Title	**Guidance notes for the production of discovery metadata for the Marine Environmental Data and Information Network (MEDIN)**
MEDIN Discipline	Discovery Metadata
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Keywords	Discovery Metadata

Metadata standards are evolving at an international level and these guidelines are therefore subject to change.

It is recommended that you use a download of this document from the Marine Environmental Data and Information Network (MEDIN) website (www.oceannet.org) rather than storing a local copy. A log of changes will be available on the website.

Change History			
Version	**Author**	**Date of last revision**	**Status**
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Interim Version 2.0	BS	2009-03-19	First interim release
Interim Version 2.1	MC	2009-03-27	Minor edits to test
Interim Version 2.2	BS	2009-03-31	Mapped to 19115
Interim Version 2.3	BS	2009-05-07	Updated WRT INSPIRE and GEMINI 2.3
Public Standard 2.3.1	OM & JR	2009-05-20	SeaZone Review
Public Standard 2.3.2	MC	2009-10-01	Updated to reflect changes in GEMINI2.
Public Standard 2.3.3	MC	2010-01-27 to 2010-03-11	Some small tweeks following discussions within MEDIN and GEMINI2 and extra guidance on spatial resolution and URIs and a refresh of xml examples
Public Standard 2.3.4	MC/JR	17-11-2010	Some minor tweeks following changes to GEMINI2.1 standard. New Element ‘Parent ID’ and explanation of file identifier added. Some cosmetic changes. Details of changes available on request.
Public Standard 2.3.5	MC/JR	11-04-2011	Minor presentational changes to document. Changes to the way controlled vocabularies are encoded (see page 4) and the way end date is encoded if the resource is ongoing. Inclusion of sub element ‘Online resource function code’ and clarification of responsible party roles.

MEDIN Elements

1. Introduction

Metadata standards are essential to enable easy discovery, evaluation and use of resources. In most cases within MEDIN the resource will be a dataset however model outputs and services such as web mapping services and data download services are also included. Different sorts of standards are applied for discovering a data set, service or series (collectively known as resources), evaluating its fitness for purpose and in providing the information required to use it. This standard is one that sets out a specific format to record details of a dataset so that in the future other people can easily discover datasets that may be of use to them. It is therefore termed a 'metadata discovery standard' and this document sets out the format used by the Marine Environmental Data Information Network (MEDIN). All metadata released via the MEDIN portal must comply with a number of international and national metadata standards. The MEDIN metadata schema is based on the ISO 19115 standard, and includes all core INSPIRE metadata elements. It also complies with the UK GEMINI 2.1 metadata standard. The xml produced conforms to the ISO 19139 standard for xml implementation.

This document is designed to assist those creating metadata for MEDIN and provides guidance on how to complete each element. Please refer to the INSPIRE metadata implementing rules, http://inspire.jrc.ec.europa.eu/ rules and UK GEMINI 2.1 specification http://www.gigateway.org.uk/metadata/standards.html for additional information.

In writing this document reference has been made to the technical guidelines for metadata produced by INSPIRE (see guidelines at http://inspire.jrc.ec.europa.eu/reports.cfm)[1].

Metadata standards may change over time. It is recommended that this document is downloaded regularly to ensure the most current version is in use.

2. Data Discoverability

It is important that other users of MEDIN can find out how to access the raw data or products by using the information held in this standard. Therefore, where available, links should be provided to web pages and/or contact details of the person who holds the dataset. If there is a direct web link to the dataset or service then it should be stated in Element 5 ‘Resource Locator’. Further information such as, related documents and links to other portals that may also hold information on the dataset, should be given in Element 19 ‘Additional Information Source’ and the contact details of the person who holds the dataset should be given in Element 22 ‘Responsible Party’.

Often it is difficult to decide if the data that has been collected constitutes one data set or many - this is called ‘granularity’. It is important to get the level or ‘granularity’ correct otherwise it is possible to end up with either too many or too few records which makes it difficult for a user to find what they wan via a portal. MEDIN has some practical guidance to help you decide:

- the correct level for a dataset is a cruise, survey or a set of repeat observations with a common purpose,
- a data set usually constitutes a specifically-funded piece of work,
- the dataset should be easily extractable from a database for a 3rd party,
- if you are searching for a data set using a portal and get the result every time you search by different combinations of time, location and parameter then it is probably too coarse.

[1] INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119, 2009-02-18, Version 1.1, MD_IR_and_ISO_20090218.

3. Using this document

This document outlines the elements that make up the MEDIN discovery metadata standard. It encompasses the INSPIRE standards which specifically covers datasets, series of datasets and services (e.g. web services). In addition MEDIN allows metadata on other data types such as, reports to be created. The elements required for different types of resource are listed below along with guidance about filling in an element.

If you are preparing metadata about a dataset or series the following fields are relevant:

Element 1 - Resource title (M)
Element 2 - Alternative resource title (O)
Element 3 - Resource abstract (M)
Element 4 - Resource type (M)
Element 5 - Resource locator (C)
Element 6 - Unique resource identifier (M)
Element 8 - Resource language (C)
Element 9 - Topic category (C)
Element 11 - Keywords (M)
Element 12 - Geographical bounding box (M)
Element 13 - Extent (O)
Element 14 - Vertical extent information (O)
Element 15 - Spatial reference system (M)
Element 16 - Temporal reference (M)
Element 17 - Lineage (M)
Element 18 - Spatial resolution (C)
Element 19 - Additional information source (O)
Element 20 - Limitations on public access (M)
Element 21 - Conditions applying for access and use (M)
Element 22 - Responsible party (M)
Element 23 - Data format (O)
Element 24 - Frequency of update (M)
Element 25 - Conformity (C)
Element 26 - Metadata date (M)
Element 27 - Metadata standard name (M)
Element 28 - Metadata standard version (M)
Element 29 - Metadata language (M)
Element 30 – Parent ID (O)

If you are preparing metadata about a service the following fields are relevant:

Element 1 - Resource title (M)
Element 2 - Alternative resource title (O)
Element 3 - Resource abstract (M)
Element 4 - Resource type (M)
Element 5 - Resource locator (C)
Element 7 - Coupled resource (C)
Element 10 - Spatial data service type (C)
Element 11 - Keywords (M)
Element 12 - Geographical bounding box (C)
Element 13 - Extent (O)
Element 14 - Vertical extent information (O)

Element 15 - Spatial reference system (C)
Element 16 - Temporal reference (O)
Element 19 - Additional information source (O)
Element 20 - Limitations on public access (M)
Element 21 - Conditions applying for access and use constraints (M)
Element 22 - Responsible party (M)
Element 24 - Frequency of update (C)
Element 25 - Conformity (C)
Element 26 - Metadata Date (M)
Element 27 - Metadata standard name (M)
Element 28 - Metadata standard version (M)
Element 29 - Metadata language (M)
Element 30 – Parent ID (O)

4. Filling in an element

The element descriptions are made up of 8 parts which are outlined below.

a) Element number – **The MEDIN reference number of the element**

b) Element name – **The MEDIN name of the element**

c) and d) Requirement – **One of three codes as specified below**:

Mandatory (M): the element must be filled in under all circumstances.
Conditional (C): the element must be completed if certain conditions are met e.g. Resource language must be completed if the resource contains textual information.
Optional (O): the element may be filled in if desired.

e) Occurrence – **The number of times an element can occur in the schema, which will be either one or many.**

e) Field type – **The data allowed in a field (as specified below).**

Free text - enter text in this field.
Controlled vocabulary - you must select an option from a list of values.
Date or Date/time - specify a date or a date and time in the format yyyy-mm-dd for dates and hh:mm:ss for times
Numeric - enter only numbers into this field.
Uniform Resource Locator URL (e.g. web address) - specify a full web address. e.g. http://www.oceannet .org/ExampleFolder/ExampleSubfolder/Resource.html there should be no spaces in the address. If there are spaces in an address they should be encoded with '%20' e.g. My Folder.resource.html becomes My%20Folder.resource.html

g) Description – A description of the data with links to code list used or websites where vocabularies can be found.

h) Example(s) – An example of the element.

An example element layout:

i) Example xml fragment:

A fragment of an xml output from an ISO compliant schema. The mapping of MEDIN elements to the ISO 19115 elements can be found in section 8.0 of this document.

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          <gmd:title>
            <gco:CharacterString>
              1998-2008 Marine Life Information Network UK
              (MarLIN) Sealife Survey Records
            </gco:CharacterString>
          </gmd:title>
          <!-- ... -->
        </gmd:CI_Citation>
      </gmd:citation>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

The XML comment tags `<!-- ... -->` indicate that other XML elements have been omitted in order to make the XML fragments clear.

Following agreement in MEDIN it was decided in May 2011, that to facilitate the portal and allow deprecation of vocabulary terms, the following vocabularies used should be encoded using the gmx:Anchor tag rather than the gco:CharacterString tag:

Element 11, Keywords: P021 Parameter Discovery Vocab
Element 11, Keywords: L131 Vertical Extent Keywords
Element 11, Keywords: N010 OIA Harvesting
Element 13, Extent: C191 SeaVox Salt and freshwater body gazetter
Element 13, Extent: Charting Progress 2 regions (NERC vocab server to follow)
Element 23, Data Format: M010 MEDIN Data Format Categories
Element 25, Conformity: C480 MEDIN Data Guidelines

5. Elements for identifying a resource

Element 1 - Resource title (M)

Mandatory element. Only one resource example allowed. Free text.

The title is used to provide a brief and precise description of the resource which in most cases will be a dataset. The following format is recommended:

'Date' 'Originating organization/programme' 'Location' 'Type of survey'. It is advised that acronyms and abbreviations are reproduced in full. Example: Centre for Environment, Fisheries and Aquaculture Science (Cefas).

Examples

Example 1: 1992 Centre for Environment, Fisheries and Aquaculture Science (Cefas) North Sea 2m beam trawl survey.

Example 2: 1980-2000 Marine Life Information Network UK (MarLIN) Sealife Survey records.

Example xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          <gmd:title>
            <gco:CharacterString>
1998-2008 Marine Life Information Network UK (MarLIN) Sealife
Survey Records
            </gco:CharacterString>
          </gmd:title>
          <!-- ... -->
        </gmd:CI_Citation>
      </gmd:citation>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 2 - Alternative resource title (O)

Optional element. Multiple alternative resource titles allowed. Free text.

The alternative title is used to add the names by which the resource (e.g. dataset) may be known and may include short name, other name, acronym or alternative language title.

Example

1980-2000 MarLIN Volunteer Sighting records.

Example xml fragment (showing title element and alternate title element):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          <!-- ... -->
          <gmd:alternateTitle>
            <gco:CharacterString>
1998-2008 MarLIN Volunteer Sighting Records
            </gco:CharacterString>
          </gmd:alternateTitle>
          <!-- ... -->
        </gmd:CI_Citation>
      </gmd:citation>
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 3 - Resource abstract (M)

Mandatory element. Only one resource abstract allowed. Free text.

The abstract should provide a clear and brief statement of the content of the resource (e.g. dataset). Include what has been recorded, what form the data takes, what purpose it was collected for, and any limiting information, i.e. limits or caveats on the use and interpretation of the data. Background methodology and quality information should be entered into the Lineage element (element 10). It is recommended that acronyms and abbreviations are reproduced in full. e.g. Centre for Environment, Fisheries and Aquaculture Science (Cefas).

Examples

Example 1: Benthic marine species abundance data from an assessment of the cumulative impacts of aggregate extraction on seabed macro-invertebrate communities. The purpose of this study was to determine whether there was any evidence of a large-scale cumulative impact on benthic macro-invertebrate communities as a result of the multiple sites of aggregate extraction located off Great Yarmouth in the North Sea.

Example 2: As part of the UK Department of Trade and Industry's (DTI's) ongoing sectorial Strategic Environmental Assessment (SEA) programme, a seabed survey programme (SEA2) was undertaken in May/June 2001 for areas in the central and southern North Sea UKCS. This report summarizes the sediment total hydrocarbon and aromatic data generated from the analyses of selected samples from 2 main study areas:

Area 2: the Dogger Bank in the SNS; and

Area 3: the pockmarks in the Fladen Ground vicinity of the central North Sea (CNS).

Example 3: Survey dataset giving port soundings in Great Yarmouth.

Example 4: Conductivity, Temperature, Depth (CTD) grid survey in the Irish Sea undertaken in August 1981. Only temperature profiles due to conductivity sensor malfunction.

Example xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:abstract>
        <gco:CharacterString>
          Sightings of seashore and underwater life collected
          through the MarLIN sealife recording scheme for the
          general public.  All records received are verified
          and validated.
        </gco:CharacterString>
      </gmd:abstract>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 4 - Resource type (M)

Mandatory element. One occurrence allowed. Controlled vocabulary.

Identify the type of resource e.g. a dataset using the controlled vocabulary, MD_ScopeCode from ISO 19115. (See Annex C for code list). The resource type must be a dataset, a series (collection of datasets with a common specification) or a service. In the vast majority of cases for MEDIN the resource type will be a dataset or a series. Further information on the difference between a dataset and a series is available at http://www.oceannet.org/marine_data_standards/other_marine_data_standards/consider_data_set.html

Example

series

Example xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_ScopeCod
e" codeListValue="dataset">dataset</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 5 - Resource locator (C)

Conditional element (must be completed if known). Multiple resource locators are allowed. Free text.

Formerly named online resource. If the resource is available online you must provide a web address (URL) that links to the resource.

Sub Element 5.1 - Resource locator url (C)

Conditional element (must be completed if known). URL (web address).

The URL (web address) including the http://

Sub Element 5.2 - Resource locator name (O)

Optional element. Free text.

The name of the web resource.

Sub Element 5.3 - Resource function (O)

Optional element. contolled vocabulary from ISO CI_OnlineFunctionCode. See Annex L.

Code for the function performed by the online resource.

