Joint Commission for Oceanography and Marine Meteorology (JCOMM)
IOC Committee on International Oceanographic Data and Information Exchange (IODE)

JCOMM/IODE Expert Team on Data Management Practices (ETDMP)

End-to-End Data Management Technology (E2EDM)

E2EDM Data Provider User Guide (version 1.1.0, July 2008)

Registration and Maintenance of Resources under the Distributed Data Source System (DDSS)
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1 INTRODUCTION

1.1 Scope

The end-to-end data management (E2EDM) technology has been developed by the IODE/JCOMM ETDMP (Expert Team on Data Management Practices) and Russian NODC under the E2EDM Pilot Project (2004-2006). This technology is considered as an “umbrella” that comprises local data systems managed by the IODE Data Centers and provides “transparent” and remote access to the metadata, data and products (resources) generated by these local data systems.

The E2EDM technology includes the following software components:

− Data Provider (software) providing an access to the local data system of participating centers. As soon as the Data Provider is installed as a “wrapper” of the local data system of an IODE Data Center, this system becomes a data source for the E2E-based distributed data system;

− Integration Server (software) provides the management and use of the data sources network via interaction with Data Providers.

The purpose of this document is to describe process of use of the Data Provider for registration and maintenance of the Distributed Data System (DDS) resources.

The document is intended for specialists of the IODE Data Centres (and other institutions) responsible for providing data to the DDSS.

1.2 Overview of the document

The document includes the following sections:

Section 1 - Introduction

Section 2 – The purpose and components of the Data Provider are considered. The process of including local data sets into the DDS is outlined.

Section 3 – The main page of the Data Provider user interface is described.

Section 4 – The rules and procedures of describing new resource provided by a Data Centre to the DDS are considered.

Section 5 – The registration and maintenance of resources are described.

Section 6 – The instructions on how to access system codes, dictionaries and data elements are given.

1.3 Terms and definitions

Data set (local) - set of data (or metadata) being created by a Data Center. It is characterized by a specific data model, data coding system, data storage system and format, conditions of access to data.

Distributed Data Source System – set of data sources in Data Centers operating under the E2EDM technology Integration Server.

Data Source - combination of the Data Provider (software component) and local data sets (information component). One Data Provider installed in a Data Center processes all local data sets of the Center.

Integration Server - E2EDM technology software performing E2EDM Distributed Data System (DDS) data sources management and reception and execution of requests from external software applications (portal services) addressed to the DDS data sources.
**Resources** - local data sets representing DSS data sources. Resource (single) is a local data set or part of it. Resource has a unique identifier and may consist of structural data units (resource instances). The content and structure of resource are recorded in the resource description and present discovery metadata of the DSS.

The Integration Server performs periodic harvesting of the DDS resource discovery metadata and uses them to access distributed data sources on requests from the portal of the system. On request from the Integration Server Data Provider performs data sampling out of the local data set by request criteria, data unification and presentation of sampled data in the form of a transport data file.

**Code** - names of objects and values in the form of sequence of characters used for unambiguous understanding of data in information systems. Code is unambiguously defined by a coding system (ISO, IOC, WIS, etc).

**System codes** – codes of resource description elements (data accessibility, spatial presentation, storage system, etc). System codes are presented by fixed list of codes and used for description of DDS resources.

**System dictionaries** – codes and structured descriptions of objects (organizations, ships, buoys, satellites, etc.). System dictionaries are used for unification of data coding by mapping local codes into system codes.

**Data element** – atomic portion of data with specific properties (code, name, units of measurements, data type, etc). Data elements can be:

- metadata (information on data – identifiers of country, organization, platform; time period, spatial coverage, etc)
- values of marine environment parameters.

Local data elements compose local data sets in Data Centers. System data elements – data elements managed by DDS. The Data Provider performs mapping of local data elements into system data elements assuring data unification.

**Data exchange protocol** – agreements regulating data exchange between the Data Provider and Integration Server. Data exchange protocol consists of request-message, response-message and transport data file.

**Transport data file** – data set provided by a data source in response to the request from the Integration Server addressed to the local data system

1.4. Contacts

Technical and software support of the Data Provider provides by:

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Kristina V. Bulgakova, tel.: (48439) 74194, fax: (495) 2552225, E-mail christy@meteo.ru

1.5 References:

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<th>Version and updating</th>
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<td>2.</td>
<td>The Checklist of technical requirements for data providers for E2E technology implementation</td>
<td>Describes requirements for IODE data centres to build the E2E Data providers network</td>
<td>Issued 09 March 2007</td>
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<td>3.</td>
<td>E2EDM technical specification v.1.0</td>
<td>Describes technical specifications (model, metadata structures, data exchange protocol and etc.) the E2EDM technology (TO BE UPDATED!!)</td>
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<td>4.</td>
<td>E2EDM Concept XML Schema</td>
<td>XML document includes ocean and marine meteo parameters which circulates under the distributed data system (current data source federation).</td>
<td>Updated 16 November 2007</td>
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<td>E2EDM Global XML Schema</td>
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<td>Updated 14 October 2007</td>
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<td>7.</td>
<td>E2EDM Integration Server User Guide</td>
<td>Includes the detail rules and procedures how to install, configure and run E2EDM Integration Server software. (TO BE UPDATED!!!!)</td>
<td>v.1.0., updated 05 May 2007</td>
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<td>8.</td>
<td>E2EDM Data Provider User Guide - Installation and setup</td>
<td>Describes detail rules, procedures and web-forms for the Data Provider installation, registration and maintenance. The document is intended for system administrators of the data centres and other institutions responsible for providing data to the system.</td>
<td>v.1.1.0 Updated September 2007</td>
</tr>
<tr>
<td>9.</td>
<td>E2EDM Data Provider User Guide - Registration and maintenance of resources.</td>
<td>Describes detail rules, procedures and web-forms for registration and maintenance of the local resources of distributed data sources system. The document is intended for operators of the data centres.</td>
<td>v.1.1.0 Updated September 2007</td>
</tr>
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</table>
The document is intended for end-user for enter and access to resources of the distributed data system. (TO BE UPDATED!!!)

Information on the E2EDM technology is provided on a dedicated web site: http://data.meteo.ru/e2edm/index.php?section=19

The IODE Ocean Data Portal prototype based on E2E technology is available at http://e2edm.vliz.be/iserv/
2. DATA PROVIDER OVERVIEW

2.1 Purpose

The Data Provider software is an E2EDM technology component performing the following functions of the DDSS data source:

- connection to the local data sets of Data Centres;
- generation and updating of resource descriptions in compliance with the current status of the local data set;
- data sampling on request of the Integration Server, structural and code unification of data, transport data file formation as a response to the request.

The Data Provider provides interaction with the following types of data storage systems:

- DBMS database;
- structured data files in “flat” (non-hierarchical) data formats;
- objective data files: electronic documents, images, structured data files in formats, which are not handled by the E2EDM technology software;
- Web-applications (stand-alone applications) accessing the local data sets.

2.2 Composition of components

The Data Provider software includes:

- J2SDK v. 1.5.0 packet,
- (DiGIR, v. 1.0.), software providing an access to DBMS databases (DiGIR, v. 1.0.),
- library of the Data Provider applications,
- Data Provider web-module.

The Data Provider software implements user interface for:

- technical support of the Data Provider in Data Centres;
- registration and maintenance of the DDSS resources on the basis of the local data sets of Data Centres.

In this document the use of the Data Provider (DP) user interface for registration and maintenance of the DDS resources in a Data Centre is considered. The user interface consists of a set of pages containing web-forms and other tools of description, viewing, editing, etc. The user interface is available through a Web-browser at the address given to a Data Centre during [?] installation of the Data Provider [8].

This guide is the main document on the use of the Data Provider. In addition, it is recommended to read other documents of the E2EDM technology.

2.3 Operation requirements

The Data Provider (DP) user interface is initiated by the Web-browser from any PC of a Data Centre.

2.3.1 Computing equipment
In the general case the DP user interface can be used from any PC connected with the Data Provider server through a local network.

2.3.2 Software

Recommended system software is Windows Pro 2003, Office 2003, IE MS 7.

2.3.3 Telecommunications

PC used for the DP user interface should be connected through the local network with:
- the Data Provider server;
- local data sets: DBMS databases, sets of structured and objective data files.

2.3.4 Institutional support

The Data Provider is operated by the staff of a Data Centre. They are responsible for:
- interaction with IODE/JCOMM on issues related to system codes, dictionaries and data elements;
- planning, registration and maintenance of resources provided to the DDS.

The overall coordination is performed by a dedicated staff member, who works as a Data Centre data administrator.

2.4. Process flow

Registration and maintenance of the DDSS resources is performed in the following order:
- design;
- registration;
- maintenance.

2.4.1. Design of resources

Design of resources includes the following operations:
- refining of system codes, dictionaries and data elements on the basis of the local data analysis;
- mapping of local to system codes and data elements;
- configuration of resources.

For each data set provided as the DDS resource it is recommended to prepare:
- a table of mapping local to [as above?] system data elements;
- a table of local codes.

The above configuration of resources consists of making decisions on the content and structure of resources. A data provider can present the local data set in the form of one or several resources divided by time (data for specific periods), geographical location (data for specific regions) and other characteristics. Each resource can be presented in the form of one or several instances.

To design resources for one data set typically requires 1-2 weeks of work of one staff member of a Data Centre. Additional time may be needed to refine (extend) system information.

The outcomes of design should be placed in a working document and further registration and maintenance of a Data Centre’s resources be performed in accordance with this document.
Note. The above working document offers significant time savings and makes registration and maintenance of resources easier.

2.4.2. Registration of resources

Registration of resources includes:

- resource description;
- resource setup.

