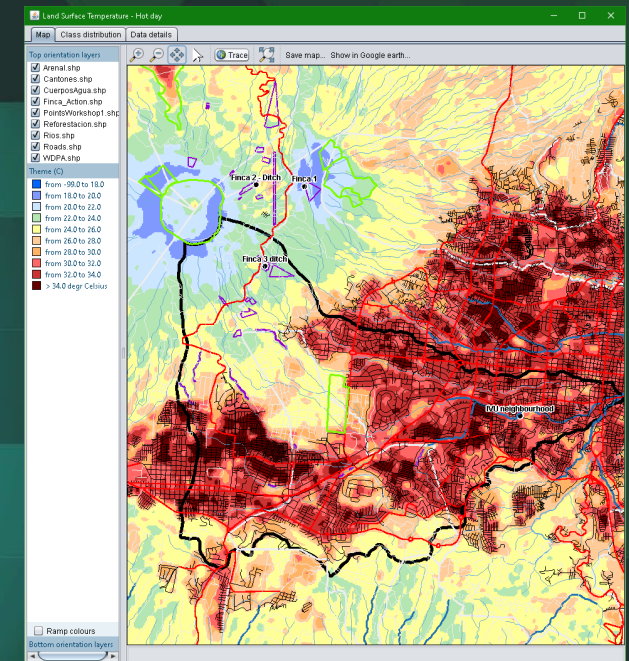
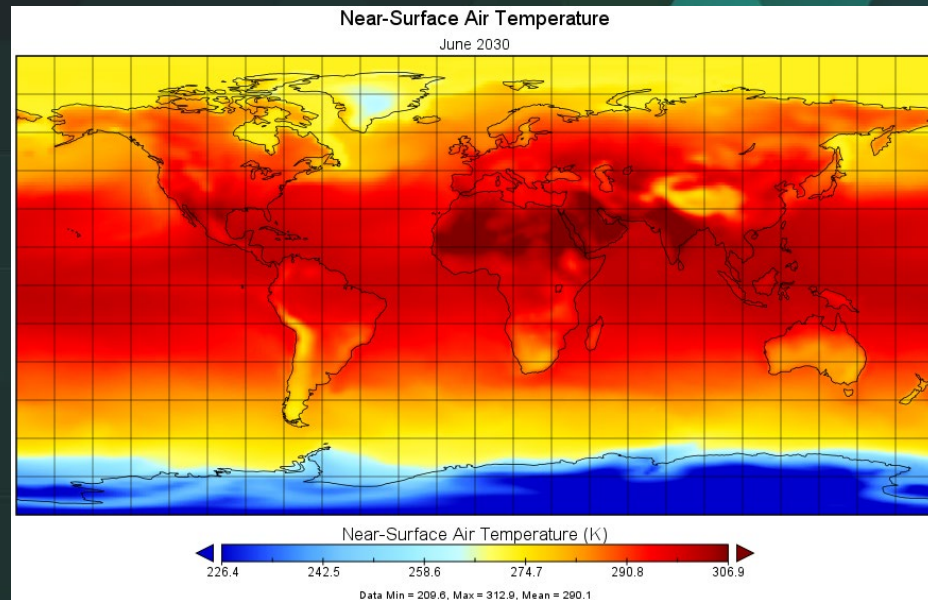




Datos climáticos espaciales: formación en línea

Datos climáticos; uso en un contexto urbano

Capacitación escalonada:

