

# **WDC-RRE metadata standard (V1.0)**

WDC-RRE

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WDC-RRE

## Foreword

1. The WDC-RRE Metadata standard was put forward by World Data Center for Renewable Resources and Environment (WDC-RRE).
2. The standard was drafted by Institute of Geographical Sciences and Natural Resource Research, Chinese Academy of Sciences.
3. The main drafters of the standard: Wang Juanle etc.

WDC-RRE

## Introduction

WDC-RRE Metadata standard is based on the national standards and professional standards of domestic and foreign related metadata and is formulated in combination with the characteristics of the production, storage and service of renewable resource data sets. The metadata of renewable resource data is a normative description of renewable data resources to illustrate all characteristics of renewable data resources. Standardizing the data metadata of renewable resources will:

- help the data output unit to manage and maintain the metadata effectively;
- help users find the data needed for their specific application through network retrieval, realizing data sharing;
- improve the database construction and maintenance quality of renewable resources;

# 1 The content of the subject and adaptation scope

This standard applies to the description and organization management of data cataloging and metadata content of WDC-RRE as well as the exchange, integration and service of data resources.

## 2 Normative references

The following documents are essential for the application of this document. For reference labelled the date, only the version of the date indicated is applicable to this document. For reference without labelled date, the latest version (including all modifications) is applicable to this document.

GB/T 7408-2005 Data elements and interchange formats--Information interchange--Representation of dates and times .

GB/T 30523-2014 Science and technology infrastructure -Resource core metadata

SDS/T 2111-2004 Metadata Standardization Principles and Methods

SDS/T 2122-2004 Data classification and coding of Scientific data sharing engineering.

ISO 19115 Geographic information - Metadata

SDS/T 2112-2004 Content of scientific data sharing metadata.

GB/ T19710-2005 Geographic information Metadata.

## **3 Conformance requirements**

### 3.1 The conformance requirements of consistency

The content of metadata when using this standard in the WDC-RRE system platform should be consistent with this standard.

### 3.2 The conformance requirements of standard setting

This standard must be followed when setting up the standard of full set and special metadata of WDC-RRE system platform.

## **4 Terminology and definitions**

The following terminology and definitions are applicable to this document.

### 4.1 WDC-RRE World Data Center for Renewable Resources and Environment

WDC-RRE is the platform to transmit and share the scientific data about resource, environment and socioeconomic research for the users in China and abroad.

### 4.2 Metadata

Metadata is data about data.



Note: it can also be explained as the description of data or explanation of data.

[GB/T 19710-2005, definition 4.5]

### 4.3 Metadata Element

Metadata Element is the basic unit of metadata.

[GB/T 19710-2005, definition 4.6]

### 4.4 Metadata Entity

Metadata Entity a group of metadata elements with the same featuresNote: it can include one or more metadata entity.

[GB/T 19710-2005 definition 4.7]

### 4.5 Metadata Section

Metadata Section is the set of correlated metadata entity and elements.

### 4.6 Dataset

Dataset is identifiable data set.

Note: one dataset can be a minor data set; conversely, one data set can be comprised of some data sets, which is the parent data set of these sub datasets.

### 4.7 core metadata

Core metadata is the smallest data set to describe the most basic information in WDC-RRE system platform and the core metadata provides basic common information about datasets.

## 5 Symbols and abbreviations

### 5.1 Abbreviations

UML: Unified Modeling Language

### 5.2 UML notations

The diagrams in this standard is represented by UML static structural diagrams. Fig.5.1 shows the UML symbols in this standard.

