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Commission for Basic Systems
OPAG on Information Systems and Services

WMO Core Metadata Profile version 1.3

Specification

Part 1 – Conformance Requirements

C.1.3-Part 1 to the Manual on the WMO Information System (WMO-No. 1060)

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PART 1. WMO CORE METADATA PROFILE VERSION 1.3 SPECIFICATION: CONFORMANCE REQUIREMENTS

1. SCOPE

The specification defines the content, structure and encoding of discovery metadata published within the WIS discovery, access and retrieval (DAR) catalogue.

The metadata standard defined herein is an informal category-1 profile[2] of the International Standard ISO 19115:2003 Geographic information – Metadata. This metadata standard shall be referred to as the WMO Core Metadata Profile.

WIS discovery metadata records shall be encoded in XML as defined by ISO/TS 19139:2007.

Part 1 of this specification defines the conformance requirements for the WMO Core Metadata Profile. Part 2 defines the abstract test suite, data dictionary and code lists. Unless otherwise stated, references to Part 1 and Part 2 are to the relevant parts of this specification.

2. CONFORMANCE

2.1 Conformance requirements

The WMO *Technical Regulations* (WMO-No. 49), Volume I, Part I, paragraph 3.3.5 states:

> A.3.3.4 WIS functions and operation shall be based on catalogues that contain metadata describing data and products available across WMO, plus metadata describing dissemination and access options. […]

[2] A category-1 profile places additional restrictions on the use of an International Standard to meet the more specific requirements of a given community. Profiles of International Standards may be formally registered. The WMO profile of ISO 19115 has not been registered and thus remains an "informal" profile.

In this document:

(a) 6 describes the XML encoding requirements for the discovery metadata records published to the WIS DAR catalogue (e.g. WIS discovery metadata records).
(b) 7 describes how compliance with this version of the WMO Core Metadata Profile is declared within a WIS discovery metadata record.
(c) 8 and 9 describe additional constraints applying to WIS discovery metadata records. These are organized into two groups to support the following formal requirements for WIS discovery metadata:
    - Metadata uniqueness and discovery within the WIS DAR catalogue
    - Description of data for global exchange within WIS

Unified Modelling Language (UML) is used to describe the additional constraints defined in this Appendix applying to WIS discovery metadata records within the context of ISO 19115:2003/Cor. 1:2006.

Where there are inconsistencies between the text description of a requirement and the UML description, the UML version shall be considered authoritative.

Authors of discovery metadata records published within the WIS DAR catalogue are required to comply with the WMO Core Metadata Profile. Thus, WIS discovery metadata shall be compliant with:

- ISO 19115:2003 'Geographic information – Metadata';
- ISO 19115:2003/Cor. 1:2006 'Geographic information – Metadata – Corrigendum 1'; and
- Additional constraints described in this Manual.

Specifications in this Manual shall take precedence over the specifications in ISO 19115:2003 and ISO 19115:2003/Cor. 1:2006.

The Secretariat shall publish guidance material to assist authors of WIS discovery metadata in maintaining consistency between metadata records.

Note: See http://wis.wmo.int/MD_Index.

2.2 Conformance classes for WIS discovery metadata

Metadata records claiming conformance with the WMO Core Metadata Profile shall conform to the rules specified in Clauses 6–9 and pass all relevant test cases of the abstract test suite in Part 2, 2.

Depending on the characteristics of a WIS discovery metadata record, 8 conformance classes are distinguished. Table 1 lists these classes and the corresponding subclause of the abstract test suite.

Table 1. Conformance classes related to the WMO Core Metadata Profile

	Conformance class	*Reference in Part 2*
6.1	ISO/TS 19139:2007 compliance	2.1.1
6.2	Explicit identification of namespaces in XML	2.1.2
6.3	GML namespace	2.1.3
8.1	Unique identification of WIS discovery metadata records	2.2.1
8.2	Provision of information to support discovery within the WIS DAR	2.2.2, 2.2.3
9.1	Identifying the scope of distribution	2.3.1
9.2	Identifiers for metadata describing data published for global exchange	2.3.1
9.3	Defining WMO data policy and GTS priority for data published for global exchange	2.3.2, 2.3.3

A WIS discovery metadata record may also be validated against guidance published by the Secretariat.

Note: See http://wis.wmo.int/MD_Conform.

During such validation, a warning shall be issued for each occasion that a metadata record fails to comply with guidance.

3. NORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this specification. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 639-2 'Code for the representation of names of languages – Part 2: Alpha-3 code'

ISO 3166 (all parts) 'Codes for the representation of names of countries and their subdivisions'

ISO 8601 'Data elements and interchange formats – Information interchange – Representation of dates and times'

ISO 19115:2003 'Geographic information – Metadata'

ISO 19115:2003/Cor. 1:2006 'Geographic information – Metadata – Corrigendum 1'

ISO/TS 19139:2007 'Geographic information – Metadata – XML schema implementation'

ISO/IEC 19757-3:2006 'Information technology – Document Schema Definition Language (DSDL) – Part 3: Rule-based validation – Schematron'

W3C XMLName 'Namespaces in XML. W3C Recommendation (14 January 1999)'

W3C XMLSchema-1 'XML Schema Part 1: Structures. W3C Recommendation (2 May 2001)'

W3C XMLSchema-2 'XML Schema Part 2: Datatypes. W3C Recommendation (2 May 2001)'

W3C XML 'Extensible Markup Language (XML) 1.0 (Second Edition). W3C Recommendation (6 October 2000)'

W3C XLink 'XML Linking Language (XLink) version 1.1. W3C Recommendation (6 May 2010)'

4. TERMS AND DEFINITIONS

namespace

Collection of names, identified by a uniform resource identifier (URI) reference, which are used in XML documents as element names and attribute names

WIS discovery metadata

Metadata consistent with the WMO Core Metadata Profile that is used within WIS for discovery of information shared through WIS.