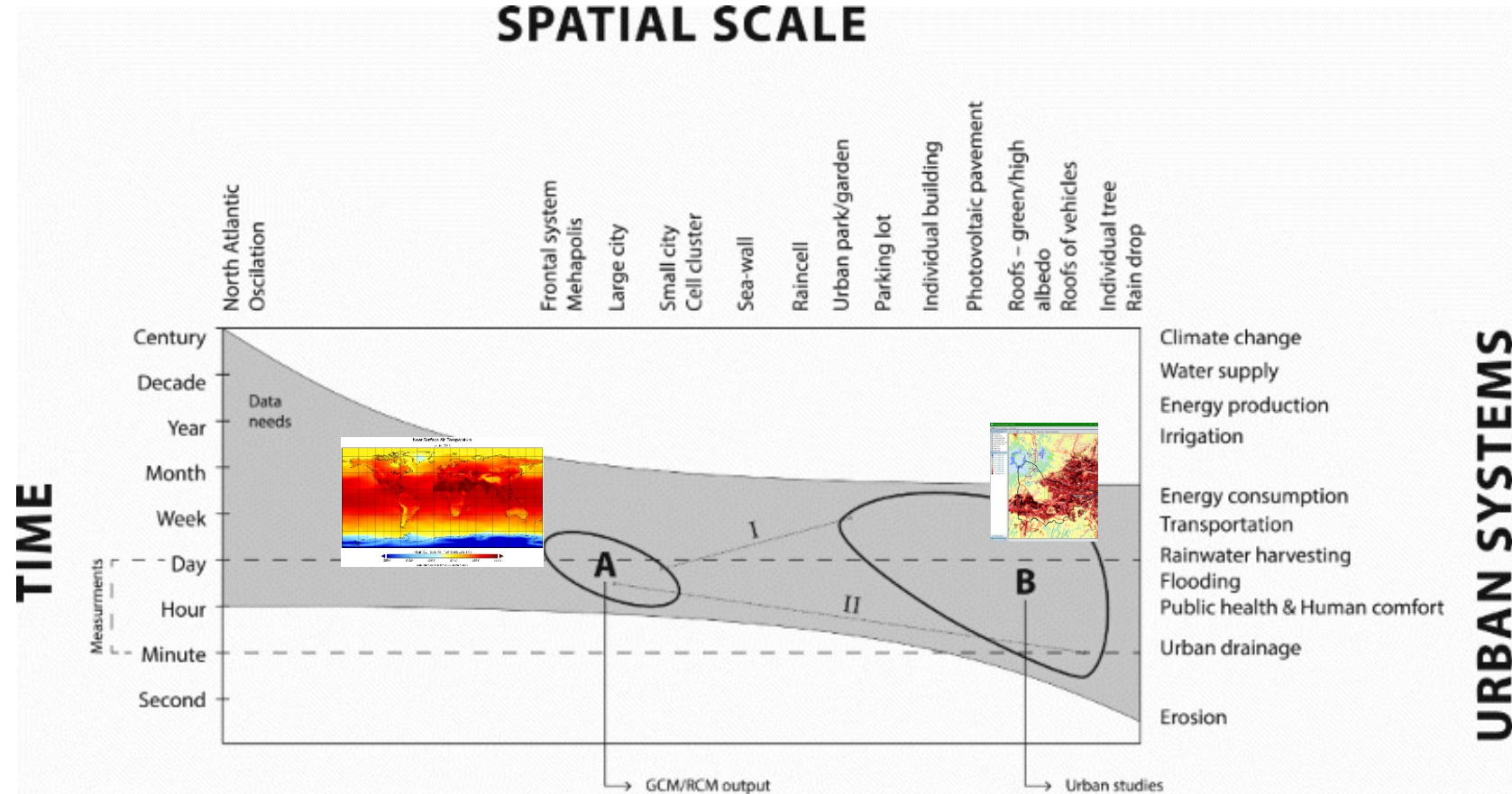
1. Reglas de expertos para proyecciones climáticas futuras
2. Datos climáticos espaciales no reducidos/escalonados, proyecciones actuales y futuras
3. Datos espaciales escalonados a escala del municipio; acceder a la selección y descargar
4. (Pre) procesamiento de los datos en SIG para poder utilizarlos en análisis espacial y planificación espacial

Proyecciones climáticas y técnicas de reducción de escala: una discusión para estudios de impacto en sistemas urbanos

Existen tres importantes cuellos de botella prácticos en el uso de proyecciones climáticas y sus derivados reducidos en un contexto urbano:

1. la terminología,
2. el desajuste de escala,
3. los aspectos de IT (tecnologías de la información).

Climate projections and downscaling techniques: a discussion for impact studies in urban systems



Marek Smid & Ana Cristina Costa (2018) Climate projections and downscaling techniques: a discussion for impact studies in urban systems, International Journal of Urban Sciences, 22:3, 277-307, DOI: [10.1080/12265934.2017.1409132](https://doi.org/10.1080/12265934.2017.1409132) (OPEN ACCESS)

1: Uso de reglas de expertos sobre el clima futuro

Datos satelitales actuales:

1. alta resolución 30, 20, 10 m de resolución (LANDSAT8 (EE. UU.), Sentinel (UE), etc.)
2. Alta resolución temporal: datos / indicadores diarios, semanales, mensuales
3. Fácil de descargar y procesar:
 - Temperatura de la superficie terrestre
 - Índices de vegetación NDVI
 - Contenido de agua de la vegetación
 - Etc.

Pero describen solo = condición actual

1: Uso de reglas de expertos para el clima futuro

Ejemplo con QUICKScan:

Temperatura de la superficie terrestre -
Día más caluroso julio de 2018 - LANDSAT 8

(ir en vivo a QUICKScan próximos slides)

RS&GIS_V17.0

Raw Data Input :

Compressed file/s

Select the area of interest shape file (Single file) ☐ Clip data

Some more details :

Ignore 'no data' values: ☒

For Landsat 8 data exclude feature/s: ☐ Clouds ☐ Cirrus + Clouds

Outputs :

Bands interested in	ToA Reflectance	ToA Radiance
Deep Blue	☐	☐
Blue	☐	☐
Green	☐	☐
Red	☐	☐
NIR	☐	☐
SWIR	☐	☐
TIR	☐	☐
PAN	☐	☐
Cirrus	☐	☐

Extra derived outputs :

TCC	☐
FCC	☐
NDVI	☒
NDWI	☒
At. Sat Temperature (Celsius)	☐
LST (Celsius)	☒

Custom output band expression/s :

eg. Eg_Index	eg. (Red - RedMin) OR (red - redmin) OR (r-rmin)
Output_name_01	Type expression 1 here (optional)
Output_name_02	Type expression 2 here (optional)
Output_name_03	Type expression 3 here (optional)
Output_name_04	Type expression 4 here (optional)

Welcome to RS&GIS_V17.0 !

