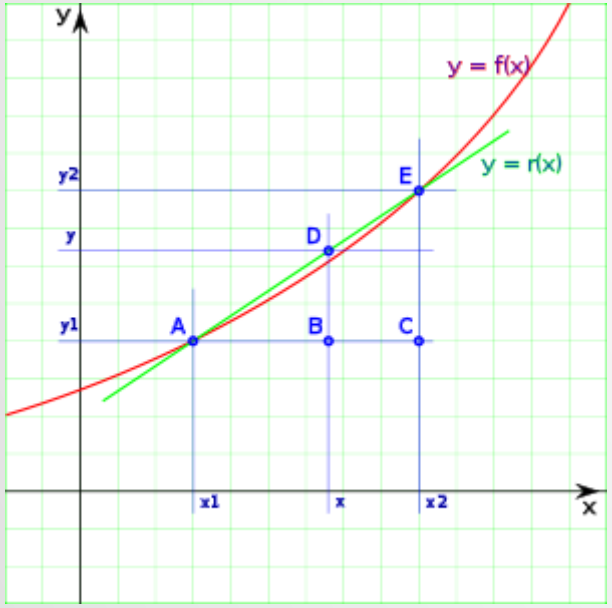
MÁS DE: DATOS AMBIENTALES

Modelado de nicho

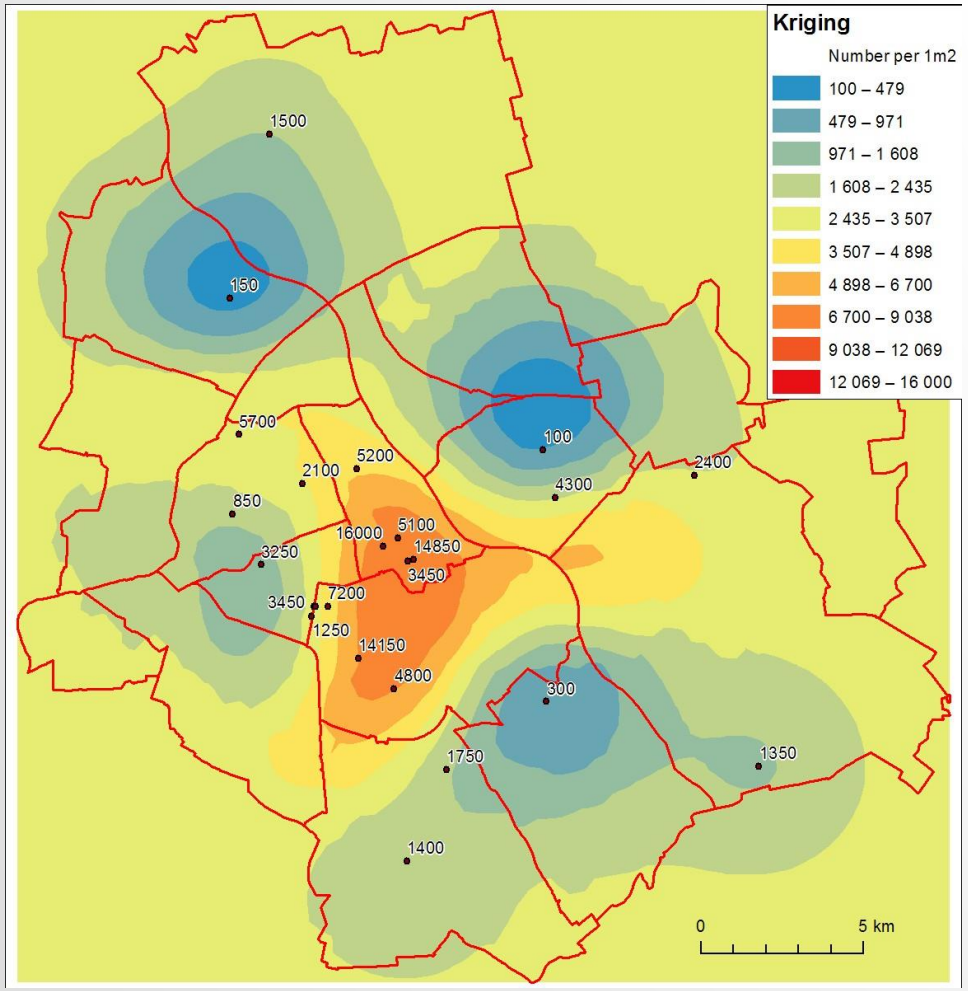
MODELOS RASTER (GENERACIÓN)

- Interpolaciones



- Sensores remotos

INTERPOLACIÓN

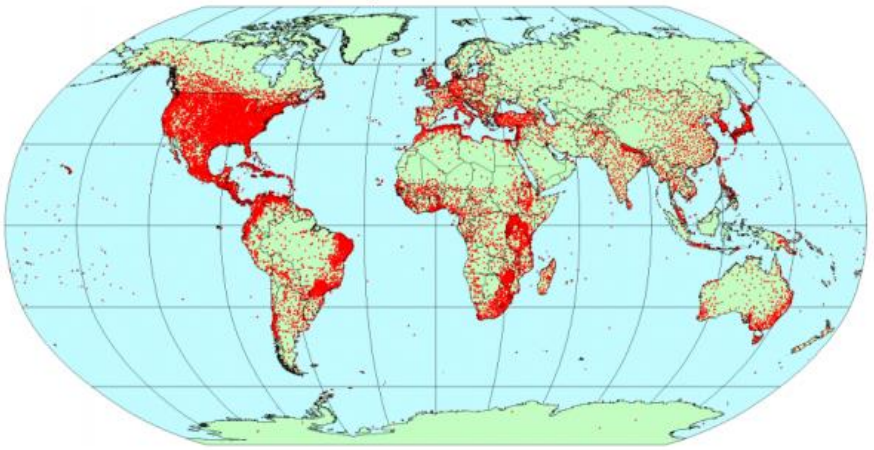


Permite obtener información de zonas donde no se tiene registro

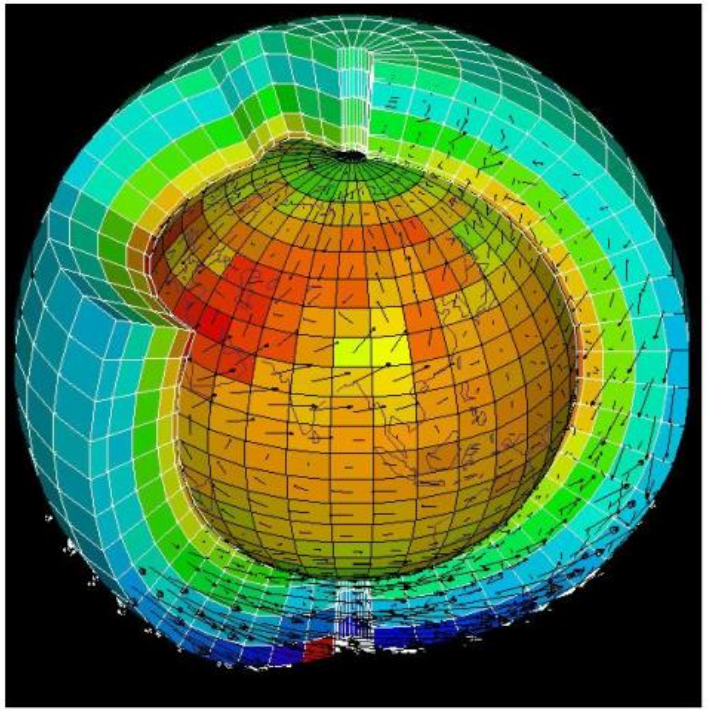
	Valor minimo	Valor Maximo
Capa SoilSamp	166,000	662,000
INTERPOLACIONES		
TIN cubica	166,028	661,588
TIN lineal	167,638	660,771
IDW1	174,000	592,622
IDW2	166,028	661,588
IDW2,7	166,000	661,988

Variables climáticas:

- 1. Worldclim: Modelo de interpolación de datos de estaciones meteorológicas.