Example

Resource locator url:

http://www.defra.gov.uk/marine/science/monitoring/merman.htm

Resource locator name: The Marine Environment National Monitoring and Assessment Database

Resource locator function: download

Example xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:distributionInfo>
    <gmd:MD_Distribution>
      <!-- ISO 19115 Constraints require this element!-->
      <gmd:distributionFormat gco:nilReason="inapplicable"/>
      <gmd:transferOptions>
        <gmd:MD_DigitalTransferOptions>
          <gmd:onLine>
            <gmd:CI_OnlineResource>
              <!-- Resource locator URL -->
              <gmd:linkage>

<gmd:URL>http://www.defra.gov.uk/marine/science/monitoring/merman.
htm</gmd:URL>
```

```
              </gmd:linkage>
              <!-- Resource function -->
              <gmd:function>
                <gmd:CI_OnLineFunctionCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_OnLineFu
nctionCode"
codeListValue="information">information</gmd:CI_OnLineFunctionCode
>
              </gmd:function>
            </gmd:CI_OnlineResource>
          </gmd:onLine>
        </gmd:MD_DigitalTransferOptions>
      </gmd:transferOptions>
    </gmd:MD_Distribution>
  </gmd:distributionInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 6 - Unique resource identifier (M)

Mandatory element (for datasets and series of datasets). One occurrence allowed. Free text.

A Unique Resource Identifier allows a dataset to be identified by a code. This code is generally assigned by the data owner and commonly consists of the organisation which manages the dataset and a number or code which is used to uniquely identify it within the databases of the organisation. If this code is unique then it is possible for an organisation to identify a dataset that a 3rd party may be referring to and also to quickly identify where dataset records may be duplicated in a portal.
The two parts to the element can either be provided separately as a code + a codespace or combined as 1 code. MEDIN recommends the use of code + a codespace as shown in example 1. Preferably the www address of the organisation should be given rather than the organisation acronym or name. *The code and the codespace should not include any spaces.* If you are unable to generate a Unique Identifier Code please contact enquiries@oceannet.org and we will generate a code for you or endeavour to provide a tool to generate your own codes.

Sub Element 6.1 - Code (M)

Mandatory sub-element (for datasets and series of datasets). One occurrence allowed. Free text.

A unique identification code for the resource.

Sub Element 6.2 - Code Space (O)

Optional sub-element. One occurrence allowed.

This sub element is the authority that guarantees that the Sub element 6.1. 'code' given is unique within its management system.

Example 1.
Code: 5639287
Codespace: http://www.bodc.ac.uk
Example 2:
Code: http://www.bodc.ac.uk/5639287

Example xml fragment (including code space):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          <!-- ... -->
          <gmd:identifier>
            <gmd:RS_Identifier>
              <gmd:code>
                <gco:CharacterString>
                  MRMLN00400000002
                </gco:CharacterString>
```

```
            </gmd:code>
            <gmd:codeSpace>
              <gco:CharacterString>
                http://www.dassh.ac.uk
              </gco:CharacterString>
            </gmd:codeSpace>
          </gmd:RS_Identifier>
        </gmd:identifier>
        <!-- ... -->
      </gmd:CI_Citation>
    </gmd:citation>
  </gmd:MD_DataIdentification>
 </gmd:identificationInfo>
 <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (excluding code space):

```
<gmd:MD_Metadata>
 <!-- ... -->
 <gmd:identificationInfo>
  <gmd:MD_DataIdentification>
   <gmd:citation>
    <gmd:CI_Citation>
     <!-- ... -->
     <gmd:identifier>
      <gmd:MD_Identifier>
       <gmd:code>
        <gco:CharacterString>
         MRMLN00400000002
        </gco:CharacterString>
       </gmd:code>
      </gmd:MD_Identifier>
     </gmd:identifier>
     <!-- ... -->
    </gmd:CI_Citation>
   </gmd:citation>
  </gmd:MD_DataIdentification>
 </gmd:identificationInfo>
 <!-- ... -->
</gmd:MD_Metadata>
```

Element 7 - Coupled resource (C)

Conditional element. Mandatory if linkages to the datasets on which the service operates on are available. Multiple coupled resource occurrences allowed.

An INSPIRE element referring to data services such as a data download or mapping web services. It identifies the data resource(s) used by the service if these are available separately from the service. You should supply the Unique resource identifiers of the relevant datasets (See element 6).

Example

MRMLN0000345

Example xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      <!-- ... -->
      <srv:operatesOn
xlink:href="http://www.seazone.com#szsl_dsb_100081"/>
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 8 - Resource language (C)

Conditional element. Mandatory when the described resource contains textual information. Multiple resource languages allowed. This element is not required if a service[1] is being described rather than a dataset or series of datasets. Controlled vocabulary, ISO 639-2.

[1] See Element 4 resource type for definition of a 'service'

Describes the language(s) of any textual information contained within the resource.

Select the relevant 3-letter code(s) from the ISO 639-2 code list of languages. Additional languages may be added to this list if required. A full list of UK language codes is listed in Annex D and a list of recognized languages available online http://www.loc.gov/standards/iso639-2.

Examples

Example 1: eng (English)

Example 2: cym (Welsh)

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:language>
        <gmd:LanguageCode
codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php"
codeListValue="eng">English</gmd:LanguageCode>
      </gmd:language>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

6. Elements classifying spatial data and services

Element 9 - Topic category (C)

Conditional element. Mandatory for datasets and series of datasets. Multiple topic categories are allowed. This element is not required if a service[1] is being described. Controlled vocabulary.

This element is mandatory for INSPIRE and must be included. This indicates the main theme(s) of the data resource. It is required for INSPIRE compliance. The relevant topic category should be selected from the ISO MD_TopicCategory list. The full list can be found in Annex E. Within MEDIN the parameter group keywords from the controlled vocabulary P021 available at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp (included in element 11) are mapped to the ISO Topic Categories so it is possible to generate the topic categories automatically once the keywords from BODC Parameter Discovery Vocabulary (P021) have been selected.

[1] See Element 4 resource type for definition of a 'service'

Examples

Example 1: biota

Example 2: oceans

Example xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:topicCategory>
       <gmd:MD_TopicCategoryCode>biota</gmd:MD_TopicCategoryCode>
      </gmd:topicCategory>
      <gmd:topicCategory>
       <gmd:MD_TopicCategoryCode>oceans</gmd:MD_TopicCategoryCode>
      </gmd:topicCategory>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 10- Spatial data service type (C)

Conditional element. Mandatory if the described resource is a service[1]. One occurrence allowed.

An element required by INSPIRE for metadata about data services e.g. web services[1]. If a service is being described (from Element 4) it must be assigned a service type from the INSPIRE Service type code list. See Annex F for list.

[1] See Element 4 resource type for definition of a 'service'

Example

Download

Example xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      <!-- ... -->
      <srv:serviceType>
        <gco:LocalName>view</gco:LocalName>
      </srv:serviceType>
      <!-- ... -->
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 11 - Keywords (M)

Mandatory element. Multiple keywords allowed. Controlled vocabularies.

The entry should consist of two sub-elements: the keywords and reference to the controlled vocabulary used as shown in the sub elements below. To allow searching of the dataset, keywords should be chosen from 3 code lists given below and the OAI harvesting keyword. In addition if a service is being described then a keyword defining the category or subcategory of the service using its language neutral name as defined in Part D 4 of the Metadata Implementing Rules should be given.

INSPIRE keywords

A list of the INSPIRE theme keywords is available in Annex J. This list is also available at http://www.eionet.europa.eu/gemet/inspire_themes At least one INSPIRE theme keywords is required for INSPIRE compliance.

MEDIN Keywords

MEDIN strongly recommends the use of the BODC Parameter Discovery Vocabulary (P021) to provide further ability to search by terms that are more related to the marine domain. This list is available at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp In particular the parameter groups and codes that are used may be searched through a more user friendly interface which has been built as part of the European funded SeaDataNet project at http://seadatanet.maris2.nl/v_bodc_vocab/vocabrelations.aspx

Vertical Extent Keywords

A vocabulary of keywords is available to describe the vertical extent of the resource (e.g. data set). The vocabulary can be downloaded as L131 (Vertical Coordinate Coverages) at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp and can also be seen in Annex J. These lists are also available through a more user friendly interface at http://seadatanet.maris2.nl/v_bodc_vocab/welcome.aspx/http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp

One of the elements ’11: vertical extent keyword’; or ’14: vertical extent information’ must be completed.

OAI harvesting

If xml files are being collected using the MEDIN OAI harvesting process an additional keyword is required to allow the data discovery service to distinguish MEDIN records from other records such as NERC. The required term to use in the xml fragment is NDGO0001 from the N010 vocab at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp.

Other Keywords

Other vocabularies may be used as required as long as they follow the format specified in 11.1 – 11.2.3

Keywords for services

Define the category or subcategory of the service using its language neutral name as defined in Part D 4 of the Metadata Implementing Rules. The Metadata Implementing Rules can be found at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:326:0012:01:EN:HTML and the keyword vocabulary available at http://inspire-

registry.jrc.ec.europa.eu/registers/GLOSSARY/items/184;jsessionid=1C0A17A72079DC671E4AB9A07D7C66AB

Sub Element 11.1 - Keyword value (M)

Mandatory element. Multiple keywords allowed from each vocabulary. Controlled vocabulary.

Name of the formally registered thesaurus or a similar authoritative source of keywords.

Sub Element 11.2 - Originating controlled vocabulary (M)

Mandatory element. Multiple controlled vocabularies allowed. Controlled vocabulary.

The controlled vocabulary from which keywords are derived should be specified in this element.

Sub Element 11.2.1 - Thesaurus name (M)

Free text. Title of vocabulary or thesaurus (mandatory).

Sub Element 11.2.2 - Date type (M)

Controlled vocabulary. Select one of the following three values: Creation, Revision or Publication.

Sub Element 11.2.3 - Date (M)

Date format. Date of creation, revision or publication as defined in 11.1.2 Date type.

Examples

keywordValue: Fish taxonomy-related counts
keywordValue: Temperature of the water column

thesaurusName: BODC Parameter Discovery Vocabulary

dateType: revision

date: 2009-10-13

keywordValue: upper_epipelagic
thesaurusName: SeaDataNet vertical coverage
dateType: Creation
date: 2006-11-15

Example XML fragment (P021):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:descriptiveKeywords>
        <gmd:MD_Keywords>
```

```
          <gmd:keyword>
            <gmx:Anchor
xlink:href="http://vocab.ndg.nerc.ac.uk/term/P021/64/FCNT">Fish
taxonomy-related counts</gmx:Anchor>
          </gmd:keyword>
          <gmd:keyword>
            <gmx:Anchor
xlink:href="http://vocab.ndg.nerc.ac.uk/term/P021/64/TEMP">Tempera
ture of the water column</gmx:Anchor>
          </gmd:keyword>
          <gmd:thesaurusName>
            <gmd:CI_Citation>
              <gmd:title>
                <gco:CharacterString>SeaDataNet Parameter
Discovery Vocabulary</gco:CharacterString>
              </gmd:title>
              <gmd:date>
                <gmd:CI_Date>
                  <gmd:date>
                    <gco:Date>2011-03-25</gco:Date>
                  </gmd:date>
                  <gmd:dateType>
                    <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/ML_gmxCodelists.xml#CI_DateT
ypeCode" codeListValue="revision">revision</gmd:CI_DateTypeCode>
                  </gmd:dateType>
                </gmd:CI_Date>
              </gmd:date>
            </gmd:CI_Citation>
          </gmd:thesaurusName>
        </gmd:MD_Keywords>
      </gmd:descriptiveKeywords>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (INSPIRE theme):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:descriptiveKeywords>
        <gmd:MD_Keywords>
          <gmd:keyword>
            <gco:CharacterString>Hydrography</gco:CharacterString>
          </gmd:keyword>
          <gmd:thesaurusName>
            <gmd:CI_Citation>
              <gmd:title>
```

```
                <gco:CharacterString>
                  GEMET - INSPIRE themes, version 1.0
                </gco:CharacterString>
              </gmd:title>
              <gmd:date>
                <gmd:CI_Date>
                  <gmd:date>
                    <gco:Date>2008-06-01</gco:Date>
                  </gmd:date>
                  <gmd:dateType>
                    <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_DateType
Code" codeListValue="publication">publication</gmd:CI_DateTypeCode>
                  </gmd:dateType>
                </gmd:CI_Date>
              </gmd:date>
            </gmd:CI_Citation>
          </gmd:thesaurusName>
        </gmd:MD_Keywords>
      </gmd:descriptiveKeywords>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (OAI Harvesting):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:descriptiveKeywords>
        <gmd:MD_Keywords>
          <gmd:keyword>
            <gmx:Anchor
xlink:href="http://vocab.ndg.nerc.ac.uk/term/N010/0"
xlink:title="NERC OAI Harvesting">NDGO0001</gmx:Anchor>
          </gmd:keyword>
        </gmd:MD_Keywords>
      </gmd:descriptiveKeywords>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (Vertical Extent Keywords)

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
```

```
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
            <gmd:EX_GeographicDescription>
              <!-- ... -->
              <gmd:geographicIdentifier>
                <gmd:MD_Identifier>
                  <gmd:authority>
                    <gmd:CI_Citation>
                      <gmd:title>
                        <gco:CharacterString>SeaVoX Vertical Co-
ordinate Coverages</gco:CharacterString>
                      </gmd:title>
                      <gmd:date>
                        <gmd:CI_Date>
                          <gmd:date>
                            <gco:Date>2010-05-18</gco:Date>
                          </gmd:date>
                          <gmd:dateType>
                            <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/ML_gmxCodelists.xml#CI_DateT
ypeCode" codeListValue="revision">revision</gmd:CI_DateTypeCode>
                          </gmd:dateType>
                        </gmd:CI_Date>
                      </gmd:date>
                    </gmd:CI_Citation>
                  </gmd:authority>
                  <gmd:code>
                    <gmx:Anchor
xlink:href="http://vocab.ndg.nerc.ac.uk/term/L131/3/U1">upper
epipelagic water column</gmx:Anchor>
                  </gmd:code>
                </gmd:MD_Identifier>
              </gmd:geographicIdentifier>
            </gmd:EX_GeographicDescription>
          </gmd:geographicElement>
          <!-- ... -->
        </gmd:extent>
      <!-- ... -->
      </gmd:EX_Extent>
      <!-- ... -->
    </gmd:identificationInfo>
  </gmd:MD_DataIdentification>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 12 - Geographic bounding box (C)

Mandatory element for datasets and conditional for services. One occurrence of each sub-element allowed. Numeric and controlled vocabulary.

