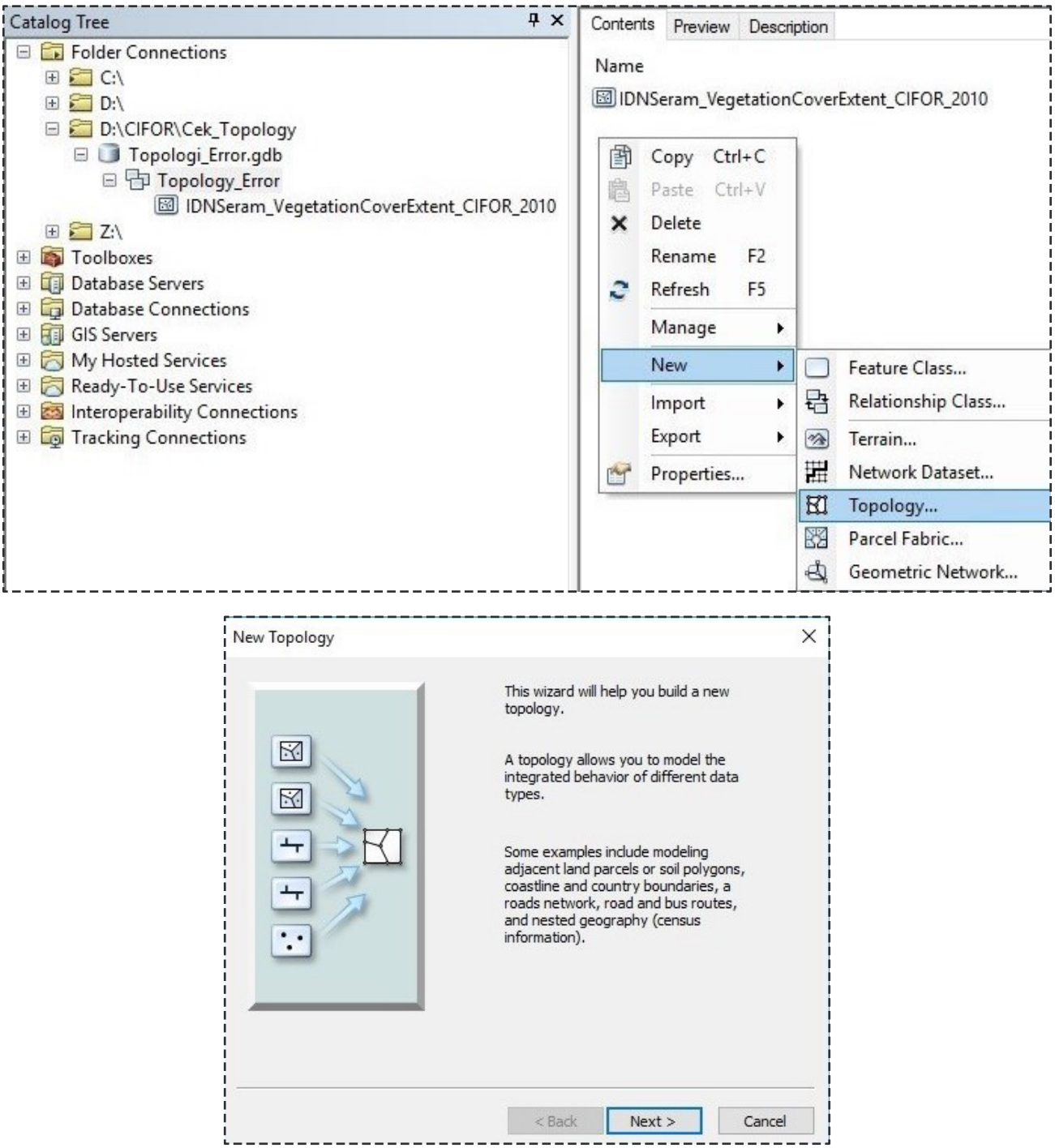


Figure 7. The first step for checking topology

8. We need to set the name of the output of the topology processing and set the cluster tolerance (**Figure 8**).

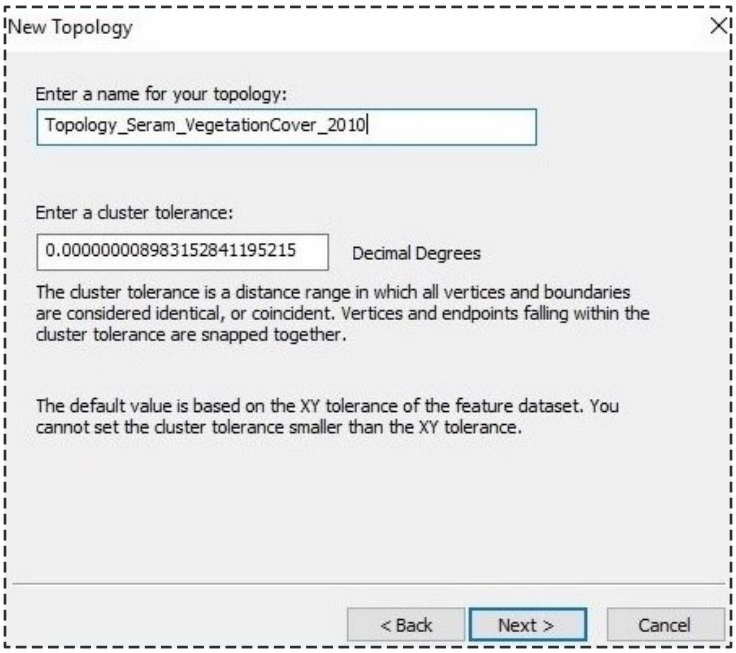


Figure 8. Entering the name and cluster tolerance

9. Click > next > tick the feature that will participate in the topology processing click > next click > next (**Figure 9**).

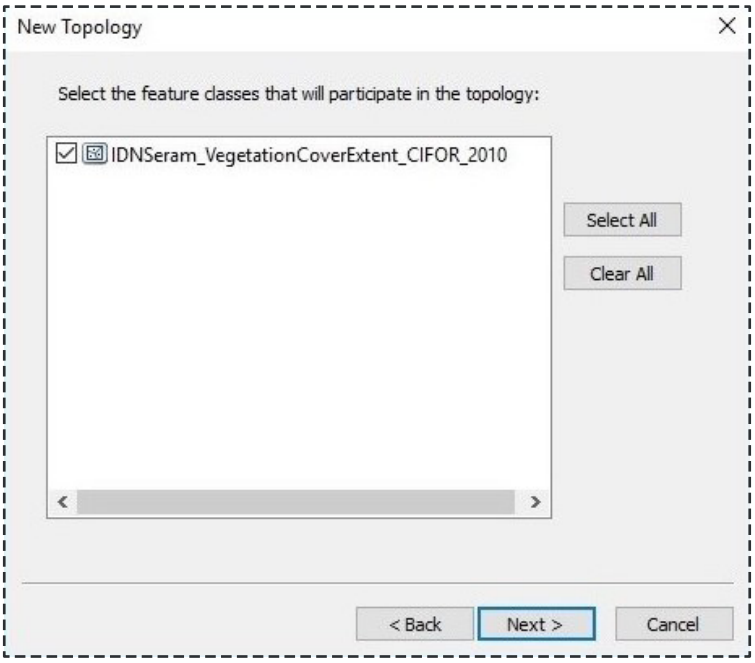


Figure 9. Tick the feature that will be used in the topology check

10. We need to add the rules of the topology check. Set the rules for checking the topology errors– we can explore the explanation of the 'rules' in the rule description. Add rules that we would like to use click > next click > OK > next (**Figure 10**).

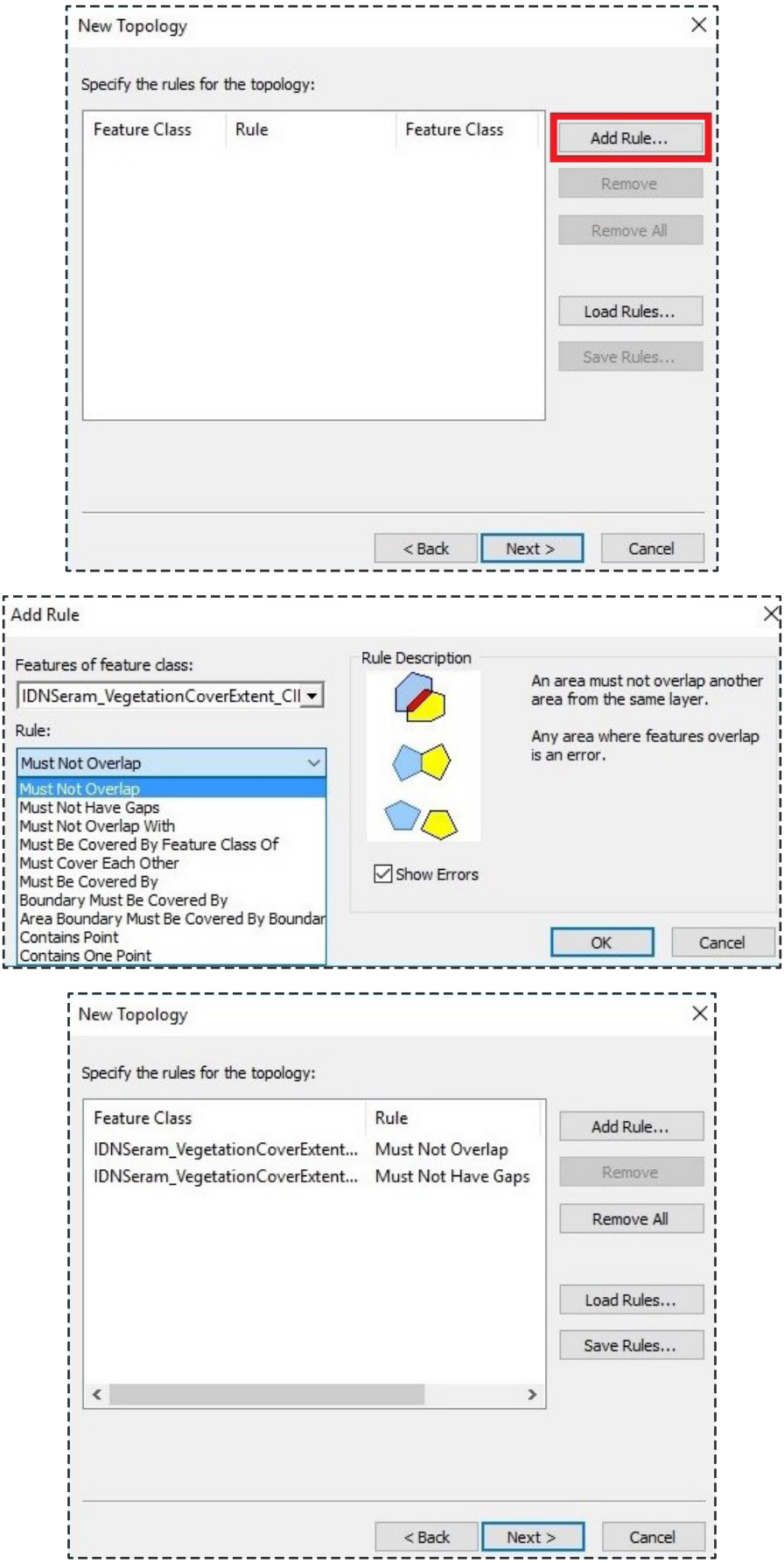


Figure 10. Adding and setting the rules for checking topology

Note: In our case study, we will use two rules for checking topology errors: 'must not overlap' and 'must not have gaps'

11. Once the topology check has finished processing, we will need to validate the new topology click >yes (**Figure 11**)

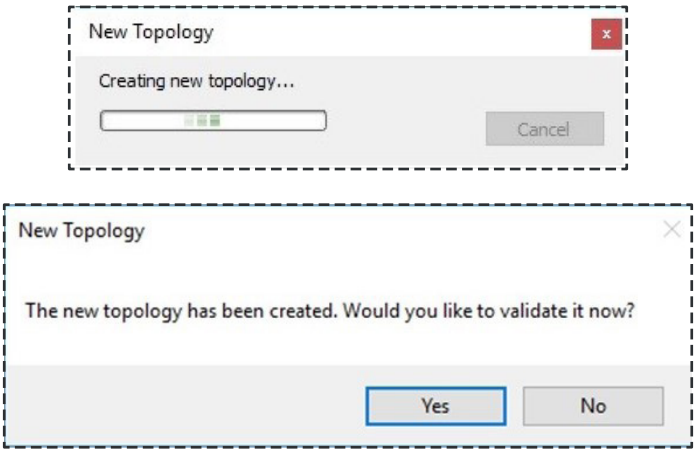


Figure 11. Validation for checking topology

12. The results of the topology check can then be explored with a new topology file of validation created in the file geodatabase (**Figure 12**).

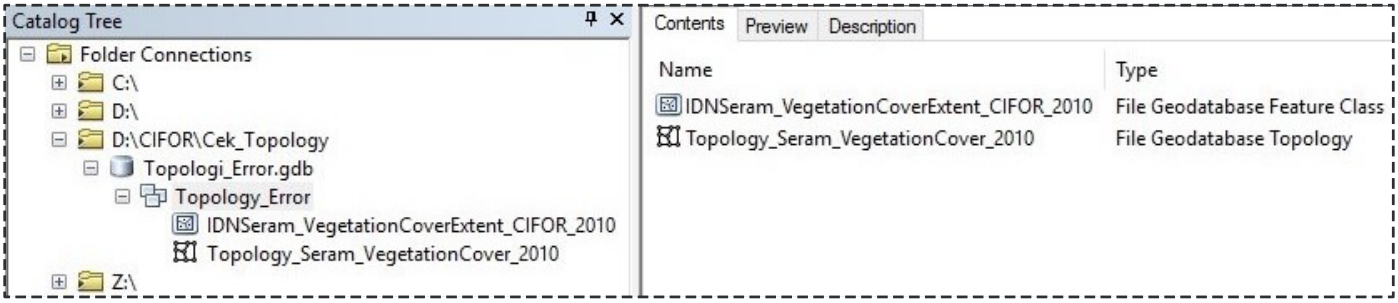


Figure 12. Topology error results

Note: If the validation procedure has been skipped in the processing, we can validate again with a right click on the topology feature and click validate (**Figure 13**).

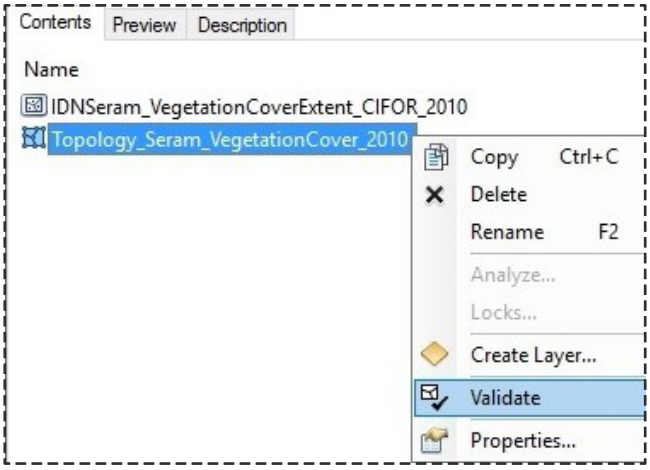


Figure 13. Revalidate the results of the topology error

13. We can check the topology results and properties with a right click > properties. Click errors to find the numbers of errors in the layer based on the rules (**Figure 14**).

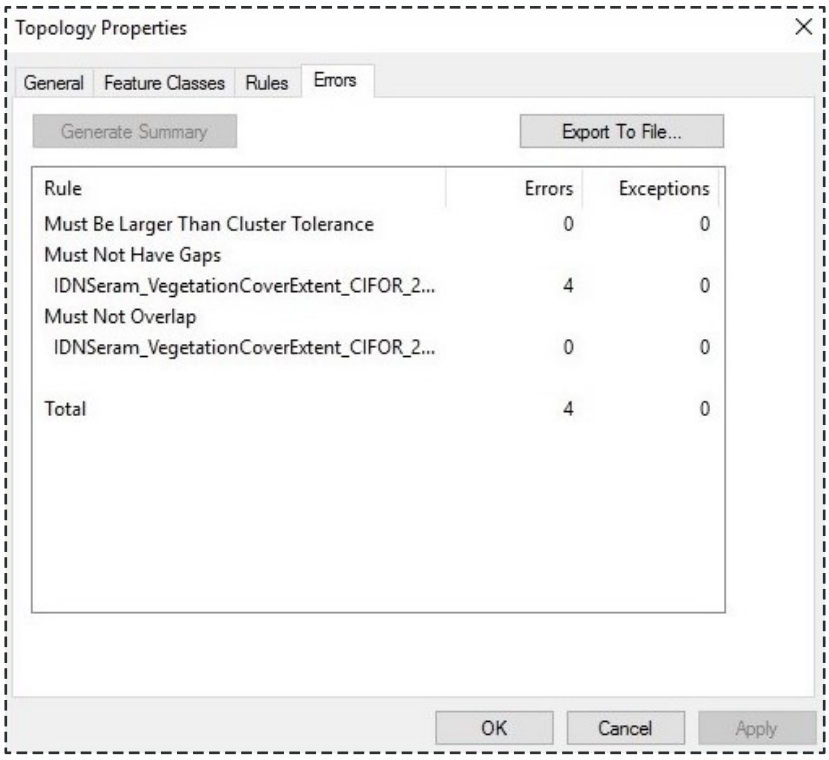


Figure 14. Checking the number of errors in the topology results

14. We can review the results by adding the topology error features to the ArcMap. To add a topology layer click > yes ('yes' will popup when you finish checking the topology errors) Results can be seen in ArcMap (**Figure 15**).

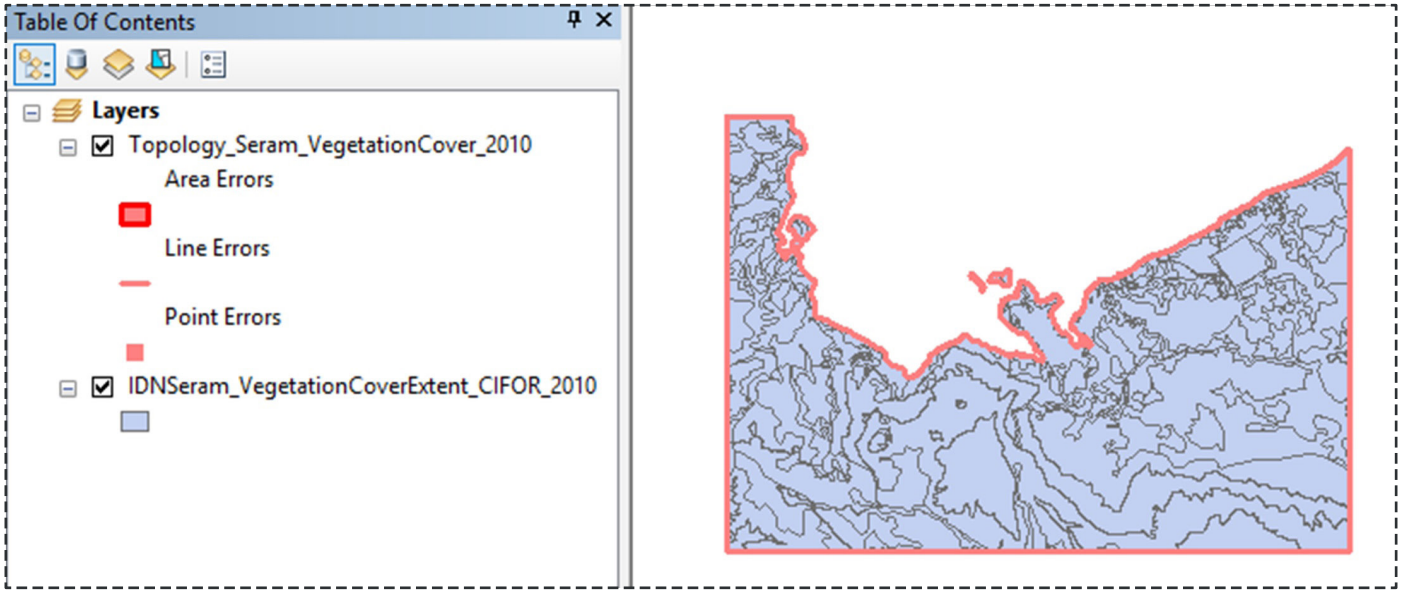


Figure 15. Topology error results displayed in ArcMap

15. We can change the symbology of the topology results to explore the errors including the gaps and overlapping (**Figure 16**).

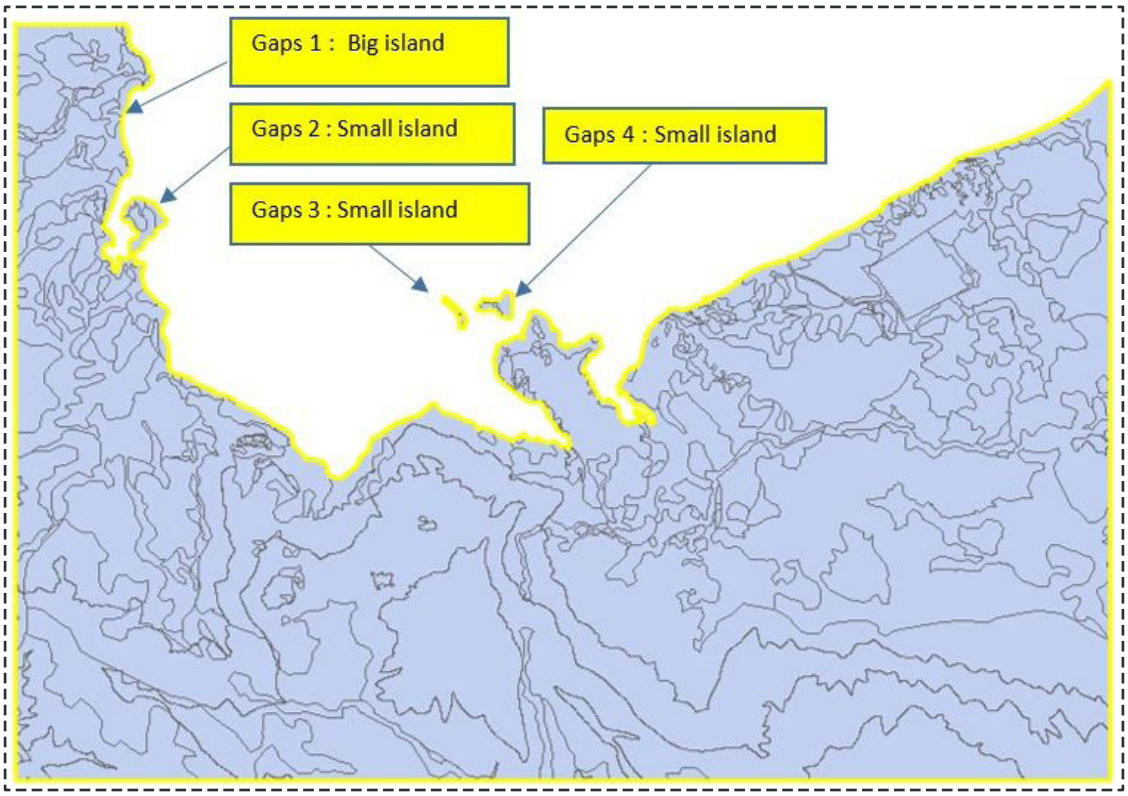


Figure 16. The detailed results of the topology error check

Note: In this sample we conclude that the gaps that are categorised as errors are the small islands. Thus, there are **no topological errors** in this dataset including overlapping and gaps.

Chapter

2

Geospatial Metadata

What is meant by metadata?

Metadata is information about data. In general, the geospatial metadata stores essential information about the: who, what, when, where, how and why of the data.

Why is metadata important?

Metadata provides important information about data. This information makes it easier to find specific data.

How can we access the metadata of geospatial data?

We can use ArcCatalog in ArcGIS to access the metadata. To check metadata in the ArcCatalog:

1. Open the ArcCatalog click > Menu customise click > ArcCatalog options. Then the ArcCatalog options dialog box will appear click > Metadata (menu). In the Metadata Style section there are various options related to the Metadata style, click > ISO 19139 Metadata Implementation Specifications (**Figure 17**).