2.4.2.1 Resource description is made with the help of the DP User Interface (menu: Operator/New resource description, see Section 4 of this document). The User Interface includes a set of “bookmarks” containing Web-forms for resource description on a section-by-section basis.

If web-forms of the section “Identification and connection to data” are filled in properly, the resource gains a status of a “resource under registration”, i.e. it is in the process of registration.

To reduce the amount of work we recommend using descriptions of resources prepared in advance in the form of description templates.

2.4.2.2 Resource setup is made with the help of the DP User Interface (menu: Operator/Registered resources, see Section 5 of this document) and includes:

- setup of mapping local codes into system codes;
- setup of periodicity of automatic updating of resource descriptions and generation of instances;
- testing and quality check of resources

Along with the above operations, resource descriptions are refined on the basis of error and comment reports.

When the registration is finished the resource gains a status of a “registered resource”, i.e. it becomes operational.

Registration of resources is performed by the Data Centre data administrator.

The time needed to register one resource is typically 2-3 hours (the first resource) and less than 1 hour for the next resources taking into account the experience gained provided that this document has been carefully studied and the resource design has been performed correctly.

2.4.3. Maintenance of resources

Maintenance of resources is performed with the help of the DP User Interface (menu: Operator/Registered resources, Section 5 of this document) and includes the following operations:

- assurance that resources are operational, i.e. readiness of the Data Provider to response to requests from the Integration Server;
- re-setup of the content and structure of resources if necessary;
- updating of DDS resources.

Monitoring of a Data Centre’s resources is performed by the Integration Server [7], which controls the Data Provider operations.

The efforts needed to maintain resources provided by the DBMS databases and structured files are very small. In standard situations only a periodic check of resource availability, change in resources setup, etc., are required. No other operations are needed.

Extension of resources to include new data files and applications is made by preparing a description of a resource’s new instance to include a new data file (application). For one data file (application) about 10-15 minutes are required.
3 USER INTERFACE

3.1. Main page

Purpose
To choose Data Provider functions and switch to relevant sections of the menu

Layout
1 – interface header, switch to the E2EDM technology Website, current date,
2 – sections of the main menu,
3 – explanatory text,
4 – login/password of DP user
5 - feedback
6 - identifier of a Data Centre, date of updating and version of DP.

Description
1. Start the DP User Interface (address is given with the installation of DP) and choose function:
   - Operator – registration and maintenance of a Centre’s resources;
   - Codes, Dictionaries, Data Elements – access to system codes, dictionaries and data elements;
   - Help – copying of this and other documents, feedback.
2. Access to functions is provided by the password.
3. To provide feedback please e-mail the E2EDM developers.

Usage notes
The access address for the User Interface, login and password are provided when the Data Provider is installed in your Centre [2].

Error (comment) report
None

Alarm conditions
1. User Interface page is not started.

Probable cause – settings have been changed or the DP Application Server does not function
Actions: update the page, contact [?] the DP administrator

3.2. Operator
**Purpose**
Registration and maintenance of DDS resources submitted by Data Centre.

**Layout**
1 – hierarchical menu
Management of resources:
   Registered resources
   Resources under registration
   New resource description

2 - explanatory text

**Description**
Choose section of the menu:
- New resource description – if it is planned to add a new resource
- Management of resources/Resource under registration – to continue resource registration
- Management of resources/Registered resource – to refine a description or change settings of an operational resource.
4. NEW RESOURCE DESCRIPTION

A resource description is made using the Web-forms with sections covering resource descriptions. Each section contains subsections consisting of several fields to enter elements of a resource description.

**Sections and subsections of resource description**

<table>
<thead>
<tr>
<th>Section of description</th>
<th>Subsection of description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identification and connection to data</td>
<td>1. Resource identification</td>
</tr>
<tr>
<td></td>
<td>2. Resource name</td>
</tr>
<tr>
<td></td>
<td>3. Data source</td>
</tr>
<tr>
<td></td>
<td>Connection to data</td>
</tr>
<tr>
<td>2. Connection to</td>
<td>1. Metadata</td>
</tr>
<tr>
<td>2a DBMS data</td>
<td>2. Data source</td>
</tr>
<tr>
<td></td>
<td>3. Tables</td>
</tr>
<tr>
<td></td>
<td>4. Filter</td>
</tr>
<tr>
<td></td>
<td>5. Mapping</td>
</tr>
<tr>
<td>2b Structured data files</td>
<td>1. Metadata</td>
</tr>
<tr>
<td></td>
<td>2. Data source</td>
</tr>
<tr>
<td></td>
<td>3. Mapping</td>
</tr>
<tr>
<td>3. Data presentation and dissemination</td>
<td>1. Observational platform type [?]</td>
</tr>
<tr>
<td></td>
<td>2. Data structure and processing</td>
</tr>
<tr>
<td></td>
<td>3. Data quality</td>
</tr>
<tr>
<td></td>
<td>4. Data dissemination</td>
</tr>
<tr>
<td></td>
<td>5. Data availability</td>
</tr>
<tr>
<td>4. Time and geographic characteristics</td>
<td>1. Time characteristics</td>
</tr>
<tr>
<td></td>
<td>2. Height (depth) characteristics</td>
</tr>
<tr>
<td></td>
<td>3. Geographic characteristic</td>
</tr>
<tr>
<td>5. Contacts</td>
<td>1. Contacts (data generator)</td>
</tr>
<tr>
<td></td>
<td>2. Contacts (data provider)</td>
</tr>
<tr>
<td></td>
<td>3. Contacts (person who performed resource description)</td>
</tr>
<tr>
<td>6. Data Hierarchy</td>
<td>1. Resource structure</td>
</tr>
<tr>
<td></td>
<td>2. Data record structure</td>
</tr>
</tbody>
</table>

Switching to the section “Connection to data” is performed from the section “Identification and connection to data”. The composition of subsections of the section “Connection to data” is dictated by the type of physical data storage system (if data storage system is objective data files or applications it is not necessary to specify connection to data).

Separate bookmarks are used to prepare each section of the description. Switching to sections by using these bookmarks is possible in any sequence using the navigation bar located at the top of the screen.

**Usage note:** press “Save section” to save edited sections (subsections) of the description. If the edited section was not saved, the previous version of the section (subsection) of resource description will open.

**4.1 Method of preparing resource description**
Purpose
Choose a method of preparing a resource description – use empty entry forms or template.

Layout
1 – Create new description
2 – Import description

Description
1. Press (1) if you intend to use empty description forms or (2) if you intend to use a template.
2. If you use empty description forms, follow instructions 4.2-4.7
3. Choosing (2) will switch you to a separate bookmark. Choose a resource-template out of (3). Use (4) to view resource-template description.
4. Press (5) to import the template and will switch to resource description (see items 4.2-4.7)

Usage notes
1. To save time it is recommended to use a template for the resource description.
2. Choose a resource template taking into account characteristics of the resource and the description which you plan to prepare. At least the type of physical data storage system should be taken into account (DBMS, structured data file, objective data file).
3. All settings of connections to data and resource-template data hierarchy are copied into the resource description which you create.

4.2 Identification and connection to data

Purpose
Assure the entry of identification information. A unique identifier of the form AA_BBBBBBBB_NNN is automatically assigned to the resource by the Data Provider, which contains the following three (space delimited) parts:

AA – identifier of data source country (e.g. [], Russia – RU);
BBBBBBB – identifier of Data Centre (e.g., RIHMI-WDC)
NNN – sequence number of the resource provided to the DDSS (e.g., 38)

Example of identifier: RU_RIHMI-WDC_38

Layout
1 – resource identifier and name
2 – switch to Connection to data
3 – save section

Description
1. The subsection “Resource identification” cannot be edited.

2. Preparation of other subsections should be performed in the following sequence:
   - subsection “Resource name” and “Data source”
   - subsection “Connection to data”.

3. Fill in (or edit) fields of the subsections “Resource name” and “Data source” following recommendations (see Annex 1)

4. Press (3) to save the subsection of the description. At the top of a bookmark a report on results will appear, including a list of errors if any occur.

   Regardless of errors the resource gains a status of a “resource under registration” and its description can be renewed any time from the menu “Management of resources/resources under registration”.

5. Edit fields of the description following the error report and repeat operation (3). A message “Configuration file of the local data set is missing” shows that Connection to data has not been set. This operation is performed in the following step.

6. Press “Connection to data” (2) to switch to a separate bookmark, which is determined by the type of physical data storage system. Use instructions of Item 4.3.1 if “DBMS” is set in the field “Type of physical data storage system”, or Item 4.3.2 if “Structured data file” is set there.

Usage notes

1. Most often errors occur due to the fact that mandatory fields of the description are not filled and due to incorrect actions in setting of “Connection to data”.

2. When a resource template is used (see Item 4.1) the section “Connection to data” will also be copied. Do not forget to make changes in the section taking into account specific features of the resource being described.

3. Resources and type of data storage system: objective data files and applications do not need Connection to data to be set. References to data file (application) are given when a resource instance is described (see Item 5.2)

Error report

1. ... [a name of description element – see table above] ... is a mandatory field

   Actions: fill in mandatory fields of the description

2. URL-reference to additional information is wrong

   Actions: edit the reference to make URL relevant.

3. Provider with the identifier “   “ has not been registered

   Actions: contact the DP administrator. Check the Data Provider identifier in the configuration file. Change the identifier.

4. Configuration file of the local data set is missing!

   Probable causes: the resource description section “Connection to data” has not been completed. The configuration file config.xml has been removed [2]. Settings of the DP with respect to the pathway to the configuration file config.xml. have been changed incorrectly.

   Actions: contact the DP administrator.

