PREPARING VARIABLES

CICGE
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ALL PROCESSES RELATED WITH OBTAINING AND PREPARING THE ENVIRONMENTAL VARIABLES ARE THE MOST TIME CONSUMING PART OF A MODELLING EXERCISE.

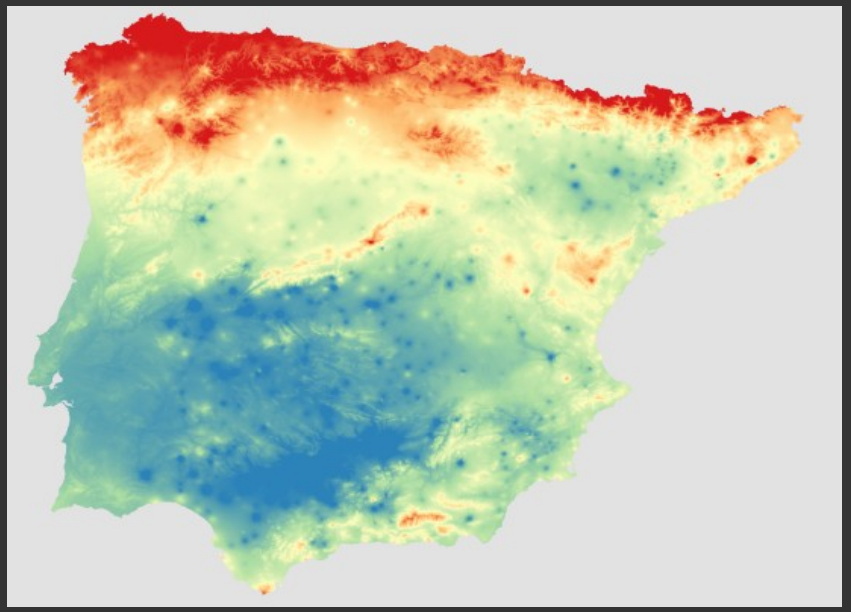
YOU WILL PROBABLY SPEND IN THIS PROCESS AROUND 95% OF YOUR TIME, AND ONLY 5% IN CALCULATING THE MODELS.

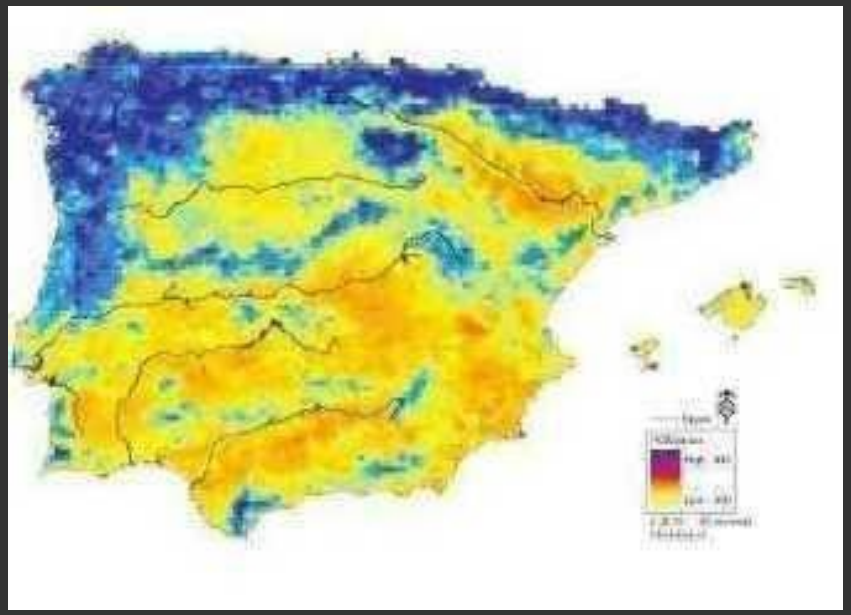
STEPS FOR PREPARING VARIABLES

- Choosing environmental data sources
- Downloading variables
- Clipping variables
- Aggregating variables
- Checking pixel size
- Checking raster limits
- Checking NoData
- Correlating variables

TYPES OF ENVIROMENTAL DATA

- Climate (temperature, precipitation)
- Altitude (slope, aspect)
- Land cover/land use
- Hydrology
- Human impacts





Acta Herpetologica 5(1): 63-85, 2010

Free GIS for herpetologists: free data sources on Internet and comparison analysis of proprietary and free/open source software

NEFTALÍ SILLERO[1], PEDRO TARROSO[2]

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[2] *CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos da Universidade do Porto, Campus Agrário de Vairão, R. Padre Armando Quintas, 4485-661 Vairão, Portugal.* E-mail: pedro.tarroso@gmail.com

Submitted on: 2009, 5th November; revised on 2010, 26th April; accepted on 2010, 3rd May.

- **WORLDCLIM: http://www.worldclim.org/**

INTERNATIONAL JOURNAL OF CLIMATOLOGY
Int. J. Climatol. **25**: 1965–1978 (2005)
Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/joc.1276

VERY HIGH RESOLUTION INTERPOLATED CLIMATE SURFACES FOR GLOBAL LAND AREAS

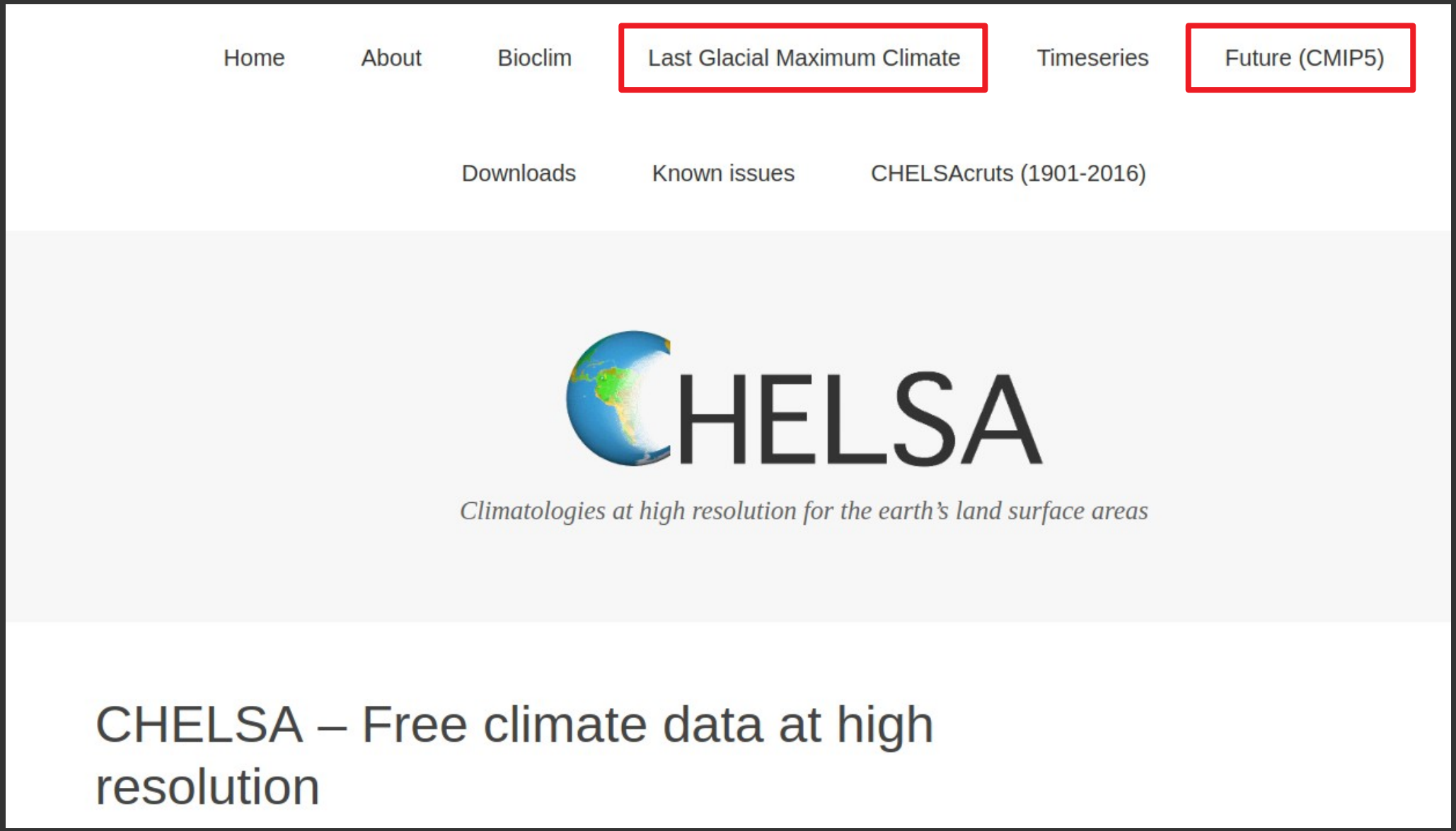
ROBERT J. HIJMANS,[a,*] SUSAN E. CAMERON,[a,b] JUAN L. PARRA,[a] PETER G. JONES[c] and ANDY JARVIS[c,d]
[a] *Museum of Vertebrate Zoology, University of California, 3101 Valley Life Sciences Building, Berkeley, CA, USA*
[b] *Department of Environmental Science and Policy, University of California, Davis, CA, USA; and Rainforest Cooperative Research Centre, University of Queensland, Australia*
[c] *International Center for Tropical Agriculture, Cali, Colombia*
[d] *International Plant Genetic Resources Institute, Cali, Colombia*