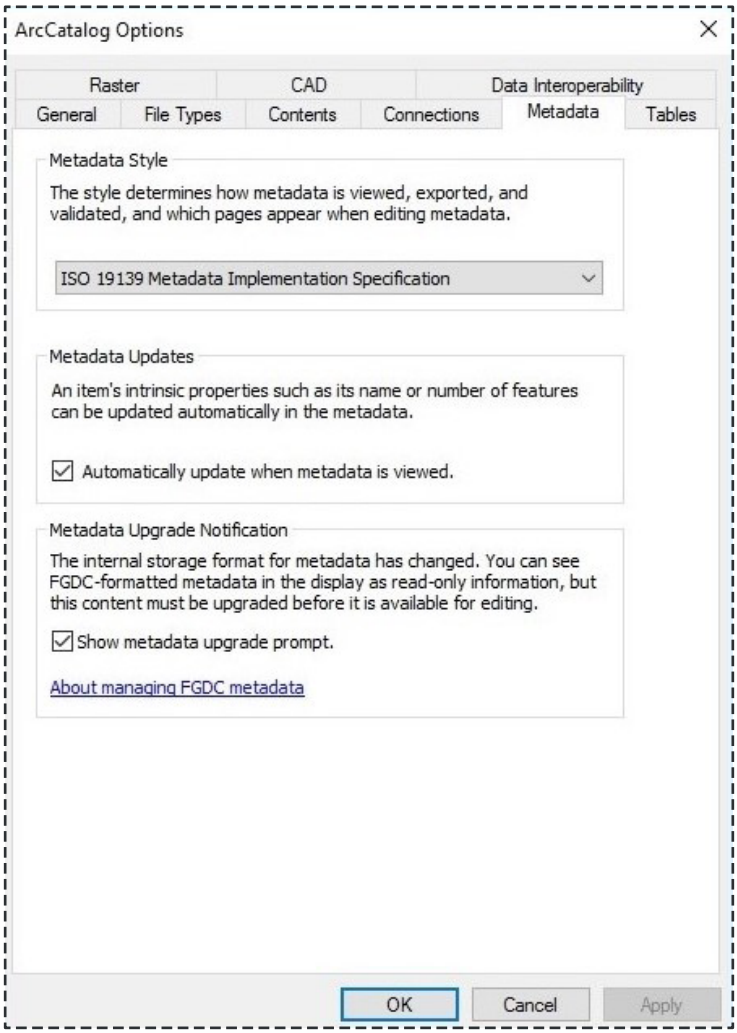


Figure 17. The metadata options in the metadata menu

2. To view the metadata of shapefile/raster data in ArcCatalog click > the file (yellow box) in the catalogue's tree column, in the left column and click > Description in the right column. If you want to create or change the metadata click > Edit (red box – **Figure 18**).

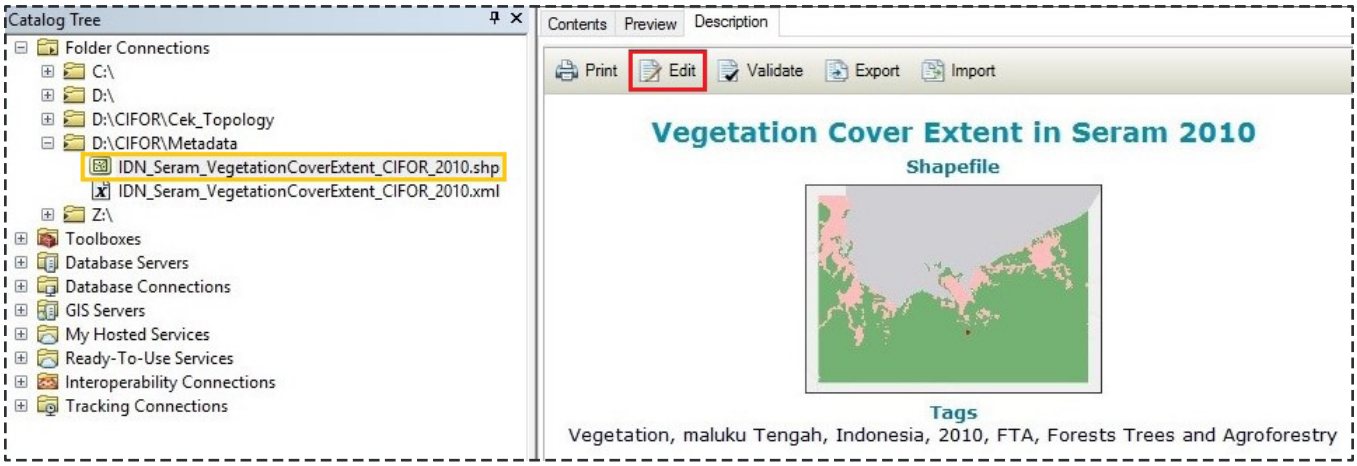


Figure 18. Viewing metadata in ArcCatalog

3. After 'Edit' has been clicked, the metadata-editing menu will be displayed on the right side of the metadata. There are three sections: overview, metadata and resource. We can save the editing by clicking > Save (red box – **Figure 19**).

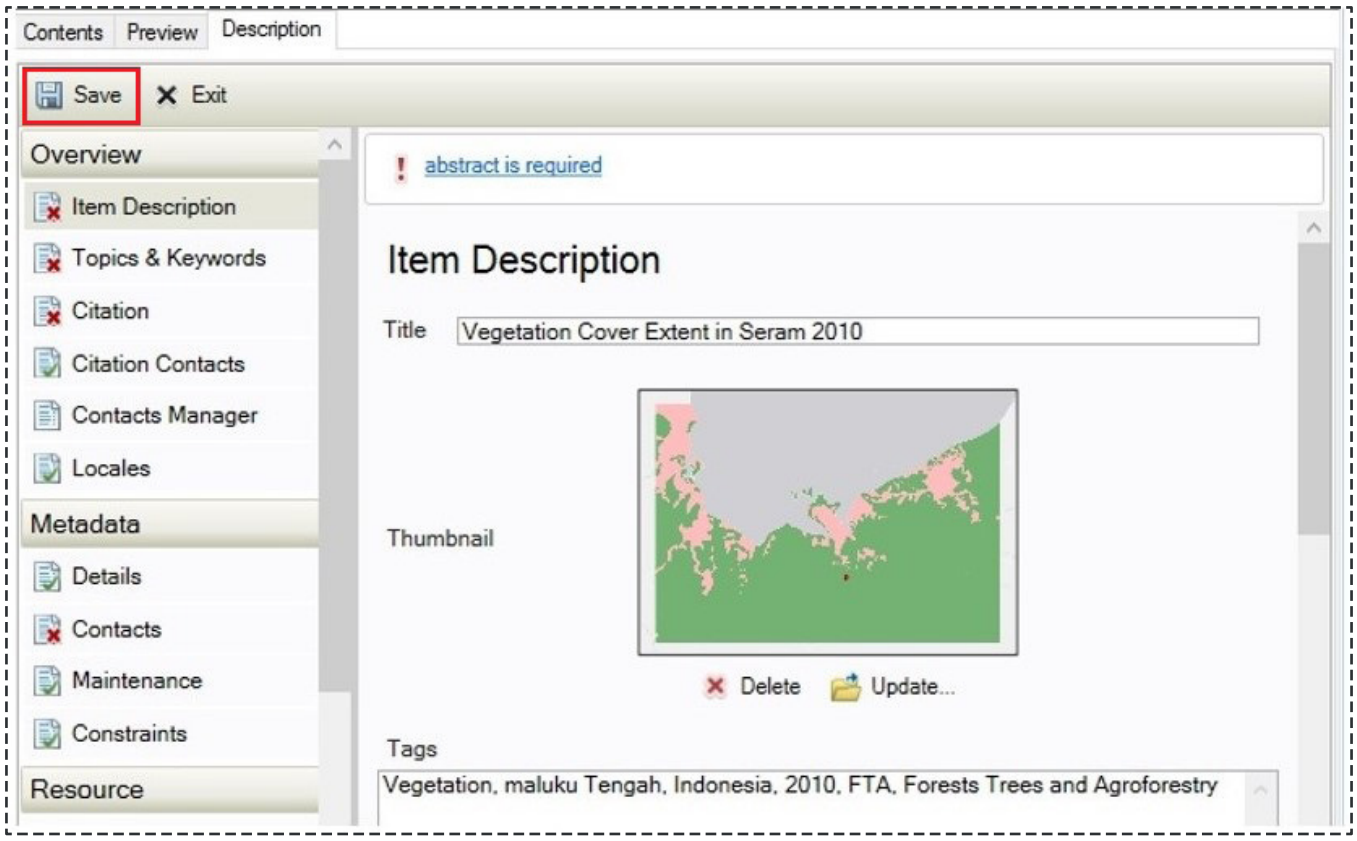


Figure 19. Editing metadata in ArcCatalog

How can we create metadata in ArcCatalog?

To create metadata in ArcCatalog click > edit in the metadata menu. There are three sections where we can enter information.

OVERVIEW SECTION

In the overview menu add information in the following:

d. Item Description

- Title: title of data
- Thumbnail: screen view of results of the overall data display, with file sizes usually not large (*.png, *.jpg, etc.). To upload the results of the screen view click a folder with the words Update.
- Tags: keywords in general. For example: data related keywords, data year, activity/project, location, donor.
- Summary (Purpose): summary of the data
- Description (Abstract): information related to the data, including an explanation of the data content, brief process of obtaining the data, pixel resolution (for raster data)/data scale, name/purpose of data activity. (**Figure 20**)

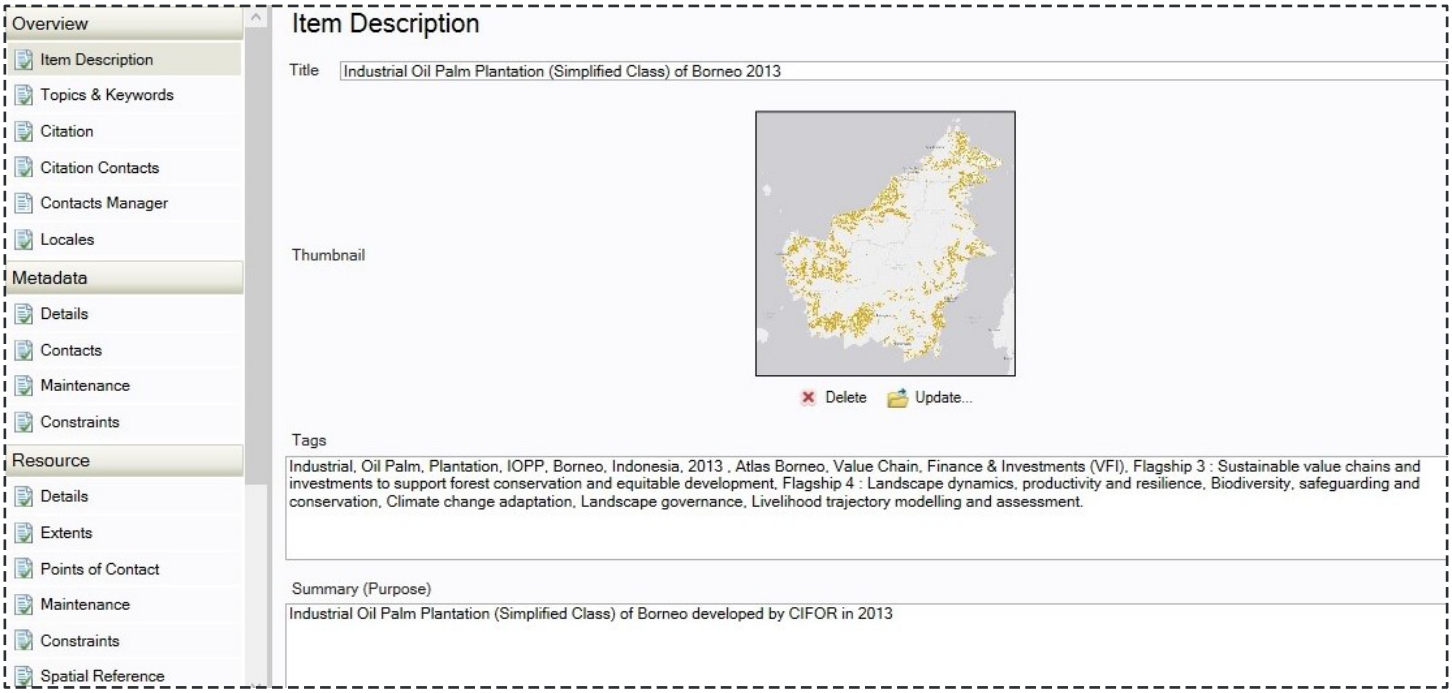


Figure 20. Overview section with focus on Item Description

- Use limitation: description about limitations or protection for using the data (Figure 21).

  Note: Example of a limitation statement for data that belongs to CIFOR

  'The information contained in this dataset is the exclusive property of the Center for International Forestry Research (CIFOR) - Headquarters and any respective copyright owners. This work is protected under international copyright treaties and convention. All uses for commercial purposes require the written permission of the Center for International Forestry Research (CIFOR) - Headquarters and any graphic outputs (on screen or on paper) produced from this dataset must carry the following acknowledgement the Center for International Forestry Research (CIFOR) – Headquarters'.

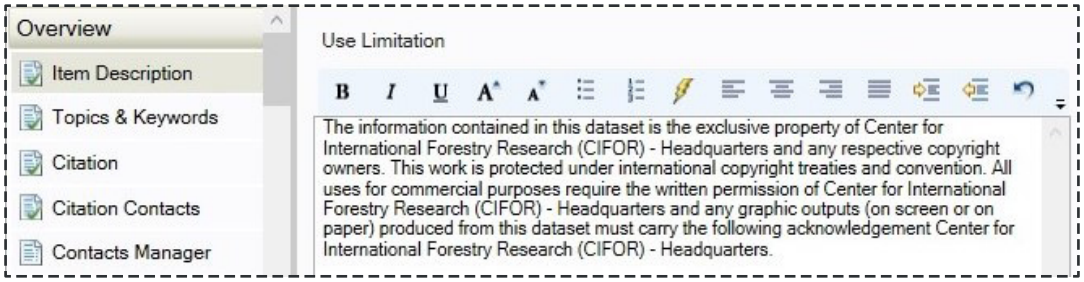


Figure 21. Entering data using limitation rules for CIFOR's data

e. Topics and Keywords

- Topic Categories: spatial themes of related data. Each theme has a detailed description on the website https://apps.usgs.gov/thesaurus/thesaurus-full.php?thcode=15. When selecting the topic categories, you can have more than 1 theme or topic (**Figure 22**).
- Content type: whether the data can be downloaded or not (example: downloadable data)
- Place Keywords: keywords for the data collection site(s) or locations
- Temporal Keywords: keywords for the time of the data. Usually, the year the data is entered here.

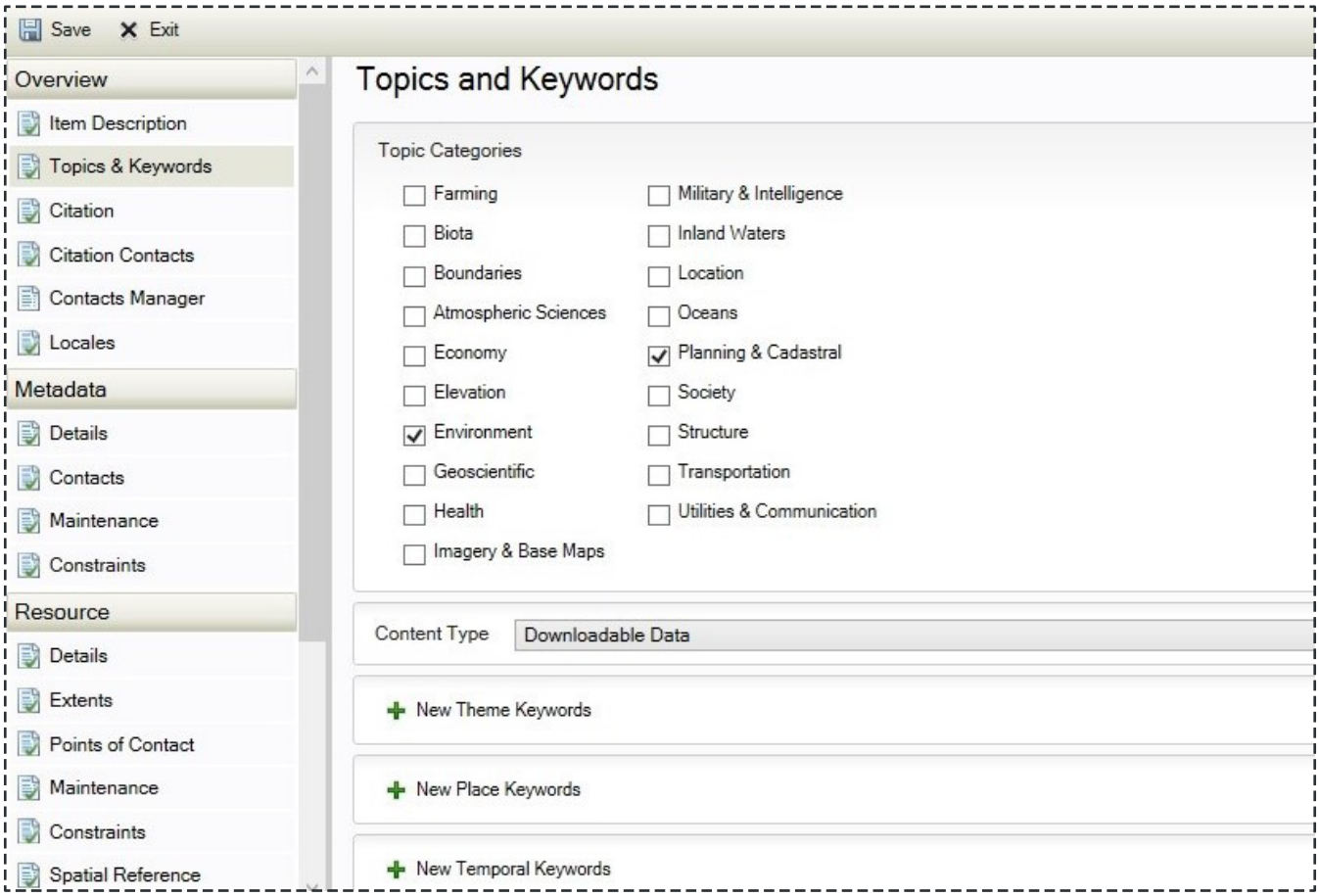


Figure 22. Entering topics and keywords in metadata

- Other Keywords: other keywords can be added, such as FTA related keywords, project and donor names, GACS. Keywords can be classified according to need (**Figure 23**). To add new keywords, click > New Other Keywords (red box – **Figure 23**)

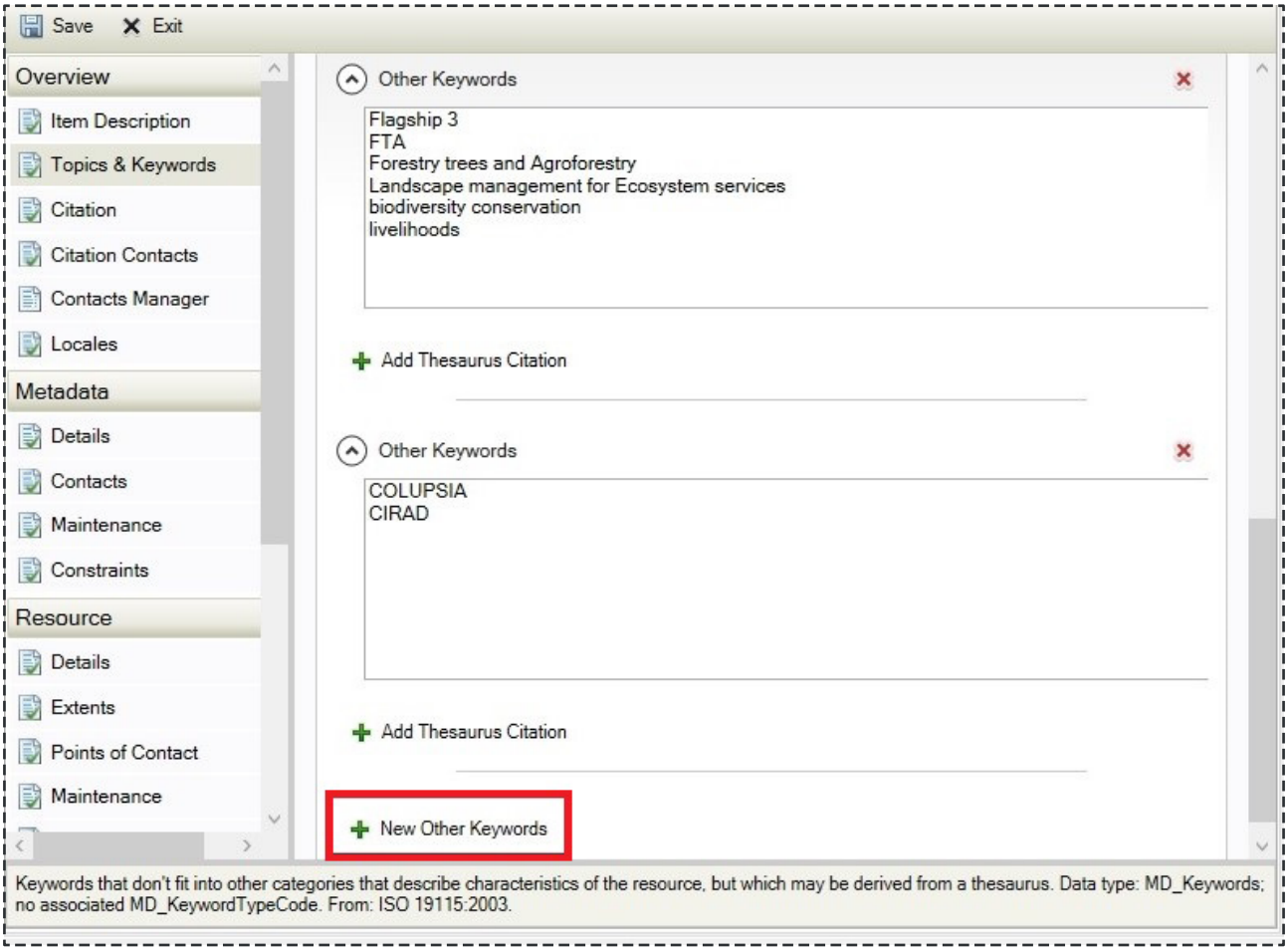


Figure 23. Entering other keywords in ArcCatalog

f. Citation

- Resource Citation - Title: data title

Fig 24. Resource citation in ArcCatalog

- Presentation form: data form– enter digital map

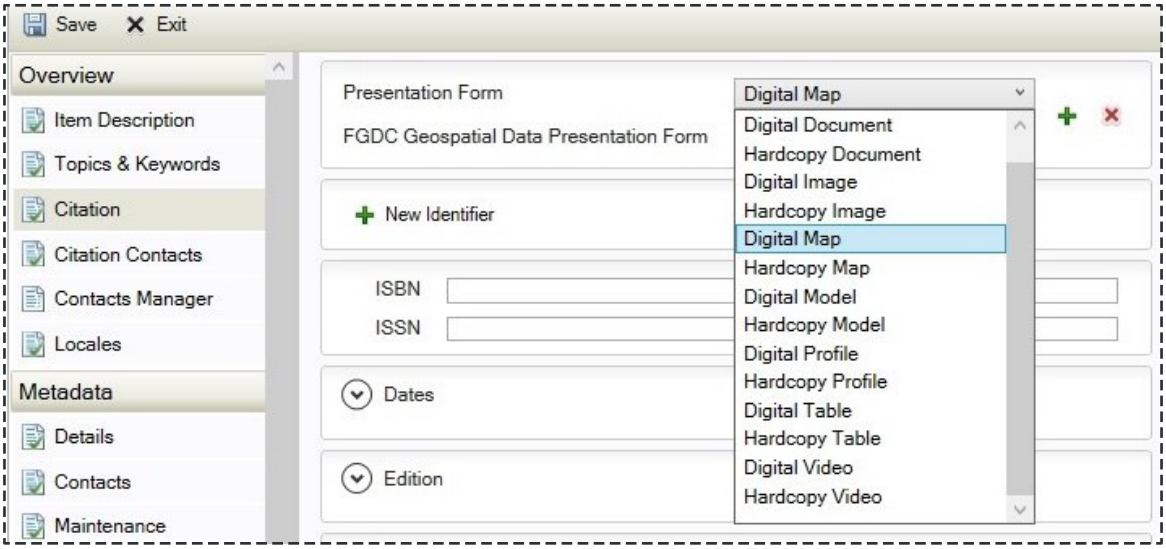


Figure 25. The options for data presentation in ArcCatalog

- Dates: enter the date the data was created, published and/or revised.

Figure 26. Entering dates to specify the data's information about time of data

g. Citation Contacts

- Citation Contacts – Resource citation contacts: information regarding the individual contacts responsible for creating the data. In this column there is: name, organization of origin, position/title, role, email address and office address. Role: enter key contacts (Point of contact).

