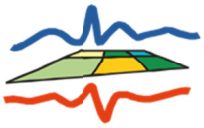

TR32DB Metadata Schema

for the Description of Research Data in the TR32DB

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Author:
Constanze Curdt
Transregional Collaborative Research Centre 32, Project Section Z1/INF
University of Cologne, Institute of Geography

Contact:
tr32db-admin@uni-koeln.de
http://www.tr32db.uni-koeln.de

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1 Introduction

1.1 The TR32DB

Managing and archiving research data in a well-organized framework is an essential task in every interdisciplinary, long-term research project. All data created or collected within the project funding has to be stored and backed up including accurate description with metadata. In DFG-funded Collaborative Research Centers (CRC) is a project section Information-Infrastructure (so-called 'INF' project) responsible to set up a systematical research data management system (RDMS). The focus of the RDMS should be on long-term usage to manage all relevant research data created within the context of the project. This should fulfill the obligations of the 'Good Scientific Practice' to archive the data for at least ten years and also support synergies and communication between the researchers.

Within the framework of the Transregional CRC 32 "Patterns in Soil-Vegetation-Atmosphere-Systems: Monitoring, Modeling and Data Assimilation" (CRC/TR32, www.tr32.de), a web-based RDMS, a so-called project database, was implemented by the INF-project section to handle all relevant research data. The CRC/TR32-Database (TR32DB, www.tr32db.uni-koeln.de) is operating since early 2008 and is physically located at the Regional Computing Center of the University of Cologne (RRZK). Secure, sustainable archive and back up is provided within this environment. The developed metadata management system (MMS) is the central element of the system. It was designed, realized, and implemented according to the needs of the interdisciplinary project background, the demands of the stored data types, and to recent metadata standards. The present TR32DB Metadata Schema provides the basis for the MMS.

1.2 The TR32D Metadata Schema

The TR32DB Metadata Schema is a structured list of metadata properties chosen to describe all data in the TR32DB with accurate metadata properties and thus to improve their searchability. The entire data provided to the TR32DB can be described with a number of descriptive metadata properties (e.g. creator, title, abstract, keywords, etc.) and administrative or technical properties (e.g. file format, file type, rights statement, etc.). The stored data are organized in six main data type categories: Data, Geodata, Report, Picture, Presentation, and Publication.

The TR32DB Metadata Schema is set up in two levels (Figure 1) to describe the various types of data collected by the CRC/TR32 participants. The first level is the 'General' level. This level includes metadata properties classified in seven categories: Identification, Responsible Party, Topic, File Details, Constraints, Geographic, and automatic generated Metadata Details. The second level is the 'Specific' level and contains the data type specific metadata properties. Currently, six data types are included: Data, Geodata, Report, Picture, Presentation, and Publication. Publication takes a special position and is once again sub-divided into the sub-categories: Article, Book, Book Section, and Event Paper.

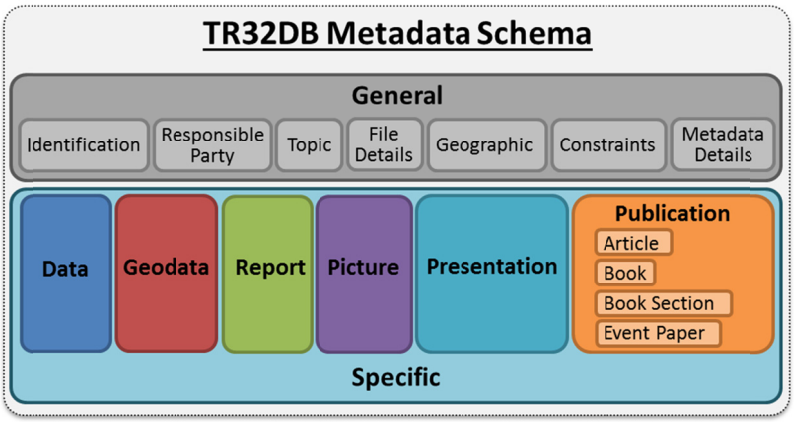

Figure 1: TR32DB Metadata Schema Structure

The TR32DB Metadata Schema comprises a defined number of metadata properties. Some of these properties are part of the core set and consequently mandatory. In addition, optional metadata properties are provided as well as automatically generated. All metadata properties are described in detail including the TR32DB property name, a definition, the maximum occurrence, the obligation, as well as supplementary notes with regard to allowed values, examples or other constraints.

The TR32DB Metadata Schema is designed in compliance with Dublin Core1 and DataCite2. It is expanded with metadata elements from ISO 191153, INSPIRE4, various properties appropriate to the stored data types, as well as specific properties related to the CRC/TR32 project background.

2 TR32DB Metadata Properties

2.1 Overview of TR32DB Metadata Schema Properties

An overview of the metadata properties of the TR32DB Metadata Schema is presented in this section. They will be described in detail in the following section. The metadata properties are allocated in three levels of obligation: **Mandatory (M)** properties must be provided, **Optional (O)** properties may be provided, and **Automatic (A)** properties are automatically generated by the TR32DB.

The following tables provide a short form of the metadata properties assorted according to the obligation level. Table 1 lists all properties with the obligation mandatory (M). These properties must be supplied for a dataset. All properties with the obligation level optional (O) are listed in Table 2. These may be supplied for a dataset. Table 1 and 2 are both structured with regard to the general and data type specific metadata properties. All properties listed in Table 3 are automatically generated.

Table 2.1-1 TR32DB Mandatory Properties

ID	Property
	GENERAL
1	Title (with type)
2	Description (with type)
3	Date (with type)
7	Creator (Creator-Person with role, name, emailAddress, TR32Membership; CreatorInstitution with universityName, instituteName, streetName, postcode, city, country, website; Creator-Organisation with organisationRole, organisationName ,organisationDepartment, streetName, postcode, city, country, website, contactPerson, eMailAddress, phone)
9	Publisher
10	Subject (with TR32topic, TR32keyword)
11	DataType
15	Language
16	DataStatus
17	Download (with DownloadPermission)
19	MeasuringSite (with measuringRegion, measuringLocation)
	DATA
31	TemporalExtent (with startDate, endDate)
	GEODATA
34	TemporalExtent (with startDate, endDate)
	REPORT
44	ReportDate
46	ReportCity
47	ReportInstitution
	PICTURE
52	RecordDate (with startDate, endDate)
53	RecordPlace
	PRESENTATION
61	PresentationDate
63	Event (with eventName, eventLocation, eventPeriod (with startDate, endDate))
	PUBLICATION-Article
64	Status
65	Review

[1] Dublin Core Metadata Initiative; http://dublincore.org/documents/dcmi-terms/
[2] DataCite Metadata Schema, Version 2.2, http://schema.datacite.org/meta/kernel-2.2/doc/DataCite-MetadataKernel_v2.2.pdf
[3] ISO 19115:2003 Geographic information – Metadata; http://www.iso.org/iso/catalogue_detail.htm?csnumber=26020
[4] INSPIRE Implementing Directive; http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:326:0012:0030:EN:PDF

66	Year
67	PublicationType
69	PublicationSource
73	PageRange (with startPage, endPage)
	PUBLICATION-Book
74	Status
75	Review
76	Year
77	PublicationType
80	City
	PUBLICATION-BookSection
85	Status
86	Review
87	Year
88	PublicationType
89	BookTitle
90	BookEditor
91	City
96	PageRange (with startPage, endPage)
	PUBLICATION-EventPaper
97	Status
98	Review
99	Year
100	PublicationType
101	Event (with eventName, eventLocation, eventPeriod)
104	PageRange (with startPage, endPage)

Table 2.1-2: TR32DB Optional Properties

ID	Property
	GENERAL
3	Identifier (with identifierType)
4	Relation (with Identifier, identifierType, relationType)
5	CitationAdvice
6	AdditionDescription (descriptionFileName, graphicFileName)
8	Contributor (with contributorName, contributorType, nameIdentifier, nameIdentifierSchema)
10	Subject (with GemetThesaurus, TopicCategory, InspireTheme, DDC)
12	DataFormat (with dataFormatVersion)
13	DataSize (with dataSizeType)
18	Constraints (with AccessAndUseConstraints, AccessLimitations)
20	GeographicBoundingBox (with westBoundLongitude, eastBoundLongitude, northBoundLatitude, southBoundLatitude)
	DATA
32	Lineage
33	MeasuringInstrumentModelMethod (Instrument with instrumentName, instrumentModel, instrumentManufacturer, manufacturerRegisterdOffice, manufacturerWebsite; InstrumentParameter with ParameterName, parameterUnit, ResolutionDistance, resolutionDistanceUnit, TemporalFrequency, temporalFrequencyUnit)
	GEODATA
35	VerticalExtent (with minimumValue, maximumValue, ReferenceSystem, referenceSystemCode, referenceSystemName)
36	Lineage
37	Spatial Resolution (with scale, distanceNumber, distanceUnit)
38	SpatialRepresentationType
39	PresentationForm
40	ReferenceSystem (with referenceSystemCode, referenceSystemName)
41	MaintenanceInformation (with maintenanceFrequency, maintenanceNote)
42	Scope
43	InitiativeType
	REPORT
45	ReportType
48	ReportVolume
49	NumberOfPages
50	PageRange (with startPage, endPage)

51	FurtherInformation
	PICTURE
54	RecordMethod
55	Orientation
56	Resolution
57	Size (with width, height)
58	CopyrightInformation
59	Event (with eventType, eventName, eventLocation, eventWebsite, eventPeriod (with startDate, endDate))
	PRESENTATION
60	Presenter
62	PresentationType
	PUBLICATION-Article
68	ArticleType
70	Volume
71	Issue
72	NumberOfPages
70	Volume
	PUBLICATION-Book
78	SeriesTitle
79	SeriesEditor
81	Volume
82	Edition
83	NumberOfPages
84	PageRange (with startPage, endPage)
	PUBLICATION-BookSection
92	SeriesTitle
93	SeriesEditor
94	Volume
95	Chapter
96	NumberOfPages
92	SeriesTitle
	PUBLICATION-EventPaper
102	Proceedings (ProceedingsEditor, ProceedingsTitle, ProceedingsURL, Volume, Issue)
103	NumberOfPages

Table 2.1-3: TR32DB Automatic Generated Properties

ID	Property
	METADATA DETAILS (METADATA ON METADATA)
21	TR32DBIdentifier (with TR32DBUrl)
22	TR32MetaDataType
23	MetadataCreator (with creatorFirstName, creatorFamiliyName, academicTitle, eMailAddress, phone, fax, TR32subproject)
24	MetadataCreatorInstitution (with universityName, instituteName, streetName, postcode, city, country, website)
25	mdCreationDate
26	mdLastUpdateDate
27	mdWebVersion
28	mdLanguage
29	fileInformation (with filename, fileExtention, fileFormat, fileSize, fileUploadTime, fileSubproject, fileFundingPhase)
30	Conformity (with specificationTitle, date, dateType, degree, explanation)

2.2 TR32DB Metadata Properties

The following tables provide a detailed description of all mandatory, optional and automatic generated TR32DB metadata properties with corresponding sub-properties. They are clearly arranged as illustrated in Figure 1. First of all, the 'General' metadata properties are described in details, following by the data type 'Specific' metadata properties. Each property is described with the following information:

- the **identifier (ID)** number of the metadata property
- the **definition** describes the metadata property
- the **occurrence (OCC)** indicates the quantity/cardinality constrains of the property:

0-n = metadata property is optional and repeatable
0-1 = metadata property is optional, but not repeatable
1-n = metadata property is required and repeatable
1 = metadata property is required, but not repeatable

- the level of **obligation (OB)** for each metadata property is distinguished in:

  Mandatory (M) properties must be provided.
  Optional (O) properties may be provided.
  Automatic (A) properties are automatically generated.

- the **notes** of a metadata property provide information about the allowed values, example, or other constraints, e.g. data value type (free text, date, controlled vocabularies), syntax encoding schema (e.g. encoding for a date)

Throughout the entire document, a naming convention has been used for the properties and sub-properties as follows. All properties begin with a capital letter (e.g. Title, Description, Identifier …). All sub-properties begin with a lower case letter (e.g. titleType, descriptionType, identifierType, …).

2.2.1 TR32DB 'GENERAL' Metadata Properties

ID	TR32DB property name	Definition	Occ	OB	Notes (allowed values, examples, other constraints)
Identification					
1	Title	A name given to the dataset. Typically a title will be a name by which the dataset is formally known.	1-n	M	Free Text *Example:* Enhanced Land Use Classification of 2008 for the Rur catchment
1.1	titleType	The type of Title.	1	M	*Controlled List:* **TitleType** See appendix for values and definitions.
2	Description	A textual description of the content of the dataset including additional information.	1-n	M	Free Text
2.1	descriptionType	The type of Description.	1	M	*Controlled List:* **DescriptionType** See appendix for values and definitions.
3	Identifier	A uniquely value (string or number) identifying the dataset. Any alphanumeric string which is unique within its domain of issue.	0-n	O	Free Text *Example:* 10.5880/TR32DB.1
3.1	identiferType	The name of the Identifier type.	0-1	O/ M	If Identifier is used, then identiferType is mandatory. *Controlled List:* **IdentifierType** See appendix for values and definitions.
4	Relation	Relation represents the relationship between the described dataset and another resource or identifier that is related to the described dataset in some way.	0-n	O	
4.1	identifier	A uniquely value (string or number) identifying the dataset. Any alphanumeric string which is unique within its domain of issue.	0-1	O/ M	If relationType and identifierType is used, then identifer is mandatory. Free Text *Example:* 10.5880/TR32DB.1 http://tr32db.uni-koeln.de/data.php?dataID=27
4.2	identifierType	The name of the identifier type.	0-1	O/ M	If relationType and identifier is used, then identiferType is mandatory. *Controlled List:* **IdentifierType** See appendix for values and definitions.
4.3	relationType	The type of the Relation.	0-1	O/ M	If identifierType and identifer is used, then relationType is mandatory.

