

Global Solar Irradiance: Data Imputation to Analyze Complementarity Studies of Energy in Colombia

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Abstract : The Colombian electricity sector has been transforming through the insertion of new energy sources to generate electricity, one of them being solar energy, which is being promoted by companies interested in photovoltaic technology. The study of this technology is important for electricity generation in general and for the planning of the sector from the perspective of energy complementarity. Precisely in this last approach is where the project is located; we are interested in answering the concerns about the reliability of the electrical system when climatic phenomena such as El Niño occur or in defining whether it is viable to replace or expand thermoelectric plants. Reliability of the electrical system when climatic phenomena such as El Niño occur, or to define whether it is viable to replace or expand thermoelectric plants with renewable electricity generation systems. In this regard, some difficulties related to the basic information on renewable energy sources from measured data must first be solved, as these come from automatic weather stations. Basic information on renewable energy sources from measured data, since these come from automatic weather stations administered by the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM) and, in the range of study (2005-2019), have significant amounts of missing data. For this reason, the overall objective of the project is to complete the global solar irradiance datasets to obtain time series to develop energy complementarity analyses in a subsequent project. Global solar irradiance data sets to obtain time series that will allow the elaboration of energy complementarity analyses in the following project. The filling of the databases will be done through numerical and statistical methods, which are basic techniques for undergraduate students in technical areas who are starting out as researchers technical areas who are starting out as researchers.

Keywords : time series, global solar irradiance, imputed data, energy complementarity

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