EuroDEM
User Guide

Refers to EuroDEM 1.0, released in April 2008

Contents

Introduction

This User Guide has been designed to provide information needed to use the Euro-DEM dataset.

The Guide is arranged into the following sections :
- "Introduction" : contact details, copyrights, other general information
- "Overview of EuroDEM data" providing an introduction to the EuroDEM product
- "Using EuroDEM" containing some instructions on how to use the dataset

Supporting document for detailed information :
- EuroDEM Product Specifications : *EuroDEM_Product_Specification_v1.pdf*

If you find an error, omission, or have a suggestion about how this guide can be improved, please contact EuroGeographics at the address shown below, under contact details.

Contact details

If you have any problems using EuroDEM or any questions related to the dataset or its use please contact EuroGeographics or the distributor from which you purchased the data.

EuroGeographics' address is as follows :

> EuroGeographics' address is:
> EuroGeographics
> 76, Rue du Nord
> 1000 Brussels
> Belgium
> Telephone: +32 (2) 888 71 93
> E-mail: contact@euroGeographics.org
> Web: https://eurogeographics.org/

The addresses of the contact persons in national mapping agencies are listed in corresponding metadata files.

Product performance

If you have any problems or identify any errors in the data, please complete the product performance report provided in Annex A.

Liability

A full description of the terms and conditions of supply and use of EuroDEM is included in the *End User Licence* signed by your organisation.

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Written notification of any deficiency in the EuroDEM data or damage to the goods must be given to EuroGeographics or the distributor from which you bought the data.

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Copyright statements are specified in Annex B.

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Overview of EuroDEM data

General product description

EuroDEM v1.0 is a pan-European height dataset in a scale of approximately 1:100 000. This digital dataset describes the terrain relief of Europe, consisting of regularly distributed terrain points. EuroDEM covers the 27 EU countries and the 4 EFTA countries as well as Albania, Bosnia-Herzegovina, Croatia, Kosovo, Macedonia, Moldova, Montenegro, Serbia and the Kaliningrad area (see the map on the first page of this document and the list below).

Using the official national databases EuroDEM was produced in cooperation by the National Mapping and Cadastral Agencies of Europe. It is seamless and harmonised at the borders of the countries.

EuroDEM is ideal for a wide range of uses, including ortho-rectification of imagery, watershed analysis, flight simulations, cartographic publishing and so on, or in combination with other datasets for rendering three-dimensional visualisations, for instance.

Coordinate system, horizontal: Geographical coordinates in seconds (longitude, latitude) and based on the ETRS89 spatial reference system, (which corresponds to the WGS84 reference system).

Coordinates system, vertical: Height values in meters based on EVRS

Vertical accuracy: 8 – 10 meters

Grid width: 2 arc seconds (approximately 60 m in meridian direction, E/W dimensions vary according to the latitude)

Metadata: According to ISO19115 standard.

Coverage: Albania, Andorra, Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Gibraltar, Greece, Great Britain, Hungary, Iceland, Ireland, Italy, Kosovo, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Monaco, Moldova, Montenegro, Northern Ireland, Norway, Poland, Portugal, Romania, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands, Vatican and the Kaliningrad area.

The product will be gradually extended targeting to cover the whole of Europe.

SRTM data (Lower quality : +/- 15 m) are applied for Albania, Baden-Württemberg and Saxony in Germany, Bosnia-Herzegovina, Macedonia, Montenegro, Serbia (except Kosovo) and the Kaliningrad area.