					Controlled List: **RelationType** See appendix for values and definitions.
5	CitationAdvice	An advice to cite the dataset.	0-1	O	Free Text *Example:* Waldhoff, Guido (2012): Enhanced Land Use Classification of 2008 for the Rur catchment. DOI: 10.5880/TR32DB.1
6	AdditionalDescription	Additional information describing the dataset.			
6.1	descriptionFileName	The name of a text file that provides additional descriptive information about the dataset. For example detailed explanations can be given about the measured/modelled parameters, site details, or instrument or model method.	0-1	O	Only text files in PDF format are permitted with a maximal file size of 5MB. Free Text *Example:* TR32_LU2011_description.pdf
6.2	graphicFileName	The name of a graphic that provides an illustration of the dataset (should include a legend for the graphic).	0-1	O	Only graphic files in JPG or PNG format are permitted with a maximal file size of 2MB. Free Text *Example:* TR32_LU2011_preview.jpg
Responsible Party					
7	Creator	The person(s) and/or organisation(s) associated with the dataset. They can be involved in producing the dataset, responsible for establishment, management, maintenance and distribution of the resource. By default CreatorPerson should be used for research data created within the CRC/TR32.			CreatorOrganisation is currently only applicable for TR32MetaDataType GEODATA. If claiming conformance to INSPIRE and ISO 19115, CreatorOrganisation should be used instead of CreatorPerson.
7.1	CreatorPerson	The main researcher(s) involved in producing the dataset (person responsible for content of the resource) or author(s) of the publication, in priory order. (Creator-Person)	1-n	M	*Controlled List:* Available at http://www.tr32db.de/creatorList*
7.1.1	creatorRole	The role of the Creator.	1	M	*Controlled List:* **RoleType** See appendix for values and definitions.
7.1.2	creatorFirstName	The first name of the Creator.	1	M	Free Text *Example:* John
7.1.3	creatorFamilyName	The family name of the Creator.	1	M	Free Text *Example:* Doe
7.1.4	nameIdentifier	The unique identifier of an individual, according to various schemes. Any alphanumeric string which is unique within its domain of issue.	0-1	O	Free Text The format is dependent upon the identifier scheme.
7.1.4.1	nameIdentifierScheme	The name of the name identifier scheme.	0-1	O/M	If nameIdentifer is used, then nameIdentifierScheme is mandatory. *Controlled List:* **CreatorScheme** See appendix for values and definitions.
7.1.5	emailAddress	The email address of the Creator.	1	M	Free Text *Example:* JohnDoe@gmx.de
7.1.6	TR32Membership	The status of the membership in the CRC/TR32.	1	M	*Controlled List:* **CreatorStatus** See appendix for values and definitions.
7.1.7	CreatorInstitution	The corresponding institution of the dataset creator.	1	M	*Controlled List:* Available at http://www.tr32db.de/institutionList*
7.1.7.1	universityName	The name of the university or	1	M	Free Text

		organisation.			*Example:* University of Cologne
7.1.7.2	instituteName	The name of the institute.	1	M	Free Text *Example:* Institute of Geography
7.1.7.3	streetName	The name of the postal street and house number as part of the address of the institution.	1	M	Free Text *Example:* Albertus-Magnus-Platz
7.1.7.4	postCode	The postcode as part of the address of the institution.	1	M	Free Text *Example:* 50923
7.1.7.5	city	The name of the city as part of the address of the institution.	1	M	Free Text *Example:* Cologne
7.1.7.6	country	The name of the country as part of the address of the institution.	1	M	Free Text *Example:* Germany
7.1.7.7	website	The website of the institution.	1	M	Free Text *Example:* www.geographie.uni-koeln.de
7.1.7.8	TR32Membership	The status of the membership in the CRC/TR32.	1	M	*Controlled List:* **InstitutionStatus** See appendix for values and definitions.
7.2	CreatorOrganisation	The organisation responsible for the establishment, management, maintenance and distribution of the resource.	0-1	O/M	Mandatory if claiming conformance to INSPIRE and ISO 19115. Therefore, Creator-Organisation should be used instead of Creator-Person. Currently only applicable for TR32MetaDataType GEODATA. *Controlled List:* Available at http://www.tr32db.de/institutionList*
7.2.1	organisationRole	The role of the organisation.	1	M	Mandatory if claiming conformance to INSPIRE and ISO 19115. *Controlled List:* **RoleType** See appendix for values and definitions.
7.2.2	organisationName	The name of the organisation.	1	M	Mandatory if claiming conformance to INSPIRE and ISO 19115. Free Text *Example:* Bezirksregierung Köln
7.2.3	organisationDepartment	The responsible department of the organisation.	0-1	O	Free Text *Example:* Abteilung 07 - GEObasis.nrw
7.2.4	streetName	The name of the postal street and house number as part of the address of the organisation.	0-1	O	Free Text *Example:* Muffendorfer Str. 19-21
7.2.5	postCode	The postcode as part of the address of the organisation.	0-1	O	Free Text *Example:* 53177
7.2.6	city	The name of the city as part of the address of the organisation.	0-1	O	Free Text *Example:* Bonn
7.2.7	country	The name of the country as part of the address of the organisation.	0-1	O	Free Text *Example:* Germany
7.2.8	website	The website of the organisation.	1	M	Free Text *Example:* http://www.bezreg-koeln.nrw.de
7.2.9	contactPerson	A name of the responsible contact person working at the organisation in order by	0-1	O	Free Text

		person surname, given name, and title separated by a comma.			*Example:* Doe, John
7.2.10	eMailAddress	The e-mail address at which the organisation or an individual person may be contacted.	1	M	Mandatory if claiming conformance to INSPIRE and ISO 19115. Free Text *Example:* JohnDoe@gmx.de
7.2.11	phone	Telephone numbers at which the organisation or an individual person may be contacted.	0-1	O	Free Text *Example:* +49-(0)228-4705555
8	Contributor	The person and/or institution responsible for making contributions to the dataset content, responsible for collecting, managing or distributing the data (in addition to creator).	0-n	O	
8.1	contributorName	The name of the contributor.	0-1	O	Free Text *Example:* Person: John Doe Institution: University of Cologne, Institute of Geography
8.2	contributorType	The type of contributor.	0-1	O/ M	If Contributor is used, then contributorType is mandatory. *Controlled List:* **ContributorType** See appendix for values and definitions.
8.3	nameIdentifier	The unique identifier of an individual, according to various schemes. Any alphanumeric string which is unique within its domain of issue.	0-1	O	Free Text The format is dependent upon the identifier scheme.
8.3.1	nameIdentifierScheme	The name of the name identifier scheme.	0-1	O/ M	If nameIdentifer is used, then nameIdentifierScheme is mandatory. *Controlled List:* **CreatorScheme** See appendix for values and definitions.
9	Publisher	The organization responsible for making the dataset available. In case of publications this is the publishing house of the publication.	1	M	Default value: CRC/TR32 Database (TR32DB) Free Text *Example:* Elsevier Science, Amsterdam, The Netherlands
Topic					
10	Subject	The topic of the dataset. Typically, the subject will be represented using keywords, key phrases, or classification codes.			
10.1	TR32topic	A subject describing the CRC/TR32 specific topic.	1	M	*Controlled List:* **TR32Topic** See appendix for values and definitions.
10.2	TR32keyword	Keywords describing the subject of the dataset with focus on the CRC/TR32 research topic.	1-n	M	*Controlled List:* Available at http://www.tr32db.de/keywordList*
10.3	GEMETThesaurus	Keywords describing the dataset taken from the General Multi-Lingual Environmental Thesaurus (GEMET).	0-n	O	*Controlled List:* Available at http://www.eionet.europa.eu/gemet
10.3.1	subjectScheme	The name and/or information about the used subject.	0-1	O/ M	If GemetThesaurus is used, then subjectScheme is mandatory. Mandatory value: GEMET - Concepts *Controlled List:* **SubjectScheme** See appendix for values and definitions.
10.4	topicCategory	Topic category describing the dataset taken from the INSPIRE directive (Infrastructure for Spatial Information in Europe) and ISO 19115.	0-1	O/ M	Mandatory if claiming conformance to INSPIRE and ISO 19115 *Controlled List:* **IsoTopicCategory** Available at http://eur-

					lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:326:0012:01:EN:HTML
10.5	INSPIRETheme	Subject describing the dataset according to the GEMET INSPIRE Spatial Data Themes.	0-n	O/M	Conditional: Mandatory if claiming conformance to INSPIRE *Controlled List:* **InspireTheme** Available at http://www.eionet.europa.eu/gemet/inspire_themes
10.5.1	subjectScheme	The name and/or information about the used subject.	0-1	O/M	If INSPIRETheme is used, then subjectScheme is mandatory. Mandatory value: GEMET – INSPIRE themes *Controlled List:* **SubjectScheme** See appendix for values and definitions.
10.6	DDC	Category describing the dataset taken from the Dewey Decimal Classification System (DDC).	0-n	O	*Controlled List:* Available at http://dewey.info/
10.6.1	subjectScheme	The name and/or information about the used subject.	0-1	O/M	If DDC is used, then subjectScheme is mandatory. Mandatory value: DDC *Controlled List:* **SubjectScheme** See appendix for values and definitions.
File Details					
11	DataType	The nature or genre of the dataset.	1	M	Recommended and default setting for datasets is [dataset]. [Dataset collection] is recommended for dataset series. *Controlled List:* **DataType** See appendix for values and definitions.
12	DataFormat	The format of the dataset. The format consists of the format name and a corresponding category.	0-1	O/M	If dataFormatVersion is used, then DataFormat is mandatory. *Controlled List:* Available at http://www.tr32db.de/dataFormatList
12.1	dataFormatVersion	The version of the format.	0-1	O	Free Text *Example:* 2007
13	DataSize	The size of the dataset, represented by a number.	0-n	O	Free Text *Example:* 255
13.1	dataSizeType	The corresponding data size type.	0-1	O/M	*Controlled List:* **SizeType** See appendix for values and definitions.
14	Date	A date that refers or is relevant to the dataset.	1-n	M	YYYY-MM-TT or any other format described in W3DTF[5] *Example:* 2012-10-17
14.1	dateType	The type of Date.	1	M	*Controlled List:* **DateType** See appendix for values and definitions.
15	Language	The language of the dataset.	1	M	Language code according to ISO 639-2[6]. *Controlled List:* Available at http://www.tr32db.de/LanguageList or *Example:* eng
16	DataStatus	The status of the dataset.	1	M	*Controlled List:* **DataStatus** See appendix for values and definitions.
Constraints					
17	Download	Information about the file download.			
17.1	downloadPermission	The download permission of the dataset.	1	M	*Controlled List:* **DownloadPermission**

[5] http://www.w3.org/TR/NOTE-datetime

[6] http://www.loc.gov/standards/iso639-2/php/code_list.php

					See appendix for values and definitions.
17.2	downloadInformation	Additional information about the download of the dataset.	0-1	O	Free Text
18	Constraints	Information about the constraints for using the dataset.			
18.1	accessAndUseConstraints	The conditions applying to access and use of the dataset.	0-1	O	The value [conditions unknown] is recommended, if the conditions are unknown. If no conditions apply, the value [no conditions apply] is recommended. Free Text
18.2	accessLimitations	The limitations and reasons (on public access) of the dataset.	0-1	O	Free Text The value [no limitations] is recommended, if there are no limitations. *Example:* no limitations
18.3	licence	The licence applying to the dataset.	0-1	O	*Controlled List:* **Licence** See appendix for values and definitions.
Geographic Information					
19	MeasuringSite	The place or spatial region, where the dataset was measured, modelled, collected or about which the dataset is focused on.			
19.1	measuringRegion	The region of the measurement or model domain of the dataset.	1	M	*Controlled List:* **MeasureRegionTR32** See appendix for values and definitions.
19.2	measuringLocation	The location of the measurement or model domain of the dataset.	1	M	*Controlled List:* **MeasureLocationTR32** See appendix for values and definitions.
20	GeographicBoundingBox	The geographic coverage of the dataset expressed in terms of geographic coordinates given as a bounding box.	0-1		Free Text
20.1	westBoundLongitude	Western-most coordinate of the limit of the dataset extent, expressed in longitude in decimal degree.	0-1	O	Free Text *Example:* 5.2263
20.2	eastBoundLongitude	Eastern-most coordinate of the limit of the dataset extent, expressed in longitude in decimal degree.	0-1	O	Free Text *Example:* 7.4236
20.3	northboundLatitude	Northern-most coordinate of the limit of the dataset extent, expressed in latitude in decimal degree.	0-1	O	Free Text *Example:* 54.5915
20.4	southBoundLatitude	Southern-most coordinate of the limit of the dataset extent, expressed in latitude in decimal degree.	0-1	O	Free Text *Example:* 50.2058
Metadata Details (automatic generation)					
21	TR32DBIdentifier	Unique identifier of the dataset within the TR32DB.	1	A	Free Text *Example:* 50
21.1	TR32DBUrl	Unique identifier of the dataset using a Uniform Resource Locator (URL) address.	1	A	Free Text *Example:* http://tr32db.uni-koeln.de/view?dataID=2
22	TR32MetaDataType	The data type of the dataset that defines the corresponding metadata extension.	1	A	*Controlled List:* **TR32MetaDataType** See appendix for values and definitions.
23	MetadataCreator	Party responsible for creation and updating the metadata information.	1	A	
23.1	creatorFirstName	The first name of the Metadata Creator.	1	A	Free Text *Example:* John
23.2	creatorFamiliyName	The family name of the Metadata Creator.	1	A	Free Text *Example:* Doe

23.3	academicTitle	The academic title of the Metadata Creator.	0-1	A	Free Text *Example:* Prof. Dr.
23.4	eMailAddress	The e-mail address of the Metadata Creator.	1	A	Free Text *Example:* JohnDoe@gmx.de
23.5	phone	The telephone number of the Metadata Creator.	1	A	Free Text *Example:* +49-(0)221-4708839
23.6	fax	The fax number of the Metadata Creator.	1	A	Free Text *Example:* +49-(0)221-4708838
23.7	TR32subproject	The corresponding TR32 project section of the Metadata Creator.	1-n	A	*Controlled List:* **TR32Subproject*** See appendix for values and definitions.
24	MetadataCreatorInstitution	The corresponding institution of the Metadata Creator.	1	A	
24.1	universityName	The name of the university or organisation.	1	A	Free Text *Example:* University of Cologne
24.2	instituteName	The name of the institute.	1	A	Free Text *Example:* Institute of Geography
24.3	streetName	The postcode as part of the address of the institution.	1	A	Free Text *Example:* Albertus-Magnus-Platz
24.4	postCode	The postcode as part of the address of the institution.	1	A	Free Text *Example:* 50923
24.5	city	The name of the city as part of the address of the institution.	1	A	Free Text *Example:* Cologne
24.6	country	The name of the country as part of the address of the institution.	1	A	Free Text *Example:* Germany
24.7	website	The website of the institution.	1	A	Free Text *Example:* www.geographie.uni-koeln.de
25	MdCreationDate	The date that the metadata was created.	1	A	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2012-10-17
26	MdLastUpdateDate	The date that the metadata was last updated.	1	A	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2012-10-17
27	MdWebVersion	The version of the TR32DB web site and metadata (profile).	1	A	Free Text *Example:* V41
28	MdLanguage	The language used for documenting metadata.	1	A	Language code according to ISO 639-26. *Controlled List:* Available at http://www.tr32db.de/LanguageList or *Example:* eng
29	FileInformation	Automatic generated information about the uploaded file.	1	A	
29.1	fileName	The title of the uploaded file.	1	A	Free Text *Example:* LandUse_Classification_2013
29.2	fileExtention	The file extension of the uploaded file.	1	A	Free Text

					Example: .zip
29.3	fileFormat	The technical format of the uploaded file using MIME type.	1	A	Available at http://www.tr32db.de/mimeTypeList
29.4	fileSize	The file size of the uploaded file in kb.	1	A	Free Text *Example:* 555
29.5	fileUploadTime	The date that the file was updated to the TR32DB data storage.	1	A	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2012-10-17
29.6	fileSubproject	The TR32 project section, where the file was created.	1	A	*Controlled List:* **TR32Subproject*** See appendix for values and definitions.
29.7	fileFundingPhase	The TR32 project funding phase, when the file was created.	1	A	*Controlled List:* **Phase** See appendix for values and definitions.
30	Conformity	Information about the outcome of evaluating the obtained value (or set of values) against a specified acceptable conformance quality level.	0-n	A	
30.1	specificationTitle	The specification describes the citation of product specification or user requirement against which data is being evaluated.	1	A	Free Text *Controlled List:* **ConformitySpecification** See appendix for values and definitions.
30.2	date	The reference date of the specification.	1	A	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2010-04-26
30.3	dateType	The reference date type.	1	A	*Controlled List:* **DateType** See appendix for values and definitions.
30.3	degree	The degree describes the indication of the conformance result.	1	A	*Controlled List:* **ConformityDegree** See appendix for values and definitions.
30.3	explanation	The explanation describes information of the meaning of conformance for this result.	1	A	Free Text *Example:* Only mandatory items are included.

