



Megabiome changes over the last 120kyr (HadCM3)

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

Abstract

This geospatial dataset contains climate data from 120 ka to 0 ka in 1000 to 4000 year steps as raster data. The variable shows biomes representing nine different climate conditions modeled with the HadCM3 - general circulation model. The source data from Hoogakker et al. (2016) was imported from the original published NetCDF file and translated to multiple GEOTIFFs with GDAL. The raster data has been converted to single GeoTIFFs with GDAL's gdal_translate and gdalwarp tool. The dataset has a resolution of 93x73 cells, with a cell size of 3.75° width and 2.5° height.

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:

J. Verheul, D. Becker, M. Zickel, Y. Yener, C. Willmes (2016): Megabiome changes over the last 120kyr (HadCM3). CRC806-Database, doi: 10.5880/SFB806.30.

2 Metadata

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

2.1 Basic Metadata

Title	Megabiome changes over the last 120kyr
Author(s)	J. Verheul, D. Becker, M. Zickel, Y. Yener, C. Willmes
Year	2016
License	CC-BY
Topic	Environment, Paleoclimate
Keywords	LGM, Paleoclimate, Paleoenvironment
Publisher	CRC806-Database
DOI	10.5880/SFB806.30

2.2 Spatial Metadata

Type	BoundingBox
Place	World
BoundingBox (SW, NE)	-90 -180, 90 180
Region	Worldwide

This is da global dataset which also involves the CRC 806 area. The area is delimited by a bounding box in longitude/latitude notation for the southwestern and northeastern corners.

2.3 Temporal Metadata

Type	Interval
Name	Late Pleistocene, Holocene
Interval	120000, 0

For temporal indexing the dates are given in years before present (yBP). The listed interval (120000 ka to 0 ka) is sourced from Hoogakker et al. (2016).

3 Data sources

The Megabiome variable was derived by using the general circulation model named **HadCM3** (Gordon et al., 2000; Pope et al., 2000). The latest part from pre-industrial till 21 ka BP was divided in 1 ka steps. Between 21 ka BP and 80 ka BP the interval switches to 2 ka followed by 4 ka steps till 120 ka BP. The original data by Hoogakker et al. (2016) was supplied in a **NETCDF** file containing longitude/latitude coordinates with the related variable values on 62 individual timebands. The source data was imported from the original **NETCDF** to GEOTIFFs with **GDAL**. The raster data was converted to GeoTIFF with GDAL's *gdal_translate* and *gdalwarp* tool as seen below. The dataset has a resolution of 96x73 cells, with a cell size of 3.75° width and 2.5° height.

```
dal_translate hadcm3.nc a1.tif -of Gtiff -b 1 -projwin_srs EPSG:4326
-a_srs EPSG:4326

gdalwarp -t_srs EPSG:4326 -te -178.125 -91.25 181.875 91.25 -ts 96 73 a1.tif
MEGABIOME1.tif -wo SOURCE_EXTRA=1000 --config CENTERLONG 0
```

Dataset	Source	Notes
Climate Data	Hoogakker et al. (2016)	Climate Data (MEGABIOMES)

4 Maps and Visualisations

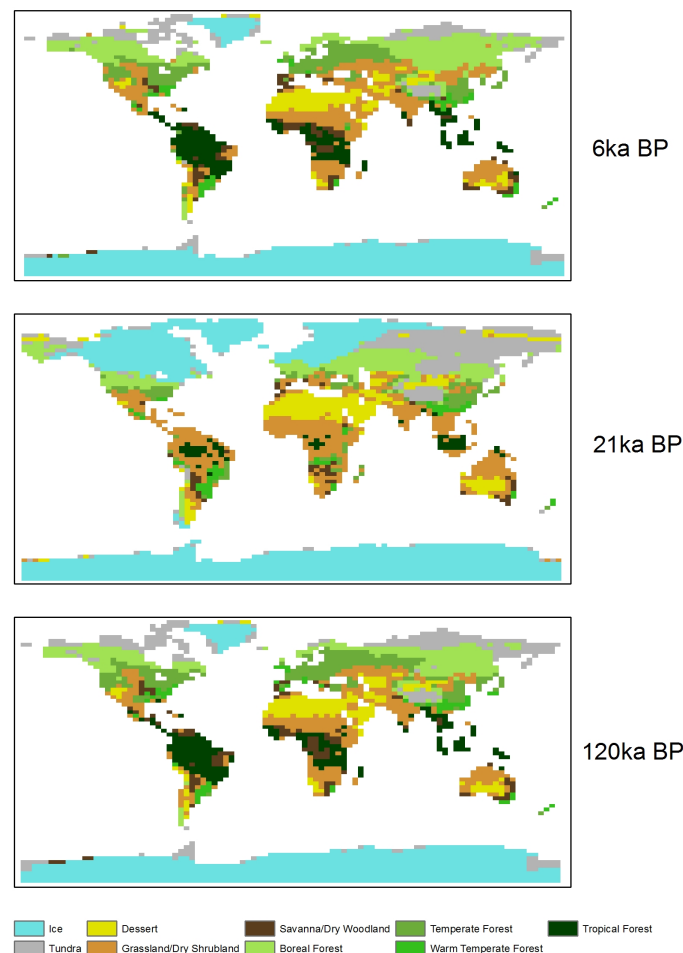


Figure 1: Exemplary maps of the Megabiomes at different times.

The visualisation of the data was conducted with esri ArcGIS 10.4. It shows examples at the three times, the GeoTIFFs are colored with unique colors indicating different megabiomes.



5 Data resources

5.1 File resources

The data was published as .zip files containing the raster files of the three variables and as GEOTIFFs.

File	Format	Size
MB_HadCM3_PreInd-22ka.zip	ZIP file containing GEOTIFFs	60 kB
MB_HadCM3_24ka-80ka.zip	ZIP file containing GEOTIFFs	77 kB
MB_HadCM3_84ka-120ka.zip	ZIP file containing GEOTIFFs	27 kB

5.2 Web resources

Megabiome Pre-I.	http://crc806db.uni-koeln.de/layer/show/407/
Megabiome 6ka	http://crc806db.uni-koeln.de/layer/show/408/
Megabiome 21ka	http://crc806db.uni-koeln.de/layer/show/409/
Megabiome 54ka	http://crc806db.uni-koeln.de/layer/show/410/
Megabiome 64ka	http://crc806db.uni-koeln.de/layer/show/411/
Megabiome 84ka	http://crc806db.uni-koeln.de/layer/show/412/
Megabiome 120ka	http://crc806db.uni-koeln.de/layer/show/413/



Acknowledgements

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References

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- Pope, V. D., Gallani, M. L., Rowntree, P. R., and Stratton, R. A. (2000). The impact of new physical parametrizations in the hadley centre climate model: Hadam3. *Climate Dynamics*, 16(2):123–146.