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## **A CLEAR SKY IRRADIATION ASSESSMENT USING THE *ESRA* MODEL AND *SRTM* DATABASE**

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### **Abstract**

This paper describes a model and an algorithm used to develop a solar radiation database for Romanian territory. In order to obtain this database, two main steps were performed. In the first part, a clear sky solar radiation model was presented, in accordance with the latest models published in European Solar Radiation Atlas. After this, a digital elevation model has been developed, based on the Shuttle Radar Topography Mission database, which, together with the previously mentioned model, allows the computation of the solar radiation’s potential over the Romanian territory.

The obtained results have been validated using the solar radiation values from two another well known database. The comparative results show that the irradiance values have a good accuracy and, therefore, it can be used as a practical tool for the estimation of the solar radiation’s potential over the analyzed territory.

*Key words:* digital elevation model, solar energy, solar radiation

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