Alarm conditions

DP can not open the Web-page “Connection to data”
Probable causes: Settings of DP with respect to the Web-process have been changed incorrectly [2].

Actions: repeat “Connection to data”. Save the section of the description, close DP and repeat actions. Contact the DP administrator.

4.2 Connection to data

Setting of Connection to data depends on the type of physical data storage system: DBMS or structured data files. In case of objective data files or applications a specific setting of Connection to data is not required.

4.2.1 Connection to data - DBMS

To implement the connection to databases the Data Provider uses the open source software DIGIR. Configuration files are prepared by completing the following subsections:

- Metadata;
- Data source;
- Database tables;
- Mapping.

4.2.1.1 Metadata

**Purpose**

Enter identification information on the data provider and the local data system.

**Layout**

1 – Resource identifier

2 – List of resources
3 – Menu of sections (Metadata has been chosen)
4 – Elements of the subsection Metadata (see Annex 1)
5 – Remove resource
6 – Save changes

**Description**

1. Fill in (or edit) fields of the subsection following recommendations of Annex 1.
2. Press “save changes”. If the operation is successful an appropriate message will appear, and then choose the subsection Data source. If not – follow instructions given in the message and press “save changes” again.

**Usage notes**

Do not use “remove resource” on the bookmarks “Connection to data – DBMS”. This will result in the loss of some of the resource description and you’ll have to repeat your work.

**Error report**

The service of access to the database will produce DIGIR messages. Follow instructions given in the message.

4.2.1.2 Data source

**Purpose**

Describe the parameters of connection to the local database.

**Layout**

1 – Resource identifier
2 – Subsection elements (see Annex 1)
3 – Remove resource
4 – Save changes

**Description**

Similar to 4.2.1.1.

**Usage notes**

Similar to 4.2.1.1.

4.2.1.3 Tables

**Purpose**

Specify tables of databases, which are used by resource and to describe relations between them.

**Layout**

1 – Resource identifier
2 – Subsection elements (see Annex 1, Item 2.1)
3 – Remove resource
4 – Save changes

**Description**
Similar to 4.2.1.1.

**Usage notes**
Similar to 4.2.1.1.

4.2.1.4 Filter

Specify criteria of data sampling out of the database. It is used when the resource is a part of the database, determined by the period of observation, geographic location and other characteristics.

**Layout**
1 – Resource identifier
2 – Subsection elements (see Annex 1, Item 2.1)
3 – Remove resource
4 – Save changes

**Description**

1. Press “add simple comparison” or “add logical comparison” depending on your preference. Simple comparison assures data filtration by one field of one database table, logical comparison allows for filtration by several fields of several tables.

2. Choose from the list: -column- (table/field to be filtered), comparator (operator of filter), type (data type of filtering value) and indicate filtering value (for date and time the format [?] is YYYY-MM-DD).

   If the option “logical comparison” has been chosen, perform the above operations for each field/table and join them with the help of an operator.

3. Press “save changes”. If the operation has been done successfully (an appropriate message will appear) switch to the next section. If not, follow instructions given in the message.

4.2.1.5 Mapping

**Purpose**

Define a one-to-one mapping between system data elements and local data elements. To save time it is recommended to prepare and use a working table of mappings.

**Layout**
1 – Resource identifier
Description

1. If you have prepared a working table of mapping local elements into system elements, begin with the first local element of this table. If not, use a description of your database.

View the list of system elements (“concept”) on the bookmark and find a system counterpart of the local data element.

2. In the line of the found system element with the help of the fields “-table-” and “-field-” define a table and field of the local data element. Identify the type of the data of the local element in accordance with your database specification.

Press “clear” if you do not like the specified mapping. Press “add”, if the mapping of local elements into system elements has been completed.

3. Perform the above operations with all local elements of the database provided by the resource.

4. On completion, press “save changes”. If the operation is successful an appropriate message will appear, and then close the page. If not, follow the instruction given in the message.

5. When it is necessary to use arithmetic operations (multiplication, division, subtraction and addition) for mapping a local element into a system element (e.g. when different units of measurement are used such as meters/half-meters, knots-km/hour) do the following:

   - press “Index page” on the left at the top of the page;
   - choose a required file from the list of resource configuration files (file name structure: <resource identifier>.xml);
   - open XML file and find a required line of mapping by code of the system element or by table name and field of the local element
   - add `math` to the end of the line (in front of the closing tag) using the following template: `math="[/,*,-,+] [number] ([/,*,-,+] [number]) ..";`
   - close the file.

Example: Resource: RU_RIHIWI-WDC_70;

System element: Wind speed: measured; P0075_00, units of measurement – m/s

Local element: Wind speed: measured; table DB:V_SYNOP_E_BAL, field WNDSPMAX12, units of measurement – cm/s

Fragment of configuration file RU_RIHIWI-WDC_70.xml (after mapping):

```xml
<concept searchable="1" returnable="1" name="esimo:M4108" type="text"
  table="V_SYNOP_E_BAL" field="STATION_ID" zid="20" />
<concept searchable="1" returnable="1" name="esimo:P0075_00" type="numeric"
  table="V_SYNOP_E_BAL" field="WNDSPMAX12" zid="132" />
</concepts>
```
Fragment of configuration file RU_RIHMI-WDC_70.xml (math has been added to change measurement units of local element)

```xml
<concept searchable="1" returnable="1" name="esimo:M4108" type="text" table="V_SYNOP_E_BAL" field="STATION_ID" zid="20" />
<concept searchable="1" returnable="1" name="esimo:P0075_00" type="numeric" table="V_SYNOP_E_BAL" field="WNDSPMAX12" zid="132" math="/100" />
</concepts>
```

6. Mapping of elements can be edited at any time when it is necessary to reset them, to add (remove) the local element to the resource, etc.

**Usage notes**

1. Comply with the following: one system data element must correspond with only one local data element, i.e., do not map more than one local element to the field “-field-”.

2. The software performs a formal control of mapping implementation. Make sure that mapping settings are correct by direct reading of the configuration file (use Item 5 of Description).

3. After editing (Item 6 of Description) make the appropriate changes in the section “Data hierarchy”.

4.2.2 Connection to data – Structured data files (SDF)

This Connection to data is implemented by the DP data file access service in accordance with the pattern similar to that described above. It is implemented by the following subsections:

- Metadata
- Data source
- Mapping

It allows the setup results to be checked

4.2.2.1 Metadata

**Purpose**

Choose a structured data file format used for local data storage.

**Layout**

1 – Resource identifier
2- Horizontal menu of sections
3 – Subsection elements (see Annex 1, Item 2.2)
4 – Save section

**Description**

Choose data format type following the recommendations given in Annex 1 and press (4).
4.2.2.2 Data source

**Purpose**
Define directories and names of data files provided by a resource.

**Layout**
1 – Resource identifier
2 – List of data file directories
3 – Choose directory or data file
4 – Add files
5 – Edit file name
6 – Remove file
7 – Specify file mask
8 – Save file mask
9 – Page after saving

**Description**
1. With (3) choose directory or data file to be used as a data resource. Press (4) and in line (2) a path to directories or names of data files will appear.

2. To change the directory (data file name) press (6) and you will switch to the page “File name editing”. Edit the directory (file name) (8) and press (9) to save changes.

3. To filter data files of the directory press (6) in the line of the path to the directory (or in the line of the path to a data file in this directory; in this case the process will be easier) and you will switch to the page “File name editing”.

With (8) specify directory mask (e.g.: c:\data\*2007*) or data file mask (e.g.: c:\data\e2e\*resource*.txt.) and press (9) to save mask settings.

All data files stored in the directory or data files of the directory complying with the name mask will be classified as data source files.

4. To remove a source data file or directory press (7), it will be removed after repeated request.

5. When necessary repeat operations given in Items 1-4 in any sequence.

**Usage notes**
On completion make sure that the specified data files match the characteristics of the resource being described.

4.2.2.3 Mapping

**Purpose**
Define the mapping
between system and local data elements as well as arithmetic operations needed to convert units of measurement.

**Layout**

1 – Resource identifier

2 – Mapping (on the left – system element, on the right – table/local element field, see also Annex 1, Item 2.1)

3 – Save changes

(at the end of the list of elements shown on the screen)

**Description**

Similar to 4.2.1.5

**Usage notes**

Similar to 4.2.1.5

4.2.4.4 Viewing setup results

**Purpose**

This subsection is intended to view the results of system and local element mapping setup

**Layout**

1 – Resource identifier

2 – List of mapping element

3 – Sorting by element

4 – Save mapping and close the page (at the end of the list of elements shown on the screen)

**Description**

1. Use (3) for sorting the list of elements.

2. Make sure that the mapping settings are correct. When necessary return to the subsection “Mapping” to edit the settings.

3. Press (4) to complete.

4.3 Data presentation and dissemination

**Purpose**

Describe a space-time structure of local data provided by a resource as well as the form and conditions of presenting information to users.

**Layout**

1-5 - Subsections of description
6 - Save section

Description

1. Fill in (or edit) fields of subsections (1)-(5) following recommendations given in Annex 1, Item 2.2

2. Save description (6) and at the top of the bookmark a report on results will appear, including a list of errors if any occur (see “Error report”)

3. Edit elements of description and save the section again.

Usage notes

1. Some elements of the section description are synchronized by values. Synchronization is managed by the software (see Table 1).