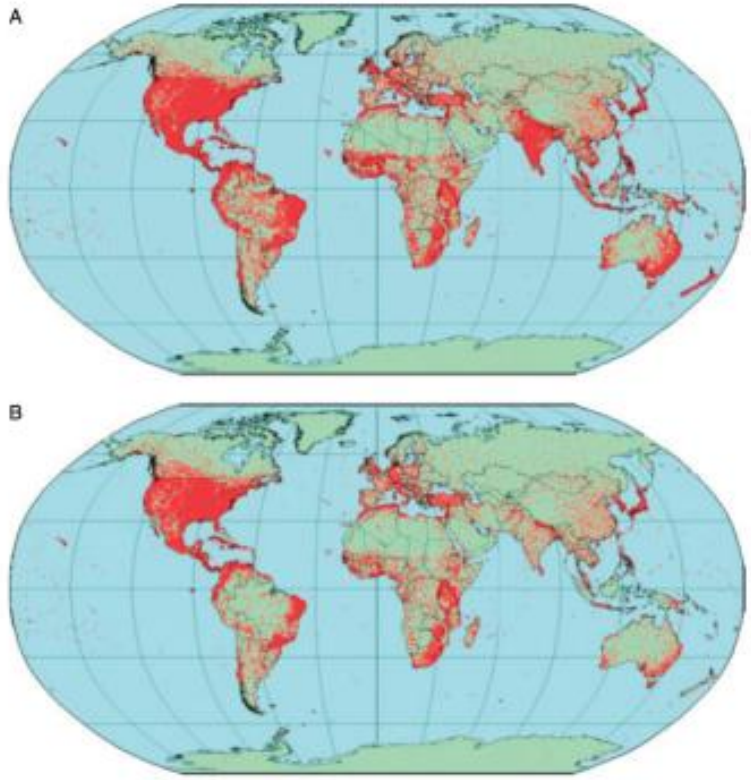


- 2. AOGCMs= Atmosphere-Ocean General Circulation Models: modelos físicos de intercambio de calor, circulación atmosférica, oceánica, vegetación, etc.



WORLDCLIM

Generalidad de worldclim

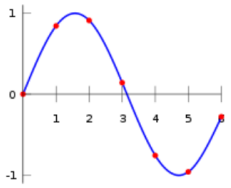


Precpitación (47,554)

Temperatura media (24,542)

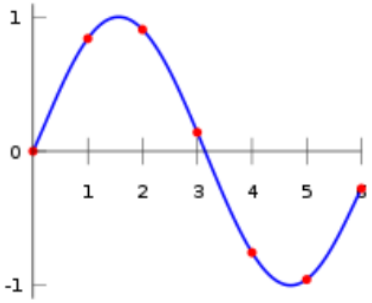
MÉTODOS DE INTERPOLACION

Spline

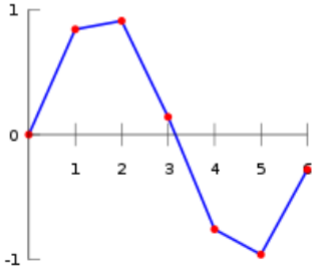


$$f(x) = \begin{cases} -0.1522x^3 + 0.9937x, & \text{if } x \in [0,1], \\ -0.01258x^3 - 0.4189x^2 + 1.4126x - 0.1396, & \text{if } x \in [1,2], \\ 0.1403x^3 - 1.3359x^2 + 3.2467x - 1.3623, & \text{if } x \in [2,3], \\ 0.1579x^3 - 1.4945x^2 + 3.7225x - 1.8381, & \text{if } x \in [3,4], \\ 0.05375x^3 - 0.2450x^2 - 1.2756x + 4.8259, & \text{if } x \in [4,5], \\ -0.1871x^3 + 3.3673x^2 - 19.3370x + 34.9282, & \text{if } x \in [5,6]. \end{cases}$$