Start deriving the outputs with 6 simple steps:

1. Select the mode of selection
2. Browse the files to process
3. Select the area of interest shape file
4. Select all the desired outputs
5. Give some extra details required
6. Start Processing!

Supports:

- > LISS IV, LISS III data
- > Landsat 8 OLI/TIRS sensor level 1 data
- > Landsat 7 ETM+ sensor level 1 data
- > Landsat 5, Landsat 4 TM sensor level 1 data
- > Landsat 4 and Landsat 5 MSS sensor level 1 data
- > Landsat 1 to 3 MSS sensor level 1 data

Note:

- > Select all the required bands along with the metadata file.
- > All the outputs are stored in the directory where raw data is stored
- > All the listed outputs are available for Landsat 8 data but some features are not available for other data products due to unavailability of required band/s.

Please Wait !

- > Process once started takes some time to complete.
- When all the processes are complete you are good to go again.

Suggestions? Feedback?

Contact:

Prathamesh B

NITK, Surathkal, India.

email: prathamesh.barane@gmail.com

>>>-----<<<

===== User Inputs =====

>>>-----<<<

Let's get started > Start with specifying the mode of selection

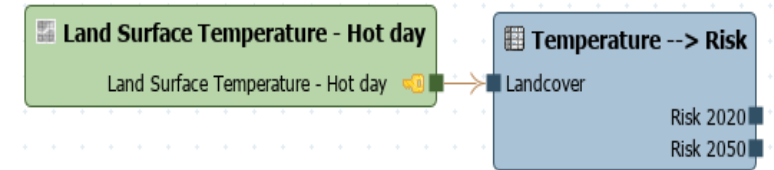
User selection mode:

Compressed file/s

QUICKScan:

definir matriz con reglas de expertos
para evaluar riesgo de cambio de
temperaturas actuales y futuras

(2020 y 2050)



Name: Temperature --> Risk
Input classification: Temperatur (C) [quantitative]
Output classification: 2 Riesgo [qualitative]

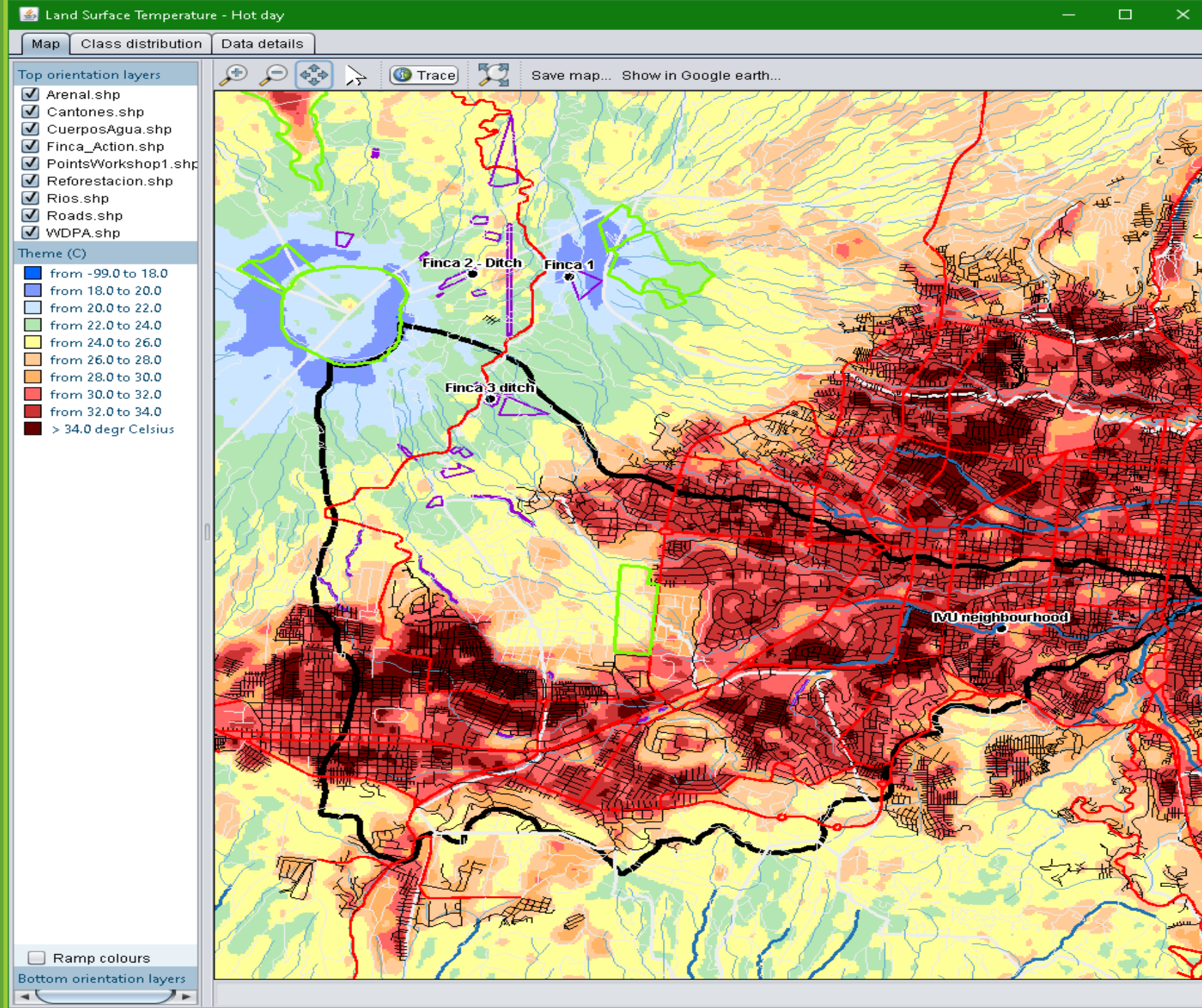
	Risk 2020	Risk 2050
from -99.0 to 18.0	minimal risk	minimal risk
from 18.0 to 20.0	minimal risk	minimal risk
from 20.0 to 22.0	minimal risk	minimal risk
from 22.0 to 24.0	minimal risk	minimal risk
from 24.0 to 26.0	minimal risk	minimal risk
from 26.0 to 28.0	minimal risk	Medium risk
from 28.0 to 30.0	Medium risk	Medium risk
from 30.0 to 32.0	Medium risk	High risk
from 32.0 to 34.0	High risk	very High risk
> 34.0 degr Celsius	very High risk	very High risk