These four sub-elements represent the geographical bounding box of the resource's extent. The co-ordinates of this bounding box should be expressed as decimal degrees longitude and latitude. A minimum of two and a maximum of four decimal places should be provided.

Latitudes between 0 and 90N, and longitudes between 0 and 180E should be expressed as positive numbers, and latitudes between 0 and 90S, and longitudes between 0 and 180W should be expressed as negative numbers. In the event that a single point is being described we recommend using the en-coding shown in the last example.

Sub element 12.1 - West bounding longitude (M)

Mandatory element. One occurrence allowed. Numeric decimal (2 - 4 decimal places).

The western-most limit of the data.

Sub element 12.2 - East bounding longitude (M)

Mandatory element. One occurrence allowed. Numeric decimal (2 - 4 decimal places).

The eastern-most limit of the data.

Sub element 12.3 - North bounding latitude (M)

Mandatory element. One occurrence allowed. Numeric decimal (2 - 4 decimal places).

The northern-most limit of the data.

Sub element 12.4 - South bounding latitude (M)

Mandatory element. One occurrence allowed. Numeric decimal (2 - 4 decimal places).

The southern-most limit of the data.

Example

westBoundingLongitude: -4.351
eastBoundingLongitude: -1.348
northBoundingLatitude: 52.949
southBoundingLatitude: 52.117

Example xml fragment (for datasets and series of datasets):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
```

```
      <!-- ... -->
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
            <gmd:EX_GeographicBoundingBox>
              <gmd:westBoundLongitude>
                <gco:Decimal>-14.00</gco:Decimal>
              </gmd:westBoundLongitude>
              <gmd:eastBoundLongitude>
                <gco:Decimal>3.80</gco:Decimal>
              </gmd:eastBoundLongitude>
              <gmd:southBoundLatitude>
                <gco:Decimal>48.00</gco:Decimal>
              </gmd:southBoundLatitude>
              <gmd:northBoundLatitude>
                <gco:Decimal>61.00</gco:Decimal>
              </gmd:northBoundLatitude>
            </gmd:EX_GeographicBoundingBox>
          </gmd:geographicElement>
        </gmd:EX_Extent>
      </gmd:extent>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (for services):

Note that the extent element is in the http://www.isotc211.org/2005/srv namespace.

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <srv:SV_ServiceIdentification>
      <!-- ... -->
      <srv:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
            <gmd:EX_GeographicBoundingBox>
              <gmd:westBoundLongitude>
                <gco:Decimal>-14.00</gco:Decimal>
              </gmd:westBoundLongitude>
              <gmd:eastBoundLongitude>
                <gco:Decimal>3.80</gco:Decimal>
              </gmd:eastBoundLongitude>
              <gmd:southBoundLatitude>
                <gco:Decimal>48.00</gco:Decimal>
              </gmd:southBoundLatitude>
              <gmd:northBoundLatitude>
                <gco:Decimal>61.00</gco:Decimal>
              </gmd:northBoundLatitude>
            </gmd:EX_GeographicBoundingBox>
          </gmd:geographicElement>
```

```
        </gmd:EX_Extent>
      </srv:extent>
      <!-- ... -->
    </srv:SV_ServiceIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example xml fragment (for datasets and series of datasets) for description of a single point:

```
<gmd:EX_GeographicBoundingBox>
  <gmd:westBoundLongitude>
    <gco:Decimal>2.5</gco:Decimal>
  </gmd:westBoundLongitude>
  <gmd:eastBoundLongitude gco:nilReason="inapplicable"/>
  <gmd:southBoundLatitude>
    <gco:Decimal>52.2</gco:Decimal>
  </gmd:southBoundLatitude>
  <gmd:northBoundLatitude gco:nilReason="inapplicable"/>
</gmd:EX_GeographicBoundingBox>
```

Element 13 - Extent (O)

Optional element. Numeric and controlled vocabulary. Multiple occurrences of extents allowed.

Keywords selected from controlled vocabularies to describe the spatial extent of the resource MEDIN strongly recommends the use of the SeaVox Sea Areas salt and freshwater body gazetter available as vocabulary C191 at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp which is a managed vocabulary and has a worldwide distribution.

Other vocabularies available including ICES areas and rectangles www.ices.dk , or Charting Progress 2 regions may be used as long as they follow the format specified in 13.1 – 13.2.3.

Sub element 13.2 - Extent name (M)

Mandatory element. Multiple extents allowed. Controlled vocabulary.

Name of the formally registered thesaurus or a similar authoritative source of extents. Derived from a controlled vocabulary held on the MEDIN website.

Sub element 13.2 - Originating controlled vocabulary (M)

Mandatory sub-element. Multiple controlled vocabularies allowed. Controlled vocabulary.

A list of extent vocabularies is available from the MEDIN website http://www.oceannet.org/marine_data_standards/other_marine_data_standards/ .

Sub element 13.2.1 - Thesaurus name

Free text. Title of vocabulary or thesaurus (mandatory).

Sub element 13.2.2 - Date type

Controlled vocabulary. Select one of the following three values: Creation, Revision or Publication.

Sub element 13.2.3 - Date

Date format. Date of creation, revision or publication as defined in 13.1.2 Date type.

Example

This example includes multiple extents from different vocabularies.

extentName: Scotland
vocabularyName: ISO3166 Countries
dateType: Creation
date: 2005-04-29

extentName: Ices Area IVb
vocabularyName: ICES Regions
dateType: Revision
date: 2006-01-01

extentName: Northern North Sea
vocabularyName: Charting Progress 2 regions.
dateType: Revision
date: 2008-09-01

extentName: North Sea
thesaurusName: IHO Sea Areas 1952
dateType: creation
date: 1952-01-01

Example xml fragment:

(Can be in either Data_identification or SV_Identification)

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
            <gmd:EX_GeographicDescription>
              <!-- Extent - by Identifier -->
              <gmd:geographicIdentifier>
                <gmd:MD_Identifier>
                  <gmd:authority>
                    <gmd:CI_Citation>
                      <gmd:title>
                        <gco:CharacterString>ICES
Regions</gco:CharacterString>
                      </gmd:title>
                      <gmd:date>
                        <gmd:CI_Date>
                          <gmd:date>
                            <gco:Date>2006-01-01</gco:Date>
                          </gmd:date>
                          <gmd:dateType>
                            <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_DateType
Code" codeListValue="revision">revision</gmd:CI_DateTypeCode>
                          </gmd:dateType>
                        </gmd:CI_Date>
                      </gmd:date>
                    </gmd:CI_Citation>
                  </gmd:authority>
                  <gmd:code>
                    <gco:CharacterString>IVc</gco:CharacterString>
                  </gmd:code>
                </gmd:MD_Identifier>
              </gmd:geographicIdentifier>
```

```
            </gmd:EX_GeographicDescription>
          </gmd:geographicElement>
        </gmd:EX_Extent>
      </gmd:extent>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 14 - Vertical extent information (O)

Optional element. This element should only be filled in if the vertical Coordinate Reference System is known. One occurrence allowed. Numeric free text and controlled vocabulary.

This element should only be filled in if the Coordinate Reference System (CRS) is registered in the 'European Petroleum Survey Group (EPSG) database. http://info.ogp.org.uk/geodesy/ If you do not have the defined CRS you should complete the vertical extent vocabulary defined in Element 11 – Keywords, to describe the vertical extent of the resource.. One of the elements '11: vertical extent keyword'; or '14: vertical extent information' must be completed.

The vertical extent element has three sub-elements; the minimum vertical extent value, the maximum vertical extent value, and the coordinate reference system. Depth below sea water surface should be a negative number. Depth taken in the intertidal zone above the sea level should be positive. If the dataset covers from the intertidal to the subtidal zone then the sub element 14.1 should be used to record the highest intertidal point and 14.2 the deepest subtidal depth. Although the element itself is optional if it is filled in then its sub-elements are either mandatory or conditional.

Sub element 14.1 - Minimum Value (M)

Record as positive or negative decimal number. The shallowest depth recorded if subtidal, or if intertidal the lowest point recorded.

Sub element 14.2 - Maximum Value (M)

Record as positive or negative decimal number. The deepest depth recorded if subtidal, or if intertidal, the highest point recorded.

Sub element 14.3 - Vertical coordinate reference system (M)

This sub-element defines the vertical coordinate reference system of the minimum and maximum vertical extent values. The vertical coordinate reference system should be included by reference to the EPSG register of geodetic parameters (http://www.epsg.org/Geodetic.html). In brief, to find a code click on the OGP Online Registry and if you know the title (eg WGS84) then type this in the 'Name' field and click search. The name, code and further information is displayed. If you are looking for a specific type of reference system such as 'vertical' then click in the 'Type' box, hover over coordinate reference system and click on vertical and then click the search button and all recorded vertical reference systems are shown. If you want to search for a reference system in a particular part of the world (e.g. Northern Ireland Grid) the you may do so by submitting a term to the 'Area' box or fill out the lat and longs then click search. The website also provides a database of the reference systems and web services to access the information. If the vertical coordinate reference system is not known or explicitly defined in the EPSG register then this element should not be completed.

Example

minimumValue: 42
maximumValue: 94
verticalCoordinateReferenceSystem: urn:ogc:def:crs:EPSG::5701

Example XML fragment (defining vertical CRS by reference):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:verticalElement>
            <gmd:EX_VerticalExtent>
              <gmd:minimumValue>
                <gco:Real>42</gco:Real>
              </gmd:minimumValue>
              <gmd:maximumValue>
                <gco:Real>94</gco:Real>
              </gmd:maximumValue>
              <gmd:verticalCRS
                 xlink:href="urn:ogc:def:crs:EPSG::5701"/>
            </gmd:EX_VerticalExtent>
          </gmd:verticalElement>
        </gmd:EX_Extent>
      </gmd:extent>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 15 - Spatial reference system (M)

Mandatory for datasets and series, conditional where relevant to services. One occurrence allowed. Controlled vocabulary.

Describes the system of spatial referencing (typically a coordinate reference system) used in the resource. This should be derived from the EPSG register of geodetic parameters (http://www.epsg.org/Geodetic.html). . To find a code click on the OGP Online Registry and if you know the title (eg WGS84) then type this in the 'Name' field and click search. The name, code and further information is displayed. If you are looking for a specific type of reference system such as 'vertical' then click in the 'Type' box, hover over coordinate reference system and click on vertical and then click the search button and all recorded vertical reference systems are shown. If you want to search for a reference system in a particular part of the world (e.g. Northern Ireland Grid) the you may do so by submitting a term to the 'Area' box or fill out the lat and longs then click search. The website also provides a database of the reference systems and web services to access the information.

Examples

Example 1: WGS84 – urn:ogc:def:crs:EPSG::4326

Example 2: National Grid of Great Britain – urn:ogc:def:crs:EPSG::27700

Example of ISO compliant xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:referenceSystemInfo>
    <gmd:MD_ReferenceSystem>
      <gmd:referenceSystemIdentifier>
        <gmd:RS_Identifier>
          <gmd:code>
            <gco:CharacterString>
              urn:ogc:def:crs:EPSG::27700
            </gco:CharacterString>
          </gmd:code>
          <gmd:codeSpace>
            <gco:CharacterString>OGP</gco:CharacterString>
          </gmd:codeSpace>
        </gmd:RS_Identifier>
      </gmd:referenceSystemIdentifier>
    </gmd:MD_ReferenceSystem>
  </gmd:referenceSystemInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 16 - Temporal reference (M)

Mandatory element for data sets and series; optional for services. One occurrence allowed of each sub element. Date/Time format.

It is recommended that all known temporal references of the resource are included. The temporal extent of the resource (e.g. the time period over which data were collected).and the date of publication (i.e. the date at which it was made publicly available) are mandatory, the date of last revision and creation date are conditional (i.e. must be completed if known) Only one occurance for each sub-element is allowed.

Sub element 16.1 - Temporal extent (M)

Conditional – Mandatory for datasets and series; conditional for services where temporal extent is relevant to the service. One occurrence allowed for each of begin and end. Date or Date/Time format.

This describes the start and end date of the resource (e.g. dataset). The start date is mandatory and the end date should be provided if known (conditional). It is recommended that a full date including year, month and day is added, but it is accepted that for some historical resources only vague dates (year only, year and month only) are available.

Sub sub element 16.1.1 Begin (M)

Start of temporal extent.

Sub sub element 16.1.2 End (C)

End of temporal extent. If the resource that you are describing is ongoing then use the encoding as described in the relevant example below.

date or date and time: yyyy-mm-dd or yyyy-mm-ddThh:mm:ss

Sub element 16.2 - Date of publication (M)

Mandatory. One occurrence allowed. Date/Time format.

This describes the publication date of the resource and should be included. If the resource is previously unpublished please use the date that the resource was made publicly available via the MEDIN network. It is recommended that a full date including year, month and day is added, but it is accepted that for some historical resources only vague dates (year only, year and month only) are available.

Sub sub element 16.2.1 Date type

Indicates temporal extent described (one of the sub elements 16.1-16.4) temporalExtent, creation, publication or revision.

Sub sub element 16.2.2 Date

Date format.

date or date and time: yyyy-mm-dd or yyyy-mm-ddThh:mm:ss

Sub element 16.3 - Date of last revision (C)

Conditional. Complete if known. One occurrence allowed. Date/Time format.

This describes the most recent date that the resource was revised. It is recommended that a full date including year, month and day is added.

Sub sub element 16.3.1 Date type

Indicates temporal extent described (one of the sub elements 16.1-16.4) temporalExtent, creation, publication or revision.