INTERNATIONAL JOURNAL OF CLIMATOLOGY
Int. J. Climatol. (2017)
Published online in Wiley Online Library
(wileyonlinelibrary.com) DOI: 10.1002/joc.5086

RMetS
Royal Meteorological Society

WorldClim 2: new 1-km spatial resolution climate surfaces for global land areas

Stephen E. Fick[a]* and Robert J. Hijmans[b]
[a] *Department of Plant Sciences, University of California, Davis, CA, USA*
[b] *Department of Environmental Science and Policy, University of California, Davis, CA, USA*



http://chelsa-climate.org

High-resolution gridded datasets (and derived products)

This page contains four sections:

Current Datasets and Static Climatologies

The CRU TS dataset was developed and has been subsequently updated, improved and maintained with support from a number of funders, principally the UK's Natural Environment Research Council (NERC) and the US Department of Energy. Long-term support is currently provided by the UK National Centre for Atmospheric Science (NCAS), a NERC collaborative centre.

CRU gratefully acknowledges the support of all these funding agencies.

Always read the relevant documentation and publications

CRU TS v. 4.01 The current version of CRU TS, using the new process introduced with version 4.00, which it supersedes. Access at BADC If BADC is down, there is a Local Copy Google Earth Interface (TMP and PRE only)	A gridded time-series dataset This version, released 20 September 2017, covers the period 1901-2016 *Dataset DOI:* http://doi.org/10/gcmcz3 *Coverage:* All land areas (excluding Antarctica) at 0.5° resolution *Variables:* pre, tmp, tmx, tmn, dtr, vap, cld, wet, frs, pet Note that the following reference only partly applies to v4.01 (please read the Release Notes) *Reference:* Harris et al. (2014) doi:10.1002/joc.3711 (click to access) *Correction to the above paper:* Revised Appendix 3 (CLD)

https://crudata.uea.ac.uk/cru/data/hrg/

frontiers in Ecology and Evolution

DATA REPORT
published: 04 April 2018
doi: 10.3389/fevo.2018.00031

Check for updates

The EuMedClim Database: Yearly Climate Data (1901–2014) of 1 km Resolution Grids for Europe and the Mediterranean Basin

Thibaut Fréjaville and Marta Benito Garzón*

Biodiversité Gènes et Communautés (UMR 1202), Institut National de la Recherche Agronomique, Université de Bordeaux, Pessac, France

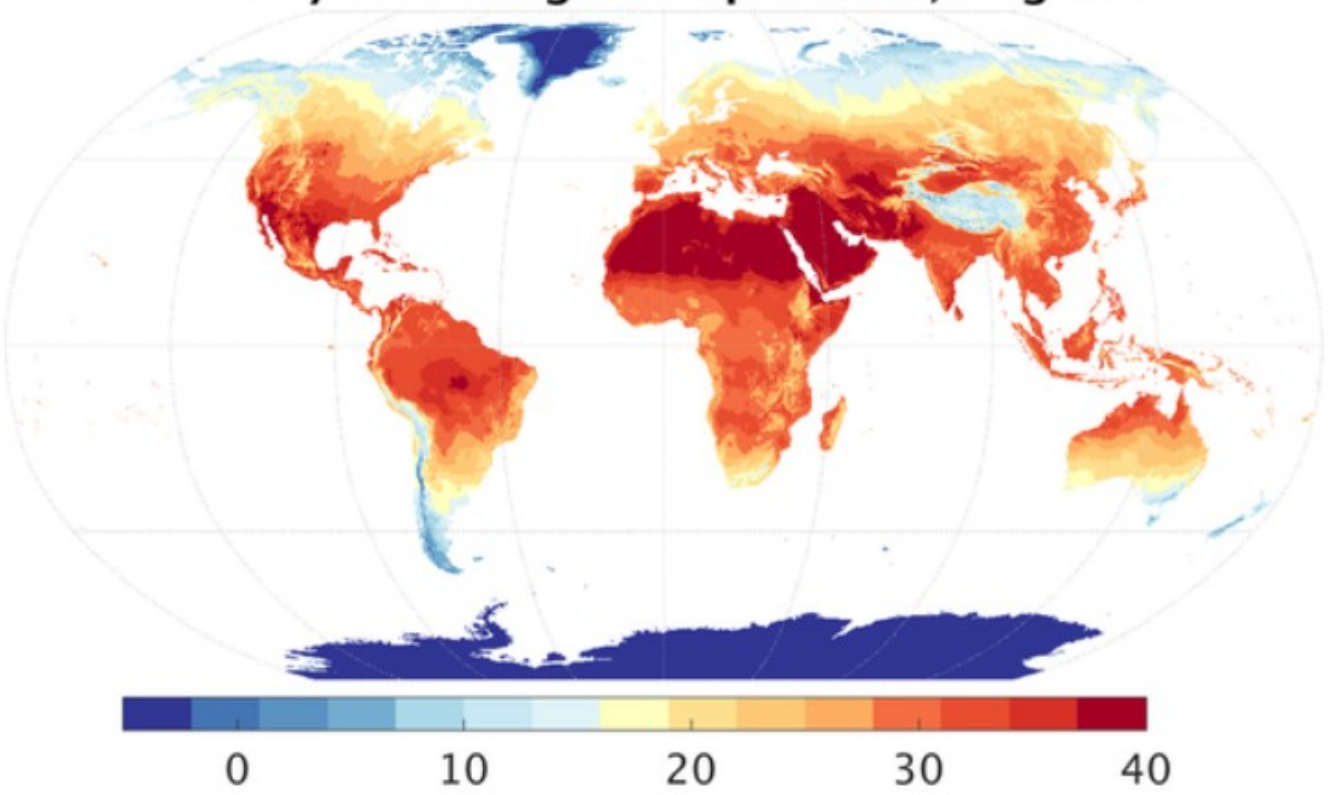
Keywords: anomaly, bioclim, climatic extremes, CRU, interpolation, precipitation, temperature, WorldClim

