



A new method of MSG images processing for hourly solar radiation assessment.

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Solar Photovoltaic (PV) and Solar Thermal Electricity (STE) are, probably, the most suitable renewable energy to sustainably cover the worldwide growing energy demand in the next few decades. The characterization of the available solar resources is the first step, but ground measurements are not always available. Satellite imagery can be used to derive solar radiation over ground with a high spatial-temporal resolution. For instance, hourly irradiances derived from Meteosat Second Generation (MSG) images have shown to be the most accurate option where ground measurements are not available. In this work we present a modified version of the Heliosat-II method to derive hourly Global Horizontal Irradiance (GHI) from MSG images. The method includes an optimized Artificial Neural Network (ANN) ensemble model and has been tested against data collected at a large number of stations from different latitudes. Results obtained showed, overall, a RMSE 30% lower than the original Heliosat-II methodology and a lower MBE.