Sub sub element 16.3.2 Date

Date format.

date or date and time: yyyy-mm-dd or yyyy-mm-ddThh:mm:ss

Sub element 16.4 - Date of creation (C)

Conditional. Complete if known. One occurrence allowed. Date/Time format.

This describes the most recent date that the resource was created. It is recommended that a full date including year, month and day is added.

Sub sub element 16.4.1 Date type

Indicates temporal extent described (one of the sub elements 16.1-16.4) temporalExtent, creation, publication or revision.

Sub sub element 16.4.2 Date

Date format.

date or date and time: yyyy-mm-dd or yyyy-mm-ddThh:mm:ss

Examples

Example 1:
dateType: creation
date: 2008-05-12T12:34:09 (date and time provided)

Example 2:

dateType: revision
date:2008-05-12 (full date provided)

Example 3:
dateType: publication
date:1952-06-00 (month and year provided, but no day)

Example 4:
dateType: creation
date: 1899-00-00 (only year provided).

Example 5:
dateType: temporalExtent
date: begin: 1980-01-01 end: 1990-03-01

Example XML fragment (temporal extent):

```
<gmd:MD_Metadata>
```

```
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:temporalElement>
            <gmd:EX_TemporalExtent>
              <gmd:extent>
                <gml:TimePeriod gml:id="medinMEDIN01">
                  <gml:beginPosition>1998-01-
01</gml:beginPosition>
                  <gml:endPosition>2008-12-12</gml:endPosition>
                </gml:TimePeriod>
              </gmd:extent>
            </gmd:EX_TemporalExtent>
          </gmd:temporalElement>
        </gmd:EX_Extent>
      </gmd:extent>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (publication):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <gmd:citation>
        <gmd:CI_Citation>
          <!-- ... -->
          <gmd:date>
            <gmd:CI_Date>
              <gmd:date>
                <gco:Date>
                  2009-01-07
                </gco:Date>
              </gmd:date>
              <gmd:dateType>
                <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_DateType
Code"
codeListValue="publication">publication</gmd:CI_DateTypeCode>
              </gmd:dateType>
            </gmd:CI_Date>
          </gmd:date>
          <!-- ... -->
        </gmd:CI_Citation>
      </gmd:citation>
    </gmd:MD_DataIdentification>
```

```
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

7. Elements describing data quality

Element 17 - Lineage (C)

Mandatory element for datasets or series of datasets. One occurrence allowed. This Element is not required if a service[1] is being described. Free text.

Lineage includes the background information, history of the sources of data used and can include data quality statements. The lineage element can include information about: source material; data collection methods used; data processing methods used; quality control processes. Please indicate any data collection standards used. Additional information source to record relevant references to the data e.g. reports, articles, website. Apart from describing the process history, the overall quality of the dataset or series should be included in the Lineage metadata element. This statement should contain any quality information required for interoperability and/or valuable for use and evaluation of the data set or series.

[1] See Element 4 Resource type for definition of a 'service'

Examples

Example 1: This dataset was collected by the Fisheries Research Services and provided to the British Oceanographic Data Centre for long term archive and management.

Example 2: (no protocols or standards used)- Forty 0.1m^2 Hamon grab samples were collected from across the region, both within and beyond the extraction area, and analyzed for macrofauna and sediment particle size distribution in order to produce a regional description of the status of the seabed environment. Samples were sieved over a 1mm mesh sieve. In addition, the data were analyzed in relation to the area of seabed impacted by dredging over the period 1993-1998. Areas subject to 'direct' impacts were determined through reference to annual electronic records of dredging activity and this information was then used to model the likely extent of areas potentially subject to 'indirect' ecological and geophysical impact.

Example 3: (collected using protocols and standards) - Data was collected using the NMMP data collection, processing and Quality Assurance SOPs and complies with MEDIN data standards.

Example 4: Survey data from MNCR lagoon surveys were used to create a GIS layer of the extent of saline lagoons in the UK that was ground-truthed using 2006-2008 aerial coastal photography obtained from the Environment Agency and site visits to selected locations.

Example xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:dataQualityInfo>
    <gmd:DQ_DataQuality>
      <!-- Scope - Required by ISO 19115 constraint -->
      <gmd:scope>
        <gmd:DQ_Scope>
          <gmd:level>
            <gmd:MD_ScopeCode
```

```
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_ScopeCod
e" codeListValue="dataset">dataset</gmd:MD_ScopeCode>
          </gmd:level>
        </gmd:DQ_Scope>
      </gmd:scope>
      <!-- Lineage -->
      <gmd:lineage>
        <gmd:LI_Lineage>
          <gmd:statement>
            <gco:CharacterString>
              Data derived from records submitted online, by
              telephone, email and paper for the toe MarLIN.
              All co-ordinates plotted locations checked and
              species verified against habitat and known
              distribution. Photographic evidence or expert
              determination required where records was of
              rare species or a species outside its usual
              range.
            </gco:CharacterString>
          </gmd:statement>
        </gmd:LI_Lineage>
      </gmd:lineage>
    </gmd:DQ_DataQuality>
  </gmd:dataQualityInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 18 - Spatial resolution (C)

Conditional for datasets and series where a resolution distance can be specified. Multiple occurrences allowed. Numeric (positive whole number) and free text.

Provides an indication of the spatial resolution of the data. The element has largely been derived for the mapping community and is currently poorly defined however MEDIN recommends that you provide the average distance (i.e. resolution) between sampling locations in metres. For example, if a dataset was composed of a grid of stations which have an average distance between stations of 2 km then 2000 metres should be recorded. In the case of a multibeam survey it should be the average distance between each sounding or 'ping' on the sea bed. For transect data such as an intertidal beach survey or a single beam echo sounder survey the resolution should be taken as the distance between the transect lines.

For single samples and observational data MEDIN recommends using 'not applicable' which may be en-coded as shown in the last example below.

MEDIN is in discussions with GEMINI and ISO to allow the use of scale for this element (e.g. pressure) and also to allow the use of 'unknown'. GEMINI accepts that in many cases only approximate values can be given.

Examples

Example 1:
distance:10
units: metres

Example XML fragment (Distance):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:spatialResolution>
        <gmd:MD_Resolution>
          <gmd:distance>
            <gco:Distance
uom="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_
19139_Schemas/resources/uom/gmxUom.xml#m">500</gco:Distance>
          </gmd:distance>
        </gmd:MD_Resolution>
      </gmd:spatialResolution>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (equivalent scale)

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
```

```
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:spatialResolution>
        <gmd:MD_Resolution>
          <gmd:equivalentScale>
            <gmd:MD_RepresentativeFraction>
              <gmd:denominator>
                <gco:Integer>25000</gco:Integer>
              </gmd:denominator>
            </gmd:MD_RepresentativeFraction>
          </gmd:equivalentScale>
        </gmd:MD_Resolution>
      </gmd:spatialResolution>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (Distance) ‘Not Applicable’:

```
<gmd:spatialResolution>
  <gmd:MD_Resolution>
    <gmd:distance gco:nilReason="inapplicable"/>
  </gmd:MD_Resolution>
</gmd:spatialResolution>
```

Element 19 - Additional information source (O)

Optional element. Single occurrence allowed. Free text.

Any references to external information that are considered useful, e.g. project website, report, journal article may be recorded. It should not be used to record additional information about the resource.

Examples

Malthus, T.J., Harries, D.B., Karpouzli, E., Moore, C.G., Lyndon, A.R., Mair, J.M., Foster-Smith, B.,Sotheran, I. and Foster-Smith, D. (2006). Biotope mapping of the Sound of Harris, Scotland. Scottish Natural Heritage Commissioned Report No. 212 (ROAME No. F01AC401/2).

http://www.cefas.co.uk/publications/files/datarep42.pdf

Example XML fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:supplementalInformation>
        <gco:CharacterString>
          www.marlin.ac.uk/rml
        </gco:CharacterString>
      </gmd:supplementalInformation>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

8. Elements relating to data usage

Element 20 - Limitations on public access (M)

Mandatory element. Multiple occurrences allowed. Controlled vocabulary and free text.

This element describes any restrictions imposed on the resource for security and other reasons using the controlled ISO vocabulary RestrictionCode (See Annex G). If restricted or otherRestrictions is chosen please provide information on any limitations to access of resource and the reasons for them. If there are no limitations on public access, this must be indicated.

Examples

Example 1:
accessConstraints:
otherRestrictions: No restrictions to public access

Example 2:
accessConstraints:
otherRestrictions: Restricted public access due to sensitive species, only available at 10km resolution.

Example of ISO compliant xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:resourceConstraints>
        <gmd:MD_LegalConstraints>
          <gmd:accessConstraints>
            <gmd:MD_RestrictionCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_Restrict
ionCode"
codeListValue="otherRestrictions">
              otherRestrictions
            </gmd:MD_RestrictionCode>
          </gmd:accessConstraints>
          <gmd:otherConstraints>
            <gco:CharacterString>
              No limitations
            </gco:CharacterString>
          </gmd:otherConstraints>
        </gmd:MD_LegalConstraints>
      </gmd:resourceConstraints>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 21 - Conditions applying for access and use (M)

Mandatory element. Multiple occurrences allowed. Free text.

This element describes any restrictions and legal restraints on using the data. Any known constraints such as fees should be identified. If no conditions apply, then “no conditions apply” should be recorded.

Examples

Example 1 - Data is freely available for research or commercial use providing that the originators are acknowledged in any publications produced.

Example 2 - Data is freely available for use in teaching and conservation but permission must be sought for use if the data will be reproduced in full or part or if used in any analyses.

Example 3 - Not suitable for use in navigation.

Example XML fragment (using MD_Constraints):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:resourceConstraints>
        <gmd:MD_Constraints>
          <gmd:useLimitation>
            <gco:CharacterString>
              Not suitable for navigation
            </gco:CharacterString>
          </gmd:useLimitation>
        </gmd:MD_Constraints>
      </gmd:resourceConstraints>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (using MD_LegalConstraints):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:resourceConstraints>
        <gmd:MD_LegalConstraints>
          <gmd:useLimitation>
            <gco:CharacterString>
              Not suitable for navigation
            </gco:CharacterString>
          </gmd:useLimitation>
```

```
          <!-- ... -->
        </gmd:MD_LegalConstraints>
      </gmd:resourceConstraints>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 22 - Responsible party (M)

Mandatory element. Multiple occurrences are allowed for some responsible party roles. Must include minimum of person/organization name and email address. Free text and controlled vocabulary.

Provides a description of an organization or person who has a role for the dataset or resource. MEDIN mandates that the roles of ‘Originator’ and ‘Custodian’ (data holder) and the role of ‘Distributor’ should be entered if different to the Custodian. The ‘Metadata point of contact’ is also mandatory. Other types of responsible party may be specified from the controlled vocabulary (see Annex H for codelist) if desired.

If the data has been lodged with a MEDIN apprroved Data Archive Centre then the DAC should be specified as the Custodian.

Sub element 22.1 - Originator (M)

Mandatory element. Multiple occurrences of originators allowed. Must include minimum of person/organization name and email address.

Person(s) or organization(s) who created the resource. This sub element should give details for the person or organisation who collected or produced the data. For example, if MEConsulting have been contracted to do an EIA of a wind farm site by ‘Greeny Energy Ltd’ then MEConsulting are the Originator. It should not be used to record who ‘owns’ the data..

Sub element 22.2 - Custodian (M)

Mandatory element. Multiple occurrences of custodians allowed. Must include minimum of person/organization name and email address.

Person(s) or organization(s) that accept responsibility for the data and ensures appropriate care and maintenance. If the data set has been lodged with a Data Archive Centre for maintainence then this should be entered. If the organisation who owns the data or service continue to accept responsibility for it then they should also be stated here.

Sub element 22.3 - Distributor (C)

Conditional element. Multiple occurrences of originators allowed. Must include minimum of person/organization name and email address.

Person(s) or organization(s) that distributes the resource.

Sub element 22.4 - Metadata point of contact (M)

Mandatory element. One occurence allowed. Must include minimum of person/organization name and email address.

Person or organization with responsibility for the creation and maintenance of the metadata for the resource.

The sub sub-elements for describing each responsible party entry are as follows;

Sub sub element 22.0.1 - Job Position (O but recommended)

Sub sub element 22.0.2 - Organization name (M)

Where an organisation is given this must be taken from the European Directory of Marine Organisations (http://seadatanet.maris2.nl/edmo/). In the event that an organisation name is not in that directory then please contact enquiries@oceannet.org who will add it. Where possible an organization should be cited and only when this is impossible should Individual Name be used.

Sub sub element 22.0.3 - Postal address (O but recommended)

Sub sub element 22.0.4 - Telephone number (O but recommended)

Where possible a generic rather than individual telephone number should be used e.g. the organizational switchboard

Sub sub element 22.0.5 - Facsimile number (O)

Sub sub element 22.0.6 - Email address (M)

Where possible a generic rather than a individual email should be used.

Sub sub element 22.0.7 - Responsible party role (M)

See Annex H for full codelist.

Examples

Data point of contact:

JobPosition: DASSH Data officer
OrganizationName DASSH
PostalAddress: The Laboratory, Citadel Hill, Plymouth PL4 8SR
TelephoneNumber: 01752 633291
EmailAddress: dassh.enquiries@mba.ac.uk
ResponsiblePartyRole: distributor

JobPosition: Marine officer
OrganizationName Joint Nature Conservation Committee (JNCC)
PostalAddress:City Road, Peterborough, PE1 1JY,
TelephoneNumber: 01733 562626
FacsimileNumber: 01733 555948
EmailAddress: marine.teamexample@jnncc.gov.uk
ResponsiblePartyRole: pointOfContact

Originator:

IndividualName: Dr A. Smith,
OrganizationName: University of Swansea
ResponsiblePartyRole: Originator

Metadata point of contact:

IndividualName: Miss Hannah Freeman
EmailAddress: haee@bodc.ac.uk
TelephoneNumber: 01517954898
ResponsiblePartyRole: pointOfContact

Example XML fragment (Metadata Point of Contact):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:contact>
    <gmd:CI_ResponsibleParty>
     <gmd:individualName>
      <gco:CharacterString>Hannah Freeman</gco:CharacterString>
    </gmd:individualName>
      <gmd:contactInfo>
        <gmd:CI_Contact>
          <gmd:phone>
            <gmd:CI_Telephone>
              <gmd:voice>
                <gco:CharacterString>
                  01517954898
                </gco:CharacterString>
              </gmd:voice>
            </gmd:CI_Telephone>
          </gmd:phone>
           <gmd:address>
            <gmd:CI_Address>
             <gmd:electronicMailAddress>
         <gco:CharacterString>haee@bodc.ac.uk</gco:CharacterString>
        </gmd:electronicMailAddress>
       </gmd:CI_Address>
      </gmd:address>
    </gmd:CI_Contact>
   </gmd:contactInfo>
     <gmd:role>
       <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_RoleCode
" codeListValue="pointOfContact">pointOfContact</gmd:CI_RoleCode>
      </gmd:role>
    </gmd:CI_ResponsibleParty>
  </gmd:contact>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (Originator):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:pointOfContact>
        <gmd:CI_ResponsibleParty>
          <gmd:organisationName>
            <gco:CharacterString>DASSH</gco:CharacterString>
          </gmd:organisationName>
          <gmd:positionName>
            <gco:CharacterString>
```

```
            DASSH Data Officer
          </gco:CharacterString>
        </gmd:positionName>
        <gmd:contactInfo>
          <gmd:CI_Contact>
            <gmd:phone>
              <gmd:CI_Telephone>
                <gmd:voice>
                  <gco:CharacterString>
                    01752 633291
                  </gco:CharacterString>
                </gmd:voice>
              </gmd:CI_Telephone>
            </gmd:phone>
            <gmd:address>
              <gmd:CI_Address>
                <gmd:deliveryPoint>
                  <gco:CharacterString>
                    The Laboratory
                  </gco:CharacterString>
                </gmd:deliveryPoint>
                <gmd:deliveryPoint>
                  <gco:CharacterString>
                    Citadel Hill
                  </gco:CharacterString>
                </gmd:deliveryPoint>
                <gmd:city>
                  <gco:CharacterString>
                    Plymouth
                  </gco:CharacterString>
                </gmd:city>
                <gmd:postalCode>
                  <gco:CharacterString>
                    PL4 8SR
                  </gco:CharacterString>
                </gmd:postalCode>
                <gmd:country>
                  <gco:CharacterString>UK</gco:CharacterString>
                </gmd:country>
                <gmd:electronicMailAddress>
                  <gco:CharacterString>
                    dassh.enquiries@mba.ac.uk
                  </gco:CharacterString>
                </gmd:electronicMailAddress>
              </gmd:CI_Address>
            </gmd:address>
          </gmd:CI_Contact>
        </gmd:contactInfo>
        <gmd:role>
          <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_RoleCode
" codeListValue="originator">originator</gmd:CI_RoleCode>
```

```
          </gmd:role>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (Distributor – note encoded in distributionInfo):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <distributionInfo>
  <MD_Distribution>
   <distributionFormat gco:nilReason="inapplicable"
xmlns:gco="http://www.isotc211.org/2005/gco" />
   <distributor>
    <MD_Distributor>
     <distributorContact>
      <CI_ResponsibleParty>
       <organisationName>
        <gco:CharacterString>
SeaZone Solutions Ltd
        </gco:CharacterString>
       </organisationName>
       <contactInfo>
        <CI_Contact>
         <phone>
          <CI_Telephone>
           <voice>
            <gco:CharacterString>+44 (0) 870 013
0607</gco:CharacterString>
           </voice>
           <facsimile>
            <gco:CharacterString>+44 (0) 870 013
0608</gco:CharacterString>
           </facsimile>
          </CI_Telephone>
         </phone>
         <address>
          <CI_Address>
           <deliveryPoint>
            <gco:CharacterString>Red Lion
House</gco:CharacterString>
           </deliveryPoint>
           <city>
            <gco:CharacterString>Bentley</gco:CharacterString>
           </city>
           <administrativeArea>
            <gco:CharacterString>Hampshire</gco:CharacterString>
           </administrativeArea>
           <postalCode>
            <gco:CharacterString>GU10 5HY</gco:CharacterString>
```

```
            </postalCode>
            <country>
             <gco:CharacterString>
               United Kingdom
             </gco:CharacterString>
            </country>
            <electronicMailAddress>
             <gco:CharacterString>
               info@seazone.com
             </gco:CharacterString>
            </electronicMailAddress>
           </CI_Address>
          </address>
         </CI_Contact>
        </contactInfo>
        <role>
         <CI_RoleCode
codeList="./resources/codeList.xml#CI_RoleCode"
codeListValue="pointOfContact">distributor</CI_RoleCode>
        </role>
       </CI_ResponsibleParty>
      </distributorContact>
     </MD_Distributor>
    </distributor>
   </MD_Distribution>
  </distributionInfo>
   <!-- ... -->
</gmd:MD_Metadata>
```