2.2.2 TR32DB specific 'DATA' Metadata

ID	TR32DB property name	Definition	Occ	OB	Notes (allowed values, examples, other constraints)
Data					
31	TemporalExtent	The time period covered by the content of the dataset including start and end date. In case of one day period startDate and endDate are the same date.	1	M	
31.1	startDate	The start date of the time period.	1	M	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-01
31.2	endDate	The end date of the time period.	1	M	For one day period, startDate is equivalent to endDate YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-02
32	Lineage	A statement on process history and/or overall quality of the dataset. Where appropriate, it may include a statement about the validity and quality assurance of the dataset, information about the version (if multiple versions exist), or the	0-1	O	Free Text

		legal validity.			
33	MeasuringInstrumentModelMethod	The measuring instrument or modeling method used to create or included in the described dataset and corresponding measured or modelled output parameter.	0-n	O	
33.1	Instrument	Details of the measuring instrument or modeling method used to create or included in the described dataset.	0-n	O	*Controlled List:* Available at http://www.tr32db.de/instrumentList***** *Example:* Gas Analyser COSMO-model
33.1.2	instrumentName	The name of the measuring instrument or modeling method.	1	M	Free Text *Example:* Gas Analyzer Atmosphere-Model
33.1.2	instrumentModel	The model name of the measuring instrument or modeling method.	1	M	Free Text *Example:* Li-7500 COSMO
33.1.3	instrumentManufacturer	The manufacturer of the measuring instrument or modeling method.	0-1	O	Free Text *Example:* Jenoptik
33.1.4	manufacturerRegisteredOffice	The location of the registered office of the measuring instrument or modeling method.	0-1	O	Free Text *Example:* Jena, Germany
33.1.5	manufacturerWebsite	The website of the registered office.	0-1	O	Free Text *Example:* www.jenoptik.com http://www.cosmo-model.org/
33.2	Parameter	Details of the measured or modelled output parameter included in the described dataset.	0-n	O	
33.2.1	ParameterName	The name of the measured or modelled output parameter.	0-1	O	*Controlled List:* Available at http://www.tr32db.de/parameterList*****
33.2.2	parameterUnit	The corresponding unit of the measured or modelled output parameter.	0-1	O/ M	If ParameterName is used, then parameterUnit is mandatory. *Controlled List:* Available at http://www.tr32db.de/parameterUnitList
33.2.3	ResolutionDistance	The resolution distance of the parameter.	0-1	O	Free Text *Example:* 5
33.2.4	resolutionDistanceUnit	The corresponding unit of the resolution distance.	0-1	O/ M	If ResolutionDistance is used, then resolutionDistanceUnit is mandatory. *Controlled List:* **ResolutionDistanceUnit** See appendix for values and definitions.
33.2.5	TemporalFrequency	The frequency of measurement or modelling of the parameter.	0-1	O	Free Text *Example:* 30
33.2.6	temporalFrequency Unit	The corresponding unit of the temporal frequency.	0-1	O/ M	If TemporalFrequency is used, then temporalFrequency-Unit is mandatory. *Controlled List:* **TemporalFrequencyUnit** See appendix for values and definitions.

2.2.3 TR32DB specific 'GEODATA' Metadata

ID	TR32DB property name	Definition	Occ	OB	Notes (allowed values, examples, other constraints)
Geodata					
34	TemporalExtent	The time period covered by the content of the dataset including start and end date. In case of one day period startDate and endDate are the same date.	0-1	O	
34.1	startDate	The start date of the time period.	0-1	O	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-01
34.2	endDate	The end date of the time period.	0-1	O	For one day period, startDate is equivalent to endDate YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-02
35	VerticalExtent	The vertical domain of the dataset.	0-n	O	
35.1	minimumValue	The lowest vertical extent contained in the dataset.	0-1	O	Free Text *Example:* 5
35.2	maximumValue	The highest vertical extent contained in the dataset.	0-1	O	Free Text *Example:* 10
35.3	referenceSystem	Information about the vertical coordinate reference system (CRS) to which the maximum and minimum elevation values are measured. The CRS identification includes unit of measure.	0-1	O/ M	If minimumValue or maximumValue is used, then referenceSystem is mandatory.
35.3.1	referenceSystemCode	The identifier of the reference system represented as EPSG code. For further information about EPSG see http://www.epsg-registry.org or http://www.epsg.org/.	0-1	O/ M	If referenceSystemCode is used, then ReferenceSystem-Name is mandatory. *Controlled List:* **ReferenceSystem** See appendix for values and definitions.
35.3.2	referenceSystemName	The name of the reference system.	0-1	O/ M	If referenceSystemName is used, then referenceSystem-Code is mandatory. *Controlled List:* **ReferenceSystem** See appendix for values and definitions.
36	Lineage	A statement on process history and/or overall quality of the dataset. Where appropriate it may include a statement whether the dataset has been validated or quality assured, whether it is the official version (if multiple versions exist), and whether it has legal validity.	0-1	O	Free Text
37	Spatial Resolution	The factor which provides a general understanding of the density of spatial data in the dataset. The level of detail expressed as a scale factor or a ground distance (consisting of the number and a unit of measure)	0-n	O	
37.1	scale	The level of detail expressed as the scale of a comparable hardcopy map or chart typically expressing the scale denominator 1:x.	0-1	O	Free Text *Example:* 5000
37.2	distanceNumber	The number expressing the distance value of the ground distance.	0-1	O	Free Text *Example:* 5
37.3	distanceUnit	The corresponding unit of measure of the distance value of the ground distance.	0-1	O/ M	If distanceNumber is used, then distanceUnit is mandatory.

					Controlled List: **MeasureUnit** See appendix for values and definitions.
38	SpatialRepresentationType	The spatial representation type describes the method used to spatially represent geographic information in the dataset.	0-n	O	*Controlled List:* **SpatialRepresentationType** See appendix for values and definitions.
39	PresentationForm	The presentation form describes the mode in which the resource is represented.	0-n	O	*Controlled List:* **PresentationForm** See appendix for values and definitions.
40	ReferenceSystem	Description of the spatial reference systems used in the dataset.	0-n	O	
40.1	referenceSystemCode	The identifier of the reference system represented as EPSG code. For further information about the EPSG see http://www.epsg-registry.org or http://www.epsg.org/.	0-1	O/M	If referenceSystemCode is used, then referenceSystem-Name is mandatory. *Controlled List:* **ReferenceSystem** See appendix for values and definitions.
40.2	referenceSystemName	The name of the reference system.	0-1	O/M	If referenceSystemName is used, then referenceSystem-Code is mandatory. *Controlled List:* **ReferenceSystem** See appendix for values and definitions.
41	MaintenanceInformation	Information about the scope and frequency of updating of the dataset.	0-n	O	
41.1	maintenanceFrequency	The maintenance and update frequency represents the frequency with which changes and additions are made to the resource after the initial resource is completed.	0-1	O	*Controlled List:* **MaintenanceFrequencyUnit** See appendix for values and definitions.
41.2	maintenanceNote	The maintenance note describes information regarding specific requirements for maintaining the resource.	0-1	O	Free Text
42	Scope	The scope describes the class of information covered by the resource.	0-1	O	*Controlled List:* **ScopeCode** See appendix for values and definitions.
43	InitiativeType	The initiative type describes the type of initiative under which the aggregate dataset was produced.	?-1	O	*Controlled List:* **InitiativeType** See appendix for values and definitions.

2.2.4 TR32DB specific 'REPORT' Metadata

ID	TR32DB property name	Definition	Occ	OB	Notes (allowed values, examples, other constraints)
Report					
44	ReportDate	The date of the report.	1	M	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-01
45	ReportType	The type of report.	1	M	*Controlled List:* **ReportType** See appendix for values and definitions.
46	ReportCity	The corresponding city and country, where the report was created.	1	M	Free Text *Example:* Cologne, Germany
47	ReportInstitution	The corresponding institution, where the report was created.	1	M	Free Text *Example:* Insitute of Geography, University of Cologne, Germany
48	ReportVolume	The volume of the report.	0-1	O	Free Text *Example:* 5
49	NumberOfPages	The number of pages of the report.	0-1	O	Free Text. Only numerical values are allowed. *Example:* 10

50	PageRange	The page range of the report.	0-1	O	
50.1	startPage	The start page of the report.	0-1	O/ M	If startPage is used, then endPage is mandatory. Only numerical values are allowed. Free Text *Example:* 1
50.2	endPage	The end page of the report.	0-1	O/ M	If endPage is used, then startPage is mandatory. Only numerical values are allowed. Free Text *Example:* 10
51	FurtherInformation	Additional information about the report.	0-1	O	Free Text

2.2.5 TR32DB specific 'PICTURE' Metadata

ID	TR32DB property name	Definition	Occ	OB	Notes (allowed values, examples, other constraints)
Picture					
52	RecordDate	The recording date of the picture including start and end date. In case of one day recording startDate and endDate are the same date.	1	M	
52.1	startDate	The start date of the time period.	1	M	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-01
52.2	endDate	The end date of the time period.	1	M	For one day events, startDate is equivalent to endDate YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-02
53	RecordPlace	The place, where the picture or image was taken or that is displayed.	1	M	Free Text *Example:* Selhausen CRC/TR32 test field
54	RecordMethod	Details about the recording method that created the picture. For instance, the make and model name of a camera or the used software.	0-1	O	Free Text *Example:* Canon EOS 5D Adobe Photoshop CS4
55	Orientation	The orientation of the picture.	0-1	O	*Controlled List:* **Orientation** See appendix for values and definitions.
56	Resolution	The resolution of the picture in dpi (dots per inch).	0-1	O	Free Text *Example:* 200
57	Size	The size of the picture or image (horizontal and vertical) in pixels.	0-1	O	
57.1	width	The width of the picture in pixels (horizontal or x dimension).	0-1	O/ M	If height is used, then width is mandatory. Free Text *Example:* 10
57.2	height	The height of the picture in pixels (vertical or y dimension).	0-1	O/ M	If width is used, then heigth is mandatory. Free Text *Example:* 1
58	CopyrightInformation	Information about the copyright of the picture.	0-1	O	Free Text *Example:* Copyright 2013 TR32. All rights reserved

59	Event	Details about the event, where the picture or image was taken.	0-1	O	
59.1	eventType	The type of event.	0-1	O	*Controlled List:* **EventType** See appendix for values and definitions.
59.2	eventName	The name of the event.	0-1	O	Free Text *Example:* CRC/TR32 Field Measurement Campaign
59.3	eventLocation	The location of the event including the city and the country separated by a comma, where the picture or image was taken.	0-1	O	Free Text *Example:* Selhausen, Gemany
59.4	eventWebsite	The website of the event.	0-1	O	Free Text *Example:* http://www.tr32.de/fieldmeasurements
59.5	eventPeriod	The duration of the event. In case of one day events startDate and endDate are the same date.	0-1	O	
59.5.1	startDate	The start date of the event.	0-1	O	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-01
59.5.2	endDate	The end date of the event.	0-1	M/ O	If startDate is used, then endDate is mandatory. For one day events, startDate is equivalent to endDate. YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-10

2.2.6 TR32DB specific 'PRESENTATION' Metadata

ID	TR32DB property name	Definition	Occ	OB	Notes (allowed values, examples, other constraints)
Presentation					
60	Presenter	The presenter of the presentation.	0-1	O	Free Text *Example:* John Doe
61	PresentationDate	The date, when the presentation was given.	1	M	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-01
62	PresentationType	The type of presentation.	1	M	*Controlled List:* **PresentationType** See appendix for values and definitions.
63	Event	Details about the event, where the dataset was presented.	1	M	
63.1	eventType	The type of event.	0-1	O	*Controlled List:* **EventType** See appendix for values and definitions.
63.2	eventName	The name of the event.	1	M	Free Text *Example:* European Geosciences Union General Assembly 2013
63.3	eventLocation	The location of the event including the city and the country separated by a comma.	1	M	Free Text *Example:* Vienna, Austria
63.4	eventWebsite	The website of the event.	0-1	O	Free Text *Example:* http://www.egu.eu
63.5	eventPeriod	The duration of the event. In case of one day events startDate and endDate are	1	M	

		the same date.			
63.5.1	startDate	The start date of the event.	1	M	YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-01
63.5.2	endDate	The end date of the event.	1	M	For one day events, startDate is equivalent to endDate. YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2013-07-10

2.2.7 TR32DB specific 'PUBLICATION' Metadata

ID	TR32DB property name	Definition	Occ	OB	Notes (allowed values, examples, other constraints)
Article					
64	Status	The status of the article.	1	M	*Controlled List:* **PublicationStatus** See appendix for values and definitions.
65	Review	The review status of the article.	1	M	*Controlled List:* **PublicationReview** See appendix for values and definitions.
66	Year	The year of the article.	1	M	Free Text *Example:* 2013
67	PublicationType	The type of publication.	1	M	Mandatory value: article *Controlled List:* **PublicationType** See appendix for values and definitions.
68	ArticleType	The type of article.	0-1	O	*Controlled List:* **ArticleType** See appendix for values and definitions.
69	PublicationSource	The name of the publication source, e.g. name of the journal or magazine.	1	M	Free Text *Example:* Nature
69.1	PublicationSourceWebsite	The website of the publication source.	0-1	O	Free Text *Example:* www.nature.com
70	Volume	The volume of the publication source.	0-1	O/M	Mandatory, if Volume is available. Free Text *Example:* 5
71	Issue	The issue of the publication source.	0-1	O/M	Mandatory, if Issue is available. Free Text *Example:* 1
72	NumberOfPages	The number of pages of the article.	0-1	O	Free Text. Only numerical values are allowed. *Example:* 10
73	PageRange	The page range of the article.	1	M	
73.1	startPage	The start page of the article.	1	M	Free Text. Only numerical values are allowed. *Example:* 1
73.2	endPage	The end page of the article.	1	M	Free Text. Only numerical values are allowed. *Example:* 10
Book					
74	Status	The status of the book.	1	M	*Controlled List:* **PublicationStatus**

