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Version 1.0 of C3Grid Metadata Profile of the ISO Metadata Standard

(see also C3Grid example XML template)

--- January 2007 ---

**Conventions:**

ISO tags in left column:

- Metadata: C3 mandatory
- Metadata: for model data mandatory
- *Metadata*: C3 optional
- [Metadata]: content of this „Metadata“ tag not used but recorded in other ISO tag
- Metadata (\*) or (\*1): Multiplicity of tag is (0..infinite) or (1..infinite)
- Numbers in left column refer to ISO tag reference numbers
- ..code: values are defined by a code table

Right column:

- **P?** directly accessed by C3Grid portal
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MD\_Metadata (1):

ISO role / name (ISO data dict. ref. lines)	Short definition / C3 usage	Remarks / usage tips
<u>MD_Metadata</u>	root entity for resource metadata	Setting Id tag is recommended (value same as fileIdentifier tag value, technical reasons)
<u>fileIdentifier</u> (2), <i>language</i> (3), <i>charset</i> (4)	Unique id of this metadata description, <i>language etc. optional (already given by xml context)</i>	fileIdentifier C3Grid convention: de.dataprovider.localid – must be unique !!
<i>parentIdentifier</i> (5)	mandatory for parts of collections (e.g. a dataset of an experiment)	<b>P?</b> mandatory if higher level – lower level metadata have to be correlated (use of series tags possible besides this for more detailed and many to many)

		relations..), top level data product if tag is omitted
hierarchyLevel(6)/MD_Scope_Code (B5.25) hierarchyLevelname(7)	(mandatory if not equal to „dataset“) (Levelname=model,dataset,series,...) - free text . e.g. „climate time series“ (dwd-wmo) “climate experiment” (cera) etc.	(see appendix of ISO 19115) e.g.. hierarchyLevel=model (015) for model data
contact (8) (*1)	party responsible for metadata information	<b>P?</b> (contact > CI_ResponsibleParty > organizationName/CharacterString)
dateStamp (9)	Data that the metadata was created	
metadataStandardName (10) metadataStandardVersion (11)	Metadata standard + Profile name / e.g. ISO19115 / C3Grid Version (profile) used / e.g. ISO 19139 / C3Grid Profile VI.0	Should be filled for C3Grid external publication ..
[dataSetURI (11.1)]	[ URI of dataset by this metadata / in C3 this info is reported in DataIdentification>OnlineResource, Identifier ]	If doi is available this can be given here / C3Grid tools etc. take information from DataIdentification block ..
locale(11.?)	Language code, char encoding etc. ( Not in ISO 19115 catalog!)	For an example, see C3 xml template
(spatialRepresentationInfo (12) (*) / MD_SpatialRepresentation (156) / MD_GridSpatialRepresent.(157))	Info on digital representation of spatial information in dataset / No use in C3Grid Version 0.x	Later use in version 1.x of C3Grid possible. → see WMO profile description document
<ul style="list-style-type: none"> <li>■ Number of dimensions(integer)</li> <li>■ axisDimensionsProperties(159) / MD_Dimension(179)</li> <li>■ ■ dimensionName / .. code,</li> <li>■ ■ dimensionSize</li> <li>■ ■ resolution</li> </ul>	Number of independent temporal, spatial dimensions  (raw,column,time, ...)  See iso 19103	
<ul style="list-style-type: none"> <li>■ cellGeometry /.. code</li> <li>■ transformationCodeAvailability</li> </ul>	B5.9 = area no	
referenceSystemInfo (13) / MD_ReferenceSystem (186) (*)	Description of spatial and temporal reference systems used /	Not used in first versions of C3Grid
identificationInfo (15) / MD_identification (23) MD_DataIdentification (36) (*1)	Information required to identify a dataset / „identity card“ of C3Grid data in portal	<b>P?</b>
<ul style="list-style-type: none"> <li>■ citation / CI_Citation (359)</li> <li>■ ■ title (360)</li> <li>■ ■ date (362)</li> <li>■ ■ series (369)</li> </ul>	Standardized resource reference Name by which the the cited resource is known Reference date for the cited resource Information about the series, or aggregate dataset, of which the dataset is part	