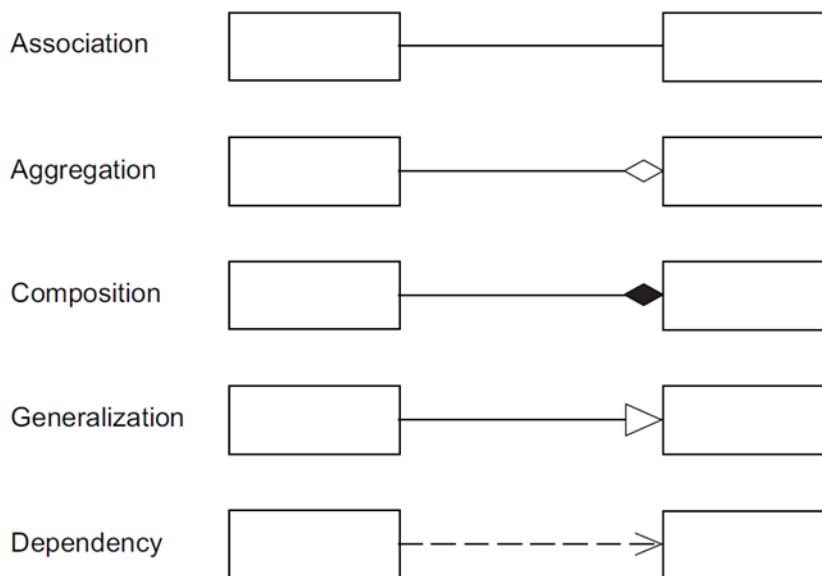


Fig.5.1 UML notations

### 5.3 Data dictionary

The data dictionary describes the features and attributes of metadata in the form of tables. The data dictionary defines metadata entities and metadata elements by name/role name, abbreviation, definition, constraint/condition, maximum number of occurrences, data type, and codomain.

### **5.3.1 Name/ Role name**

A name is the unique token of a metadata entity or metadata element. Role names are used to identify associations. The entity name is unique in the entire dictionary, and the metadata element name is also unique in the entity in which it is located.

### **5.3.2 Short name**

Each element of the class that is not the stereotype of code table or an enumeration table is represented by an abbreviation, which is unique in this standard.

### **5.3.3 Definition**

The description of metadata entities and elements makes it different conceptually from other metadata elements.

### **5.3.4 Obligation/ condition**

It indicates whether the metadata entity or metadata element must be selected, which includes mandatory (M), optional (O), and conditional (C).

### **5.3.5 Maximum occurrence**

It describes the maximum number of instances that metadata entities or metadata elements can have. If it just appears only once, use "1" to represent; if it appears repeatedly, use "N". The number of fixed occurrences that is not 1 is represented by corresponding numbers, such as "2", "3", "4", etc.

### 5.3.6 Data type

It represents a set of different values for metadata elements, such as "integer", "real", "date time", "boolean", "string", "complex", etc.

### 5.3.7 Domain

It describes the value range of metadata elements. When a field is not assigned to a value in the system, the system automatically assigns the default value of the field or object to that field.

## 5.4 The relationship between UML model and data dictionary

This standard represents the metadata structure using a UML static structure diagram. The relationship between the model and the data dictionary in the UML diagram is shown in table.5.1.

Table.5.1 relationship between UML model and digital dictionary.

UML model	Numerical dictionary
package	subset
Generalization class	entity
Specialized class	entity
class	entity
attribute	element
Association	element

## 6 The content of core metadata

### 6.1 Overview

This standard includes 32 metadata elements and 3 metadata entities, in which the MResponsibleDepartment entity and DResponsibleDepartment entity are respectively concentrated by 7 elements. The PROJECT is concentrated by 5 elements together, with a total of 53 core metadata elements to support the description of all kinds of data resources within the WDC-RRE system. This standard describes core metadata using abstracts, data dictionaries, and UML.

### 6.2 Core metadata – abstraction

#### 6.2.1 UID

Definition: the unique identifier of the system

Short name: UID

Field type: string

Codomain: free text

Note: required field, the maximum number of occurrences is 1

#### 6.2.2 DATASETID

Definition: identifier ID of the dataset.

Short name: dtId

Field type: string.

Value domain: free text.

Note: option, the maximum number of occurrences is 1.

#### 6.2.3 DATASETNAM

Definition: the name of the dataset.

Short name: dtTtlName

Field type: string.

Value domain: free text.

Note: required field, the maximum number of occurrences is 1.

Remark: free text; (the full name of the data set when it is officially published, and the title of the dataset must include these important information, that is 'where', 'what', 'when' and 'when')

## 6.2.4 TheFile

Definition: file name of data set entity.

Short name: File

Field type: string.

Codomain: free text.

Note: the maximum number of occurrences is 1.

## 6.2.5 ABSTRACT

Definition: overview introduction of WDC-RRE resource content, including sources, features, indicators, uses etc.

Short name: dtAbst

Field type: string.