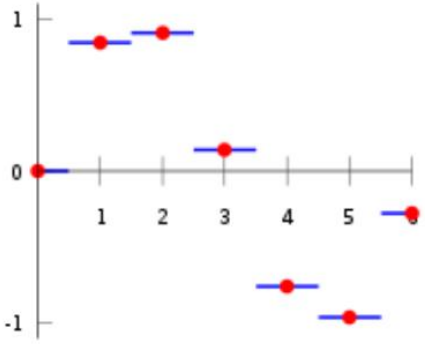
Polinomial



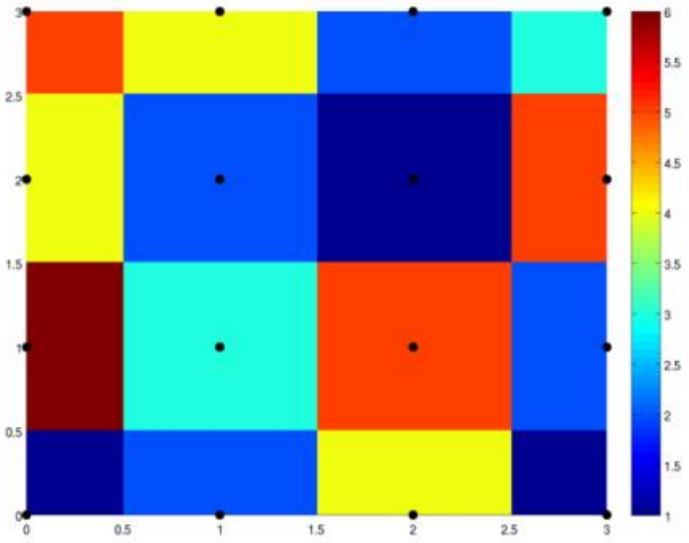
Linear



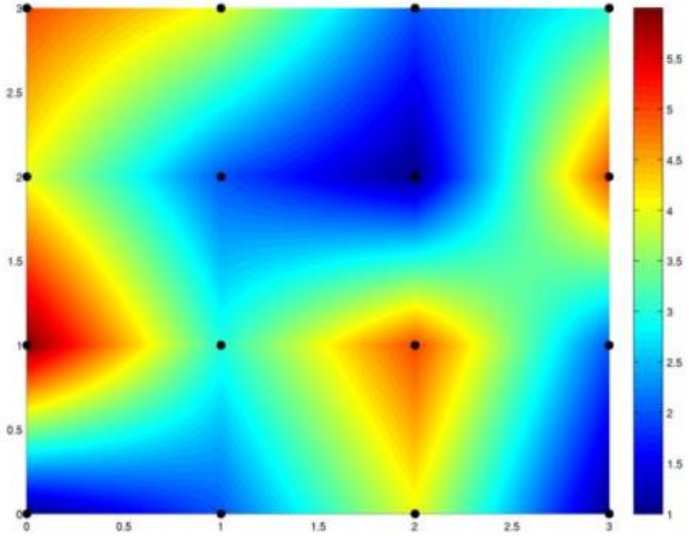
Nearest neighbor



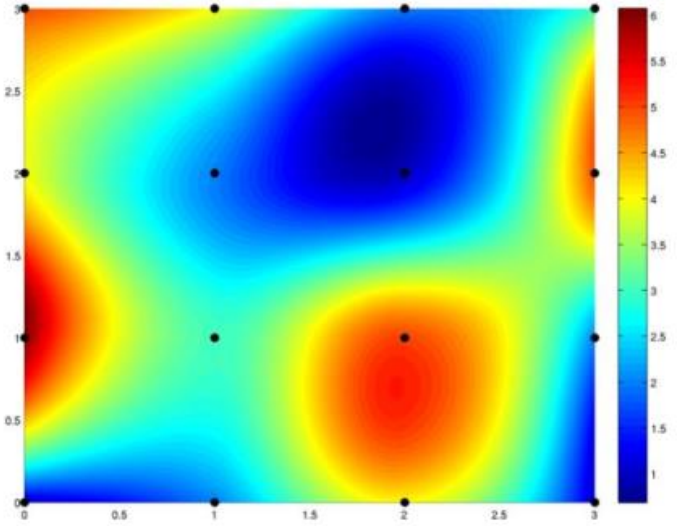
MÉTODOS DE INTERPOLACION



Nearest neighbor



Linear

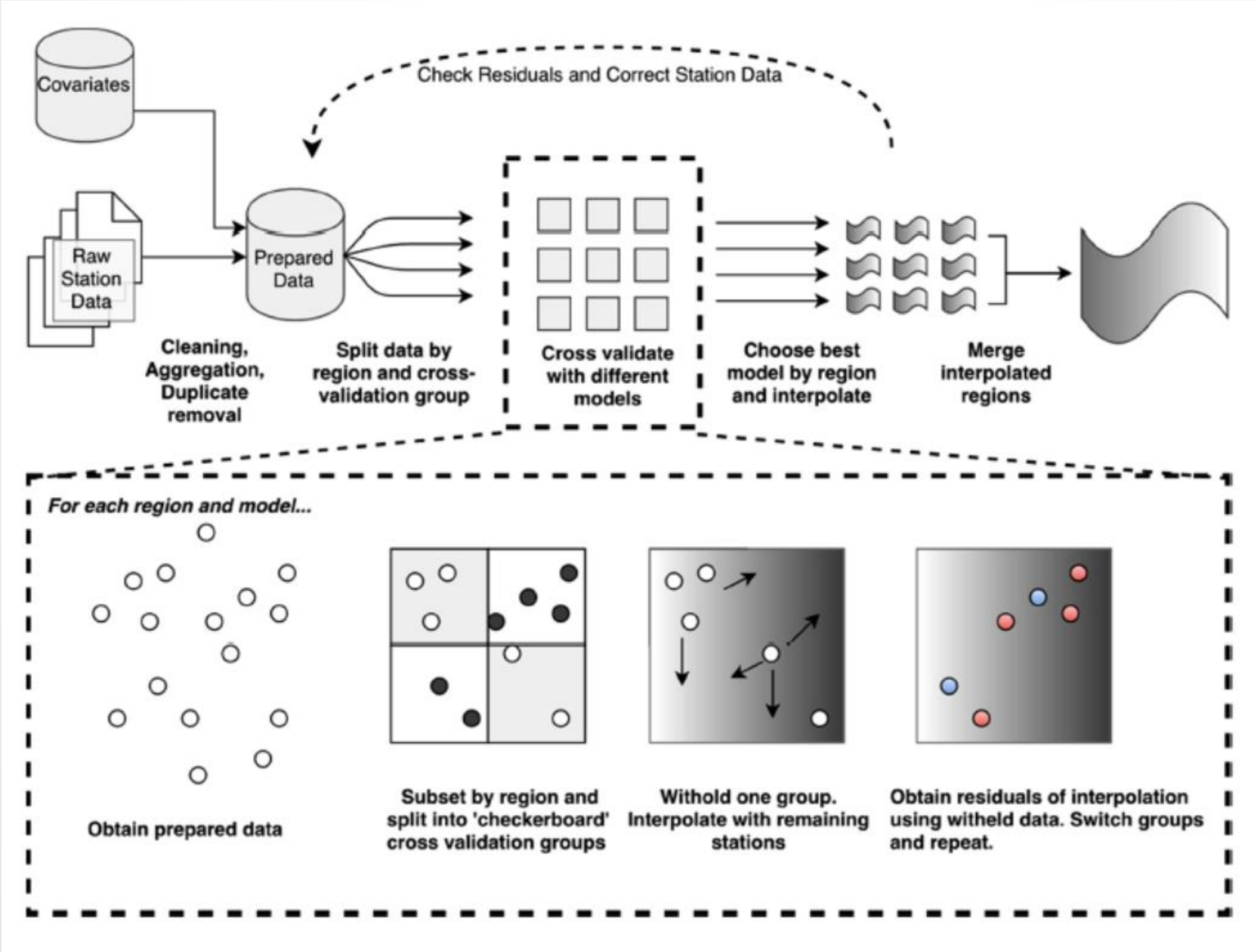


Cubic

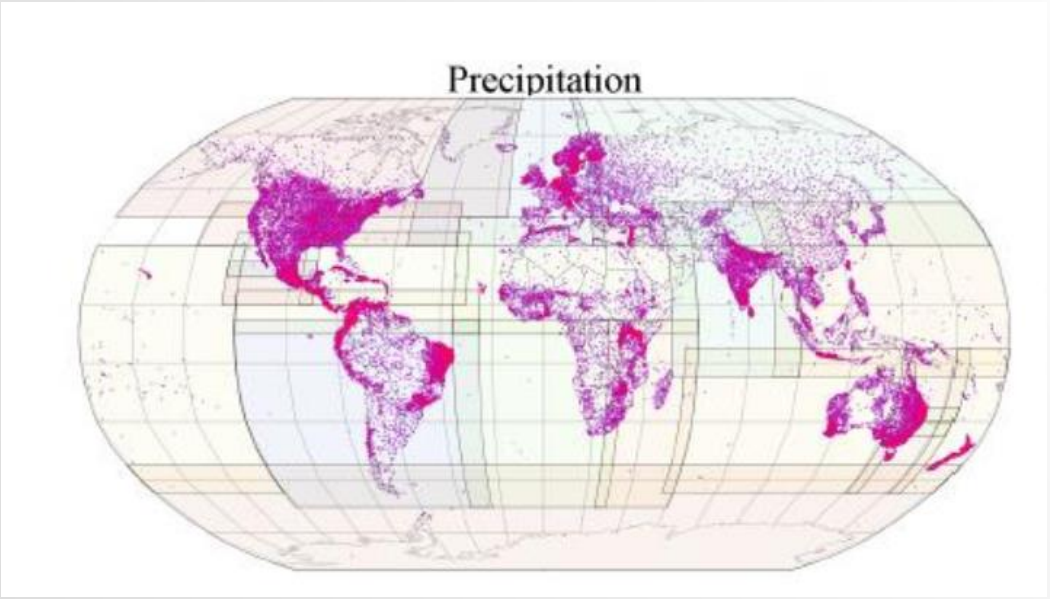
WORLD CLIM 1 O 2

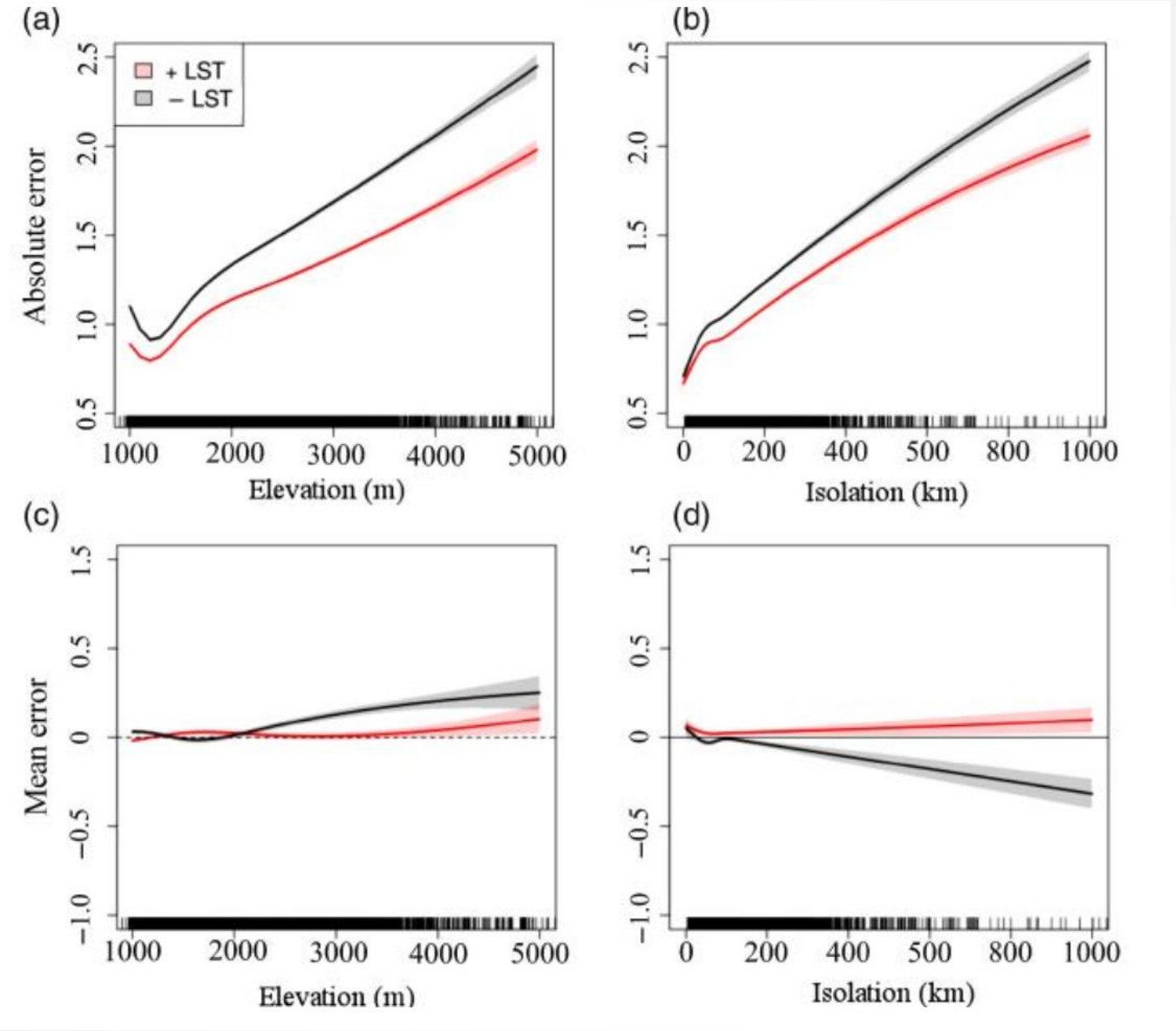
Son interpolaciones no datos reales

- Worldclim 2
  (datos entre 9000 y 60000 estaciones meteorológicas, de 1970-2000)
  monthly temperature (minimum, maximum and average)
