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Temperature range over Nigeria by the end of 21st century: Prospects for photovoltaic potentials from CMIP5 and CORDEX perspectives

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The projections of the horizontal solar radiation (Gh) derived from the empirical method based on the temperature range across Nigeria, for photovoltaic (PV) resource potential by the end of 21st century, has been investigated. Observational monthly maximum and minimum temperature data from the Climate Research Unit (CRU) has been validated by comparison with the Nigeria Meteorological Agency (NIMET) in the 3 representative sites of Gh Zones I, II and III respectively whereas the CRU estimated monthly and annual mean Gh has been validated by comparison with the European Commission - Joint Research Centre - Photovoltaic Geographical Information System (PVGIS) data across the country. Selected Coupled Model Intercomparison Project's 5th phase (CMIP5) and Coordinated Regional Downscaling Experiment (CORDEX)-Africa models performances in representing the estimated Gh has been examined. The models' outputs project varying Gh outlooks for each location whereas the identified epochs in the estimated annual mean Gh show more locations having potential significant trends from 2039 to 2098 than from 2006 to 2038 in both the RCP 4.5 and RCP 8.5 outputs respectively. The results are vital tools in PV resources planning, siting and management across the country.

Biography

Nwokocha Cecily O started his career at Central School Nnarambia in 1984 and Mater Ecclesiae Seminary in 1990 where he got the West African School Certificate in 1995 with distinctions. He further proceeded to Enugu State University of Science and Technology, Nigeria in 1998 where he graduated in Industrial Physics in 2002. After his National Youth Service Corp (NYSC) in 2004 his quest for knowledge and academic development drove him to Imo State University Owerri Nigeria for a graduate study where he graduated in Atmospheric Physics in 2008 in the Department of Physics and Industrial Physics. During this period he joined the Atmospheric Physics Research Group of the University where they undertook research works that gave rise to publishing in peer reviewed journals.

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