

Commission

### Joint Research Centre

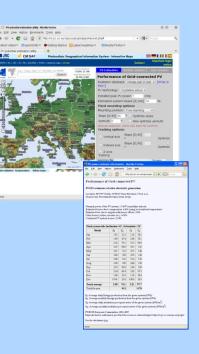
The European Commission's in-house science service

# PVGIS Internet tools for the assessment of

## photovoltaic solar energy systems

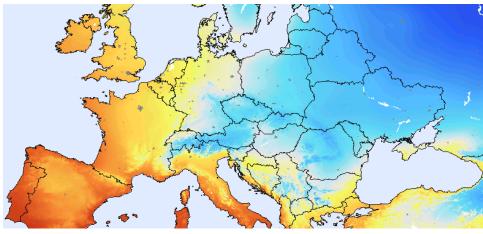
http://re.jrc.ec.europa.eu/pvgis/ Information for any location can be queried by:

- browsing thematic maps
- searching with a place name or its geographical coordinates.



Contact:

Web: http://re.jrc.ec.europa.eu/pvgis/ Email: esti.services@jrc.ec.europa.eu European Commission - JRC Institute for Energy and Transport I-21027 Ispra, Italy



The Photovoltaic Geographical Information System (PVGIS) provides web access to: •solar radiation and temperature data •PV performance assessment tools

#### **Solar Irradiation**

Monthly and yearly averages of solar irradiation at horizontal and inclined surfaces, ambient temperature, optimum inclination of PV modules, country maps and animations.

#### Average daily irradiance

The average daily irradiance profile for a chosen month is calculated for a given module inclination and orientation. Simulation of clear-sky and average real-sky irradiances takes into account also local horizon and terrain shadowing from digital elevation model at 100-m resolution.

#### Estimation of PV electricity generation

Monthly and yearly PV electricity potential can be assessed for crystalline-silicon or other PV technologies mounted in a fixed position or on various tracking systems. Alternatively, inclination and orientation of fixed-mounted modules can be optimised.

#### Estimation of off-grid PV systems

Based on daily irradiation sums, PVGIS calculates monthly and yearly energy output as well as statistical information on system reliability and efficiency.

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#### https://ec.europa.eu/jrc/

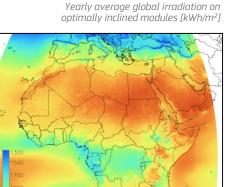
Climatic and geographical data for photovoltaic potential

#### European subcontinent Solar radiation

- Based on satellite data, 1998-2011, grid resolution ~2.5km
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- Monthly and yearly averages (irradiation/irradiance)
  Grid resolution 1 km (terrain 100 m)
- Optimum inclination of PV modules
- Horizon/terrain shadowing

#### Ambient temperature

- Interpolated data from ~800 meteorological stations
- Monthly and yearly averages, daily maximum and minimum
- Daily and daytime average profiles
- Period 1995-2006
- Grid resolution 1 km

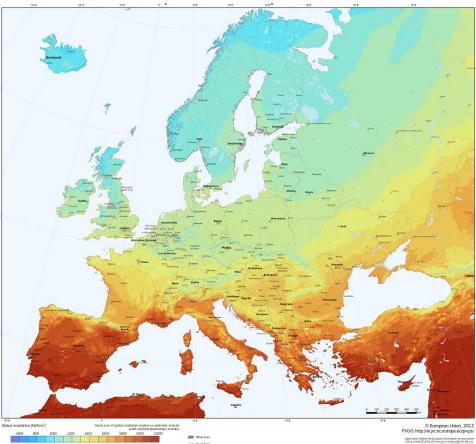


Mediterranean Basin, Africa and South-West Asia

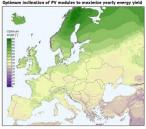
#### Solar radiation

Solar radiation database computed from Meteosat satellite images by CMSAF (<u>www.cmsaf.eu</u>)

- Monthly and yearly averages
- Probability statistics
- Period 1998-2011

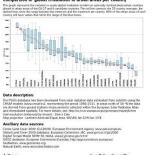


#### Photovoltaic Solar Electricity Potential in European Countries



put: difference between fixed optimum angle and one-axis





CM SAF