

BIOGEOGRAPHICAL PROCESS NATURA 2000 - MACARONESIAN REGION

# ENVIRONMENTAL DATA FOR THE STUDYING OF THE COHERENCE OF NATURA 2000 NETWORK

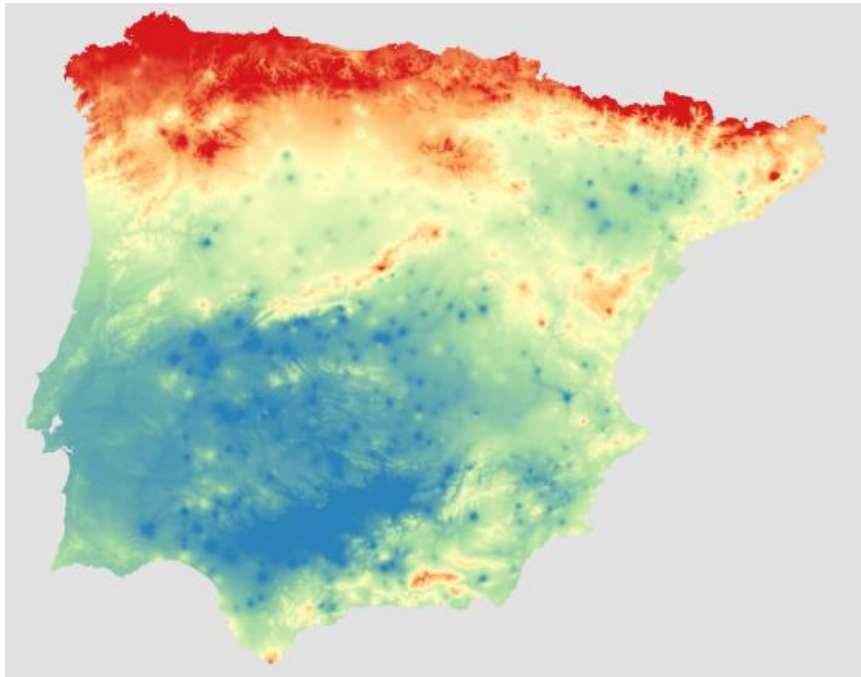
Neftalí Sillero (Centro de Investigação em Ciências Geo-Espaciais – Universidade do Porto)

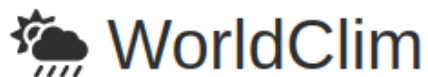
PROCESSO BIOGEOGRÁFICO NATURA 2000  
REGIÃO BIOGEOGRÁFICA MACARONÉSICA



# TYPES OF ENVIROMENTAL DATA

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





## Global climate and weather data

- [Historical climate data](#)
- [Historical monthly weather data](#)
- [Future climate data](#)

Welcome to the WorldClim data website.

WorldClim is a database of high spatial resolution global weather and climate data. These data can be used for mapping and spatial modeling. The data are provided for use in research and related activities; and some specialized skill and knowledge is needed to use them ([here is some help](#)). More easily available data for the general public will soon be [available here](#).

You can download gridded weather and climate data for [historical](#) (near current) and [future](#) conditions.

[www.worldclim.org](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

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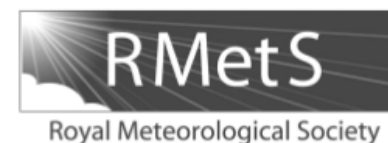
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INTERNATIONAL JOURNAL OF CLIMATOLOGY

*Int. J. Climatol.* (2017)

Published online in Wiley Online Library  
(wileyonlinelibrary.com) DOI: 10.1002/joc.5086



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

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<sup>b</sup> *Department of Environmental Science and Policy, University of California, Davis, CA, USA*

[www.worldclim.org](http://www.worldclim.org)



# WORLDCLIM

- **global monthly averages**
- **period 1970-2000**
- **mean, maximum and minimum temperature, and precipitation**
- **19 Bioclim variables**
- **spatial resolution of ~1 km**
- **future RCP scenarios for 2040, 2060, 2080, 2100**
- **past climate scenarios**
  - **Last Interglacial period**
  - **Last Glacial Maximum**
  - **Holocene**

[www.worldclim.org](http://www.worldclim.org)