http://gentree.data.inra.fr/climate/

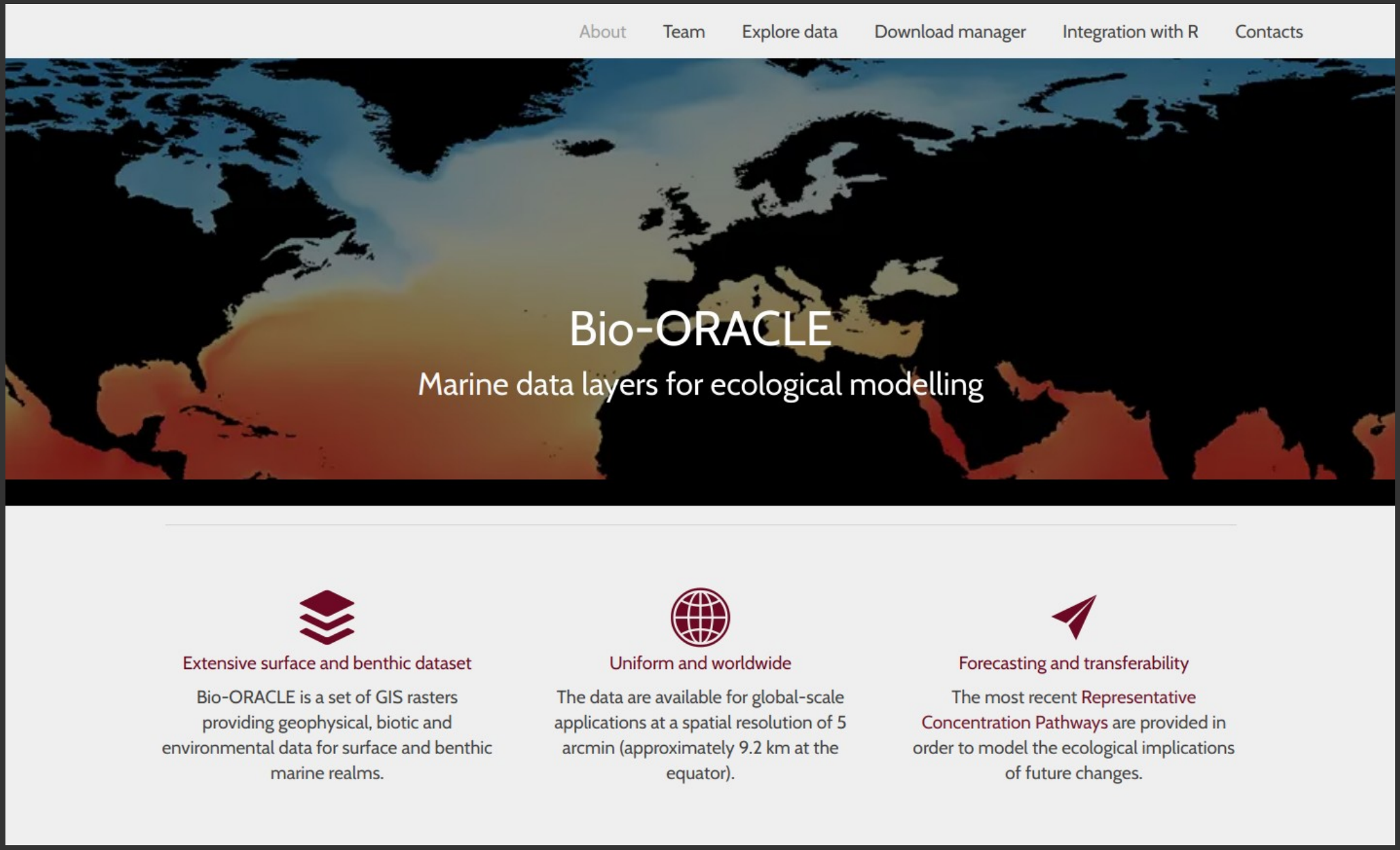
About | Download | Updates | References

TERRACLIMATE

Monthly Mean High Temperature, Aug 2015



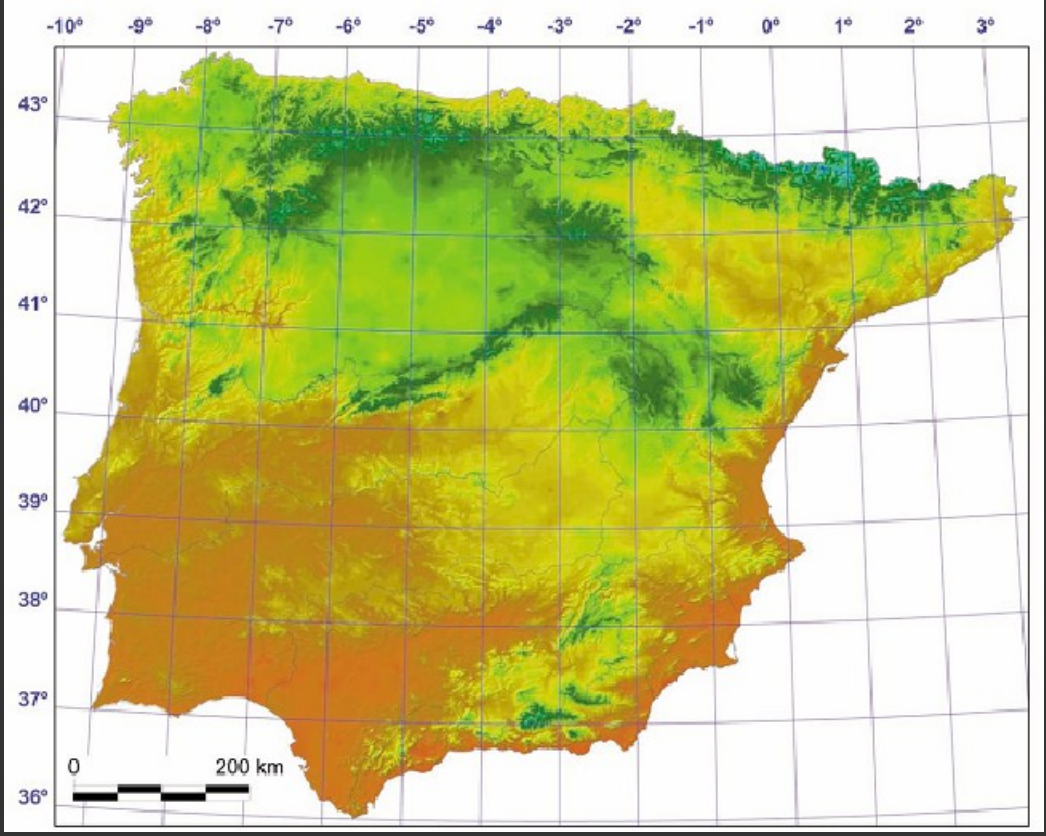
www.climatologylab.org/terraclimate.html



http://bio-oracle.org

- **Digital Climatic Atlas of the Iberian Peninsula: http://opengis.uab.es/wms/iberia/index.htm**

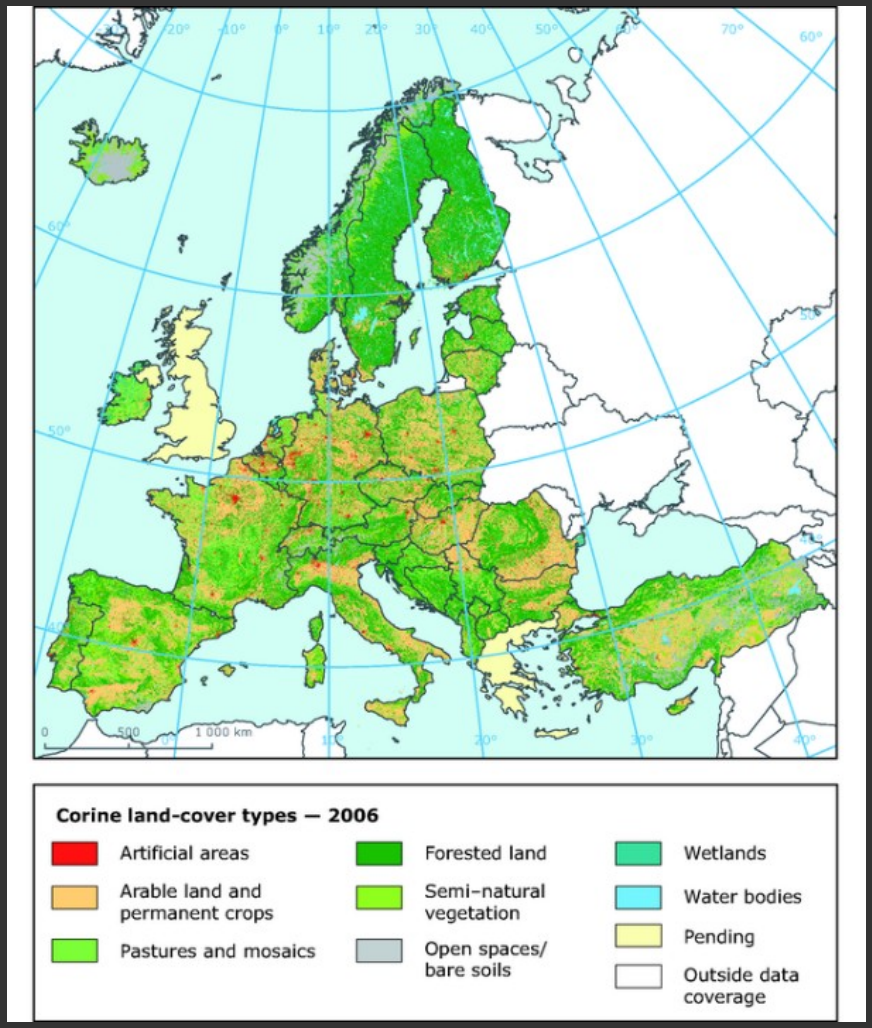
Ninyerola, M.; Pons, X.; & Roure, J.M. (2005). Atlas Climático Digital de la Península Ibérica. Metodología y aplicaciones en bioclimatología y geobotánica. *Universidad Autónoma de Barcelona, Bellaterra*: 45 pp.



