

Daily gridded rain, reference evapotranspiration, temperature, relative humidity, global radiation for all Benin 1983-2005 (IMPETUS dataset ID = 370)

General information

Dataset name: Daily gridded rain, reference evapotranspiration, temperature, relative humidity, global radiation for all Benin 1983-2005 (IMPETUS dataset ID = 370)
Created on: 2008-10-01

Contact(s)

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Period

Date begin (yyyy-mm-jj): 1983-01-01
Date end (yyyy-mm-jj): 2005-12-31

Project(s)

IMPETUS

Data description

Abstract

Daily gridded 0.1°x0.1° degree longitude/latitude meteorological monitoring estimates based on synoptic observations, and METEOSAT 2 to 7 infra-red images. -Rainfall and global radiation was derived using METEOSAT infrared images. -Daily maximum and minimum temperatures, relative humidity were derived using 6 synoptic stations and meteosat images. -Reference evapotranspiration was derived using Penman Monteith standard for green grass according to FAO standard using the above meteorological estimates. Parameter, Attribute list: global radiation, relative humidity, rain, reference evapotranspiration, maximum temperature, minimum temperature. Dataset created by IMPETUS subproject AB1.

Data Lineage: EUMETSAT, GTS/synop archives; Data Consistency: A weakness of the method is the problematic calibration on the infrared sensors on Meteosat 2 to 7. Although both EUMETSAT and ISCCP calibration was applied to the data, long term biases from sensor to sensor still affected rainfall and global radiation estimates. This was corrected in postprocessing by long term recalibration with ground observations (> yearly resolution).; Data Completeness: On days with insufficient satellite data due to system failure, the meteorological estimate of the same hour of the previous day (or most recent day) is used to replace the missing data. This method of missing data substitution conserves long term trends. The original hourly estimates are available in dataset 815 to

see the data completeness on single days.; Positional Accuracy: No known deficiencies; Data Completeness: Data was validated using independent daily rainfall ground observations from 1983 to 2005, 6 hourly synoptic measurements, and hourly climate station data in Djougou from 2001 to 2005. Compared to the hourly climate station data, global radiation has a correlation of 0.97, temperature 0.94, relative humidity 0.94. Due to the high spatiotemporal variability and statistical properties, rainfall estimates show very poor correlation with point measurements at hourly resolution, 0.5 at daily resolution, and 0.8 at monthly and yearly resolution. This makes rainfall the least accurate parameter, but still more accurate than other satellite derived products at the same location. The estimates of reference evapotranspiration showed good correlation with independent ground observations of potential evapotranspiration (using evaporimeters and surface parameters) in 6 locations, but with significant biases which are believed to be caused by local surface characteristics.

Observing strategy

Daily set of daily full coverage meteorological parameters for Benin from 1983 to 2005.

Geographic information

Measured parameters

Precipitation

Parameter name: precipitation
Parameter keyword: Atmosphere > Precipitation

Meteorological measurements

Parameter name: meteorological measurements

Data use information

Use constraints: Please inform the Point of Contact if you use the data for publication
Data policy: IMPETUS data policy
Database: IMPETUS
Original data format(s): Text