Table 1. Synchronization of values of resource description elements

<table>
<thead>
<tr>
<th>Type of physical data storage system</th>
<th>Form of presentation</th>
<th>Type of data record</th>
<th>Format name (choice in the field “Format name”)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Digital profile</td>
<td>E2EProfileDD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Digital model (field)</td>
<td>E2EGridDD</td>
<td></td>
</tr>
<tr>
<td>Objective data file (ODF), application</td>
<td>Digital table</td>
<td>E2EObjectDD</td>
<td>Common network data format (Unidata), NetCDF version 3, Universal data file exchange format (Unidata), NetCDF version 3, WMO binary data exchange formats (BUFR, [GRIB?], undefined), format used by Data Centre (LocalFormat, undefined)</td>
</tr>
<tr>
<td></td>
<td>Digital profile</td>
<td></td>
<td>Text document without separators, with separator, with separation by lines; XML-document; Microsoft Office [?] documents [including RTF?]; Acrobat Portable Document Format (PDF)</td>
</tr>
<tr>
<td></td>
<td>Digital field</td>
<td></td>
<td>Graphic presentation in tiff, gif, jpeg, png formats</td>
</tr>
<tr>
<td></td>
<td>Digital document</td>
<td></td>
<td>Video presentation in mpeg mpeg, avi formats</td>
</tr>
<tr>
<td></td>
<td>Digital presentation</td>
<td></td>
<td>GIS Arcview, version 3, version 9</td>
</tr>
<tr>
<td></td>
<td>Digital video</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Digital map</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Pay attention to the agreement between the description of the data space-time structure and the description of the resource structure (see Data hierarchy).

3. “Conditions of access to information” being specified should correspond to the data accessibility category established by the Operating Rules of your Data Centre

Error report
1. ... [a name of description element – see table above] ... is a mandatory field
Actions: fill in mandatory fields of description

4.4 Time and geographic characteristics

**Purpose**
Describe time and geographical characteristics of data provided by a resource.

**Layout**
1-3 - Subsections of description (see Annex 1)
4 – Define coordinates
5 - Save section

**Description**
1. Fill in (or edit) fields of subsections (1) – (3) following the recommendations (Annex 1, Item 4)

   To enter the time characteristic a mask “date/time” is used. It can be set depending on values of the description elements “Data processing level” and “Time presentation” (the section “Data presentation and dissemination”).

2. Use (4) to fill in the fields of 4 boundary coordinates on the basis of the geographical extents of the resource.

3. Save description (3) and at the top of the bookmark a report on results will appear, including a list of errors if any occur (see “Error report”).

4. Edit elements of the description on the basis of error reports and save the description again.

**Usage notes**
1. Most often errors occur due to the fact that mandatory fields are not filled.

2. Rules of forming the mask “date/time” (Table 2) are based on synchronization of values of the description elements “Data processing level” and “Time presentation” (see the section “Data presentation and dissemination”).

Table 2. Rules of forming the mask “date/time”

<table>
<thead>
<tr>
<th>Time presentation</th>
<th>Mask date/time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of processing (code value): <strong>Observed data or Not defined</strong></td>
<td>YYYY-MM-DD:Thh:mm</td>
</tr>
<tr>
<td>Any</td>
<td>YYYY-MM-DD:Thh:mm</td>
</tr>
<tr>
<td>Level of processing (code value): <strong>Generalized (for a specific year) data or forecasting</strong></td>
<td>YYYY-MM-DD:Thh:mm</td>
</tr>
<tr>
<td>Unknown, as required, continuously</td>
<td>YYYY-MM-DD:Thh:mm</td>
</tr>
<tr>
<td>Time presentation</td>
<td>Mask date/time</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Every hour, every 3, 6, 12 hours</td>
<td>YYYY-MM-DD:Thh-</td>
</tr>
<tr>
<td>Every day, every week, every two weeks, every 10 day</td>
<td>YYYY-MM-DD</td>
</tr>
<tr>
<td>Every month, every quarter, twice a year</td>
<td>YYYY-MM</td>
</tr>
<tr>
<td>Every year</td>
<td>YYYY</td>
</tr>
</tbody>
</table>

Level of processing (code value): **Generalized (for a long-term period) data**

| Unknown, as required, continuously                      | MM-DD:Thh:mm         |
| Every hour, every 3, 6, 12 hours                         | MM-DD:Thh-           |
| Every day, every week, every two weeks, every 10 day     | MM-DD                |
| Every month, every quarter, twice a year                 | MM                   |
| Every year                                                | YYYY                |

3. Pay attention to the agreement between resource description and data elements provided by resource (see “Data hierarchy”). Data should contain elements – Date/time or Year, Month, Day Hour and Minutes in accordance with the mask “date/time”.

**Error report**

1. ... [a name of description element – see table above] ... is a mandatory field
   Actions: fill in mandatory fields of the description

2. **Numeric format is wrong**
   Cause: characteristics of height (depth) are not expressed in numbers.
   Actions: edit values

3. **Both values should be of one sign**
   Causes: characteristics of height (depth) are of different sign
   Actions: edit values following the rule: height +, depth -.

4. **Maximum value should exceed minimum value.**
   Cause: maximum and minimum values of height are not consistent
   Actions: edit values.

5. **Minimum value should exceed maximum value**
   Cause: minimum and maximum values of height are not consistent
   Actions: edit values.

4.5 **Contacts**

**Purpose**
Enter contact information in these three categories:

- “generator” – organization holding a right of ownership (or entitled to a right of ownership) of the data set provided by resource;
- “resource provider” – Data Centre;
- “person, who performed data description” – staff member of the resource provider.

**Layout**

1-3 - Subsections of description (see Annex 1)
4 – Copy content into the next section
5 - Save section

**Description**

1. Fill in (or edit) fields of subsections (1) – (3) following the recommendations (Annex 1, Item 4)
2. Use (4) to copy the subsection as a template for the preparation of the next subsection
3. Save section of description (5).

**4.6 Data hierarchy**

The Data Provider setup to the data set of the ESIMO Centre generates an information resource in a definite structure, specified by this section of resource description. The section “Data hierarchy” defines:

1. resource structure – data segmentation (granulation) into resource instances;
2. data structure – data segmentation (granulation) into transport data file records.

The segmentation mechanism depends on the type of data storage: DBMS, structured data file (SDF), objective data files (ODF) and applications.

**Resource structure.**

Resource structure setup is based on a logical and physical basis.

Logical segmentation is made by key data elements i.e. transition from one instance to another is performed when specified key data elements are changed.

Physical segmentation is based on the following ratio: one data file – one resource instance.
The choice of segmentation is dictated by the type of data storage system:
– for DBMS logical segmentation is always used;
3. for SDF resource segmentation can be physical or (and) logical;
4. for ODF and applications physical segmentation is always used.

Data structure.

5. The following types of data records are used: E2EPointDD, E2EProfileDD, E2EGridDD and E2EObjectDD.

Data records E2EPointDD, E2EProfileDD and E2EGridDD are used with DBMS and ODF. Data records have the following construction: a header and matrix (table)

- data record E2EPointDD has only data table;
- data record E2EProfileDD has a header and data table;
- data record E2EGridDD has a header and several data tables.

Header elements and columns of tables are consistent with the system elements specified in the subsection “Mapping” of the resource description section “Identification and connection to data.”

The choice of a data record type is dictated by the form of data presentation (the resource description section “Presentation and dissemination”)

- “digital table” – record E2EPointDD;
- “digital profile” – record E2EProfileDD;
- “digital model (field)” – record E2EGridDD.

6. Data record E2EObjectDD defines the fact, that the data transport file is an electronic document. The special construction “Data file composition” is used to describe the composition of objective data file.

4.6.1. Data hierarchy setup – DBMS and structured data files

Purpose

Define segmentation of a resource provided by the DBMS local databases and structured data files.

Layout

Resource Structure

1 – Choice of element
2 – Move of element
3 – Key elements
4 – Sorting of elements
5 – Remove level

Data record structure

(e.g. E2EProfileDD)
6 – Elements of record header
7 – Key elements of record
8 – Elements of data table
9 – Save section

**Description**

*Setting of resource segmentation to resource instances*

1. Form a list of key elements of resource segmentation (3) by repeated actions: choice of element (1) and movement of element (2).

2. Set the required sequence of elements in the key list using Choice of element and “Up/Down” ordering of element (4)

3. Use (5) if you do not intend to segment resource into instances.

*Setting of data record structure*

4. Use actions following item 1 to prepare a list of elements of a data record header (6)

5. Key list (7) will contain a copy of record header elements. Remove from the key list (by relocating to the list of elements) elements which are not key. Set the required sequence of elements in the key list using Choice of element and “Up/Down” ordering of element (4).

6. Use actions following item 1 to prepare a list of elements of the table of elements.

7. Use (9) to save the section.

**Error report**

1. *Configuration file of the local data source is missing! Switch to the bookmark “Identification and connection to data”.*

   Cause: An attempt was made to specify a Data hierarchy without establishing a connection to data.

   Actions: follow the error report.

2. *Key data elements defining resource instance are not indicated.*

   Actions: Specify key elements defining resource instances or use “Remove level”. If you use “Remove level” the resource will have no instances.

3. *Data elements in the record header are not indicated*

   Actions: specify record header elements and save the section again.

4. *Key data elements defining data record are not indicated*

   Actions: Specify key elements defining the data record and save the section again.

5. *List of elements in the table of elements is not indicated*

   Actions: Specify data table elements and save the section again.
6. Element used in the hierarchy is not connected to the data source

Actions: Remove this element from the list of data hierarchy.

4.6.2. Setting of data hierarchy – data file directory

Purpose

Some local operational data systems make and update objective data file directories in the form of DBMS tables or ASCII files with simple structure, containing data file descriptions: space-time characteristics and others.

