Paleocoastlines GIS dataset

M. Zickel, D. Becker, J. Verheul, Y. Yener, C. Willmes

Abstract

This GIS dataset contains 23 different modelled land masks of characteristic sea level high stand/ low stand for events and intervals during a period from 140 ka until today in Europe, the Nearer East and northern parts of Africa. The sea level data was collected from data published in scholarly works and GIS proceeded using GIS software QGIS and ArcMap also as General Bathymetric Chart of the Oceans (2014)DEM.

1 Context

The work for collecting the data and creating this GIS dataset was conducted within the Z2 Data Management and Data Services sub project of the Collaborative Research Centre 806 (www.sfb806.de).
The dataset is assigned with a DOI, and can be cited as follows in scholarly works:

> M. Zickel, D. Becker, J. Verheul, Y. Yener, C. Willmes (2016): Paleocoastlines GIS dataset. CRC806-Database, doi: 10.5880/SFB806.19.

The data was produced as follows: First of all the BoundingBox for GEBCO 2014 (30 arc) DEM was set to the 1.0 -21.0, 62.0 57.0 (CRC806 area) and interpolated to a ten times higher resolution, for increasing the detail of the coastlines. Afterwards raster data was reclassified in order to get the specific elevation level that was mentioned in literature. The next steps were the vectorization of data and extraction of land mask followed by modification of attributes in adding sea level information to the data set.

2 Metadata

The basic descriptive metadata of the dataset is given in this section.

2.1 Basic Metadata

Title	Paleocoastlines GIS dataset
Author(s)	M. Zickel, C. Willmes
Year	2016
License	CC-BY
Topic	Elevation
Keywords	Paleoenvironment, Sealevel, Coastline.
Publisher	CRC806-Database
DOI	10.5880/SFB806.19

2.2 Spatial Metadata

Type	BoundingBox.
BoundingBox (SW, NE)	1.0 -21.0, 62.0 57.0
Region	Europe & North-Africa

2.3 Temporal Metadata

Type	Interval.
Name	Saalian until today.
Interval	140000, 0

For temporal indexing the dates are given in year before present (yBP).

3   Data sources

The Plaeocoastline data was derived from the GeBCO topography and bathymetry data set.

Dataset	Source	Notes
Gebco 2014	General Bathymetric Chart of the Oceans (2014)	The topographic and bathymetric data.

Most of the sealevel data was taken from Fleming et al. (1998) and represents global geoarchive data or rather a fitted european curve where as Lambeck and Purcell (2005) data was calculated for the mediterranean area excluded sealevel -130 m (LGM) which has a more defined area, the adriatic. The plus 5 m eemian sealevel represents global data from Cuffey and Marshall (2000). Sealevel data (-115 m, LGM) taken from Sikora et al. (2014) is set to Central Eastern Adriatic.
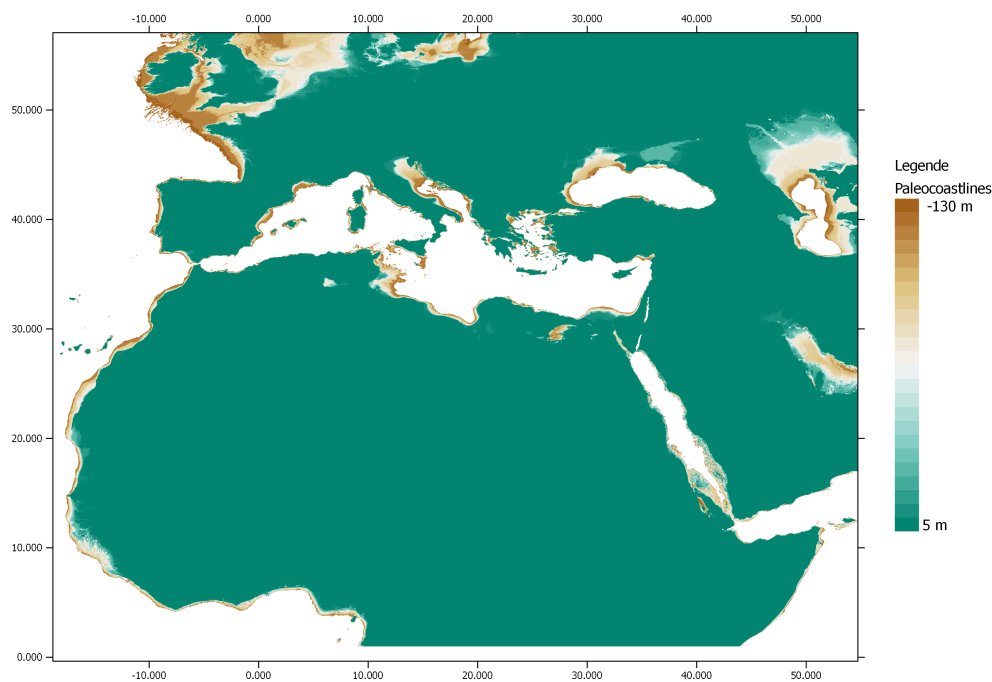
4   Maps and Visualisations

Figure 1: Paleocoastlines between minus 130 m and plus 5 m.

