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ESTIMATION OF GLOBAL SOLAR RADIATION IN GUSAU, NIGERIA

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ABSTRACT

Information on the availability of global solar radiation of a given geographical location is an essential factor in developing suitable solar energy system and devices for various applications. In this work, data for daily sunshine duration were used to estimate mean global solar radiation in Gusau city, Nigeria. The daily sunshine hours were measured for period of 6 years (1995 - 2000) from which the monthly mean values were determined. Angstrom-Prescott model was then used to estimate the global solar radiation based on the monthly mean sunshine hours. The values of global solar radiation for Gusau ranged from 16.1676 - 21.6536 $MJm^{-2}day^{-1}$ under the period of study with mean value of 18.8015 $MJm^{-2}day^{-1}$. These values can be utilized in the design and performance of solar energy systems for the location.

KEYWORDS: Angstrom, Gusau, NIMET, Prescott, Solar Radiation, Sunshine Hours