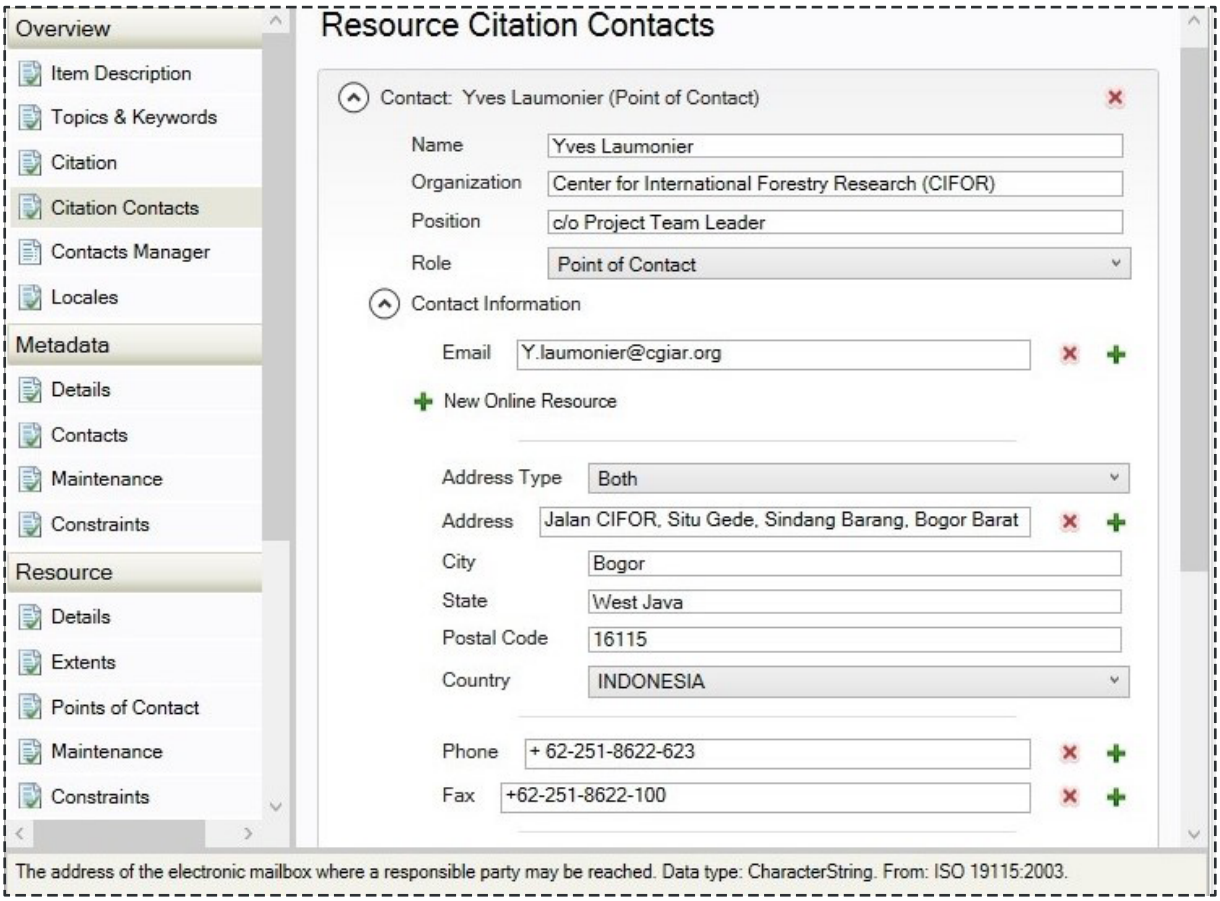


Figure 27. Entering the contact details of data producers

METADATA SECTION

a. Details – Metadata details: in this section enter:

- File identifier = name of data
- Language = the language used in these examples is English
- Character set = utf 8

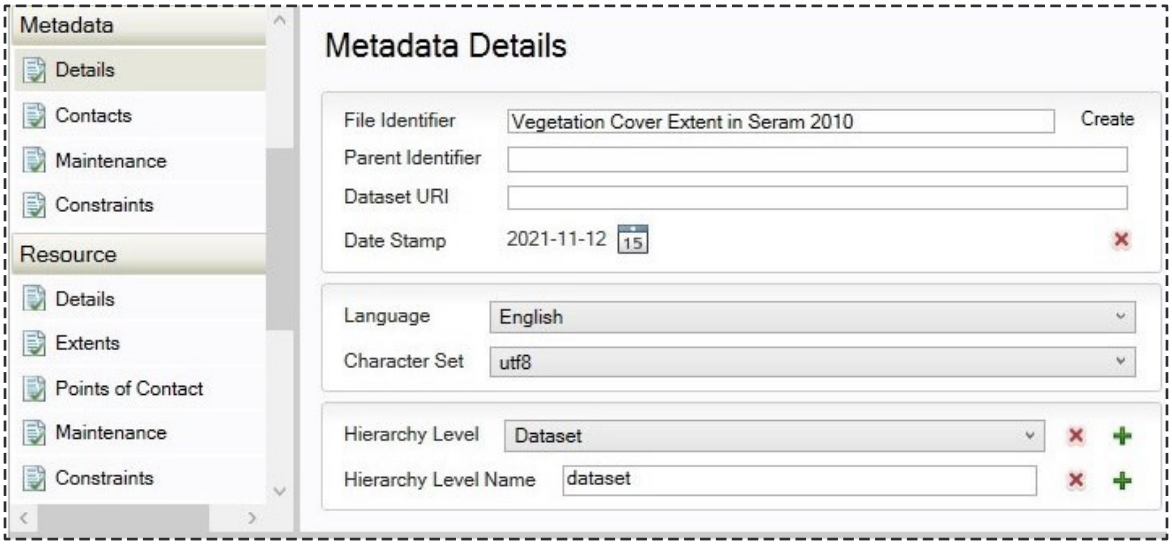


Figure 28. Details about metadata

b. Contacts – Metadata contacts: information regarding the contact responsible for creating the metadata. As an example, the Center for International Forestry Research (CIFOR) has been entered as the contact for distributing organization (**Figure 29**).

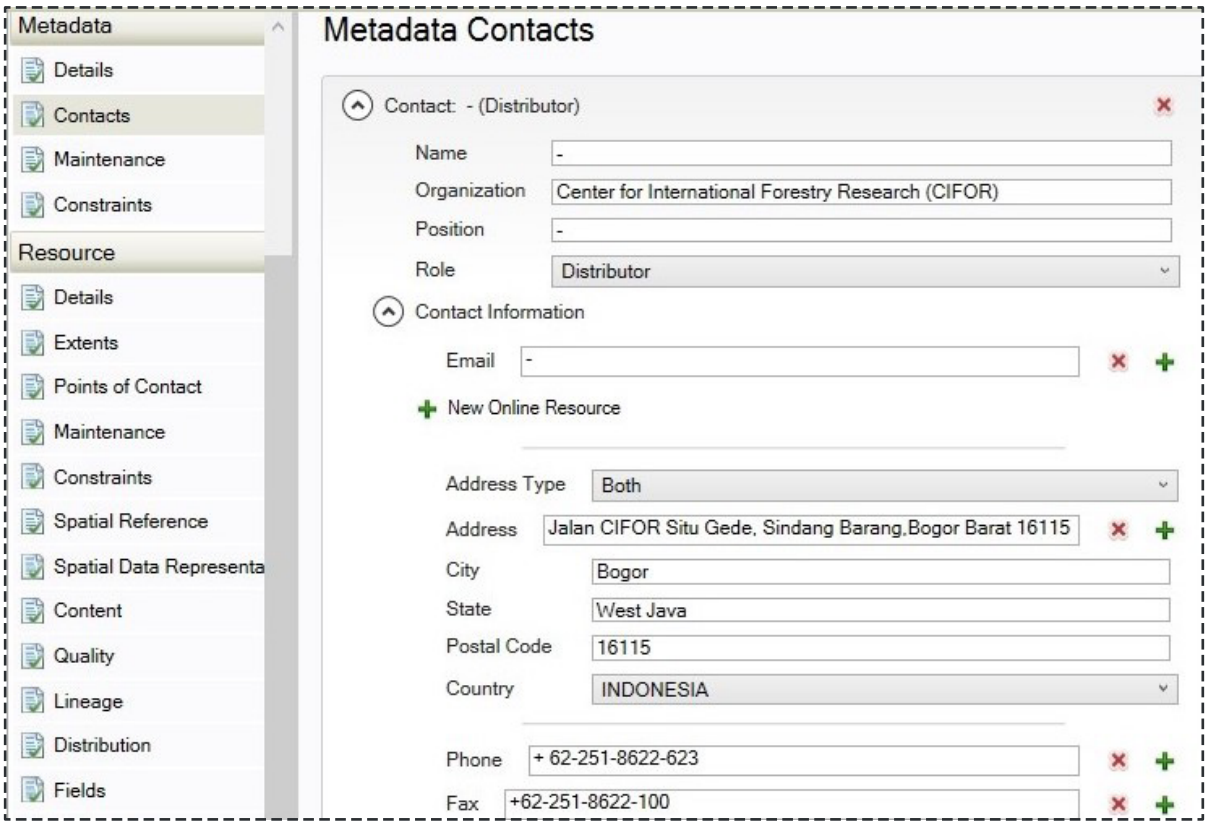


Figure 29. Entering the contact details of the metadata

c. Maintenance: information related to the frequency of maintenance/data updates. If you don't know, you can choose 'unknown' (Figure 30).

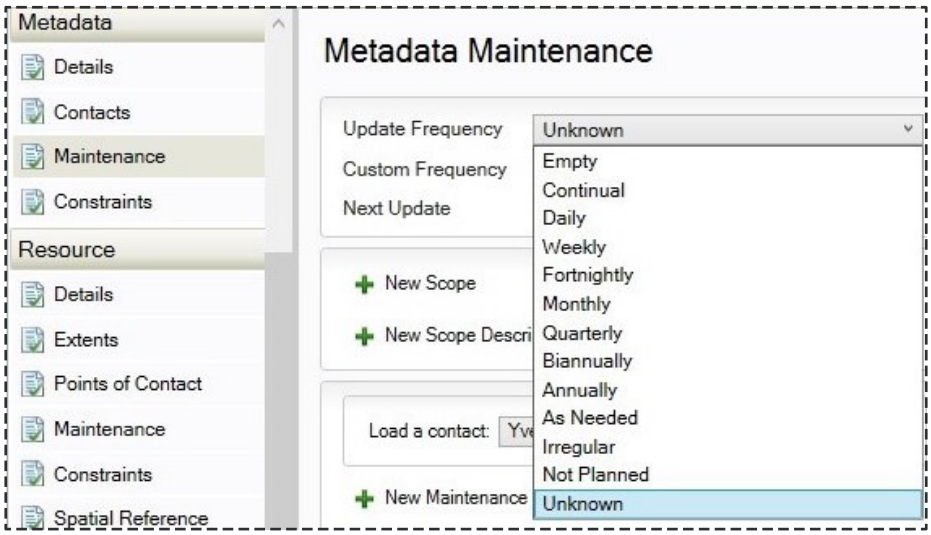


Figure 30. Entering the update frequency

RESOURCE SECTION

a. Spatial Reference – Reference System: this is the information related to the coordinates and projection system used. Usually, this is entered automatically by the system if the coordinate system in the data is defined. For example, using the WGS 1984 coordinate system, the EPSG code 32752 is defined (**Figure 31**).

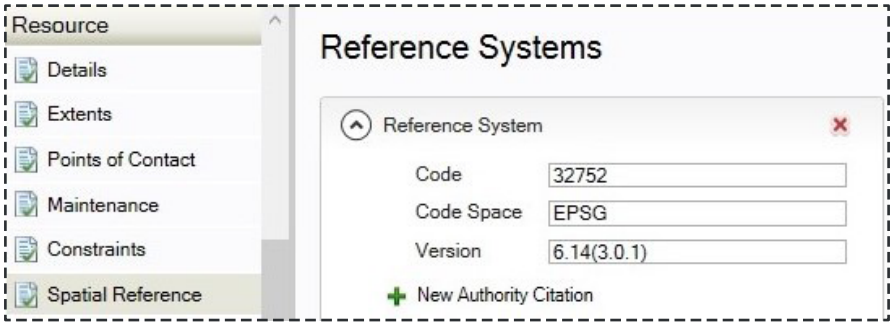


Figure 31. Entering the reference system

Does a data quality report need to be generated in metadata?

Yes, it is necessary. As one of the pillars in using the data, this quality data report can be written as more than one type, depending on the findings of the curator regarding the attributes of the data. The data quality can be entered as follows (**Figure 32**):

b. Quality – Data Quality – Scope level: Dataset

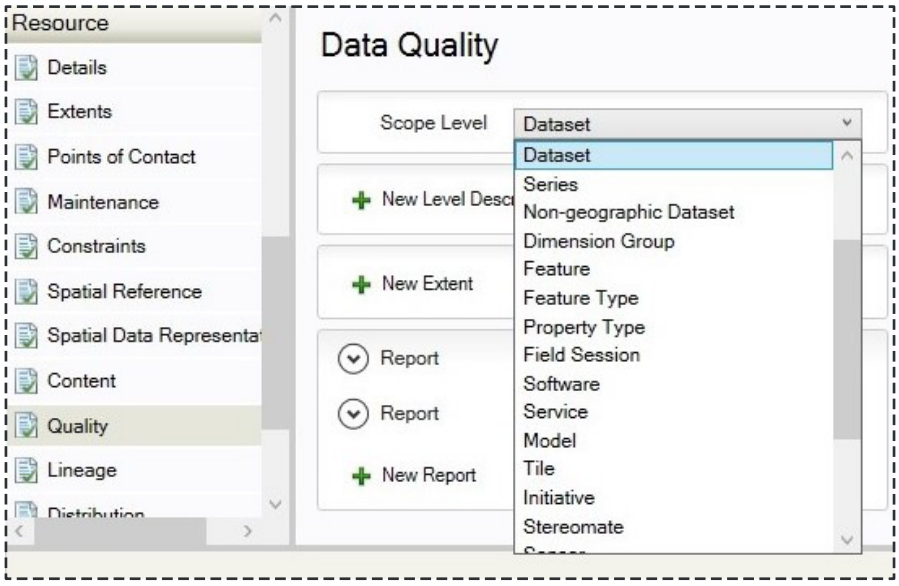


Figure 32. Entering the scope of the data quality report

c. Quality – Data Quality – Report: information/records related to the attributes of the data after checking, using the GIS Curator.

- To add information: (Report) click 'new report' (red box – **Figure 33**).

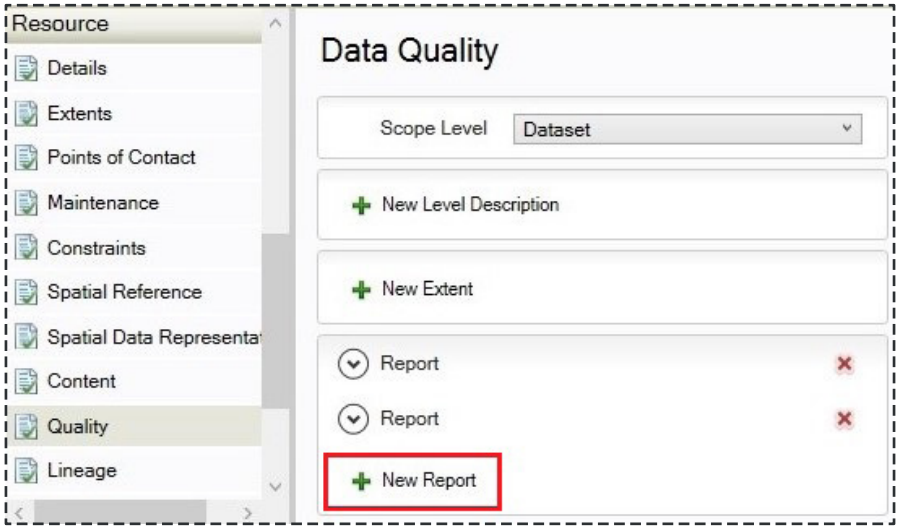


Figure 33. Adding a new data quality report

- Report – Report Type: type of report/notes related to findings from curation. There are various options available here, for example, in the data there is a record for the type Conceptual Consistency (**Figure 34**).

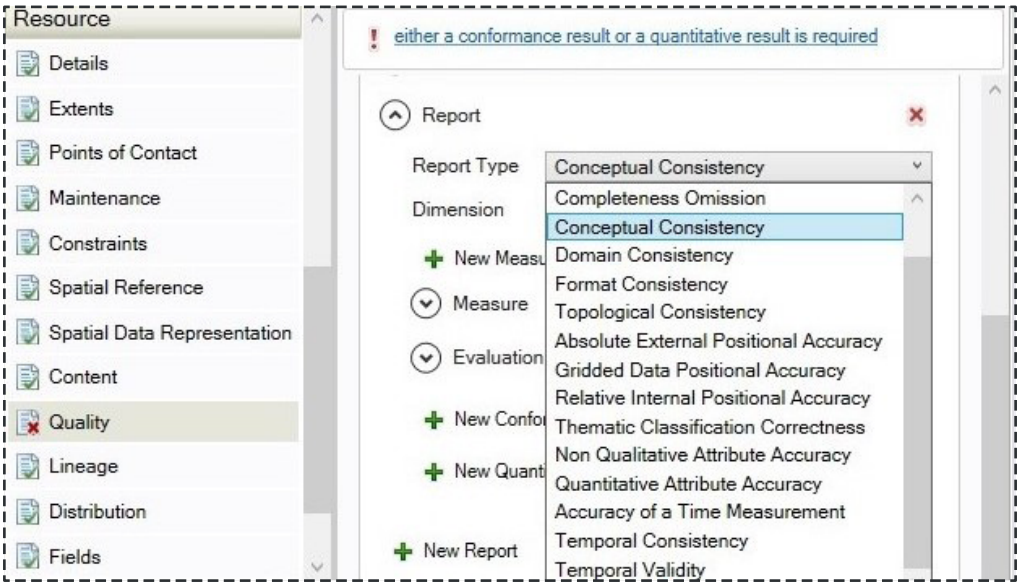


Figure 34. To specify the Report Type of data quality

- Report – Dimension: dimension of the check results. For example, the dimension is the horizontal dimension of the data (**Figure 35**).

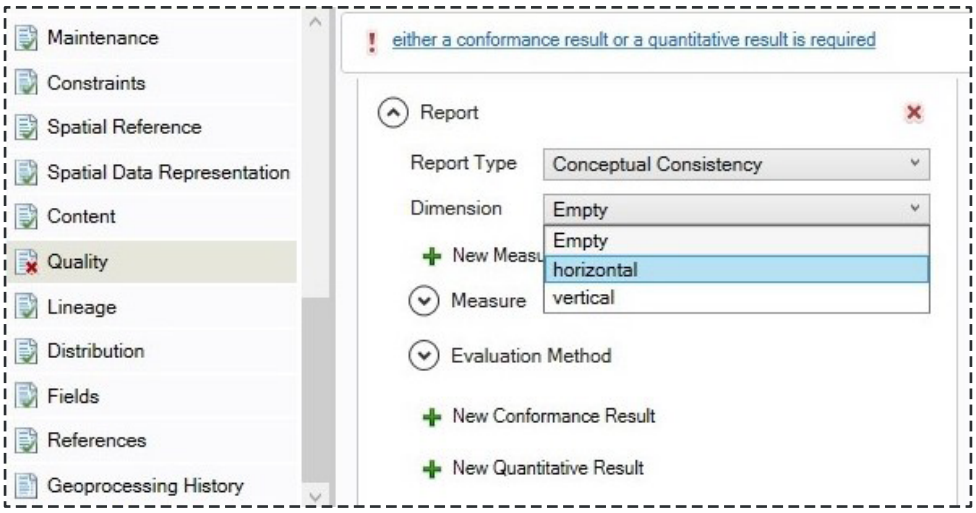


Figure 35. Entering the dimension of the data quality report

- After entering information related to the Report type and Dimension, there will be a warning at the top that will ask for information to be entered, namely a conformance result (yellow box). To add a Conformance Result click > New Conformance Result (red box – **Figure 36**)

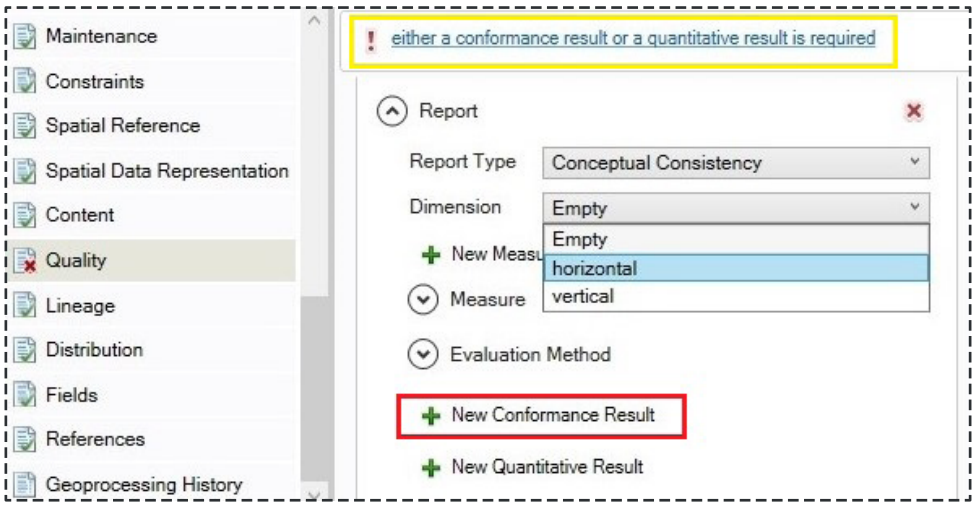


Figure 36. Adding New Conformance Result(s) for data quality

After the Conformance Results appear, enter the following:

- Report – **Conformance Result** – Pass: pass/fail. If there is no problem with the data in terms of the report type, enter (✓) in the pass box. If there is a problem with the data leave the 'pass' box blank.
- Report - Conformance result – Explanation: the curator can enter an explanation regarding the data attribute. Example: conceptual consistency was passed because the information available in the attribute data is clear and there is no overlapping (**Figure 37**).

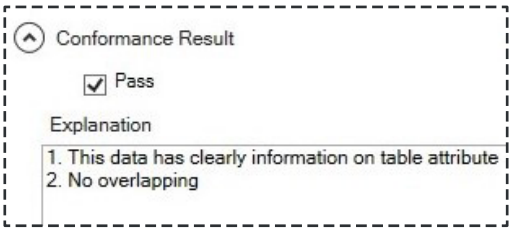


Figure 37. Pass for Conformance Results with some explanations of data quality

Report – Conformance Result – **Specification** – Titles: enter a minus sign (-) in all as a default, namely Title, Alternate Title and Collective Title (Figure 38).

Figure 38. Title of Data Conformance Result Specification

- Report – Conformance Result – Specification – **Dates**: the time the report was generated following the curation results (date, month and year) (**Figure 39**).

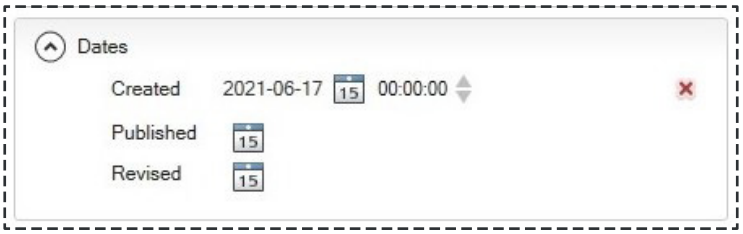


Figure 39. Date of data quality report

- If the Conformance Result Menu has not been completed, warnings will appear as in **Figure 40**, which means they need to be completed.
- If the pass column is blank/not marked (☐) due to poor data attributes (yellow box), the warnings can be ignored (**Figure 40**).

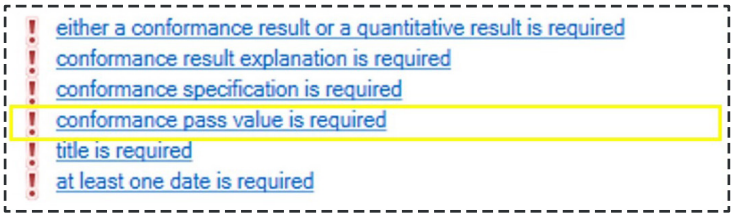


Figure 40. Warnings of data quality specifications

Note: The Data Quality Report can be implemented using several quality elements (**Figure 41**).