- Precipitation
- solar radiation
- vapour pressure
- wind speed
- Weather station data were interpolated using thin-plate splines with covariates including:
- elevation, distance to the coast and three satellite-derived covariates: maximum and minimum land surface temperature as well as cloud cover,obtained with the MODIS satellite platform

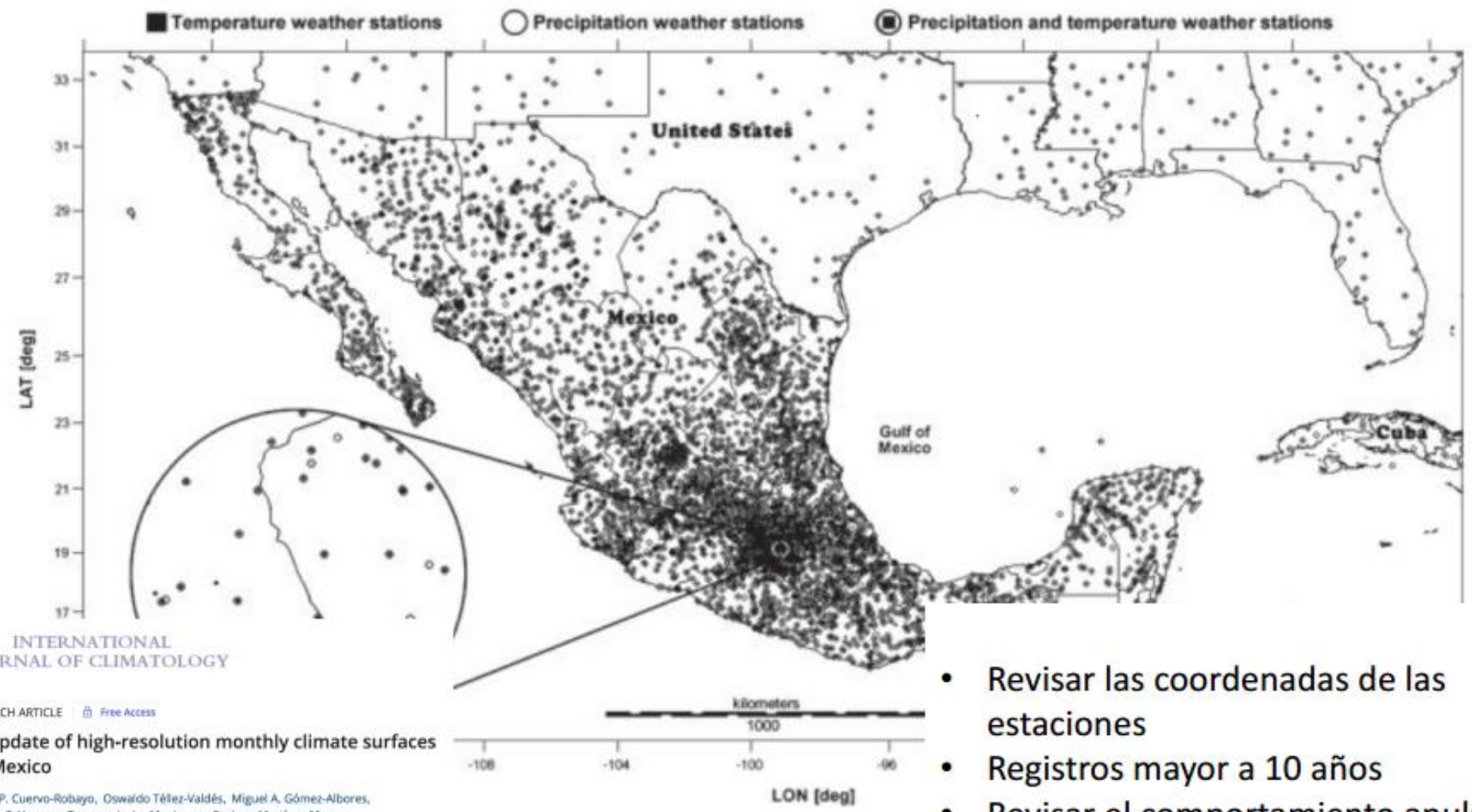


Fick, S. E. and Hijmans, R. J. (2017), WorldClim 2: new 1-km spatial resolution climate surfaces for global land areas. Int. J. Climatol, 37: 4302–4315. doi:10.1002/joc.5086


