Preparatory Actions for
European Marine Observation and Data Network

DTM exchange format specification

Service Contract No. "MARE/2008/03
Lot 1 Hydrography – SI2.531515"

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Version informatie				
Version	**Date**	**Description**	**Author**	**Distributed**
v0.1	13-8-2009	Draft	R. Vossen	M. Ronda
v0.2	17-8-2009	Draft	R. Vossen	D.M.A. Schaap
v1.0	17-8-2009	Final	R. Vossen	EMODNET Consortium members
v1.1	9-3-2010	Final. Addition after synchronizing with latest QA/QC definitions	R. Vossen	Eric Moussat, Peter Hunter
v1.2	26-3-2010	Removed some fields, added precision, changed field separator in ;	R. Vossen	EMODNET Consortium members
v1.3	26-3-2010	Depth not a mandatory due to generation and export considerations	R. Vossen	EMODNET Consortium members
v1.4	8-4-2010	Extended field 11, 12 to 100 char. On request of IFREMER	R. Vossen	EMODNET Consortium members
v1.5	7-2-2011	Changed the usage of the CDI ID and DTM source parameter (fields 11 and 12). Reference: Seabedmapping_Meeting_ MARIS_ATLIS_Jan2011-v2.doc	R. Vossen	EMODNET Consortium members + Public
V1.6	27-11-2017	Change in DTM format definition concerning elementary surfaces	DMA Schaap	EMODNET Consortium members + Public

1 INTRODUCTION

Goal

This document describes the specification for the exchange from the regional Digital Terrain Models (DTM) to the central DTM as managed by ATLIS. Using this specification will enable a smooth integration of the different regional DTM's into the central portal DTM.

Scope

The specification in this document only defines the requirements with respect to the technical data format. The specification does not address the quality of the data / DTM, nor does it specify the related metadata. The quality of the data / DTM will be dealt with by QA / QC activities. The metadata will be based on the SeaDataNet Common Data Index (CDI) and will be specified separately.

2 BACKGROUND

The different regional DTM's will be integrated into the central portal DTM in order to allow public access and viewing of this data. The following three regions are identified:

- The Atlantic Ocean (Channel, Celtic Seas, Western Approaches);
- The North Sea and Kattegat;
- The Western and Central Mediterranean sea and Ionian Sea.

For each region the existing data from public and private organizations relating to the state of maritime basins will be collated. All hydrographic data sets are processed and quality controlled in the 3 regional background databases. For each region a Digital Terrain Model including x,y coordinates and water depth will be produced.

The integration of the DTM will be done by importing each of the regional DTM's into the central DTM, which will be based on SENS Bathymetry, a software application of ATLIS. During import additional conversion and processing will take place. The imported DTM's will be stored and maintained using

Oracle Spatial technology. The data then will be made available by the web portal.

3 SPECIFICATION

In order to be able to integrate the regional DTM's, giving x,y coordinates and water depth, the technical data format is specified:

- File format: `Ascii,` semi-colon separated fields;
- Vertical reference: `LAT`.

3.1 Parameters and attribute formats

The parameters and attribute formats are defined in the following table.

No.	Parameter / attribute	Description	Format example	Precision / size
1*	Position Long	Longitude in decimal degrees W (0 … -180) = negative value E (0 … 180) = positive value	52.07334567	8 decimals
2*	Position Lat	Latitude in decimal degrees N (0 … 180) = positive value S (0 … -180) = negative value	3.06033283	8 decimals
3	Depth Min	Minimum over cell in Meters (positive value)	35.61	2 decimals
4	Depth Max	Maximum over cell in Meters (positive value)	36.02	2 decimals
5	Depth Average	Average over cell in Meters (positive value is depth, a negative value indicates a depth above LAT in the intertidal zone)	35.80	2 decimals
6	Depth StDev	Standard Deviation over cell	0.21	2 decimals
7	Interpolations	Number of values used for interpolation over the cell	80	0 decimals
8	Extrapolation	Indicator of cells processed as extrapolation of the neighbouring cells (absence of real soundings data). Set to 1 in case of extrapolation.	0 or 1	0 decimals
9	Depth Smoothed	Water depth smoothed by means of a spline function in Meters	35.90	2 decimals
10	Depth Smoothed Offset	Offset of smoothed water depth related to the average water depth	0.10	2 decimals
11	CDI ID	ID of related CDI metadata record set complete with truncated Id = EDMO-code-provider_Local-CDI-Id. *(format example: 363 = EDMO-code of metadata provider (=CDI author) and 14367 = Local-CDI-Id).*	363_14367	Max. 100 char.
12	DTM source	ID of composite DTM source or version of GEBCO, used to determine the water depth. Parameter 11 or 12 should be present, not both. When both parameters are present, 11 will be used. ID of composite DTM complete with truncated Id = EDMO-code-provider_DTM-ID. (*format example: 363 = EDMO-code of metadata provider (=DTM author) and 12 = DTM-Id).* Version of GEBCO is referenced as: GEBCO_yyyymmdd.	363_12 GEBCO_20091120	Max. 100 char.

* *Parameters 1 and 2 are mandatory. Parameter 5 isn't mandatory because when generating the export file it might be preferable to generate a line for every cell in the grid, even if there is no depth value.*

Parameters having no value are left empty. The last parameter of a DTM record is followed by a semi-colon and linefeed.

3.2 Example

File format example

```
<Position Long>;<Position Lat>;<Depth Min>;<Depth Max>;<Depth Average>;
<Depth StDev>;<Interpolations>;<Extrapolation>;<Depth Smoothed>;
<Depth Smoothed Offset>;<CDI ID>;<DTM source>;
```

File data example (some different, not related records are given)

Record for DTM point based on survey

```
54.00420987; 2.1250017;137.33;140.02;139.56;0.21;80;0;139.90;0.34;363_14367;;
```

Record for DTM point based on composite DTM

```
56.99587893; 1.10416755;86.30;91.20;89.48;0.42;30;0;90.48;1.00;;363_12;
```

Record for DTM point based on GEBCO

```
59.28338076; 0.42500034;;;59.79;;;0;60.00;0.21;;GEBCO_20091120;
```

4 REMARKS

No remarks.