Acquisition date : differs between national datasets (mostly from 1990 to 2007)
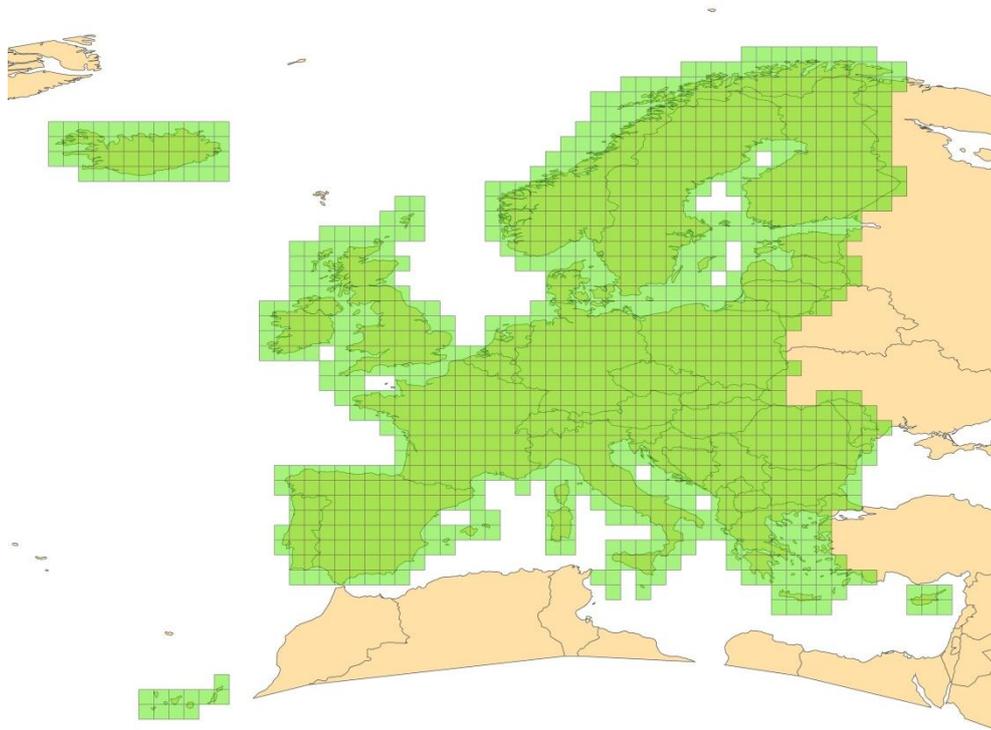
Update: This is the first version of EuroDEM. Presently, there is no fixed date for an update.

For more detailed information see the EuroDEM website:
https://eurogeographics.org/maps-for-europe/eurodem/

Dataset partition

EuroDEM 1.0 has a seamless coverage of Europe. However, the product has adopted a tile partition, which is delimited by degree graduation of longitude and latitude. The tiles have a spatial extent of 1 x 1 degree (3600 x 3600 arc seconds).

Figure 1 : Tiles of EuroDEM

Standard products

Coverages

EuroDEM will be licensed according to two standard product options:

1. Full European coverage including all countries
2. A predefined set covering one of the following 4 European regions:
   - Northern Europe
   - Western Europe
   - Central Europe
   - Eastern Europe

The coverages of the European regions overlap each other so that a country may be included into several regions.

There is no possibility to license a single national dataset of a country. However single national datasets can be licensed in addition to a European region on condition that they create a seamless coverage and constitute a neighbouring country of the region.

	Country
Northern Europe	Denmark Finland Norway Sweden Iceland Estonia Latvia Lithuania Kaliningrad area
Western Europe	Austria Belgium France + Monaco Germany Great Britain Northern Ireland Ireland Italy + San Marino + Vatican Luxembourg Malta Portugal Spain + Andorra + Gibraltar Switzerland + Liechtenstein The Netherlands
Central Europe	Austria Belgium Czech Republic Denmark France + Monaco Germany Hungary Italy + San Marino + Vatican Luxembourg Malta Poland Slovak Republic Slovenia Switzerland + Liechtenstein The Netherlands
Eastern Europe	Albania Bosnia-Herzegovina Bulgaria Croatia Cyprus Czech Republic Greece Hungary Kosovo Macedonia Moldova Montenegro Poland Romania Serbia Slovak Republic Slovenia

Table 1: description of the European regions

Cartographic projection

EuroDEM is available in arc seconds (ETRS89-WGS84) but can be projected into the Lambert projection (conformal conic) ETRS89, suitable for the whole of Europe.

Product delivery formats:

The Full Europe and the European regions can be provided as follows :

- ESRI Grid (ArcGIS Version 9.2)
- ESRI Grid Ascii (ArcGIS Version 9.2)
- GeoTIFF
- XYZ-File (Ascii)

Metadata

Discovery metadata are provided in Excel format, compliant with the ISO 19115 profile. There is a discovery metadata file documenting the entire dataset and a discovery metadata customised by Minimum Unit Dataset, which specifies at the national level the data quality and the production process (source, producer organisation, date of production, reference date of data, accuracy, completeness, and consistency). This discovery metadata delivered by Minimum Unit Dataset is completed by a lineage.doc file describing the level of compliancy with the EuroRegionalMap specifications, any specificity coming from national criteria, the feature and attribute completeness described by feature classes, the reference dates by themes or feature classes.