Precipitation


(a)
+ LST
− LST
Absolute error
0.5
1.0
1.5
2.0
2.5
1000
2000
3000
4000
5000
Elevation (m)
(b)
0
200
400
500
800
1000
Isolation (km)
(c)
Mean error
1.5
0.5
0
−0.5
−1.0
Elevation (m)
(d)
Isolation (km)

Estudio de caso: México



INTERNATIONAL JOURNAL OF CLIMATOLOGY

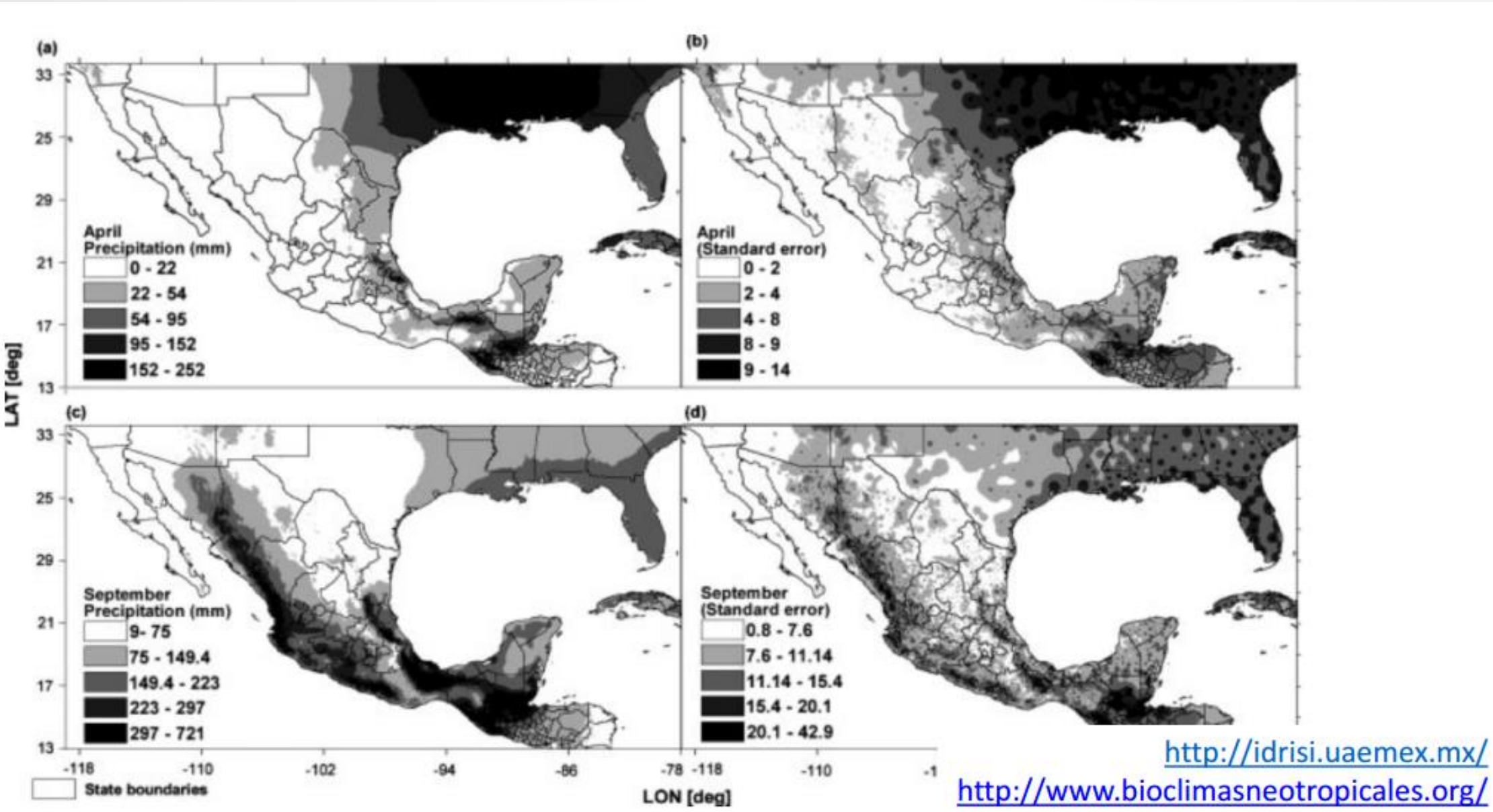
RESEARCH ARTICLE Free Access

An update of high-resolution monthly climate surfaces for Mexico

Angela P. Cuervo-Robayo, Oswaldo Téllez-Valdés, Miguel A. Gómez-Albores, Crystian S. Venegas-Barrera, Javier Manjarrez, Enrique Martínez-Meyer

First published: 31 October 2013 | https://doi.org/10.1002/joc.3848 | Cited by:21

- Revisar las coordenadas de las estaciones
- Registros mayor a 10 años
- Revisar el comportamiento anula del clima



http://idrisi.uaemex.mx/

http://www.bioclimasneotropicales.org/

Worldclim 2

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*

ABSTRACT: We created a new dataset of spatially interpolated monthly climate data for global land areas at a very high spatial resolution (approximately 1 km^2). We included monthly temperature (minimum, maximum and average), precipitation, solar radiation, vapour pressure and wind speed, aggregated across a target temporal range of 1970–2000, using data from between 9000 and 60 000 weather stations. Weather station data were interpolated using thin-plate splines with covariates including elevation, distance to the coast and three satellite-derived covariates: maximum and minimum land surface temperature as well as cloud cover, obtained with the MODIS satellite platform. Interpolation was done for 23 regions of varying size depending on station density. Satellite data improved prediction accuracy for temperature variables 5–15% (0.07–0.17 °C), particularly for areas with a low station density, although prediction error remained high in such regions for all climate variables. Contributions of satellite covariates were mostly negligible for the other variables, although their importance varied by region. In contrast to the common approach to use a single model formulation for the entire world, we constructed the final product by selecting the best performing model for each region and variable. Global cross-validation correlations were ≥ 0.99 for temperature and humidity, 0.86 for precipitation and 0.76 for wind speed. The fact that most of our climate surface estimates were only marginally improved by use of satellite covariates highlights the importance having a dense, high-quality network of climate station data.

Productos derivados de modelos globales de circulación

Data Descriptor | OPEN

Climatologies at high resolution for the earth's land surface areas

Dirk Nikolaus Karger, Olaf Conrad, Jürgen Böhner, Tobias Kawohl, Holger Kreft, Rodrigo Wilber Soria-Auza, Niklaus E. Zimmermann, H. Peter Linder & Michael Kessler

Scientific Data **4**, Article number: 170122 (2017)
doi:10.1038/sdata.2017.122
Download Citation

Received: 11 October 2016
Accepted: 21 July 2017
Published: 05 September 2017

1973-2013
Bioclimas
Clima del ultimo maximo glacial
Futuro (CMIP5)
Series de tiempo (enero 1979 – hoy)

Data Descriptor | OPEN

MERRAclim, a high-resolution global dataset of remotely sensed bioclimatic variables for ecological modelling

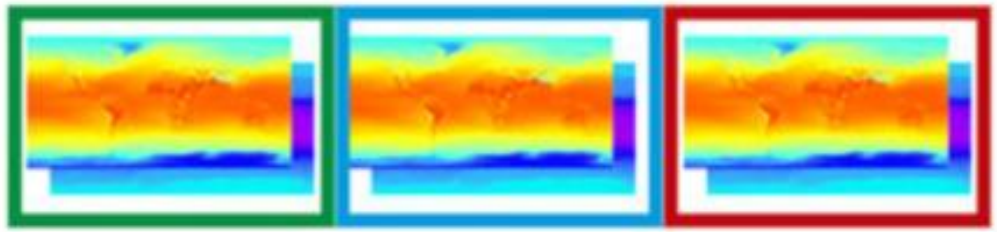
Greta C. Vega, Luis R. Pertierra & Miguel Ángel Olalla-Tárraga