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

CHELSEA – Free climate data at high resolution

<http://chelsa-climate.org>

- **global monthly mean temperature and precipitation**
- **period 1981-2010**
- **spatial resolution of ~1 km**
- **monthly precipitation, maximum, minimum, and mean temperatures**
- **temporal series: yearly variables (1979-2018)**
- **future RCP scenarios for 2040, 2070 and 2100**
- **past climate scenarios for the Last Glacial Maximum**

<http://chelsea-climate.org>



**CliMond** global climatologies for bioclimatic modelling

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correlative modelling Köppen-Geiger niche modelling  
conservation · climate change · invasives

**CliMond: global climatologies for bioclimatic modelling**

CliMond is the product of an informal collaboration between bioclimatic modellers and climate data custodians. We modellers have experienced the frustration of having to transform or reformat climatological data so that it can be used in our projects. We aim to provide you with useful data for bioclimatic modelling, saving you the frustration of repeating our work.

**Current Projects**

- Making error surfaces available to guide modellers on underlying data reliability.

**Recent updates**

- 26 Nov 2014 ExDet V1.1 released
- 09 Sep 2014 CliMond V1.2 goes live
- 28 Aug 2014 New Bioclim variables
- 24 Aug 2014 The Bioclim registry



# CLIMOND

- **interpolated surfaces at 10' and 30' of spatial resolution**
- **recent historical climate**
- **future climate scenarios**
- **monthly climate data**
- **40 Bioclim variables**
- **CLIMEX format**
- **CliMond uses Worldclim and the Climate Research Unit (CRU) (CL1.0 and CL2.0) datasets**

# TERRACLIMATE

About

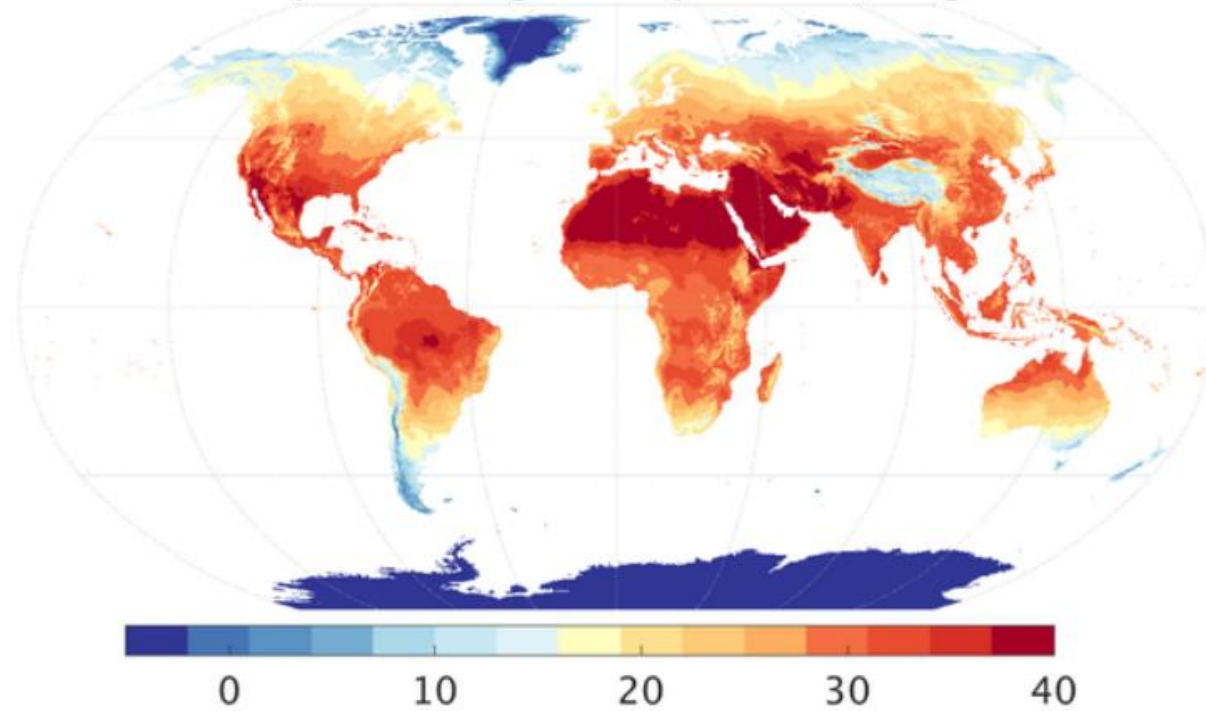
Download

Updates

References

## TERRACLIMATE

Monthly Mean High Temperature, Aug 2015



[www.climatologylab.org/terraclimate.html](http://www.climatologylab.org/terraclimate.html)

