

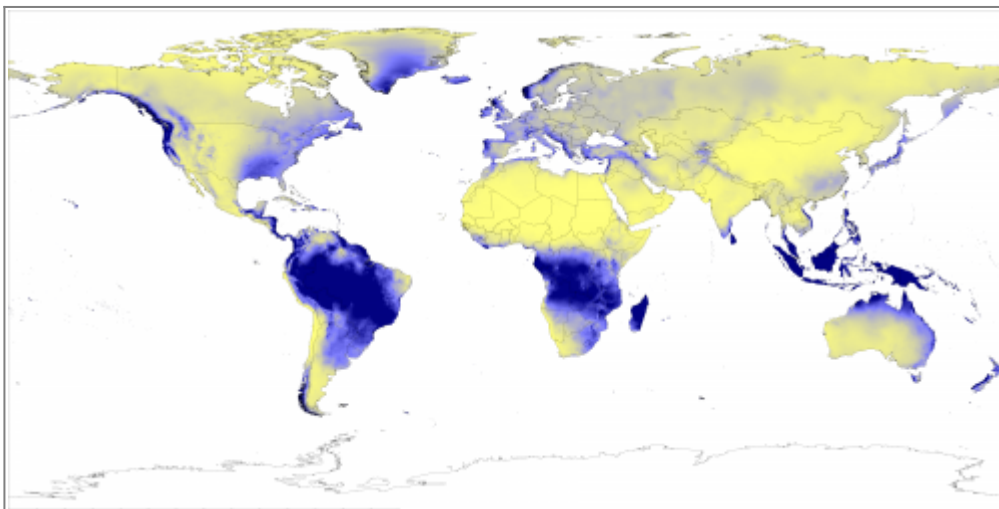
See the complete article: [Publicly available global environmental layers](#)

- Edited by: T. Hengl and M. Kilibarda

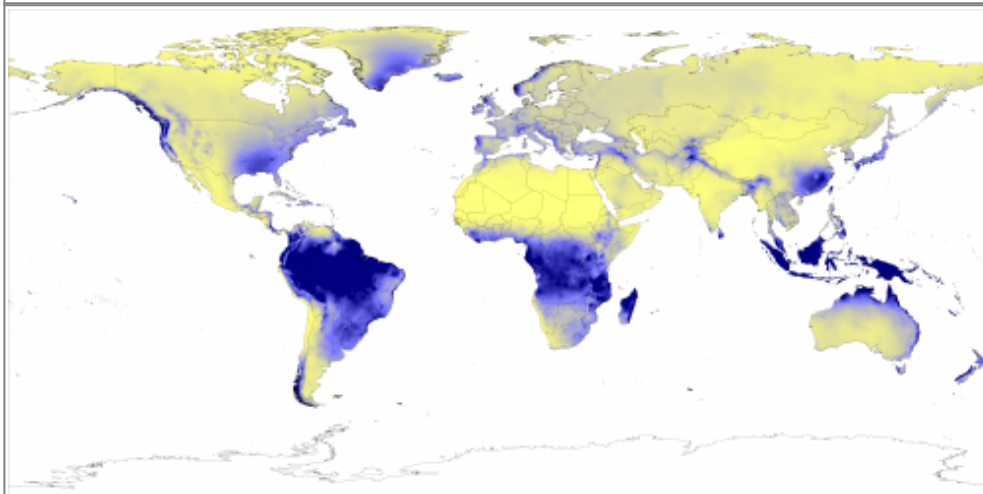
## Climatic maps

A comprehensive resource of global climatic images is the [WorldClim.org](#) service created and maintained by [Robert Hijmans](#) (UC Davis). This repository provides global maps of some 18 bioclimatic parameters derived using thin plate smoothing splines on >15,000 weather stations ([Hijmans et al., 2005](#)). The climatic parameters include: mean, minimum and maximum temperatures, monthly precipitation and bioclimatic variables. All at ground resolution of 1 km. A somewhat more extensive repository of climatic surfaces is the [CliMond](#) produced by [Kriticos et al. \(2012\)](#).