<ul style="list-style-type: none"> <li>■ ■ <i>collectiveTitle</i> (371)</li> </ul>	<i>Common title of elem. of series collectively</i>	
<ul style="list-style-type: none"> <li>■ <i>abstract</i> (25), <i>purpose</i> (26), <i>status</i> (28), <i>pointofContact</i>(29) <i>resourceMaintenance</i> (30)</li> </ul>	Brief narrative summary of content / <i>purpose Contact info for resource (diffence to contact(8) !)</i>	<b>P?</b> freetext search over abstract content in C3Grid portal
<ul style="list-style-type: none"> <li>■ <i>graphicOverview/ MD_BrowseGraphic</i></li> <li>■ ■ <i>fileName, fileDescription, fileType</i></li> </ul>	Info on graphic that providedes illustration of dataset	<b>P?</b> Free text entries  <i>e.g. filename= C3 graphics http endpoint</i>
<ul style="list-style-type: none"> <li>■ [<i>resourceFormat</i>(32)/ <i>MD_Format</i>(284) (name,version: free text)]</li> </ul>	<i>description of the format of the resource(s)/ in C3Grid this info is taken from distributioninfo tags ..</i>	
<ul style="list-style-type: none"> <li>■ <i>descriptiveKeywords</i>(33) (*) / <i>MD_Keywords</i>(52)</li> </ul>	Kategorie keywords, their type and ref. source	<b>P?</b>
<ul style="list-style-type: none"> <li>■ <i>resourcespecificUsage</i>(34) (*) / <i>MD_Usage</i>(62)</li> </ul>	<i>Info about specific applications for which this resource is used by users / initially no C3Grid usage</i>	freetext – open for future usage and C3Grid conventions
<ul style="list-style-type: none"> <li>■ <i>resourceConstraints</i>(35)/ (*) / <i>MD-Constraints</i>(67) <i>Aggregation info ??(35.1)</i></li> </ul>	<i>Access constraints</i>	Initially no specific access constraints in C3Grid / stepwise establishment of conventions
<ul style="list-style-type: none"> <li>■ <i>spatialRepresentationType</i>(37) / .. <i>Code</i> (*)</li> <li>■ <i>spatialResolution</i></li> </ul>	<i>grid (002) for model data</i>	
<ul style="list-style-type: none"> <li>■ <i>language</i>_____ (*1)</li> </ul>	Language used in dataset / C3 : english	
<ul style="list-style-type: none"> <li>■ <i>topicCategory</i>(41)/.. <i>Code</i> (*)</li> </ul>	<i>climatologyMeteorologyAthmosphere (004) or oceans (014) etc.</i>	
<ul style="list-style-type: none"> <li>■ <i>environmentDescription</i>(44)</li> </ul>	Producers processing environment info (sw,hw,os,filenames and dataset size)	freetext
<ul style="list-style-type: none"> <li>■ <i>extent</i> (45)/<i>EX_Extent</i>(334)(*)</li> </ul>	Geogr. + temporal BBox of dataset	<b>P?</b>
<ul style="list-style-type: none"> <li>■ ■ <i>description</i>(335)</li> </ul>	<i>Spatial or temp. extent</i>	Free text
<ul style="list-style-type: none"> <li>■ ■ <i>geographicElement</i>(336)(*) / <i>EX_geographicExtent</i> / <i>EX_GeographicBoundigBox</i>(343)</li> </ul>	West/East/South/North degrees of BBox	<b>P?</b> Raw coverage information

<ul style="list-style-type: none"> <li>■ ■ <u>temporalElement(337)(*)</u> /EX_temporalExtent(350)</li> </ul>	time period which dataset covers	<b>P?</b>
<ul style="list-style-type: none"> <li>■ ■ verticalElement(338)(*) /EX_vertialExtent(354)</li> </ul>	vertical coverage	<b>P?</b> Use vertical CRS (Coord. Ref. Systems) to give additional info (e.g. unit, direction) – see c3 xml template
<ul style="list-style-type: none"> <li>■ <i>supplemental Information(46)</i></li> </ul>		<i>Free text entries, e.g. tracking additional info for a dataset in workflows)</i>
<u>contentInfo(16)</u> (*) / MD_CoverageDescription(239)	Info (about feature catalogue +) coverage characteristics	No separate feature catalogue definitions in C3Grid, physical variables are described in MD_CoverageDescription/attributeDescription following CF convention
<ul style="list-style-type: none"> <li>■ <u>attributeDescription</u> (240) /</li> </ul>	Description of attribute described by the measurement value / in C3 often also model data values	<b>P?</b> Use CF (climate and forecast) convention !
<ul style="list-style-type: none"> <li>■ <u>contentType(241)</u> / ..code</li> </ul>	Type of information represented by cell value	Use WMO defined code values
<ul style="list-style-type: none"> <li>■ <u>dimension(242)(*)</u> / MD_RangeDimension(256)</li> </ul>	Descriptor : descr. of the range of a cell measurement value	free text: e.g. gpm for ?? C3grid conventions here in future
<u>distributionInfo(17)</u> / MD_Distribution(270)	info about the distributor / in C3 access info is given here: format and data access endpoints	
<ul style="list-style-type: none"> <li>■ <u>distributionFormat(272)</u> (*) /MD_Format (284)</li> </ul>	name, version tags / transfersize: size of resource, multiple online entries	<b>P?</b> e.g. name: GRIB, version: WMO gridded binary data ..
<ul style="list-style-type: none"> <li>■ <u>transferOptions(273)</u> (*) / MD_DigitalTransferOptions(274)</li> <li>■ ■ <u>online / CI_OnlineResource</u></li> <li>■ ■ ■ <u>linkage</u></li> <li>■ ■ ■ <u>protocol</u></li> <li>■ ■ ■ <u>name</u></li> <li>■ ■ ■ <u>description</u></li> <li>■ ■ ■ <u>function</u></li> </ul>	Provided information about technical means and media by which a resource is obtained from the distributor (unitsOfDistribution,transferSize,online → CI_OnlineResource (396), offline → MD_Medium (291))	<b>P?</b>  C3Grid: one online entry for data staging webservice endpoint (“interface D”), one online entry for gridFTP endpoint for data access See C3 xml template example
<u>dataQualityInfo(18)</u> (*) / DQ_DataQuality(78)	Overall assessment of quality of resource / mandatory for c3grid processed data	Used for tracking C3Grid processing history (source, lineage)
<ul style="list-style-type: none"> <li>■ <u>scope(79) / DQ_Scope(138)</u></li> </ul>	Code list	series, dataset, experiment etc...