In this case:

- type of data storage system (the section “Identification and connection to data”) is DBMS or structured data file;
- type of record is always E2EPointDD;
- setting to data directory elements (fields) is performed as described before but such system elements as the data file URI address is mandatory;
- thematic content of the objective data file is defined with the help of “Data file composition” in the subsection “Data record structure”

Layout

Resource structure

1 – Choice of element
2 – Move of element
3 – Key elements
4 – Sorting of elements
5 – Remove level

Data record structure

(E2EPointDD)

6 – Key elements of record
7 – Elements of data table
8 – Data file composition
9 – Save section

Description

Setting of resource segmentation into resource instances

1. Resource segmentation is performed when each data file is identified as a resource instance. Data directory elements, which define a directory record, i.e. date/time, geographical region, etc., are used as a key element (elements) for segmentation of the resource into instances.

Form a list of key elements of resource segmentation (3) by repeated actions: Choice of element (1) and Move of element (2).
2. Set the required sequence of elements in the key list using Choice of element and “Up/Down” ordering of the element (4)

*Setting of data record structure*

3. Use actions following item 1 to prepare a list of elements defining data record (6)

4. Include into “Data file composition” elements, which characterize the content of objective data files – resource instances.

5. Use (9) to save the section.

*Usage notes*

A mechanism of describing the content of the objective data files ensures that the content of all files presented in the data directory is uniform.

If this condition is not fulfilled, use filtration to present a set of objective data files by several resources based on groups of parameters.

*Error report*

Similar to 4.2.1.5

4.6.3. Setting of data hierarchy – objective data files (applications)

*Purpose*

Some local data systems, which form sets of guidance, regulatory and mass media information, provide data to DDSS directly in the form of objective data files.

In this case:

- the type of data storage system (the section “Identification and connection to data”) is objective data file;
- the type of record is always E2EObjectDD;
- the content of data is prepared by manual description of an instance. The section “Connection to data” is not used.
- The thematic content of objective data file is defined with the help of “Data file composition” in the subsection “Data record structure”

Description of software applications is made in a similar way

*Layout*

*Resource structure*

1 – Choice of element
2 – Move of element
3 – Key elements
4 – Sorting of elements
5 – Remove level

*Data record structure*
Setting of resource segmentation into resource instances

1. Resource segmentation is accomplished through the designation of individual files.

Setting of data record structure

2. Include in “Data file composition” elements, those that characterize the content of objective data files – resource instances.

6. Use (9) to save the section.

Usage notes

The mechanism of describing the content of objective data files requires that the content of all objective data files presented in the data directory is uniform.

If this condition is not fulfilled, present a set of objective data files by several resources based on groups of parameters.
5 RESOURCE MANAGEMENT

Management of information resources includes the following actions: registration of resources (menu: Resources under registration) and maintenance of resources (menu: Registered resources).

5.1 Registration of resources

Purpose

Registration of resources includes three steps: resource description (see Section 4), resource setup, and resource testing.

On completion of “resource description,” when at least the fields of the main section of description “Identification and connection to data” should be filled in, the resource receives an identifier and status “Resources under registration”.

From this bookmark operations with resources under registrations are performed. They are:

- continuing or refining the description on the basis of error and comment reports;
- setting of mapping of local codes to system codes
- test request to resource.

Layout

A list of resources under registration is located in the central part of the screen and all operations are performed by choosing function in the resource line

1 – Name of resource
2 – 1, 2, ..., 5 – Sections of resource description
3 – Edit/remove
4 – Mapping of codes
5 – Errors/comments
6 – Test request
7 – Activation of resource

If a resource description and setting is made correctly the resource line will be highlighted in green and the resource can be transferred to the list “Registered resources”.

Description

1. Identify the resource you will work with using (1).

2. View a resource description by pressing the resource name.
3. If some section of a resource description is completed without errors, an icon 📝 will appear in the appropriate column of the description section (2), if there are errors, the icon 🚭 will appear.

4. In column (5) the total number of errors and comments for each resource is given (e.g. 0/23). Press 0/23 to switch to a separate page with a list of errors and comments. Before editing the resource description it is recommended to print out the list of errors and comments. This will save time.

5. To edit the section of resource description press (✍️ or 📝) in the appropriate column (2). You can also switch to editing directly from the list of errors/comments or by pressing icon 📝 (3).

6. If it is necessary to set mapping of local code into system codes choose (4) to switch to the appropriate bookmark. The required instructions are given below.

If setting of code mapping is completed icons ✍️ (edit/remove mapping) will appear, if not - 🚭 will appear.

7. To make a test request press (✍️) (5) to switch to the appropriate bookmark. The required instructions are on this bookmark.

8. If all actions for resource registrations are made properly the resource line will be highlighted in green and in column (6) a note “Activate” will appear.

By pressing this note you will show that resource registration has been completed, i.e. the resource will be transferred to the list “Registered resources” (see 5.2).

9. To remove the resource, press [ ] in the resource line. The resource will be removed after repeated request.

10. The above actions can be performed in any sequence.

Setting of code mapping

Setting of code mapping consists in specifying mapping between

1. name of system dictionary from the list located in the left hand part of the screen (countries, oceans and seas, organization, ships, hydrometeorological stations);

2. codes of system elements from the list;

3. name of the local dictionary from the list

To save settings use (4).

If dictionaries needed for mapping a specific local element are not available, contact the DDBS data administrator and propose extending the code mapping capabilities.

5.2 Maintenance of resources

Maintenance of resources includes actions assuring availability and updating of resources.

5.2.1 Availability of resources

Purpose

Make the DDS resources (with a status of “registered resources”) ready for requests from the Integration Server
To assure availability of resources it is necessary to:

- provide a complete resource description;
- set the periodicity of automatic updating of the descriptions of resources and generation of instances;
- test resources.

**Layout**

A list of registered resources is located in the central part of the screen and all operations are performed by choosing a function in the resource line

1 – Name of resource
2 – List of instances
3 – Code mapping
4 – Task manager
5 – Comments
6 – Test request
7 – Edit resource description
8 – Remove resource description

**Description**

1. Identify the resource you will work with using (1). To view the resource description, press the resource name.

2. The quality of a resource description is assessed by software (e.g. [12]) and shown in the appropriate column (5). Press [12] to switch to the page with a list of comments. Print the list out and edit (icon [3], (7)) appropriate sections (subsections) of description. You can switch to editing directly from the list of comments (5).

Normal operational capability of resource assumes that there are no comments. If necessary it is possible to:
• extend (reduce) a list of local data elements presented in the resource. Changes are made by editing Connection to data in the section of description “Data source”

• change the resource segmentation and data record structure in the transport data file by editing the “Data hierarchy” section of the description.

3. If it is required to reset mapping of local codes into system codes, choose (3) to switch to the bookmark “Code mapping”. The required instructions are given in the previous section of the document.

Resetting of code mapping is only necessary if:
• names of system and local dictionaries have been changed;
• codes of system elements used for resource presentation have been changed
• other similar causes have appeared.

4. To set (reset) periodicity of resource description updating (DBMS and structured data files) press icon (4) and you will switch to the bookmark “Updating manager”. The required instructions are given below.

It should be seen that parameters specified in Updating manager correspond to the actual periodicity of local data updating.

Resetting is made only when necessary if:
• scheme of local data set updating has been changed;
• the first settings do not correspond to the actual process of data updating or do not meet normal requirements;
• other similar causes have appeared.

If different parts of the local data set are updated with different periodicity it is recommended to present this set in the form of several resources grouped by similarity of updating periodicity.

5. To test a request press icon (6) and you will switch to the appropriate bookmark. The required instructions are given below.

Make periodic data quality checks with the help of a test request. It is mandatory to make test request after:
• making changes in a resource description, especially in the sections “Data source” (Connection to data) and “Data hierarchy”;
• resetting of code mapping;
• updating of a resource description and generation of resource instances.

Analyze carefully the test outcomes and make corrections on the basis of the analysis.

6. To remove the resource, press (8) in the resource line. The resource will be removed after repeated request.

7. The above actions can be performed in any sequence.

**Usage notes**

1. Be careful when changing resource structure and data record structure. Take into account that the following resource description attributes are synchronized:
• Type of physical data storage system
• Form of presentation
• Type of data record
Name of format
Synchronization is controlled by the software.

2. If in editing a description or in other operations with the registered resource errors were made the resource will automatically change its status to “resource under registration” and the error report will appear.

Further work can be continued from the menu section “Management of resources/resources under registration.”

Setting of periodicity of updating of resource description and generation of resource instances
Setting is made from the appropriate bookmark and consists in specifying
(1) date of the first resource description updating set with the help of the calendar;
(2) periodicity of updating (in milliseconds).
Use (3) to save settings

5.2.2 Adding of resource instances – objective data files and software applications

Purpose
Adding resource instances by manual entry of new objective data files or software applications.

Layout
1 – Resource identification
2 – Type of storage system
3 – List of instances

Description
1. Using (1) and (2) identify the resource to which you plan to add instances.
2. Choose (3) and you will switch to the appropriate bookmark
3. Fill in (or edit) fields of subsection (4) – (7) following the recommendations:
4. Save description (3). In case of errors the error report will appear at the top of the bookmark (see “Error reports”, Section 4.2-4.6).
5. Edit the description of the resource instance and save it (3)
6. To remove the instance, press (8) in the resource line. The instance will be removed after repeated request.
Usage notes

If the errors are not corrected when the description of resource instance is entered (edited), this resource will automatically change its status to “resource under registration” and the error report will be produced.

Further work can be continued from the menu section “Management of resources/resources under registration.”
6 ACCESS AND USE THE AUXILIARY INFORMATION

6.1 Codes

Purpose

Provide access to system codes used for the description of resources.

System codes are presented in the form of a list of codes (fixed lists of codes, representing some specific characteristic of resource and their values – types of data records, types of observation platforms, categories of resources and users, etc).