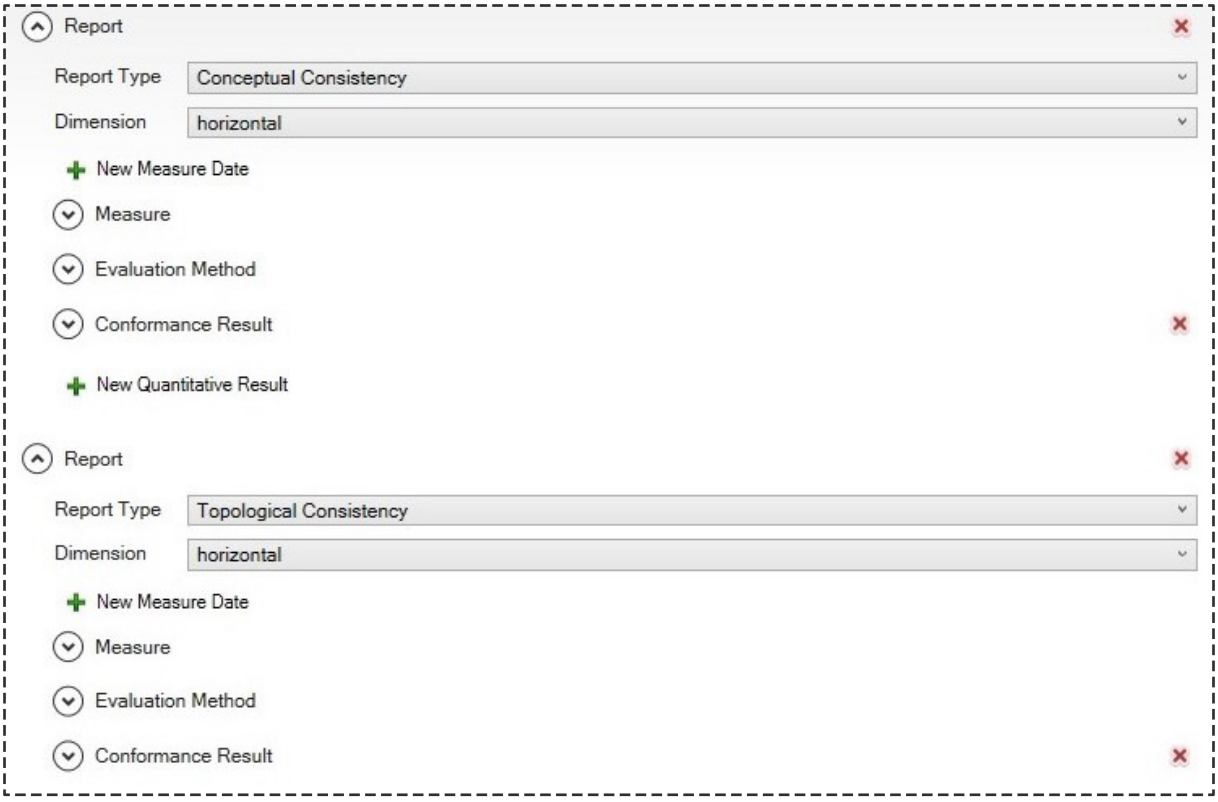


Figure 41. Data Quality Report with some elements: conceptual and topological consistency

Why is lineage essential information in metadata?

A lineage statement is an explanation or information regarding how to obtain data, data quality attributes and notes from the researchers themselves regarding the data. A sample of lineage can be seen in **Figure 42**.

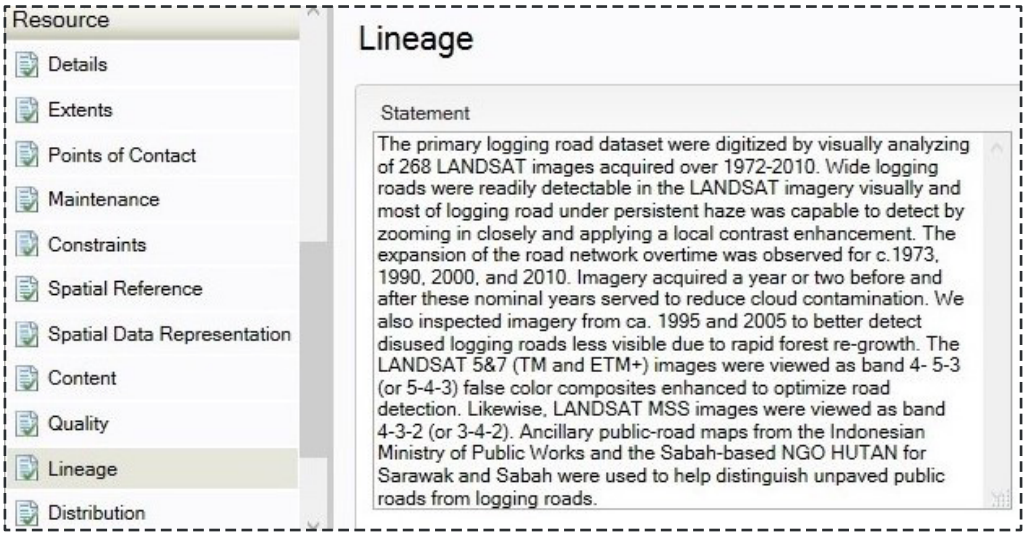


Figure 42. Statement of data lineage

How important distribution information is entered into metadata

The distribution of information describes the product specifications when distributed such as:

- Distribution – Distribution Information – Distribution Format – **Format Name**: information on the format of the file being distributed.
- Distribution – Distribution Information – Distribution Format – **Format Version**: the version of the data being distributed if the data has multiple versions. If it does not exist, it can be entered using a minus sign (-) (**Figure 43**).

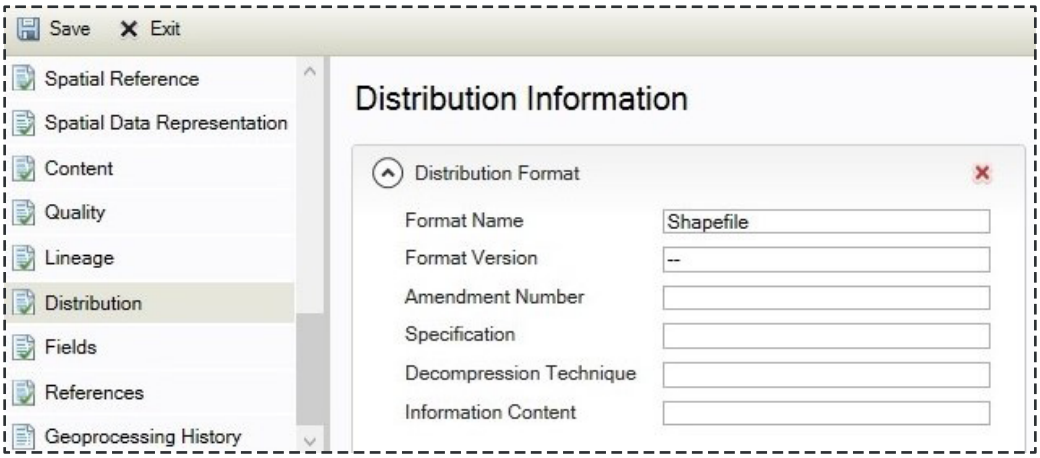


Figure 43. Distribution information about the data format

- Distribution – Distribution Information – Distributor: contact information regarding the agency that will distribute the data (**Figure 44**).

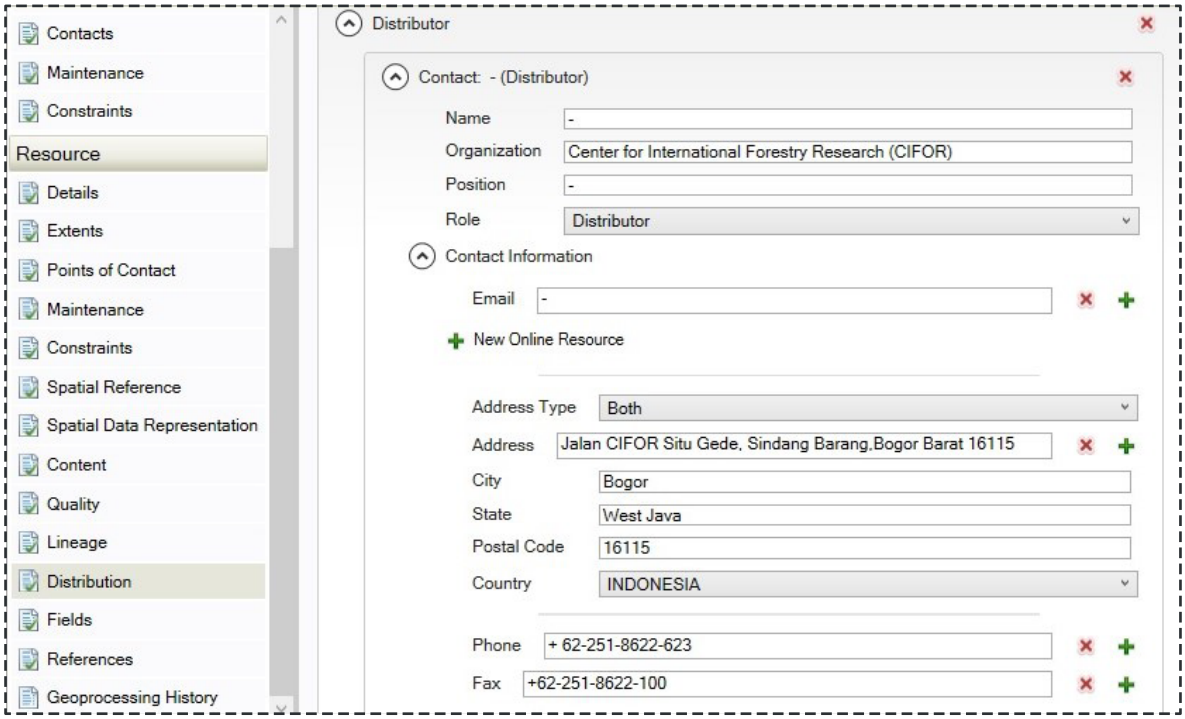
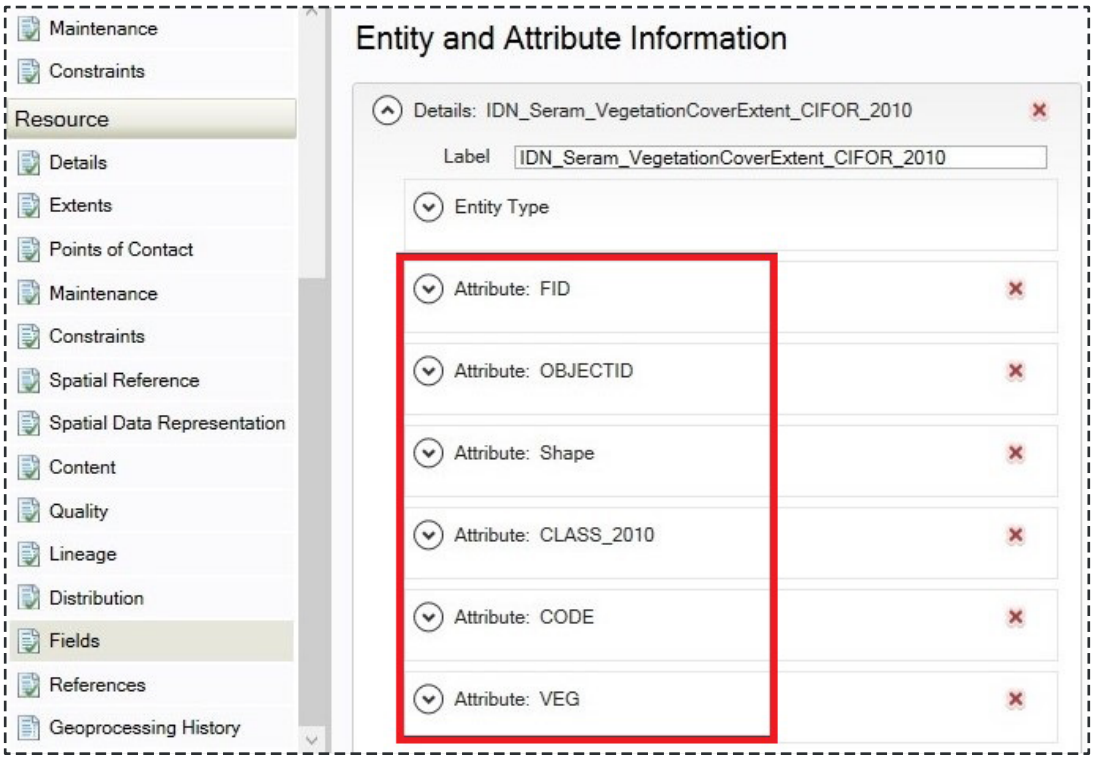


Figure 44. Information about the data distributor

How data attributes can be explained in metadata

Fields – Entity and Attribute Information: provide detailed information related to the attribute table, especially the column Attribute Field. This is how the title of the data attributes is inserted into the metadata and the data Shapefile (**Figure 45**).



FID	Shape *	OBJECTID	CLASS_2010	CODE	VEG
0	Polygon	1	Back mangrove and nipa swamp	3	F
1	Polygon	4	Cloud	57	NF
2	Polygon	5	Coastal (beach) forest	12	F

Figure 45. Entering information about data Attributes in metadata

- Information needs to be entered into each column (Field Attributes), for example:
  - » The CLASS_2010 column and its illustrations (**Figure 46**)
  - » Attribute: class_2010:
    - Definition: description related to the column CLASS_2010
    - Definition Source: the source of the information is obtained from the definition column. If the source is not known, enter a minus symbol (-).
    - Enumerated Domain: enter a minus symbol in all as the default for value, definition and definition source. Enumerated Domain filled to system request.

Note: Enumerated Domain is not required for Entity Type, FID, OBJECTID and Shape.

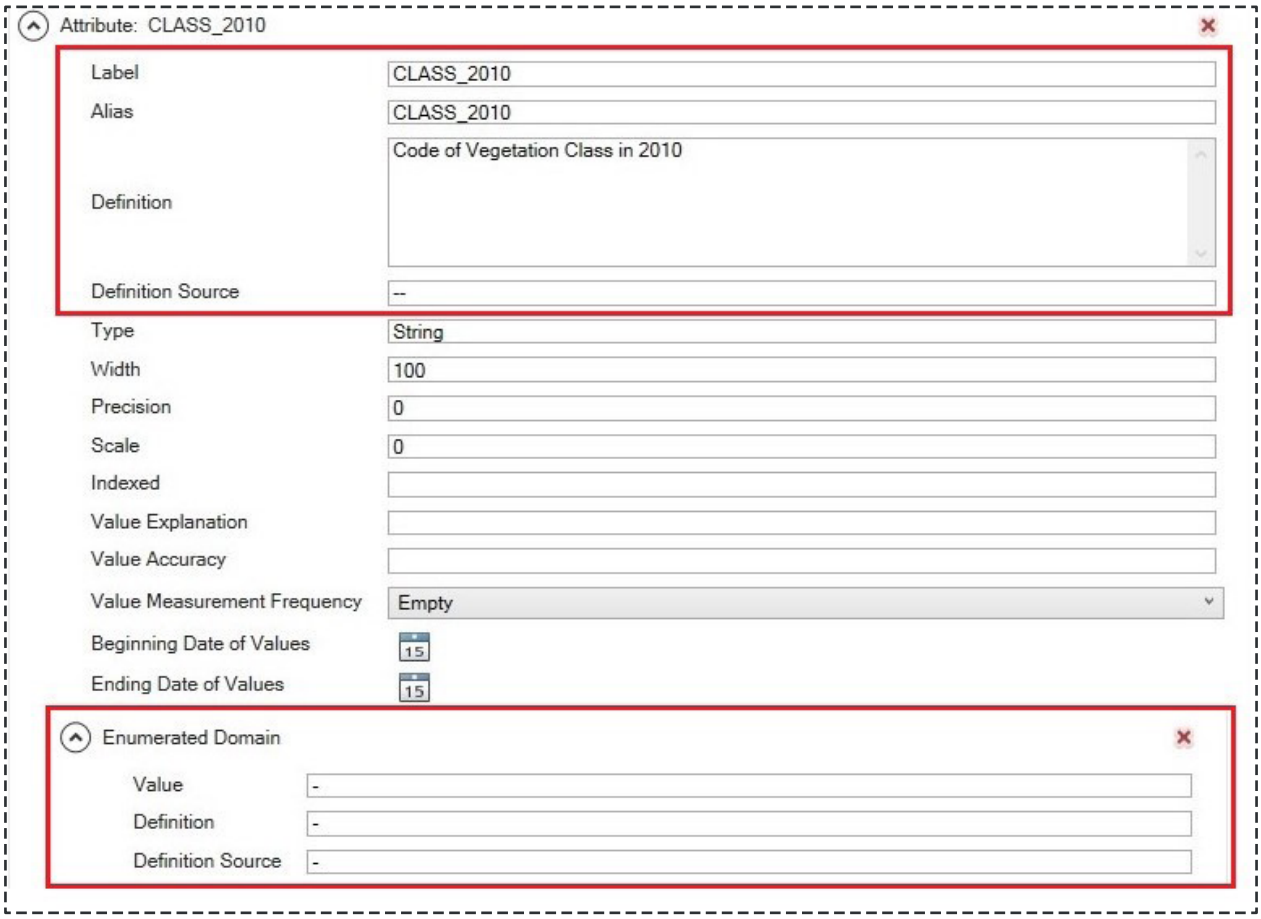


Figure 46. Detailed information for each field of data attributes

Fields – Entity and Attribute Information – Entity Type: enter '-' as default for definition and definition source (**Figure 47**).

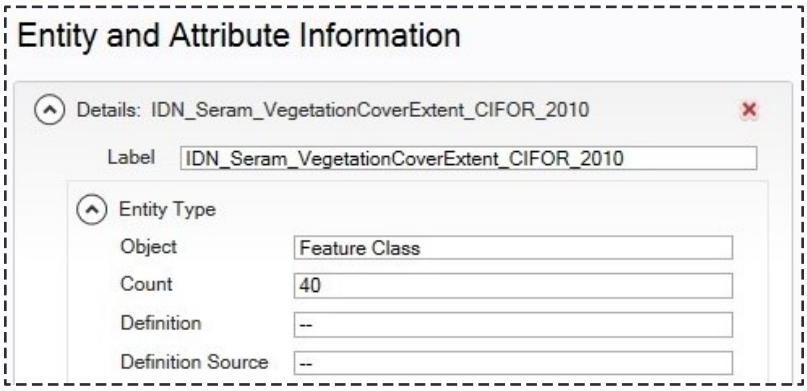


Figure 47. Details about entity and attribute information

How can we export metadata to xml format?

Metadata can be exported in xml format using the following steps:

Open ArcCatalog and click > the Shapefile and the metadata will be exported. Then click > the Description menu, next click > the Export menu on the toolbar (**Figure 48**).

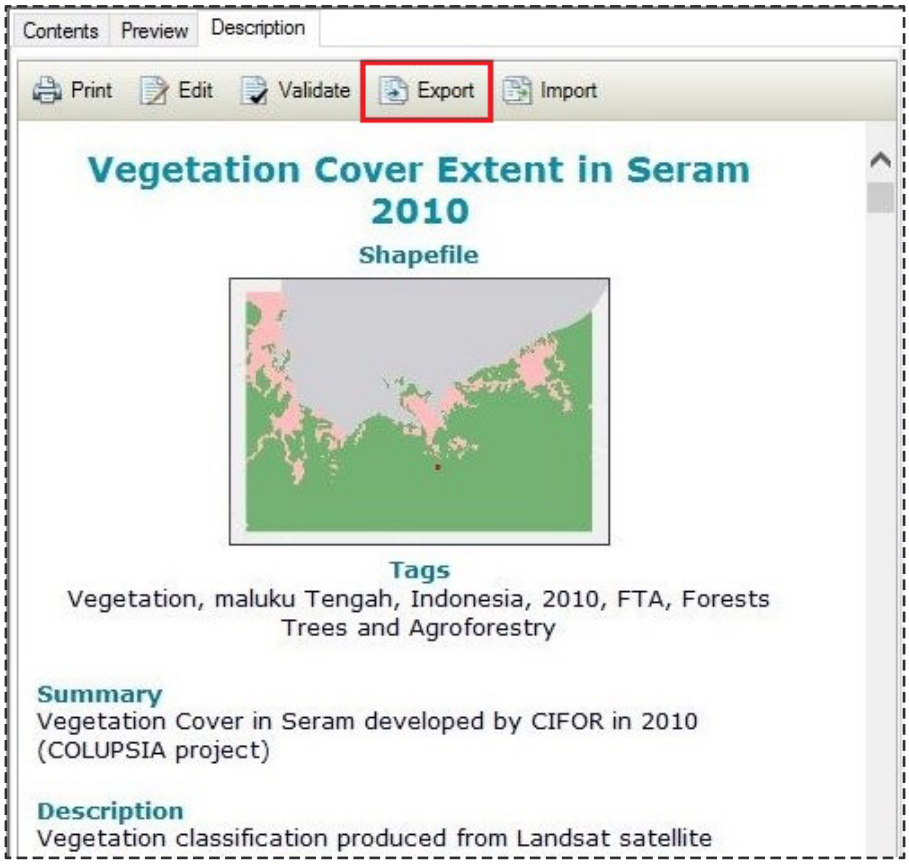


Figure 48. Exporting metadata

After that, the Export Metadata dialog box will appear, then specify the location of the folder as an output and enter the XML file name in the Output file column with **.xml format, (**Figure 49**), then click > OK.

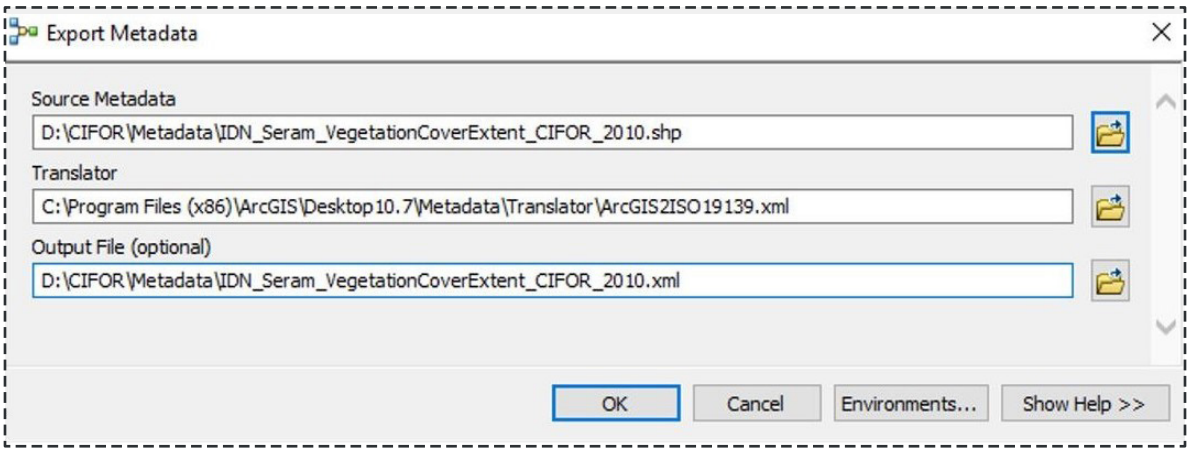


Figure 49. The specifications for exporting metadata

ArcGIS will automatically process the data and the screen in **Figure 50** will be displayed.

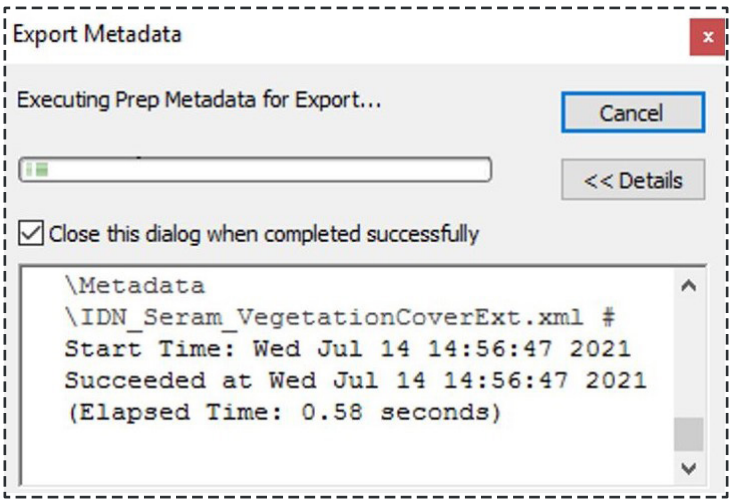


Figure 50. View of Export Metadata screen

After that, a new *.xml file will appear, which can be checked in ArcCatalog using the display below (red box – **Figure 51**).