CREAF-UAB

- **CORINE: http://www.eea.europa.eu/**

European Environment Agency



- **OCEAN COLOR: https://oceancolor.gsfc.nasa.go**

NASA

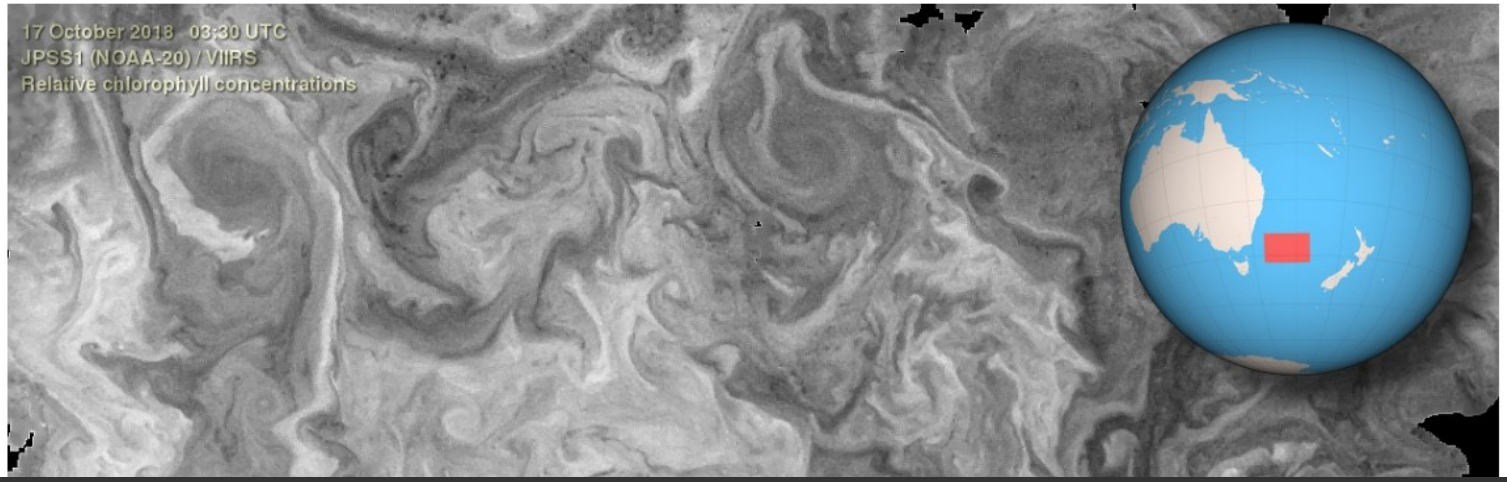
OceanColor WEB

ABOUT MISSIONS DATA DOCS SERVICES

NASA's OceanColor Web is supported by the Ocean Biology Processing Group (OBPG) at NASA's Goddard Space Flight Center. Our responsibilities include the collection, processing, calibration, validation, archive and distribution of ocean-related products from a large number of operational, satellite-based remote-sensing missions providing ocean color, sea surface temperature and sea surface salinity data to the international research community since 1996.