					See appendix for values and definitions.
75	Review	The review status of the book.	1	M	*Controlled List:* **PublicationReview** See appendix for values and definitions.
76	Year	The year of the book.	1	M	Free Text *Example:* 2013
77	PublicationType	The type of publication.	1	M	Mandatory value: book *Controlled List:* **PublicationType** See appendix for values and definitions.
78	SeriesTitle	The series title of the book.	0-1	O/ M	Mandatory, if SeriesTitle is available. Free Text *Example:* Kölner Geographisches Arbeiten
79	SeriesEditor	The series editor of book.	0-1	O/ M	Mandatory, if SeriesEditor is available. Free Text *Example:* Bareth, G., Braun, B., .Schneider, K.
80	City	The city and county, where the publisher is located.	1	M	Free Text *Example:* Cologne, Germany
81	Volume	The volume of the book.	0-1	O/ M	Mandatory, if Volume is available. Free Text *Example:* 90
82	Edition	The edition of the book.	0-1	O	Free Text *Example:* 1st ed.
83	NumberOfPages	The number of pages of the book.	0-1	O	Free Text. Only numerical values are allowed. *Example:* 145
84	PageRange	The page range of the book.	1	O	
84.1	startPage	The start page of the book.	0-1	O/ M	If startPage is used, then endPage is mandatory. Only numerical values are allowed. Free Text *Example:* 1
84.2	endPage	The end page of the book.	0-1	O/ M	If endPage is used, then startPage is mandatory. Only numerical values are allowed. Free Text *Example:* 144
BookSection					
85	Status	The status of the publication.	1	M	*Controlled List:* **PublicationStatus** See appendix for values and definitions.
86	Review	The review status of the publication.	1	M	*Controlled List:* **PublicationReview** See appendix for values and definitions.
87	Year	The year of the publication.	1	M	Free Text *Example:* 2013
88	PublicationType	The type of publication.	1	M	Mandatory value: book *Controlled List:* **PublicationType** See appendix for values and definitions.
89	BookTitle	The title of the book	1	M	Free Text *Example:* Proceedings of the Data Management Workshop

90	BookEditor	The editor of the book.	1	M	Free Text *Example:* Curdt, C. and Bareth, G.
91	City	The city and county separated by a comma, where the publisher is located.	1	M	Free Text *Example:* Cologne, Germany
92	SeriesTitle	The title of the book series.	0-1	O	Free Text *Example:* Kölner Geographisches Arbeiten
93	SeriesEditor	The editor of book series.	0-1	O	Free Text *Example:* G. Bareth, H. Besler, B. Braun, E. Brunotte
94	Volume	The volume of the book.	0-1	O	Free Text *Example:* 90
95	Chapter	The chapter of the book.	0-1	O	Free Text *Example:* 5
96	NumberOfPages	The number of pages of the book section.	0-1	O	Free Text. Only numerical values are allowed. *Example:* 8
97	PageRange	The page range of the book section.	1	M	
97.1	startPage	The start page of the book section.	1	M	Free Text. Only numerical values are allowed. *Example:* 82
97.2	endPage	The end page of the book section.	1	M	Free Text. Only numerical values are allowed. *Example:* 90
EventPaper					
98	Status	The status of the publication.	1	M	*Controlled List:* **PublicationStatus** See appendix for values and definitions.
99	Review	The review status of the publication.	1	M	*Controlled List:* **PublicationReview** See appendix for values and definitions.
100	Year	The year of the publication.	1	M	Free Text *Example:* 2013
101	PublicationType	The type of publication.	1	M	Mandatory value: eventPaper *Controlled List:* **PublicationType** See appendix for values and definitions.
102	Event	Details about the event, where the dataset was presented.	1	M	
102.1	eventType	The type of event.	0-1	O	*Controlled List:* **EventType** See appendix for values and definitions.
101.2	eventName	The name of the event.	1	M	Free Text *Example:* ISPRS Workshop Laserscanning 2009
102.3	eventLocation	The location of the event including the city and the country separated by a comma.	1	M	Free Text *Example:* Paris, France
102.4	eventWebsite	The website of the event.	0-1	O	Free Text *Example:* http://laserscanning2009.ign.fr/
102.5	eventPeriod	The duration of the event. In case of one day events startDate and endDate are the same date.	1	M	
102.5.1	startDate	The start date of the event.	1	M	YYYY-MM-TT or any other format

					described in W3DTF5 *Example:* 2009-07-01
102.5.2	endDate	The end date of the event.	1	M	For one day events, startDate is equivalent to endDate. YYYY-MM-TT or any other format described in W3DTF5 *Example:* 2009-07-10
103	Proceedings	Information about the proceedings of the event.			
103.1	ProceedingsEditor	The editor of the proceedings.	0-1	O	Free Text *Example:* Bretar, F., Pierrot-Deseilligny, M., and Vosselman, G.
103.2	ProceedingsTitle	The title of the proceedings.	0-1	O	Free Text *Example:* ISPRS Workshop Laserscanning 2009
103.3	ProceedingsURL	The website of the proceedings.	0-1	O	Free Text
103.4	Volume	The volume of the publication source.	0-1	O/ M	Mandatory, if Volume is available. Free Text *Example:* 5
103.5	Issue	The issue of the publication source.	0-1	O/ M	Mandatory, if Issue is available. Free Text *Example:* 1
104	NumberOfPages	The number of pages of the event paper.	0-1	O	Free Text. Only numerical values are allowed. *Example:* 8
105	PageRange	The page range of the event paper.	1	M	
105.1	startPage	The start page of the event paper in the proceedings.	1	M	Free Text. Only numerical values are allowed. *Example:* 82
105.2	endPage	The end page of the event paper in the proceedings.	1	M	Free Text. Only numerical values are allowed. *Example:* 90

Appendices A

A.1 TR32DB Metadata Schema Mapping

A.1.1 Overview

This section gives an overview of mappings between the metadata properties of the TR32DB Metadata Schema and elements of four metadata schemas and standards. Mandatory elements or properties of the used metadata standard are highlighted (section A.1.2). The mapping was on one hand used to create this metadata schema and on the other hand represents the interoperability to the used schemas and standards.
The following metadata schemas and standards are applied (Table A1-1):

Table A1-1 Metadata Schemes and Standards for Mapping

Schema	Full Title	Web Access Address
DataCite	DataCite Metadata Schema for the Publication and Citation of Research Data, Version 2.2	http://schema.datacite.org/meta/kernel-2.2/doc/DataCite-MetadataKernel_v2.2.pdf
Dublin Core	Dublin Core Metadata Element Set, Version 1.1	http://dublincore.org/documents/dces/
	DCMI Metadata Terms	http://dublincore.org/documents/dcmi-terms/
INSPIRE	INSPIRE Implementing Directive;	http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:326:0012:0030:EN:PDF
	INSPIRE Implementing Rules for Metadata, Version 1.2	http://inspire.jrc.ec.europa.eu/documents/Metadata/INSPIRE_MD_IR_and_ISO_v1_2_20100616.pdf
ISO	ISO 19115:2003 Geographic information – Metadata	http://www.iso.org/iso/catalogue_detail.htm?csnumber=26020

For each property of the metadata schema and standard, the identifier number (ID) and the particular obligation (O.) is specified. The identifier number of INSPIRE reverences to Part B of the INSPIRE Implementing Directive.
In addition, further metadata schemes are considered with regard to further use of the TR32DB Metadata Schema and presented in 'Other Elements'.
The following table (Table A1-2) provides an overview of the used abbreviations represented in the mapping.

Table A1-2 Abbreviation applied for the Mapping

Abbreviation	Full Title	Web Access Address
bibo	The Bibliographic Ontology	http://bibliontology.com/
dc	Dublin Core Element Set, Version 1.1	http://dublincore.org/documents/dces/
dcterms	DCMI Metadata Terms	http://dublincore.org/documents/dcmi-terms/
event	The Event Ontology	http://purl.org/NET/c4dm/event.owl#
tl	The Timeline Ontology	http://motools.sourceforge.net/timeline/timeline.html
time	Time Ontology in OWL	http://www.w3.org/TR/owl-time/; http://www.w3.org/2006/time#

A.1.2 TR32DB Metadata Schema Mapping

ID	TR32DB property	Dublin Core	ID	ISO	O.	ID	INSPIRE	O.	ID	DataCite	O.	Other Elements
Identification												
1	Title	dc.title dcterms:title	360	CI_Citation.title	M	1.1	Resource title	M	3	Title	M	
1.1	TitleType	dcterms.alternative	361	CI_Citation.alternateTitle	O				3.1	TitleType	C	
2	Description	dc.description dcterms.description	25	MD_Identification.abstract	M	1.2	Abstract	M	17	Description	O	
2.1	descriptionType	dcterms.abstract dcterms.tableOfContents							17.1	descriptionType	O/M	
3	Date	dc.date dcterms.date	362/394	CI_Date.date	M	5.2, 5.3, 5.4	Date	C	8	Date	O	
3.1	dateType	dc.date dcterms.available dcterms.created dcterms.dateAccepted dcterms.dateCopyrighted dcterms.dateSubmitted dcterms.issued dcterms.modified	362/395	CI_Date.dateType	M	5.2, 5.3, 5.4	Date of publication, revision and creation	C	8.1	dateType	O/M	
4	Identifier	dc.identifier dcterms.identifier	365	CI_Citation.Identifier	O	1.5	Unique resource identifier Code	M	11	AlternateIdentifier	O	
4.1	identiferType	dc.identifier dcterms.identifier	207	MD_Identifier.Code	M	1.5	Identifier Namespace	O	11.1	alternateIdentifierType	O/M	bibo:issn bibo:isbn bibo:uri bibo:doi
5	Relation											
5.1	identifier	dc.identifier dcterms.identifier							12	RelatedIdentifier	O	
5.2	identifierType	dc.identifier dcterms.identifier							12.1	relatedIdentifierType	O/M	
5.3	relationType	dc.relation dcterms.relation dcterms.conformsTo dcterms.isReferencedBy dcterms.references dcterms.isVersionOf dcterms.hasVersion dcterms.isFormatOf dcterms.hasFormat dcterms.isPartOf dcterms.hasPart dcterms.isReplacedBy dcterms.replaces dcterms.source								12.2	relationType	O/M	

6	CitationAdvice	dcterms.bibliographicCitation										
7	AdditionalDescription											
7.1	descriptionFileName											
7.2	graphicFileName		49	MD_BrowseGraphic.fileName	M							
Responsible Party												
8	Creator											
8.1	Creator-Person	dc.creator dcterms.creator							2	Creator	M	bibo:authorList
8.1.1	creatorRole		379	CL_ResponsibleParty.role	O	9.2	Responsible party role	M				
8.1.2	creatorFirstName	dc.creator dcterms.creator	375	CI_ResponsibleParty.individualName	M				2.1	CreatorName	M	
8.1.3	creatorFamilyName	dc.creator dcterms.creator	375	CI_ResponsibleParty.individualName	M				2.1	CreatorName	M	
8.1.4	nameIdentifier								2.2	nameIdentifier	C	
8.1.4.1	nameIdentifierScheme								2.2.1	nameIdentifierScheme	C/M	
8.1.5	emailAddress		386	CI_Address.electronicMailAddress	O	9.1	Responsible party	M				
8.1.6	TR32Membership											
8.1.7	CreatorInstitution								2.1	CreatorName	M	
8.1.7.1	universityName		376	CI_ResponsibleParty.organisationName	M				2.1	CreatorName	M	
8.1.7.2	instituteName		376	CI_ResponsibleParty.organisationName	M							
8.1.7.3	streetName		381	CI_Address.deliveryPoint	O							
8.1.7.4	postCode		384	CI_Address.postalCode	O							
8.1.7.5	city		382	CI_Address.city	O							
8.1.7.6	country		385	CI_Address.country	O							
8.1.7.7	website		390	CI_Contact.onlineResource	O							
8.1.7.8	TR32Membership											
8.2	Creator-Organisation	dc.creator dcterms.creator										
8.2.1	OrganisationRole		379	CL_ResponsibleParty.role	O	9.2	Responsible party role	M				
8.2.2	OrganisationName		376	CI_ResponsibleParty.organisationName	M				2.1	CreatorName	M	
8.2.3	OrganisationDepartment		376	CI_ResponsibleParty.organisationName	M				2.1	CreatorName	M	
8.2.4	streetName		381	CI_Address.deliveryPoint	O							
8.2.5	postCode		384	CI_Address.postalCode	O							
8.2.6	city		382	CI_Address.city	O							

8.2.7	country		385	CI_Address.country	O							
8.2.8	website		390	CI_Contact.onlineResource	O							
8.2.9	contactPerson		375	CI_ResponsibleParty.individualName	M							
8.2.10	eMailAddress		386	CI_Address.electronicMailAddress	O	9.1	Responsible party	M				
8.2.11	phone											
9	Contributor	dc.contributor dcterms.contributor							7	Contributor	O	bibo:contributor
9.1	contributorName	dc.contributor dcterms.contributor							7.2	contributorName	O/M	
9.2	contributorType								7.1	contributorType	O/M	
9.3	nameIdentifier								2.2	nameIdentifier	O	
9.3.1	nameIdentifierScheme								2.2.1	nameIdentifierScheme	O/M	
10	Publisher	dc.publisher dcterms.publisher	376/379	CI_ResponsibleParty.organisationName CI_ResponsibleParty.role (=publisher)	O	9.1 9.2	Responsible party Responsible party role (=publisher)	M	4	Publisher	M	
Topic												
11	Subject	dc.subject dcterms.subject							6	Subject	O	
11.1	TR32topic	dc.subject dcterms.subject	53	MD_Keywords.keyword	M	3.1	Keyword value	M	6	Subject	O	
11.2	TR32keyword	dc.subject dcterms.subject	53	MD_Keywords.keyword	M	3.1	Keyword value	M	6	Subject	O	
11.3	GemetThesaurus	dc.subject dcterms.subject	53	MD_Keywords.keyword	M	3.1	Keyword value	M	6	Subject	O	
11.3.1	subjectScheme		55	MD_Keywords.ThesaurusName	C	3.2	Originating controlled vocabulary	M	6.1	subjectScheme	O	
11.4	topicCategory	dc.subject dcterms.subject	41	MD_DataIdentification.topicCategory	C	2.1	Topic category	M	6	Subject	O	
11.5	INSPIRETheme	dc.subject dcterms.subject	53	MD_Keywords.keyword	M	3.1	Keyword value	M	6	Subject	O	
11.5.1	subjectScheme		55	MD_Keywords.ThesaurusName	C	3.2	Originating controlled vocabulary	M	6.1	subjectScheme	O	
11.6	DDC	dc.subject dcterms.subject	53	MD_Keywords.keyword	M	3.1	Keyword value	M	6	Subject	O	
11.6.1	subjectScheme	dcterms.ddc	55	MD_Keywords.ThesaurusName	C	3.2	Originating controlled vocabulary	M	6.1	subjectScheme	O	
File Details												
12	DataType	dc.type dcterms.type	6	MD_Metadata.hierarchyLevel	C	1.3	Resource Type	M	10.1	resourceTypeGeneral	O/M	
13	DataSize	dc.format dcterms.extent	276	MD_DigitialTransferOptions.transferSize	O				13	Size	O	
13.1	dataSizeType	dc.format dcterms.sizeOrDuration	275	MD_DigitialTransferOptions.unitsOfDistribution	O				13	Size	O	

