Prediction of global solar radiation and comparison with satellite data

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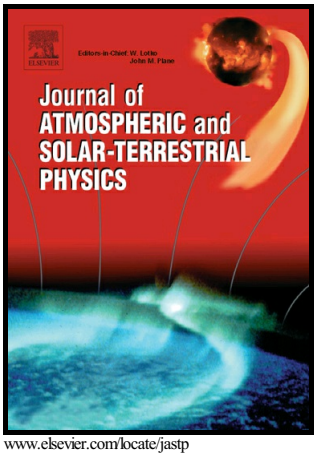

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Prediction of global solar radiation and comparison with satellite data

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Abstract

Data on solar radiation at a related location is very necessary for many solar applications. In the present study, the models are derived to forecast the daily global solar radiation on horizontal plane for the Eastern Anatolia Region (EAR) of Turkey, covering thirteen provinces. The measured data on horizontal plane for the period of 1991–2005 are analyzed. The comparisons of calculated and measured values have been carried out with various statistical test methods. These statistical test methods are the mean bias error (MBE), the main percentage error (MPE), the root mean square error (RMSE) and t-statistic (t-stat). In addition, the comparisons of the solar radiation values of the National Aeronautics and Space Administration - Surface meteorology and Solar Energy (NASA-SSE) and calculated from the Model 3 with the higher determination coefficient is performed.

Keywords: Regression analysis; Satellite data; Solar radiation

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