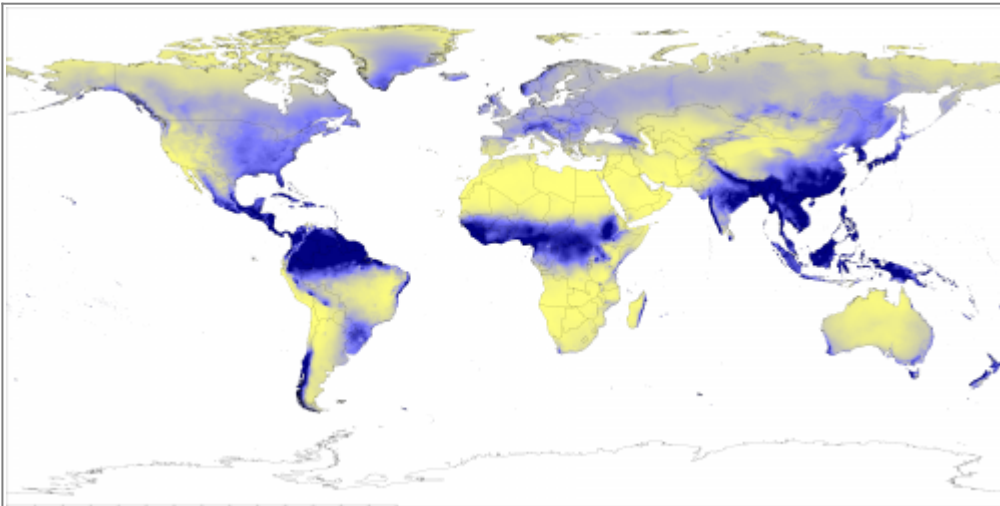
Coarse (1 degree) global monthly and daily precipitation data (1979-present) can be obtained via the [NASA/GSFC. Climatic Research Unit](#) of the University of East Anglia prepared a [repository](#) of high resolution maps (10 arc-minutes) representing mean monthly surface climate over global land areas, excluding Antarctica ([New et al. 2003](#)). Even more detailed climatic images can be obtained via the [Global Energy and Water Cycle Experiment project](#) and [British Atmospheric Data Centre](#) (BADC). The National Center for Atmospheric Research maintains a [ClimateDataGuide](#) portal. Via ClimateDataGuide everyone can publish climatic data, provided that some [minimum requirements](#) are met.



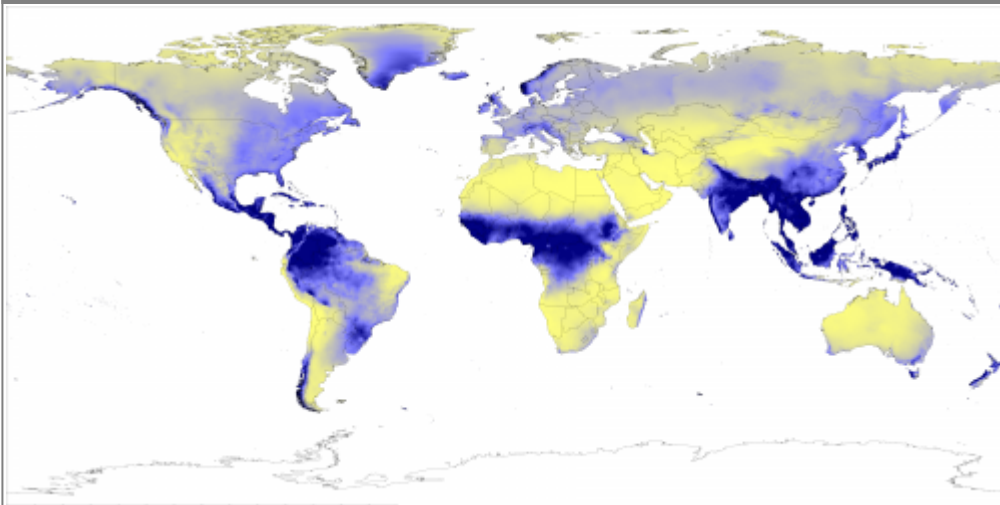
Long-term precipitation for period Nov/Dec/Jan based on WorldClim.org data.



Long-term precipitation for period Feb/Mar/Apr based on WorldClim.org data.



Long-term precipitation for period May/Jun/Jul based on WorldClim.org data.



Long-term precipitation for period Aug/Sep/Oct based on WorldClim.org data.

The National Geophysical Data Centre (NGDC) provides [free access](#) to numerous remote sensing based global maps — from solar parameters to cloud imagery, energetic particle measurements and similar (collectively called “Solar-terrestrial physics” products).