14	DataFormat	dc.format dcterms.mediaType	285	MD_Format.name	M				14	Format	O	
14.1	dataFormatVersion	dc.format dcterms.mediaTypeOrExtent	286	MD_Format.version	M							
15	Language	dc.language dcterms.language	39	MD_DataIdentification.language	M	2.2.7	Resource language	C	9	Language	O	
16	DataStatus											
Constraints												
17	Download											
17.1	DownloadPermission	dc.rights dcterms.rights										
17.2	DownloadInformation	dc.rights dcterms.rightsStatement							16	Rights	O	
18	Constraints											
18.1	AccessAndUse-Constraints	dc.rights dcterms.rightsStatement	68	MD_Constraints.useLimitation	O	8.1	Condition applying to access and use	M	16	Rights	O	
18.2	AccessLimitations	dc.rights dcterms.accessRights	72	MD_LegalConstraints.otherConstraints	C	8.2	Limitations on public access	M	16	Rights	O	
18.3	Licence	dc.rights dcterms.license							16	Rights	O	cc:license
Geographic Information												
19	MeasuringSite	dc.coverage dcterms.location										
19.1	measuringRegion	dc.coverage dcterms.location										
19.2	measuringLocation	dc.coverage dcterms.location										
20	GeographicBounding-Box	dc.coverage dcterms.spatial dcterms.box	343	EX_GeographicBoundingBox	M							
20.1	westBoundLongitude	dc.coverage dcterms.spatial dcterms.box	344	EX_GeographicBoundingBox. westBoundLongitude	M	4.1	Geographic bounding box	M/C				
20.2	eastBoundLongitude	dc.coverage dcterms.spatial dcterms.box	345	EX_GeographicBoundingBox. eastBoundLongitude	M	4.1	Geographic bounding box	M/C				
20.3	northBoundLatutude	dc.coverage dcterms.spatial dcterms.box	347	EX_GeographicBoundingBox. northBoundLatitude	M	4.1	Geographic bounding box	M/C				
20.4	southBoundLatitude	dc.coverage dcterms.spatial dcterms.box	346	EX_GeographicBoundingBox. southBoundLatitude	M	4.1	Geographic bounding box	M/C				
Metadata on Metadata (automatic generation)												
21	tr32dbIdentifier	dc.identifier dcterms.identifer	2	MD_Metadata.fileIdentifer	O							
21.1	tr32dbUrl		397	CI_OnlineResource.linkage	M	1.4	Resource locator	M				

22	TR32MetaDataType											
23	MetadataCreator											
23.1	creatorFirstName		8	MD_Metadata.contact	M	10.1	Metadata point of contact	M				
23.2	creatorFamiliyNam e		8	MD_Metadata.contact	M							
23.3	academicTitle											
23.4	eMailAddress		386	CI_Address.electronicMailA ddress	O	10.1	Metadata point of contact	M				
23.5	phone		408	CI_Telephone.voice	O							
23.6	fax		409	CI_Telephone.facsimile	O							
23.7	TR32subproject											
24	MetadataCreatorIn stitution											
24.1	universityName		376	CI_ResponsibleParty.organi sationName	C							
24.2	instituteName		376	CI_ResponsibleParty.organi sationName	C							
24.3	streetName		381	CI_Address.deliveryPoint	O							
24.4	postCode		384	CI_Address.postalCode	O							
24.5	city		382	CI_Address.city	O							
24.6	country		385	CI_Address.country	O							
24.7	website											
25	mdCreationDate	dc.date dcterms.date	9	MD_Metadata.dateStamp	M	10.2	Metadata date	M				
26	mdLastUpdateDate	dc.date dcterms.modified										
27	mdWebVersion											
28	mdLanguage	dc.Language dcterms.language	3	MD_Metadata.language	C	10.3	Metadata Language	M				
29	fileInformation											
29.1	fileName											
29.2	fileExtention	dcterms.mediaType										
29.3	fileFormat	dc.format dcterms.fileFormat							14	Format	O	
29.4	fileSize	dc.format dcterms.extent	276	MD_DigitialTransferOption s.transferSize	O				13	Size	O	
29.5	fileUploadTime	dc.date dcterms.modified										
29.6	fileSubproject											
29.7	fileFundingPhase											
30	Conformity	dcterms.conformsTo	128	DQ_Result								
30.1	specificationTitle		130	DQ_ConformanceResult.sp ecification	M	7.1	Specification	M				

30.2	date	dc.date dcterms.date	362/394	CI_Date.date	M	7.1	Specification Date	M				
30.3	dateType	dc.date dcterms.created dcterms.issued dcterms.modified	362/394	CI_Date.dateType	M	7.1	Specification Code	M				
30.3	degree		132	DQ_ConformanceResult.pass	M	7.2	Degree	M				
30.3	Explanation		131	DQ_ConformanceResult.explanation	M	7.1	Explanation					
Data												
31	TemporalExtent	dc.coverage dcterms.termporal	350	EX_TemporalExtent								
31.1	startDate	dc.date dcterms.date	351	EX_TemporalExtent.extent	M	5.1	Temporal extent	C				
31.2	endDate	dc.date dcterms.date	351	EX_TemporalExtent.extent	M	5.1	Temporal extent	C				
32	Lineage	dc.source dcterms.provenence	83	LI_Lineage.statement	C	6.1	Lineage	M				
33	MeasuringModellingInstrument	dc.source										
33.1	instrumentName											
33.1.2	instrumentModel											
33.1.2	instrumentManufac-turer											
33.1.3	manufacturerRegisterdOffice											
33.1.4	manufacturerWebsite											
33.1.5	InstrumentParameter											
33.2	ParameterName											
33.2.1	parameterUnit											
33.2.2	ResolutionDistance											
33.2.3	resolutionDistanceUnit											
33.2.4	TemporalFrequency											
33.2.5	temporalFrequencyUnit											
Geodata												
34	TemporalExtent	dc.coverage dcterms.extent	350	EX_TemporalExtent								
34.1	startDate	dc.date dcterms.date	351	EX_TemporalExtent.extent	M	5.1	Temporal extent	C				
34.2	endDate	dc.date dcterms.date	351	EX_TemporalExtent.extent	M	5.1	Temporal extent	C				
35	VerticalExtent	dc.coverage	354	EX_VerticalExtent								

		dcterms.coverage											
35.1	minimumValue	dc.coverage dcterms.coverage	355	EX_VerticalExtent.minimumValue	C/M								
35.2	maximumValue	dc.coverage dcterms.coverage	356	EX_VerticalExtent.maximumValue	C/M								
35.3	ReferenceSystem		358	EX_VerticalExtent.verticalCRS	C/M								
35.3.1	referenceSystemCode												
35.3.2	referenceSystemName												
36	Lineage	dc.source dcterms.provenence	83	LI_Lineage.statement	C	6.1	Lineage	M					
37	Spatial Resolution		59	MD_Resolution	C	6.2	Spatial resolution	M					
37.1	scale		60	MD_Resolution.equivalentScale	C	6.2	Equivalent scale	M					
37.2	distanceNumber		61	MD_Resolution.distance	C	6.2	Ground sample distance	M					
37.3	distanceUnit		61	MD_Resolution.distance	C	6.2	Ground sample distance	M					
38	SpatialRepresentationType	dc.type dcterms.type	37	MD_DataIdentification.spatialRepresentationType	O								
39	PresentationForm		368	CI_Citation.presentationForm	O								
40	ReferenceSystem		186	MD_ReferenceSystem									
40.1	referenceSystemCode		187	MD_ReferenceSystem.referenceSystemIdentifier	C/M								
40.2	referenceSystemName		196	RS_ReferenceSystem.name	M								
41	MaintenanceInforma-tion	dcterms.frequency	142	MD_MaintenanceInformation									
41.1	maintenanceFrequency	dcterms.frequency	143	MD_MaintenanceInformation. maintenanceAndUpdateFrequency	M								
41.2	maintenanceNote		148	MD_MaintenanceInformation. maintenanceNote	O								
42	Scope	dc.type dcterms.type	6	MD_Metadata.hierarchyLevel	C	1.3	ResourceType	M					
43	InitiativeType		66.5	MD_AggregateInformation. initiativeType	C								
Report													
44	ReportDate	dc.date dcterms.date											
45	ReportType												bibo:report
46	ReportCity	dcterms.location											event:place
47	ReportInstitution												
48	ReportVolume												bibo:volume

49	NumberOfPages											bibo:numPages
50	PageRange											bibo:pages
50.1	startPage											bibo:pageStart
50.2	endPage											bibo:pageEnd
51	FurtherInformation											
Picture												
52	RecordDate	dc.date										
52.1	startDate	dc.date										
52.2	endDate	dc.date										
53	RecordPlace	dcterms.location										
54	RecordMethod											
55	Orientation											
56	Resolution											
57	Size	dcterms.sizeOrDuration										
57.1	width	dcterms.sizeOrDuration										
57.2	height	dcterms.sizeOrDuration										
58	CopyrightInformation	dc.rights										
59	Event											bibo:event
59.1	EventType											bibo:conference bibo:workshop
59.2	EventName	dc.title dcterms.title										bibo:event
59.3	EventLocation	dc.coverage dcterms.location										event:place
59.4	EventWebsite	dc.date dcterms.periodOfTime										bibo:website
59.5	EventPeriod	dc.date dcterms.periodOfTime										event:time tl:interval
59.5.1	startDate	dc.date dcterms.periodOfTime										tl:beginsAt
59.5.2	endDate	dc.date dcterms.periodOfTime										tl:endsAt
Presentation												
60	Presenter											bibo:presents
61	PresentationDate	dc.date dcterms.date										
62	PresentationType											bibo:slideshow
63	Event											bibo:event
63.1	EventType											bibo:conference bibo:workshop
63.2	EventName	dc.title dcterms.title										bibo:event bibo:presentedAt

63.3	EventLocation	dc.coverage dcterms.location										event.place
63.4	EventWebsite											bibo:presentedAt bibo:website
63.5	EventPeriod	dc.date dcterms.periodOfTime										event:time tlinterval
63.5.1	startDate	dc.date dcterms.periodOfTime										tl:beginsAt
63.5.2	endDate	dc.date dcterms.periodOfTime										tl:endsAt
Publication												
Article												
64	Status											bibo:status
65	Review											bibo:status
66	Year	dc.date dcterms.issued										
67	PublicationType	dcterms.bibliographicResource										bibo:Article
68	ArticleType											bibo:journal bibo:magazine
69	PublicationSource	dc.title dcterns.title										bibo:journal
69.1	PublicationSource-Website											bibo:website
70	Volume											bibo:volume
71	Issue											bibo:issue
72	NumberOfPages											bibo:numPages
73	PageRange											bibo:pages
73.1	startPage											bibo:pageStart
73.2	endPage											bibo:pageEnd
Book												
74	Status											bibo:status
75	Review											bibo:status
76	Year	dc.date dcterms.issued										
77	PublicationType	dcterms.bibliographicResource										bibo:book
78	SeriesTitle	dc.title dcterms.title										
79	SeriesEditor											bibo:editorList
80	City	dcterms.location										event:place
81	Volume											bibo:volume
82	Edition											bibo:edition

83	NumberOfPages											bibo:numPages
84	PageRange											bibo:pages
84.1	startPage											bibo:pageStart
84.2	endPage											bibo:pageEnd
BookSection												
85	Status											bibo:status
86	Review											bibo:status
87	Year	dc.date dcterms.issued										
88	PublicationType	dcterms.bibliographicResource										bibo:BookSection
89	BookTitle	dc.title dcterms.title										
90	BookEditor											bibo:editorList
91	City											event:place
92	SeriesTitle	dc.title dcterms.title										
93	SeriesEditor											bibo:editorList
94	Volume											bibo:volume
95	Chapter											bibo:chapter
96	NumberOfPages											bibo:numPages
97	PageRange											bibo:pages
97.1	startPage											bibo:pageStart
97.2	endPage											bibo:pageEnd
EventPaper												
98	Status											bibo:status
99	Review											bibo:status
100	Year	dc.date dcterms.issued										
101	PublicationType	dcterms.bibliographicResource										bibo:Proceedings
102	Event											
102.1	EventType											bibo:conference bibo:workshop
102.2	EventName	dc.title dcterms.title										bibo:conference
102.3	EventLocation	dc.coverage dcterms.location										event:place
102.4	EventWebsite											bibo:presentedAt bibo:website
102.5	EventPeriod	dc.date dcterms.periodOfTime										event:time tl:interval

102.5.1	startDate	dc.date dcterms.periodOfTime										tl:beginsAt
102.5.2	endDate	dc.date dcterms.periodOfTime										tl:endsAt
103	Proceedings											bibo:reproducedIn
103.1	ProceedingsEditor											bibo:editor
103.2	ProceedingsTitle											bibo:proceedings
103.3	ProceedingsURL											bibo:proceedings
103.4	Volume											bibo:volume
103.5	Issue											bibo:issue
104	NumberOfPages											bibo:numPages
105	PageRange											bibo:pages
105.1	startPage											bibo:pageStart
105.2	endPage											bibo:pageEnd

A.2 Controlled lists and attribute values

An overview of the controlled lists and attribute values of the TR32DB Metadata Schema are presented in this section. The content of the lists and values is composed of various standards and schemas (see section 1.2) used to design this TR32DB Metadata Schema, as well as own supplements. The origin of the value names and definition is indicated in the header line of the particular tables. Controlled lists with an asterisk * will continuously updated according to the CRC/TR32 project participants requirements. In the following sections, the controlled lists and attribute values will be described in detail.

A.2.1 ArticleType

ID	Value name TR32DB	Definition
1.	Journal	Journal article
2.	Magazine	Magazine article
3.	Newspaper	Newspaper article
4.	Electronic	Electronic article

A.2.2 ConformityDegree

ID	Value name TR32DB (ISO, INSPIRE)	Definition
1.	conformant	The dataset is fully conformant with the cited specification. (true)
2.	notConformant	The dataset does not conform to the cited specification. (false)
3.	notEvaluated	Conformance has not been evaluated.

A.2.3 ConformitySpecification

ID	Value name TR32DB	Definition
1.	DCMES	Dublin Core Metadata Element Set, Version 1.1, http://dublincore.org/documents/dces/
2.	DCMI Metadata Terms	Dublin Core Metadata Initiative Metadata Terms http://dublincore.org/documents/dcmi-terms/
3.	ISO 19115	ISO 19115:2003 Geographic information – Metadata; Core Metadata Elements
4.	INSPIRE	EU INSPIRE Directive, Metadata Implementing Rules Technical Guidelines, http://inspire.jrc.ec.europa.eu/documents/Metadata/INSPIRE_MD_IR_and_ISO_v1_2_20100616.pdf
5.	DataCite	DataCite Metadata Schema, Version 2.2, http://schema.datacite.org/meta/kernel-2.2/doc/DataCite-MetadataKernel_v2.2.pdf

A.2.4 ContributorType

ID	Value name TR32DB (DataCite)	Definition
1.	ContactPerson	Person with knowledge of how to access, troubleshoot, or otherwise field issues related to the resource.
2.	DataCollector	Person/institution responsible for finding, gathering/collecting data under the guidelines of the author(s) or Principal Investigator (PI).
3.	DataManager	Person (or organization with a staff of data managers, such as a data centre) responsible for maintaining the finished resource.
4.	Distributor	Institution tasked with responsibility to generate/disseminate copies of the resource in either electronic or print form.
5.	Editor	A person who oversees the details related to the publication format of the resource.
6.	Funder	Institution that provided financial support for the development of the resource.
7.	HostingInstitution	Typically, the organization allowing the resource to be available on the Internet through the provision of its hardware/software/operating support.
8.	Producer	Typically a person or organization responsible for the artistry and form of a media product.
9.	ProjectLeader	Person officially designated as head of project team or sub-project team instrumental in the work necessary to development of the resource.
10.	ProjectMember	Person on the membership list of a designated project/project team.
11.	RelatedPerson	A person without a specifically defined role in the development of the resource, but who is someone the author wishes to recognize.
12.	Researcher	A person involved in analysing data or the results of an experiment or formal study. May indicate an intern or assistant to one of the authors who helped with research but who was not so “key” as to be listed as an author.