# TERRACLIMATE

- **temporal series: yearly variables (1958-2015)**
- **spatial resolution of ~4-km (1/24th degree)**
- **climatic variables: maximum temperature, minimum temperature, vapour pressure, precipitation accumulation, downward surface short-wave radiation, and wind-speed**
- **climatic water balance variables: reference evapotranspiration, runoff, actual evapotranspiration, climate water deficit, soil moisture, snow water equivalent, drought severity index, vapour pressure deficit**

[www.climatologylab.org/terraclimate.html](http://www.climatologylab.org/terraclimate.html)





## 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/>



- **temporal series: yearly climate data**
- **1901–2014 of 1 km resolution**
- **for Europe and the Mediterranean Basin**
- **seven Bioclim variables (bio1, 2, 5, 6, 12, 13, 14)**
- **annual precipitation**
- **seasonal temperature and precipitation**
- **annual potential evapotranspiration**
- **minimal and maximal monthly potential evapotranspiration**
- **annual water balance**
- **minimal and maximal monthly water balance**

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

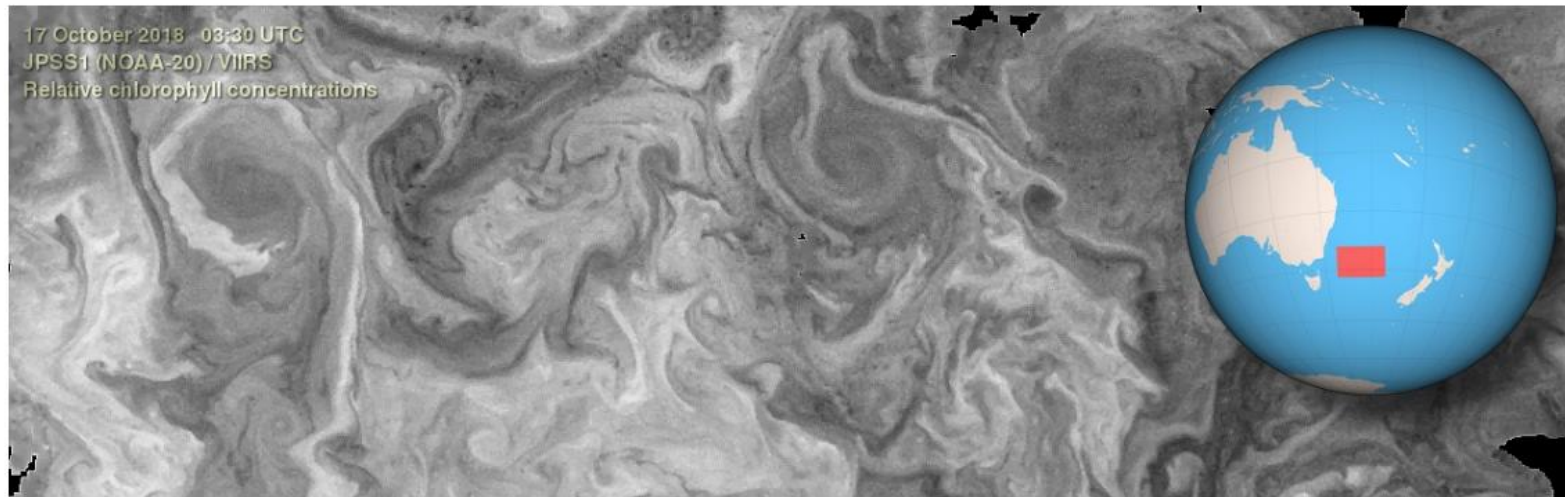
# OCEAN COLOR



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



<https://oceancolor.gsfc.nasa.gov/>





#### Extensive surface and benthic dataset

Bio-ORACLE is a set of GIS rasters providing geophysical, biotic and environmental data for surface and benthic marine realms.



