



Measurement of Global Radiation using Photovoltaic Panels

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The Vito Unit – Environmental and Spatial Aspects (RMA) - for many of its models makes use of global solar radiation. From this viewpoint and also from the notion that this variable is seldom measured or available at the local scale and at high multi-temporal frequencies, it can be stated that many models are fed with low quality estimates of global solar radiation at the local to regional scales.

A project was initiated called SUNSPIDER with the following objective. To make use of photovoltaic solar panels to measure solar radiation at the highest spatio-temporal resolution, from the local to the regional scales and from minutes to years. To integrate the measured solar fields in different application fields like, plant systems and agriculture, agro-meteorology and hydrology and last but not least solar energy applications.

In Belgium about 250.000 PV installations have been built leading to about 6% electric power supply from photovoltaics on a yearly basis. Last year in June, the supply reached a peak of more than 20% of the total power input on the Belgian grid.

A database of Belgian residential solar panel sites will be compiled. The database will serve as an input to an inverted PV model to be able to perform radiation calculations specifically for each of the validated panel sites based on minutely logged power data. Data acquisition for these sites will start each time a site is validated and hence imported in the database.

Keywords: Photovoltaic Panels; PV modelling; Global Radiation.