

Analysis of an Alternative Data Base for the Estimation of Solar Radiation

Authors : Graciela Soares Marcelli, Elison Eduardo Jardim Bierhals, Luciane Teresa Salvi, Claudineia Brazil, Rafael Haag

Abstract : The sun is a source of renewable energy, and its use as both a source of heat and light is one of the most promising energy alternatives for the future. To measure the thermal or photovoltaic systems a solar irradiation database is necessary. Brazil still has a reduced number of meteorological stations that provide frequency tests, as an alternative to the radio data platform, with reanalysis systems, quite significant. ERA-Interim is a global fire reanalysis by the European Center for Medium-Range Weather Forecasts (ECMWF). The data assimilation system used for the production of ERA-Interim is based on a 2006 version of the IFS (Cy31r2). The system includes a 4-dimensional variable analysis (4D-Var) with a 12-hour analysis window. The spatial resolution of the dataset is approximately 80 km at 60 vertical levels from the surface to 0.1 hPa. This work aims to make a comparative analysis between the ERA-Interim data and the data observed in the Solarimetric Atlas of the State of Rio Grande do Sul, to verify its applicability in the absence of an observed data network. The analysis of the results obtained for a study region as an alternative to the energy potential of a given region.

Keywords : energy potential, reanalyses, renewable energy, solar radiation

Conference Title : ICETECE 2019 : International Conference on Environmental, Technological and Economic Challenges for Energy

Conference Location : Lisbon, Portugal

Conference Dates : April 16-17, 2019