<table>
<thead>
<tr>
<th>Layout</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Name of code</td>
<td>1. Using (1) choose a code</td>
</tr>
<tr>
<td>2 – Number of codes</td>
<td>2. To switch to viewing of code descriptions click on the name of code.</td>
</tr>
<tr>
<td>3 – Date of updating</td>
<td>3. Use icons to:</td>
</tr>
<tr>
<td>4 – Data export</td>
<td>• sort the list by the chosen field</td>
</tr>
<tr>
<td></td>
<td>• obtain the full list of codes without paging</td>
</tr>
<tr>
<td></td>
<td>• export a code in the form of Excel, Word, pdf, or csv files.</td>
</tr>
<tr>
<td></td>
<td>4. The list of codes is given with the indicated date of modification (3)</td>
</tr>
</tbody>
</table>

6.2 Dictionaries
Purpose

Provide access to system dictionaries (guides) used for code unification of local data

The user interface is similar to that shown above (see item 6.1.). For viewing choose the required dictionary by the name and also use icons to:

- sort the list by the chosen field
- obtain the full list of codes without paging
- copy a dictionary in the form of Excel, Word, pdf, or csv file.

The list of dictionaries is given with the indicated date of modification (3)

6.3 Data elements

In the DDS system data elements are used. In the process of resource registration it is required to set a one-to-one mapping between “local data elements” (in the relevant set of a Data Centre) and “system elements”.

This bookmark is used to plan mapping of local data elements into system elements and to adjust characteristics of system codes if necessary.

The user interface is similar to that shown above (see item 6.1.). For viewing choose the required element by name and also use quick search by the local element name and icons to:

- sort the list of system elements by the chosen field
- obtain the full list of codes without paging
- copy an element of description in the form of Excel, Word, pdf, or csv file.

The list of system data elements is given with the indicated date of modification (3)
Reference guide
on elements of the Data Provider entry forms for resource description

A resource description is made through the Web-forms assuring entry of necessary information into resource description sections. Each section includes subsections consisting of one or several fields to enter elements of the resource description.

### Sections and subsections of resource description

<table>
<thead>
<tr>
<th>Section of description</th>
<th>Subsection of description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identification and connection to data</td>
<td>4. Resource identification</td>
</tr>
<tr>
<td></td>
<td>5. Resource name</td>
</tr>
<tr>
<td></td>
<td>6. Data source</td>
</tr>
<tr>
<td></td>
<td>Connection to data</td>
</tr>
<tr>
<td>2.</td>
<td>6. Metadata</td>
</tr>
<tr>
<td></td>
<td>7. Data source</td>
</tr>
<tr>
<td></td>
<td>8. Tables</td>
</tr>
<tr>
<td></td>
<td>9. Filter</td>
</tr>
<tr>
<td></td>
<td>10. Representation</td>
</tr>
<tr>
<td>Structured data files</td>
<td>4. Metadata</td>
</tr>
<tr>
<td></td>
<td>5. Data source</td>
</tr>
<tr>
<td></td>
<td>6. Representation</td>
</tr>
</tbody>
</table>
| 3. Data presentation and dissemination | 6. Observational platform type [?]
|                         | 7. Data structure and processing |
|                         | 8. Data quality           |
|                         | 9. Data dissemination     |
|                         | 10. Data availability     |
| 4. Time and geographic characteristics | 5. Time characteristics |
|                         | 6. Height (depth) characteristcis |
|                         | 7. Geographic characteristic |
| 5. Contacts             | 4. Contacts (data generator) |
|                         | 5. Contacts (data provider) |
|                         | 6. Contacts (person who performed resource description) |
|                         | 4. Data record structure  |

Composition of the Section “Connection to data” is defined by the type of data storage system (if the type of storage system is objective data files or applications, sections of the description are not filled).
1. Identification and connection to data

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subsection (1): Resource identification</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universal identifier *1</td>
<td>Used for resource identification</td>
<td>Assigned automatically by the Data Provider</td>
</tr>
<tr>
<td>Thematic federation *</td>
<td>Defines to which system of distributed data (federation of data sources) the resource belongs</td>
<td>Assigned by default – DDBS of ESIMO first portion</td>
</tr>
<tr>
<td>Data Provider *</td>
<td>Identifies Data provider in the ESIMO DDBS</td>
<td>Has the following form: BBBBBBBB (see above) and it is assigned automatically</td>
</tr>
<tr>
<td><strong>Subsection (2) Resource name</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource name *</td>
<td>Shows the content of a resource and is used for identification in lists, tables, etc.</td>
<td>Should comply with the list of resources available in the ESIMO Centre operating rules</td>
</tr>
<tr>
<td>Description</td>
<td>Shows the content of a resource and is used in the ESIMO user interfaces</td>
<td>See above (Resource name)</td>
</tr>
<tr>
<td>URL-reference to additional information</td>
<td>Reference to additional data which can be useful for users</td>
<td>Reference to the document containing a data set description and other documents (article, HTML page and other)</td>
</tr>
<tr>
<td>Key words</td>
<td>Describe the content and specific features of data for the context data search</td>
<td>Choose key words from the fixed list – no less than 5-6 words</td>
</tr>
<tr>
<td><strong>Subsection (3) Data source</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of data *</td>
<td>Defines the content of a local data set</td>
<td>Choose: metadata or data depending on the content of a local data set</td>
</tr>
<tr>
<td>Type of physical data storage*</td>
<td>Defines the system of local data storage and DP service providing access to data</td>
<td>Choose from the list: DBMS, structured data file, objective data file, application</td>
</tr>
<tr>
<td>Instance caching</td>
<td>Defines whether it is necessary to save a resource instances in the form of transport data files (or not) when performing planned generation of resource instances</td>
<td>Use “on” mode to considerably improve access to local data, especially for operational data.</td>
</tr>
</tbody>
</table>

2. Connection to data

1 Mandatory description attribute
### 2.1. Connection to data - DBMS

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subsection (1): Metadata</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Provides information on the DP organization</td>
<td>Use the abbreviation of the Data Centre (BBBBBBBB) from resource identifier</td>
</tr>
<tr>
<td>Code</td>
<td>Used for DP identification</td>
<td>Use DP identifier assigned in the process of DP installation (BBBBBBBB: RIHMI-WDC, AARI, etc.)</td>
</tr>
<tr>
<td>Related information</td>
<td>Intended to provide additional information on the DP organization</td>
<td>Use URL reference to the site of the Data Centre</td>
</tr>
<tr>
<td>Contact</td>
<td>Defines the type of contact: administrative or technical, and contains information on the staff member responsible for the DP maintenance</td>
<td>Provide complete information</td>
</tr>
<tr>
<td>- Contact/Name</td>
<td>Provides data about the DB access service, which can be useful for users</td>
<td>Do not fill in</td>
</tr>
<tr>
<td>- Contact/Position</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Contact/email</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Contact/phone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstract Keywords</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Constraints</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conceptual Schema</td>
<td>The full address of the conceptual XML schema (a list of system data elements) is defined</td>
<td>Assigned with the installation and setup of DP</td>
</tr>
<tr>
<td>Schema Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Record Identifier</td>
<td>Used to specify a response data flow identifier</td>
<td>An element of identifier of the resource being described is indicated - BBBBBBBB (see. 5.1.2)</td>
</tr>
<tr>
<td>Record Basis, MinQueryTermLength, MaxSearchResponseRecords, MaxInventoryResponseRecords</td>
<td>Not used</td>
<td></td>
</tr>
<tr>
<td><strong>Subsection (2) Data source</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Defines the type of access</td>
<td>Only “SQL” should be used</td>
</tr>
<tr>
<td>Driver</td>
<td>Defines the name of PHP ADODB driver.</td>
<td>Select from the provided list</td>
</tr>
<tr>
<td>Database encoding</td>
<td>Specifies encoding of characters used by database driver (“utf-8” and other).</td>
<td>Select from the provided list</td>
</tr>
<tr>
<td>Database string</td>
<td>Describes database IP address</td>
<td>If necessary it may be the address of the database administrator</td>
</tr>
<tr>
<td>Name of field (element of description)</td>
<td>Purpose</td>
<td>Guide on how to fill in</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Username</td>
<td>Identifies a database user</td>
<td>It is recommended to identify a special user, who is authorized to read only those tables which are used by resource</td>
</tr>
<tr>
<td>Password</td>
<td>Password to access database taking into account conditions described above</td>
<td>See Username</td>
</tr>
<tr>
<td>Database name</td>
<td>Defines the database name</td>
<td>Ensure this is correct</td>
</tr>
<tr>
<td><strong>Subsection (3) Tables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root table and keyfield</td>
<td>Defines the root table and column with the unique table row identifier E.g. rootTab and kfield.</td>
<td>Should be chosen from the fixed list &lt;table name.field name&gt; being provided. The list is formed on the basis of the section “Data source”</td>
</tr>
<tr>
<td>New join</td>
<td>Joins a new table to the root table using “-between-“ and “-and-“. Taking into account the above example the table “child1” joins the root table by the fields “child1 field” in the table “child1” and “parentfield1” in the root table</td>
<td>Should be used if resource data are located in two and more database tables. New join is described as often as it is required by the composition of the resource</td>
</tr>
<tr>
<td><strong>Subsection (4): Filter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add simple comparison, Add logical comparison</td>
<td>Defines – column- (table/field), comparator (operator of comparison), type (data type) and value to which comparison should be made. A simple comparison assures data filtration by one field of one database table, a logical comparison allows for filtration by several fields of several tables.</td>
<td>The choice of simple or logical comparison is defined by the planned content of resource.</td>
</tr>
<tr>
<td><strong>Subsection (5) Mapping</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System data element (concept)</td>
<td>Defines system data element (concept) into which local data element should be mapped. E.g. M4000 Data unit: identifier or P0048_00 Water salinity</td>
<td>No actions are required. In the column the list of system elements fixed for the current moment is given. It can be filtered taking into account specific features of Centre’s data – WKS Administrator/Localization of system data elements</td>
</tr>
<tr>
<td>Searchable and returnable data element</td>
<td>Not used</td>
<td>Do not edit</td>
</tr>
<tr>
<td>Table</td>
<td>Defines a database table from the list specified in the section “Tables”. E.g. rootTab child1</td>
<td>Choose a table from the fixed list “-table-“.</td>
</tr>
<tr>
<td>Field</td>
<td>Defines a field of the chosen database table (see above)</td>
<td>Choose field from the fixed list “-field-“.</td>
</tr>
<tr>
<td>Name of field (element of description)</td>
<td>Purpose</td>
<td>Guide on how to fill in</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------</td>
<td>--------------------------</td>
</tr>
<tr>
<td><strong>Data type</strong></td>
<td>Defines data type (text, numeric, date/time) of the chosen local element.</td>
<td>Choose data type from the list “-type-“. Pay attention to agreement between data types of system and local elements</td>
</tr>
</tbody>
</table>

