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Bias-correction of Surface Wind over Reunion and Mauritius Islands using CORDEX Regional Climate Model: RegCM4.7

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The world needs energy for its social and economic development. In the growing population and industrialization, there is an increasing demand for energy worldwide. The fossil fuel resources are still major resources for fulfilling this energy demand though they are responsible for the increased GHG emissions. Renewable energy is an alternative and greener approach towards meeting increasing energy demand. The wind energy is one of the most prominent resources of greener and renewable energy. The islands of Mauritius and Reunion in the southwest Indian Ocean are blessed with wind resources. The wind energy can be used to meet the demand of energy requirement of these two islands by increasing the number of wind turbines. However, energy generation with wind turbines is sensitive to the variability in the surface wind due to climate variability. The surface wind data available is sparse due to limited ground-based observation. The data quality is also affected by instrumental errors, and data is available only for past and present. Regional Climate Models (RCMs) are the main source of climate information for the present and the future. However, simulations from RCMs deal with biases from various sources and therefore need to be bias-corrected. Here we use a transfer function based on the method proposed by Li et al. (2010) for the bias-correction of surface wind over Reunion and Mauritius islands. For this purpose, RegCM4.7 RCM from CORDEX AFR22 domain has been chosen for the time period of 1981-2004. The data is interpolated at 9 km resolution and bias-corrected with respect to surface wind data obtained from ERA5 land reanalysis data. The bias-corrected results are validated with the ERA5 land reanalysis data set.