

PERSIANN–CDR: A Daily Precipitation Climate Data Record

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PERSIANN-Climate Data Record

- A retrospective satellite-based precipitation dataset is constructed as a climate data record for hydrological and climate studies.
- The Precipitation Estimation from Remotely Sensed Information using Artificial Neural Networks Climate Data Record (PERSIANN-CDR) provides daily and 0.25° rainfall estimates for the latitude band 60° S–60° N for the period of 1983 to 2014 (delayed present).

PERSIANN-CDR Algorithm

PERSIANN-CDR is generated from the PERSIANN algorithm using GridSat-B1 Infrared window (IRWIN) channel data at 3-hour samples. It is adjusted using the Global Precipitation Climatology Project (GPCP) monthly product to maintain consistency of the two datasets at 2.5 ° monthly scale throughout the entire record.



Data Download from NCDC

Download PERSIANN-CDR data from NCDC: http://www.ncdc.noaa.gov/cdr/operationalcdrs.html

Data Period: 1983~2013; Coverage: 60°S ~ 60°N Spatial Resolution: 0.25°x0.25° Temporal Resolution: Daily



PERSIANN before and after GPCP Adjustment

Global rainfall maps (mm/day) for August 2005 from monthly 2.5° GPCP (top), 0.25° PERSIANN-B1 (i.e. PERSIANN before GPCP adjustment) (middle), and 0.25° PERSIANN-CDR (bottom) datasets.



Daily Mean Areal Precipitation

Evaluation of Daily mean areal precipitation of GPCP 1DD, PERSIANN-B1 and PERSIANN-CDR for the period of 1997-2009:

The PERSIANN-B1 (PERIANN before GPCP monthly data adjustment) rain rate estimates has a good agreement with GPCP 1DD (one degree daily) over the tropical regions. Applying the GPCP bias-adjustment, PERSIANN-CDR (blue-line) shows consistency with GPCP 1DD (red line).



Evaluation of PDF

Comparing the empirical probability density function (PDF) of daily precipitation from PERSIANN-B1, PERSIANN-CDR, TMPA V7, and CPC unified gauge-based analysis over the CONUS during the period of 1998–2008.



Top 5% heavy rainfall (mm/day) maps from GPCP-1DD (top), PERSIANN-CDR 1° (middle), and PERSIANN-CDR 0.25° (bottom) for the period of 1997-2012.



Rainfall (mm/day) over land during Hurricane Katrina on 29 August 2005 from: (a) PERSIANN-CDR, (b) Stage IV Radar, and (c) TMPA v7. Black and gray pixels show radar blockages and zero precipitation, respectively.



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