Element 23 - Data format (O)

Optional element. Multiple data formats are allowed. Controlled vocabulary.

Indicate the formats in which digital data can be provided for transfer. A controlled vocabulary has been defined for use by MEDIN which is M010 'MEDIN data format categories' available at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp or which can be seen in Annex K. The term from this controlled vocab should be used for the sub element 'name of format' and 'unknown' used for the sub element version

Sub Element 23.1 - Name of format (O)

Optional element. Single occurence. Controlled vocabulary.

Give title of term from controlled vocabulary.

Sub Element 23.2 - Version (O)

Optional element. Single occurence. Free Text

MEDIN recommends using 'unknown'

Example 1

Database

Unknown

Example XML fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:resourceFormat>
        <gmd:MD_Format>
          <gmd:name>
            <gmx:Anchor xlink:type="simple"
xlink:href="http://vocab.ndg.nerc.ac.uk/term/M010/1/DB">Database</
gmx:Anchor>
          </gmd:name>
          <gmd:version gco:nilReason="unknown"/>
        </gmd:MD_Format>
      </gmd:resourceFormat>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 24 - Frequency of update (C)

Mandatory for datasets and series of datasets, Conditional for services where frequency of update is relevant to the service. One occurrence allowed. Controlled vocabulary.

This describes the frequency that the resource (data set) is modified or updated and should be included if known. For example if the data set is from a monitoring programme which samples once per year then the frequency is annually. Select one option from ISO frequency of update codelist (MD_FrequencyOfUpdate codelist). The full code list is presented in Annex I.

Examples

Example 1: monthly
Example 2: annually

Example XML fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification>
      <!-- ... -->
      <gmd:resourceMaintenance>
        <gmd:MD_MaintenanceInformation>
          <gmd:maintenanceAndUpdateFrequency>
            <gmd:MD_MaintenanceFrequencyCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_Maintena
nceFrequencyCode" codeListValue="asNeeded">
              asNeeded
            </gmd:MD_MaintenanceFrequencyCode>
          </gmd:maintenanceAndUpdateFrequency>
        </gmd:MD_MaintenanceInformation>
      </gmd:resourceMaintenance>
      <!-- ... -->
    </gmd:MD_DataIdentification>
  </gmd:identificationInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

9. Elements relating to Conformity (C)

Element 25 - Conformity

This element relates specifies if the data set being described is conformant with other specifications such as the INSPIRE data specifications or MEDIN data guidelines. There are 3 sub-elements which give the title of the specification, the degree of conformity (if it is or not conformant) and an explanation which gives further details of how conformant it is or any other useful information for the user.

Conditional element. Multiple occurences allowed. Required if the resource provider is claiming conformance to INSPIRE.

Sub element 25.1 - Specification (C)

Conditional element. Single occurrence. Required if the resource provider is claiming conformance to INSPIRE.

Give the citation of the specification or user requirement against which data resource is evaluated.

Sub sub element 25.1.1 - Title (M)

Free text. Title of specification

Sub sub element 25.1.2 - Date type (M)

Controlled vocabulary. Type of date (MEDIN recommend use of ‘publication’ date rather than revision or creation).

Sub sub element 25.1.3 - Date (M)

Date format. Date.

Sub element 25.2 - Degree of conformity (C)

Conditional element. Single occurence. Required if the resource provider is claiming conformance to INSPIRE.

This element relates to the INSPIRE Directive 1 and indicates whether a resource conforms to a product specification or other INSPIRE thematic specification. The values are as follows:

True
False

Sub element 25.3 - Explanation (C)

Conditional element. Single occurence. Required if the resource provider is claiming conformance to INSPIRE. Free Text.

Meaning of conformance for this degree of conformance result

Example 1.

D2.8.I.5 INSPIRE Data Specification on *Addresses* – Guidelines, publication, 2010-04-26
True
Only mandatory items included

Example 2.

MEDIN Data Guideline for sediment sampling by grab or core for benthos, publication, 2009-07-29
True
All mandatory and conditional items were completed

Example XML fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:dataQualityInfo>
    <gmd:DQ_DataQuality>
      <!-- Scope - Required by ISO 19115 constraint -->
      <gmd:scope>
        <gmd:DQ_Scope>
          <gmd:level>
            <gmd:MD_ScopeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_ScopeCod
e" codeListValue="dataset">dataset</gmd:MD_ScopeCode>
          </gmd:level>
        </gmd:DQ_Scope>
      </gmd:scope>
      <gmd:report>
        <gmd:DQ_DomainConsistency>
          <gmd:result>
            <gmd:DQ_ConformanceResult >
              <gmd:specification>
                <gmd:CI_Citation>
                  <gmd:title>
                    <gco:CharacterString>
                      INSPIRE Implementing rules laying down
                      technical arrangements for the
                      interoperability and harmonisation of
                      orthoimagery
                    </gco:CharacterString>
                  </gmd:title>
                  <gmd:date>
                    <gmd:CI_Date>
                      <gmd:date>
                        <gco:Date>2011-05-15</gco:Date>
                      </gmd:date>
                      <gmd:dateType>
                        <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_DateType
Code"
codeListValue="publication">publication</gmd:CI_DateTypeCode>
                      </gmd:dateType>
```

```
                    </gmd:CI_Date>
                  </gmd:date>
                </gmd:CI_Citation>
              </gmd:specification>
              <gmd:explanation>
                <gco:CharacterString>See the referenced
specification</gco:CharacterString>
              </gmd:explanation>
              <gmd:pass>
                <gco:Boolean>true</gco:Boolean>
              </gmd:pass>
            </gmd:DQ_ConformanceResult>
          </gmd:result>
        </gmd:DQ_DomainConsistency>
      </gmd:report>
      <!-- ... -->
    </gmd:DQ_DataQuality>
  </gmd:dataQualityInfo>
  <!-- ... -->
</gmd:MD_Metadata>
```

10. Elements relating to metadata

File Identifier

The file identifier is a code that is encoded in XML that is globally unique and remains with the same metadata record even if the record is edited or transferred between portals or tools. It is not therefore an actual element but part of the xml record. The file identifier can be used to identify and remove duplication of records in a portal if it is harvesting records from a wide range of sources. As such it is not an element of the metadata but is used to uniquely identify the metadata xml record (as opposed to the element Unique Resource Identifier which refers to the dataset, series or service itself).

The file identifier should be created either by the organisation generating metadata or by the tools from which the metadata record is generated. Applications that are used subsequently to edit the metadata shall not change the file identifier. MEDIN recommends the use of a 'Globally Unique Identifier' or GUID as the file identifier. It is a system generated 128-bit integer number used to identify resources (e.g. 79557726-b60a-4cf3-a8fd-9799c603d4dc). GUIDs can be generated from a variety of sources including internal PC systems and online resources such as http://www.guidgenerator.com/online-guid-generator.aspx

Element 26 - Metadata date (M)

Mandatory element. One occurence allowed. Date format.

This describes the last date the metadata was updated on. If the metadata has not been updated it should give the date on which it was created. This should be provided as a date in the format:

yyyy-mm-dd

Example

2008-05-12

Example XML fragment (Date):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:dateStamp>
    <gco:Date>2009-03-01</gco:Date>
  </gmd:dateStamp>
  <!-- ... -->
</gmd:MD_Metadata>
```

Example XML fragment (DateTime):

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:dateStamp>
    <gco:DateTime>2009-01-01T09:09:09</gco:DateTime>
  </gmd:dateStamp>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 27 - Metadata standard name (M)

Mandatory element. One occurence allowed. Free text.

Identify the metadata standard used to create the metadata. It is recommended that the term below is used to to comply with this MEDIN standard.

Example

MEDIN Discovery Metadata Standard

Example XML fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:metadataStandardName>
    <gco:CharacterString>MEDIN Discovery Metadata
Standard</gco:CharacterString>
  </gmd:metadataStandardName>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 28 - Metadata standard version (M)

Mandatory element. One occurence allowed.

Identify the version of the metadata standard used to create the metadata. It is recommended that the term below is used to to comply with this MEDIN standard.

Example

2.3.2

Example of ISO compliant xml fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:metadataStandardVersion>
    <gco:CharacterString>Version 2.3</gco:CharacterString>
  </gmd:metadataStandardVersion>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 29 - Metadata language (M)

Mandatory element. One occurrence allowed. Controlled vocabulary.

Describes the language(s) elements of the metadata.

Select the relevant 3-letter code(s) from the ISO 639-2 code list of languages. Additional languages may be added to this list if required. A full list of UK language codes is listed in Annex D and a list of recognized languages is available online http://www.loc.gov/standards/iso639-2.

Examples

Example 1: (English)

eng

Example 2: (Welsh)

cym

Example XML fragment:

```
<gmd:MD_Metadata>
  <!-- ... -->
  <gmd:language>
    <gmd:LanguageCode
codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php"
codeListValue="eng">English</gmd:LanguageCode>
  </gmd:language>
  <!-- ... -->
</gmd:MD_Metadata>
```

Element 30 – Parent ID (O)

Optional element. One occurence allowed. Free text.