Codomain: free text.

Note: required field, the maximum number of occurrences is 1.

## 6.2.6 KEYWORDS

Definition: generic term, formalized word, or phrase used to describe the topic of renewable resource information.

Short name: keywords

Field type: string.

Codomain: free text.

Note: The maximum number of occurrences is N.

## 6.2.7 PURPOSE

Definition: purpose and scope of application.

Short name: purpose

Field type: string.

Value domain: free text; Multiple words are separated by "."

Note: the maximum number of occurrences is N.

## 6.2.8 USELIMIT

Definition: the use of data sets involves privacy, protection of intellectual property, or any specific constraints, restrictions, or considerations.

Short name: useLimit

Field type: class

Value domain: MD\_ restricted code.

Note: option, the maximum number of occurrences is N.

## 6.2.9 LICENSE

Definition: permission

Short name: License

Field type: string.

Value domain: free text.

Note: the maximum number of occurrences is 1.

## 6.2.10 EXTENSION

Definition: the data set or the extended data format of the file it contains.

Short name: the Extension

Field type: class

Codomain: MD\_ data format code.

Note: option, the maximum number of occurrences is 1.

## 6.2.11 FORMDES

Definition: data set or the data format of the file it contains.

Short name: dtFormat

Field type: class

Value domain: MD\_ data format code.

Note: required field, the maximum number of occurrences is 1.

## 6.2.12 SCALE

Definition: describes the spatial resolution of a data set.

English name: SCALE.

Short name: Scale

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1

### 6.2.13 PRODUCT

Definition: the production unit of a data set.

Short name: the product

Field type: string.

Codomain: free text.

Note: required field, the maximum number of occurrences is 1.

### 6.2.14 ONLINK

Definition: online information about resources.

Short name: onLink

Field type: string.

Codomain: URL

Note: option, the maximum number of occurrences is 1.

### 6.2.15 SUPPLEMENT

Definition: additional information.

Short name: supplement

Field type: string.

Value domain: free text.

Note: option, the maximum number of occurrences is 1.

### 6.2.16 CLASS

Definition: class information describing data in renewable resources dataset

Short name: class

Field type: class

Codomain: MD\_ renewable resource class table.

Note: required field, the maximum number of occurrences is N.

### 6.2.17 THEME

Definition: a formal phrase used to describe generic term of a topic

Short name: Theme

Field type: class

Codomain: MD\_ renewable resource subject list.

Note: required field, the maximum number of occurrences is N.



## 6.2.18 DATASOURCE

Definition: data source information used by the dataset.

Short name: dtSource

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

## 6.2.19 PUBTIME

Definition: the release time of metadata.

Short name: pubTime

Field type: date.

Codomain: date type

Note: required option, the maximum number of occurrences is 1.

## 6.2.20 PROJECT

Definition: information about the project.

Short name: project

Field type: compound.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

Child element: PROJECT =.

0 {PROJECTINFO} + 1

0 {PROJECTSTATUS} + 1

0 {PROJECTNAME} + 1

0 {ROJECTADMIN} + 1

0 {STARTTIME} 1 +

0 {FINISHMETTIME} + 1

The extended pabs paradigm: project= 0 {projInfo} 1 0 {projStatus} 1 0 {proAdmin} 1, 0 {startTime} 1 0 {finshTime} 1;

### 6.2.20.1 PROJECTINFO

Definition: basic information of the project.

Short name: projInfo

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

### 6.2.20.2 PROJECTSTATUS

Definition: project status information.

Short name: projStatus

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

### 6.2.20.3 PROJECTNAME

Definition: the name of the project.

Short name: proName

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

### 6.2.20.4 PROJECTADMIN

Definition: the name of the project leader.

Short name: proAdmin

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

### 6.2.20.5 STARTTIME

Definition: project start time.

Short name: startTime

Field type: date.

Codomain: date type; For example: format reference: 01- January -02.

Note: option, the maximum number of occurrences is 1.

### 6.2.20.6 FINISHMETTIME

Definition: the end time of the project.

Short name: finshTime

Field type: date.

Codomain: date type; For example: format reference: 01- January -02.

Note: option, the maximum number of occurrences is 1.

## 6.2.21 the PROJECTION

Definition: the projection method used by the data set.

