Global Monthly Seven Key Variables

Solar Radiation

The solar radiation data are collected from the NASA Langley Research Centre Atmospheric Science Data Centre. The data set contains monthly average global fields of eleven shortwave (SW) surface radiative parameters derived with the shortwave algorithm of the NASA World Climate Research Programme/Global Energy and WaterCycle Experiment (WCRP/GEWEX) Surface Radiation Budget (SRB) Project. The Climate Insights baseline uses all Sky Surface Downward Flux (RSDS in GCM variable name convention) monthly averages from 1984 to 2006.

Wind Speed

To get a more accurate baseline with a global coverage, the wind speed baseline is a monthly climatology derived from three datasets, then interpolated to the standardized 0.5°x0.5° latitude and longitude grid defined by Climate Insights.

The wind data, excluding the polar area, are collected from NOAA Blended Sea Winds5, which contain globally gridded, high resolution ocean surface vector winds and wind stresses on a global 0.25° grid, and multiple time resolutions of 6hourly, daily and monthly intervals (19952005) . The monthly wind speed over the polar area is obtained for a 10year period (July 1983 June 1993) from the NASA POWER Project6.

Precipitation

Global land precipitation climatology is created with the Global Precipitation Climatology Centre (GPCC3) monthly rainfall dataset (19812100), while Ocean precipitation is extracted from Xie Arkin (19812002), with additional data derived from the monthly precipitation of the Global Precipitation Climatology Project (GPCP4; 20032010 at a spatial resolution of 1°).

Temperature

Global mean, maximum and minimum temperature datasets are the foundation. This data is created from the CRU_ts3.201 (19812010) dataset with a spatial resolution of 0.5° for the land area. As for the ocean area, the mean temperature data are derived from NASA reanalysis data, and the diurnal temperature range is derived from multiple GCMs, applying maximum and minimum temperatures.

List of Variables

Relative Humidity

Relative humidity data is derived from NASA reanalysis monthly assimilated pressure data with an original resolution of 0.888888° (1981 to 2000).

Sea Surface Temperature

The sea surface temperature data (SST) is extracted from the AMIP29 boundary condition dataset at 1.0 by 1.0 degree resolution, which is derived from the observational data. The observed monthly mean SSTs have been compiled for the period January 1870 through near present. This data set is updated periodically (at least every 6 months).

Soil Temperature

The dataset is derived from a replacement for the GLDAS1, 0.25degree monthly data product. Global Land Data Assimilation System Version 2 (hereafter, GLDAS2) has two components: one forced entirely with the Princeton meteorological forcing data (hereafter, GLDAS2.0), and the other forced with a combination of model and observation based forcing data sets.