< Previous Next > OK Cancel

1: Uso de reglas de expertos para el clima actual

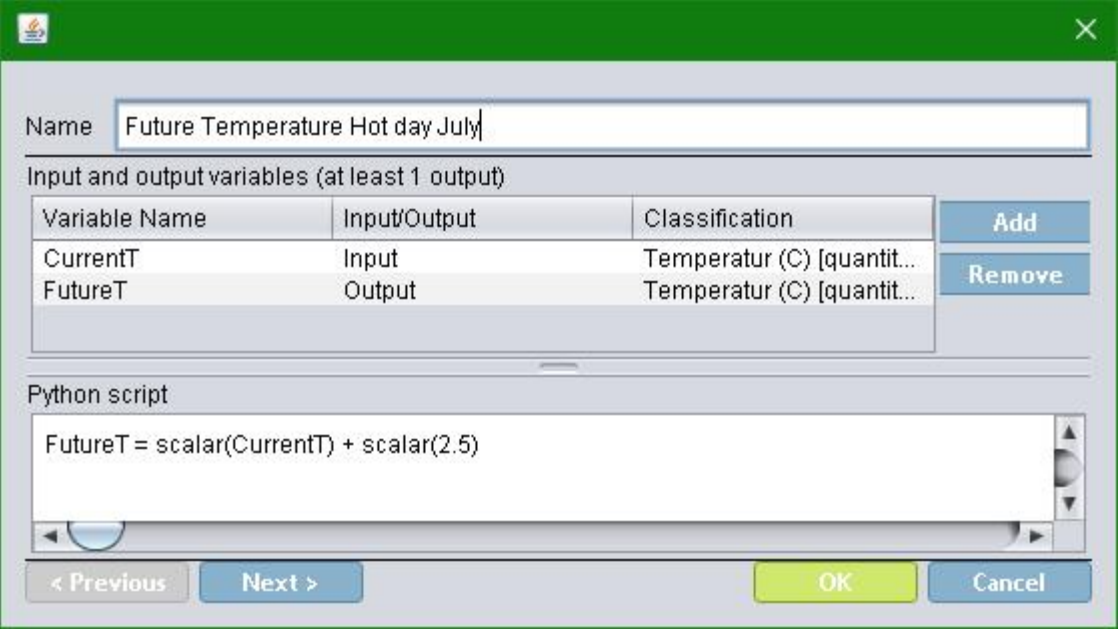
Ejemplo de resultado con QUICKScan:

Temperatura de la superficie terrestre - Día más caluroso julio de 2018 - LANDSAT 8



1: Uso de reglas de expertos para el clima **futuro**

Ejemplo con QUICKScan:
definir reglas de expertos
para temperaturas **futuras**



The screenshot shows the QUICKScan expert rule editor window. It has a green title bar and a close button in the top right corner. The main area is divided into three sections: a 'Name' field, a table for 'Input and output variables', and a 'Python script' text area.

Name: Future Temperature Hot day July

Input and output variables (at least 1 output)

Variable Name	Input/Output	Classification
CurrentT	Input	Temperatur (C) [quantit...
FutureT	Output	Temperatur (C) [quantit...