Short name: the projection

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

## 6.2.22 COORDINATE

Definition: the longitude frame of the data set coverage.

Short name: dtSource

Field type: class

Codomain: MD\_ coordinate system.

Note: option, the maximum number of occurrences is 1.

## 6.2.23 DATAQUALITY

Definition: data source information used by the dataset.

Short name: dtSource

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

## 6.2.24 MResponsibleDepartment

Definition: an organization or individual that maintains a data set.

Short name: MRespDepart

Field type: compound.

Note: required field, the maximum number of occurrences is 1.

Child element: MResponsibleDepartment =.

```
MPNAME +
0 {MADDRESS} 1 +
0 {MPOSTCODE} 1 +
1 {MNAME} n +
1 {MEMAIL} n +
1 {MPHONE} n +
0 {MFAX} 1
```

The extended pabs paradigm: mrespdeparts = mPName, 0{mAddress}1, 0{mPostcode}1 1 {mName}n,1 {mEmail}n, 1 {mPhone}n, 0{mFax}1;

#### 6.2.24.1 MPNAME

Definition: unit name of data set contributor

Short name: mPName

Field type: string.

Codomain: free text; the full name of the unit when it is officially published.

Note: required field, the maximum number of occurrences is 1.

#### 6.2.24.2 MADDRESS

Definition: the address of data set contributor

Short name: mAddress

Field type: string.

Codomain: free text; the detailed address of the unit where the unit is officially published, including the name of the road, the number of the door number and so on.

Note: option, the maximum number of occurrences is 1.

#### 6.2.24.3 MPOSTCODE

Definition: the zip code of data set contributor

Short name: mPostcode

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

#### 6.2.24.4 MNAME

Definition: name of the person who contributes the data set

Short name: mName

Field type: string.

Codomain: free text.

Note: required field, the maximum number of occurrences is N.

#### 6.2.24.5 MEMAIL

Definition: the mailbox of the person who contributes the data set.

Short name: mEmail

Field type: string.

Codomain: free text.

Note: required field, the maximum number of occurrences is N.

#### 6.2.24.6 MPHONE

Definition: the phone number of the person who contributes the data set

Short name: mPhone

Field type: string.

Codomain: free text.

Note: required field, the maximum number of occurrences is N.

#### 6.2.24.7 MFAX

Definition: the fax of the person who contributes the data set

Short name: mFax

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

#### 6.2.25 MHOMEPAGE

Definition: home page information of data maintenance party

Short name: mHomepage

Field type: string.

Codomain: URL

Note: option, the maximum number of occurrences is 1.

#### 6.2.26 WESTBL

Definition: the longitude coordinates in the west of the data set coverage, in decimal degrees.

Short name: westBL

Field type: real.

Codomain: decimal, degree  $-180.0 \leq \text{western longitude} \leq 180.0$ .

Note: option, the maximum number of occurrences is 1.

#### 6.2.27 EASTBL

Definition: the longitude coordinates in the east of the data set coverage, the unit is the decimal degree.

Short name: eastBL

Field type: real.

Codomain: decimal, degree  $-180.0 \leq \text{east longitude} \leq 180.0$ .

Note: option, the maximum number of occurrences is 1.

## 6.2.28 SOUTHBL

Definition: the latitude coordinates in the southwest of the data set coverage, and the unit is the decimal degree.

Short name: southBL

Field type: real.

Codomain: decimal, degree-90.0 <= south latitude <= 90.0; South latitude <= north latitude.

Note: required field, the maximum number of occurrences is 1.

## 6.2.29 NORTHBL

Definition: the latitude coordinates in the north of the data set coverage, and the units are decimal degrees.

Short name: northBL

Field type: real.

Codomain: decimal, degree-90.0 <= south latitude <= 90.0; North latitude >= south latitude.

Note: required field, the maximum number of occurrences is 1.

## 6.2.30 BEGINTIME

Definition: the starting time of data collection.

Short name: beginTime

Field type: date.

Codomain: date type; For example: format reference :01- January -02.

Note: required field, the maximum number of occurrences is 1.

## 6.2.31 ENDTIME

Definition: the end time of data collection.(此处原文为 “起始时间” )

Short name: endTime

Field type: date.

Codomain: date type; For example: format reference 01- January -02.