5. SYMBOLS AND ABBREVIATED TERMS

5.1 Namespace abbreviations

In the list below, the item on the left describes the common namespace prefix used to describe the elements in the namespace. The second item is an English description of the namespace prefix and the item in parenthesis is the uniform resource name (URN) of the actual namespace. These URNs do not necessarily correspond to an effective location of the schemas, however. When available, an authoritative location for the schema is provided.

The WMO Core Metadata Profile does not specify a namespace as it contains no XML schema extensions.

The list below corresponds to external namespaces used by the WMO Core Metadata Profile.

gco Geographic Common extensible markup language (http://www.isotc211.org/2005/gco)
gmd Geographic MetaData extensible markup language (http://www.isotc211.org/2005/gmd)
gmx Geographic Metadata XML schema (http://www.isotc211.org/2005/gmx)
gss Geographic Spatial Schema extensible markup language (http://www.isotc211.org/2005/gss)
gsr Geographic Spatial Referencing extensible markup language (http://www.isotc211.org/2005/gsr)
gts Geographic Temporal Schema extensible markup language (http://www.isotc211.org/2005/gts)
srv geographic SeRVice metadata (http://www.isotc211.org/2005/srv)[3]
gml Geography Markup Language (http://www.opengis.net/gml/3.2)[3]
xlink XML LINKing language (http://www.w3.org/1999/xlink)[3]
xsi W3C XML Schema Instance (http://www.w3.org/2001X/MLSchema-instance)[3]

5.2 External classes

All the model elements used within the WMO Core Metadata Profile are defined in ISO geographic information standards. By convention with ISO/TC 211, names of Unified Modelling Language (UML) classes, with the exception of basic data-type classes, include a two- or three-letter prefix that identifies the International Standard and the UML package in which the class is defined. Table 2 lists the standards and packages in which UML classes are used in the WMO Core Metadata Profile.

Table 2. Sources of UML classes

Prefix	*International Standard*	*Package*
CI	ISO 19115:2003	Citation Information
EX	ISO 19115:2003	Extent Information
MD	ISO 19115:2003	Metadata Entity

6. XML ENCODING

WIS implementation is predicated on the publication of metadata records as XML documents.

[3] This http reference is to the identifier of the namespace and may not refer to an actual Internet link.

6.1 ISO/TS 19139:2007 compliance

Compliance with this specification requires that WIS discovery metadata records shall validate without error against the XML schemas created from the UML model of ISO 19115:2003/Cor. 1:2006 using the encoding rules defined in ISO/TS 19139:2007 'Geographic information – Metadata – XML schema implementation' Clause 9.

The WMO Core Metadata Profile requires that:

6.1.1 Each WIS discovery metadata record shall validate without error against the XML schemas defined in ISO/TS 19139:2007.

Notes:

(1) Not all XML validation tools implement the full W3C XML Schema recommendation and not all XML validation tools interpret the W3C XML Schema recommendation in the same manner. It is recommended that a tool with strict interpretation of XML Schema and full support for the W3C XML Schema recommendation be used to ensure conformance.

(2) WMO hosts a copy of the ISO/TS 19139:2007 XML schemas at: http://wis.wmo.int/2011/schemata/iso19139_2007/schema/. The directory structure in which the XML schemata are published mirrors that of the normative XML schema repository published by ISO at: http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_19139_Schemas/. For example, gmd.xsd can be found at http://wis.wmo.int/2011/schemata/iso19139_2007/schema/gmd/gmd.xsd.

XML 1.0 does not support the enforcement of certain types of constraints. For example, gmd:CI_ResponsibleParty shall include at least one of gmd:individualName, gmd:organisationName or gmd:positionName. As a result, it is imperative that implementers heed the constraints identified within the UML model defined in ISO 19115:2003 and the associated corrigendum. These are listed in ISO/TS 19139:2007 Annex A: 'Table A.1 – Conformance Rules not enforceable with XML Schema'.

The WMO Core Metadata Profile requires that:

6.1.2 Each WIS discovery metadata record shall validate without error against the rule-based constraints listed in ISO/TS 19139:2007 Annex A (Table A.1).

Note: WMO provides an automated test suite including validation against the constraints listed in ISO/TS 19139:2007 Annex A. These are implemented as Schematron rules (ISO/IEC 19757-3:2006 'Information technology – Document Schema Definition Language (DSDL) – Part 3: Rule-based validation – Schematron') and can be found at the following location: http://wis.wmo.int/2012/metadata/validationTestSuite/.

6.2 Explicit identification of namespaces in XML

To support the provision of reusable XML validation test suites, it shall be mandatory to explicitly define XML namespaces used within a WIS discovery metadata record. Use of a default (implied) namespace may lead to misinterpretation of the XML document and failure to validate.