This field holds the file identifier code of the series metadata record for which the dataset which is being described is part of. Therefore, this element allows links to be made between a dataset and a series (see http://www.oceannet.org/marine_data_standards/other_marine_data_standards/consider_data_set.html for MEDINs definition of these terms). This will then allow the MEDIN portal to be able to find related metadata records. For example, a large multidisciplinary project may be described as a 'series' and each of the themes of work will be described as 'datasets'. Using this field allows the user when viewing the series metadata to ask for the metadata records of all the datasets of each theme. Alternatively, a user may ask for all related records when veiwing a dataset.

Example

79557726-b60a-4cf3-a8fd-9799c603d4dc

Example XML fragment:

```
<gmd:MD_Metadata>
 ...
 <gmd:parentIdentifier>
  <gco:CharacterString>79557726-b60a-4cf3-a8fd-
9799c603d4dc</gco:CharacterString>
 </gmd:parentIdentifier>
 ...
</gmd:MD_Metadata>
```

Annex A Mapping of MEDIN profile to the ISO 19115 and 19119 standard

The following table maps the MEDIN profile elements to the relevant section of the ISO 19115 UML diagrams.

Name	Path to 19115	Datasets and series	Services etc
Resource title	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.title	M	M
Alternative resource title	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.alternateTitle	O	O
Resource abstract	MD_Metadata.identificationInfo > MD_DataIdentification.abstract	M	M
Resource Type	MD_Metadata.hierarchyLevel	M	M
Resource locator	MD_Metadata.distributionInfo > MD_DigitalTransferOptions.onLine> CI_OnlineResource.linkage	C	C
Unique Resource Identifier	MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.identifier	M	O
Coupled resource	MD_Metadata.identificationInfo > MD_DataIdentification.OperatesOn	-	M
Resource language	MD_Metadata.identificationInfo > DataIdentification.language		
Topic category	MD_Metadata.identificationInfo > MD_DataIdentification.topicCategory	M	-
Spatial data service type	MD_Metadata.identificationInfo > SV_ServiceIdentification.ServiceType	-	M
Keywords	MD_Metadata.identificationInfo > MD_DataIdentification.descriptiveKeywords > MD_keywords.keywords & MD_keywords_thesaurusName > CI_Citation.title CI_Citation.date CI_Citation.datetype	M	M
Geographic bounding box	MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent > EX_GeographicBoundingBox	M	
Extent	MD_Metadata.identificationInfo > MD_DataIdentification.extent >	M	

	EX_Extent >		
Vertical extent	MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.verticalElement > EX_VerticalExtent	C	
Temporal Reference	MD_Metadata.identificationInfo > MD_DataIdentification.extent > EX_Extent.temporalElement > EX_TemporalExtent.extent & MD_Metadata.identificationInfo > MD_DataIdentification.citation > CI_Citation.date > CI_Date.date	C	C
Lineage	MD_Metadata.dataQualityInfo > DQ_DataQuality.lineage > LI_Lineage	M	-
Spatial resolution	MD_Metadata.identificationInfo > MD_DataIdentification.spatialResolution > MD_Resolution.distance	C	C
Additional information source	MD_Metadata.identificationInfo > MD_DataIdentification.supplementalInformation > CI_Citation	O	O
INSPIRE conformity	MD_Metadata.dataQualityInfo > DQ_DataQuality.report >	C	C
Limitations on public access	MD_Metadata.identificationInfo > MD_DataIdentification.ResourceConstraints > MD_LegalConstraints.AccessConstraints > MD_RestrictionCode	M	
Conditions applying to access and use	MD_Metadata.identificationInfo > MD_DataIdentification.ResourceConstraints > MD_Constraints.useLimitation	M	
Responsible party	CI_ResponsibleParty	M must provide minimum of Originator(s) and pointOfContact(s)	
Data format	MD_Metadata.identificationInfo > resourceFormat MD_format.name	O	O

Frequency of update	MD_Metadata.identificationInfo > MD_MaintainenceInformation.maintenanceAndUpdateFrequency > MD_MaintenanceFrequencyCode	M	M
Metadata point of contact	MD_Metadata.pointOfContact	M	M
Metadata date stamp	MD_Metadata.dateStamp	M	M
Metadata language	MD_Metadata.language	M	M
Metadata standard name	MD_Metadata.MetadataStandardName	M	M
Metadata standard version	MD_Metadata. MetadataStandardVersion	M	M
Parent ID	MD_Metadata.parentIdentifier	O	O

