Supplementary materials for "Nonparametric Bayesian-based recognition of solar irradiance conditions: Application to the generation of high temporal resolution synthetic solar irradiance data"

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February 18, 2019

The article "Nonparametric Bayesian-based recognition of solar irradiance conditions: Application to the generation of high temporal resolution synthetic solar irradiance data" comes with supplementary materials. This document contains instructions for reproducing the clustering algorithm and data generation processes. The code is an R-package named SolarClusGnr.Dependencies will automatically be suggested to be added in the package installation process.

Users are invited to install the development version of "SolarClusGnr":
with the remotes package:
   remotes::install_github("frimane/SolarClusGnr")
or with devtools package:
   devtools::install_github("frimane/SolarClusGnr")

Data The same data for a site used in the article is selected to run the example in Example.R file. In data folder: GHI1min.rda is a list of the 1-min GHI data-set, EHI1min.rda the corresponding 1-min EHI data-set, GHI10min.rda the averaged GHI 10-min data-set and EHI10min the corresponding EHI 10-min data-set. similar_climate_classification.rda is an object of 'clusData' class used to generate data based on similar climate conditions in Example.R.

Code SolarClusGnr is an R-package allows a reproducible research for nonparametric clustering and down-scaling of daily solar irradiation time-series. This currently version includes: SIR_Data: constructor function of objects of SIRData class. Once the user creates a 'SIRData' object from his data, he no longer need other inputs, all the rest work will done automatically. DPGMMclus: S3 Method for nonparametric Bayesian Dirichlet-Gaussian mixture model clustering of daily clearness index distributions. It can be also used to perform any data clustering of class matrix other than irradiance data. It generate an object of class 'clusData' containing the clustering outputs. parClusGena: constructor function of objects of 'genData' class, needed for the generation of hight resolution solar irradiance data. GenData: function to generate high resolution solar irradiance time-series. It requires object of 'genData' class as input. clPlot: function to generate plots of the resulting classes.

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