The WMO Core Metadata Profile places the following additional restriction on ISO 19139:2007:

6.2.1 Each WIS discovery metadata record shall name explicitly all namespaces used within the record: use of default namespaces is prohibited.

6.3 GML namespace

ISO/TS 19139:2007 is dependent on ISO 19136:2007 'Geographic information – Geography Markup Language (GML)'. ISO 19136:2007 relates to GML version 3.2.1. The associated namespace URN is http://www.opengis.net/gml/3.2.

The WMO Core Metadata Profile places the following additional restriction on ISO 19139:2007:

6.3.1 Each WIS discovery metadata record shall declare the following XML namespace for GML: http://www.opengis.net/gml/3.2**.**

7. DECLARING COMPLIANCE WITH THE WMO CORE METADATA PROFILE

A WIS discovery metadata record may declare compliance with this version of the WMO Core Metadata Profile as follows:

- /gmd:MD_Metadata/gmd:metadataStandardName = "WMO Core Metadata Profile of ISO 19115 (WMO Core), 2003/Cor.1:2006 (ISO 19115), 2007 (ISO/TS 19139)"
- /gmd:MD_Metadata/gmd:metadataStandardversion = "1.3"

8. METADATA UNIQUENESS AND DISCOVERY WITHIN WIS DAR CATALOGUE

8.1 Unique identification of WIS discovery metadata records

Section 4.2 of this Manual (WIS-TechSpec-1: Uploading of metadata for data and products) requires the use of the WMO Core Metadata Profile and the provision of a globally unique identifier for each WIS discovery metadata record:

4.2.1 This specification requires that each metadata record uploaded shall be represented in compliance with the WMO Core Metadata Profile of ISO 19115 with a unique identifier.

A WIS discovery metadata record shall be uniquely identified using the gmd:MD_Metadata/gmd:fileIdentifier attribute.

The WMO Core Metadata Profile places the following additional restrictions on ISO 19115:2003/Cor. 1:2006 –

8.1.1 Each WIS discovery metadata record shall include one gmd:MD_Metadata/gmd:fileIdentifier attribute.
8.1.2 The gmd:MD_Metadata/gmd:fileIdentifier attribute for each WIS discovery metadata record shall be unique within WIS.

(i.e. the attribute is mandatory in the WMO Core Metadata Profile and must be globally unique within WIS).

Note that the gmd:MD_Metadata/gmd:fileIdentifier elements are treated as CASE-INSENSITIVE when assessing metadata records for duplication.

The WMO Core Metadata Profile recommends the use of a URI structure for gmd:fileIdentifier attributes. The URI should be structured as follows:

- Fixed string "urn:x-wmo:md:";
- Citation authority based on the Internet domain name of the data-provider organization, e.g. "int.wmo.wis", "gov.noaa", "edu.ucar.ncar", "cn.gov.cma" or "uk.gov.metoffice";
- Separator colon ":";

- Unique identifier:
  - For metadata records describing GTS products in bulletins or named according to the WMO file-naming convention P-flag = "T" or P-flag= "A", the unique identifier is "«TTAAii»«CCCC»";
  - For metadata records describing products named according to the WMO file-naming convention P-flag = "W", the unique identifier should be a truncated version of the WMO product identifier field of the associated data-files, excluding the date-stamp and any other varying elements as necessary;
  - For metadata records describing other products, the unique identifier may be assigned by the citation authority so as to be unique among the identifiers assigned by the citation authority.

The Secretariat shall maintain a list of citation authorities and the associated organization.

Each "citation authority" organization shall implement procedures that ensure that its authorized metadata authors can create unique values for the "unique identifier". Note that inclusion of "citation authority" in fileIdentifier guarantees global uniqueness, provided the organization has a procedure to ensure local uniqueness.

If the data custodian has its own methodology for assigning metadata identifiers and is able to guarantee the global uniqueness of the identifier, that identifier may be used.

Amendments to a WIS discovery metadata record shall not change the gmd:MD_Metadata/gmd:fileIdentifier attribute. Each amendment shall be published with an updated gmd:MD_Metadata/gmd:dateStamp attribute indicating the date of publication of the amended version of the metadata record.

gmd:MD_Metadata/gmd:dateStamp shall be specified using a single date as specified by ISO 8601 in the extended date format (YYYY-MM-DD), where YYYY is the year, MM is the month and DD is the day. Time (hh:$m_m m_m$:$s_s s_s$, where hh is the hour, $m_m m_m$ the minutes and $s_s s_s$ the seconds) may be added if required, separated from the day by "T".

A set of WIS discovery metadata records with the same gmd:MD_Metadata/gmd:fileIdentifier shall be considered to be versions of the same WIS discovery metadata record. The sequence (time-order) of these records shall be determined from the gmd:MD_Metadata/gmd:dateStamp.

8.2 Provision of information to support discovery within the WIS DAR catalogue

Section 4.9 of this Manual (WIS-TechSpec-8: DAR catalogue search and retrieval) outlines the mechanisms by which WIS DAR catalogue content may be searched according to indexed metadata attributes.

Search within the WIS DAR catalogue is based on terms from SRU, ISO 23950:1998.

