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Seasonal and spatial distribution of direct solar radiation over Nigeria

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The paper utilizes data obtained from geostationary satellite platform to describe the seasonal and spatial distribution of direct solar radiation over Nigeria. All data was collected from the NASA Goddard Earth Observing System – Version 1 (GEOS-1) Multiyear Assimilation Timeseries Data on the NOAA 17 satellite. Results show that direct solar radiation increases in value from the Atlantic coast northwards, and is generally lower during the rainy season than the dry season. The northward increase was found to be almost parallel with lines of latitude although the contour lines are slightly skewed to a West-North-West to East-South-East orientation. The interpolation of the distribution was generated using Arcview 3.2a (GIS software) and the entire country was classified into regions of high and low occurrence using an elementary linkage analysis. Bivariate regression models show a direct relationship between direct solar radiation and latitude; clearness index; and average elevation above sea level, whereas an inverse relationship is shown with daily cloud amount; average daily solar angle; and average daily relative humidity.