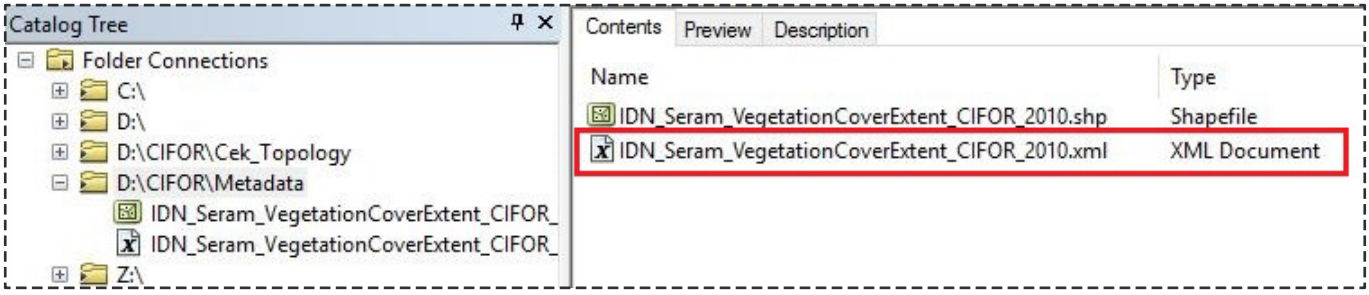


Figure 51. Exporting results in the xml format

When viewed from Windows Explorer, the screen view will be displayed as in the red box in **Figure 52**.

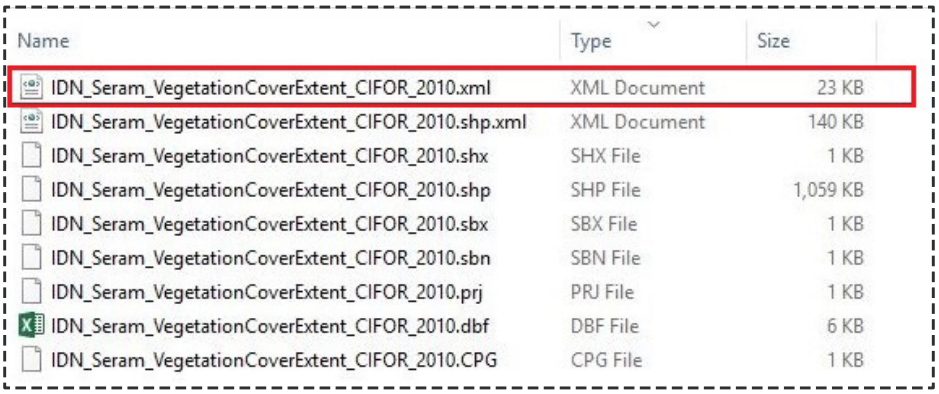


Figure 52. The xml format in the file folder

Is there a tool for developing metadata?

Yes, we recommend you use CatMDedit as one of the open source tools to create metadata as it conforms to the ISO 19115 standards. The steps are as follows:

- The first step is to create a folder in Windows Explorer, for example: D:\CIFOR\FTA_Geoportal
- The next step is to open > the CatMDEdit application and click > Add/delete repository (red box – with a hand symbol and a folder) (**Figure 53**).

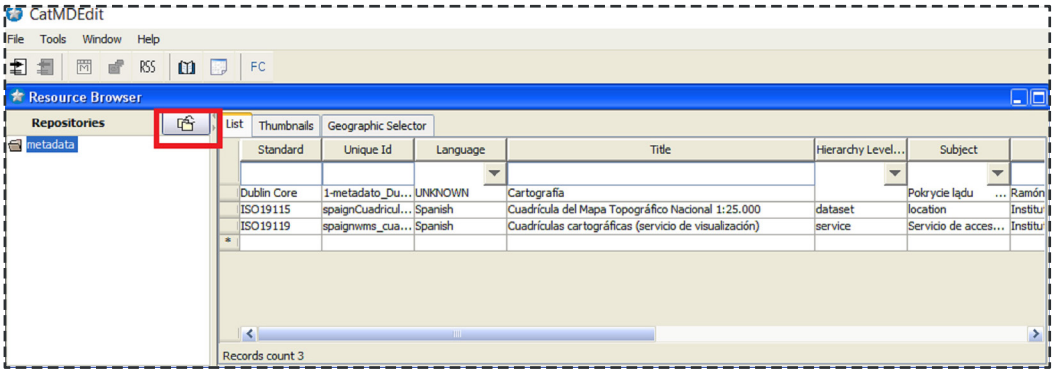


Figure 53. Adding metadata to CatMDedit

- Then the Repository Manager (and then the Repository Creation) dialog box will appear > click the repository folder that has been created (Example: D:\CIFOR\FTA_Geoportal) (**Figure 54**)

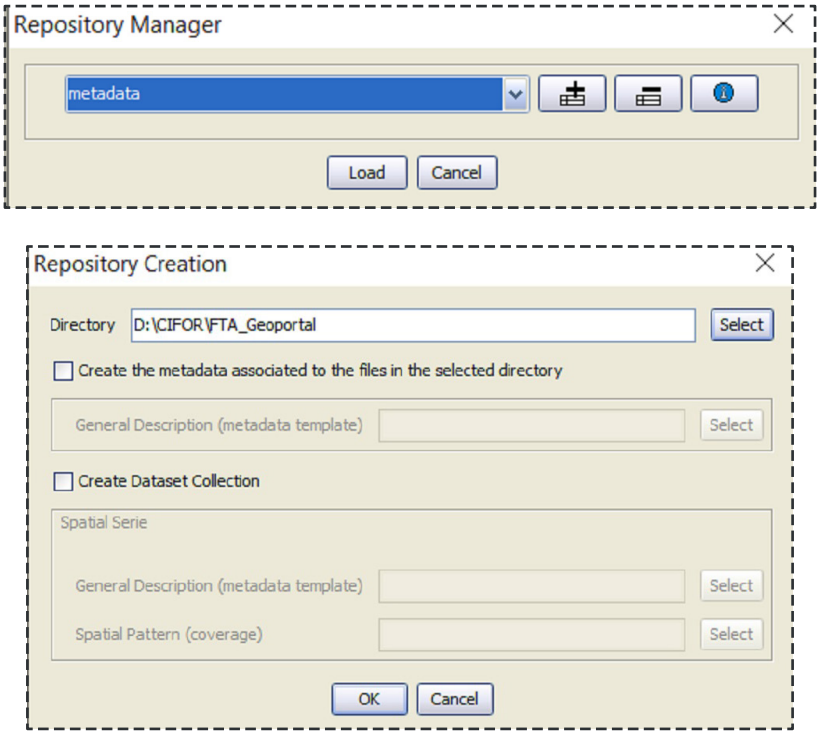


Figure 54. Loading metadata in CatMDedit

- Then click > OK > Load and the FTA_Geoportal will appear in the repository list. After that click> the FTA_Geoportal folder and wait until it turns blue and an empty list column (Left) will appear, because it does not have an XML data list (**Figure 55**).

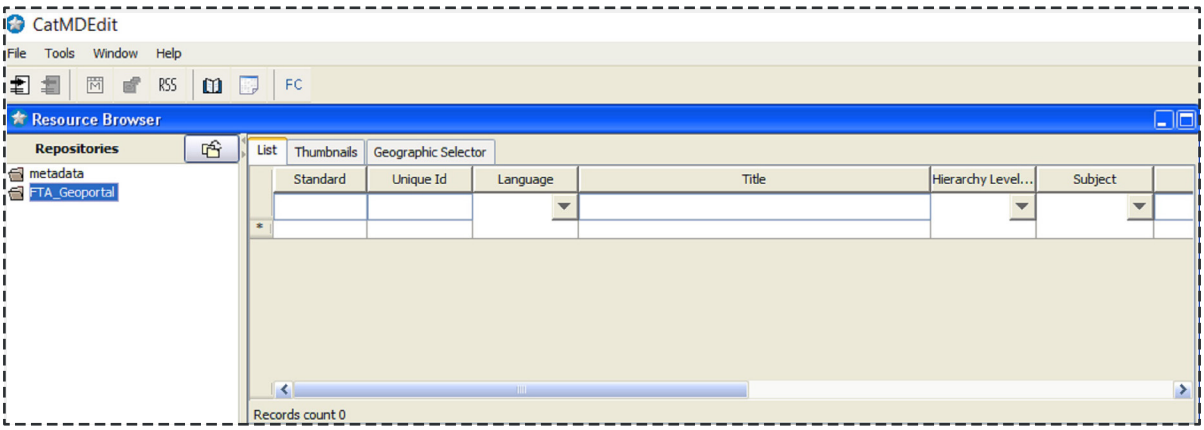


Figure 55. Results of folder creation in CatMDedit

Can metadata in XML format be edited in CatMDEdit?

Yes, metadata in xml format such as the results from ArcCatalog can be edited using CatMDedit.

- Once the Repository is available (example–FTA_Geoportal) click and wait > the Repository in question will turn blue then click > import (red box – **Figure 56**)

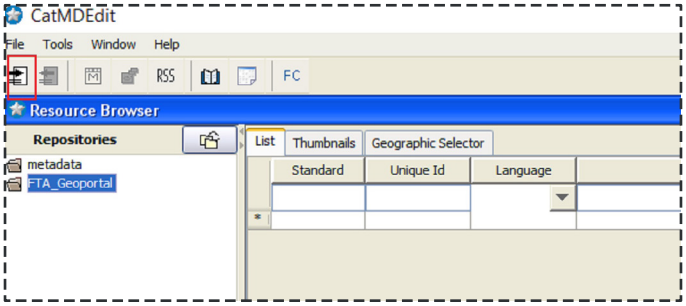


Figure 56. Importing a file to CatMDedit to specific folders

- The Import dialog box will then appear click > add to click the XML file to be imported. After clicking the XML file click > Open then click > Import (**Figure 57**).

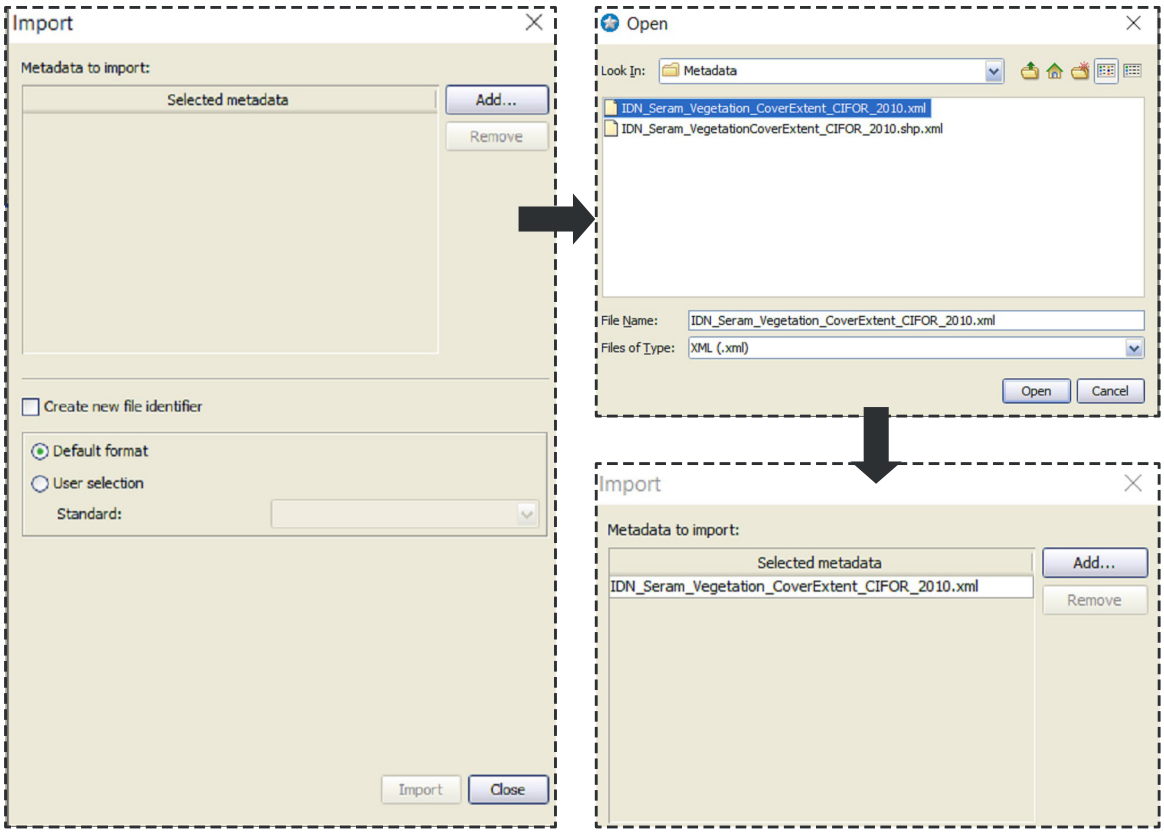


Figure 57. Process of adding the xml file to catMDedit

- After clicking Import, the data will be automatically added to the list and you can click > Close (red box – **Figure 58**):

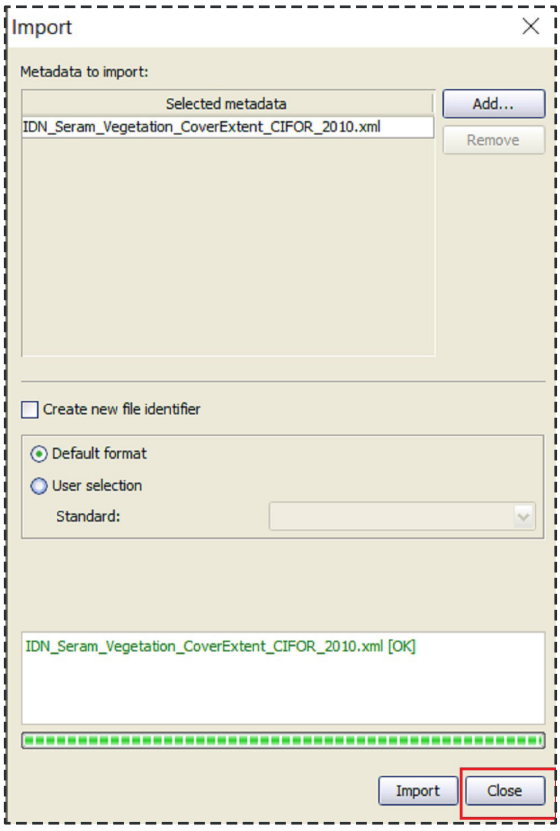


Figure 58. Closing the importing process after finished and OK

- The repository display for FTA_Geoportal, after XML data has been entered, will look like the screen view in **Figure 59**.

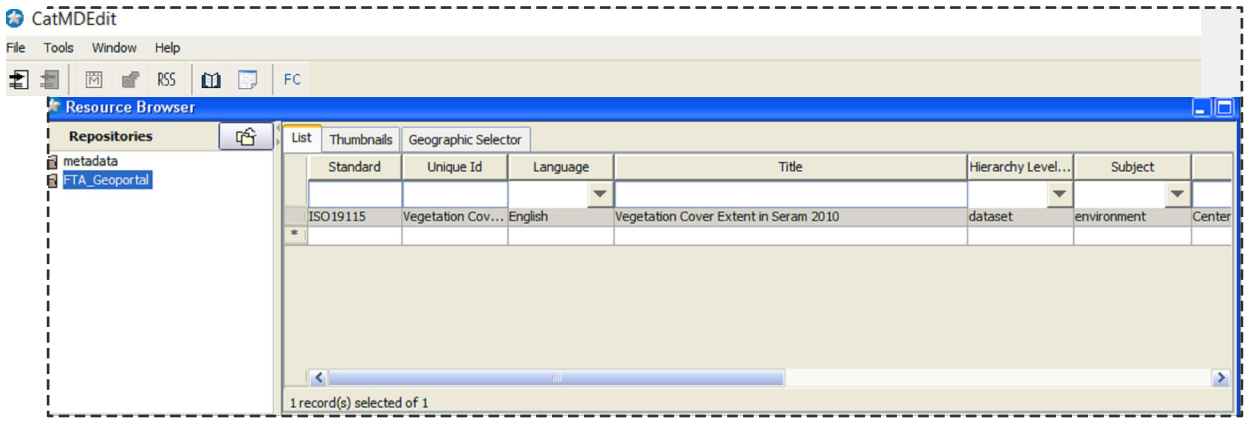


Figure 59. The results of importing an xml file to a specific folder

- In addition, in Windows Explorer, from the example: D:\CIFOR\Repository, it will automatically add 1 new file (**Figure 60**).

Figure 60. The xml file can be read in Windows Explorer.

How to edit Metadata in CatMDEdit following ISO 19115 standards

When the XML data in CatMDEedit appears > double-click on the data > metadata will be entered.

- A new toolbar will appear containing the HTML menu, ISO 19115 etc. Because the metadata used is ISO 19115 click > the ISO 19115 menu. Information from the metadata has 3 classes: mandatory, optional and conditional. In Figure 61, there is a screen view of what it will look like.

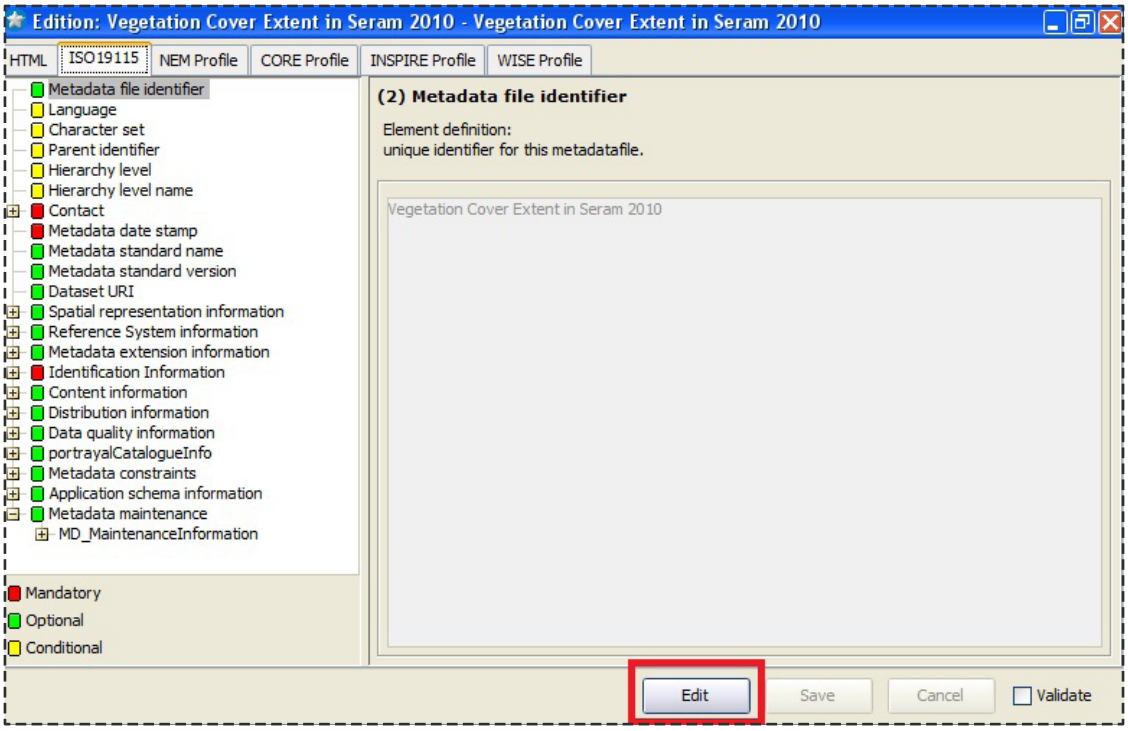


Figure 61. The ISO 19115 elements in the metadata standards

- To change the metadata click >Edit at the bottom (red box), 'Save' and > 'Cancel' will be activated automatically (**Figure 61**). Here's an explanation:
  - » Metadata file identifier: Information regarding the identification code for the data. If the identification code does not exist, a data title can be added/entered, for example 'Vegetation Cover Extent in Seram 2010'. (**Figure 62**)

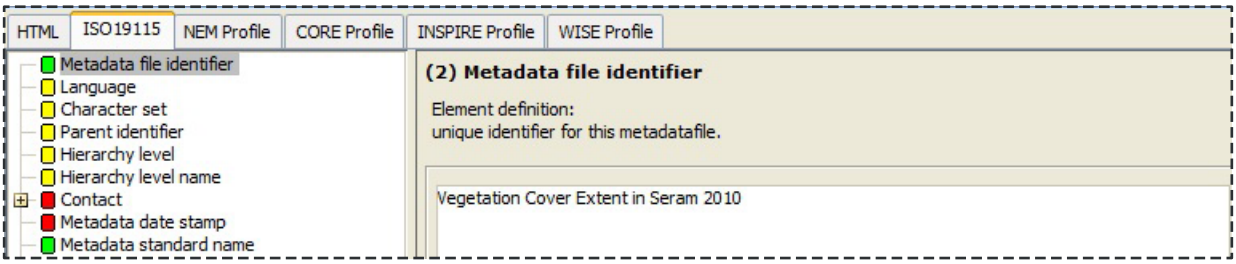


Figure 62. A unique identifier that can be implemented in the dataset

  - » Language: this is the language used in the metadata, for example, English (**Figure 63**)

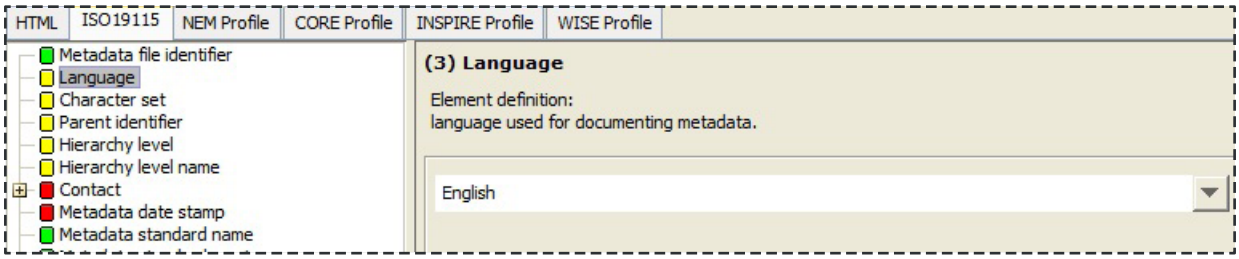


Figure 63. Entering the language of the metadata

  - » Character set: using utf8
  - » Metadata date stamp: this is the date the metadata was created (this is required information – red mark) (**Figure 64**).