13.	RightsHolder	Person or institution owning or managing property rights, including intellectual property rights over the resource.
14.	Sponsor	Person or organization that issued a contract or under the auspices of which a work has been written, printed, published, developed, etc.
15.	Supervisor	Designated administrator over one or more groups/teams working to produce a resource or over one or more steps of a development process.
16.	WorkPackageLeader	A Work Package is a recognized data product, not all of which is included in publication. The package, instead, may include notes, discarded documents, etc. The Work Package Leader is responsible for ensuring the comprehensive contents, versioning, and availability of the Work Package during the development of the resource.

A.2.5 CreatorScheme

ID	Value name TR32DB	Definition
1.	ISNI	International Standard Name Identifier scheme (http://www.isni.org/).
2.	ORCID	Open Researcher and Contributor Identifier (http://about.orcid.org/).
3.	OpenID	OpenID is an open standard that describes how users can be authenticated in a decentralized manner, eliminating the need for centralized registration services (http://openid.net).
4.	ResearcherID	ResearcherID is an identifying system for scientific authors created and owned by Thomson Reuters (http://www.researcherid.com).
5.	VIAF	The Virtual International Authority File is an international authority file created by merging the national authority files of several national libraries and operated by the Online Computer Library Center (OCLC) (http://viaf.org/).

A.2.6 CreatorStatus

ID	Value name TR32DB	Definition
1.	CreatorIsNoMember	Creator is no member of CRC/TR32.
2.	CreatorIsFullMember	Creator is full member of CRC/TR32.
3.	CreatorWasMember	Creator is former member of CRC/TR32.
4.	CreatorIsCorrespondingMember	Creator is corresponding member of CRC/TR32.
5.	CreatorIsAssociateMember	Creator is associate member of CRC/TR32.

A.2.7 DataStatus

ID	Value name TR32DB	Definition
1.	Completed	Completed dataset.
2.	inProcess	Data in process.
3.	RawData	Raw data.

A.2.8 DataType

ID	Value name TR32DB (dcterms)	Value name (DataCite)	Value name (ISO, INSPIRE)	Definition
1.	Collection	Collection	series	An aggregation of resources. A collection is described as a group; its parts may also be separately described.
2.	Dataset	Dataset	dataset	Data encoded in a defined structure. Examples include lists, tables, and databases. A dataset may be useful for direct machine processing.
3.	Event	Event		A non-persistent, time-based occurrence. Metadata for an event provides descriptive information that is the basis for discovery of the purpose, location, duration, and responsible agents associated with an event. Examples include an exhibition, webcast, conference, workshop, open day, performance, battle, trial, wedding, tea party, and conflagration.
4.	MovingImage	Audiovisual		A series of visual representations imparting an impression of motion when shown in succession. Examples include animations, movies, television programs, videos, zoetrope's, or visual output from a simulation. Instances of the type Moving Image must also be describable as instances of the broader type Image.
5.	Image	Image	dataset	A visual representation other than text. Examples include images and photographs of physical objects, paintings,

				prints, drawings, other images and graphics, animations and moving pictures, film, diagrams, maps, musical notation. Note that Image may include both electronic and physical representations.
6.	InteractiveResource	InteractiveResource		A resource requiring interaction from the user to be understood, executed, or experienced. Examples include forms on Web pages, applets, multimedia learning objects, chat services, or virtual reality environments.
7.	PhysicalObject	PhysicalObject		An inanimate, three-dimensional object or substance. Note that digital representations of, or surrogates for, these objects should use Image, Text or one of the other types.
8.	Service	Service	service	A system that provides one or more functions. Examples include a photocopying service, a banking service, an authentication service, interlibrary loans, a Z39.50 or Web server.
9.	Software	Software		A computer program in source or compiled form. Examples include a C source file, MS-Windows .exe executable, or Perl script.
10.	Sound	Sound		A resource primarily intended to be heard. Examples include a music playback file format, an audio compact disc, and recorded speech or sounds.
11.	Text	Text		A resource consisting primarily of words for reading. Examples include books, letters, dissertations, poems, newspapers, articles, archives of mailing lists. Note that facsimiles or images of texts are still of the genre Text.
12.	StillImage	Image		A static visual representation. Examples include paintings, drawings, graphic designs, plans and maps. Recommended best practice is to assign the type Text to images of textual materials. Instances of the type StillImage must also be describable as instances of the broader type Image.
13		Model		An abstraction of the real thing, i.e. some generalisation and interpretation. A symbolic representation.

A.2.9 DateType

ID	Value name TR32DB (dcterms)	Value name (DataCite)	Value name (ISO/INSPIRE)	Definition
1.	Created	Created	creation	This property refers to a description of the date or range of the creation of a dataset. According to the one-to-one principle this has to be the creation date of the dataset being described and not the creation date of any other dataset from which the described dataset derives (e.g. a former version or a superior dataset). So a dataset is created only once, every other date of creation belongs to another dataset that has to be described on its own.
2.	Issued	Issued	publication	This property refers to a description of the date of the formal issuance resp. publication of a dataset. A dataset is issued only once, every other issuance belongs to another dataset that has to be described on its own. If the issuance of a dataset is not formal the property "available" should be used.
3.	Available	Available		This property refers to a description of the date a dataset did become or will become available. A dataset becomes available only once, every other availability belongs to another dataset that has to be described on its own. If the availability of a dataset starts with the formal issuance resp. publication use "issued".
4.	Modified	Updated	revision	This property refers to a description of the date a dataset was changed. You may record every date a dataset was modified by repeating this property or record only one date (this should be the last one).
5.	Valid	Valid		This property refers to a description of the date or range a dataset is, was or will be valid. This property should be

				used if a dataset is only valid resp. relevant until a particular date.
6.	DateCopyrighted	Copyrighted		This property refers to a description of the date or range of the copyright of the dataset.
7.	DateSubmitted	Submitted		This property refers to a description of the date a dataset was submitted (e.g. a thesis at a university department, an article at the editorial board of a journal, etc.).
8.	DateAccepted	Accepted		This property refers to a description of the date a dataset was accepted (e.g. a thesis by a university department, an article by the editorial board of a journal, etc.).

A.2.10 DescriptionType

ID	Value name TR32DB (dcterms)	Value name (DataCite)	Definition
1.	Abstract	Abstract	Abstract describing the resource.
2.		SeriesInformation	Series Information describes a dataset that is part of a series.
3.	TableOfContents	TableOfContents	Table of Contents of a resource.
4.		Other	Other type of description.

A.2.11 DownloadPermission

ID	Value name TR32DB	Definition
1.	Free	Download is possible for everybody.
2.	OnlyOwnSubproject	Download of a data is only possible for registered users of the same CRC/TR32 project section.
3.	OnlyTR32	Download of a data is only possible for members of the CRC/TR32 who are registered users of the TR32DB.

A.2.12 EventType

ID	Value name TR32DB	Definition
1.	Other	Other event type
2.	Conference	Conference
3.	CrossGroupMeeting	CRC/TR32 Cross group meeting
4.	ProjectMeeting	Project meeting
5.	Workshop	Workshop
6.	FieldCampaign	Field Measurement Campaign

A.2.13 InspireTheme

ID	Value name TR32DB (ISO, INSPIRE)	Definition
1.	Addresses	Location of properties based on address identifiers, usually by road name, house number, postal code.
2.	Administrative units	Units of administration, dividing areas where Member States have and/or exercise jurisdictional rights, for local, regional and national governance, separated by administrative boundaries.
3.	Agricultural and aquaculture facilities	Farming equipment and production facilities (including irrigation systems, greenhouses and stables).
4.	Area management/restriction/regulation zones and reporting units	Areas managed, regulated or used for reporting at international, European, national, regional and local levels. Includes dumping sites, restricted areas around drinking water sources, nitrate-vulnerable zones, regulated fairways at sea or large inland waters, areas for the dumping of waste, noise restriction zones, prospecting and mining permit areas, river basin districts, relevant reporting units and coastal zone management areas.
5.	Atmospheric conditions	Physical conditions in the atmosphere. Includes spatial data based on measurements, on models or on a combination thereof and includes measurement locations.
6.	Bio-geographical regions	Areas of relatively homogeneous ecological conditions with common characteristics.
7.	Buildings	Geographical location of buildings.
8.	Cadastral parcels	Areas defined by cadastral registers or equivalent.
9.	Coordinate reference systems	Systems for uniquely referencing spatial information in space as a set of coordinates (x, y, z) and/or latitude and longitude and height, based on a geodetic horizontal and vertical datum.
10.	Elevation	Digital elevation models for land, ice and ocean surface. Includes terrestrial

		elevation, bathymetry and shoreline.
11.	Energy resources	Energy resources including hydrocarbons, hydropower, bio-energy, solar, wind, etc., where relevant including depth/height information on the extent of the resource.
12.	Environmental monitoring facilities	Location and operation of environmental monitoring facilities includes observation and measurement of emissions, of the state of environmental media and of other ecosystem parameters (biodiversity, ecological conditions of vegetation, etc.) by or on behalf of public authorities.
13.	Geographical grid systems	Harmonised multi-resolution grid with a common point of origin and standardised location and size of grid cells.
14.	Geographical names	Names of areas, regions, localities, cities, suburbs, towns or settlements, or any geographical or topographical feature of public or historical interest.
15.	Geology	Geology characterised according to composition and structure. Includes bedrock, aquifers and geomorphology.
16.	Habitats and biotopes	Geographical areas characterised by specific ecological conditions, processes, structure, and (life support) functions that physically support the organisms that live there. Includes terrestrial and aquatic areas distinguished by geographical, abiotic and biotic features, whether entirely natural or semi-natural.
17.	Human health and safety	Geographical distribution of dominance of pathologies (allergies, cancers, respiratory diseases, etc.), information indicating the effect on health (biomarkers, decline of fertility, epidemics) or well-being of humans (fatigue, stress, etc.) linked directly (air pollution, chemicals, depletion of the ozone layer, noise, etc.) or indirectly (food, genetically modified organisms, etc.) to the quality of the environment.
18.	Hydrography	Hydrographic elements, including marine areas and all other water bodies and items related to them, including river basins and sub-basins. Where appropriate, according to the definitions set out in Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (2) and in the form of networks.
19.	Land cover	Physical and biological cover of the earth s surface including artificial surfaces, agricultural areas, forests, (semi-)natural areas, wetlands, water bodies.
20.	Land use	Territory characterised according to its current and future planned functional dimension or socio-economic purpose (e.g. residential, industrial, commercial, agricultural, forestry, recreational).
21.	Meteorological geographical features	Weather conditions and their measurements; precipitation, temperature, evapotranspiration, wind speed and direction.
22.	Mineral resources	Mineral resources including metal ores, industrial minerals, etc., where relevant including depth/height information on the extent of the resource.
23.	Natural risk zones	Vulnerable areas characterised according to natural hazards (all atmospheric, hydrologic, seismic, volcanic and wildfire phenomena that, because of their location, severity, and frequency, have the potential to seriously affect society), e.g. floods, landslides and subsidence, avalanches, forest fires, earthquakes, volcanic eruptions.
24.	Oceanographic geographical features	Physical conditions of oceans (currents, salinity, wave heights, etc.).
25.	Orthoimagery	Geo-referenced image data of the Earth's surface, from either satellite or airborne sensors.
26.	Population distribution — demography	Geographical distribution of people, including population characteristics and activity levels, aggregated by grid, region, administrative unit or other analytical unit.
27.	Production and industrial facilities	Industrial production sites, including installations covered by Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control (1) and water abstraction facilities, mining, storage sites.
28.	Protected sites	Area designated or managed within a framework of international, Community and Member States legislation to achieve specific conservation objectives.
29.	Sea regions	Physical conditions of seas and saline water bodies divided into regions and sub-regions with common characteristics.
30.	Soil	Soils and subsoil characterised according to depth, texture, structure and content of particles and organic material, stoniness, erosion, where appropriate mean slope and anticipated water storage capacity.
31.	Species distribution	Geographical distribution of occurrence of animal and plant species aggregated by grid, region, administrative unit or other analytical unit.
32.	Statistical units	Units for dissemination or use of statistical information.
33.	Transport networks	Road, rail, air and water transport networks and related infrastructure. Includes links between different networks. Also includes the trans-European transport

		network as defined in Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community Guidelines for the development of the trans-European transport network (1) and future revisions of that Decision.
34.	Utility and governmental services	Includes utility facilities such as sewage, waste management, energy supply and water supply, administrative and social governmental services such as public administrations, civil protection sites, schools and hospitals.

A.2.14 IdentifierType

ID	Value name TR32DB (dcterms)	Value name (DataCite)	Definition
1.	ARK	ARK	The ARK (Archival Resource Key) naming scheme is designed to facilitate the high-quality and persistent identification of information objects [ARK].
2.	DOI	DOI	The Digital Object Identifier (DOI) is a persistent identifier of intellectual property entities. [http://www.doi.org/]
3.		EAN13	The EAN-13 barcode (originally European Article Number, now renamed International Article Number) is a 13 digit barcoding standard.
4.		EISSN	Electronic International Standard Serial Number [http://www.issn.org/]
5.	Handle	Handle	The Handle System (HANDLE) is a comprehensive system for assigning, managing, and resolving persistent identifiers, known as "handles," for digital objects and other resources on the Internet. [http://www.handle.net/]
6.	ISBN	ISBN	An International Standard Book Number (ISBN) identifies an edition of a monographic work and is defined by the standard NISO/ANSI/ISO 2108:1992.
7.	ISSN	ISSN	The International Standard Serial Number (ISSN) is an eight-digit number which identifies periodical publications, including electronic serials. [http://www.issn.org/]
8.		ISTC	International Standard Text Code [http://www.istc-international.org/html/]
9.		LISSN	Linking International Standard Serial Number [http://www.issn.org/]
10.		LSID	Life Science Identifier [http://www.ipni.org/lsids.html
11.	PURL	PURL	A PURL is a Persistent Uniform Resource Locator. Functionally, a PURL is a URL. However, instead of pointing directly to the location of an Internet resource, a PURL points to an intermediate resolution service. Because PURLs conform to the URI specification, they can be used unmodified in DC metadata. [http://purl.org/]
12.		UPC	Universal Product Code
13.	URL	URL	Uniform Resource Locator
14.	URN	URN	Uniform Resource Name
15.	SICI		Serial Item and Contribution Identifier

A.2.15 InstitutionStatus

ID	Value name TR32DB	Definition
1.	InstitutionIsFullMember	Institution is full member of CRC/TR32.
	InstitutionIsNoMember	Institution is no member of CRC/TR32.
2.	InstitutionWasMember	Institution is former member of CRC/TR32.
3.	InstitutionIsAssociateMember	Institution is associate member of CRC/TR32.
4.	InstitutionIsCorrespondingMember	Institution is corresponding member of CRC/TR32.