Scientific Data **4**, Article number: 170078 (2017)
doi:10.1038/sdata.2017.78
Download Citation

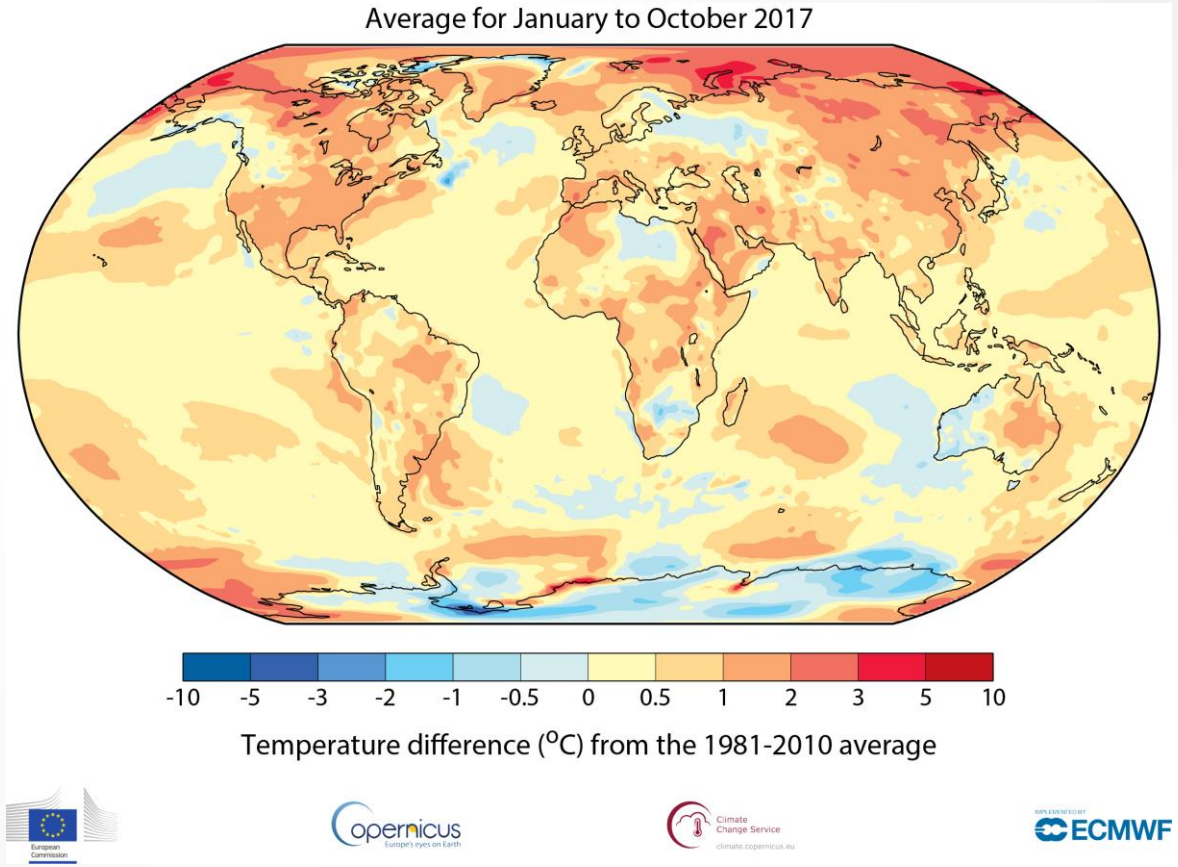
Received: 12 July 2016
Accepted: 28 April 2017
Published: 20 June 2017

Datos en la Antártida

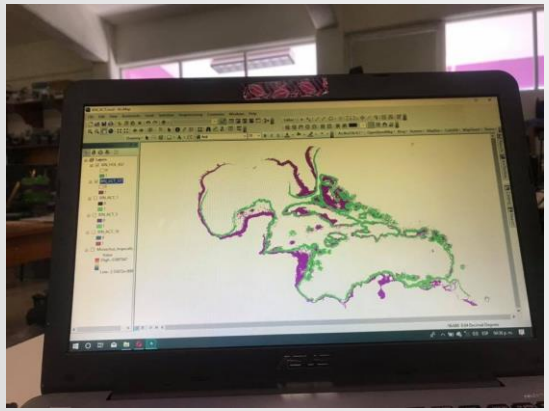
Bioclimas



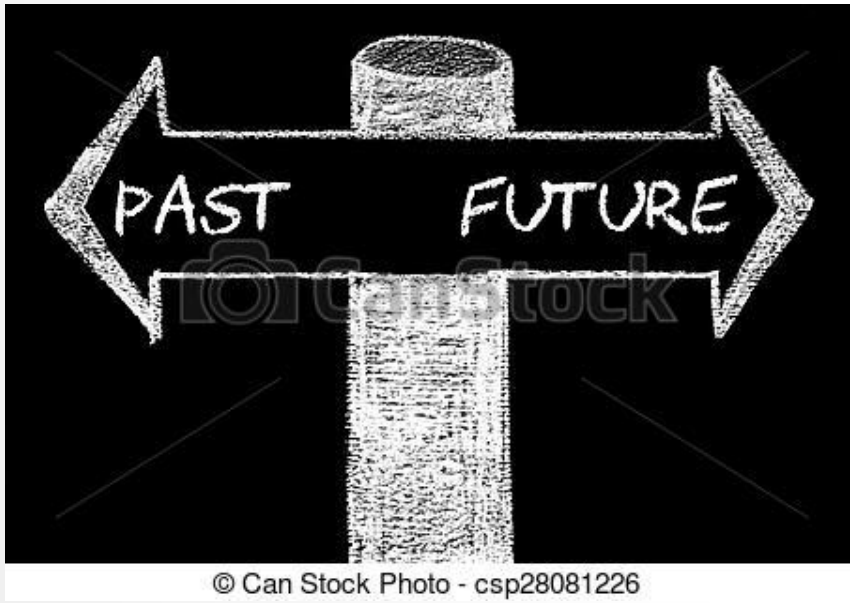
- Darse tiempo para invertir en que modelos climáticos escogerán.
- Si tienen datos a nivel local preferibles usarlos.
- Revisar la validación de los modelos
- Reportar año base, resolución, fuente



