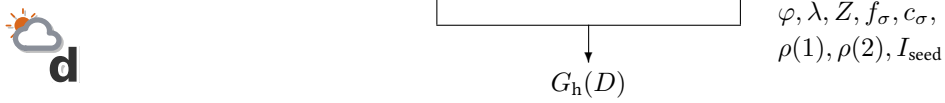
Block GENGD

Warning: The explicit usage of this block is deprecated, because it uses a west-positive convention for longitudes.

Please use GENGD2 instead, with east-positive longitudes. GENGD is still used internally by GENGD2.

The GENGD block generates a series of daily global radiation data from monthly mean values.



Name	GENGD
Function	em0016
Inputs	4
Outputs	1
Parameters	9
Strings	0
Group	S

Inputs

1 Monthly mean value $G_\mathrm{h}(M)$ / W m^{-2} of global radiation on a horizontal plane
2 Year a
3 Month $M \in [1, 12]$
4 Day $d \in [1, 31]$

Outputs

1 Daily mean value $G_\mathrm{h}(d)$ / W m^{-2} of global radiation on a horizontal plane

Parameters

1 Model
- 0 Gordon Reddy model
- 1 Aguiar Collares-Pereira model

2 Latitude $\varphi \in [-90°, +90°]$, northern hemisphere positive

3 Longitude $\lambda \in [0°, 360°)$, west of Greenwich; values east of Greenwich may be used with a minus sign

4 Time zone $Z \in [0, 23]$, Greenwich Mean Time $Z = 0$, Central European Time $Z = 23$.

5 Variance factor f_σ to the Gordon / Reddy correlation; if unknown $f_\sigma = 1$ is recommended

6 Coefficient c_σ corresponding to the year-to-year variability due to different climatic conditions. When c_σ is set to zero the year-to-year variability is omitted. $c_\sigma = 0.185$ approximates North American variability, while $c_\sigma = 0.3$ approximates European variability

7 Autocorrelation coefficient $\rho(1)$ at a lag of one day; if unknown $\rho(1) = 0.3$ is recommended

8 Autocorrelation coefficient $\rho(2)$ at a lag of two days; if unknown $\rho(2) = 0.57\rho(1)$ is recommended

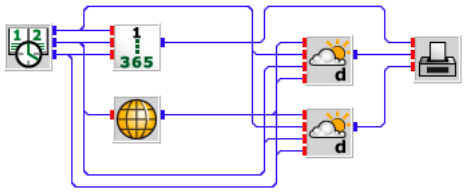
9 Initialization I_{seed} of random number generator 0 for a different random sequence at each run

Strings

None

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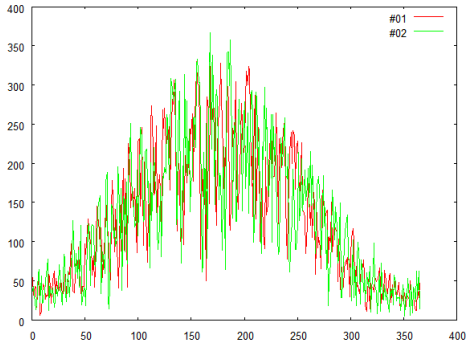
gengd.vseit



A CLOCK runs through the year 2010 in steps of one day. Monthly mean irradiance data are read from the INSEL weather data base by the MTM block for the location of Stuttgart, Germany.

Two GENGD blocks generate daily irradiance data, the upper block uses the Gordon and Reddy model, the lower one the Markov model approach proposed by Aguilar and Collares-Pereira.

A day of the year block DOY is used as x-coordinate by the PLOT block which displays the two generated irradiance data time series.



See also Blocks DISGR, GENG and GENGH.