5 Data resources

5.1 File resources

File	Format	Size
Paleocoastlines.zip	Zipped Shapefile	45,04 MB
Paleocoastline_+5m.zip	Zipped Shapefile	2,93 MB
Paleocoastline_-3m.zip	Zipped Shapefile	2,55 MB
Paleocoastline_-5m.zip	Zipped Shapefile	2,56 MB
Paleocoastline_-14m.zip	Zipped Shapefile	2,39 MB
Paleocoastline_-16m.zip	Zipped Shapefile	2,38 MB
Paleocoastline_-18m.zip	Zipped Shapefile	2,35 MB
Paleocoastline_-19m.zip	Zipped Shapefile	2,32 MB
Paleocoastline_-20m.zip	Zipped Shapefile	2,29 MB
Paleocoastline_-21m.zip	Zipped Shapefile	2,25 MB
Paleocoastline_-24m.zip	Zipped Shapefile	2,17 MB
Paleocoastline_-25m.zip	Zipped Shapefile	2,16 MB
Paleocoastline_-27m.zip	Zipped Shapefile	2,09 MB
Paleocoastline_-40m.zip	Zipped Shapefile	1,74 MB
Paleocoastline_-45m.zip	Zipped Shapefile	1,66 MB
Paleocoastline_-50m.zip	Zipped Shapefile	1,6 MB
Paleocoastline_-65m.zip	Zipped Shapefile	1,45 MB
Paleocoastline_-74m.zip	Zipped Shapefile	1,36 MB
Paleocoastline_-77m.zip	Zipped Shapefile	1,33 MB
Paleocoastline_-80m.zip	Zipped Shapefile	1,3 MB
Paleocoastline_-81m.zip	Zipped Shapefile	1,3 MB
Paleocoastline_-115m.zip	Zipped Shapefile	1,04 MB
Paleocoastline_-120m.zip	Zipped Shapefile	1,03 MB
Paleocoastline_-130m.zip	Zipped Shapefile	0,99 MB

5.2   Web resources

DOI	10.5880/SFB806.19
Paleocoastlines GIS dataset - 130 m below to 5 m above mean sea level	`http://crc806db.uni-koeln.de/layer/show/327/`
Paleocoastline 5 m	`http://crc806db.uni-koeln.de/layer/show/325/`
Paleocoastline -3 m	`http://crc806db.uni-koeln.de/layer/show/299/`
Paleocoastline -5 m	`http://crc806db.uni-koeln.de/layer/show/326/`
Paleocoastline -14 m	`http://crc806db.uni-koeln.de/layer/show/305/`
Paleocoastline -16 m	`http://crc806db.uni-koeln.de/layer/show/306/`
Paleocoastline -18 m	`http://crc806db.uni-koeln.de/layer/show/307/`
Paleocoastline -19 m	`http://crc806db.uni-koeln.de/layer/show/308/`
Paleocoastline -20 m	`http://crc806db.uni-koeln.de/layer/show/309/`
Paleocoastline -21 m	`http://crc806db.uni-koeln.de/layer/show/310/`
Paleocoastline -24 m	`http://crc806db.uni-koeln.de/layer/show/311/`
Paleocoastline -25 m	`http://crc806db.uni-koeln.de/layer/show/312/`
Paleocoastline -27 m	`http://crc806db.uni-koeln.de/layer/show/313/`
Paleocoastline -40 m	`http://crc806db.uni-koeln.de/layer/show/314/`
Paleocoastline -45 m	`http://crc806db.uni-koeln.de/layer/show/315/`
Paleocoastline -50 m	`http://crc806db.uni-koeln.de/layer/show/316/`
Paleocoastline -65 m	`http://crc806db.uni-koeln.de/layer/show/317/`
Paleocoastline -74 m	`http://crc806db.uni-koeln.de/layer/show/318/`
Paleocoastline -77 m	`http://crc806db.uni-koeln.de/layer/show/319/`
Paleocoastline -80 m	`http://crc806db.uni-koeln.de/layer/show/320/`
Paleocoastline -81 m	`http://crc806db.uni-koeln.de/layer/show/321/`
Paleocoastline -115 m	`http://crc806db.uni-koeln.de/layer/show/322/`
Paleocoastline -120 m	`http://crc806db.uni-koeln.de/layer/show/323/`
Paleocoastline -130 m	`http://crc806db.uni-koeln.de/layer/show/324/`
OGC OWS	`http://www.sfb806db.uni-koeln.de/owsproxy.php?service=wms&version=1.3.0&request=GetCapabilities`

Acknowledgements

References

Cuffey, K. M. and Marshall, S. J. (2000). Substantial contribution to sea-level rise during the last interglacial from the greenland ice sheet. *Nature*, 404(6778):591–594.

Fleming, K., Johnston, P., Zwartz, D., Yokoyama, Y., Lambeck, K., and Chappell, J. (1998). Refining the eustatic sea-level curve since the last glacial maximum using far- and intermediate-field sites. *Earth and Planetary Science Letters*, 163(1–4):327 – 342.

General Bathymetric Chart of the Oceans (2014). GEBCO 2014 Grid - Gridded bathymetry data. `http://www.gebco.net/data_and_products/gridded_bathymetry_data/`, accessed: 2015-10-22.

Lambeck, K. and Purcell, A. (2005). Sea-level change in the mediterranean sea since the lgm: model predictions for tectonically stable areas. *Quaternary Science Reviews*, 24(18–19):1969 – 1988. Quaternary coastal morphology and sea-level changesQuaternary coastal morphology and sea-level changes.

Sikora, M., Mihanovic, H., and Vilbic, I. (2014). Paleo-coastline of the central eastern adriatic sea, and paleo-channels of the cetina and neretva rivers during the last glacial maximum. *Acta Adriatica*, 55(1):3 – 18. paleo-coastline, paleo riverbed, the Adriatic Sea, LGM, DEM, river network computation.