As a minimum, for text-based searches, these shall include:

i. subject
ii. abstract
iii. title
iv. author
v. keywords
vi. format
vii. identifier
viii. type
ix. crs (coordinate reference system)

For date-based searches, these shall include:

i. creationDate
ii. modificationDate
iii. publicationDate
iv. beginningDate
v. endingDate

Finally, geographic search shall also be provided:

i. bounding box (specified in decimal degrees, north, west, south and east)

Table 3 provides a mapping of SRU terms to ISO 19115 attributes (defined via XPath).

Table 3. Mapping from SRU search terms to ISO 19115 attributes

SRU term	*ISO 19115 attribute*
subject	**/gmd:MD_Metadata/gmd:identificationInfo//gmd:descriptiveKeywords//gmd:keyword**
abstract	/gmd:MD_Metadata/gmd:identificationInfo//gmd:abstract
title	/gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:title
author	/gmd:MD_Metadata/gmd:contact
keywords	**/gmd:MD_Metadata/gmd:identificationInfo//gmd:descriptiveKeywords//gmd:keyword**
format	/gmd:MD_Metadata/gmd:distributionInfo//gmd:distributionFormat//gmd:name
identifier	/gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:identifier
type	/gmd:MD_Metadata/gmd:identificationInfo//spatialRepresentationType
crs	/gmd:MD_Metadata//gmd:referenceSystemInfo/gmd:MD_ReferenceSystem/gmd:referenceSystemIdentifier/gmd:RS_Identifier/gmd:code
creationDate	/gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:date//gmd:date
	/gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:date//gmd:dateType=“creation”
modificationDate	/gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:date//gmd:date
	/gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:date//gmd:dateType=“revision”
publicationDate	/gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:date//gmd:date
	/gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:date//gmd:dateType=“publication”
beginningDate	/gmd:MD_Metadata/gmd:identificationInfo//gmd:extent//gmd:temporalElement/gmd:extent
endingDate	/gmd:MD_Metadata/gmd:identificationInfo//gmd:extent//gmd:temporalElement/gmd:extent
boundingBox	**/gmd:MD_Metadata/gmd:identificationInfo//gmd:extent//gmd:geographicElement/gmd:EX_GeographicBoundingBox/gmd:northBoundLatitude**
	/gmd:MD_Metadata/gmd:identificationInfo//gmd:extent//gmd:geographicElement/gmd:EX_GeographicBoundingBox/gmd:westBoundLatitude
	/gmd:MD_Metadata/gmd:identificationInfo//gmd:extent//gmd:geographicElement/gmd:EX_GeographicBoundingBox/gmd:southBoundLatitude
	/gmd:MD_Metadata/gmd:identificationInfo//gmd:extent//gmd:geographicElement/gmd:EX_GeographicBoundingBox/gmd:eastBoundLatitude

The following elements from Table 3 are declared mandatory in ISO 19115:2003/Cor. 1:2006:

- [abstract]
  /gmd:MD_Metadata/gmd:identificationInfo//gmd:abstract
- [title]
  /gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:title
- [creationDate, modificationDate]
  /gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:date
- [author]
  /gmd:MD_Metadata/gmd:contact

CI_ResponsibleParty entity /gmd:MD_Metadata/gmd:contact element should use the CI_ RoleCode "pointOfContact"; e.g./gmd:MD_Metadata/gmd:contact//gmd:role = "pointOfContact"

Note that the abstract should provide a clear and concise statement that enables the reader to understand the content of the dataset. For guidance when completing the abstract, consider these points:

(a) State what the "things" are that are recorded.
(b) State the key aspects recorded about these things.
(c) State what form the data takes.
(d) State any other limiting information, such as time period of validity of the data.
(e) Add purpose of data resource where relevant (e.g. for survey data).
(f) Aim to be understood by non-experts.
(g) Do not include general background information.
(h) Avoid jargon and unexplained abbreviations.

It is recommended that /gmd:MD_Metadata/gmd:identificationInfo//gmd:pointOfContact should provide a minimum of a name and an e-mail address.

In order to improve the consistency of WIS discovery metadata records with regard to search and discovery within the WIS DAR catalogue, the keyword and boundingBox attributes are mandatory within the WMO Core Metadata Profile.

The WMO Core Metadata Profile places the following additional restrictions on ISO 19115:2003/ Cor. 1:2006:

8.2.1 Each WIS discovery metadata record shall include at least one keyword from the WMO_CategoryCode code list.
8.2.2 Keywords from the WMO_CategoryCode code list shall be defined as keyword type "theme".
8.2.3 All keywords sourced from a particular keyword thesaurus shall be grouped into a single instance of the MD_Keywords class.
8.2.4 Each WIS discovery metadata record describing geographic data shall include the description of at least one geographic bounding box defining the spatial extent of the data.

A new code-list dictionary is published as part of this specification, defining the set of permissible values for WMO_CategoryCode (see Part 2, Table 16). Keywords from WMO_CategoryCode shall be of type "theme".

The GeographicBoundingBox is determined by four coordinates.

Bounding boxes that cross the 180 degree meridian can be differentiated from bounding boxes that do not by the following rule:

In a dataset that does not cross the 180 degree meridian, the westernmost longitude shall always be less than the easternmost longitude. Conversely, if a bounding box crosses the 180 degree meridian, then the westernmost longitude shall be greater than the easternmost longitude.

