Geo-Seas

# Pan-European infrastructure for management of marine and ocean geological and geophysical data

## Geo-Seas 3D DTM viewer test data README

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| Long Title. | |
| Geo-Seas test data to accompany the 3D viewer | |
| Short Description | |
| This document describes data sets made available to test the installation and the use of the 3D viewer software package developed for viewing the Geo-Seas Digital Terrain Model data sets produced according to the Geo-Seas methodology (described in D11.4). Also contained herein are the conditions of use and downloading procedures to obtain the data sets. | |
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| PU | Public | x |
| CO | Confidential, for project partners and the European Commission only | |

# Executive Summary

This document describes data sets made available to test the installation and the use of the 3D viewer software package developed for viewing the Geo-Seas Digital Terrain Model data sets produced according to the Geo-Seas methodology (described in D11.4). Also contained herein are the conditions of use and downloading procedures to obtain the data sets.

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# 1 Introduction

The *Geo-Seas-3D Viewer* is an innovative and high-performance tool for viewing, interacting with and manipulating data types such as Digital Terrain Models (DTM) and Web Map Service (WMS) which are plugged into a virtual globe.

It has been designed for the purposes of:

- In-depth evaluation of data set content to assess the quality of a DTM (resolution, coverage, quality) using basic GIS functionalities,
- Combining data layers such as sample location, sediment properties etc. using WMS from other data sources to assist end-users searching for data or analyzing interactions between processes on the seabed or between the water column and topographic features.
- Demonstrating the concept of making this type service available to end-users without them requiring specific skills to install or to use the service.

The viewer is based on NasaWorldWind (1)and is a derivative of the SonarScope - 3DViewer (http://www.ifremer.fr/fleet/acous_sism/sonarscope/SSC3D.html) which is primarily aimed at displaying DTM and water column data, such as bubbles and other features detected by SonarScope algorithms (2). The 3D viewer is a freeware module maintained as a component of the *Global Oceanographic Bathymetry Explorer* ***G***LOBE software of Ifremer (http://flotte.ifremer.fr/fleet/Presentation-of-the-fleet/On-board-software).

Figure 1. below shows the appearance of the main pane of the graphic user interface (GUI).

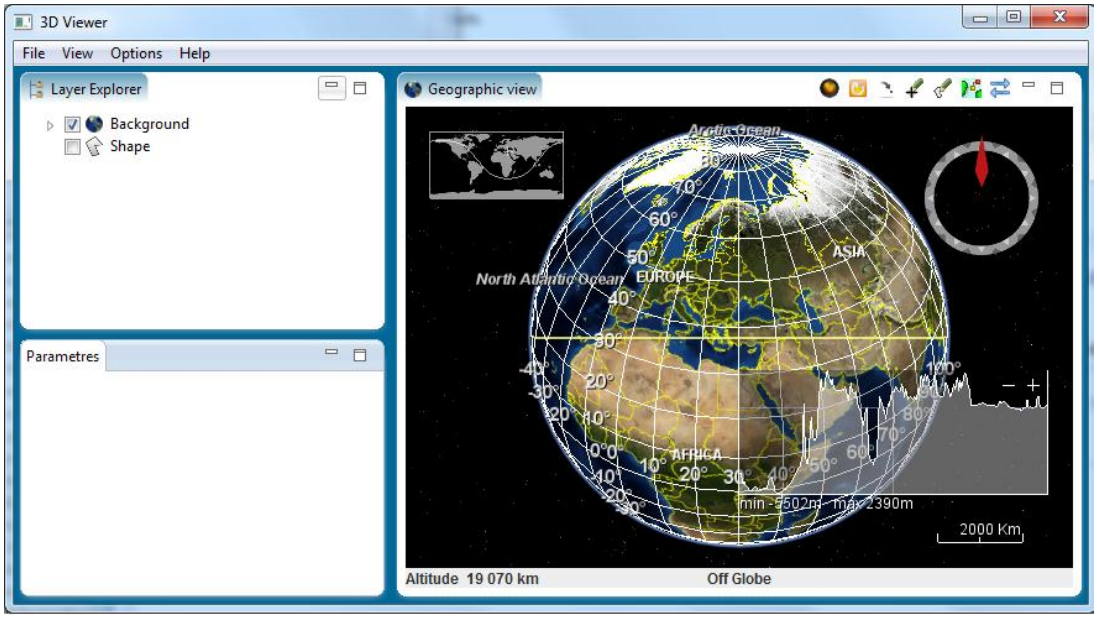


**Figure 1: Start page of the Geo-Seas DTM 3D Viewer**

Attention in drawn to the following key features of the viewer:

- DTM elevation and resolution are correctly and independently rendered, in contrast with other methods which consist of a simple image draped over the softwareôs own DTM, e.g. as is the case in GoogleEarth export (Public Version).
- Vertical exaggeration can be adjusted up to a maximum of 20 times which is expected to suffice for most sea floor representation.
- A variety of different georeferenced scientific data themes (oceanography, geology, etc.) that can be downloaded from WMS server are viewable.
- The Geo-Seas 3D viewer has been specifically designed to allow quick and easy 3D viewing of DTMs distributed using the NetCDF transport format which has been specified and adopted by the European Geo-Seas infrastructure (http://www.geo-seas.eu/). The viewer also uses the DTM source data layers produced with the Geo-Seas standard procedure. This enables users to access the metadata of the source datasets at each DTM cell by means of the unique identifier from the Geo-seas/SeaDataNet Common Data Index (CDI). (http://www.geo-seas.eu/v_cdi_v2/search.asp)
- European Seas bathymetric grids produced in the framework of the Hydrography and Seabed mapping preparatory actions of the European Marine Observation and Data Network (EMODnet) http://www.emodnet-hydrography.eu/ can be downloaded in the Geo-Seas transport format and also viewed using the 3D Geo-Seas viewer.
- These standard format Grids can be produced using Generic Mapping Tool (GMT) and scripts developed specifically for this purpose (see http://www.geo-seas.eu/ for downloading) or by using various software tools such as Caraibes or Sonarscope (http://flotte.ifremer.fr/fleet/Presentation-of-the-fleet/On-board-software).
- The *Geo-Seas 3DViewer* is a complete standalone application based on Nasa WorldWind technology and associated 3D engine. It is developed in Java, and available on all platforms running Nasa WorldWind.

# 2 Test datasets

## 2.1 Description

2 datasets are made available on the Geo-Seas portal for testing and demonstrating the Geo-Seas 3D viewer :

- Emodnet_hydrography_06_WestMed_V3.mnt

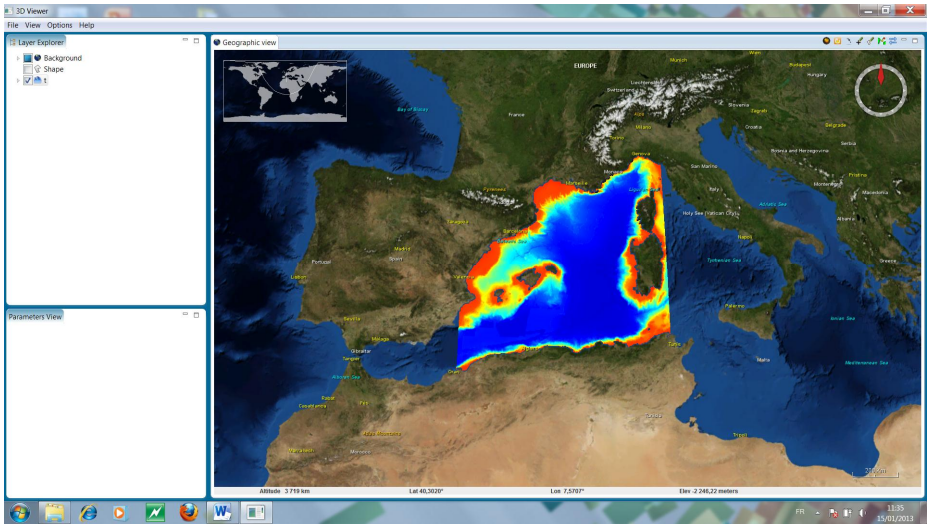


Figure 2 : Emodnet_hydrography_06_WestMed_v3 DTM coverage

Emodnet_hydrography_06_WestMed_V3.mnt is a DTM file with a resolution of ¼ minute of arc (mesh size) in WGS 84 produced in the framework of the EMODNET hydrography project (http://www.emodnet-hydrography.eu/).