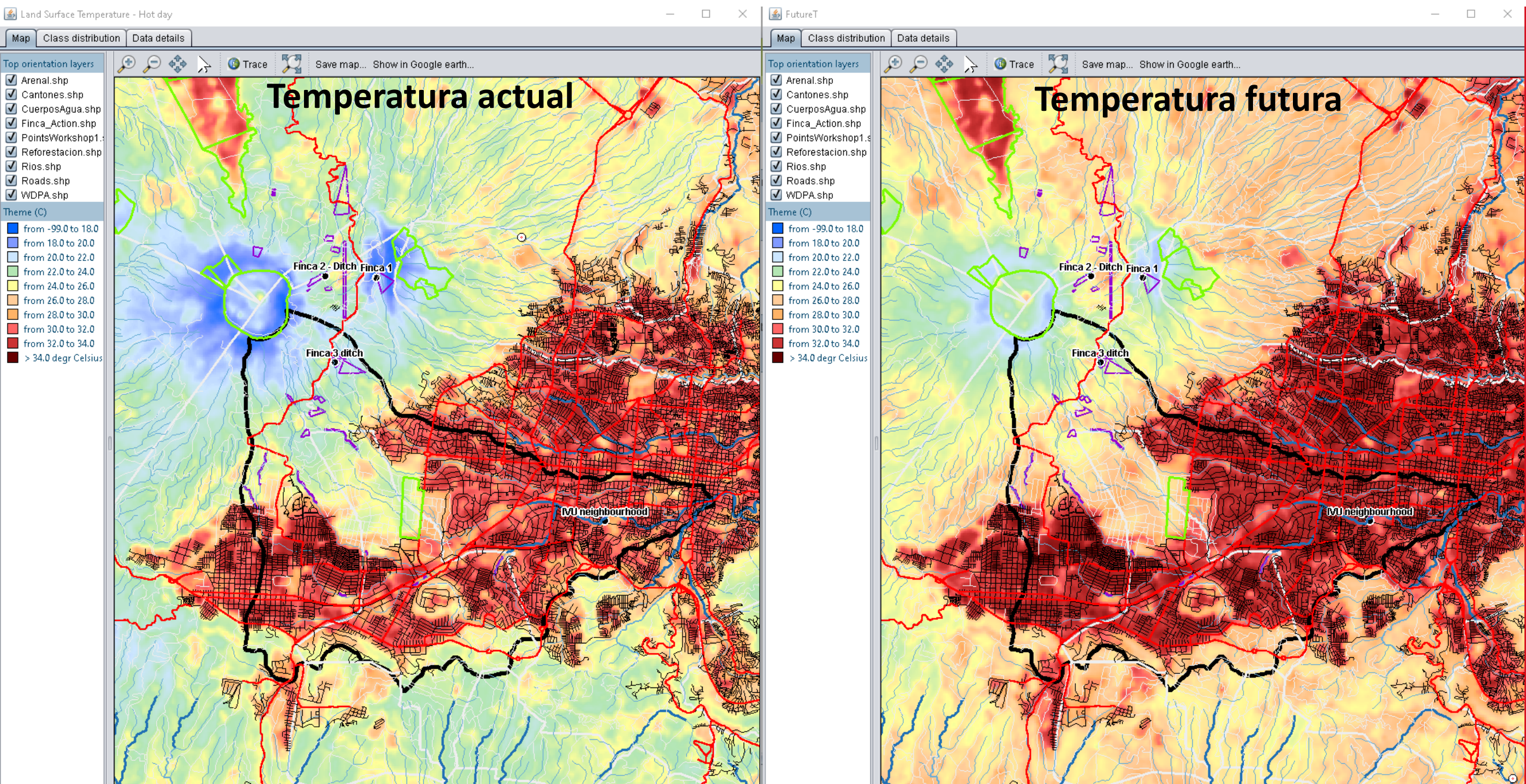
Buttons: Add, Remove

Python script:

```
FutureT = scalar(CurrentT) + scalar(2.5)
```

Navigation buttons: < Previous, Next >, OK, Cancel

Ejemplo de comparación de resultados con QUICKScan: Temperatura actual y futura



2. Datos climáticos espaciales no escalados, proyecciones actuales y futuras

Gran brecha entre las observaciones actuales con datos LANDSAT /Sentinel y datos climáticos:

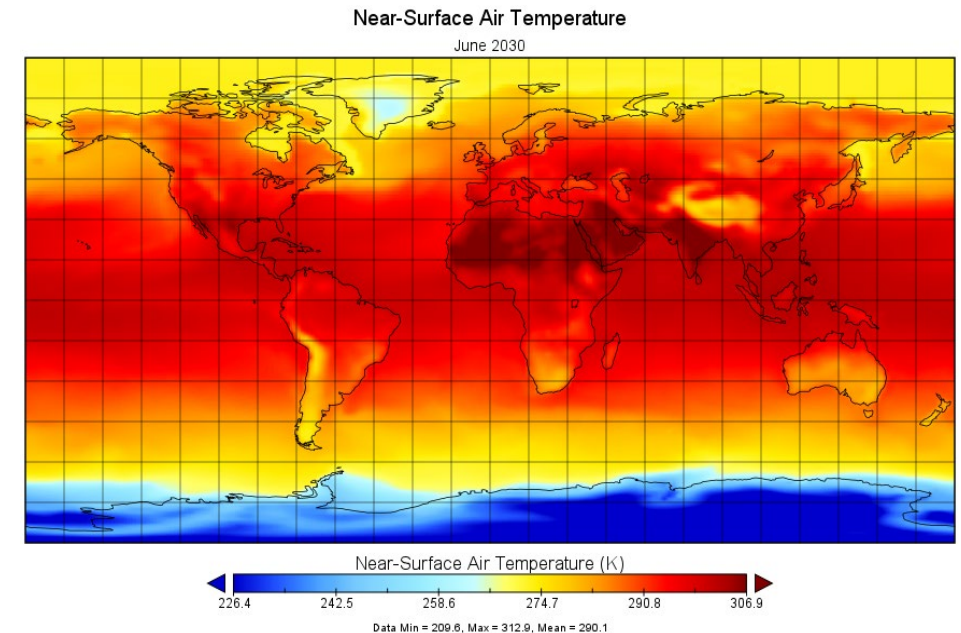
(Re) análisis de grandes conjuntos de datos (por ejemplo, datos por hora) utilizando modelos: Indicadores (proyectados) mensuales / anuales de salida, etc. (por ejemplo, Tmax, Tmean, etc.)