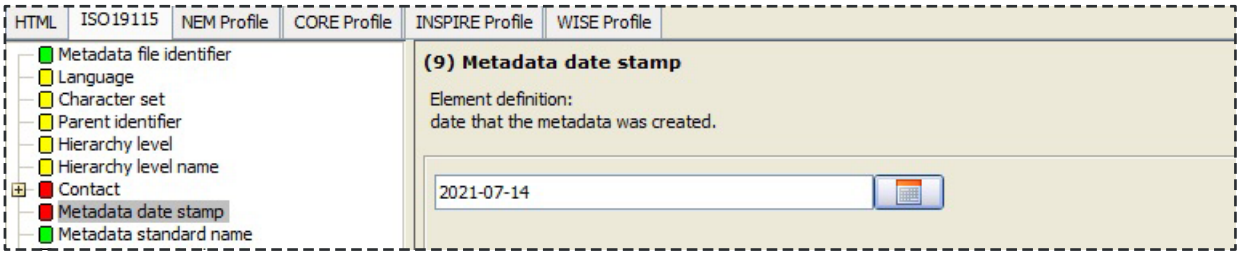


Figure 64. Entering the date stamp

  - » Metadata standard name: ISO 19115 Geographic information – Metadata (**Figure 65**)

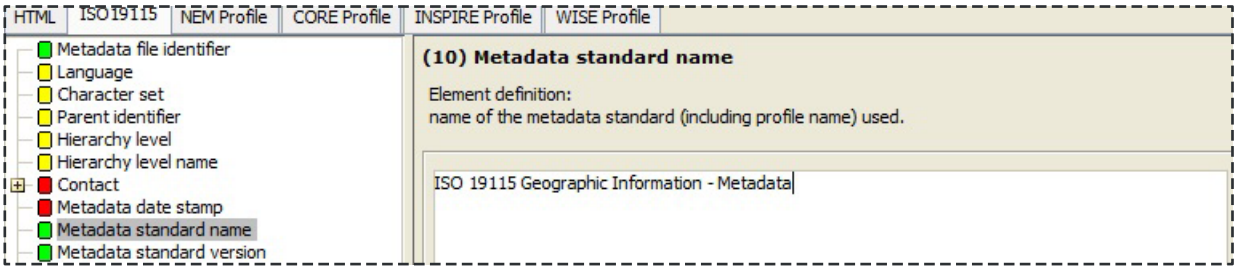


Figure 65. Entering the metadata standard name

» Metadata standard version: ISO 19115:2003 (**Figure 66**)

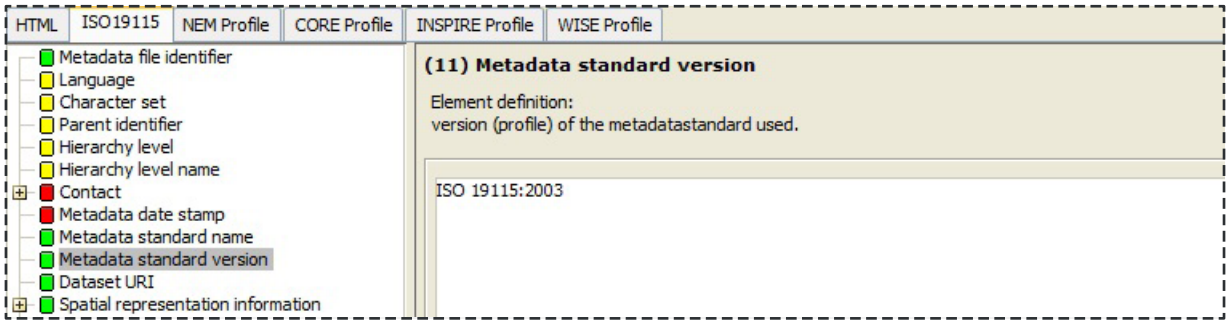


Figure 66. Entering the standard version of the metadata

» Contact: enter the contact information of the metadata creator (required information – red mark) (**Figure 67**)

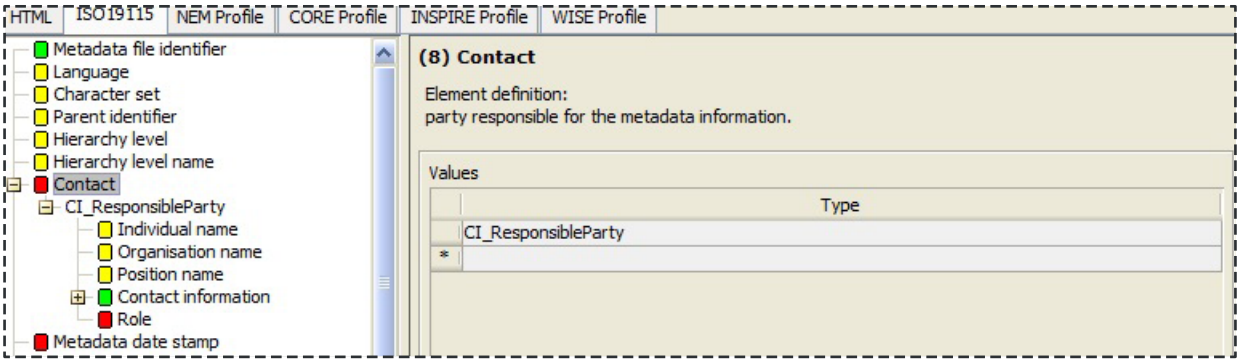


Figure 67. Entering the contact and responsible party

» Organization name: the organization where the creator of the metadata works, example: Center for International Forestry Research (CIFOR) (**Figure 68**).

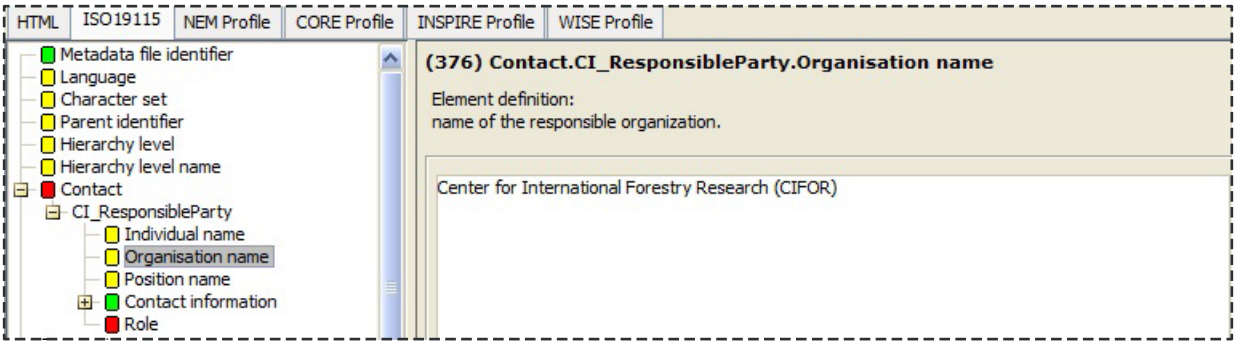


Figure 68. Entering the organization's name

» Phone – CI_Telephone: telephone number and fax number of the metadata generator. Example: CIFOR agency telephone number (as the place of work of the metadata creator) (**Figure 69**)

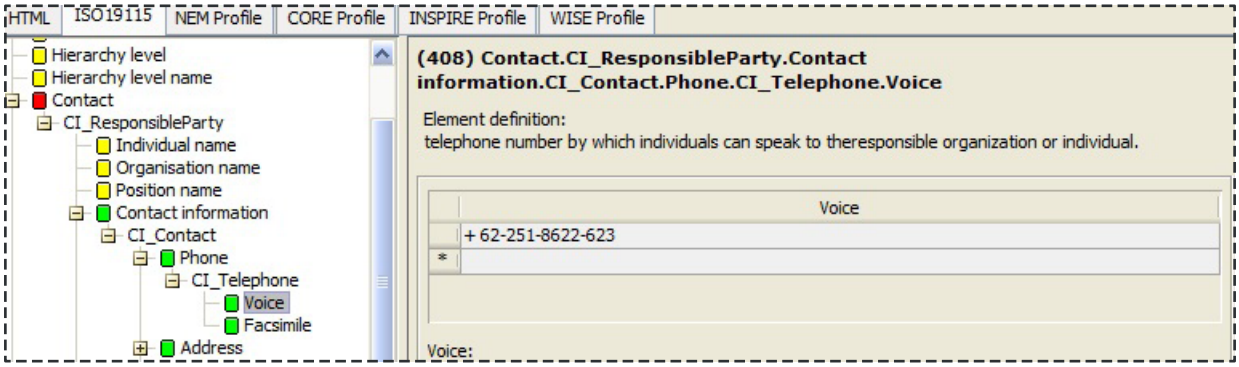


Figure 69. Entering the telephone number

» Address – CI_Address: office address, city, province, postal code and country (**Figure 70**)

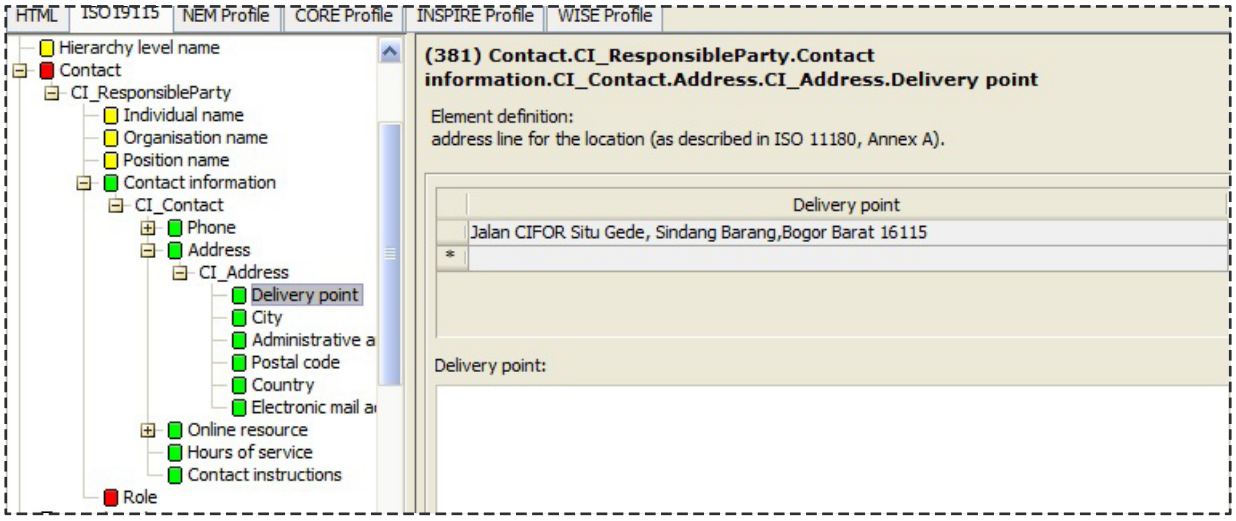


Figure 70. Entering the address

» Role: Distributor; if the one who manages the metadata is the CIFOR management team, enter CIFOR as the data distributor. If the situation is different, this can be adjusted using the available options (**Figure 71**).

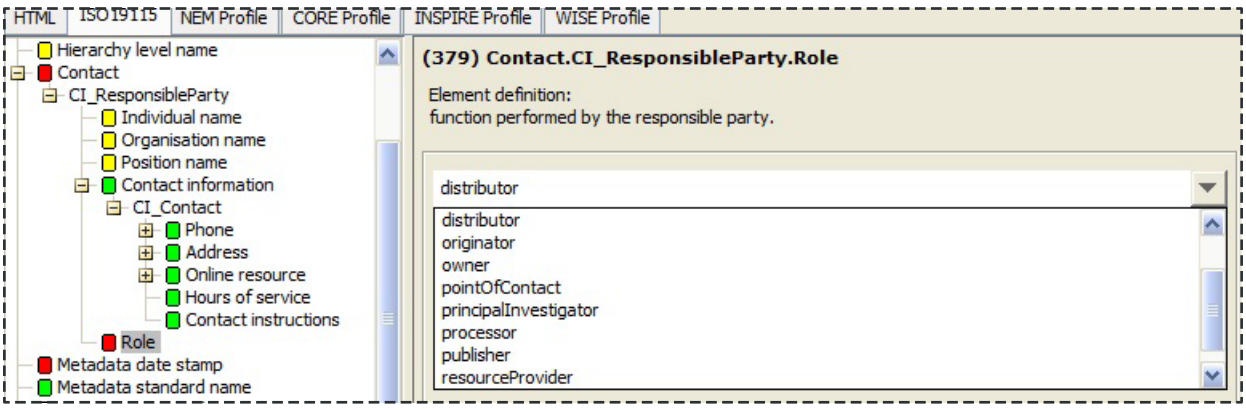


Figure 71. Defining the role of the responsible party.

» Dataset URI: link for the uploaded data on CIFOR geonode website (https://geonode.cifor.org) (**Figure 72**)

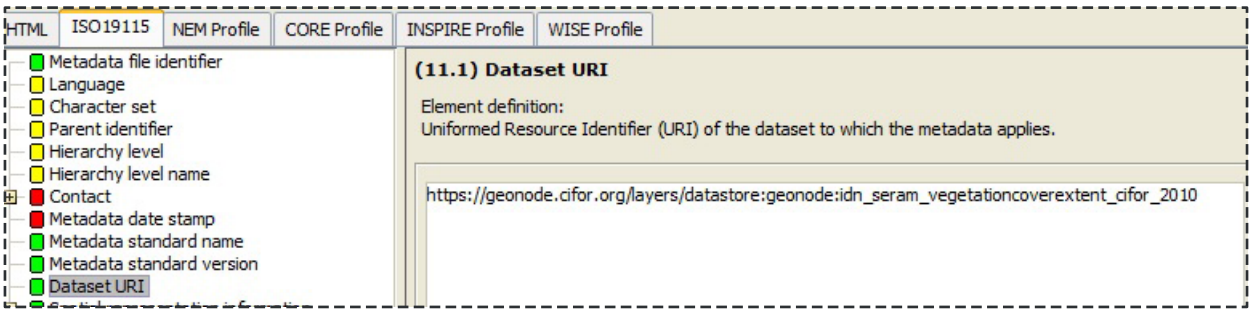


Figure 72. Entering the URI

» In code, enter the Reference System Information – MD ReferenceSystem – RS Identifier – Code and then click > Code Space: coordinate system used in Shapefile/raster data, WGS 1984 – EPSG 4326 (**Figure 73**).

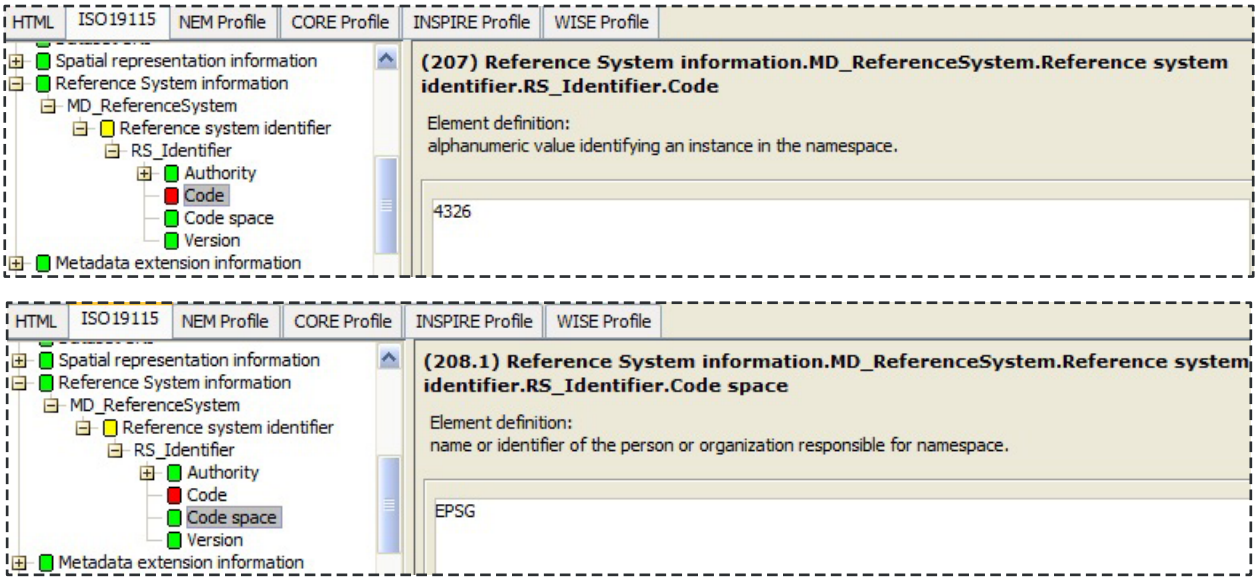


Figure 73. Entering the system projection code

» Metadata Maintenance > MD_MaintenanceInformation > Maintenance and Update Frequency: the frequency of metadata repair if the time is known, otherwise click/enter > Unknown. (**Figure 74**)

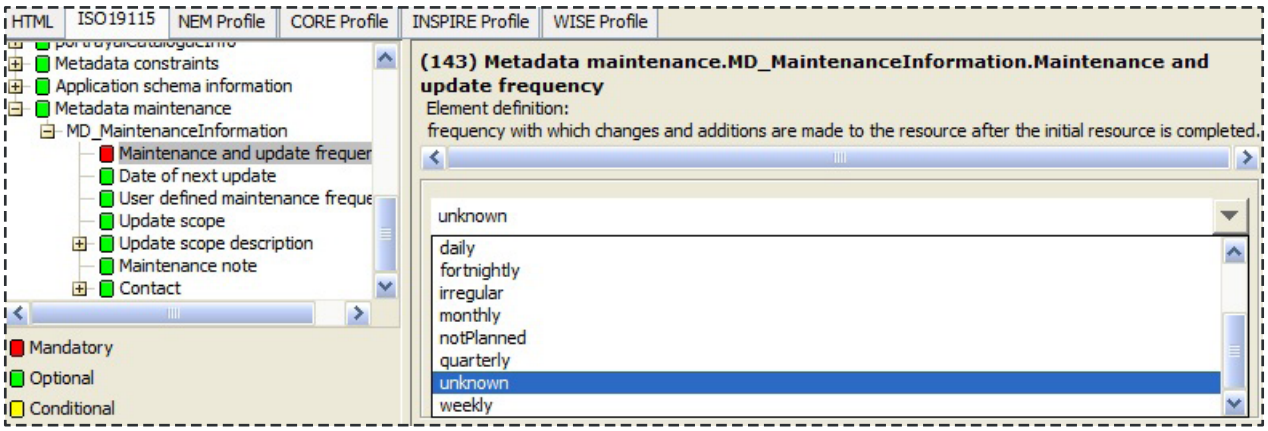


Figure 74. Entering the maintenance information

» Click > Identification Information > MD_DataIdentification > CI_Citation > Title: Data title, for example 'Extent of vegetation cover in Seram 2010' (information required – red mark) (**Figure 75**)

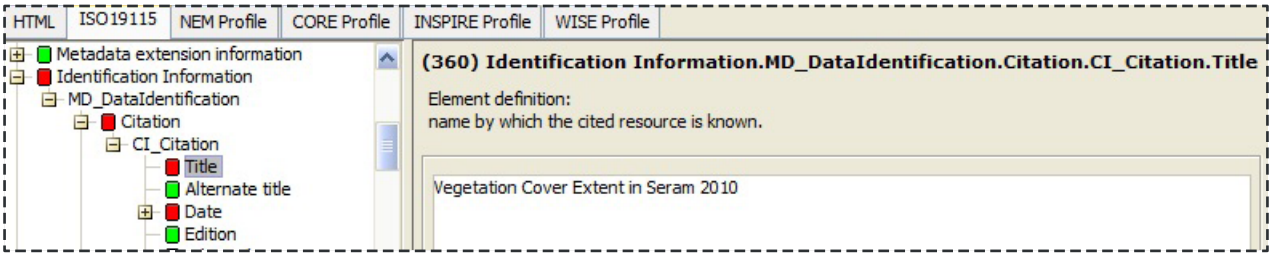


Figure 75. Entering the title of data.

» Click > MD_DataIdentification > CI_Citation > Date > CI_Date > Date_type: data related information created, published or revised. Example: 'Creation' (information required – red mark) (**Figure 76**)

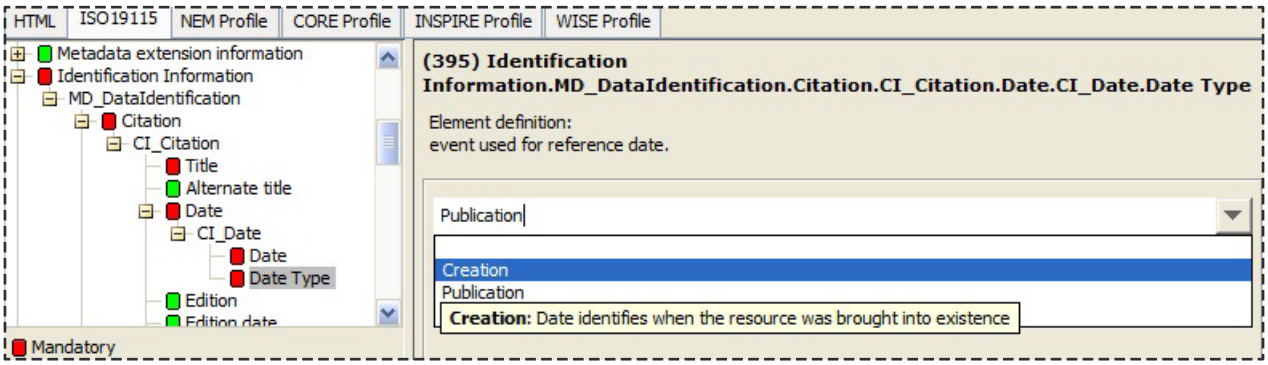


Figure 76. Entering the date type

» MD_DataIdentification – CI_Citation – Date – CI_Date – Date: time information that supports Date Type, for example: data created on 31 December 2010 (required – red mark) (**Figure 77**)

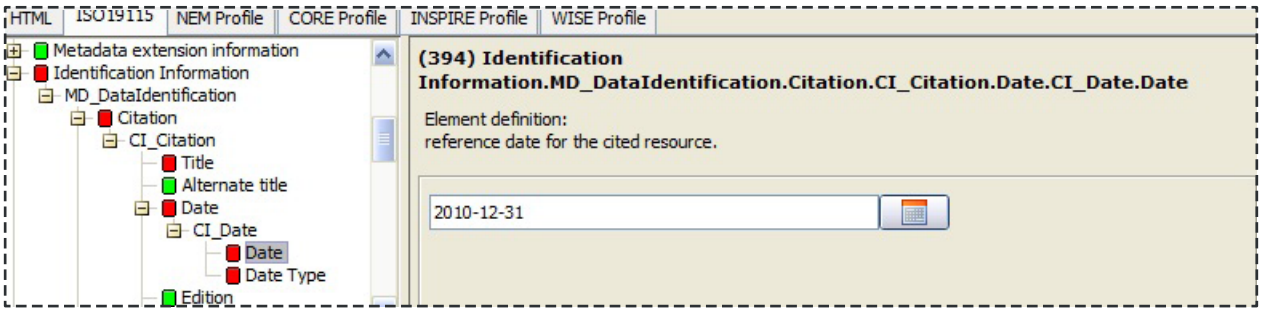


Figure 77. Enter the date

» Click MD_DataIdentification > Citation > CI_Citation > Date: the CI_Date information can be entered more than once. If there is information on the time of data creation and publication, the CI_Date list will contain two items, as shown in **Figure 78**.

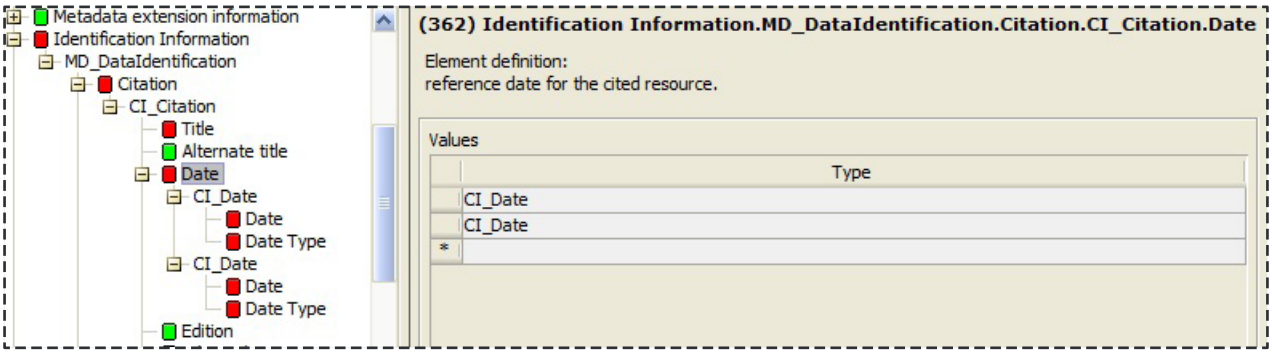


Figure 78. Date can be entered more than once based on the type of date

» Abstract: information related to the summary of the contents of the data (required – red mark) (**Figure 79**).