Note: the maximum number of occurrences is 1.

## 6.2.32 VERMIN

Definition: the minimum in vertical coordinate

Short name: verMin

Field type: string.

Value domain: free text.

Note: option, the maximum number of occurrences is 1.

### 6.2.33 VERMAX

Definition: the maximum vertical coordinate

Short name: verMin

Field type: string.

Value domain: free text.

Note: option, the maximum number of occurrences is 1.

### 6.2.34 DResponsibleDepartment

Definition: an organization or individual that provides data services.

Short name: DResDepart

Field type: compound.

Note: required field, the maximum number of occurrences is 1.

Child element: DResponsibleDepartment =.

DPNAME +  
 0 {DADDRESS} 1 +  
 0 {DPOSTCODE} 1 +  
 1 {DNAME} n +  
 1 {DEMAIL} n +  
 1 {DPHONE} n +  
 0 {DFAX} 1

The extended pabs paradigm: dresdet = dPName,0{dAddress}1, 0{dPostcode}1  
 1{dName}n, 1{dEmail}n, 1{dPhone}n, 0{dFax}1;

#### 6.2.34.1 DPNAME

Definition: the name of the data service unit.

Short name: dPName

Field type: string.

Codomain: free text; The name of the unit is officially published.

Note: required field, the maximum number of occurrences is 1.

#### 6.2.34.2 DADDRESS

Definition: the address of data server

Short name: dAddress

Field type: string.

Codomain: free text; the detailed address of the unit when the unit is officially published, including the name of the road, the number of the door number and so on.

Note: option, the maximum number of occurrences is 1.

### 6.2.34.3 DPOSTCODE

Definition: the zip code of data server

Short name: dPostcode

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

### 6.2.34.4 DNAME

Definition: the name of the responsible person from the data server

Short name: dName

Field type: string.

Codomain: free text.

Note: required field, the maximum number of occurrences is N.

### 6.2.34.5 DEMAIL

Definition: the mailbox of the responsible person from the data server

Short name: dEmail

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is N.

### 6.2.34.6 DPHONE

Definition: the phone number of the responsible person from the data server

Short name: dPhone

Field type: string.

Codomain: free text.

Note: required field, the maximum number of occurrences is N.



#### 6.2.34.7 DFAX

Definition: the fax of the responsible person from the data server

Short name: dFax

Field type: string.

Codomain: free text.

Note: option, the maximum number of occurrences is 1.

#### 6.2.35 DHOMEPAGE

Definition: the home page information of data server

short name: dHomepage

Field type: string.

Value domain: URL

Note: the maximum number of occurrences is 1.

WDC-RRE

## 6.3 The core metadata of the WDC-RRE metadata standard – Dictionary

Sequence number	Role/role name	Abbreviation	definition	Constraint/condition	The maximum number of occurrence	Data type	codomain
1	UID	UID	The unique identifier in the system	M	1	string	Free text
2	DATASET ID	dtId	The identifier ID of the data set	O	1	string	Free text
3	DATASET NAME	dtName	The name of the data set	M	1	string	Free text; (the full name of the data set when it is officially published, and the title of the dataset must include 'where', 'what', 'when' )
4	TheFile	File	The file name of the dataset entity	O	1	string	Free text
5	ABSTRACT	dtAbst	Overview of WDC-RRE resource content, including sources of data, features, indicators, uses, etc.	M	1	string	Free text
6	KEYWORD	keyword	A generic term, formalized word, or	M	N	string	Free text, multiple keywords are

	DS	s	phrase used to describe a renewable topic.				separated by “,”
7	PURPOSE	purpose	Purpose and scope of application.	M	N	string	Free text, multiple words are separated by “,”
8	USELIMIT	useLimit	The use of data sets involves privacy, protection of intellectual property, or any specific constraints, restrictions, or considerations.	O	N	class	MD-restricted code
9	LICENSE	License	The license	O	1	string	Free text
10	EXTENSION	Extension	The data set or the extended data format of the file it contains.	O	N	string	Free text
11	FORMDES	dtFormat	Data set or the data format of the file it contains.	M	1	string	Free text
12	SCALE	Scale	Describes the spatial resolution information of the data set.	O	1	string	Free text
13	PRODUCT	product	The production unit of the data set.	M	1	string	Free text
14	ONLINK	onLink	Related online information of resources.	O	1	string	URL
15	SUPPLEMENT	supplement	Supplementary information	O	1	string	Free text
16	CLASS	class	Describes the class information of the data in data set for renewable resources.	M	N	class	MD- renewable resource class list
17	THEME	Theme	A generic term for a topic.	M	N	class	MD-renewable resource topic words list