### 2.2. Connection to data – Structured data files (SDF)

#### Subsection (1): Metadata

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uniform resource identifier <em>(^2)</em></td>
<td>Used to for resource identification.</td>
<td>Assigned automatically</td>
</tr>
<tr>
<td>Data format</td>
<td>Used for setting the SDF access service. In addition to ASCII files with separators (or without separators) DP supports several specific data formats</td>
<td>Choose from the list. Normally “ASCII with a separator”.</td>
</tr>
</tbody>
</table>

#### Subsection (2): Data source

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td>File name</td>
<td>Defines a mechanism of access to data files: directory, mask of directory name, list of data file.</td>
<td>Choose a data file directory, if all data files of the directory represent a resource. E.g. (c:{data}e2). Or specify a mask of directory name. E.g. (c:{data}<em>2007</em>). Specify a file name mask using “<em>”</em>. E.g. (c:{data}e2)<em>resource</em>.txt. Or choose specific data files. E.g. (c:{data}e2|resourceA.txt; c:{data}e2|resourceA.txt...) If necessary use combination of the above methods</td>
</tr>
<tr>
<td>Size of file or directory</td>
<td>Defines the size of file (Mb, Kb)</td>
<td>Defined by the software according to which data files are chosen [?]</td>
</tr>
</tbody>
</table>

#### Subsection (3) Mapping

<table>
<thead>
<tr>
<th>Name of field (system data element)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element name</td>
<td>Defines a system data element into which a local data element should be mapped. E.g. M4000 Data unit: identifier or P0038_00 Nitrites, mcg/l. Elements</td>
<td>No actions are required. In the column the list of system elements fixed for the current moment is given. It can be filtered taking into account specific features of Centre’s data – WKS</td>
</tr>
</tbody>
</table>

\(^2\) Mandatory element
<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td>correspond to local elements: M4000: cruise_num – 1st element in record, field: 1-5 bites of record, type – text; 2) P0038_00: NO₂, 10th element in record, field 123-127 bites, mcg-atm/l (local units of measurements differ from system units of measurements)</td>
<td>Administrator/Localization of system data elements</td>
<td></td>
</tr>
<tr>
<td>Number of position of the local element’s field beginning</td>
<td>Defines position of the local element’s field beginning (byte number from the beginning of record). It is used if SDF does not have separators. In the above example: 1 (for M4000), 123 (for P0038_00)</td>
<td>Specify byte number of the local element’s field beginning from the beginning of record</td>
</tr>
<tr>
<td>Number of position of the local element’s end</td>
<td>Defines position of the local element’s field end (byte number from the beginning of record). It is used if SDF does not have separators. In the above example: 5 (for M4000), 127 (for P0038_00)</td>
<td>Specify byte number of the local element’s field end from the beginning of record</td>
</tr>
<tr>
<td>Element number in record</td>
<td>Defines element number in record. It is used if SDF has separators (“;”). In the above example: 1 (for M4000), 10 (for P0038_00)</td>
<td>Specify element number in record</td>
</tr>
<tr>
<td>Data type</td>
<td>Defines data type (text, numeric, date/time) of the chosen local element. If system element and local element being mapped are defined as “year, month, day, etc” , a “numeric” data type of element storage is used</td>
<td>Choose data type from the list. Pay attention to agreement between data types of system and local elements</td>
</tr>
<tr>
<td>Arithmetic operations</td>
<td>Defines arithmetic operations according to the following template (/,<em>,-,+) [number] (/,</em>,-,+) [number]) In the above example: for P0038_00 it is necessary to convert local units (mcg-atm/l) to system units (mcg/l) through division by NO₂ atomic weight, which is 22.12. :/22.12 should be indicated in the field.</td>
<td>Specify arithmetic operations if necessary.</td>
</tr>
</tbody>
</table>
3. Data presentation and dissemination

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subsection (1): Platform of observations (activities)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category of platform</td>
<td>Describes the category of observational platform type (marine-related activities), data on which (or from which) constitute a resource: Ground-based and sea-bed platforms - Submarine vessel - Ship - Buoy, mooring system - Ballón - Aircraft, satellite, rocket - Special platforms - Category of platform is not clearly identified</td>
<td>Identify category of platform by choosing from the list. If the data set contains data from platforms of several categories use filter (see the section Identification and connection to data) and register the data set as several resources.</td>
</tr>
<tr>
<td>Type of platform</td>
<td>Describes type of platforms of observation (marine-related activities) within the chosen category (see above)</td>
<td>Choose type of platform from the list. It is possible to choose several platforms of one category</td>
</tr>
<tr>
<td><strong>Subsection (2): Data structure and processing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of data processing*</td>
<td>Defines a level of data processing: observed data – any measured data; generalized (for a specific year) data – output of data processing, analysis, etc. - generalized data (for a long-term period) - output of data processing, analysis, etc. - forecasting data – output of models and processes forecasting techniques, including processes of marine-related activities: - level of data processing is not identified – scientific-</td>
<td>Choose code from the list corresponding to data categories: - observed data – sea water temperature and salinity, port capacity, location of a ship on the specified data; - generalized (for a specific year and for a long-term period) data – annual means of water temperature by months, wind field for a ten-day period, average number of Russian ships at sea by quarters for 1995-2000; - forecasting data – estimation of future funding of marine-related activities in Russia for 2008-2012; level of data processing is not identified – international law documents in the field of marine-related activities</td>
</tr>
</tbody>
</table>

---

3  * - Mandatory attribute
3  In this field it is possible to place more than one element (use “;” as the separation symbol)
<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>and-production information, scientific-and technical information, guidance documentation and other types of information, which does not allow a level of data processing to be identified.</td>
<td>Note: Generalization (for a specific year or long-term period) defines a time mask for describing data time coverage</td>
</tr>
<tr>
<td>Spatial presentation*</td>
<td>Defines systematization: - fixed point (data series for points fixed in space); - trajectory (data series of vector representation); - region (data series for regions with the predetermined 4 or more boundary coordinates, test sites); - grid (series of grid point data) - spatial presentation is not defined (data are not systematized or this attribute of description cannot be used).</td>
<td>Choose code from the list. Examples: - fixed point – data from meteorological stations, ports, etc. - trajectory – data from RV cruises, satellite passes, sections, ect. - region – data for Marsden trapezoids, latitudes, administrative regions, districts, etc. - grid – 1-degree grid point data, 50-km grid point data, ect</td>
</tr>
<tr>
<td>Time presentation *</td>
<td>Defines time frequency of data presentation; every hour, every day, every month, etc.</td>
<td>Choose code from the list taking into account data characteristics. E.g. If the resource “Climate fields of the Barents Sea water temperature and salinity” consists of a series of objective data files containing temperature fields for every month (or every ten-day period), use code “Every month” (“Every ten-day period”), etc. If you describe files containing guidance, legal or similar information, use code “Not identified”.</td>
</tr>
<tr>
<td>Vertical presentation *</td>
<td>Defines presentation of data by height (depth): - nonstandard levels; - layer; - surface (sea, land); - standard levels; - not identified.</td>
<td>Choose code from the list taking into account data characteristics. E.g. If the resource “Climate fields of the Baltic Sea water temperature ” consists of files containing temperature fields at standard levels, use code “Standard levels” or if the resource contains text description of a water temperature jump level, use code “Layer”. For resources containing guidance, legal and similar information code “Not identified is mainly used”.</td>
</tr>
</tbody>
</table>

**Subsection (3): Data quality**

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data quality description</td>
<td>It contains information on local data set quality control.</td>
<td>Using plain text provide brief information on quality control of the</td>
</tr>
<tr>
<td>Name of field (element of description)</td>
<td>Purpose</td>
<td>Guide on how to fill in</td>
</tr>
<tr>
<td>--------------------------------------</td>
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<td>-------------------------</td>
</tr>
<tr>
<td>data set represented by the resource. If the document describing quality control procedures is available, give its URL.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Subsection (4): Data dissemination**

**Periodicity of data source updating *:** Defines the periodicity of local data set (DBMS database, data file) updating: every hour, every day, every month, other. Choose code from the list. It should correspond to data set updating principles formulated in the Operation Rules of your Centre.

**Data presentation form *:** Defines data presentation form:  
- digital table, profile and model – structured data in the form of E2EPointDD (flat data table), E2EProfileDD (heading and data table), E2EGridDD (heading and several data tables) records respectively;  
- digital map – shape-files in vector format;  
- digital document – any electronic document in formats msword, acrobat, html;  
- digital presentation – any presentation including raster format maps;  
- digital video – video (film).  
Choose code from the list. Code is controlled by software depending on the type of data storage:  
- for DBMS or structured file it is possible to choose: digital table, profile and model;  
- for objective data files (ODF) or applications other forms of presentation are used with the exception of those mentioned above.