Other constraints on geographic bounding boxes:

(a) The total longitudinal span shall be greater than zero, and less than, or equal to, 360 degrees.
(b) Geographic points shall be designated with the northernmost and southernmost latitudes equal and the westernmost and easternmost longitudes equal.
(c) The northernmost latitude shall always be greater than, or equal to, the southernmost latitude.
(d) Longitude and latitude shall be recorded in a coordinate reference system that has the same axes, units and prime meridian as WGS84.

Attribute /gmd:MD_Metadata/gmd:identificationInfo//gmd:citation//gmd:date//gmd:date shall be expressed as an ISO 8601 compliant date. The extended date format (YYYY-MM-DD) should be used, where YYYY is the year, MM is the month and DD is the day. Time (hh:$m_m m_m$:$s_s s_s$, where hh is the hour, $m_m m_m$ the minutes and $s_s s_s$ the seconds) may be added if required, separated from the day by "T".

The remaining elements from Table 3 are optional in this version of the WMO Core Metadata Profile:

- [format]
- [identifier]
- [type]
- [crs]
- [beginningDate]
- [endingDate]

Note: Further guidance on the use of these elements is published by the Secretariat at http://wis.wmo.int/MD_OptElt.

The primary language used in metadata conforming to the WMO Core Metadata Profile is English. Translations of English elements within the record may also be included.

8.2.5 All information contained within a metadata record shall, as a minimum, be provided in English within the metadata record.

Translations of all or part of the English content may also be included.

9. DESCRIPTION OF DATA FOR GLOBAL EXCHANGE WITHIN WIS

Within WIS, it is important for GISCs to be able to identify which data are published for global exchange. This determines whether the data are incorporated into the GISC cache. The WIS discovery metadata record describing a given dataset may identify whether that dataset is published for global exchange within WIS.

9.1 Identifying the scope of distribution

The scope of distribution for a dataset (whether it is published for global exchange within WIS) may be specified using a keyword:

- /gmd:MD_Metadata/gmd:identificationInfo//gmd:descriptiveKeywords//gmd:keyword

The semantics of a keyword are inferred from a specified keyword thesaurus. The thesaurus relating to a particular keyword may be cited using the following element:

- /gmd:MD_Metadata/gmd:identificationInfo//gmd:descriptiveKeywords//gmd:thesaurusName

The scope of distribution for data within WIS shall be expressed using the following controlled vocabulary: “GlobalExchange”, “RegionalExchange” and “OriginatingCentre”.

A new code-list dictionary is published as part of this specification defining the set of permissible values for specifying the scope of distribution within WIS: WMO_DistributionScopeCode. Part 2, Table 17 refers.

The type of keyword may be specified using the following element:

- /gmd:MD_Metadata/gmd:identificationInfo//gmd:descriptiveKeywords//gmd:type

The keyword type associated with WMO_DistributionScopeCode thesaurus shall be “dataCentre”. Keyword type “dataCentre” is taken from the MD_KeywordTypeCode class described in ISO/DIS 19115-1:2013.

The WMO Core Metadata Profile places the following additional restriction on ISO 19115:2003/Cor. 1:2006:

9.1.1 A WIS discovery metadata record describing data for global exchange via WIS shall indicate the scope of distribution using the keyword “GlobalExchange” of type “dataCentre” from thesaurus WMO_DistributionScopeCode.

9.2 Identifiers for metadata describing data published for global exchange

The identifier (gmd:MD_Metadata/gmd:fileIdentifier) for a WIS discovery metadata record that describes data published for global exchange via WIS shall be formatted as follows:

- gmd:MD_Metadata/gmd:fileIdentifier = “urn:x-wmo:md:int.wmo.wis::{uid}”

where {uid} is a unique identifier derived from the GTS bulletin or file name.

Unique identifiers ({uid}) for globally exchanged data shall be defined as follows:

(a) If a GTS «TTAAii» and «CCCC» is allocated for the product (i.e. where the datasets described by the metadata record employ the WMO file-naming convention P-flag = “T” or P-flag = “A”) use «TTAAii»«CCCC» for the unique identifier; or
(b) If a WMO product identifier is allocated for the product (i.e. WMO file-naming convention P-flag = “W”) use a truncated WMO product-identifier field of the associated data-files, excluding the date-stamp and any other varying elements as necessary.

The WMO Core Metadata Profile places the following additional restriction on ISO 19115:2003/Cor. 1:2006:

9.2.1 A WIS discovery metadata record describing data for global exchange via WIS shall have a gmd:MD_Metadata/gmd:fileIdentifier attribute formatted as follows (where {uid} is a unique identifier derived from the GTS bulletin or file name).

Note: To assist readers, the following are examples of gmd:fileIdentifier attributes for data globally exchanged via WIS:

- urn:x-wmo:md:int.wmo.wis::FCUK31EGRR
- urn:x-wmo:md:int.wmo.wis::FR-meteofrance-toulouse,GRIB,ARPEGE-75N10N-60W65E_C_LFPW

9.3 Defining WMO data policy and GTS priority for data published for global exchange

WMO data policy pertaining to Resolution 40 (Cg-XII) and Resolution 25 (Cg-XIII) and other regulations (e.g. ICAO Annex 3 – Meteorological Services for International Air Navigation) shall be expressed using the following controlled vocabulary: "WMOEssential", "WMOAdditional" and "WMOOther".