- Ifremer_lion-16eme-bathy-cdi2012.mnt

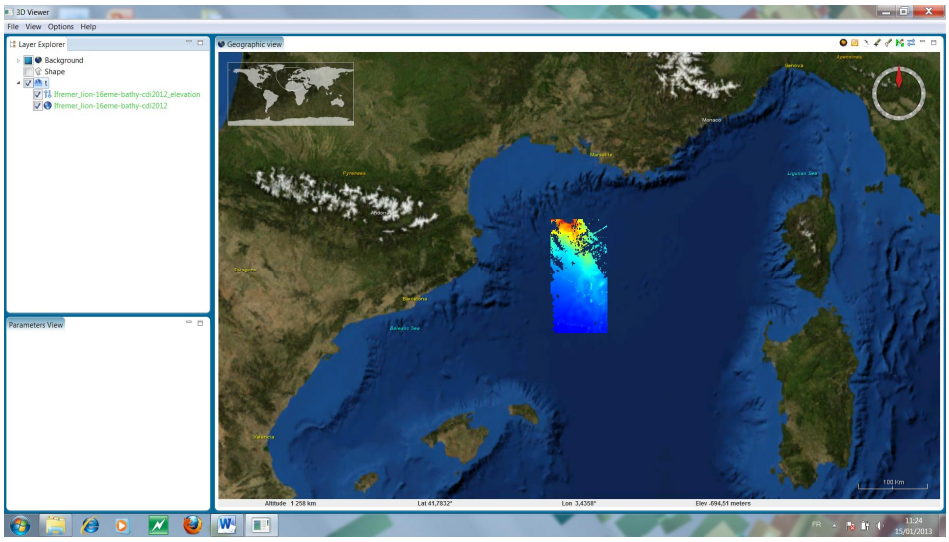


Figure 3 : Ifremer_lion-16eme-bathy-cdi2012 DTM coverage

This DTM is a multiple survey DTM produced by Ifremer (B. Loubrieu) at a resolution (mesh size) of 1/16 minute of arc in WGS 84.

The term ñdatasetsòused below refers to the DTMs described above.

## 2.2 Access to datasets

Downloading from the Geo-Seas portal (http://www.geo-seas.eu/) and using the datasets indicates userós acceptance of the terms and conditions of use of the datasets.

### 2.3 Terms and conditions of use

- The datasets are provided only for testing and demonstrating the functionalities of the Geo-Seas 3D viewer. For any other uses, contact sismer@ifremer.fr.
- The datasets are provided without warranty of any kind. Emodnet hydrography, Geo-Seas and Ifremer do not accept any liability in the use of the datasets made available (damage for loss of business profits, interruption of business activity, loss of business information, or other monetary loss).
- Users must acknowledge Emodnet hydrography in all publications showing results obtained using the Emodnet_hydrography_06_WestMed_V3.mnt dataset.
- Users must acknowledge Ifremer in all publications showing results obtained using the Ifremer_lion-16eme-bathy-cdi2012.mnt dataset.

## 3 Instructions for downloading

The datasets are freely available for 3D testing and demonstrating the Geo-Seas 3D viewer provided the user has accepted the conditions of use.

Go to **/http://www.geo-seas.eu/.**

Select ñ**Product**ò

# Annex A. References

(1) NASA WORLD WIND, Copyright ©, 2001, United States Government as represented by the Administrator of the National Aeronautics and Space Administration, All rights reserved. http://builds.worldwind.arc.nasa.gov

(2) J. M. Augustin, (2012), Sonar-Scope 3D viewer : software tools for the processing and display of oceanographic data from acoustic sensors, Sea Tech Week Conference, Brest, 2012.

# Annex B. Figures and table

Figure 1 : start page of the 3D viewer
Figure 2 : Emodnet_hydrography_06_WestMed_v3 DTM coverage
Figure 3 : Ifremer_lion-16eme-bathy-cdi2012 DTM coverage

# Annex C. Terminology

| Term | Definition |
|---|---|
| **CDI** | Common Data Index : common Geo-Seas-SeaDataNet catalogue of observation datasets http://www.geo-seas.eu/content/content.asp?menu=0020000_000000 |
| **CDI-ID** | Identifier of a dataset in the CDI |
| **DTM** | Digital Terrain Model |
| **EMODnet** | European Marine Observation and Data Network |
| **GIS** | Geographical Information System |
| **GMT** | Generic Mapping Tools (http://gmt.soest.hawaii.edu/) |
| **NASA** | National Aeronautics and Space Administration |
| **NetCDF** | Network Common Data Form : set of software libraries and self-describing, machine-independent data formats that support the creation, access, and sharing of array-oriented scientific data. The project homepage is hosted by the Unidata program at the University Corporation for Atmospheric Research (UCAR) http://www.unidata.ucar.edu/software/netcdf/ |
| **WGS84** | World Geodetic System revision dating from 1984. Global Reference system using latitude and longitude as coordinates (equivalent to EPSG projection 4326) |
| **WMS** | Web Map Service: standard protocol for serving georeferenced map images over the Internet that are generated by a map server using data from a GIS database. The specification was developed and first published by the Open Geospatial Consortium |
| **WW** | World Wind : NASA World Wind is a graphically rich 3D virtual globe. It |

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| | combines NASA imagery generated from satellites that have produced Blue Marble, Landsat 7, SRTM, MODIS and more.<br>Website : http://worldwind.arc.nasa.gov/java/ |
| **3D** | Three dimensions |