18	DATASOURCE	dtSource	Data source information used by the data set.	O	1	string	Free text
19	PUBTIME	pubTime	The release time of metadata.	M	1	date	date
20	PROJECTINFO	projInfo	The basic information of the project	O	1	string	Free text
21	PROJECTSTATUS	projStatus	The status information of the project	O	1	string	Free text
22	PROJECTNAME	proName	The name of the project	O	1	string	Free text
23	PROJECTADMIN	proAdmin	The name of the person who are responsible for the project	O	1	string	Free text
24	STARTTIME	startTime	The starting time of the project	O	1	date	Date; for example, format reference: 01-January-02
25	FINISHTIME	FinishTime	The end time of the project	O	1	date	Date; for example, format reference: 01-January-02
26	PROJECTION	projection	The projection mode in data	O	1	string	Free text
27	COORDINATE	coordinate	The longitude coordinate of the data coverage	O	1	class	MD-coordinates
28	DATAQUALITY	dataQual	Information about the quality of the data set	O	1	string	Free text
29	MNAME	mName	The name of the data contributor	M	N	string	Free text: write the full name of the responsible person
30	MPNAME	mPName	The name of the unit that contributes the data	M	1	string	Free text, write the name of the unit when it is officially

							published
31	MADDRESS	mAddress	The address of the data contributor	O	1	string	Free text; The detailed address of the unit where the unit is officially published, including the name of the road, the number of the door number and so on.
32	MPOSTCODE	mPostcode	The zip code of the data contributor	O	1	string	Free text
33	MPHONE	mPhone	The phone number of the responsible person from the data contributor	M	N	string	Free text
34	MEMAIL	mEmail	The mailbox of the responsible person from the data contributor	M	N	string	Free text
35	MFAX	mFax	The fax of the responsible person from the data contributor	O	1	string	Free text
36	MHOMEPAGE	mHomepage	The homepage information of the data contributor	O	1	string	URL
37	WESTBL	westBL	The longitude coordinate in the west of the dataset coverage, in decimal degree	M	1	Real	Decimal, degree $-180.0 \leq$ western longitude $\leq 180.0$
38	EASTBL	eastBL	The longitude coordinate in the east of the dataset coverage, in decimal degree	M	1	Real	Decimal, degree $-180.0 \leq$ eastern longitude $\leq 180.0$
39	SOUTHBL	southBL	The latitude coordinate in south of the dataset coverage, in decimal degree	M	1	Real	Decimal, degree $-90.0 \leq$ south latitude $\leq 90.0$ ; south latitude $\leq$ northern latitude
40	NORTHBL	northBL	The latitude coordinate in north of the	M	1	Real	Decimal, degree $-90.0 \leq$ north

			dataset coverage, in decimal degree				latitude <=90.0; northern latitude >= south latitude
41	BEGINTIME	beginTime	The starting time of data collection	M	1	date	Date, for example, format reference: 01-January-02
42	ENDTIME	endTime	The end time of the data collection (起始时间)	M	1	date	Date, for example, format reference: 01-January-02
43	VERMIN	verMin	The minimum of the vertical coordinate	O	1	string	Free text
44	VERMAX	verMax	The maximum of the vertical coordinate	O	1	string	Free text
45	DNAME	dName	The name of the responsible person from the data server	M	N	string	Free text, write the full name of the responsible person of the metadata
46	DPNAME	dPName	The unit name of the data server	M	1	string	Free text; write the full name of the unit when it is officially published
47	DADDRESS	dAddress	The address of the data server	O	1	string	Free text, the detailed address of the unit when the unit is officially published, including the name of the road, the number of the door number and so on.
48	DPOSTCODE	dPostcode	The zip code of the data server	O	1	string	Free text
49	DPHONE	dPhone	The phone number of the responsible	M	N	string	Free text

			person from the data server				
50	DEMAIL	dEmail	The mailbox of the responsible person from the data server	M	N	string	Free text
51	DFAX	dFax	The fax of the responsible person from the data server	O	1	string	Free text
52	DHOMEPAGE	dHomepage	The homepage information of the data server	O	1	string	URL