A new code-list dictionary is published as part of this specification defining the set of permissible values for specifying the WMO data policy: WMO_DataLicenseCode. Part 2, Table 14 refers.

WMO data policy is considered to be a legal constraint applying to both usage and access.

Note: More details on WMO data policy (WMO Resolution 25 (Cg-XIII) and Resolution 40 (Cg-XII)) are described at http://www.wmo.int/pages/about/exchangingdata_en.html.

WMO data policy shall be defined using the following element:

- /gmd:MD_Metadata/gmd:identificationInfo//gmd:resourceConstraints//gmd:otherConstraints

The presence of more than one WMO data-policy statement in a single metadata record yields an ambiguous state; a WIS discovery metadata record describing data for global exchange shall declare only a single WMO data policy.

The WMO Core Metadata Profile places the following additional restriction on ISO 19115:2003/Cor. 1:2006:

9.3.1 A WIS discovery metadata record describing data for global exchange via WIS shall indicate the WMO data license as legal constraint (type: "otherConstraints") using one and only one term from the WMO_DataLicenseCode code list.

Notes:

(1) Only exact matches to the terms from the code list are acceptable: "wmo-essential", "WMO Essential" or "WmOaDdiTiOnaL" will all fail to validate.

(2) Where WMO data policies "WMOAdditional" or "WMOOther" are cited, a more precise definition of the additional access or usage restrictions may be provided by the data publisher.

(3) Guidance on the provision of alternative data policies and access or usage restrictions is provided at: http://wis.wmo.int/MD_DataPolicy.

GTS priority (also known as GTS product category code) shall be expressed using the following controlled vocabulary: "GTSPriority1", "GTSPriority2", "GTSPriority3" and "GTSPriority4".

A new code-list dictionary is published as part of this specification defining the set of permissible values for specifying WMO data policy: WMO_GTSProductCategoryCode. Part 2, Table 15 refers.

GTS priority is considered to be a legal constraint applying to both usage and access.

GTS priority shall be defined using the following element:

- /gmd:MD_Metadata/gmd:identificationInfo//gmd:resourceConstraints//gmd:otherConstraints

The presence of more than one GTS priority statement in a single metadata record yields an ambiguous state; a WIS discovery metadata record describing data for global exchange shall declare only a single GTS priority.

The WMO Core Metadata Profile places the following additional restriction on ISO 19115:2003/ Cor. 1:2006:

9.3.2 A WIS discovery metadata record describing data for global exchange via WIS shall indicate GTS priority as legal constraint (type: "otherConstraints") using one and only one term from the WMO_GTSProductCategoryCode code list.

Note: Only exact matches to the terms from the code list are acceptable: "gts-priority-4", "GTS Priority 4", or "GtsPriority4" will all fail to validate.

The absence of both gmd:accessConstraints and gmd:useConstraints shall be interpreted such that the terms expressed in gmd:otherConstraints (e.g. WMO data policy and GTS priority) apply to both access and use.

However, this should be made explicit by expressing:

gmd:MD_LegalConstraints/gmd:accessConstraints and
gmd:MD_LegalConstraints/gmd:useConstraints using
gmd:MD_RestrictionCode "otherRestrictions".

Note: Example

```
<gmd:resourceConstraints>
        <gmd:MD_LegalConstraints>
                <gmd:accessConstraints>
                    <gmd:MD_RestrictionCode
                      codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/
                      ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_RestrictionCode"
                      codeListValue="otherRestrictions">
                      otherRestrictions
                </gmd:MD_RestrictionCode>
        </gmd:accessConstraints>
        <gmd:useConstraints>
                <gmd:MD_RestrictionCode
                    codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards/
                    ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_RestrictionCode"
                    codeListValue="otherRestrictions">
                    otherRestrictions
                </gmd:MD_RestrictionCode>
        </gmd:useConstraints>
        <gmd:otherConstraints>
                <gco:CharacterString>WMOEssential</gco:CharacterString>
        </gmd:otherConstraints>
        <gmd:otherConstraints>
                <gco:CharacterString>GTSPriority3</gco:CharacterString>
        </gmd:otherConstraints>
    </gmd:MD_LegalConstraints>
</gmd:resourceConstraints>
```

All statements regarding constraints originating from a single source should be grouped into a single gmd:resourceConstraints element.

Note: This practice aims to ensure forward compatibility with ISO 19115-1:2013 (currently in Draft International Standard status) where the amended gmd:MD_Constraints class is expected to include information about the source of a (set of) constraint(s).

10. SUMMARY OF ADDITIONAL RESTRICTIONS

The requirements defined in this specification are summarized in Table 4, Table 5 and Table 6. They are grouped according to the encoding requirements expressed in section 6 and the formal requirements expressed in sections 8 and 9.

Table 4. XML encoding (6)

	Encoding rule		*Description*
1	ISO/TS 19139:2007 compliance	6.1.1	[MANDATORY obligation] Each WIS discovery metadata record shall validate without error against the XML schemas defined in ISO/TS 19139:2007.
		6.1.2	[MANDATORY obligation] Each WIS discovery metadata record shall validate without error against the rule-based constraints listed in ISO/TS 19139:2007 Annex A (Table A.1).
2	Explicit identification of namespaces in XML	6.2.1	[MANDATORY obligation] Each WIS discovery metadata record shall explicitly name all namespaces used within the record; use of default namespaces is prohibited.
3	Specification of GML namespace	6.3.1	[MANDATORY obligation] Each WIS discovery metadata record shall declare the following XML namespace for GML: http://www.opengis.net/gml/3.2.