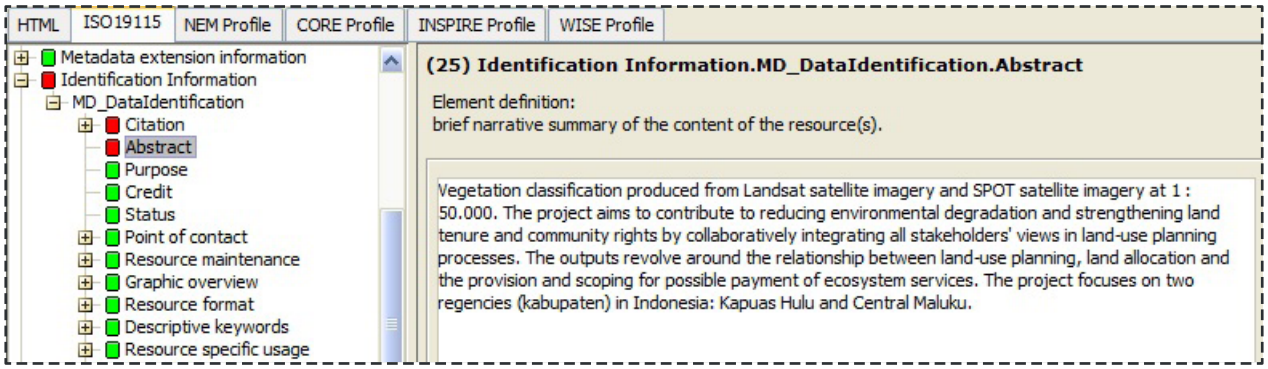


Figure 79. The abstract is basic information about the dataset

» The Purpose of the data is then entered (**Figure 80**)

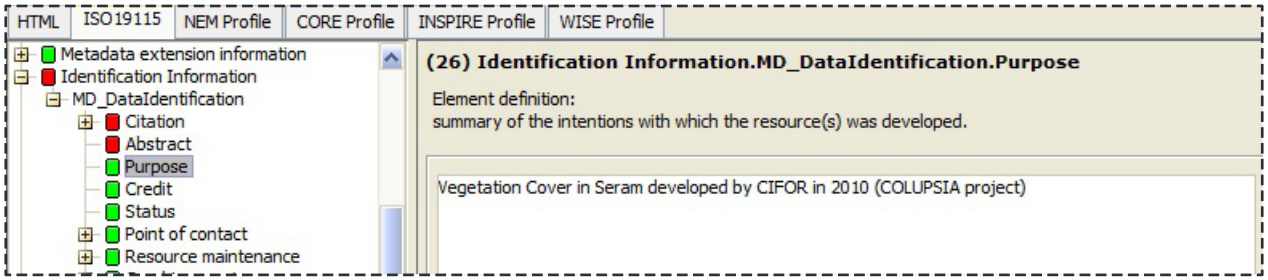


Figure 80. The purpose of data creation.

» Credit: creator and person in charge of data (**Figure 81**).

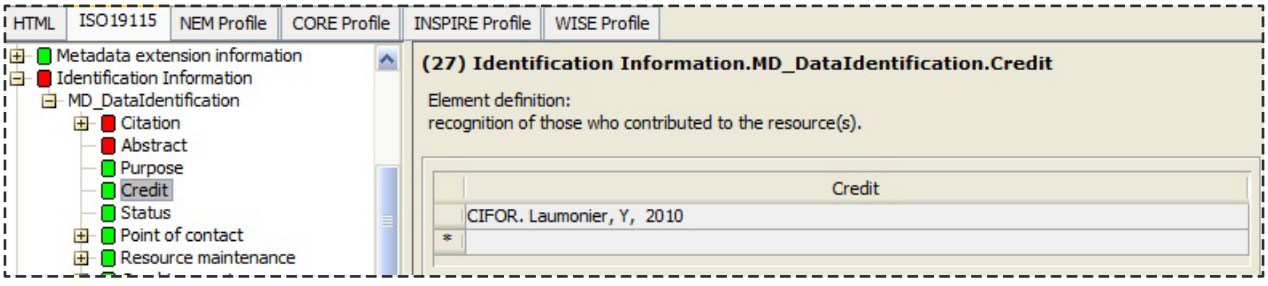


Figure 81. Credit data producers and creators, including the owner of the dataset

Point of contact: information about the person in charge of the data

» CI_ResponsibleParty > Individual name: enter the individual's name (**Figure 82**).

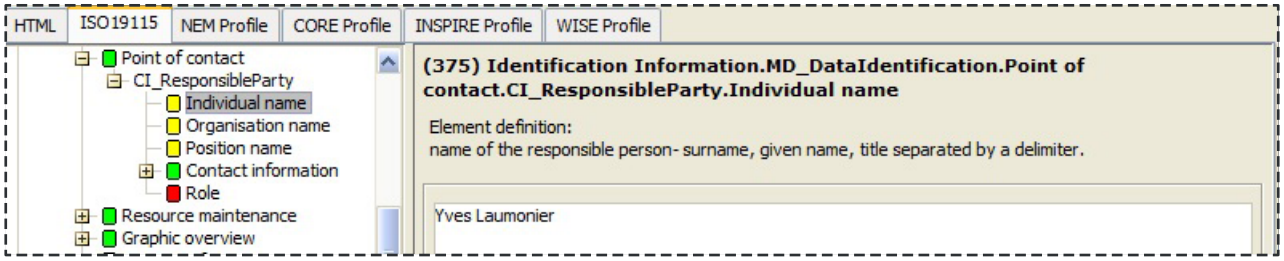


Figure 82. Name of person in charge of the dataset

» CI_ResponsibleParty > Organization name: organization's name and that of the person in charge. (**Figure 83**).

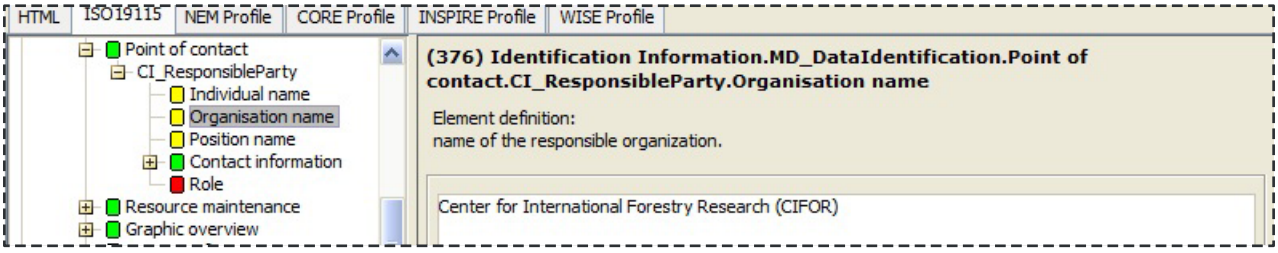


Figure 83. The organization of the responsible party

» CI_ResponsibleParty > Position name: position and person in charge (**Figure 84**)

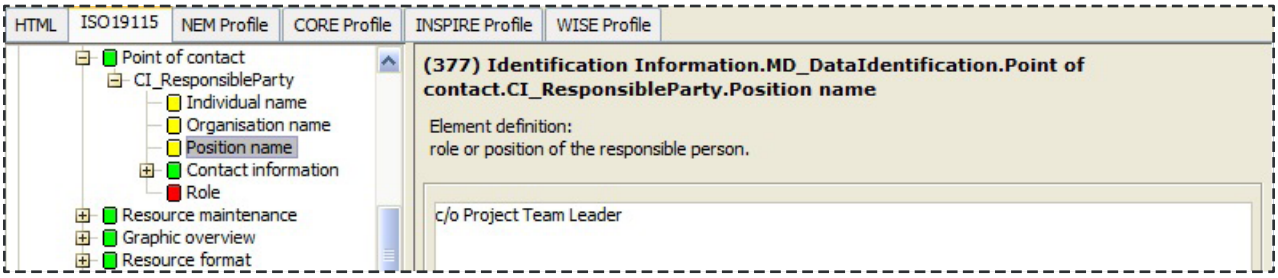


Figure 84. The position of the responsible party.

» CI_ ResponsibleParty > Contact information > CI_ Contact > **Phone**: information regarding the telephone number and facsimile of the person in charge of the data. Example: CIFOR office telephone number (as place of work)

» CI_ ResponsibleParty > Contact information > CI_Contact > **Address**: office address, city, province, postal code, country and email address of the person in charge of the data

» CI_ ResponsibleParty > **Role:** the role of the person in charge. Example: as the main contact related to data, click > PointofContact (**Figure 85**).

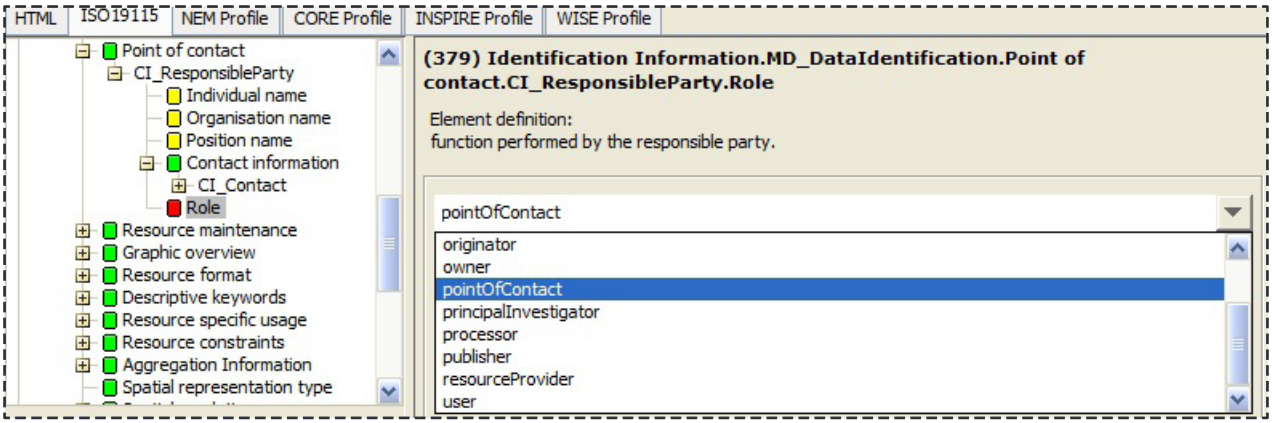


Figure 85. The role of responsible party for the dataset

» Resource maintenance > MD_ MaintenanceInformation > Maintenance and update frequency: information related to data update frequency. If it is not known whether the data has already been updated or not, click > unknown (**Figure 86**)

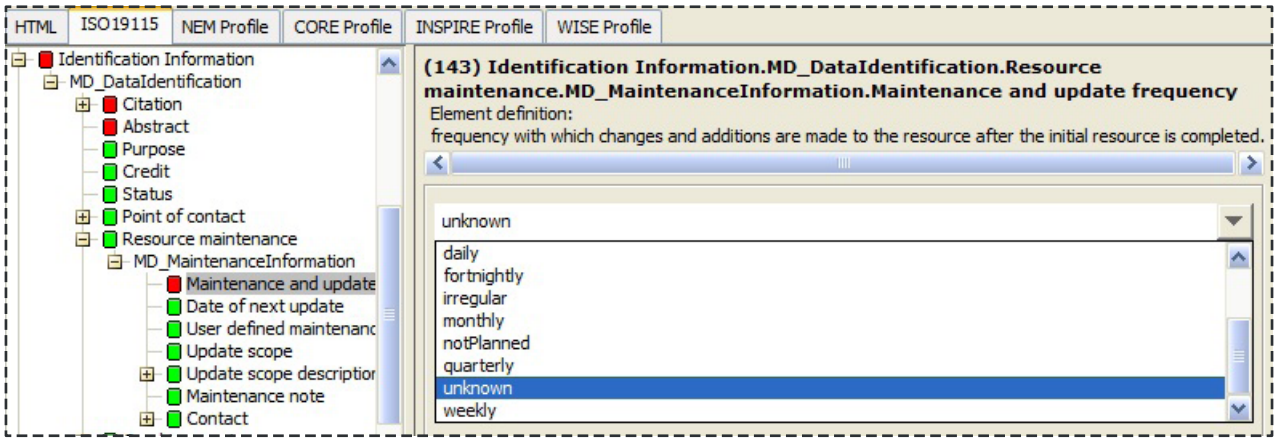


Figure 86. Maintenance statement of the dataset

» Descriptive keywords > MD_Keywords: enter keywords/keywords related to data. Keywords can be entered as groups (**Figure 87**).

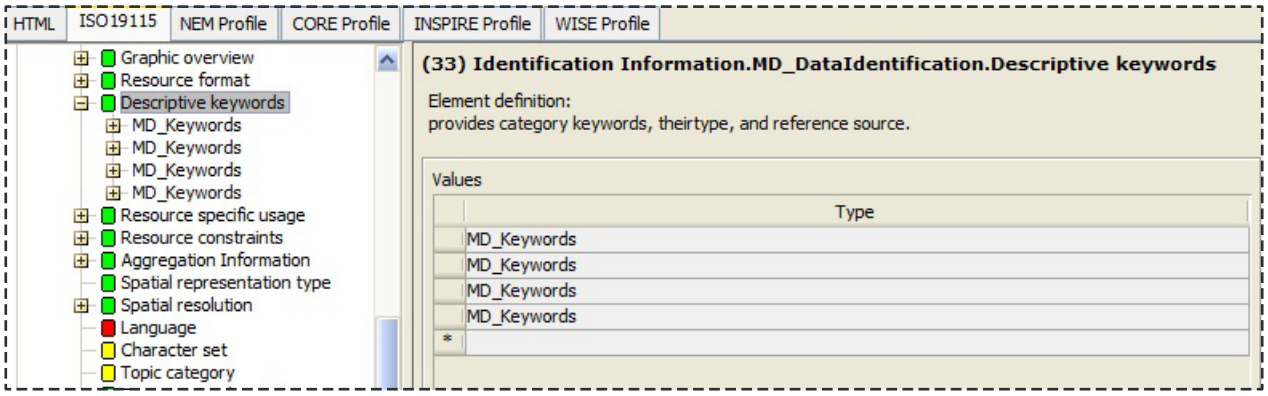


Figure 87. Keywords of the datasets in the descriptive format

Example: the location keyword (place) and a location name (keyword)

Example: keywords for FTA, Flagship (**Figure 88**).

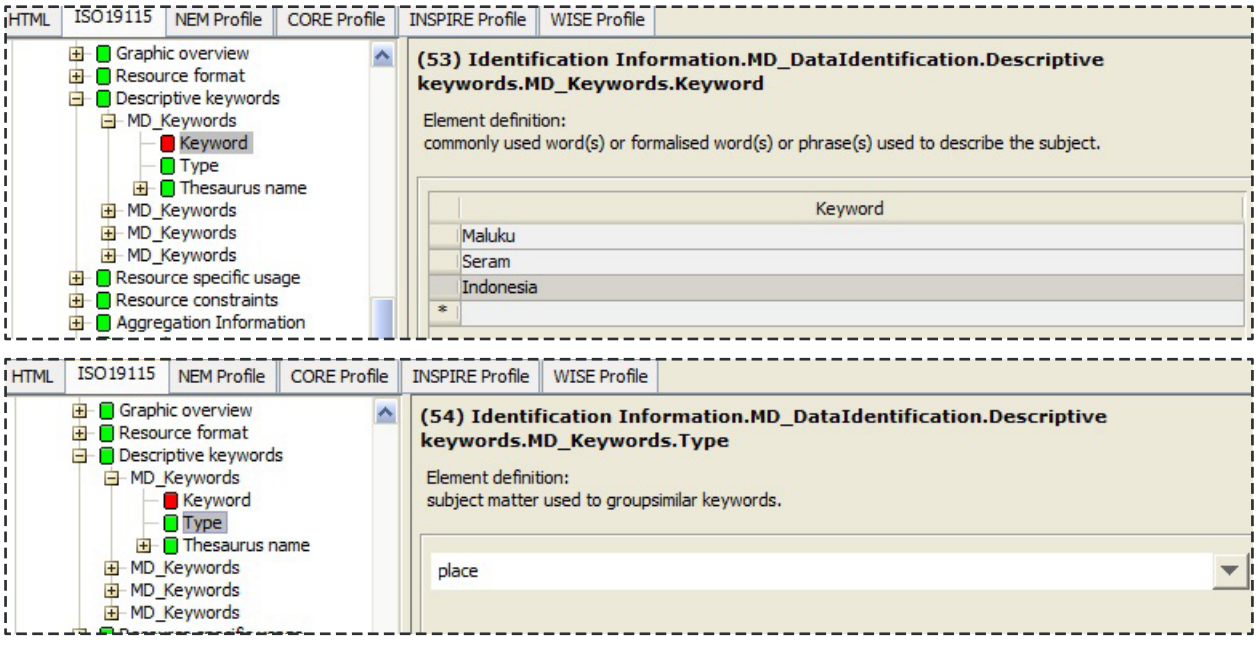


Figure 88. The dataset keywords to help the users find a dataset specific to the place of the dataset

» Resource constraints – MD Constraints – Use Limitations: description of the scope of data usage. Here is an example (**Figure 89**):

'The information contained in this dataset is the exclusive property of the Center for International Forestry Research (CIFOR) Headquarters and any respective copyright owners. This work is protected under international copyright treaties and conventions. All use for commercial purposes requires the written permission of the Center for International Forestry Research (CIFOR) Headquarters and any graphic outputs (on screen or on paper) produced from this dataset must carry the following acknowledgment Center for International Forestry Research (CIFOR) Headquarters.

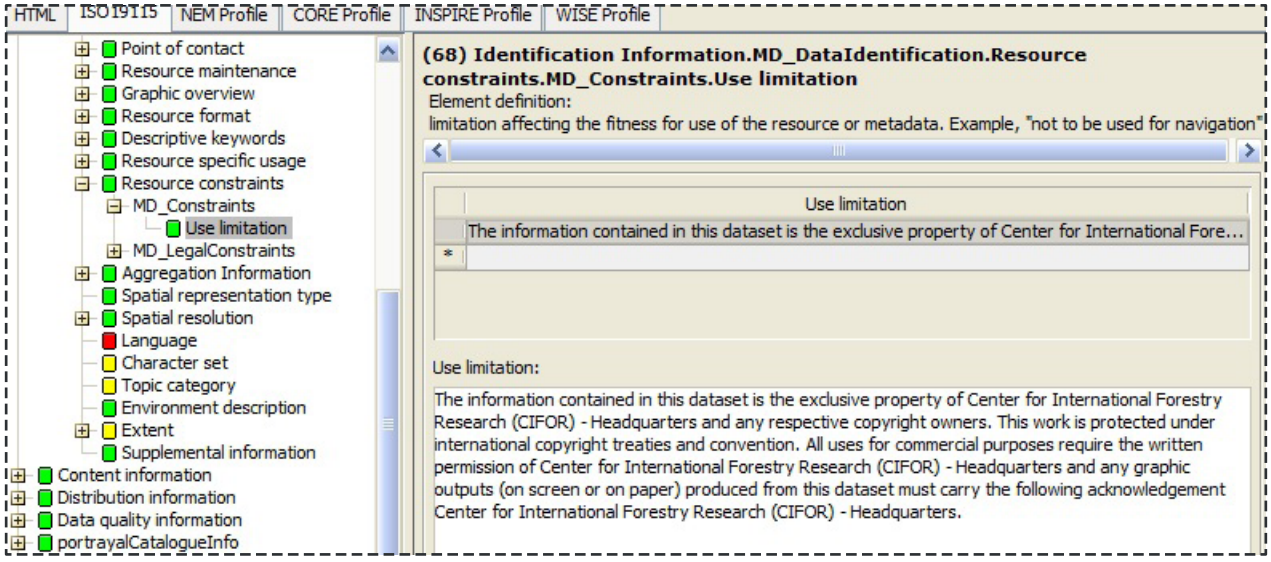


Figure 89. Enter the statement of Use limitation in the metadata field

» Topic category: categories of themes based on spatial data, more than 1 theme can be clicked (**Figure 90**).

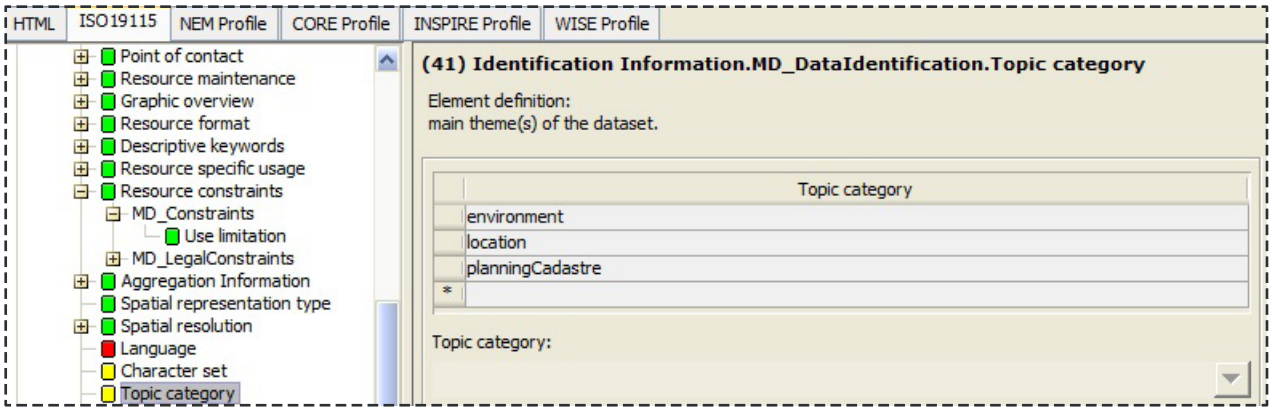


Figure 90. The topic category of the dataset

» Extent > Ex_Extent > Geographic element > EX_GeographicBoundingBox: information related to coordinates for east, west, north and south boundaries (required – red mark)(**Figure 91**).

- West bound longitude: West longitude coordinates
- East bound longitude: East longitude coordinates
- South bound latitude: South latitude coordinates
- North bound latitude: North latitude coordinates

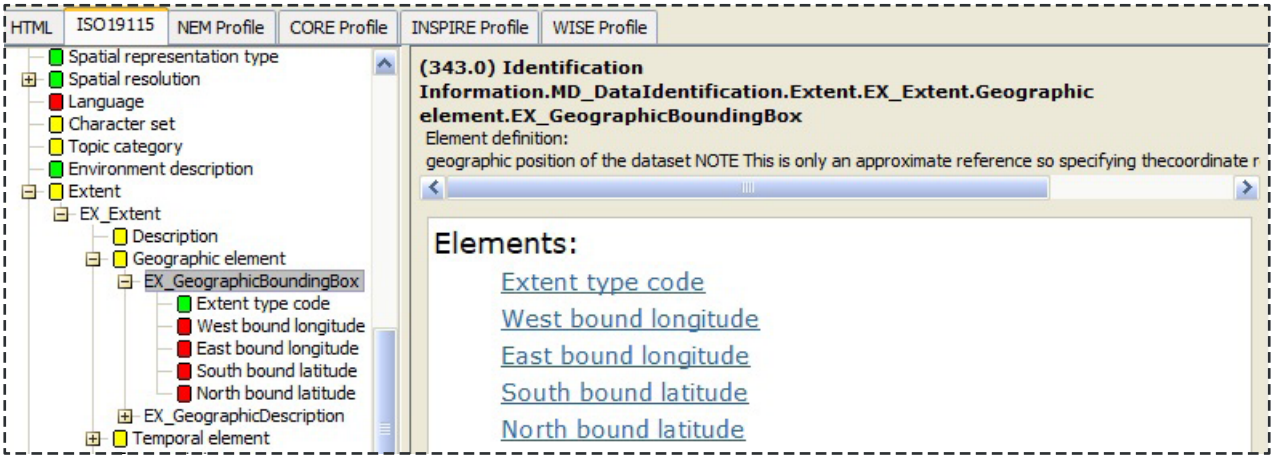


Figure 91. Geographic boundary elements

» Supplementary information: contains information related to the publication of research results, reports and websites related to the data (**Figure 92**).

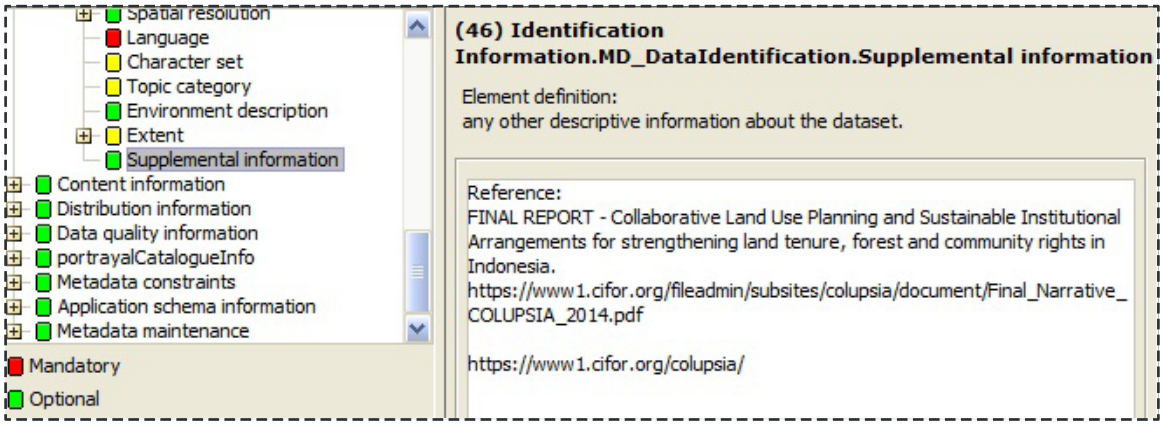


Figure 92. Supplementary information important for the dataset

Note: The users can refer to this supplementary information if they have a question about the dataset.