**Data presentation format and format version *:** Defines the data format. Codes contain only self-documenting formats (structures and languages) and multimedia formats; for specific formats one code is identified - localFormat, undefined.  
If type of physical data storage is ODF and application, code from the list of code should be chosen taking into consideration the data presentation form previously specified.  
This field should be filled in only for ODF. Choose format from the list taking in to account the data presentation form. Only one data format is possible.  
E.g.: NetCDF,v.3, HDF, v.4, BUFR,undefined, UiDF, text/plain,undefined, text/xml,undefined, application/msword, undefined, application/pdf, undefined, image/tiff,undefined, video/avi,undefined, application/arcview, v.9
<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media on which it is possible to obtain data (not on-line)</td>
<td>Defines type of media on which data can be obtained on request.</td>
<td>Plain text</td>
</tr>
</tbody>
</table>

**Subsection (5) Data availability**

| Conditions of access to information | Defines conditions of access to data by categories: - “free information” (available for all users without any conditions); - “information provided to specific users” (government bodies and their organization, data centres, etc) through user-WKSs and authorized access directly from the ESIMO portal | Category of access is defined in the list of resources given in the Operation Rules of your centre. Choose category from the list following this document carefully. |
| Conditions of information use | Condition of information use are fixed – copyrights rights of ownership are mandatory. | plain text |
## 4. Time and geographic characteristics

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subsection (1): Time characteristics (time coverage)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date/time of beginning <strong>4</strong></td>
<td>Defines date/time of data beginning in the resource (resource instance). This attribute has a template: YYYY-MM-DD:Thh-mm set by the mask “date/time” depending on the attributes “Level of data processing”, “Time presentation” (the section “Presentation and dissemination”). If the type of physical data storage is DBMS and ODF, the value of elements is updated automatically following task manager (see WKS Administrator/Task manager management)</td>
<td>Specify data/time of data beginning using time mask. Detailed rules of data/time mask setup are given below (see Notice) For regulatory, guidance and scientific-technical information date of publication should be given.</td>
</tr>
<tr>
<td>Date/time of end</td>
<td>Similar to the above</td>
<td>Specify date/time of end using time mask. If date/time of beginning and date/time of end are the same, both fields should be filled in.</td>
</tr>
<tr>
<td><strong>Subsection (2): Characteristics of height (depth) vertical coverage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum height (depth)</td>
<td>Defines minimum value of height of observations (measurements, calculation values) in data. Height has “+” sign, depth has “-” sign. Default units of measurements are meters (integer). If the type of physical data storage system is DBMS and ODF, value of element is updated automatically following task manager (see WKS Administrator/Task manager management)</td>
<td>Specify minimum height (depth)</td>
</tr>
<tr>
<td>Maximum height (depth)</td>
<td>Similar to the above</td>
<td>Specify maximum height (depth) in the element field. If minimum and maximum heights (depths) are equal give minimum value again. If the attribute “Vertical presentation” is “layer”, “nonstandard levels”, “standard levels” minimum and maximum values of height (depth) should differ. Both values should be of one sign</td>
</tr>
</tbody>
</table>

---

**4** - Mandatory attribute
<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subsection (3): Geographic characteristics (geographic coverage)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifier of geographic area, Name of geographic area</td>
<td>Defines geographic areas for the data contained in the resource. Choices are defined by system dictionaries: - oceans and seas; - cities of Russia (including sea ports); - countries (territories) - constituents of Federation; - federal districts.</td>
<td>Choose type of geographical area: ocean and sea, etc.; choose geographical areas from the list. If necessary use “remove”.</td>
</tr>
<tr>
<td>Most westerly, easterly, northerly and southerly points of the region*</td>
<td>Defines 4 boundary coordinates (+north/east, -south/west) of the geographic region enclosing the data. If the type of physical data storage system is DBMS and ODF, boundary coordinates are updated automatically with periodicity set by task manager (see WKS Administrator/Task manager management)</td>
<td>Specify 4 boundary coordinates. Use degrees and fractions of degrees if necessary (62.3, -15.0). If data are concentrated in one fixed point coordinates of points should coincide.</td>
</tr>
</tbody>
</table>
## 5. Contacts

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subsection (1): Contact (role “Data generator”)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of organization</td>
<td>Defines organization which prepared the data</td>
<td>Choose abbreviation of the organization from the list</td>
</tr>
<tr>
<td>Role</td>
<td>Defines the type of contact – Data generator</td>
<td>Set by the software</td>
</tr>
<tr>
<td>Name and position</td>
<td>Defines the contact person in the organization</td>
<td>Fill in the fields of description attributes</td>
</tr>
<tr>
<td>Phone</td>
<td>Defines the address and other reference information</td>
<td>Fill in the fields of description attributes</td>
</tr>
<tr>
<td>Fax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point of delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative district</td>
<td></td>
<td></td>
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<tr>
<td>Zip code</td>
<td></td>
<td></td>
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<tr>
<td>Country</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet-address</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subsection (2): Contact (role “Data provider”)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of organization</td>
<td>Gives information on the organization which provides data to the ESIMO DDBS</td>
<td>Choose from the list abbreviation of Data Center organization-provider of information</td>
</tr>
<tr>
<td>Role</td>
<td>Defines the type of contact – Data provider</td>
<td>Set by the software</td>
</tr>
<tr>
<td>Name and position</td>
<td>Defines the contact person in the organization</td>
<td>Fill in the fields of description attributes</td>
</tr>
<tr>
<td>Phone</td>
<td>Defines the address and other reference information</td>
<td>Fill in the fields of description attributes</td>
</tr>
<tr>
<td>Fax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point of delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative district</td>
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<td>Zip code</td>
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<td>Country</td>
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<td>E-mail</td>
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<tr>
<td>Internet-address</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of field (element of description)</td>
<td>Purpose</td>
<td>Guide on how to fill in</td>
</tr>
<tr>
<td>----------------------------------------</td>
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</tr>
<tr>
<td>Subsection (3) Contact (role “Contact person”)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of organization</td>
<td>Defines the organization where the description was prepared</td>
<td>Choose from the list abbreviation of Data Center organization-provider of information</td>
</tr>
<tr>
<td>Role</td>
<td>Defines the type of contact – contact person</td>
<td>Set by the software</td>
</tr>
<tr>
<td>Name and position</td>
<td>Define the person who performed resource description</td>
<td>Fill in the fields of description attributes</td>
</tr>
<tr>
<td>Phone</td>
<td>Define the address and other contact information</td>
<td>Fill in the fields of description attributes</td>
</tr>
<tr>
<td>Fax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point of delivery</td>
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<td>Internet-address</td>
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</tbody>
</table>
### 6. Data hierarchy

<table>
<thead>
<tr>
<th>Name of field (element of description)</th>
<th>Purpose</th>
<th>Guide on how to fill in</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subsection (1) Resource structure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data element</td>
<td>Provide a list of system elements – metadata for choosing key elements</td>
<td>Select from the fixed list of elements – metadata specified in the section “Identification and connection to data”</td>
</tr>
<tr>
<td>Key</td>
<td>Contains one or more key elements-metadata defining resource instances</td>
<td>Choose from the list (marked as “Data element”) key elements defining resource segmentation into instances</td>
</tr>
<tr>
<td><strong>Subsection (2): Structure of data records</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>List of data element in record header</td>
<td><em>It is used for specifying elements of header of the records</em> E2EProfileDD, E2EGridDD</td>
<td>See subsection (1)</td>
</tr>
<tr>
<td>Data element</td>
<td>see subsection (1)</td>
<td></td>
</tr>
<tr>
<td>Record</td>
<td>Contains a list of data record header elements</td>
<td>Choose from the list (marked as “Data element”) elements which will be placed in the data record header and carry them to the field “Record”.</td>
</tr>
<tr>
<td>Key</td>
<td>Contains one and more key elements-metadata defining data record</td>
<td>Choose from the list (marked as “Key”) elements. With changing of these elements data record will be formed.</td>
</tr>
<tr>
<td>List of elements in data table</td>
<td><em>It is used for specifying elements of data table of the records</em> E2EPointDD, E2EProfileDD, E2EGridDD</td>
<td></td>
</tr>
<tr>
<td>Data element</td>
<td>Contains the list of all system elements (metadata and parameters) specified by the description of the section Mapping (the section Identification and connection to data”)</td>
<td></td>
</tr>
<tr>
<td>Record</td>
<td>Contains a list of data table elements</td>
<td>Choose from the list (marked as “Data element”) elements which will be included into data table. If the element has already been included into record header it should not be included into data table.</td>
</tr>
<tr>
<td>Key</td>
<td>Contains one and more key elements-metadata defining data record</td>
<td>Choose from the list (marked as “Key”) elements. With changing of these elements data record will be formed.</td>
</tr>
<tr>
<td><strong>Data file composition</strong></td>
<td><em>It used to define the content of objective data file</em></td>
<td></td>
</tr>
<tr>
<td>Name of field (element of description)</td>
<td>Purpose</td>
<td>Guide on how to fill in</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>---------</td>
<td>------------------------</td>
</tr>
<tr>
<td><strong>Data elements</strong></td>
<td>Contains the list of all system elements (metadata and parameters) specified by the description of the section Mapping (the section Identification and connection to data”) and group elements (by default)</td>
<td></td>
</tr>
<tr>
<td><strong>Data file</strong></td>
<td>Shows the content of objective data file</td>
<td>Choose from the list (marked as “Data element”) elements (simple and group) which show the content of objective data file</td>
</tr>
</tbody>
</table>