Table 5. Metadata uniqueness and discovery within the WIS DAR catalogue (8)

	Target element(s)		*Description*
4	gmd:MD_Metadata/gmd:fileIdentifier	8.1.1	[MANDATORY obligation] Each WIS discovery metadata record shall include one gmd:MD_Metadata/gmd:fileIdentifier attribute.
		8.1.2	[MANDATORY obligation] The gmd:MD_Metadata/gmd:fileIdentifier attribute for each WIS discovery metadata record shall be unique within WIS.
5	gmd:MD_Metadata/gmd:identificationInfo/ ↘gmd:MD_Identification/gmd:descriptiveKeywords	8.2.1	[MANDATORY obligation] Each WIS discovery metadata record shall include at least one keyword from the WMO_CategoryCode code list.
		8.2.2	[MANDATORY obligation] Keywords from WMO_CategoryCode code list shall be defined as keyword type “theme”.
		8.2.3	[MANDATORY obligation] All keywords sourced from a particular keyword thesaurus shall be grouped into a single instance of the MD_Keywords class.
6	gmd:MD_Metadata/gmd:identificationInfo/ ↘gmd:MD_DataIdentification/gmd:extent/ ↘gmd:EX_Extent/gmd:geographicExtent/	8.2.4	[CONDITIONAL obligation: geographic data only] Each WIS discovery metadata record describing geographic data shall include the description of at least one geographic bounding box defining the spatial extent of the data.

Table 6. Description of data for global exchange via WIS (9)

	Target element(s)		*Description*
7	gmd:MD_Metadata/gmd:identificationInfo/ ↘gmd:MD_Identification/gmd:descriptiveKeywords	9.1.1	[MANDATORY obligation] A WIS discovery metadata record describing data for global exchange via WIS shall indicate the scope of distribution using the keyword "GlobalExchange" of type "dataCentre" from thesaurus WMO_ DistributionScopeCode.
8	gmd:MD_Metadata/gmd:fileIdentifier	9.2.1	[CONDITIONAL obligation: data globally exchanged via WIS only] A WIS discovery metadata record describing data for global exchange via WIS shall have a gmd:MD_Metadata/gmd:fileIdentifier attribute formatted as follows: urn:x-wmo:md:int.wmo.wis::{uid} (where {uid} is a unique identifier derived from the GTS bulletin or file name)
9	gmd:MD_Metadata/gmd:identificationInfo/ ↘gmd:MD_DataIdentification/ ↘gmd:resourceConstraints/ ↘gmd:MD_LegalConstraints/gmd:otherConstraints	9.3.1	[CONDITIONAL obligation: data globally exchanged via WIS only] A WIS discovery metadata record describing data for global exchange via WIS shall indicate the WMO data license as legal constraint (type: "otherConstraints") using one and only one term from the WMO_ DataLicenseCode code list.
		9.3.2	[CONDITIONAL obligation: data globally exchanged via WIS only] A WIS dscovery metadata record describing data for global exchange via WIS shall indicate the GTS priority as legal constraint (type: "otherConstraints") using one and only one term from the WMO_ GTSProductCategoryCode code list.

11. AMENDMENTS TO CODE LISTS/NEW CODE LISTS

Table 7 lists the modifications and additions to the code lists defined in ISO 19115:2003. Please refer to Part 2, 4, for more information on code-list extensions.

Table 7. Modifications and additions to the ISO 19115:2003 code lists

	Target code list	*Change*	*Description*
1	CI_DateTypeCode	Amendment	Additional term «reference» [004] See Part 2, Table 8.
2	MD_KeywordTypeCode	Amendment	Additional term «dataCentre» [006] – from ISO/DIS 19115-1:2013. See Part 2, Table 10.
3	WMO_DataLicenseCode	New	WMO data license applied to the data resource – derived from WMO Resolution 40 (Cg-XII) and Resolution 25 (Cg-XIII) (http://www.wmo.int/pages/about/exchangingdata_en.html) See Part 2, Table 14.
4	WMO_GTSProductCategoryCode	New	Product category used for prioritizing messages over the WMO GTS See Part 2, Table 15.
5	WMO_CategoryCode	New	Additional topic categories for the WMO community See Part 2, Table 16.
6	WMO_DistributionScopeCode	New	Scope of distribution of data within the WIS See Part 2, Table 17.

12. WMO CORE METADATA PROFILE UML MODEL

Metadata records compliant with the WMO Core Metadata Profile shall contain as a minimum the information defined in Figure 1. These are the "mandatory" elements of the record.

The WMO Core Metadata Profile specification defines a further set of elements that shall be included in a WIS discovery metadata record under certain conditions. These are illustrated in Figure 2.

Details of the UML classes and attributes are provided in Part 2, 3.

Note: For reference, the normative UML model for ISO 19115:2003/Cor. 1:2006 is published by ISO/TC 211 at: http://www.isotc211.org/hmmg/HTML/index.htm.