Resolución espacial de 0,1 a 0,5 grados (10-50 km)

Muchas, muchas, muchas proyecciones diferentes

Ejemplo: portal de servicios climáticos de Copernicus

[Copernicus Climate Service Portal](#)



3. Datos espaciales reducidos a escala; acceder a la selección y descargar

Muchos: portales e iniciativas de reducción de escala: p. Ej. USGS y EURO-CORDEX, pero la reducción de escala significa que a menudo solo va a 0.1x0.1 grados decimales (10x10km)

Una solución fácil de usar hecha a medida de CCAFS: Métodos para escalonar (downscaling) http://www.ccafs-climate.org/data_spatial_downscaling/

pedir los datos de escalonamiento: <http://www.ccafs-climate.org/climatewizard/>

Otra opción: <https://chelsa-climate.org/downloads/>

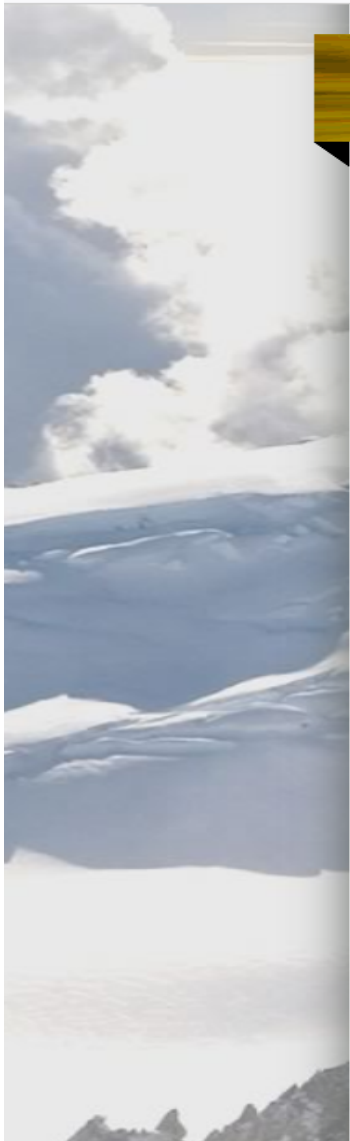
Datos climáticos; uso en un contexto urbano

Ejemplo escalonado:

1. Reglas expertas para proyecciones climáticas futuras
2. Datos climáticos espaciales no escalonados, proyecciones actuales y futuras
3. Datos espaciales reducidos a escala; acceder a la selección y descargar
4. (Pre) procesamiento de los datos en SIG para poder utilizarlos en análisis espacial y planificación espacial

Ejemplo en vivo próximos slides

Cargar datos escalonados desde plataforma CCAFS (1 km x 1 km)



www.ccafs-climate.org/data_spatial_downscaling/

Spatial Downscaling Data

Spatial downscaling

[How to download data](#)

File Set

Scenario

Model

- Select all options
- baseline
- bcc_csm1_1
- bcc_csm1_1_m
- bccr_bcm2_0
- bnu_esm
- cccma_canesm4
- cccma_canesm2
- cccma_cgcm2_0
- cccma_cgcm3_1_t47
- cccma_cgcm3_1_t63
- cesm1_bgc
- cesm1_cam5
- cesm1_cam5_1_t42
- cesm1_fastchem
- cesm1_wacm
- cmcc_cesm
- cmcc_cm