Annex B Example xml file

```
<?xml version="1.0" encoding="utf-8"?>
<gmd:MD_Metadata xmlns:gmd="http://www.isotc211.org/2005/gmd"
                 xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"
                 xmlns:gco="http://www.isotc211.org/2005/gco"
                 xmlns:gmx="http://www.isotc211.org/2005/gmx"
                 xmlns:gml="http://www.opengis.net/gml/3.2"
                 xmlns:xlink="http://www.w3.org/1999/xlink"

xsi:schemaLocation="http://www.isotc211.org/2005/gmx
../XSD_Schemas/ISO_19139_Schemas/gmx/gmx.xsd">
  <gmd:fileIdentifier>
    <gco:CharacterString>ff940020-1aa0-4abb-b9fc-
c05c98eee863</gco:CharacterString>
  </gmd:fileIdentifier>
  <!-- Metadata Language -->
  <gmd:language>
    <gmd:LanguageCode
codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php"

codeListValue="eng">English</gmd:LanguageCode>
  </gmd:language>
  <!-- Resource Type -->
  <gmd:hierarchyLevel>
    <gmd:MD_ScopeCode

codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_ScopeCod
e"
      codeListValue="dataset">dataset</gmd:MD_ScopeCode>
  </gmd:hierarchyLevel>
  <!-- Metadata Point of Contact -->
  <gmd:contact>
    <gmd:CI_ResponsibleParty>
      <gmd:organisationName>
        <gco:CharacterString>SeaZone Solutions
Limited</gco:CharacterString>
      </gmd:organisationName>
      <gmd:contactInfo>
        <gmd:CI_Contact>
          <gmd:phone>
            <gmd:CI_Telephone>
              <gmd:voice>
                <gco:CharacterString>0870 013
0607</gco:CharacterString>
              </gmd:voice>
            </gmd:CI_Telephone>
          </gmd:phone>
          <gmd:address>
            <gmd:CI_Address>
              <gmd:electronicMailAddress>
```

```
<gco:CharacterString>info@seazone.com</gco:CharacterString>
              </gmd:electronicMailAddress>
            </gmd:CI_Address>
          </gmd:address>
        </gmd:CI_Contact>
      </gmd:contactInfo>
      <gmd:role>
        <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_RoleCode
"

codeListValue="pointOfContact">pointOfContact</gmd:CI_RoleCode>
      </gmd:role>
    </gmd:CI_ResponsibleParty>
  </gmd:contact>
  <!-- Date of Update of Metadata -->
  <gmd:dateStamp>
    <gco:Date>2009-05-20</gco:Date>
  </gmd:dateStamp>
  <!-- Metadata Standard Name -->
  <gmd:metadataStandardName>
    <gco:CharacterString>MEDIN Discovery Metadata
Standard</gco:CharacterString>
  </gmd:metadataStandardName>
  <!-- Metadata Standard Version -->
  <gmd:metadataStandardVersion>
    <gco:CharacterString>Version 2.3</gco:CharacterString>
  </gmd:metadataStandardVersion>
  <!-- Spatial Reference System - Recommend using EPSG URN -->
  <gmd:referenceSystemInfo>
    <gmd:MD_ReferenceSystem>
      <gmd:referenceSystemIdentifier>
        <gmd:RS_Identifier>
          <gmd:code>

<gco:CharacterString>urn:ogc:def:crs:EPSG::4326</gco:CharacterStri
ng>
          </gmd:code>
          <gmd:codeSpace>
            <gco:CharacterString>OGP</gco:CharacterString>
          </gmd:codeSpace>
        </gmd:RS_Identifier>
      </gmd:referenceSystemIdentifier>
    </gmd:MD_ReferenceSystem>
  </gmd:referenceSystemInfo>
  <gmd:identificationInfo>
    <gmd:MD_DataIdentification id="szsl_dsb_100081">
      <gmd:citation>
        <gmd:CI_Citation>
          <!-- Resource Title -->
          <gmd:title>
```

```
            <gco:CharacterString>Knock Deep Area TE 11
HI995</gco:CharacterString>
          </gmd:title>
          <!-- Alternative Resource Title -->
          <gmd:alternateTitle>
            <gco:CharacterString>SeaZone Digital Survey
Bathymetry</gco:CharacterString>
          </gmd:alternateTitle>
          <!-- Temporal Reference Date - Publication -->
          <gmd:date>
            <gmd:CI_Date>
              <gmd:date>
                <gco:Date> 2005-11-16 </gco:Date>
              </gmd:date>
              <gmd:dateType>
                <gmd:CI_DateTypeCode

codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_DateType
Code"

codeListValue="publication">publication</gmd:CI_DateTypeCode>
              </gmd:dateType>
            </gmd:CI_Date>
          </gmd:date>
          <!-- Unique Resource Identifier -->
          <gmd:identifier>
            <gmd:RS_Identifier>
              <gmd:code>

<gco:CharacterString>SZ100081</gco:CharacterString>
              </gmd:code>
              <gmd:codeSpace>

<gco:CharacterString>http://www.seazone.com/dsb</gco:CharacterStri
ng>
              </gmd:codeSpace>
            </gmd:RS_Identifier>
          </gmd:identifier>
        </gmd:CI_Citation>
      </gmd:citation>
      <!-- Resource Abstract -->
      <gmd:abstract>
        <gco:CharacterString>
          SeaZone Digital Survey Bathymetry (DSB). Survey
bathymetry data processed to form a
          dataset providing elevation at discrete points. The
elevation and shape of the seabed.
        </gco:CharacterString>
      </gmd:abstract>
      <!-- Data Point of Contact - Point of Contact -->
      <gmd:pointOfContact>
        <gmd:CI_ResponsibleParty>
```

```
          <gmd:organisationName>
            <gco:CharacterString>SeaZone Solutions
Limited</gco:CharacterString>
          </gmd:organisationName>
          <gmd:contactInfo>
            <gmd:CI_Contact>
              <gmd:phone>
                <gmd:CI_Telephone>
                  <gmd:voice>
                    <gco:CharacterString>0870 013
0607</gco:CharacterString>
                  </gmd:voice>
                </gmd:CI_Telephone>
              </gmd:phone>
              <gmd:address>
                <gmd:CI_Address>
                  <gmd:deliveryPoint>
                    <gco:CharacterString>Red Lion
House</gco:CharacterString>
                  </gmd:deliveryPoint>
                  <gmd:city>

<gco:CharacterString>Bentley</gco:CharacterString>
                  </gmd:city>
                  <gmd:postalCode>
                    <gco:CharacterString>GU10
5HY</gco:CharacterString>
                  </gmd:postalCode>
                  <gmd:country>
                    <gco:CharacterString>UK</gco:CharacterString>
                  </gmd:country>
                  <gmd:electronicMailAddress>

<gco:CharacterString>info@seazone.com</gco:CharacterString>
                  </gmd:electronicMailAddress>
                </gmd:CI_Address>
              </gmd:address>
            </gmd:CI_Contact>
          </gmd:contactInfo>
          <gmd:role>
            <gmd:CI_RoleCode

codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_RoleCode
"

codeListValue="pointOfContact">pointOfContact</gmd:CI_RoleCode>
          </gmd:role>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
      <!-- Data Point of Contact - Originator -->
      <gmd:pointOfContact>
        <gmd:CI_ResponsibleParty>
```

```
          <gmd:organisationName>
            <gco:CharacterString>United Kingdom Hydrographic
Office</gco:CharacterString>
          </gmd:organisationName>
          <gmd:contactInfo>
            <gmd:CI_Contact>
              <gmd:phone>
                <gmd:CI_Telephone>
                  <gmd:voice>
                    <gco:CharacterString>+44 (0) 1823
337900</gco:CharacterString>
                  </gmd:voice>
                  <gmd:facsimile>
                    <gco:CharacterString>+44 (0) 1823
284077</gco:CharacterString>
                  </gmd:facsimile>
                </gmd:CI_Telephone>
              </gmd:phone>
              <gmd:address>
                <gmd:CI_Address>
                  <gmd:deliveryPoint>
                    <gco:CharacterString>Admiralty
Way</gco:CharacterString>
                  </gmd:deliveryPoint>
                  <gmd:city>

<gco:CharacterString>Taunton</gco:CharacterString>
                  </gmd:city>
                  <gmd:postalCode>
                    <gco:CharacterString>TA1
2DN</gco:CharacterString>
                  </gmd:postalCode>
                  <gmd:country>
                    <gco:CharacterString>UK</gco:CharacterString>
                  </gmd:country>
                  <gmd:electronicMailAddress>

<gco:CharacterString>info@ukho.ac.uk</gco:CharacterString>
                  </gmd:electronicMailAddress>
                </gmd:CI_Address>
              </gmd:address>
            </gmd:CI_Contact>
          </gmd:contactInfo>
          <gmd:role>
            <gmd:CI_RoleCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_RoleCode
"

codeListValue="originator">originator</gmd:CI_RoleCode>
          </gmd:role>
        </gmd:CI_ResponsibleParty>
      </gmd:pointOfContact>
```

```
      <!-- Frequency of Update -->
      <gmd:resourceMaintenance>
        <gmd:MD_MaintenanceInformation>
          <gmd:maintenanceAndUpdateFrequency>
            <gmd:MD_MaintenanceFrequencyCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_Maintena
nceFrequencyCode"

codeListValue="notPlanned">notPlanned</gmd:MD_MaintenanceFrequency
Code>
          </gmd:maintenanceAndUpdateFrequency>
        </gmd:MD_MaintenanceInformation>
      </gmd:resourceMaintenance>
      <!-- Data Format -->
      <gmd:resourceFormat>
        <gmd:MD_Format>
          <gmd:name>
            <<gmx:Anchor xlink:type="simple"
xlink:href="http://vocab.ndg.nerc.ac.uk/term/M010/1/DB">Database</
gmx:Anchor>
          </gmd:name>
          <gmd:version gco:nilReason="inapplicable"/>
        </gmd:MD_Format>
      </gmd:resourceFormat>
      <!-- Keyword - Proposal for NERC OAI Harvesting -->
      <gmd:descriptiveKeywords>
        <gmd:MD_Keywords>
          <gmd:keyword>
            <gmx:Anchor
xlink:href="http://vocab.ndg.nerc.ac.uk/term/N010/0"
xlink:title="NERC OAI Harvesting">NDGO0001</gmx:Anchor>
          </gmd:keyword>
        </gmd:MD_Keywords>
      </gmd:descriptiveKeywords>
      <!-- Keyword - for datasets claiming to be INSPIRE themes --
>
      <gmd:descriptiveKeywords>
        <gmd:MD_Keywords>
          <gmd:keyword>
            <gco:CharacterString>Bathymetry and
Elevation</gco:CharacterString>
          </gmd:keyword>
          <gmd:thesaurusName>
            <gmd:CI_Citation>
              <gmd:title>
                <gco:CharacterString>SeaDataNet P021 parameter
discovery vocabulary</gco:CharacterString>
              </gmd:title>
              <gmd:date>
                <gmd:CI_Date>
                  <gmd:date>
                    <gco:Date>2009-05-20</gco:Date>
```

```
                  </gmd:date>
                  <gmd:dateType>
                    <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_DateType
Code"

codeListValue="revision">revision</gmd:CI_DateTypeCode>
                  </gmd:dateType>
                </gmd:CI_Date>
              </gmd:date>
            </gmd:CI_Citation>
          </gmd:thesaurusName>
        </gmd:MD_Keywords>
      </gmd:descriptiveKeywords>
      <!-- Conditions Applying to Access and Use -->
      <gmd:resourceConstraints>
        <gmd:MD_Constraints>
          <gmd:useLimitation>
            <gco:CharacterString>Not suitable for
navigation</gco:CharacterString>
          </gmd:useLimitation>
        </gmd:MD_Constraints>
      </gmd:resourceConstraints>
      <!-- Limitations on Public Access -->
      <gmd:resourceConstraints>
        <gmd:MD_LegalConstraints>
          <gmd:accessConstraints>
            <gmd:MD_RestrictionCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_Restrict
ionCode"

codeListValue="license">license</gmd:MD_RestrictionCode>
          </gmd:accessConstraints>
          <gmd:accessConstraints>
            <gmd:MD_RestrictionCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_Restrict
ionCode"

codeListValue="restricted">restricted</gmd:MD_RestrictionCode>
          </gmd:accessConstraints>
        </gmd:MD_LegalConstraints>
      </gmd:resourceConstraints>
      <!-- Spatial Resolution using distance -->
      <gmd:spatialResolution>
        <gmd:MD_Resolution>
          <gmd:distance>
            <gco:Distance
uom="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_
19139_Schemas/resources/uom/gmxUom.xml#m">5</gco:Distance>
          </gmd:distance>
```

```
        </gmd:MD_Resolution>
      </gmd:spatialResolution>
      <!-- Resource Language -->
      <gmd:language>
        <gmd:LanguageCode
codeList="http://www.loc.gov/standards/iso639-2/php/code_list.php"

codeListValue="eng">English</gmd:LanguageCode>
      </gmd:language>
      <!-- Topic Category -->
      <gmd:topicCategory>

<gmd:MD_TopicCategoryCode>elevation</gmd:MD_TopicCategoryCode>
      </gmd:topicCategory>
      <gmd:topicCategory>

<gmd:MD_TopicCategoryCode>oceans</gmd:MD_TopicCategoryCode>
      </gmd:topicCategory>
      <gmd:topicCategory>

<gmd:MD_TopicCategoryCode>imageryBaseMapsEarthCover</gmd:MD_TopicC
ategoryCode>
      </gmd:topicCategory>
      <!-- Extent -->
      <gmd:extent>
        <gmd:EX_Extent>
          <gmd:geographicElement>
            <gmd:EX_GeographicDescription>
              <!-- Extent - by Identifier -->
              <gmd:geographicIdentifier>
                <gmd:MD_Identifier>
                  <gmd:authority>
                    <gmd:CI_Citation>
                      <gmd:title>
                        <gco:CharacterString>SeaDataNet vertical
extent keywords</gco:CharacterString>
                      </gmd:title>
                      <gmd:date>
                        <gmd:CI_Date>
                          <gmd:date>
                            <gco:Date>2010-01-01</gco:Date>
                          </gmd:date>
                          <gmd:dateType>
                            <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_DateType
Code" codeListValue="revision">revision</gmd:CI_DateTypeCode>
                          </gmd:dateType>
                        </gmd:CI_Date>
                      </gmd:date>
                    </gmd:CI_Citation>
                  </gmd:authority>
```

```
                  ../../HAEE/Desktop/xml/sxchematron
testing/schematron test.xml           <gmd:code>

<gco:CharacterString>troposphere</gco:CharacterString>
                  </gmd:code>
                </gmd:MD_Identifier>
              </gmd:geographicIdentifier>
            </gmd:EX_GeographicDescription>
          </gmd:geographicElement>
          <gmd:geographicElement>
            ../../HAEE/Desktop/xml/sxchematron testing/schematron
test.xml      <gmd:EX_GeographicDescription>
              <!-- Extent - by Identifier -->
              <gmd:geographicIdentifier>
                <gmd:MD_Identifier>
                  <gmd:authority>
                    <gmd:CI_Citation>
                      <gmd:title>
                        <gco:CharacterString>ICES
Regions</gco:CharacterString>
                      </gmd:title>
                      <gmd:date>
                        <gmd:CI_Date>
                          <gmd:date>
                            <gco:Date>2006-01-01</gco:Date>
                          </gmd:date>
                          <gmd:dateType>
                            <gmd:CI_DateTypeCode
codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#CI_DateType
Code"

codeListValue="revision">revision</gmd:CI_DateTypeCode>
                          </gmd:dateType>
                        </gmd:CI_Date>
                      </gmd:date>
                    </gmd:CI_Citation>
                  </gmd:authority>
                  <gmd:code>
                    <gco:CharacterString>IVc</gco:CharacterString>
                  </gmd:code>
                </gmd:MD_Identifier>
              </gmd:geographicIdentifier>
            </gmd:EX_GeographicDescription>
          </gmd:geographicElement>
          <!-- Geographic Bounding Box -->
          <gmd:geographicElement>
            <gmd:EX_GeographicBoundingBox>
              <gmd:westBoundLongitude>
                <gco:Decimal>1.42</gco:Decimal>
              </gmd:westBoundLongitude>
              <gmd:eastBoundLongitude>
                <gco:Decimal>1.69</gco:Decimal>
```

```
              </gmd:eastBoundLongitude>
              <gmd:southBoundLatitude>
                <gco:Decimal>51.57</gco:Decimal>
              </gmd:southBoundLatitude>
              <gmd:northBoundLatitude>
                <gco:Decimal>51.80</gco:Decimal>
              </gmd:northBoundLatitude>
            </gmd:EX_GeographicBoundingBox>
          </gmd:geographicElement>
          <!-- Temporal Extent -->
          <gmd:temporalElement>
            <gmd:EX_TemporalExtent>
              <gmd:extent>
                <gml:TimePeriod gml:id="medinMEDIN01">
                  <gml:beginPosition>2002-05-
02</gml:beginPosition>
                  <gml:endPosition>2002-05-09</gml:endPosition>
                </gml:TimePeriod>
              </gmd:extent>
            </gmd:EX_TemporalExtent>
          </gmd:temporalElement>
          <!-- Vertical Extent - Hard coded Vertical CRS
Information -->
          <gmd:verticalElement>
            <gmd:EX_VerticalExtent>
              <gmd:minimumValue>
                <gco:Real>-30.7</gco:Real>
              </gmd:minimumValue>
              <gmd:maximumValue>
                <gco:Real>1.0</gco:Real>
              </gmd:maximumValue>
              <gmd:verticalCRS>
                <gml:VerticalCRS gml:id="metadata-crs-001">
                  <gml:identifier codeSpace="MEDIN">metadata-crs-
001</gml:identifier>
                  <gml:name>Chart Datum Height</gml:name>
                  <gml:scope>Defines the vertical CRS of the
minimum and maximum extent values.</gml:scope>
                  <gml:verticalCS>
                    <gml:VerticalCS gml:id="metadata-cs-001">
                      <gml:identifier codeSpace="MEDIN">metadata-
cs-001</gml:identifier>
                      <gml:name>Vertical coordinate system
orientated up</gml:name>
                      <gml:axis>
                        <gml:CoordinateSystemAxis
gml:id="metadata-axis-001"

uom="http://standards.iso.org/ittf/PubliclyAvailableStandards/ISO_
19139_Schemas/resources/uom/gmxUom.xml#m">
                          <gml:identifier
codeSpace="MEDIN">metadata-axis-001</gml:identifier>
                          <gml:axisAbbrev>Z</gml:axisAbbrev>
```

```
                        <gml:axisDirection
codeSpace="MEDIN">up</gml:axisDirection>
                      </gml:CoordinateSystemAxis>
                    </gml:axis>
                  </gml:VerticalCS>
                </gml:verticalCS>
                <gml:verticalDatum>
                  <gml:VerticalDatum gml:id="metadata-datum-
001">
                    <gml:identifier codeSpace="MEDIN">metadata-
datum-001</gml:identifier>
                    <gml:name>Chart Datum</gml:name>
                    <gml:scope>Hydrographic survey and
charting</gml:scope>
                    <gml:anchorDefinition>Approximation of
Lowest Astronomical Tide at the local tide
station</gml:anchorDefinition>
                  </gml:VerticalDatum>
                </gml:verticalDatum>
              </gml:VerticalCRS>
            </gmd:verticalCRS>
          </gmd:EX_VerticalExtent>
        </gmd:verticalElement>
      </gmd:EX_Extent>
    </gmd:extent>
    <!-- Additional Information Source-->
    <gmd:supplementalInformation>
      <gco:CharacterString>Freeman and Freeman (2008) Scientific
Article on Something Amazing, Journal of Biodiversity and
Conservation</gco:CharacterString>
    </gmd:supplementalInformation>
  </gmd:MD_DataIdentification>
</gmd:identificationInfo>
<!--Resource Locator -->
<gmd:distributionInfo>
  <gmd:MD_Distribution>
    <!--The ISO 19115 Constraints require this element!-->
    <gmd:distributionFormat gco:nilReason="inapplicable" />
    <gmd:transferOptions>
      <gmd:MD_DigitalTransferOptions>
        <gmd:onLine>
          <gmd:CI_OnlineResource>
            <gmd:linkage>
              <gmd:URL>http://www.oceannet.org</gmd:URL>
            </gmd:linkage>
          </gmd:CI_OnlineResource>
        </gmd:onLine>
      </gmd:MD_DigitalTransferOptions>
    </gmd:transferOptions>
  </gmd:MD_Distribution>
</gmd:distributionInfo>
<!-- Lineage -->
<gmd:dataQualityInfo>
```

```
    <gmd:DQ_DataQuality>
      <!-- Scope - Required by ISO 19115 -->
      <gmd:scope>
        <gmd:DQ_Scope>
          <gmd:level>
            <gmd:MD_ScopeCode

codeList="http://standards.iso.org/ittf/PubliclyAvailableStandards
/ISO_19139_Schemas/resources/Codelist/gmxCodelists.xml#MD_ScopeCod
e"
              codeListValue="dataset">dataset</gmd:MD_ScopeCode>
          </gmd:level>
        </gmd:DQ_Scope>
      </gmd:scope>
      <!-- Lineage -->
      <gmd:lineage>
        <gmd:LI_Lineage>
          <gmd:statement>
            <gco:CharacterString>
              Survey platform NP 1016. Horizontal datum of source
              data: World Geodetic System 1984. Vertical datum of
source data: Lowest
              Astronomical Tide. Survey type: SINGLE BEAM.
            </gco:CharacterString>
          </gmd:statement>
        </gmd:LI_Lineage>
      </gmd:lineage>
    </gmd:DQ_DataQuality>
  </gmd:dataQualityInfo>
</gmd:MD_Metadata>
```

Annex C. ISO Scope code codelist. For the latest list it is recommended to be accessed directly form the ISO website. Please note that the terms dataset, series and service are only allowed for the UK Location Programme and INSPIRE.

Code	Name	Description
005	dataset	Information applies to a single dataset.
006	series	Information applies to a group of datasets linked by a common specification.
014	service	Information applies to a facility to view, download data e.g. web service

Annex D ISO Language codelist

Derived from the ISO 639-2 Codes for Languages. Below are the codes relevant to the UK. Please refer to the on-line resource at http://www.loc.gov/standards/iso639-2/php/English_list.php for the latest version

eng	English
cym	Welsh/Cymru (note do not use the code 'wel')
gle	Irish (Gaelic)
gla	Scottish (Gaelic)
cor	Cornish

Annex E. ISO Topic category codelist

Derived from the ISO 19115/TC 211 Geographic Information/Geomatics Metadata Standard with relevant INSPIRE data themes. Please refer to http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008R1205:EN:NOT for the most recent list.

Code	Name	Definition	INSPIRE Theme
001	Farming	Rearing of animals or cultivation of plants. For example, resources describing irrigation, aquaculture, herding, and pests and diseases affecting crops and livestock.	This category applies to Directive 2007/2/EC spatial data theme Annex III(9) Agricultural and aquaculture facilities.
002	Biota	Naturally occurring flora and fauna. For example, resources describing wildlife, biological sciences, ecology, wilderness, sea life, wetlands, and habitats.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(17) Bio-geographical regions, Annex III(18) Habitats and biotopes, Annex III(19) Species distribution.
003	Boundaries	Legal land descriptions.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex I(4) Administrative units, Annex III(1) Statistical units.
004	Climatology/Meteorology/Atmosphere	Atmospheric processes and phenomena. For example, resources describing cloud cover, weather, atmospheric conditions, climate change, and precipitation.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(13) Atmospheric conditions, Annex III(14) Meteorological geographical features.