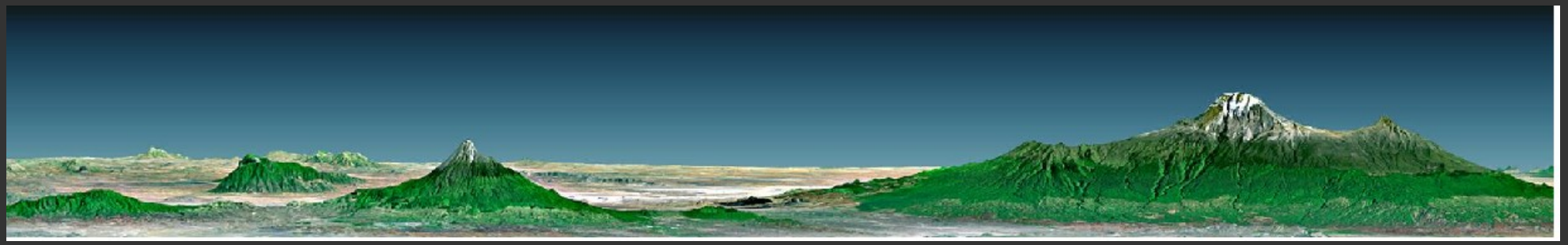
Ocean Color Feature

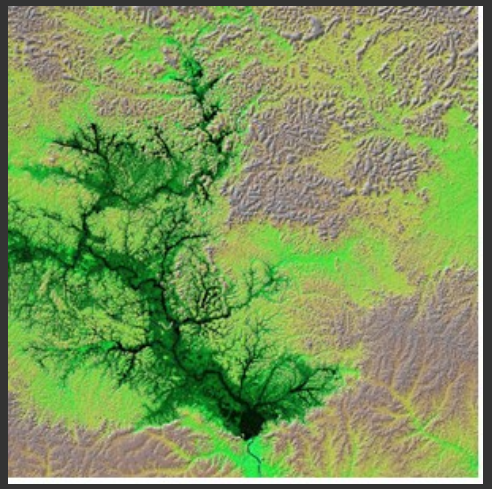
Tasman Sea Chlorophyll

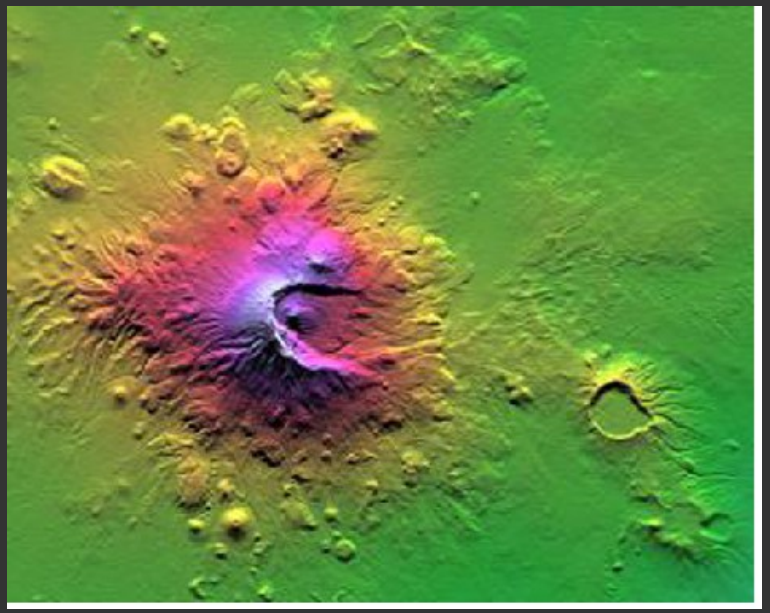


- **SRTM: http://www2.jpl.nasa.gov/srtm/**

Shuttle Radar Topography Mission



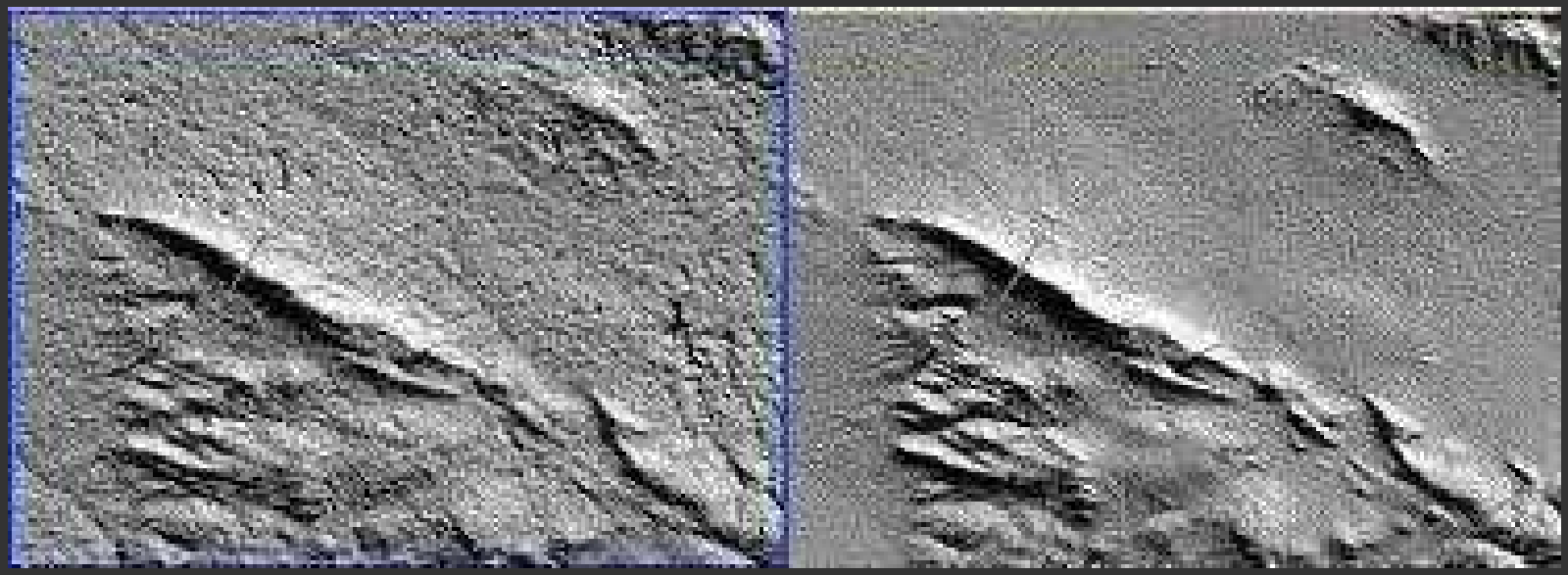




NASA
USGS

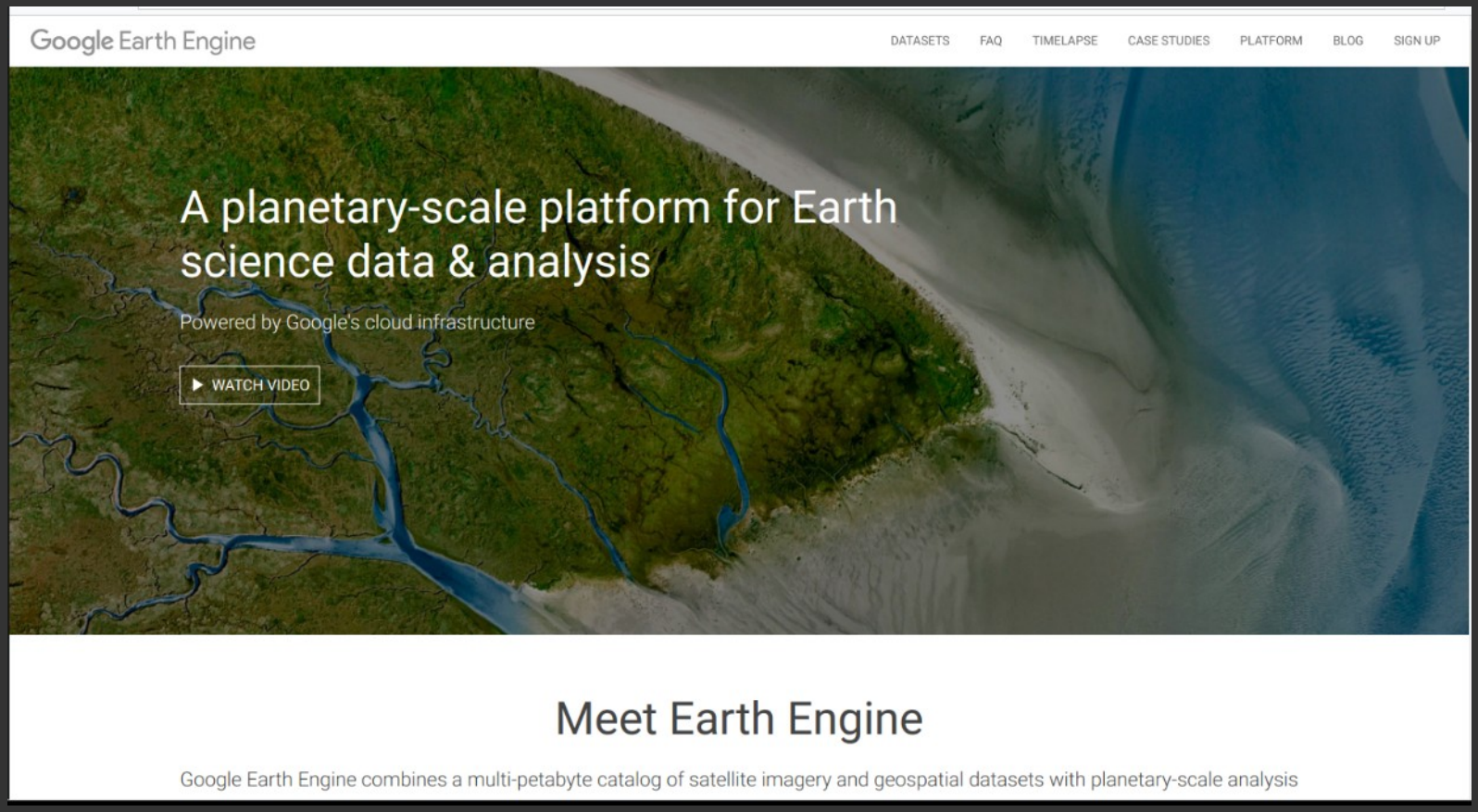
- **ASTER GDEM: http://asterweb.jpl.nasa.gov/**

ASTER Global Digital Elevetion Model



- **EARTH ENGINE: https://earthengine.google.com**

GOOGLE



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Submitted on: 2009, 5th November; revised on 2010, 26th April; accepted on 2010, 3rd May.