Extent

☐ Global

☒ Region

Format

☒ ASCII Grid Format

☐ ESRI-Grid

Period

Variable

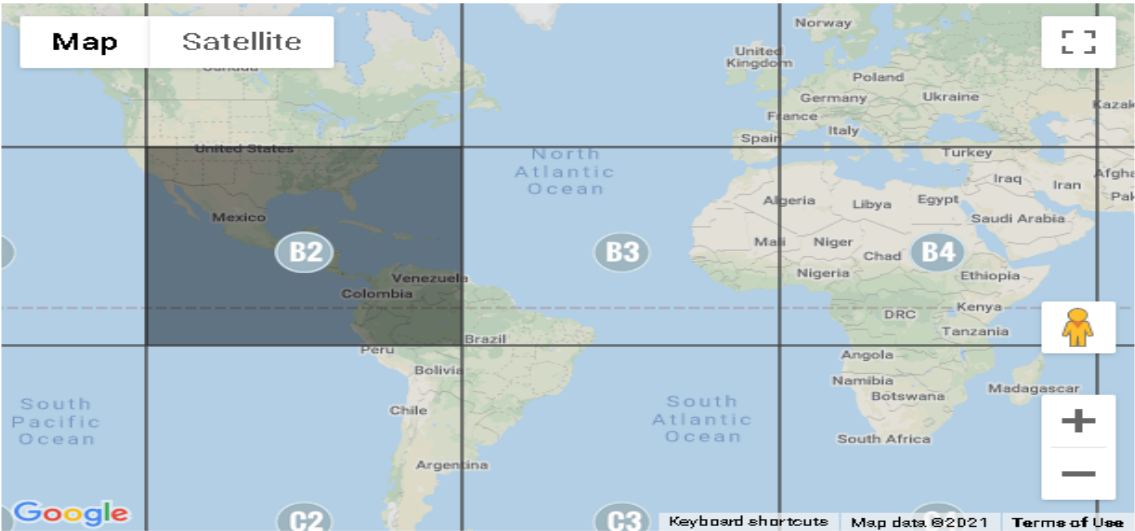
Resolution

106 files found

Search

Map

Satellite



Google

Keyboard shortcuts

Map data ©2021

Terms of Use

The data distributed here are in ARC GRID, and ARC ASCII format, in decimal degrees and datum WGS84. The Delta Method uses **WorldClim v1.4** as the high resolution baseline. CCAFS and its partners have processed this data to provide seamless continuous future climate surfaces. Users are prohibited from any commercial, non-free resale, or redistribution without explicit written permission from CCAFS or the data-developing institutions. Users should acknowledge CCAFS as the source used in the creation of any reports, publications, new data sets, derived products, or services resulting from the use of this data set. For commercial access to the data, send requests to **Andy Jarvis** at the International Center for Tropical Agriculture (CIAT).

Cargar datos escalonados desde Chelsa (1 km x 1 km)

13_browsing

https://envirodata.wsl.ch/#/prefix=chelsa%2Fchelsa_V2%2FGLOBAL%2Fclimatology%2F

S3 File Browser1.9.4Bucket: envirocloud

Search Directories

>

1981-2010/

>

2011-2040/

>

2041-2070/

>

GFDL-ESMA/

>

IPSL-CM5A-LR/

>

MPICSM1-2-HR/

>

ssp126/

>

ssp370/

>

ssp585/

>

bio/

>

pr/

>

tas/

CHLSA_mpiesm1-2-hr_r11p1f1_w565_ssp585_tas_01_2041_2070_norm.tif

114.3 MB

2021-03-01T11:56:46.236Z

CHLSA_mpiesm1-2-hr_r11p1f1_w565_ssp585_tas_02_2041_2070_norm.tif

115.3 MB

2021-03-01T11:56:46.831Z

CHLSA_mpiesm1-2-hr_r11p1f1_w565_ssp585_tas_03_2041_2070_norm.tif

117.5 MB

2021-03-01T11:56:47.223Z

CHLSA_mpiesm1-2-hr_r11p1f1_w565_ssp585_tas_04_2041_2070_norm.tif

120.8 MB

2021-03-01T11:56:47.707Z

CHLSA_mpiesm1-2-hr_r11p1f1_w565_ssp585_tas_05_2041_2070_norm.tif

122.7 MB

2021-03-01T11:56:48.075Z

Cargar datos no escalonados desde Copernicus (50 km x 50 km)

CMIP6 climate projections

https://cds.climate.copernicus.eu/cdsapp#/dataset/projections-cmip6/tab=overview

HomeSearchDatasetsApplicationsToolboxSupportLive

CMIP6 climate projections

OverviewDownload dataDocumentation

This catalogue entry provides daily and monthly global climate projections data from a large number computed in the framework of the sixth phase of the Coupled Model Intercomparison Project (CMIP6).

CMIP6 data underpins the Intergovernmental Panel on Climate Change 6th Assessment Report. The use of

- addressing outstanding scientific questions that arose as part of the IPCC reporting process;
- improving the understanding of the climate system;
- providing estimates of future climate change and related uncertainties;
- providing input data for the adaptation to the climate change;
- examining climate predictability and exploring the ability of models to predict climate on decadal timescales;
- evaluating how realistic the different models are in simulating the recent past.

The term "experiments" refers to the three main categories of CMIP6 simulations:

- Historical experiments which cover the period where modern climate observations exist. These experiments cover the period from 1850 to 2005.
- Climate projection experiments following the combined pathways of Shared Socioeconomic Pathway (SSPs) and the future climate forcing. The period covered is typically 2006-2100, some extended RCP.