#### Uniform and worldwide

The data are available for global-scale applications at a spatial resolution of 5 arcmin (approximately 9.2 km at the equator).



#### Forecasting and transferability

The most recent Representative Concentration Pathways are provided in order to model the ecological implications of future changes.

<http://bio-oracle.org>

- geophysical, biotic and environmental data
- surface and benthic global marine environments
- spatial resolution of 5 arcmins (approximately 9.2 km at the equator)
- only dataset for ocean environments with future climate scenarios
- temperature, salinity, currents velocity, ice thickness, sea ice concentration, nitrate, phosphate, silicate, dissolved molecular oxygen, iron, chlorophyll, phytoplankton, primary productivity, calcite, pH, photosynthetic available radiation, diffuse attenuation, and cloud cover.

# MARSPEC

HOME

ABOUT

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PALEO DATA

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## OCEAN CLIMATE LAYERS FOR MARINE SPATIAL ECOLOGY

High resolution climatic and geophysical raster grids for the world ocean.

MODERN DATA

PALEO DATA

<http://marspec.weebly.com/>



# COPERNICUS LAND MONITORING SERVICE

Copernicus is a European system for monitoring the Earth. Data is collected by different sources, including Earth observation satellites and in-situ sensors. The data is processed and provides reliable and up-to-date information in six thematic areas: land, marine, atmosphere, climate change, emergency management and security. The land theme is divided into four main components:

- Global**  
*provides a series of bio-geophysical products on the status and evolution of the land surface at global scale at mid and low spatial resolution*
- Pan-European**  
*provides information about the land cover and land use (LC/LU), land cover and land use changes and land cover characteristics*
- Local**  
*focuses on different hotspots, i.e. areas that are prone to specific environmental challenges and problems*
- Imagery and reference data**  
*satellite imagery forms the input for the creation of Copernicus land products. In order to ensure an efficient and effective use of satellite data the Copernicus land monitoring service needs access to in-situ data*

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<https://land.copernicus.eu/>



# COPERNICUS LAND MONITORING SERVICE

The screenshot shows the Copernicus Land Monitoring Service website. At the top, there is a navigation bar with links for Site Map, About, Contact us, Log in, and Register. Below this is a search bar and buttons for FAQ and Ask the service desk. A secondary navigation bar includes a home icon, Global, Pan-European, Local, Imagery and reference data, Product portfolio, social media icons, News, and Language. The main content area features a large aerial image of agricultural fields. Below the image, a breadcrumb trail reads "You are here: Home / Pan-European". The "Pan-European" section is highlighted, with a "Print" button. To the right, a "User corner" lists several resources: "How to access our data", "Technical library", "Factsheets", "Use cases", and "Looking for National projection & Expert products?". The main content area contains six data visualization thumbnails: "CORINE Land Cover" (a map of Europe with color-coded land cover), "CLC+" (a map of Europe with a different color scheme), "High Resolution Layers" (a detailed map of a river basin with various layers), "Biophysical parameters" (a line graph showing seasonal cycles), "European Ground Motion Service" (a map of Europe with simulated ground motion data), and "Related Pan-European products" (a detailed map of a coastal area).

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<https://land.copernicus.eu/pan-european>

# CORINE LAND COVER DATA

The screenshot displays the Copernicus Land Monitoring Service website. At the top, there is a navigation bar with links for Site Map, About, Contact us, Log in, and Register. Below this, there are buttons for FAQ, Ask the service desk, and a search bar. A secondary navigation bar includes a home icon, Global, Pan-European, Local, Imagery and reference data, Product portfolio, social media icons (Facebook, Twitter, YouTube), News, and Language. The main content area features a large aerial photograph of agricultural fields. Below the photo, a breadcrumb trail reads: You are here: Home / Pan-European / CORINE Land Cover. The main heading is "CORINE Land Cover", followed by a "Print" button. A "User corner" section lists several resources: How to access our data, Technical library, Factsheets, Use cases, and Looking for National projection & Expert products?. The central part of the page shows a grid of eight land cover maps. The top row contains four maps labeled "CLC 1990", "CLC 2000", "CLC 2006", and "CLC 2012". The bottom row contains four maps labeled "CLC 2018", "CHA 1990-2000", "CHA 2000-2006", and "CHA 2006-2012".