https://sites.google.com/site/neftalisillero/gis-rs-data-on-internet

ELEVATION

SLOPE or any other topographical index

Calculate SLOPE in a metrical projected system

It is not possible to calculate the slope in a degree geographical system

Check if you want slope in degrees or percentage

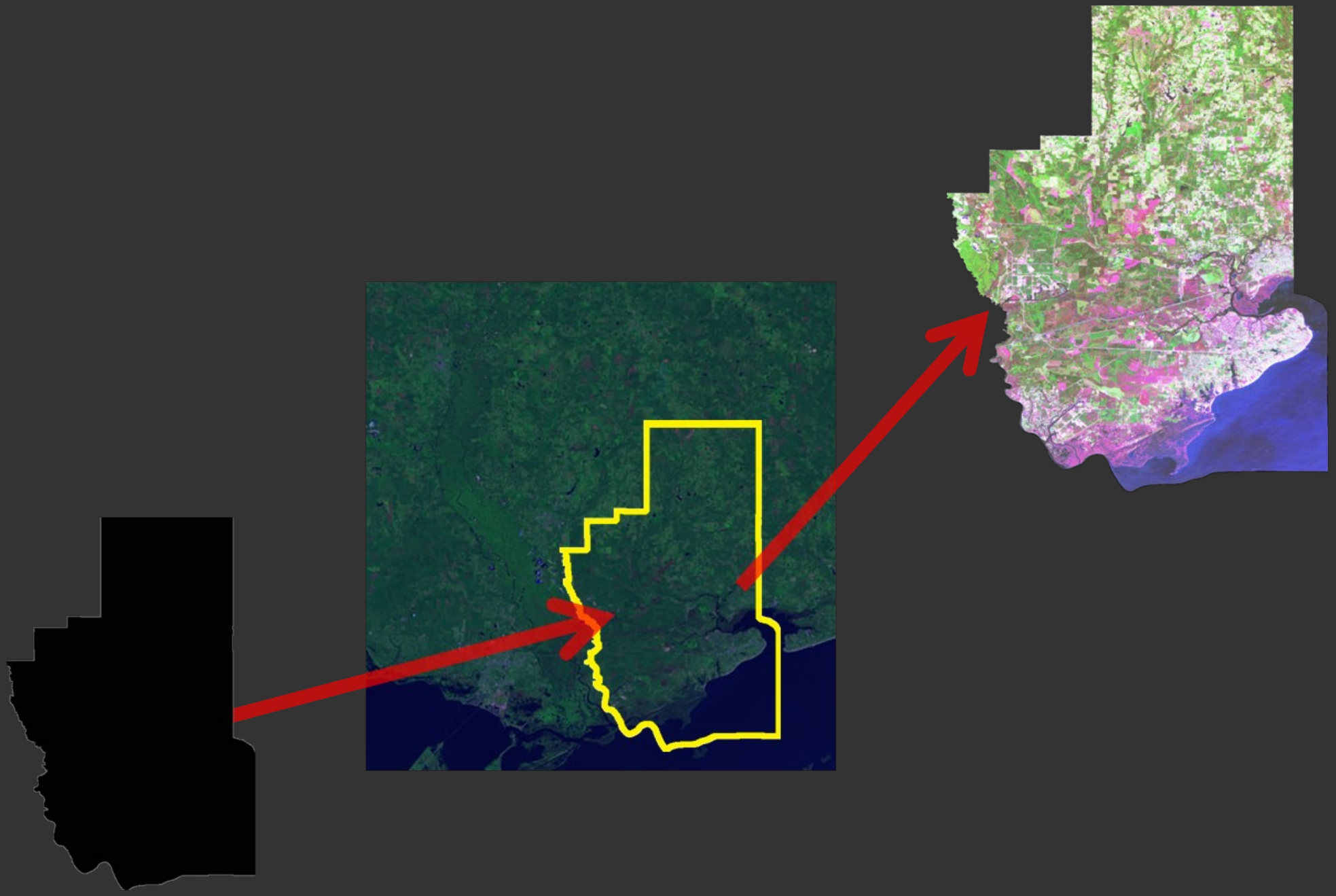
ASPECT OR CARDINAL ORIENTATION

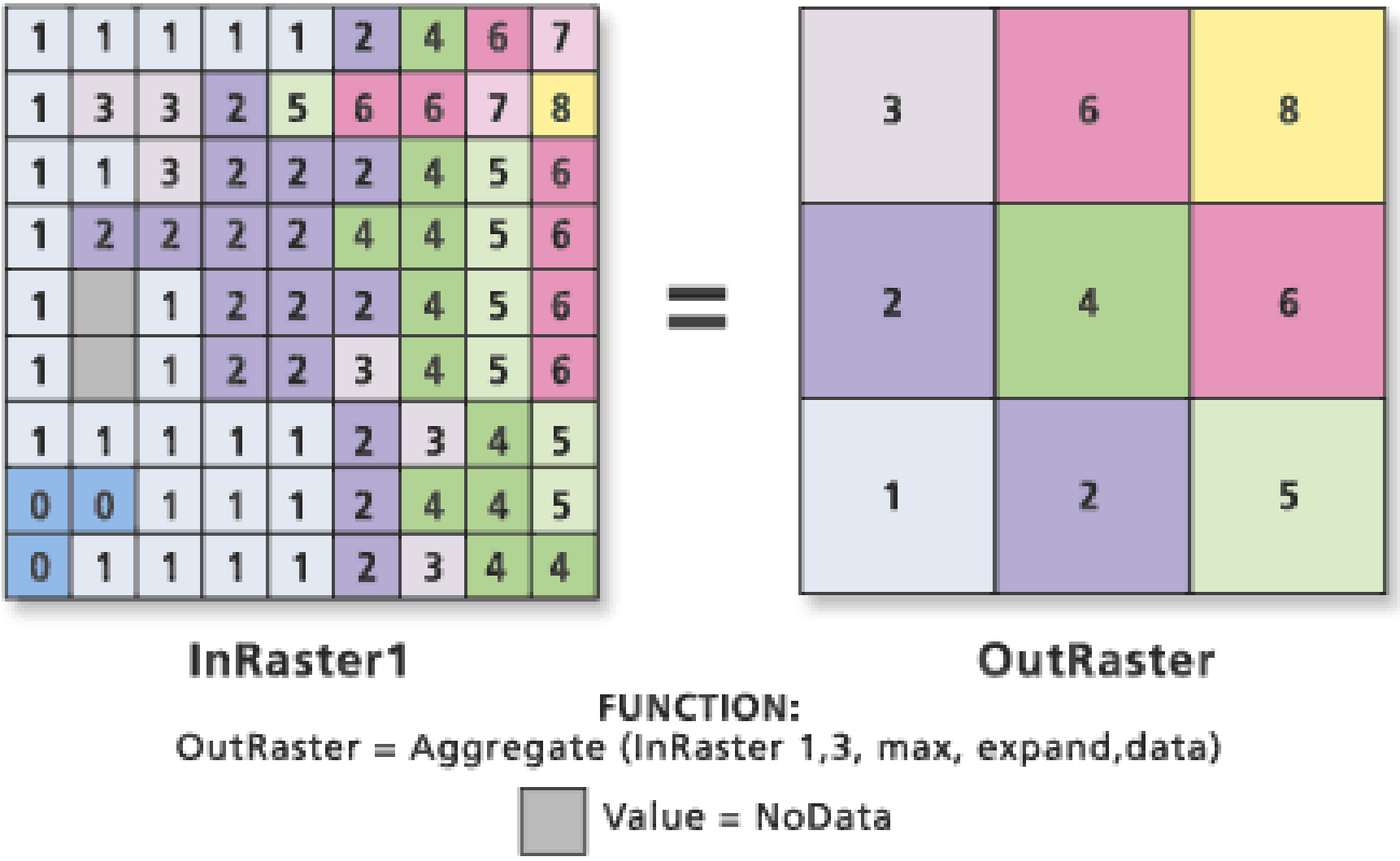
Calculate ASPECT

Change 360º to 0º

0º = 360º = NORTH orientation

CLIPPING VARIABLES




1 1 1 1 1 2 4 6 7
1 3 3 2 5 6 6 7 8
1 1 3 2 2 2 4 5 6
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1 1 2 2 3 4 5 6
1 1 1 1 1 2 3 4 5
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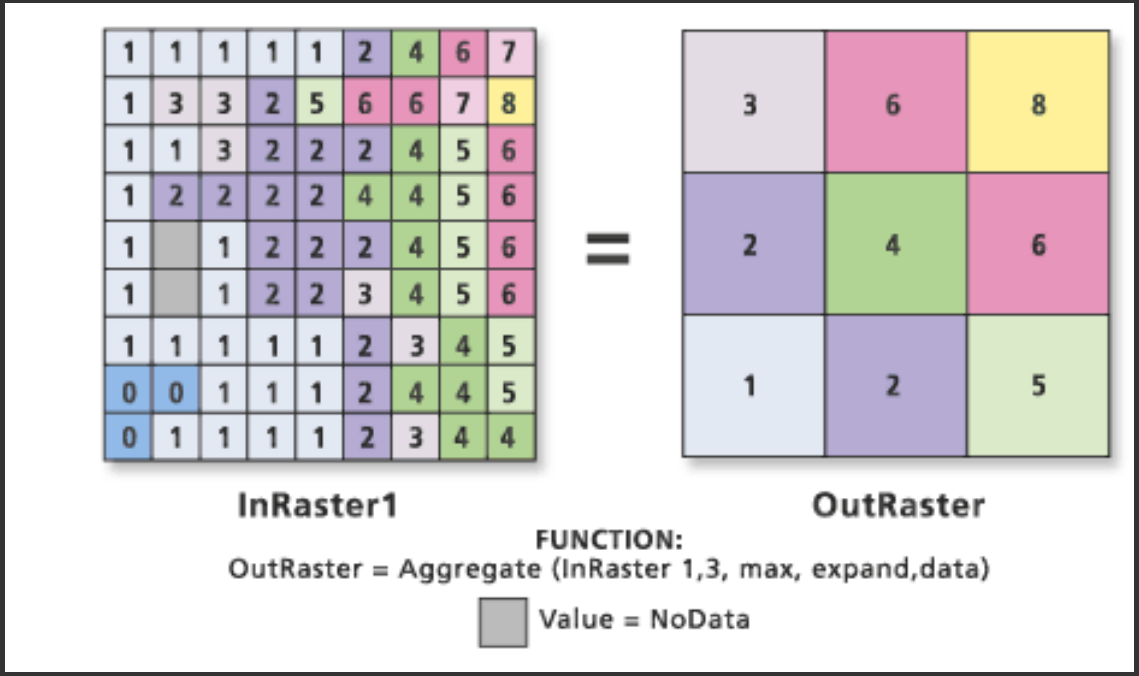
3 6 8
2 4 6
1 2 5
InRaster1
OutRaster
FUNCTION:
OutRaster = Aggregate (InRaster 1,3, max, expand,data)
Value = NoData