A.2.16 InitiativeType

ID	Value name TR32DB (ISO)	Definition
1.	campaign	Series of organized planned actions.
2.	collection	Accumulation of datasets assembled for a specific purpose.
3.	dataDictionary	Element and entity definitions.
4.	exercise	Specific performance of a function or group of functions.
5.	experiment	Process designed to find if something is effective or valid.
6.	investigation	Search or systematic inquiry.
7.	mission	Specific operation of a data collection system.
8.	sensor	Device or piece of equipment which detects or records.
9.	operation	Action that is part of a series of actions.
10.	platform	Vehicle or other support base that holds a sensor.
11.	process	Method of doing something involving a number of steps.
12.	program	Specific planned activity.
13.	project	Organized undertaking, research, or development.
14.	sciencePaper	Document based on an experiment or research.

15.	study	Examination or investigation.
16.	task	Piece of work.
17.	trial	Process of testing to discover or demonstrate something.
18.	userGuide	Operating manual for users.

A.2.17 IsoTopicCategory

ID	Value name TR32DB (ISO, INSPIRE)	Definition
1.	farming	rearing of animals and/or cultivation of plants; Examples: agriculture, irrigation, aquaculture, plantations, herding, pests and diseases affecting crops and livestock
2.	biota	flora and/or fauna in natural environment; Examples: wildlife, vegetation, biological sciences, ecology, wilderness, sea life, wetlands, habitat, biological resources
3.	boundaries	legal land descriptions; Examples: political and administrative boundaries, governmental units, marine boundaries, voting districts, school districts, international boundaries
4.	climatologyMeteorologyAtmosphere	processes and phenomena of the atmosphere; Examples: cloud cover, weather, climate, atmospheric conditions, climate change, precipitation
5.	economy	economic activities, conditions, and employment; Examples: production, labor, revenue, business, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, exploration and exploitation of resources such as minerals, oil and gas
6.	elevation	height above or below sea level; Examples: altitude, bathymetry, digital elevation models, slope, derived products, DEMs, TINs
7.	environment	environmental resources, protection and conservation; Examples: environmental pollution, waste storage and treatment, environmental impact assessment, monitoring environmental risk, nature reserves, landscape, water quality, air quality, environmental modelling
8.	geoscientificInformation	information pertaining to earth sciences; Examples: geophysical features and processes, geology, minerals, sciences dealing with the composition, structure and origin of the earth's rocks, risks of earthquakes, volcanic activity, landslides, gravity information, soils, permafrost, hydrogeology, groundwater, erosion
9.	health	health, health services, human ecology, and safety; Examples: disease and illness, factors affecting health, hygiene, substance abuse, mental and physical health, health services, health care providers, public health
10.	imageryBaseMapsEarthCover	base maps; Examples: land/earth cover, topographic maps, imagery, unclassified images, annotations, digital ortho imagery
11.	intelligenceMilitary	military bases, structures, activities; Examples: barracks, training grounds, military transportation, information collection
12.	inlandWaters	inland water features, drainage systems and characteristics; Examples: rivers and glaciers, slat lakes, water utilization plans, dams, currents, floods and flood hazards, water quality, hydrographic charts, watersheds, wetlands, hydrography
13.	location	positional information and services; Examples: addresses, geodetic networks, geodetic control points, postal zones and services, place names, geographic names
14.	oceans	features and characteristics of salt water bodies (excluding inland waters) Examples: tides, tidal waves, coastal information, reefs, maritime, outer continental shelf submerged lands, shoreline
15.	planningCadastre	information used for appropriate actions for future use of the land; Examples: land use maps, zoning maps, cadastral surveys, land ownership, parcels, easements, tax maps, federal land ownership status, public land conveyance records
16.	society	characteristics of society and culture; Examples: settlements, housing, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, tourism, recreational areas and activities, parks, recreational trails, historical sites, cultural resources, social impact assessments, crime and justice, law enforcement, census information, immigration, ethnicity
17.	structure	man-made construction; Examples: buildings, museums, churches, factories, housing, monuments, shops, towers, building footprints, architectural and structural plans
18.	transportation	means and aids for conveying persons and/or goods; Examples: roads, airports/airstrips, shipping routes, tunnels nautical charts, vehicle or vessel location, aeronautical charts, railways
19.	utilitiesCommunication	energy, water and waste systems and communications infrastructure and services; Examples: hydroelectricity, geothermal, solar and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electricity and gas

		distribution, data communication, telecommunication, radio, communication networks

A.2.18 Licence

ID	Value name TR32DB	Definition
1.	Creative Commons - Attribution 3.0 Unported [CC BY]	This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials. [http://creativecommons.org/licenses/by/3.0/
2.	Creative Commons - Attribution-NoDerivs 3.0 Unported [CC BY-ND]	This license allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you. [http://creativecommons.org/licenses/by-nd/3.0/
3.	Creative Commons - Attribution-NonCommercial 3.0 Unported [CC BY-NC]	This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms. [http://creativecommons.org/licenses/by-nc/3.0/
4.	Creative Commons - Attribution-NonCommercial-NoDerivs 3.0 Unported [CC BY-NC-ND]	This license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially. [http://creativecommons.org/licenses/by-nc-nd/3.0/
5.	Creative Commons - Attribution-NonCommercial-ShareAlike 3.0 Unported [CC BY-NC-SA]	This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms. [http://creativecommons.org/licenses/by-nc-sa/3.0/
6.	Creative Commons - Attribution-ShareAlike 3.0 Unported [CC BY-SA 3.0]	This license lets others remix, tweak, and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms. This license is often compared to "copyleft" free and open source software licenses. All new works based on yours will carry the same license, so any derivatives will also allow commercial use. This is the license used by Wikipedia, and is recommended for materials that would benefit from incorporating content from Wikipedia and similarly licensed projects. [http://creativecommons.org/licenses/by-sa/3.0/
7.	Open Data Commons - Open Database License [ODC-ODbL]	Attribution Share-Alike for data/databases [http://opendatacommons.org/licenses/odbl/summary/
8.	Open Data Commons - Public Domain Dedication and License [PDDL]	Public Domain for data/databases [http://opendatacommons.org/licenses/pddl/summary/
9.	Open Data Commons - Attribution License [ODC-By]	Attribution for data/databases [http://opendatacommons.org/licenses/by/summary/
10.	TR32DB Data policy agreement	Data Policy Agreement of the CRC/TR32 Project Database [http://www.tr32db.uni-koeln.de/datapolicy/]
11.	Creative Commons - Attribution 3.0 Unported [CC BY]	This license lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials. [http://creativecommons.org/licenses/by/3.0/
12.	Creative Commons - Attribution-NoDerivs 3.0 Unported [CC BY-ND]	This license allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you. [http://creativecommons.org/licenses/by-nd/3.0/
13.	Creative Commons - Attribution-NonCommercial 3.0 Unported [CC BY-NC]	This license lets others remix, tweak, and build upon your work non-commercially, and although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms. [http://creativecommons.org/licenses/by-nc/3.0/
14.	Creative Commons - Attribution-NonCommercial-NoDerivs 3.0 Unported [CC BY-NC-ND]	This license is the most restrictive of our six main licenses, only allowing others to download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially. [http://creativecommons.org/licenses/by-nc-nd/3.0/
15.	Creative Commons - Attribution-NonCommercial-ShareAlike 3.0 Unported [CC BY-NC-SA]	This license lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms. [http://creativecommons.org/licenses/by-nc-sa/3.0/
16.	Creative Commons - Attribution-ShareAlike 3.0 Unported [CC BY-SA 3.0]	This license lets others remix, tweak, and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms. This license is often compared to "copyleft" free and open source software licenses. All new works based on yours will carry the same license, so any

		derivatives will also allow commercial use. This is the license used by Wikipedia, and is recommended for materials that would benefit from incorporating content from Wikipedia and similarly licensed projects. [http://creativecommons.org/licenses/by-sa/3.0/

A.2.19 MaintenanceFrequencyUnit

ID	Value name TR32DB (ISO)	Definition
1.	continual	Data is repeatedly and frequently updated.
2.	daily	Data is updated each day.
3.	weekly	Data is updated on a weekly basis.
4.	fortnightly	Data is updated every two weeks.
5.	monthly	Data is updated each month.
6.	quarterly	Data is updated every three months.
7.	biannually	Data is updated twice each year.
8.	annually	Data is updated every year.
9.	asNeeded	Data is updated as deemed necessary.
10.	irregular	Data is updated in intervals that are uneven in duration.
11.	notPlanned	There are no plans to update the data.
12.	unknown	Frequency of maintenance for the data is not known.

A.2.20 MeasureLocationTR32*

ID	Value name TR32DB	Definition
1.	Wüstebach	TR32 measure/model location Wüstebach located in Erkensruhr.
2.	Rollesbroich	TR32 measure/model location Rollesbroich located in Kall.
3.	Merken	TR32 measure/model location Merken located in Ellebach.
4.	Merzenhausen	TR32 measure/model location Merzenhausen located in Ellebach.
5.	Other	Other measure location, not listed.
6.	None	No measure/model location available.
7.	Laboratory	TR32 measure/model location located in the laboratory.
8.	Krauthausen	TR32 measure/model location Krauthausen located in Ellebach.
9.	Jülich (reserach centre)	TR32 measure/model location Research Centre Jülich located in Ellebach.
10.	Ruraue	TR32 measure/model location Ruraue located in Ellebach.
11.	Selhausen	TR32 measure/model location Selhausen located in Ellebach.

A.2.21 MeasureRegionTR32*

ID	Value name TR32DB	Definition
1.	Belgium	TR32 measure/model region located in Belgium.
2.	C4ModellingArea	TR32 measure/model region covering the C4 Modelling Area.
3.	Ellebach	TR32 measure/model region located in the sub-catchment Ellebach.
4.	Erkensruhr	TR32 measure/model region located in the sub-catchment Erkensruhr.
5.	Germany	TR32 measure/model region located in Germany.
6.	Kall	TR32 measure/model region located in the sub-catchment Kall.
7.	Laboratory	TR32 measure/model region located in the laboratory.
8.	None	No TR32 measure/model region available.
9.	North Rhine-Westphalia	TR32 measure/model region located in North Rhine Westphalia.
10.	Other	Other TR32 measure/model region not listed.
11.	Rhineland-Palatinate	TR32 measure/model region located in Rhineland-Palatinate.
12.	RurCatchment	TR32 measure/model region located in the catchment of river Rur.
13.	TheNetherlands	TR32 measure/model region located in The Netherlands.

A.2.22 MeasureUnit

ID	Value name TR32DB (ISO)	Definition
1.	mm	millimetres
2.	cm	centimetres
3.	m	meters

A.2.23 Orientation

ID	Value name TR32DB	Definition
1.	Horizontal/Landscape	Horizontal/landscape image orientation.
2.	Vertical/Portrait	Vertical/portrait image orientation.
3.	Other	Other image orientation.

A.2.24 Phase*

ID	Value name TR32DB	Definition
1.	1	CRC/TR32 funding phase 1 (2007-2010).
2.	2	CRC/TR32 funding phase 2 (2011-2014).

A.2.25 PresentationForm

ID	Value name TR32DB (ISO)	Definition
1.	documentDigital	Digital representation of a primarily textual item (can contain illustrations also).
2.	documentHardcopy	Representation of a primarily textual item (can contain illustrations also) on paper, photographic material, or other media.
3.	imageDigital	Likeness of natural or man-made features, objects, and activities acquired through the sensing of visual or any other segment of the electromagnetic spectrum by sensors, such as thermal infrared, and high resolution radar and stored in digital format.
4.	imageHardcopy	Likeness of natural or man-made features, objects, and activities acquired through the sensing of visual or any other segment of the electromagnetic spectrum by sensors, such as thermal infrared, and high resolution radar and reproduced on paper, photographic material, or other media for use directly by the human user.
5.	mapDigital	Map represented in raster or vector form.
6.	mapHardcopy	Map printed on paper, photographic material, or other media for use directly by the human user.
7.	modelDigital	Multi-dimensional digital representation of a feature, process, etc.
8.	modelHardcopy	3-dimensional, physical model.
9.	profileDigital	Vertical cross-section in digital form.
10.	profileHardcopy	Vertical cross-section printed on paper, etc.
11.	tableDigital	Digital representation of facts or figures systematically displayed, especially in columns.
12.	tableHardcopy	Representation of facts or figures systematically displayed, especially in columns, printed on papers, photographic material, or other media.
13.	videoDigital	Digital video recording.
14.	videoHardcopy	Video recording on film.

A.2.26 PresentationType

ID	Value name TR32DB	Definition
1.	Keynote	Type of presentation is keynote.
2.	Poster	Type of presentation is poster.
3.	Talk	Type of presentation is talk.
4.	other	Type of presentation is other.

A.2.27 PublicationReview

ID	Value name TR32DB	Value name (bibo)	Definition
1.	PeerReview	peerReviewed	A review of the publication was conducted.
2.	NoPeerReview	nonPeerReviewed	There was no review of the publication conducted.

A.2.28 PublicationStatus

ID	Value name TR32DB	Value name (bibo)	Definition
1.	InPrint		Document is in print.
2.	InReview		Document is currently in review process.
3.	Published	published	Document is published.
4.	Submitted		Document is submitted to journal.
5.	Unpublished	unpublished	Document is unpublished.
6.	Accepted	accepted	Document is accepted for publication after peer reviewing.
7.	Draft	draft	Document is drafted.
8.	Forthcoming	forthcoming	Document to be published.
9.	Legal	legal	Legal document.
10.	NonPeerReviewed	nonPeerReviewed	A document that is not peer reviewed.
11.	PeerReviewed	peerReviewed	The process by which articles are chosen to be included in a refereed journal. An editorial board consisting of experts in the same field as the author review the article and decide if it is authoritative enough for publication.
12.	Rejected	rejected	Rejected for publication after peer reviewing.

A.2.29 PublicationType

ID	Value name TR32DB	Definition
1.	Article	Type of publication is article.
2.	Book	Type of publication is book.
3.	BookSection	Type of publication is book section or chapter.
4.	EventPaper	Type of publication is event paper (conference paper).