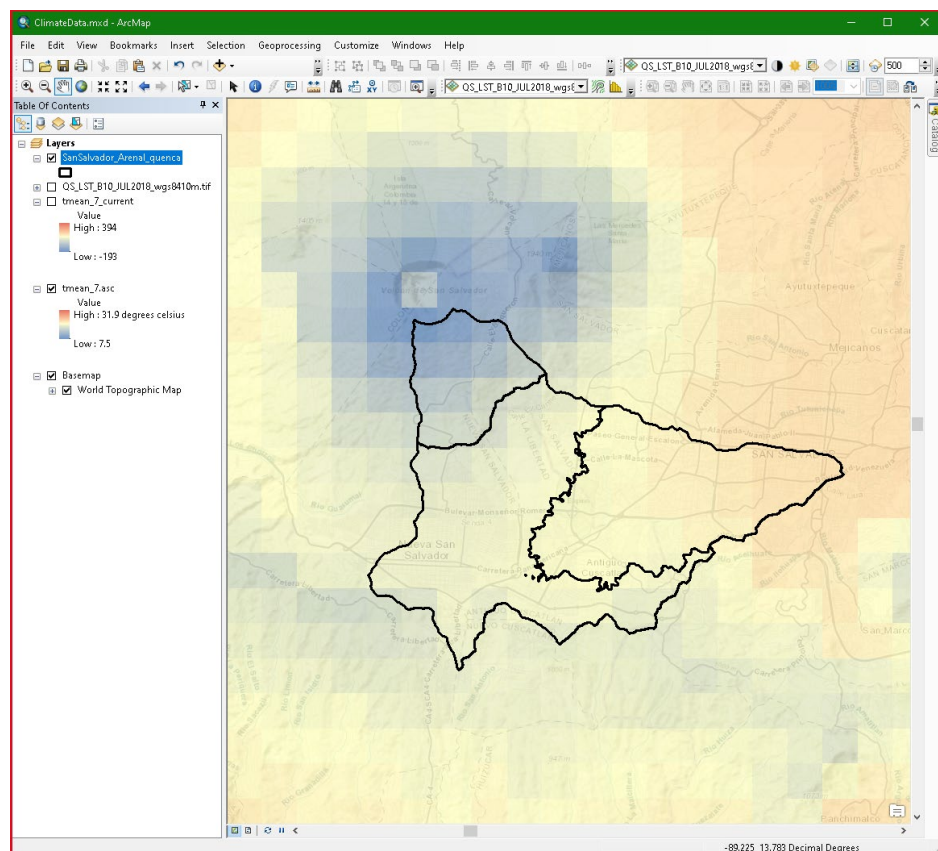
This catalogue entry provides both two- and three-dimensional data, along with an option to apply spatio-temporal projection dataset, which relies on compute processes run simultaneously in the ESGF nodes, where the data are produced by the participating institutes of the CMIP6 project.

DATA DESCRIPTION		
Data type	Gridded	
Projection	Regular latitude-longitude grid, ocean grid	
Horizontal coverage	Global	
Horizontal resolution	Varies between models	
Vertical coverage	Single levels, pressure levels (1 - 1000 hPa)	
Temporal coverage	1850-2300 (shorter for some experiments)	
Temporal resolution	Monthly, daily, fixed (no temporal resolution)	
File format	NetCDF4	
Conventions	Climate and Forecast (CF) Metadata Convention v1.6	
Versions	Latest version of the data is provided	

MAIN VARIABLES		
Name	Units	Description
Air temperature	K	Temperature in the atmosphere. It has units of Kelvin (K). Temperature measured in kelvin can be converted to degrees Celsius (°C) by subtracting 273.15. This parameter is available on multiple levels through the atmosphere.
Capacity of soil to store water (field capacity)	kg m ⁻²	The total water holding capacity of all the soil in the grid cell divided by the land area of the grid cell.
Daily maximum near-surface air temperature	K	Daily maximum temperature of air at 2m above the surface of land, sea or inland waters.
Daily minimum near-surface air temperature	K	Daily minimum temperature of air at 2m above the surface of land, sea or inland waters.
Eastward near-surface wind	m s ⁻¹	Magnitude of the eastward component of the two-dimensional horizontal air velocity 10m above the surface.
Eastward wind	m s ⁻¹	Magnitude of the eastward component of the two-dimensional horizontal air velocity.
Evaporation including sublimation and transpiration	kg m ⁻² s ⁻¹	The transfer of latent heat (resulting from water phase changes, such as evaporation, condensation, sublimation and transpiration) between the Earth's surface and the atmosphere through the effects of turbulent air motion. Evaporation from the Earth's surface represents a transfer of energy from the surface to the atmosphere. It indicates a vector component which is positive when directed downward (negative upward).
Grid-cell area for ocean variables	m ²	The area of the grid cell in the ocean. The data is time-independent.
Land ice area percentage	%	Fraction of grid cell occupied by "permanent" ice (e.g. glaciers). The data is time-independent.
Moisture in upper portion of soil column	kg m ⁻²	Vertical sum per unit area from the surface down to the bottom of the soil model of water in all phases contained in soil.
Near-surface air temperature	K	Temperature of air at 2m above the surface of land, sea or inland waters. 2m temperature is calculated by interpolating between the lowest model level and the Earth's surface, taking account of the atmospheric conditions.
Near-surface relative humidity	%	Amount of moisture in the air near the surface divided by the maximum amount of moisture that could exist in the air at a specific temperature and location.

Datos escalonados de temperatura futura y diferencia con la actual desde Chelsa (1 km x 1 km)

Temperatura futura 2050



Diferencia actual - futura