Code	Name	Definition	INSPIRE Theme
005	Economy	Economic activities or employment. For example, resources describing labour, revenue, commerce, industry, tourism and ecotourism, forestry, fisheries, commercial or subsistence hunting, and exploration and exploitation of resources such as minerals, oil, and gas.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(20) Energy resources, Annex III(21) Mineral resources.
006	Elevation	Height above or below sea level. For example, resources describing altitude, bathymetry, digital elevation models, slope, and products derived from this information.	This category applies to the following Directive 2007/2/EC spatial data theme: Annex II(1) Elevation.
007	Environment	Environmental resources, protection, and conservation. For example, resources describing pollution, waste storage and treatment, environmental impact assessment, environmental risk, and nature reserves.	This category applies to the following Directive 2007/2/EC spatial data theme: Annex I(9) Protected sites.
008	Geoscientific Information	Earth sciences. For example, resources describing geophysical features and processes, minerals, the composition, structure and origin of the earth's rocks, earthquakes, volcanic activity, landslides, gravity information, soils, permafrost, hydrogeology, and erosion.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(3) Soil , Annex II(4) Geology, Annex III(12) Natural risk zones.
009	Health	Health services, human ecology, and safety. For example, resources describing human disease and illness, factors affecting health, hygiene, mental and physical health,	This category applies to the following Directive 2007/2/EC spatial data theme: Annex III(5)

Code	Name	Definition	INSPIRE Theme
		substance abuse, and health services.	Human health and safety.
010	Imagery/Base Maps/Earth Cover	Base maps. For example, resources describing land cover, topographic maps, and classified and unclassified images.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex II(3) Orthoimagery, Annex II(2) Land cover.
011	Intelligence/Military	Military bases, structures, and activities. For example, resources describing barracks, training grounds, military transportation, and information collection.	This category does not apply specifically to any Directive 2007/2/EC spatial data themes.
012	Inland Waters	Inland water features, drainage systems, and their characteristics. For example, resources describing rivers and glaciers, salt lakes, water use plans, dams, currents, floods, water quality, and hydrographic charts.	This category applies to the following Directive 2007/2/EC spatial data theme: Annex I(8) Hydrography.
013	Location	Positional information and services. For example, resources describing addresses, geodetic networks, postal zones and services, control points, and place names.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex I(3) Geographical names, Annex I(5) Addresses.
014	Oceans	Features and characteristics of salt water bodies excluding inland waters. For example, resources describing tides, tidal waves, coastal information, and	This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(16)

Code	Name	Definition	INSPIRE Theme
		reefs.	Sea regions, Annex III(15) Oceanographic geographical features.
015	Planning Cadastre	Land use. For example, resources describing zoning maps, cadastral surveys, and land ownership.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex I(6) Cadastral parcels, Annex III(4) Land use, Annex III(11) Area management/restriction/regulation zones & reporting units.
016	Society	Characteristics of societies and cultures. For example, resources describing natural settlements, anthropology, archaeology, education, traditional beliefs, manners and customs, demographic data, crime and justice, recreational areas and activities, social impact assessments, and census information.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(10) Population distribution – demography.
017	Structure	Man-made construction. For example, resources describing buildings, museums, churches, factories, housing, monuments, and towers.	This category applies to the following Directive 2007/2/EC spatial data themes: Annex III(2) Buildings, Annex III(8) Production and industrial facilities, Annex III(7) Environmental monitoring facilities.

Code	Name	Definition	INSPIRE Theme
018	Transportation	Means and aids for conveying people and goods. For example, resources describing roads, airports and airstrips, shipping routes, tunnels, nautical charts, vehicle or vessel location, aeronautical charts, and railways.	This category applies to the following Directive 2007/2/EC spatial data theme: Annex I(7) Transport networks.
019	Utilities/Communications	Energy, water and waste systems, and communications infrastructure and services. For example, resources describing hydroelectricity, geothermal, solar, and nuclear sources of energy, water purification and distribution, sewage collection and disposal, electricity and gas distribution, data communication, telecommunication, radio, and communication networks.	This category applies to the following Directive 2007/2/EC spatial data theme: Annex III(6) Utility and governmental services.

Annex F Inspire Service type codelist

Code list from ISO 19119 adapted by INSPIRE for the classification of service types. Please refer to this website for the latest list
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32008R1205:EN:NOT

Possible values are as follows (in brackets are the language neutral names to be used):

Discovery Service (discovery)

View Service (view)

Download Service (download)

Transformation Service (transformation)

Invoke Spatial Data Service (invoke)

Other Service (other)

Annex G ISO Restriction codelist

Derived from the ISO 19115/TC 211 Geographic Information/Geomatics Metadata Standard. Please refer to ISO19115 for the most up to date list.

Code	Name	Description
001	copyright	Exclusive right to the publication, production, or sale of the rights to a literary, dramatic, musical, or artistic work, or to the use of a commercial print or label, granted by law for a specified period of time to an author, composer, artist, distributor
002	patent	Government has granted exclusive right to make, sell, use or license an invention or discovery.
003	patentPending	Produced or sold information awaiting a patent.
004	trademark	A name, symbol, or other device identifying a product, officially registered and legally restricted to the use of the owner or manufacturer.
005	licence	Formal permission to do something.

Code	Name	Description
006	intellectualPropertyRights	Rights to financial benefit from and control of distribution of non-tangible property that is a result of creativity.
007	restricted	Withheld from general circulation or disclosure.
008	otherRestrictions	Limitation not listed.

Annex H. ISO Responsible party codelist

Derived from the ISO 19115/TC 211 Geographic Information/Geomatics Metadata Standard. Please refer to ISO19115 for the most up to date list.

Code	Name	Description
001	resourceProvider	Party that supplies the resource.
002	custodian	Party that accepts accountability and responsibility for the data and ensures appropriate care and maintenance of the resource.
003	owner	Party that owns the resource.
004	user	Party who uses the resource.
005	distributor	Party that distributes the resource.
006	originator	Party who created the resource.
007	pointOfContact	Party who can be contacted for acquiring knowledge about or acquisition of the resource.
008	principalInvestigator	Key party responsible for gathering information and conducting research.
009	processor	Party who has processed the data in a manner such that the resource has been modified.

Code	Name	Description
010	publisher	Party who published the resource.
011	author	Party who authored the resource.

Annex I. ISO Frequency of maintenance code list

Derived from the ISO 19115/TC 211 Geographic Information/Geomatics Metadata Standard. Please refer to ISO19115 for the most up to date list.

Code	Name	Description
001	continual	Data is repeatedly and frequently updated
002	daily	Data is updated each day
003	weekly	Data is updated on a weekly basis
004	fortnightly	Data is updated every two weeks
005	monthly	Data is updated each month
006	quarterly	Data is updated every three months
007	biannually	Data is updated twice each year
008	annually	Data is updated every year
009	as needed	Data is updated as deemed necessary
010	irregular	Data is updated at intervals that are uneven in duration
011	not planned	There are no plans to update the data
012	unknown	Frequency of maintenance for the data is not known

Annex J. Keywords

INSPIRE themes

Please refer to http://www.eionet.europa.eu/gemet/inspire_themes?langcode=en for the authoritative and most recent keyword list

Addresses
Administrative units
Agricultural and aquaculture facilities
Area management/restriction/regulation zones and reporting units
Atmospheric conditions
Bio-geographical regions
Buildings
Cadastral parcels
Coordinate reference systems
Elevation
Energy resources
Environmental monitoring facilities
Geographical grid systems
Geology
Habitats and biotopes
Human health and safety
Hydrography
Land cover
Land use
Meteorological geographical features
Mineral resources
Natural risk zones
Oceanographic geographical features
Orthoimagery
Population distribution — demography
Production and industrial facilities
Protected sites Sea regions
Soil Geographical names
Species distribution

Statistical units
Transport networks
Utility and governmental services

BODC Parameter Discovery Vocabulary

Please refer to vocab P021 at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jsp and the full and most recent keyword list. Please note that the vocabulary P022 holds depreciated terms from P021, and P02 holds both.

SeaVox Vertical Coordinate Coverages Keywords

Please refer to vocab L131 at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jspand for the most up to date list.

Keyword	Definition	Modified
abyssopelagic	abyssopelagic water column	The water column zone of total darkness extending down to the abyssal sea floor. Typically between depths of approximately 4000 metres and 6000 metres.
atmosphere	atmosphere	The envelope of gases surrounding the Earth.
atmosphere_boundary	atmospheric boundary layer	The region of the atmosphere close enough to the Earth's surface for frictional effects of that surface to be significant. Typically not more than 1 km thick.
bathypelagic	bathypelagic water column	The water column zone illuminated only by bioluminescent organisms. Typically between depths of approximately 1000 metres and 4000 metres.
benthic_boundary	benthic boundary layer	The water column that is significantly influenced by the seabed, which is broader in deep ocean than in shelf seas. Guideline approximation is bottom 10m of oceans and bottom 5% of shelf (<200m) seas.

core	core	The central zone of the earth largely composed of solid or molten metal alloys, typically from the centre of the Earth to approximately 2900 km below the surface.
crust	crust	The layer of lithified rock between the unconsolidated sediment and the Moho seismic discontinuity. Typically 5-10 km thick beneath oceans and 60-70 km thick beneath continents.
epipelagic	epipelagic water column	The water column zone in which for clear water there is adequate light for photosynthesis. Typically from the surface down to a depth of approximately 200 metres.
exosphere	exosphere	The outermost layer of the atmosphere from which atoms can escape into outer space. Lies above the thermosphere from about 400 km in altitude.
hadopelagic	hadopelagic water column	The zone of the water column occupying ocean trenches, deeper than approximately 6000 metres.
heterosphere	heterosphere	The region of the atmosphere where the mixing ratio of gases is differentiated by gravity. Lies above the homosphere, from about 100 km in altitude.
homopause	homopause	The boundary region between the homosphere and the heterosphere. Typically at about 100 km.
homosphere	homosphere	The region of the atmosphere where gases are fully mixed by diffusion and turbulence. Lies between the surface (0 km) and the base of the heterosphere (at about 100 km).

mantle	mantle	The layer of basic (i.e. ferromagnesian) solid rock between the core and the crust. Typically from between 5-70 km below the surface to approximately 2900 km below the surface.
mesopause	mesopause	The boundary between the mesosphere and the thermosphere characterised by a temperature minimum. Typically lies somewhere between 80 and 90 km.
mesopelagic	mesopelagic water column	The water column zone penetrated by light, but in insufficient quantities for photosynthesis. Typically between depths of approximately 200 metres and 1000 metres.
mesosphere	mesosphere	The layer of atmosphere overlying the stratospause characterised by decreasing temperature with height, typically from about 50 to about 80 km
sediment	soil and sediment	The unlithified sediments that form a layer between the solid crust and either the atmosphere or the water column.
stratopause	stratopause	The boundary between the stratosphere and the mesosphere characterised by a temperature maximum. Typically at about 50 km.
stratosphere	stratosphere	The layer of the atmosphere from the tropopause to a height of approximately 50 km, characterised by increasing temperature with height.
thermopause	thermopause	The boundary between the thermosphere and the exosphere. Typically at about 400 km.
thermosphere	thermosphere	The atmospheric layer extending between heights of approximately 80 km to

		approximately 400 km characterised by rising temperature with height and phenomena associated with ionisation. Part of the thermosphere is sometimes termed the ionosphere.
tropopause	tropopause	The boundary between the troposphere and stratosphere, characterized by change in temperature gradient with height from decreasing below to increasing above. May extend over a few km in height. Typically lies somewhere between 10 and 15 km.
troposphere	troposphere	The lowest broad layer of the atmosphere characterised by decreasing avearage temperature with height. Typically from the surface to between 10 and 15 km.
unknown	unknown	The correct value is not known to, and not computable by, the sender of this data. However, a correct value probably exists.
upper_epipelagic	upper epipelagic water column	The strongly illuminated upper half of the epipelagic zone. Typically from the surface down to a depth of approximately 100 metres.
water_column	water column	The entire body of water between the bed and the atmosphere.
water_column_boundary	water column boundary layer	The zone of the water column that is significantly influenced by the atmosphere. Typically the top 10m of the water column.
water_column_skin	water column skin	The zone a few microns thick at the extreme surface of the water column that is sampled by radiometers.

Annex K. MEDIN Data Format vocabulary

Please refer to vocab M010 at http://vocab.ndg.nerc.ac.uk/client/vocabServer.jspand for the most up to date list.

DB	Database	Files that are used to store data in database applications such as Oracle or MS Access
DEL	Delimited	File formats that are delimited by commas, tabs, semi colons that can be opened using software packages such as MS Excel
DOC	Documents	Files that hold written information such as pdf, doc,
GIS	Geographic Information System	Files that are geographic in scope and can be opened by MapInfo or ESRI
KMX	Google Earth and Oceans	Files (e.g. kml, kmg) used to display data and images using Google applications Earth and Oceans.
IMG	Image	Still image files such as jpeg, tiff, png that may be opened by applications such as PhotoShop
MOV	Movie	Files that capture moving images such as avi, mpeg, mov, wmv
NC	Network Common Data Form	Binary data files conforming to a set of conventions allowing them to be manipulated through the NetCDF API and tools built using that API
ODV	Ocean Data View	Delimited files conforming to a set of conventions that allow them to be opened and interrogated using the OCEAN Data View application
TXT	Text or Plaintext	Files encoded in a character convention, usually ASCII, that need to be handled with a generic text editor such as Vi or Notepad or bespoke software

Annex L ISO CI_OnlineFunctionCode

download
information
offlineAccess
order
search