A.2.30 ReferenceSystem

ID	Value name TR32DB	Definition incl. ReferenceSystemType
1.	32632	WGS 84 / UTM zone 32N (World Geodetic System 1984 / UTM zone 32N); Projected CRS
2.	31466	DHDN / 3-degree Gauss-Kruger zone 2 (Deutsches Hauptdreiecksnetz / 3-degree Gauss-Kruger zone 2); Projected CRS
3.	28992	Amersfoort / RD New (Amersfoort / RD New); Projected CRS
4.	4326	WGS 84 (World Geodetic System 1984); Geodetic CRS
5.	4258	ETRS89 (European Terrestrial Reference System 1989); Geodetic CRS
6.	25832	ETRS89 / UTM zone 32N (European Terrestrial Reference System 1989 / UTM zone 32N)
7.	32631	WGS 84 / UTM zone 31N (World Geodetic System 1984 / UTM zone 31N); Projected CRS
8.	5783	DHHN92 height (Deutsches Haupthoehennetz 1992); Vertical CRS
9.	5621	EVRF2007 (European Vertical Reference Frame 2007); Vertical CRS
10.	31467	DHDN / 3-degree Gauss-Krüger zone 3 (Deutsches Hauptdreiecksnetz / 3-degree Gauss-Krüger zone 2); Projected CRS

A.2.31 ReferenceSystemType

ID	Value name TR32DB	Definition
1.	Projected CRS	Projected coordinate reference system.
2.	Geodetic CRS	Geodetic coordinate reference system (geographic 2D).
3.	Geodetic CRS	Geodetic coordinate reference system (geographic 3D).
4.	Geodetic CRS	Geodetic coordinate reference system (geocentric).
5.	Vertical CRS	Vertical coordinate reference system.
6.	Engineering CRS	Engineering coordinate reference system.
7.	Compound CRS	Compound coordinate reference system.

A.2.32 RelationType

ID	Value name TR32DB (dcterms)	Value name (DataCite)	Definition
1.	IsReferencedBy	IsCitedBy	This property describes the relationship between a resource and another resource that points to the described resource by citation, acknowledgement, etc (e.g. the described resource is a book cited in an article, or a play pointed to in an interview, etc.). For the reciprocal statement use references. Indicates that the related resource includes the described resource in a citation.
2.	References	Cites	This property describes the relationship between the described resource and another resource that is cited, referenced, or otherwise pointed to by the described resource (e.g. the described resource is an article citing a book, or an interview pointing to a play). For the reciprocal statement use isReferencedBy. Indicates that the described resource includes the related resource in a citation.
3.		IsSupplementTo	Indicated that the described resource is a supplement to the related resource.
4.		IsSupplementedBy	Indicated that the related resource is a supplement to the described resource.
5.		IsContinuedBy	Indicates that the described resource is continued by the work of the related resource.
6.		Continues	Indicates that the related resource is a continuation of the work of the described resource.
7.	IsVersionOf		This property describes the relationship between the described resource and another resource that is a former version, edition or adaptation of the described resource (e.g. the described resource is the revision of a book, or another recording of a song, etc.). Another version implies changes in the content of a resource. For resources with different formats use isFormatOf. For the reciprocal statement use

			hasVersion.
8.	IsPartOf		This property describes the relationship between the described resource and another resource of which the described resource is a physical or logical part (e.g. a painting as part of a collection, an article as part of a journal, etc.). The described resource is like a "child" in a hierarchical or "parent/child" relationship. For the reciprocal statement use hasPart.
9.	HasPart		This property describes the relationship between the described resource and another resource which is a physical or logical part of the described resource (e.g. the described resource is a collection of paintings, or a journal with different articles, etc.). The described resource is like the "parent" in a hierarchical or "parent/child" relationship. For the reciprocal statement use isPartOf.
10.		IsDocumentedBy	Indicates that the related resource is a documentation about/explaining the described resource.
11.		Documents	Indicates that the described resource is a documentation about/explaining the related resource.
12.		IsCompiledBy	Indicates that the related resource is used to compile or create the described resource.
13.		Compiles	Indicates that the related resource is the result of a compile or creation event using the described resource.
14.		IsVariantFormOf	Indicates that the described resource is a variant of different form of related resource, e.g. calculated or calibrated form of different packaging.
15.		IsOriginalFormOf	Indicates that the described resource is the original form of the related resource.
16.		IsPreviousVersionOf	Indicates that the described resource is a previous edition of the related resource.
17.	HasVersion		This property describes the relationship between the described property and another property that is a later version, edition or adaptation of the described resource (e.g. the described resource is the older version of a revised book, or of a song, etc.). Another version implies changes in the content of a resource. For resources with different formats use hasFormat. For the reciprocal statement use isVersionOf.
18.	IsFormatOf		This property describes the relationship between the described resource and another resource that is a former version of the described resource with the same intellectual content but presented in another format (e.g. the described resource is the microfilm version of a printed book or the pdf version of a doc document). For intellectual changes between resources use isVersonOf. For the reciprocal statement use hasFormat.
19.	HasFormat		This property describes the relationship between the described resource and another resource that is a later version of the described resource with the same intellectual content but presented in another format (e.g. the described resource is a printed book that is also available as a microfilm, or a doc document that is also available as pdf). For intellectual changes between resources use hasVersion. For the reciprocal statement use isFormatOf.
20.	Replaces		This property describes the relationship between the described resource and another resource that has been supplanted, displaced or superseded by the described resource. It is used for the valid version in chain of versions (e.g. the described resource is the last draft of a contract, or the current version of guidelines). For the reciprocal statement use isReplacedBy.
21.	IsReplacedBy		This property describes the relationship between the described resource and another resource, that supplants, displaces or supersedes the described resource. It is used, when in chain of versions only one version is valid (e.g. the described resource is one of the former drafts of a contract, or a former version of guidelines). For the reciprocal statement use replaces.
22.	Requires		This property describes the relationship between the described resource and another resource supporting the function, delivery or coherence of the content of the described resource (e.g. the described resource is an application that can be used only with a particular software, or hardware). For the reciprocal statement use isRequiredBy.
23.	IsRequiredBy		The described resource is necessary for the function, delivery or coherence of the content of the resource the property references to (e.g. the described resource is a software or hardware necessary to use a particular application). For the reciprocal statement use requires.
24.	ConformsTo		This property describes the relationship between a resource and an established standard, to which the described resource conforms (e.g. a metadata record that

			conforms to the RDA standard, or a pipe that conforms to ISO 3183, etc.).

A.2.33 ReportType

ID	Value name TR32DB	Definition
1.	Booklet	Report type is booklet.
2.	BookReview	Report type is book review.
3.	ConferenceReview	Report type is conference review.
4.	Glossary	Report type is glossary.
5.	Minutes	Report type is minutes.
6.	OnlineTutorial	Report type is online tutorial.
7.	Other	Report type is other.
8.	PhDReport	Report type is PhD report.
9.	Policy	Report type is guideline.
10.	Guideline	Report type is guideline.
11.	Presentation	Report type is presentation.
12.	DiplomaThesis	Report type is an unpublished/unpublished Diploma thesis.
13.	MasterThesis	Report type is an unpublished/unpublished Master's thesis.
14.	BachelorThesis	Report type is an unpublished/unpublished Bachelor's thesis.
15.	PhDThesis	Report type is an unpublished/unpublished PhDs thesis.
16.	WorkshopReview	Report type is workshop review.

A.2.34 ResolutionDistanceUnit

ID	Value name TR32DB	Definition
1.	µm	Micrometres
2.	mm	Millimetres
3.	cm	Centimetres
4.	dm	Decimetres
5.	m	Metres
6.	km	Kilometres
7.	other	Other

A.2.35 RoleType

ID	Value name TR32DB (ISO, INSPIRE)	Definition
1.	ResourceProvider	Party that supplies the resource.
2.	Custodian	Party that accepts accountability and responsibility for the data and ensures appropriate care and maintenance of the resource.
3.	Owner	Party that owns the resource.
4.	User	Party who uses the resource.
5.	Distributor	Party who distributes the resource.
6.	Originator	Party who created the resource.
7.	PointOfContact	Party who can be contacted for acquiring knowledge about or acquisition of the resource.
8.	PrincipalInvestigator	Key party responsible for gathering information and conducting research.
9.	Processor	Party who has processed the data in a manner such that the resource has been modified.
10.	Publisher	Party who published the resource.
11.	Author	Party who authored the resource.

A.2.36 ScopeCode

ID	Value name TR32DB (ISO)	Value name (dcterms)	Definition
1.	attribute	Dataset	Information applies to the attribute class.
2.	attributeType	Dataset	Information applies to the characteristic of a feature.
3.	collectionHardware	Dataset	Information applies to the collection hardware class.
4.	collectionSession	Event	Information applies to the collection session.
5.	dataset	Dataset	Applies to the dataset.
6.	series	Collection	Applies to the series.
7.	nonGeographicDataset	Dataset	Information applies to non-geographic data.

8.	dimensionGroup	Dataset	Information applies to a dimension group.
9.	featureInformation	Dataset	Applies to a feature.
10.	featureType	Dataset	Information applies to a feature type.
11.	propertyType	Dataset	Information applies to a property type.
12.	fieldSession	Dataset	Information applies to a field session.
13.	software	Software	Information applies to a computer program or routine.
14.	service	Service	Information applies to a capability which a service provider entity makes available to a service user entity through a set of interfaces that define a behaviour, such as a use case.
15.	model	Dataset	Information applies to a copy or imitation of an existing or hypothetical object.
16.	tile	Dataset	Information applies to a tile, a spatial subset of geographic data.

A.2.37 SizeType

ID	Value name TR32DB	Definition
1.	DataPoints	The amount of data points within a dataset.
2.	Datasets	The amount of datasets contained in a dataset.
3.	Experiments	The mount of experiments described or contained in the dataset.
4.	Numbers	The amount of numbers describing the dataset.
5.	Pages	The amount of pages contained in the dataset.
6.	Kilobytes	The size of the dataset in kilobytes.

A.2.38 SpatialRepresentationType

ID	Value name TR32DB (ISO)	Definition
1.	vector	Vector data is used to represent geographic data
2.	grid	Grid / raster data is used to represent geographic data
3.	textTable	Textual or tabular data is used to represent geographic data
4.	tin	Triangulated irregular network
5.	stereoModel	Three-dimensional view formed by the intersecting homologous rays of an overlapping pair of images
6.	video	Scene from a video recording

A.2.39 SubjectScheme

ID	Value name TR32DB	Definition
1.	GEMET - Concepts	Title: GEMET - Concepts, version 3.1 publication date: 2012-07-20 URL: http://www.eionet.europa.eu/gemet/alphabetic?langcode=en KeywordTypeCode: theme
2.	GEMET - INSPIRE themes	Title: GEMET - INSPIRE themes, version 1.0 publication date: 2008-06-01 URL: http://www.eionet.europa.eu/gemet/inspire_themes KeywordTypeCode: theme
3.	DDC	Dewey Decimal Classification URL: http://dewey.info/ KeywordTypeCode: theme

A.2.40 TemporalFrequencyUnit

ID	Value name TR32DB	Definition
1.	day/s	Measure frequency per day/s.
2.	hour/s	Measure frequency per hour/s.
3.	Hz	Measure frequency per hertz.
4.	MHz	Measure frequency per megahertz.
5.	minute/s	Measure frequency per minute/s.
6.	month/s	Measure frequency per month/s.
7.	other	Other frequency, not listed.
8.	second/s	Measure frequency per second/s.
9.	week/s	Measure frequency per week/s.
10.	year/s	Measure frequency per year/s.

A.2.41 TitleType

ID	Value name TR32DB	Value name (dcterms)	Value name (DataCite)	Value name (ISO)	Definition
1.	mainTitle				Main title of the dataset.
2.	alternativeTitle	alternative	alternativeTitle	alternateTitle	Alternative title of the dataset.
3.	subtitle		subtitle		Subtitle of the dataset.
4.	translatedTitle		translatedTitle		Translated title of the dataset.

A.2.42 TR32MetaDataType

ID	Value name TR32DB	Definition
1.	data	Data type data.
2.	geodata	Data type geodata.
3.	picture	Data type picture.
4.	presentation	Data type presentation.
5.	publication	Data type publication.
6.	report	Data type report.

A.2.43 TR32Subproject*

ID	Value name TR32DB	Definition
1.	A1	Pore structure, moisture, and water transport in soil by NMR
2.	A2	Characterization of flow and transport properties of unsaturated soils using non-invasive methods and numerical modeling at the µm to dm scale
3.	A3	Inverse modeling of soil hydraulic property patterns from non-invasive electrical measurements
4.	A4	Multiphase flow simulations coupled to NMR and SIP signatures in reconstructed natural porous media using Lattice Boltzmann methods
5.	B1	Characterizing spatio-temporal patterns of water and C-fluxes at field-scale
6.	B3	Spatial and temporal patterns of soil carbon pools - a MIR-spectroscopic approach
7.	B4	Upscaling of local $C0_2$, water and heat fluxes to the field scale from observed spatio-temporal patterns using an integrative 3-D mechanistic process model
8.	B5	Modeling the spatio-temporal variability of crop and cropping system processes under heterogeneous field conditions
9.	B6	Soil moisture content estimation by inverting surface and horizontal borehole GPR data
10.	C1	Spatio-temporal variability of catchment properties and their effect on water, solute, and CO_2 fluxes from the micro to the mesoscale
11.	C2	Analysis of temporal and spatial structures of soil moisture by integrating remote sensing and process based modeling
12.	C3	Scale–consistent two-way coupling of land-surface and atmospheric models
13.	C4	Process-based modeling of regional water and energy fluxes taking into account multi-sensor and multi-scale observation patterns
14.	C6	Process-based modeling of regional water and energy fluxes taking into account multi-sensor and multi-scale observation patterns
15.	D1	Modeling of time-space patterns of energy and mass fluxes over heterogeneous land surfaces with special consideration of CO_2 and H_2O
16.	D2	Experimental study of spatio-temporal structures in atmosphere-land surface energy, water and CO_2 exchange
17.	D3	CO_2 and water flux estimation by four-dimensional variational assimilation of in situ and remote sensing data
18.	D5	A high-resolution multi-scale space-time precipitation model from direct measurements and remote sensing
19.	D6	Large-Eddy Simulation of Atmosphere and Land Interactions over Heterogeneous Surfaces
20.	D7	Influence of subsurface hydrodynamics on the lower atmosphere at the catchment scale
21.	D8	High resolution parallel simulation of variably saturated flow with adaptive mesh refinement
22.	Z1/INF	Project Database and Data Management
23.	Z2	SFB/TR32 Central Services, Administration and Coordination
24.	Z3	Measurement Support and Data Processing
25.	Z4	Model Development and Maintenance Services

26.	Z5-IRTG	Integrated Research Training Group (IRTG)

A.2.44 TR32Topic

ID	Value name TR32DB	Definition
1.	atmosphere	Data related to the topic atmosphere.
2.	land use	Data related to the topic land use.
3.	other	Other topic, not listed.
4.	remote sensing	Data related to the topic remote sensing.
5.	soil	Data related to the topic soil.
6.	topography	Data related to the topic topography.
7.	vegetation	Data related to the topic vegetation.

A.2.45 WebsiteVersion*

ID	Value name TR32DB	Definition
1.	V25	Website and Metadata Version 2.5
2.	V26	Website and Metadata Version 2.6
3.	V30	Website and Metadata Version 3.0
4.	V31	Website and Metadata Version 3.1
5.	V40	Website and Metadata Version 4.0