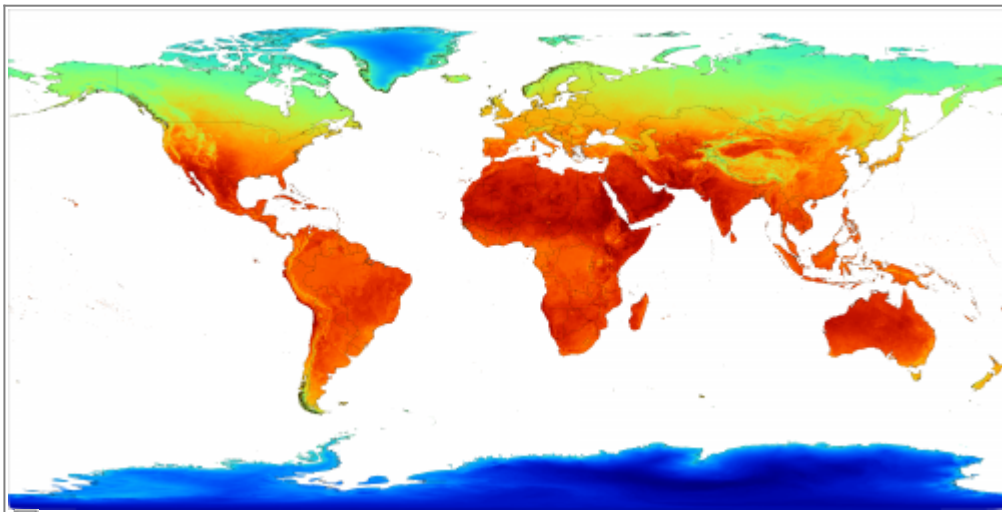
[The National Snow and Ice Data Center](#) maintains a number of global data sets — frozen ground maps, monthly satellite-derived snow water equivalent (SWE) climatologies and similar. These data can be obtained for northern and southern hemisphere at resolution of 25 km.

## Meteorological images

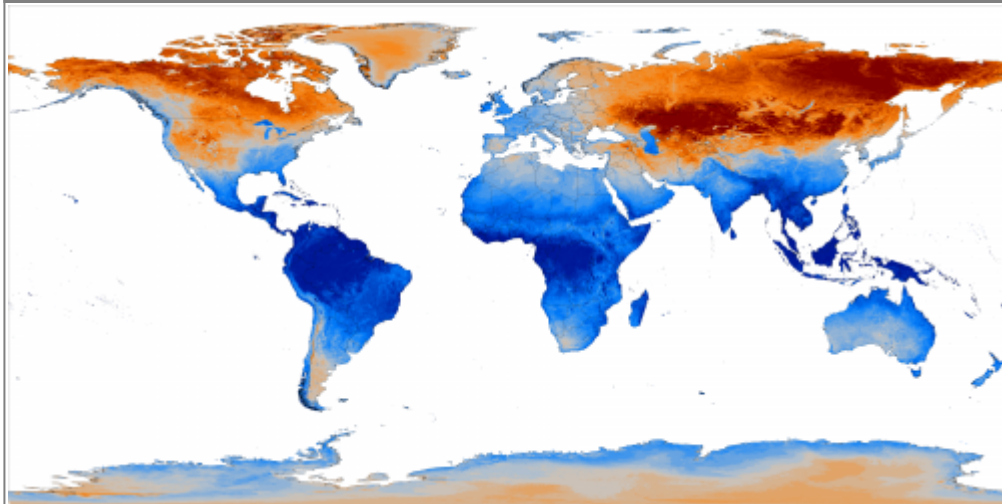
The [Meteosat](#) Second Generation (MSG) satellites (from Meteosat-8 onwards) produce SEVIRI 15-minutes images at resolution of 1 km. The most attractive data set for environmental applications is the High Rate SEVIRI, which consists of 12 spectral channels including: visible and near infrared light, water vapour band, carbon dioxide and ozone bands. MODIS produces [monthly estimates of the global Land Surface Temperature](#), which are supposedly highly accurate with an average accuracy of  $\pm 1$  degree Kelvin ([Wan et al. 2004](#)).

The time series of MODIS LST images can be used to analyze seasonal variation and compare differences between the temperatures at day and night time. The Japan Aerospace Exploration

Agency generated a list of [precipitation products](#) based on a combination of meteorological images. These images are available in resolutions of 0.1 and 0.25 arcdegrees, and can be used to get a more global and consistent estimate of the precipitation patterns (Kubota et al. 2007).



Mean value from the time series of Day-time MODIS Land Surface Temperature images.



Standard deviation value from the time series of Day-time MODIS Land Surface Temperature images.

## References

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