Prediction of diffuse solar radiation using simple model

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A simple model for the prediction of daily diffuse solar radiation for some locations in the tropics climate zone in presented. The relative sunshine duration data and solar altitude of the sun on the 15th of the month in degrees for five Nigerian stations have been used to obtain monthly mean daily diffuse radiation from coppolino model $H_d = 7 \, (S/S_{\max})^{-0.25} \, (Sinh_n)^{1.55}$

The validity of the formular was tested which shows that the standard per cent error of estimate $\phi(\%)$ is less than 8. The simple model depend on the altitude and geographical location and is considered valid and useful to predict the daily diffuse solar radiation for the location lacking data records of diffuse solar radiation. The monthly variation of diffuse solar radiation is examined. Relationship between scattering index and clearness index is studied.