AGGREGATING VARIABLES

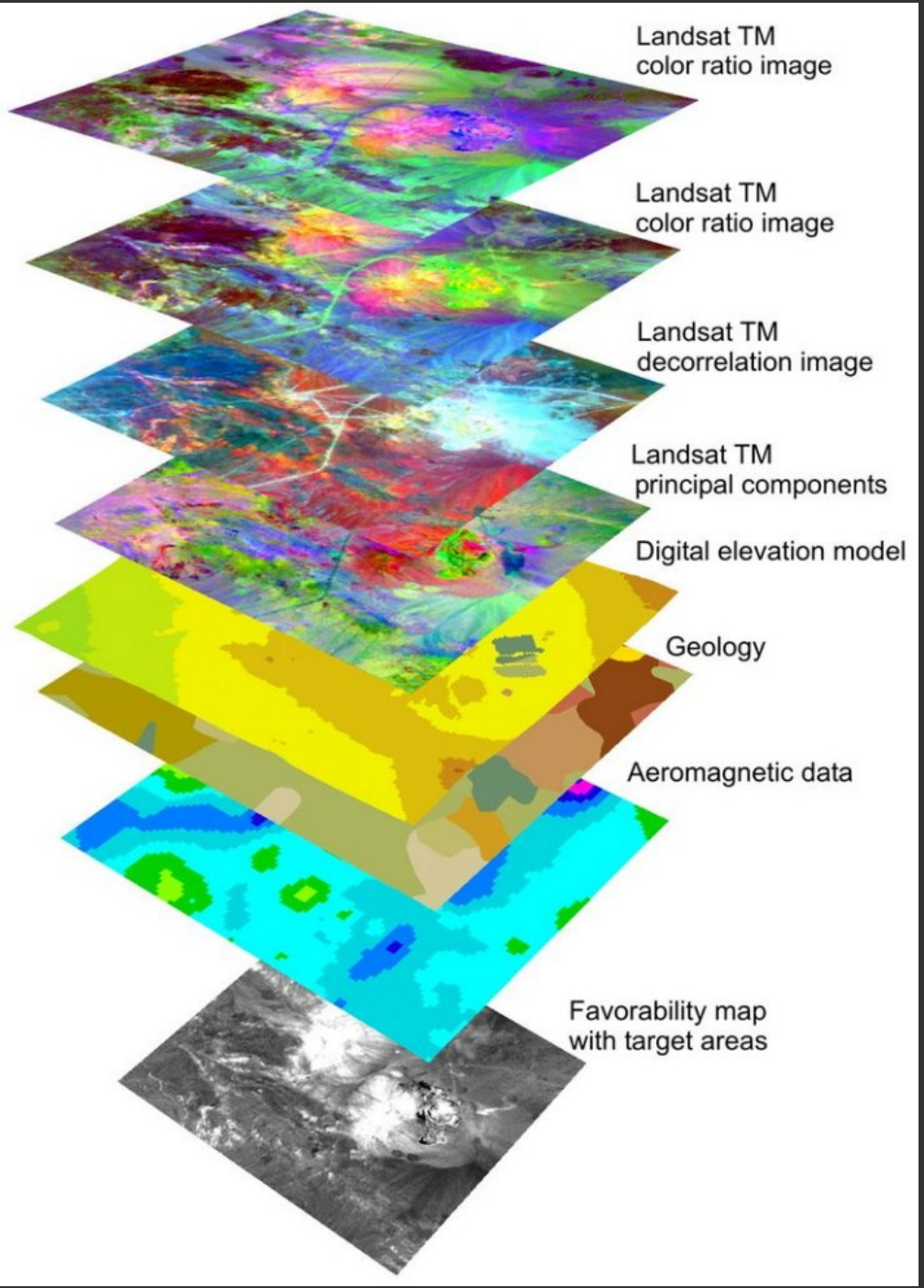
- Aggregate function
- Different to resample
- Aggregation: mean, min, max
- Reduce the spatial resolution
- Reduce the number of pixels
- Proper for downscaling
- The spatial resolution of species records should corresponds to the rasters' one



CHECKING PIXEL SIZE & RASTER LIMITS

ALL RASTERS MUST HAVE THE SAME PIXEL SIZE

ALL RASTERS MUST HAVE THE SAME SPATIAL LIMITS



ASCII FILES

Open — muralis_avg.asc — ~/Documents/research/papers/2_in_process/guillem/models/area_v7/muralis/maxent — Save

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nrows         79
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yllcorner     42.25542611
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 4.3419E-1 4.22208E-1 5.02388E-1 -9999 -9999 -9999 -9999 -9999 -9999 -9999 -9999
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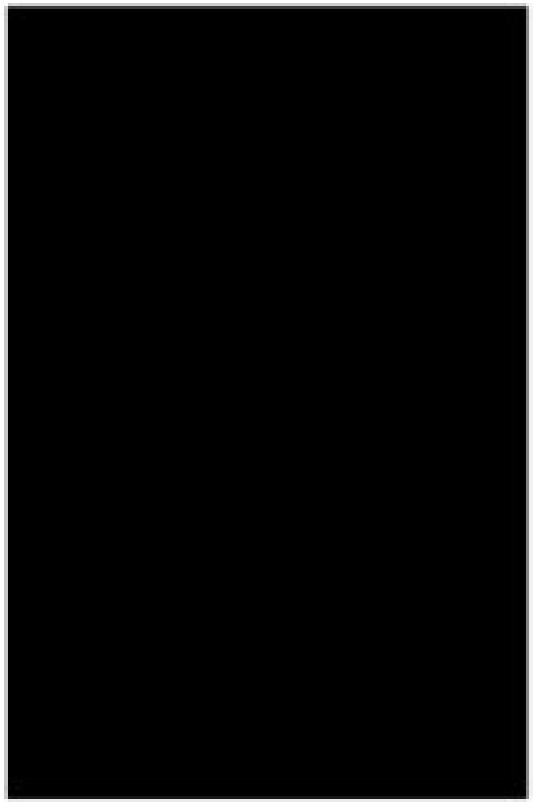
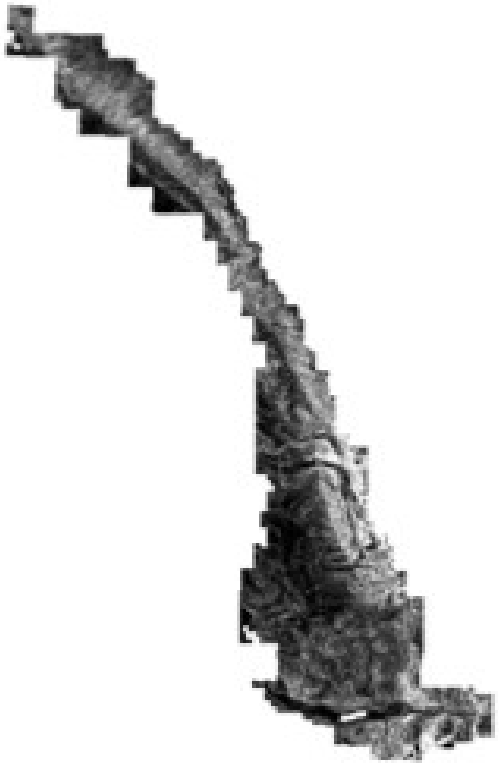
Plain Text — Tab Width: 8 — Ln 1, Col 1 — INS