How to enter the data distribution in CatMDedit

We can click on the distribution information and select several options to define the distribution of data including:

- Distribution format – MD_Format: format of data and version that has been used, i.e., Shapefile format.
- Distributor – MD_Distributor_Distributor contact – CI_ResponsibleParty: information about the contact details of the responsible party, including the organization's name, position, contact information and role.

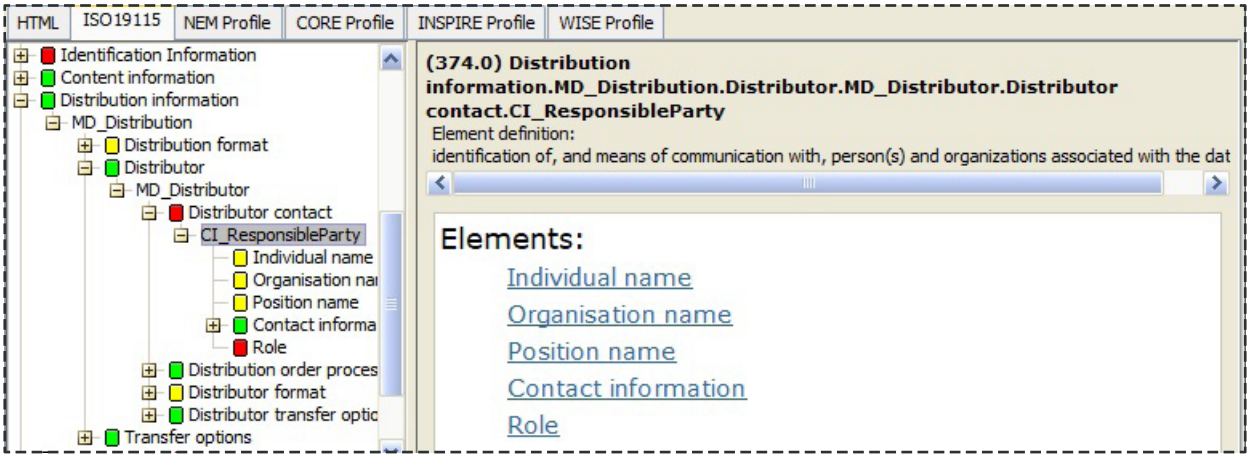


Figure 93. CI Responsible Party Elements

- Transfer options – MD_DigitalTransferOptions – On-line resource – CI_OnlineResource – Linkage: website address where data has been uploaded.

  For example, the website address on the CIFOR geonode:https://geonode.cifor.org/layers/geonode:idn_seram_vegetationcoverextent_cifor_2010 (**Figure 94**)

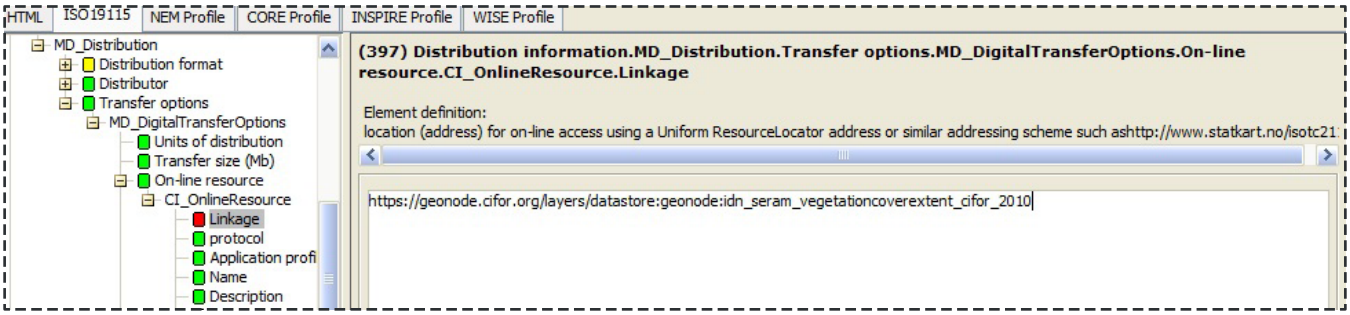


Figure 94. Online dataset resource

How to enter the data quality information in CatMDedit

- Data quality information – DQ_DataQuality – Scope: this is information related to the data coverage. There are many options when entering data quality information. One example for spatial data is the Dataset as in **Figure 95**.

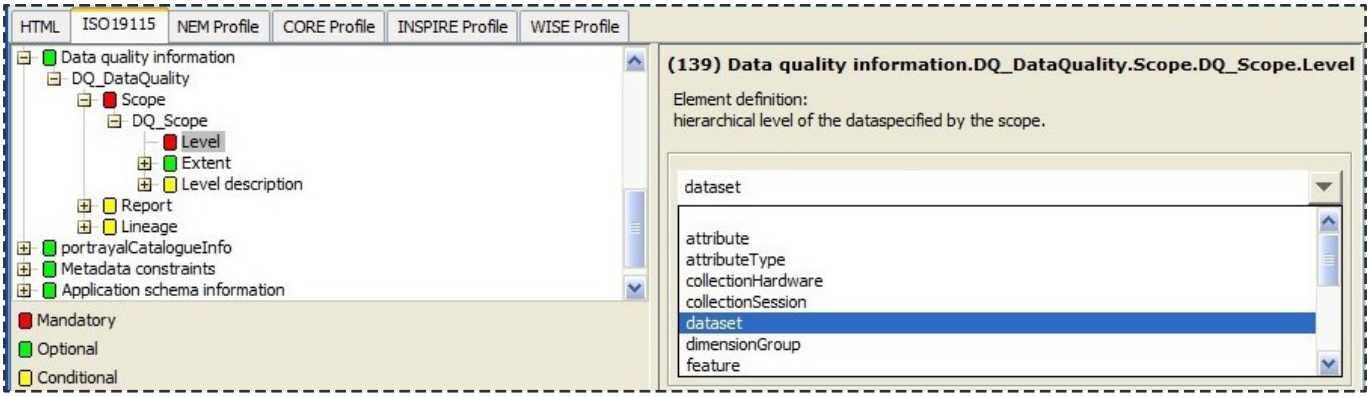


Figure 95. The scope of the data quality report including the dataset

- Data quality information – DQ_DataQuality – Report: this is where data quality may be entered, when viewed from the spatial data. Here you can enter more than one category.

  For example, after the data has been examined, there are notes in terms of ConceptualConsistency and TopologicalConsistency (**Figure 96**).

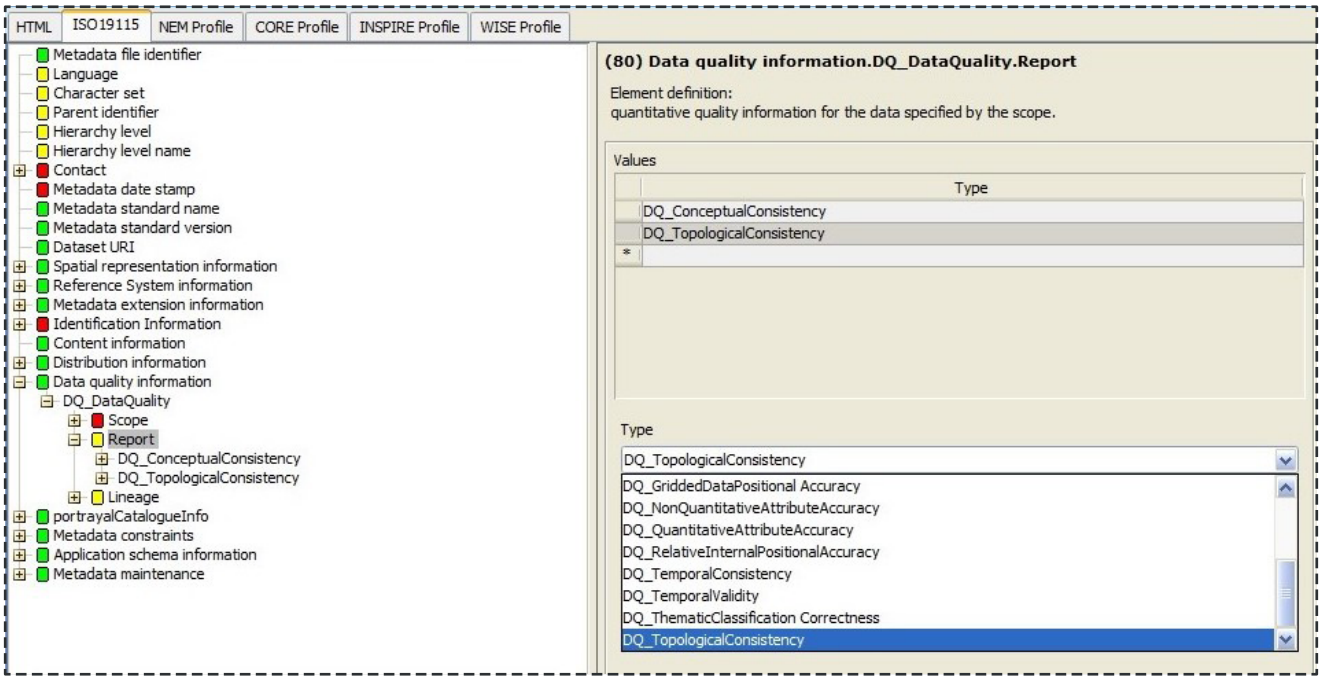


Figure 96. Type of data quality report

- DQ_Data Quality – Report – DQ_ConceptualConsistency – Results – DQ_Conformance Result – Explanation: contains an explanation regarding the attributes of the data after it has been checked and/or corrected by the curator, in terms of conceptual consistency. (**Figure 97**)

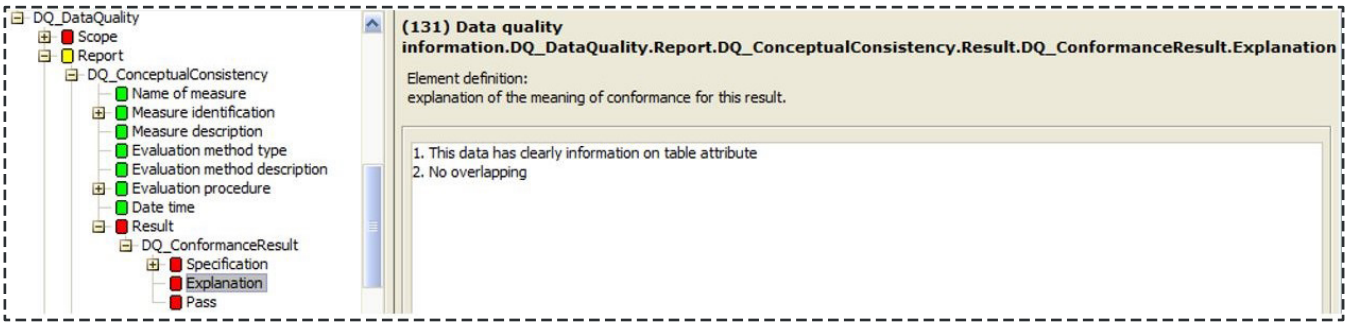


Figure 97. Conceptual consistency results entered in the metadata

- DQ_DataQuality – Report – DQ_ConceptualConsistency – Result – DQ_ConformanceResult - Pass: contains a choice, whether this data is acceptable or not in terms of quality, based on Conceptual consistency.

For example: if this data can be accepted, then click > 'True', this means it has been passed. (**Figure 98**)

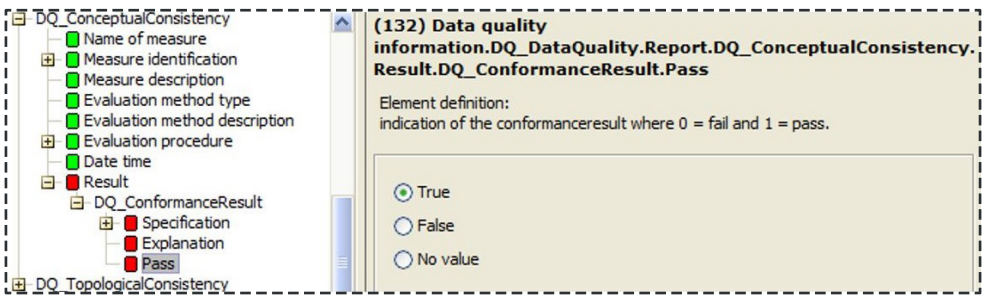


Figure 98. Data quality ConformanceResult – Pass – True, False or No value for the quality standards

- DQ_DataQuality – Report – DQ_ConceptualConsistency – Result – DQ_ConformanceResult – Specification CI_Citation – Title: enter a minus symbol (-)

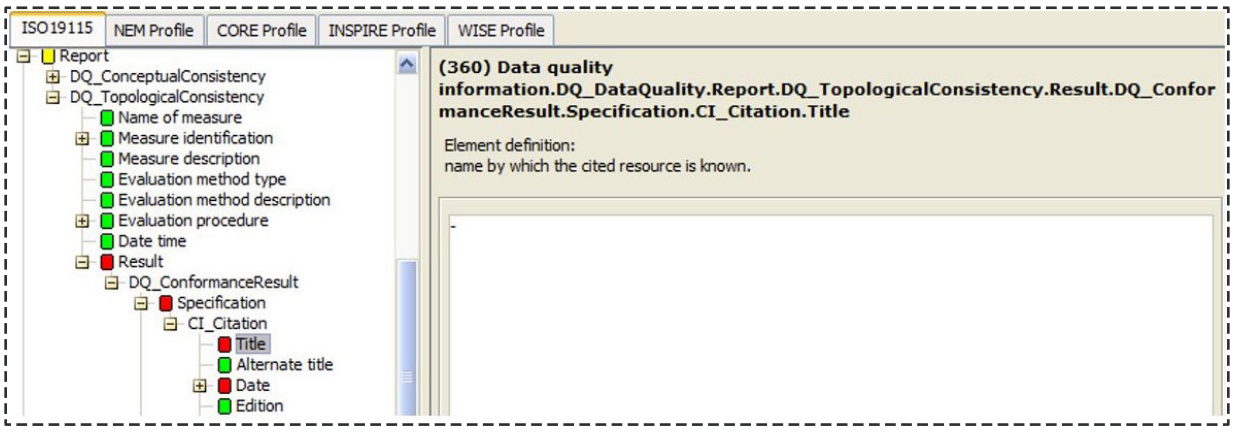


Figure 99. Citation title of data quality

- DQ_DataQuality – Report – DQ_ConceptualConsistency – Result – DQ_ConformanceResult – Specification – CI_Citation – Date: enter the date the metadata was created and/or revised.

  Example for Date: enter 24 June 2021

  Example for Date Type: enter Creation, because 24 June 2021 is the date the metadata was created. (**Figure 100**)

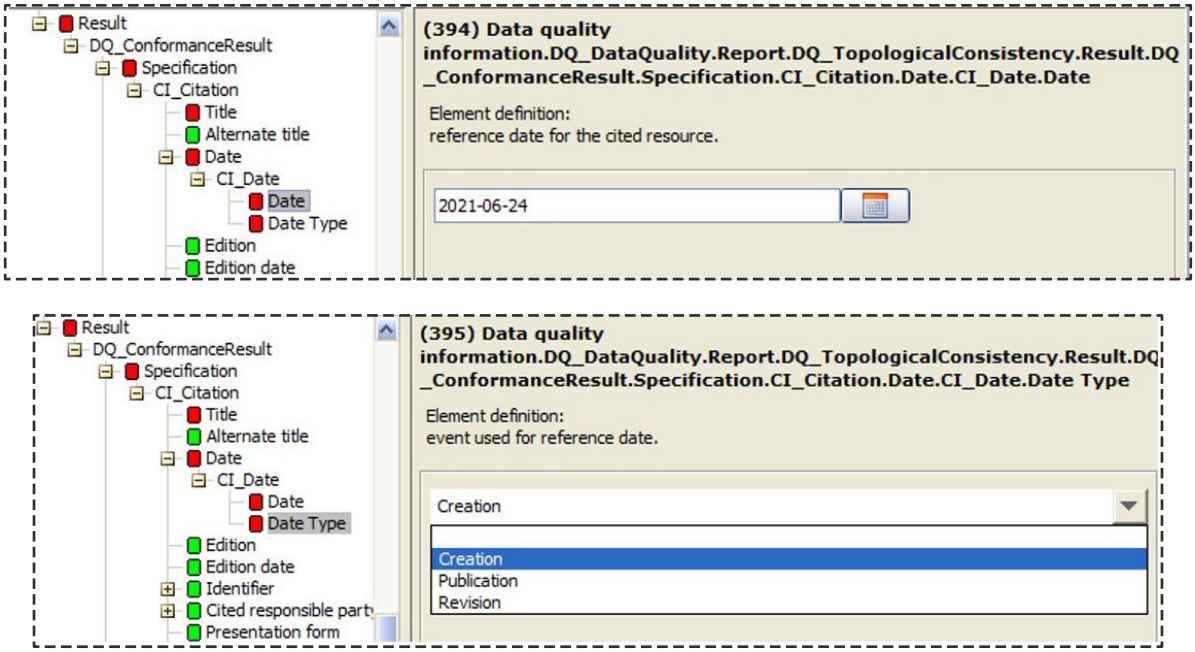


Figure 100. Enter the data for the specific type of date including creation, publication or revision

How to validate Metadata if it has been entered completely

This metadata validation aims to see the completeness of the metadata according to ISO 19115.

- When opening metadata, click > Validate in the lower right corner (red box – **Figure 101**)

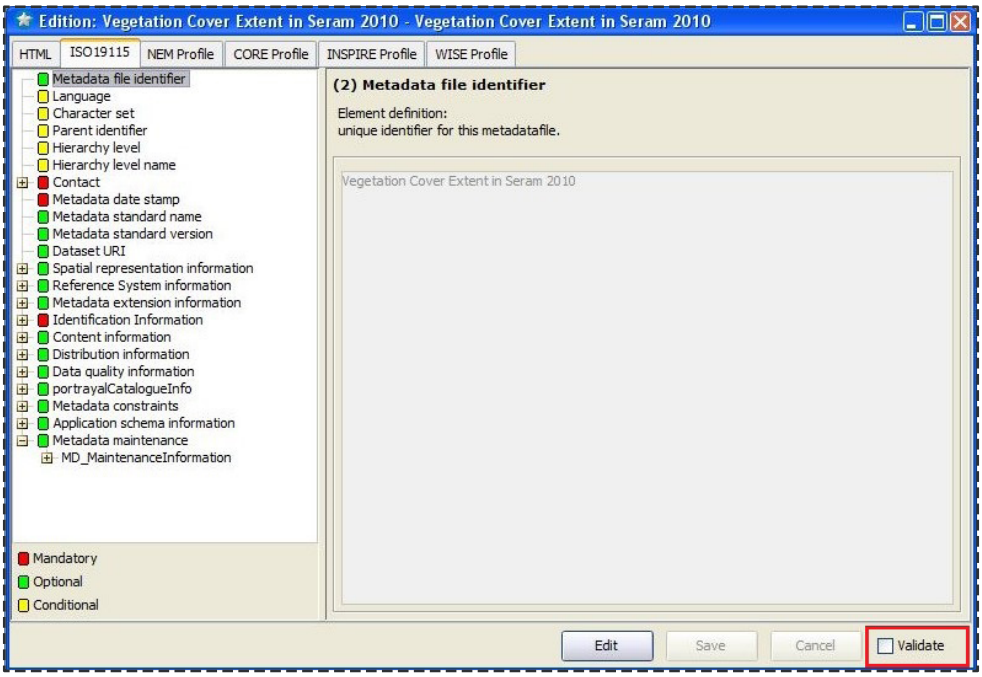


Figure 101. Validation conducted after completing the metadata

Metadata is considered as valid following ISO 19115 standards if the validation result reads,

'The metadata is valid' (**Figure 102**)

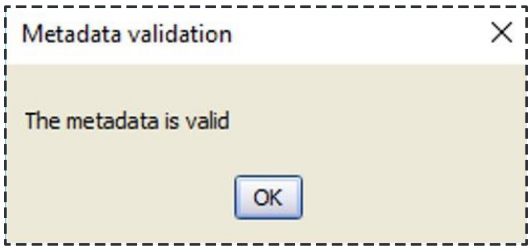


Figure 102. The results of the metadata validation

If the validation result provides information 'not valid', we need to recheck the metadata entry (**Figure 103**).

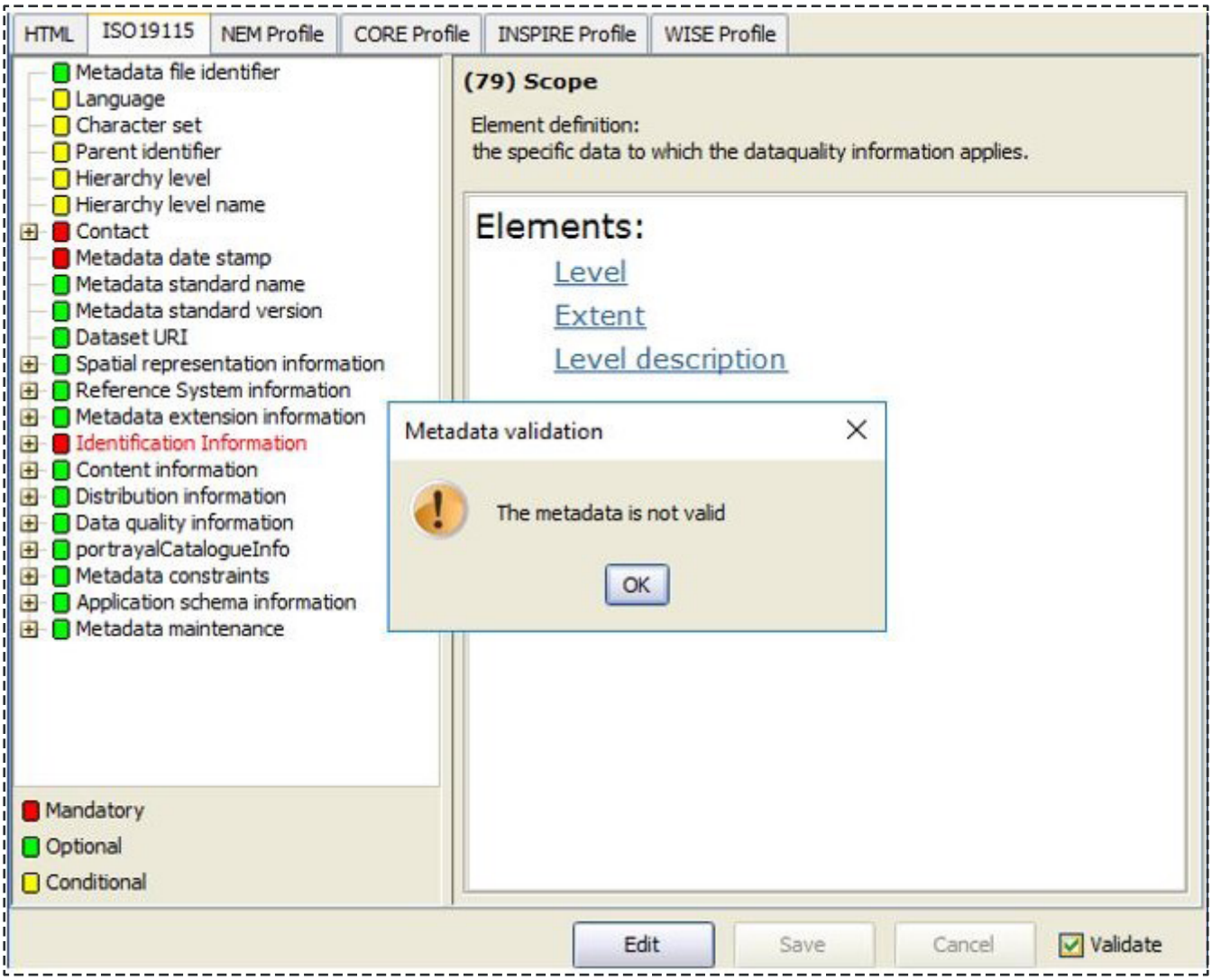


Figure 103. Metadata is not valid

The red text shows the elements of information that need to be entered to complete the metadata.

CGIAR RESEARCH PROGRAM ON Forests, Trees and Agroforestry

The CGIAR Research Program on Forests, Trees and Agroforestry (FTA). FTA is the world's largest research for development program to enhance the role of forests, trees and agroforestry in sustainable development and food security and to address climate change. CIFOR leads FTA in partnership with ICRAF, the Alliance of Bioversity International and CIAT, CATIE, CIRAD, INBAR and TBI.

FTA's work is supported by the CGIAR Trust Fund: cgiar.org/funders/