

Uncertainty of the Brazilian Earth System Model for Solar Radiation

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Abstract : This study evaluated the uncertainties involved in the solar radiation projections generated by the Brazilian Earth System Model (BESM) of the CPTEC (Weather and Climate Prediction Center) belonging to CMIP5 (Coupled Model Intercomparison Phase 5), with the aim of identifying efficiency in the projections for solar radiation of said model and in this way establish the viability of its use. Two different scenarios elaborated by IPCC (Intergovernmental Panel Climate Change) were evaluated; RCP 4.5 (with more optimistic contour conditions) and 8.5 (with more pessimistic initial conditions). The method used to verify the accuracy of the present model was the Nash coefficient and the statistical bias, as it better represents these atmospheric patterns. The BESM showed a tendency to overestimate the data of solar radiation projections in most regions of the state of Rio Grande do Sul, and through the validation methods adopted by this study, BESM did not present a satisfactory accuracy.

Keywords : climate changes, projections, solar radiation, uncertainty

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