## 6.4 The core metadata of the WDC-RRE metadata standard – UML diagram

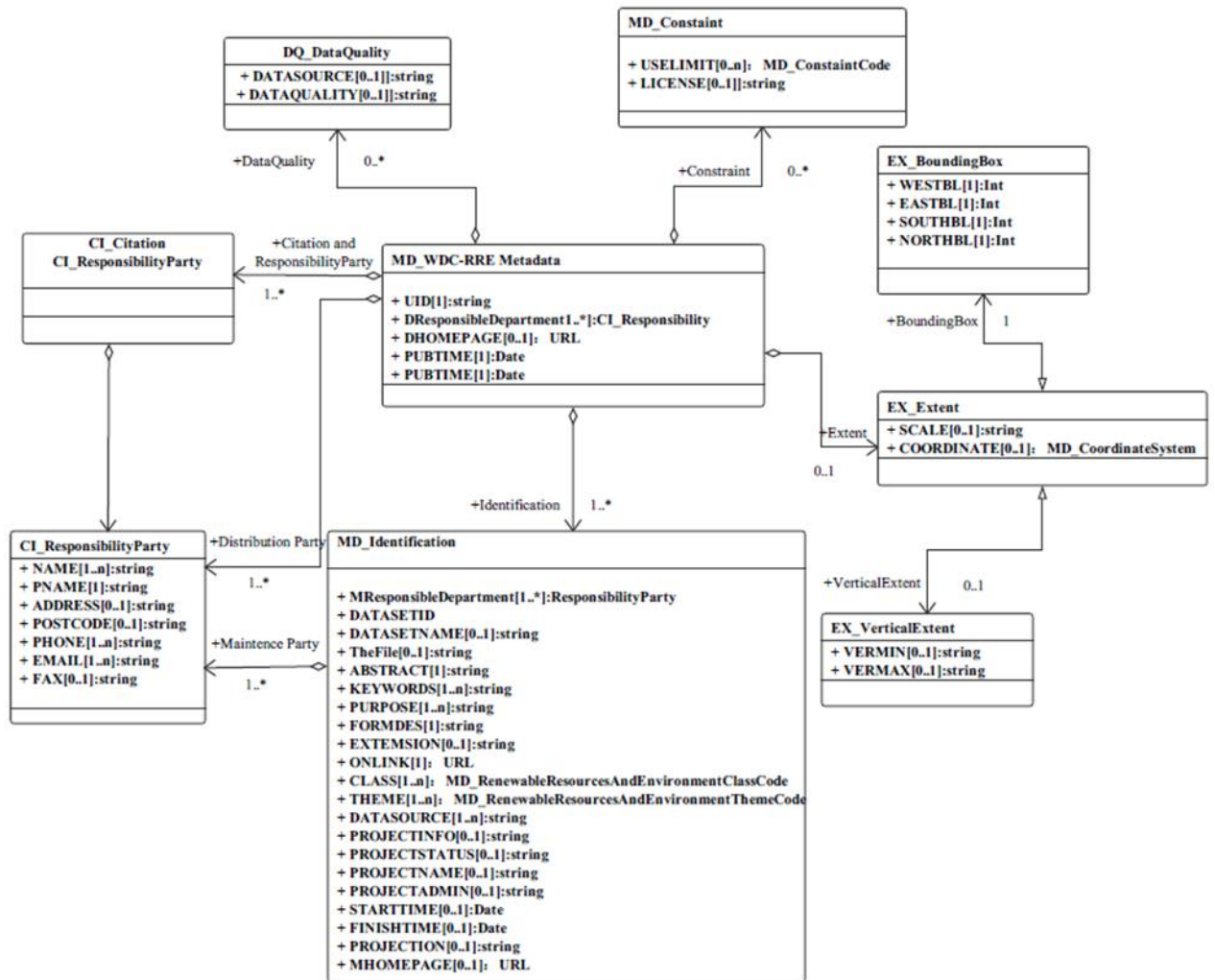


Fig.6.1 The core metadata of the WDC-RRE metadata standard



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