<https://land.copernicus.eu/pan-european/corine-land-cover>



# SRTM: SHUTTLE RADAR TOPOGRAPHY MISSION



 Jet Propulsion Laboratory  
California Institute of Technology

[+ View the NASA Portal](#)

JPL HOME | EARTH | SOLAR SYSTEM | STARS & GALAXIES | TECHNOLOGY

 Shuttle Radar Topography Mission  
The Mission to Map the World

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Gallery of Images  
- Image Policy

Public Data Distribution

Video Multimedia

Project Status

Photojournal Search

SRTM Related

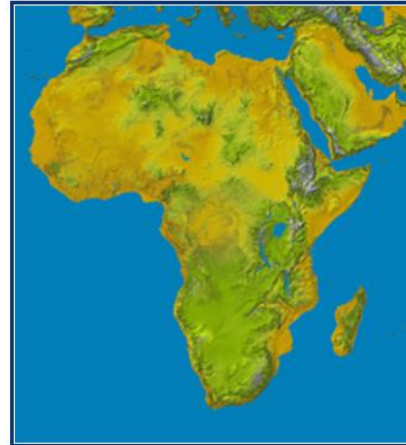
- NASA
- German Aerospace Ctr
- Italian Space Agency

Data Users Forum

Site Index

Contact Us

## U.S. Releases Enhanced Shuttle Land Elevation Data



released with a 1 arc-second, or about 30 meters (98 feet), sampling that reveals the full resolution of the original measurements.

See an [index map](#) of the newly available full-resolution data. (SRTM did not produce data for the northernmost latitudes or Antarctica.)

The new data are available for download from the [USGS EROS Data Center](#) - see [Public Data Distribution](#) for details.

See the Africa image above and its caption at the [PIA04965](#). A fly around video of the Crater

On September 23, 2014, the White House announced that the highest-resolution topographic data generated from NASA's Shuttle Radar Topography Mission (SRTM) in 2000 was to be released globally by late 2015. The announcement was made at the United Nations Heads of State Climate Summit in New York. Since then the schedule was accelerated, and all global SRTM data have been released.

See the full [JPL Release 2014-321](#).

Previously, SRTM data for regions outside the United States were sampled for public release at 3 arc-seconds, which is 1/1200th of a degree of latitude and longitude, or about 90 meters (295 feet). The new data have been

<https://www2.jpl.nasa.gov/srtm/>

# ASRER GLOBAL DIGITAL ELEVATION MODEL

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NASA Jet Propulsion Laboratory  
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JPL HOME EARTH SOLAR SYSTEM STARS & GALAXIES TECHNOLOGY

# ASTER

Advanced Spaceborne Thermal Emission and Reflection Radiometer

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**LATEST FEATURED IMAGE FROM ASTER:**

**Banjul, The Gambia**

Banjul is the capital of The Gambia; it is located on St. Mary's Island, where the Gambia River enters the Atlantic Ocean in western Africa.  
[Read More.](#) Updated on 2/8/2021

January 29, 2021

**Upcoming Terra Constellation Exit**

Terra has completed all mission maneuvers related to maintaining a 10:30 mean local time (MLT) equator crossing and 705 km orbit