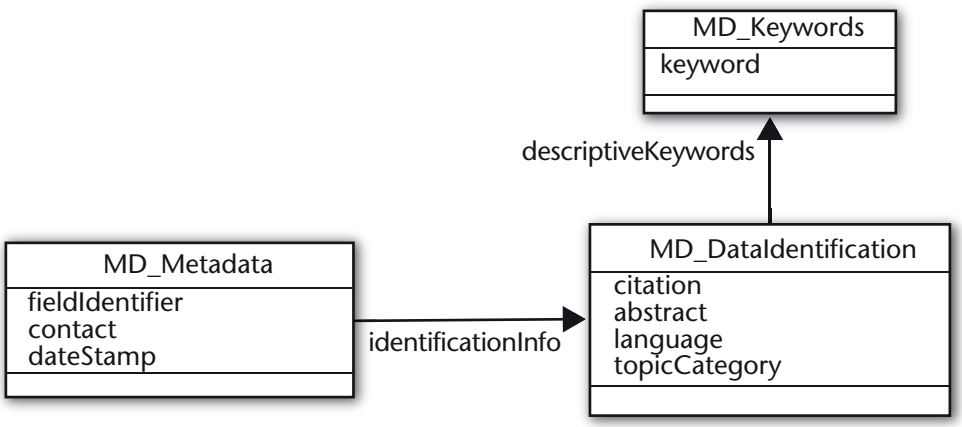

Figure 1. Mandatory contents of a WIS discovery metadata record

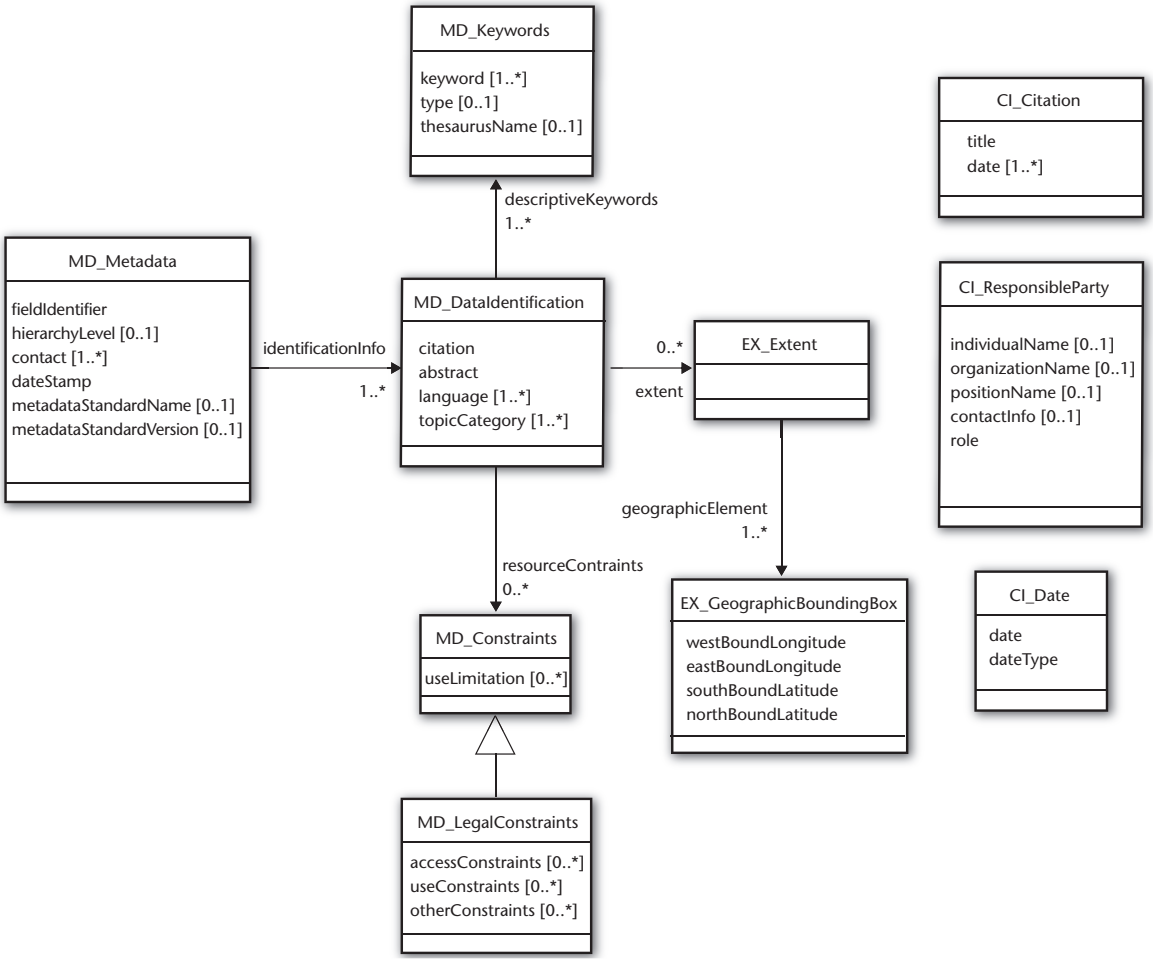

Figure 2. Full specification of the WMO Core Metadata Profile, including both optional and mandatory items