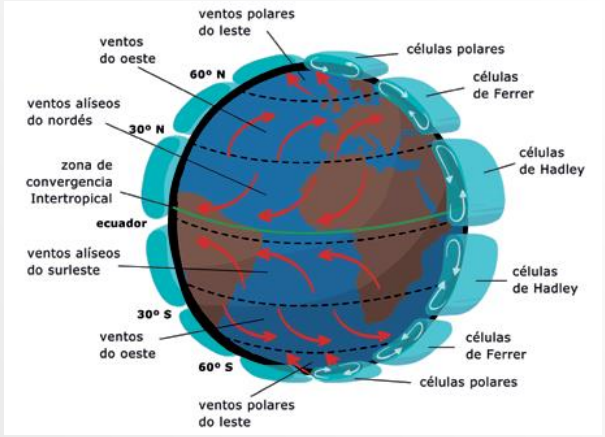
MODELOS DE CIRCULACIÓN

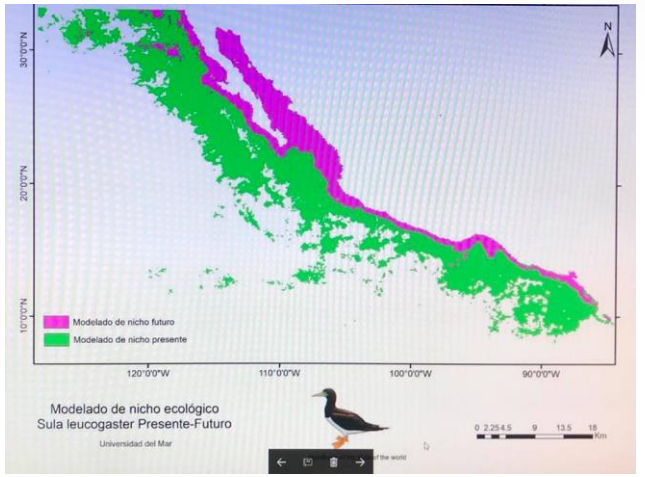


Refugios



© Can Stock Photo - csp28081226





Conservación

MODELOS DE CIRCULACIÓN

Pros:
La salida de los modelos se puede dar cada 6/12/24 horas.
Variables que tienen que ver con la atmósfera y los océanos.
Por ejemplo, dirección y velocidad del viento y de las corrientes. Precisión y temperatura 6/12/24 horas.

Contras:
Se necesitan computadoras muy poderosas, lleva mucho tiempo. La mejor resolución hasta ahora es de 25 minutos (~ 50 km en el ecuador)

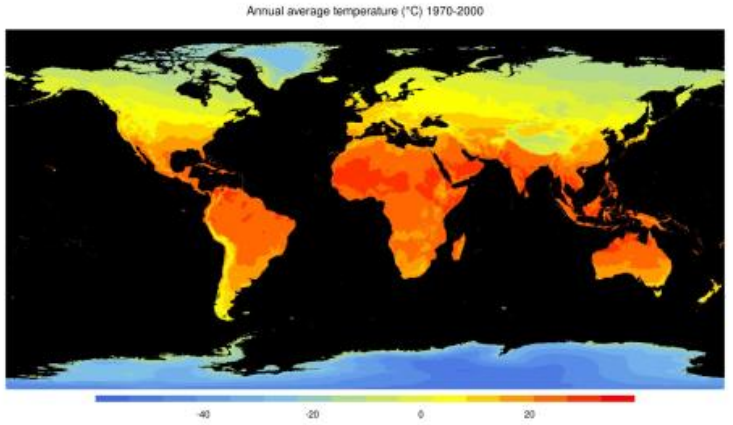
MODELOS DE CIRCULACIÓN GLOBAL

Model ID	Modeling Center	Resolution	# of years	Source	Release
CCSM4	National Center for Atmospheric Research, USA	0.9° × 1.25°	100	CMIP5/ PMIP3	2012
CNRM-CM5	Centre National de Recherches Meteorologiques / Centre Europeen de Recherche et Formation Avancees en Calcul Scientifique, France	1.4° x 1.4°	200	CMIP5/ PMIP3	2012
COSMOS-ASO (FUB)	Freie Universität Berlin, Germany	3.75° x 3.7°	600	PMIP3	2012
GISS-E2-R	NASA Goddard Institute for Space Studies, USA	2.5° x 2.0°	100	CMIP5/ PMIP3	2012
FGOALS-g2	National Key Laboratory of Numerical Modeling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG). Institute of Atmospheric Physics (IAP), China	2.8° × 2.8°	100	CMIP5/ PMIP3	2013
IPSL-CM5A-LR	Institut Pierre Simon Laplace, France	3.75° x 1.9°	200	CMIP5/ PMIP3	2012
MIROC-ESM	Atmosphere and Ocean Research Institute (University of Tokyo), National Institute for Environmental Studies, and Japan Agency for Marine-Earth Science and Technology, Japan	2.8° × 2.8°	100	CMIP5/ PMIP3	2012
MPI-ESM-P	Max Planck Institute for Meteorology, Germany	1.9° x 1.9°	100	CMIP5/ PMIP3	2011
MRI-CGCM3	Meteorological Research Institute, Japan	1.1° x 1.1°	100	CMIP5/ PMIP3	2012

AOGCM presente (2x2º)

-

Wordlclim presente (1km)



= delta (1 km)

10	12
17	20

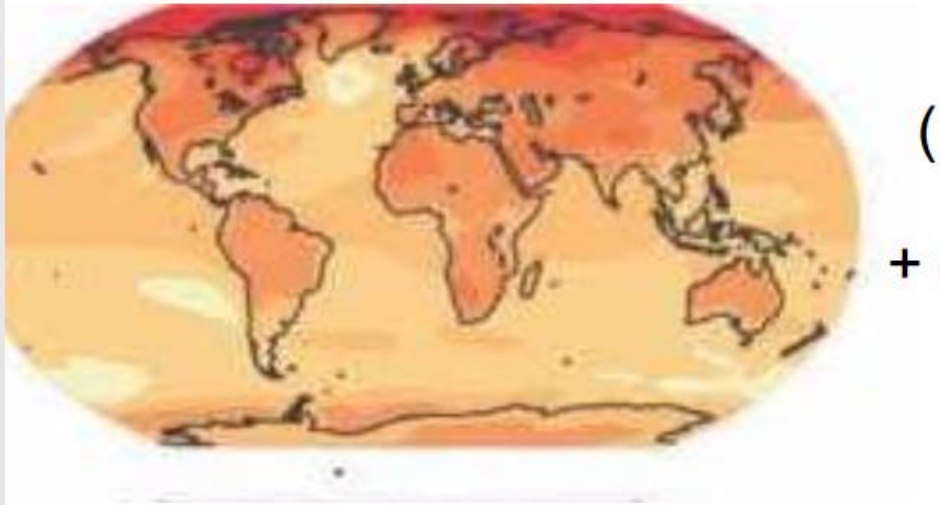
-

8	9	10	11
8	10	9	8
10	11	15	17
15	17	18	19

=

2	1	2	1
2	0	3	4
7	6	5	3
2	0	2	1

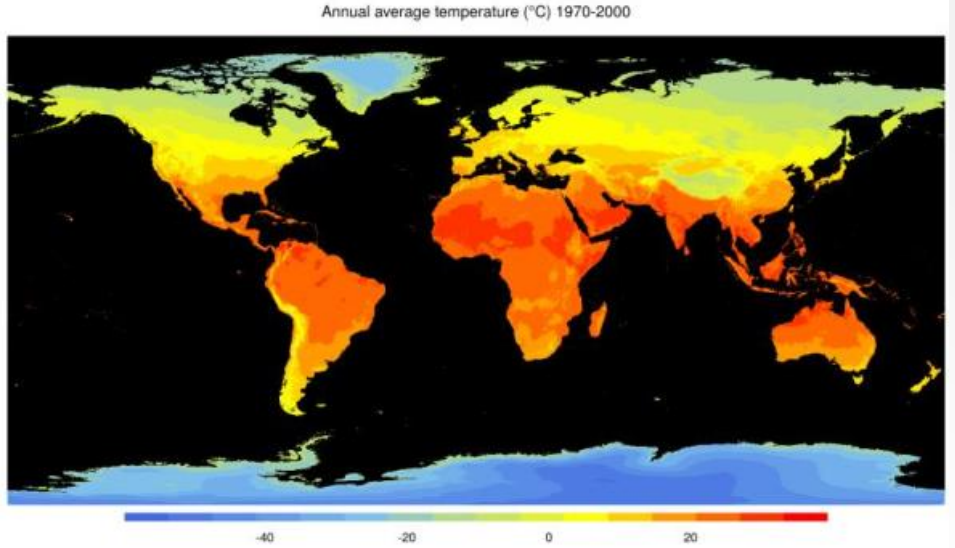
AOGCM futuro (2x2º)