**ASTER Data Archive**  
**GET DATA**

**Request an Acquisition**

**Acquisition Calendar**

**ASTER Global DEM**

<http://asterweb.jpl.nasa.gov/>





# GOOGLE EARTH ENGINE

Google Earth Engine

DATASETS FAQ TIMELAPSE CASE STUDIES PLATFORM BLOG SIGN UP

A planetary-scale platform for Earth science data & analysis

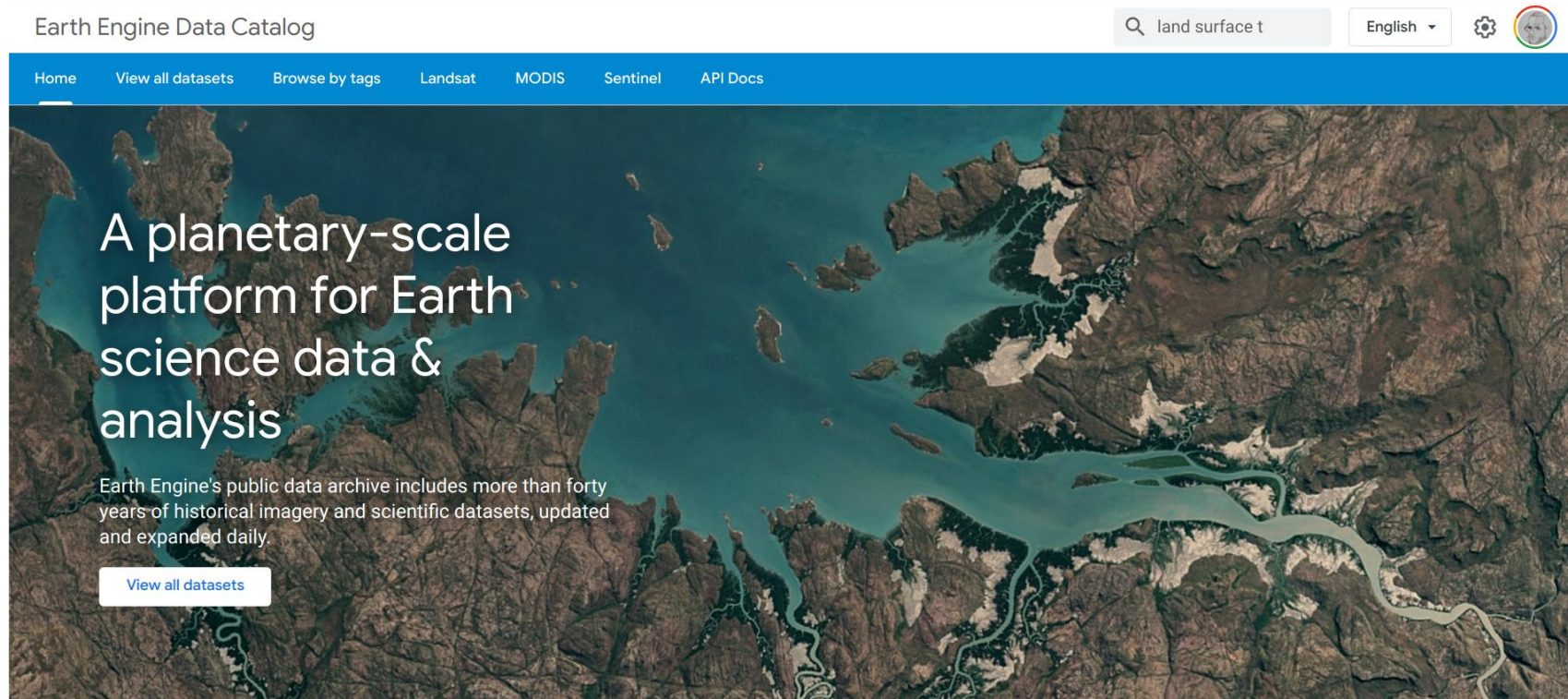
Powered by Google's cloud infrastructure

▶ WATCH VIDEO

Meet Earth Engine

Google Earth Engine combines a multi-petabyte catalog of satellite imagery and geospatial datasets with planetary-scale analysis

# GOOGLE EARTH ENGINE CATALOG



Climate and Weather

<https://developers.google.com/earth-engine/datasets>



# GOOGLE EARTH ENGINE CATALOG

The screenshot shows the Earth Engine Data Catalog homepage. At the top, there is a search bar and a language dropdown set to 'English'. Below the navigation bar, the main heading is 'Earth Engine Data Catalog'. A paragraph explains that the catalog includes standard Earth science raster datasets and allows for private use or sharing. A link is provided for suggesting datasets. A filter input field is present. Four dataset thumbnails are displayed with their respective titles: 'Canada AAFC Annual Crop Inventory', 'AHN Netherlands 0.5m DEM, Interpolated', 'AHN Netherlands 0.5m DEM, Non-Interpolated', and 'AHN Netherlands 0.5m DEM, Raw Samples'.



<https://developers.google.com/earth-engine/datasets>

**Thanks for your attention!**  
**Muito obrigado!**  
**¡Muchas gracias!**