CHECKING NODATA

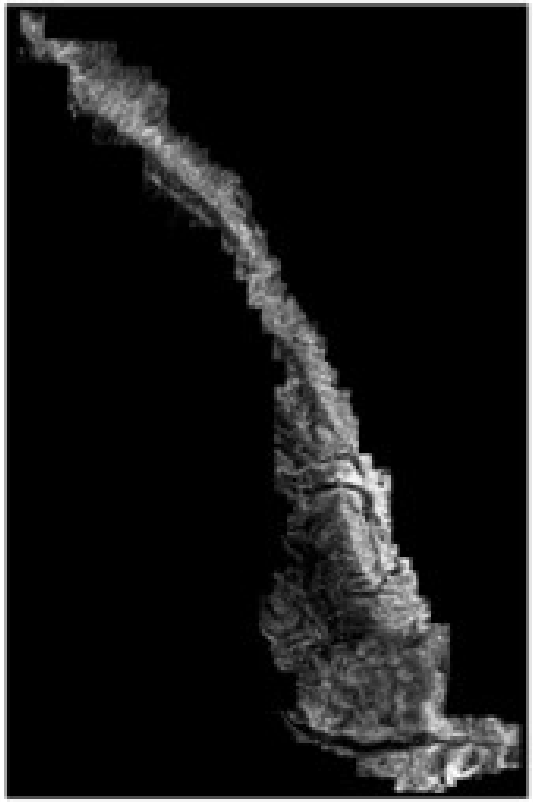
Raster A



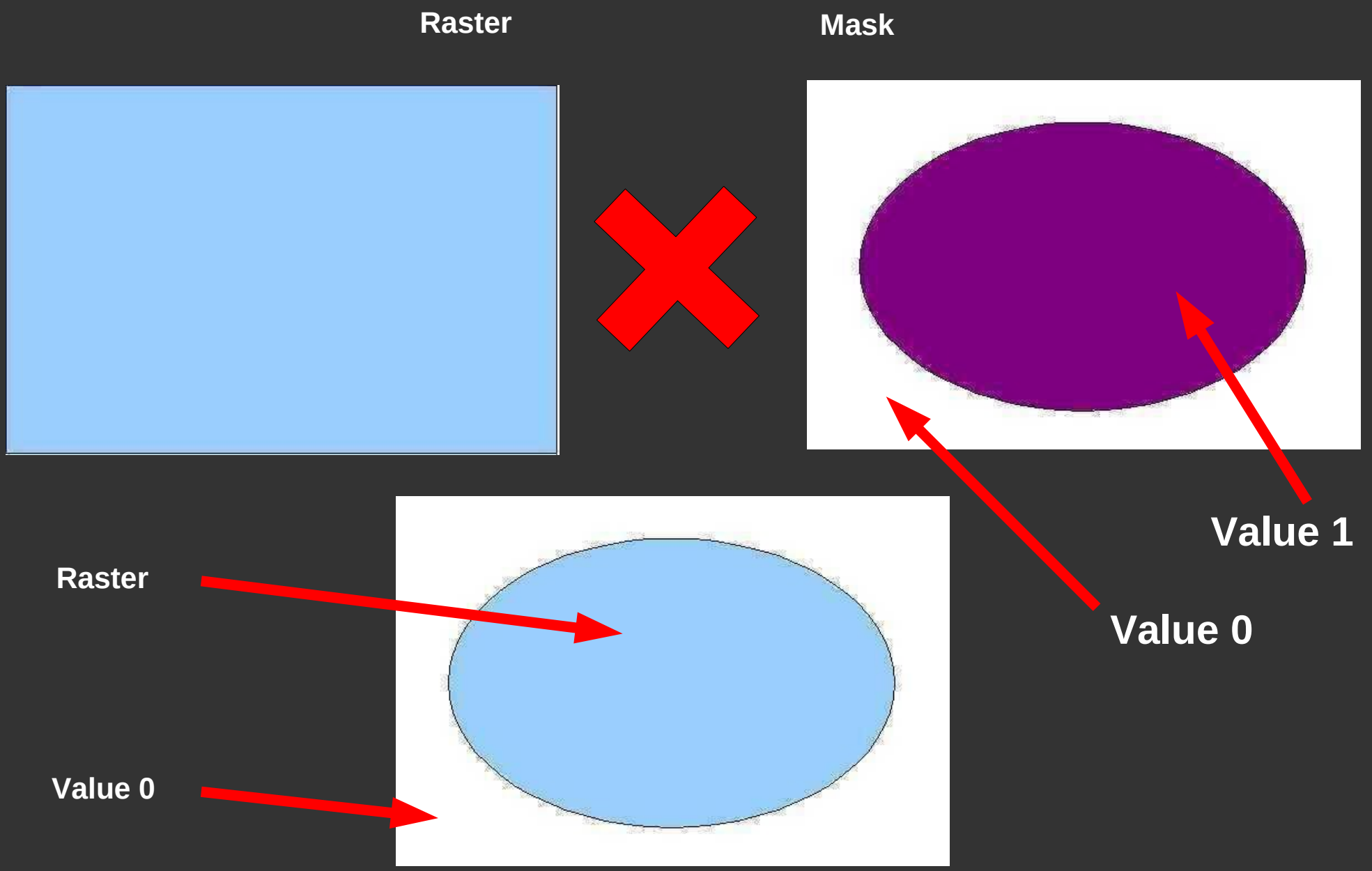
Raster B

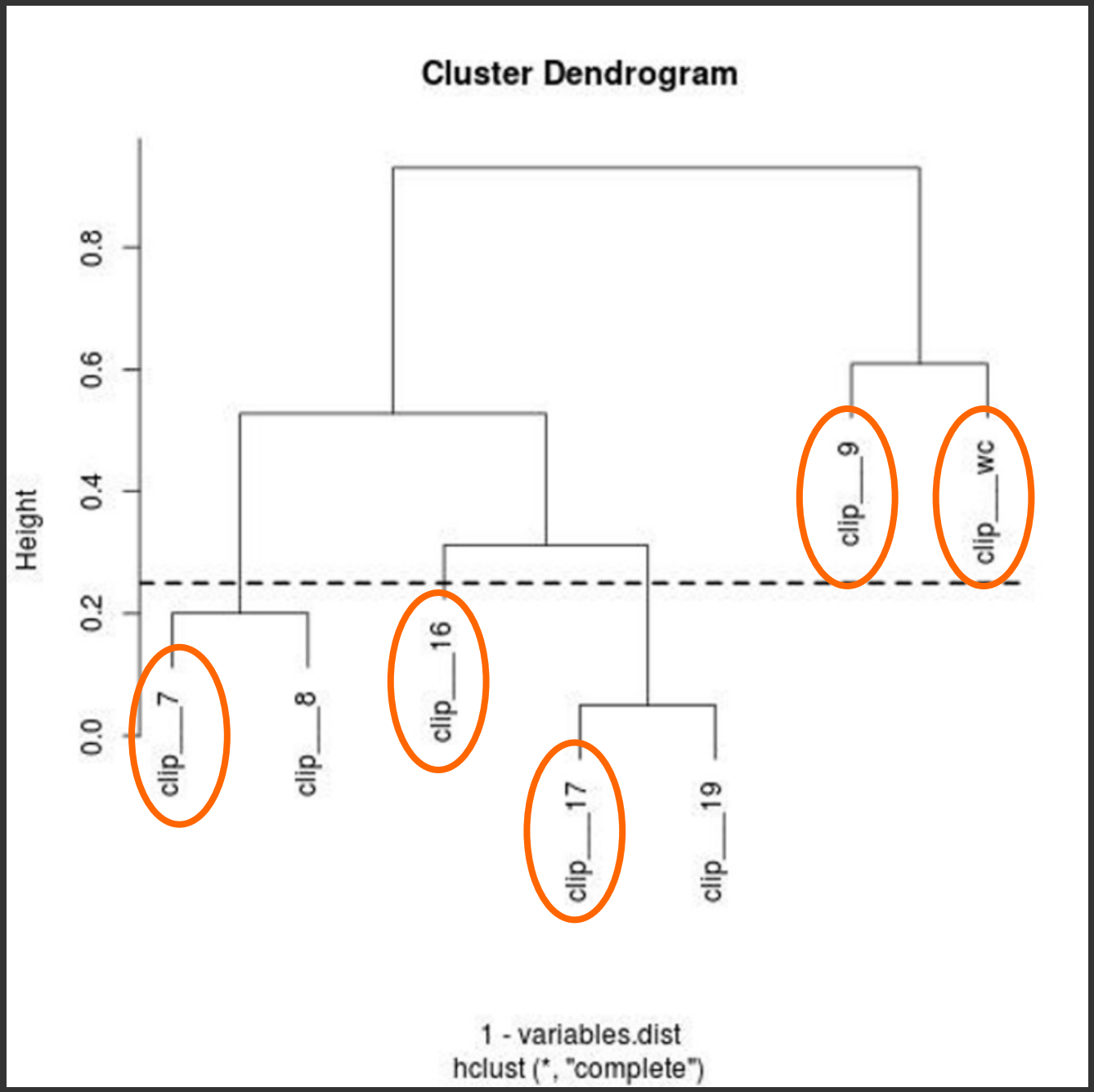


Raster C



CHECKING NODATA




Cluster Dendrogram
Height
0.0
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0.6
0.8
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clip__8
clip__16
clip__17
clip__19
clip__9
clip__wc
1 - variables.dist
hclust (*, "complete")

QUESTIONS?