(1km)

+ delta =

"AOGCM + delta" ~ "Futuro" (1km)



28	32
37	23

+

2	1	2	1
2	0	3	4
7	6	5	3
2	0	2	1

=

30	29	34	33
30	28	35	36
44	43	28	26
39	37	25	24

ecoclimate.org

AOGCM	Past			Present			Future			
	Plio	LGM	HOL	piCon.	Histor.	Modern	RCP2.6	RCP4.5	RCP6.0	RCP8.5
CCSM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CNRM	✗	✓	✓	✓	✓	✓	✗	✓	✗	✓
COSMOS	✗	✓	✗	✓	✗	✗	✗	✗	✗	✗
FGOALS	✗	✓	✓	✓	✓	✓	✓	✗	✗	✓
GISS	✗	✓	✗	✓	✓	✓	✓	✓	✓	✓
IPSL	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
MIROC	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
MPI	✗	✓	✓	✓	✓	✓	✗	✗	✗	✗
MRI	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓

Resolución = 0.5 grados
19 Bioclimatic variables +
Mensuales:
pr – precipitation flux
tas – mean temperature
tasmax – maximum temperature
tasmin – minimum temperature

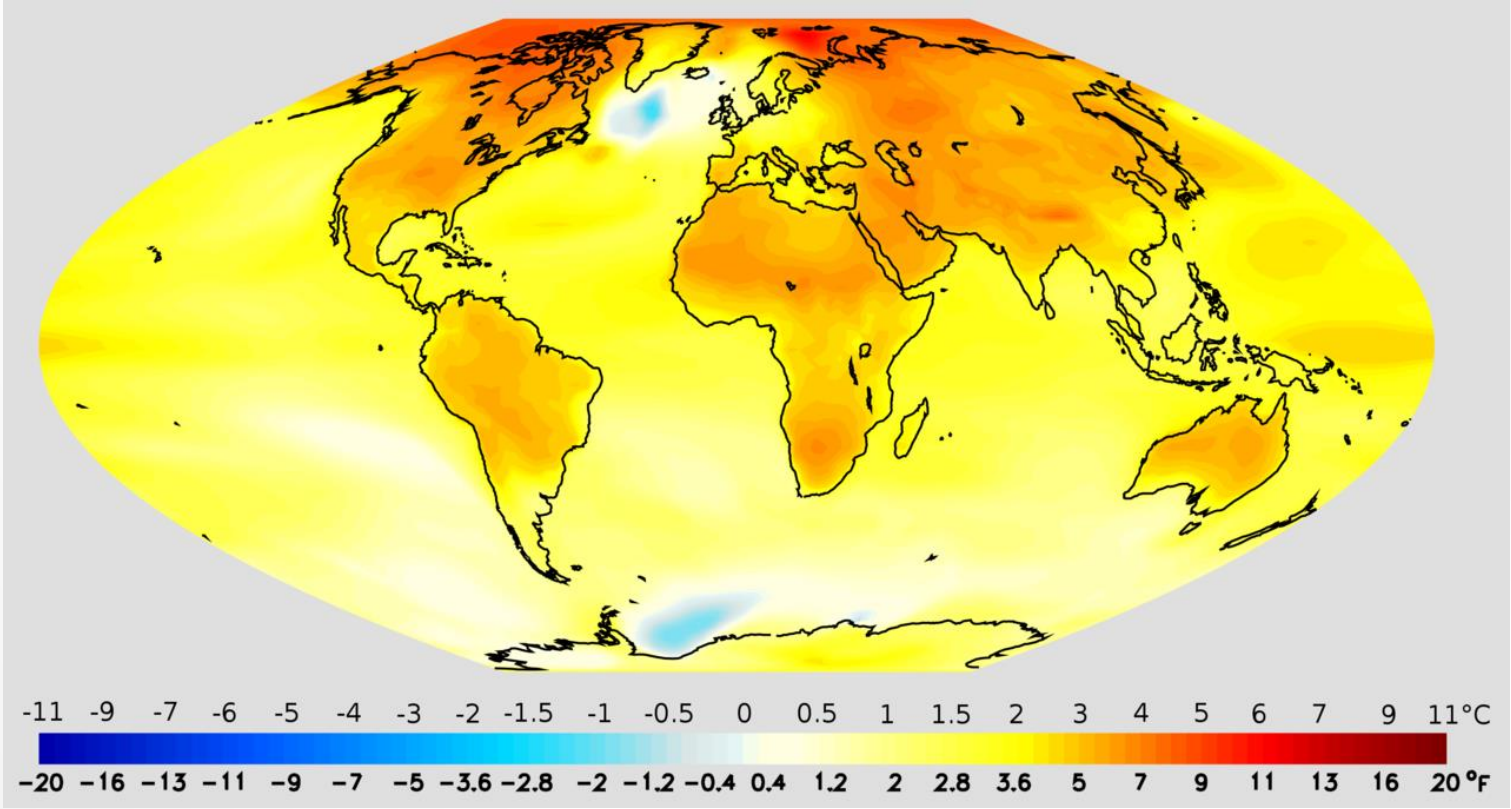
Worldclim 2

Para el presente.

Los datos a 1 km no son datos, son predicciones de un modelo

AOGCMs para el pasado o el futuro

Variables: temperatura es más fiable que precipitación



Varela et al. 2015 Plos One

Checar en la carpeta:

2.Literatura el archivo: **“LigaDatosAmbientales”**

	A	B	C	D
1	**Tipo**	**ID**	**Descripción**	**Pagina web**
2	**Clima**	**EarthEnv**	Global 1-km Cloud Cover	http://www.earthenv.org/cloud
3	**CGIARCSI**	CRU-TS v3.10.01 Historic Climate Database for GIS	http://www.cgiar-csi.org/data/uea-cru-ts-v3-10-01-historic-climate-database	CRU-TS v3.10.01
4	**CGIARCSI**	Global Aridity and PET Database	http://www.cgiar-csi.org/data/global-aridity-and-pet-database	Ver sección de documentación de la pagina
5	**ClimateSA:**	Historical and projected climate data for Mexico, Central and South America	https://sites.ualberta.ca/~ahamann/data/climatesa.html	
6	**Clima**	Clima Mexico	http://idrisi.uaemex.mx/	http://onlinelibrary.wiley.com/doi/10.1002/joc.
7	**Clima**	Downscaled and debiased climate simulations for North America from 21,000 years ago to 2100AD	http://datadryad.org/resource/doi:10.5061/dryad.1597g	http://www.nature.com/articles/sdata201648
8	**Clima**	MERRAclim	http://datadryad.org/resource/doi:10.5061/dryad.s2v81	https://www.nature.com/articles/sdata201778
9	**Clima NA**	Current and projected climate data for North America (CMIP5 scenarios)	https://adaptwest.databasin.org/pages/adaptwest-climatena	http://journals.plos.org/plosone/article?id=10
10	**Clima**	Clima diario	https://daymet.ornl.gov/	https://daac.ornl.gov/DAYMET/guides/Daymet_
11	**TerraClimate**	Clima Anual	http://www.climatologylab.org/terraclimate.html	https://www.nature.com/articles/sdata201719
12	**Ecoclimate**	Paleoclimatología	www.ecoclimate.org	http://journals.plos.org/plosone/article?id=10
13	**Chelsa**	Climatología	http://chelsa-climate.org/	

RECURSO EN DRIVE