Each minimum unit dataset is identified by the ICC code of the countries (ISO 3166 two character country code)

Refer to: http://www.iso.org/iso/en/prods-services/iso3166ma/02iso-3166-code-lists/iso_3166-1_decoding_table.html

The dataset naming description is the following one :

Dataset Coding	Minimum Unit Dataset Description
AT	Austria
BE+LU	Belgium + Luxembourg
HR	Croatia
CZ	Czech Republic
CY	Cyprus
DK	Denmark
EE	Estonia
FI	Finland
FR	France including Monaco
DE	Germany
GR	Greece
GB1 (*)	United Kingdom excluding Northern Ireland = Great Britain
HU	Hungary
IS	Iceland
IE	Ireland
IT+SM+VA	Italy including San Marino and The Vatican City

LV	Latvia
LT	Lithuania
MT	Malta
MD	Moldova
GB2 (*)	United Kingdom excluding Great Britain = Northern Ireland
NL	The Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
ES+AD+GI	Spain + Andorra + Gibraltar
SE	Sweden
CH+LI	Switzerland + Liechtenstein

(*) GB is the ISO (UN) code for the United Kingdom. However, this country is split into two da-tasets: Great Britain (GB1) produced by NMCA of Great Britain and Northern Ireland (GB2) pro-duced by the NMCA of Northern Ireland.

Distribution media: DVD, CD-ROM.

File Naming convention

Dataset
The naming convention for a EuroDEM tile will be structured as follows :

The name of the tile is composed of the longitude and latitude values of the left lower corner of the tile, for example :

<div align="center">e06n49</div>

means the tile with the left lower corner coordinates 06° East / 49° North.

Dataset description	Dataset name
ESRI Grid	Data folder with several data files Folder name : e06n49 (with separate "Info" folder)
ESRI Grid Ascii	e06n49.asc
GeoTiff	e06n49.tif
XYZ-File (Ascii)	e06n49.xyz

Metadata

The naming convention for the discovery metadata is:
- <Country Codes>_EuroDEM_Metadata.xls, e.g. *AT_EuroDEM_Metadata.xls*

Data Structure

Raster data (ESRI Grid, ESRI Grid Ascii, GeoTIFF)

The data is stored in these proprietary formats with integer values of the heights (which means height resolution in meters).

XYZ-Files (Ascii)

Dataset format :
<longitude.value[arc seconds]> <latitude.value[arc seconds]> <height.value[meters]>
one height point per line

Example :
21601 179999 387
21603 179999 388
21605 179999 389
…

Using EuroDEM

What you need to use EuroDEM

Hardware

EuroDEM can be used with any computer platform from a PC to a mainframe. There are no specific hardware requirements for managing EuroDEM data.

Software

EuroDEM is a dataset and is delivered without a user interface for displaying or analysing it. Whatever you want to do with the data, you need to have appropriate software.

EuroDEM can be used directly with the ESRI ArcGIS system (ESRI Grid, Esri Grid Ascii and GeoTIFF) and may also be imported into other GIS software packages (GeoTIFF and XYZ-Files).

The Spatial reference

Geodetic Datum: ETRS89
Vertical Datum: EVRS
Coordinate System: Lat/Lon in arc seconds
Resolution of the height: Height value in meters (Integer value)
Geographic Coordinate System: ETRS89
- Datum: D_ETRS_1989
- Spheroid: GRS_180
- Semi major Axis: 6378137
- Semi minor Axis: 6356752.3141403561
Note: In practice it is considered WGS84 = ETRF89 = ETRS89 = GRS80.

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Annex A : Product performance report

Please complete and send to:

EuroDEM Product Manager

    EuroGeographics
    76, Rue du Nord
    1000 Brussels
    Belgium
    Telephone: +32 (2) 888 71 93
    E-mail: contact@EuroGeographics.org
    Web: https://eurogeographics.org/

Description of problem encountered / suggestion:

_____
_____
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_____
_____

Version of data:_____(from DVD/CD)

Your name: _____

Company: _____
Address: _____
              _____
              _____
              _____

Telephone: _____
Facsimile: _____
e-mail: _____

Annex B : Copyright statements

EuroDEM data copyright is held by European National Mapping Agencies:

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