

ABSTRACT

This study has investigated global solar predictive models, modified, validated and compared five models, for prediction of monthly daily mean solar radiation in four different locations of Kenya that represents the four major climatic conditions. The input variables to the models Were; latitude, day length, sunshine hours, relative sunshine hours, temperature, and precipitation. Solar radiation data from 2000 to 2013 was used to obtain the monthly daily mean global solar radiation, to analyze, validate and compare the performance of the models. The predicted and measured data was simulated using MATLAB. Statistical indicators, MBE, RMSE, t-test and R, were performed to determine the models performance. The results showed that sunshine hours based models predicted global solar radiation with higher accuracy in wet and cold, wet and warm climatic conditions, while the temperature and precipitation models were accurate in solar radiation prediction in hot and dry climatic conditions. Key words: Global solar radiation¹, Sunshine hours², Day length³

Keywords

Egerton University