<ul style="list-style-type: none"> <li>■ ■ level(139) / ..code(5.25)</li> </ul>	/ C3: series, dataset ...	Use WMO codelist catalog
<ul style="list-style-type: none"> <li>■ ■ extent(140)/ EX_Extent(334)</li> </ul>	see also MD_DataIdentification → extent	not used initially
<ul style="list-style-type: none"> <li>■ lineage(81) / LI_Lineage(82)</li> </ul>	Non quantitative quality information about the lineage of the data specified by the scope / mandatory for c3grid processed data	<p><b>P?</b> track work done in c3 workflows with this data</p> <p>WMO core metadata profile, version 0.3 (Jul.,2006): “Information about the level of processing applied to the dataset. This field should be used to indicate whether the data are observations, analyses (re-analyses), forecast (based on initial states including observations), simulations or other sources of data.</p> <p>Could also be used to include the platform/mission in the source of data (e.g. Ship, aircraft, satellite, satellite id). May need to use pairs of [source, processing step] to provide additional information. May contain references (e.g. URI) to external information on the processing and source”.</p>
<ul style="list-style-type: none"> <li>■ ■ statement(83)</li> </ul>	Freitext: Allg. Erklärung des lineage Wissens des Datenproduzenten	
<ul style="list-style-type: none"> <li>■ ■ processStep(84) (*)</li> <li>   / LI_ProcessStep(86)</li> <li>■ ■ ■ description</li> <li>■ ■ ■ rationale</li> <li>■ ■ ■ dateTime</li> <li>■ ■ ■ processor (*)</li> </ul>	Informations about the events in the life of a dataset specified by the scope	<p><b>P?</b> Describe individual process step in description tag,</p> <p>track sequences in multiple process steps, separate (order) steps by using id tags and dateTime info !</p>
<ul style="list-style-type: none"> <li>■ ■ source(85) / LI_Source(92)(*)</li> <li>■ ■ ■ description</li> <li>■ ■ ■ sourceCitation,sourceExtent,sourceStep</li> </ul>	Information about the source data used on creating the data specified by the scope / Optional more detaile characterization of source	<p><b>P?</b> (optional correlation of processSteps and sources by means of id refs)</p>
<ul style="list-style-type: none"> <li>metadataMaintenance(22)</li> <li>/ MD_Maint.Information(142)</li> </ul>	Provides information about the frequency of metadata updates, and the scope of those updates	
<ul style="list-style-type: none"> <li>series</li> </ul>	information about the series, or aggregate dataset of wich the dataset is a part	
<ul style="list-style-type: none"> <li>■ DS_Series /composedOf</li> <li>   /DS_Dataset/has (*)</li> <li>   ..... MD_Metadata</li> <li> [ contact</li> <li>dateStamp</li> <li>identificationInfo ..]</li> </ul>	Using references to aggregate datasets, hierarchies and other types of connections can be established / Mandatory tags can be empty !!	<p>Detailed description of a correlated datasets</p> <p>Only difference to this metadata description has to be described in individual MD_Metadata entries</p> <p>e.g. for model data: Extent, Contentinfo/attributeDescr, Keywords distributionInfo etc.</p>