World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:13, No:09, 2019

Reducing Uncertainty in Climate Projections over Uganda by Numerical Models Using Bias Correction

Authors : Isaac Mugume

Abstract : Since the beginning of the 21st century, climate change has been an issue due to the reported rise in global temperature and changes in the frequency as well as severity of extreme weather and climatic events. The changing climate has been attributed to rising concentrations of greenhouse gases, including environmental changes such as ecosystems and land-uses. Climatic projections have been carried out under the auspices of the intergovernmental panel on climate change where a couple of models have been run to inform us about the likelihood of future climates. Since one of the major forcings informing the changing climate is emission of greenhouse gases, different scenarios have been proposed and future climates for different periods presented. The global climate models project different areas to experience different impacts. While regional modeling is being carried out for high impact studies, bias correction is less documented. Yet, the regional climate models suffer bias which introduces uncertainty. This is addressed in this study by bias correcting the regional models. This study uses the Weather Research and Forecasting model under different representative concentration pathways and correcting the products of these models using observed climatic data. This study notes that bias correction (e.g., the running-mean bias correction; the best easy systematic estimator method; the simple linear regression method, nearest neighborhood, weighted mean) improves the climatic projection skill and therefore reduce the uncertainty inherent in the climatic projections.

Keywords : bias correction, climatic projections, numerical models, representative concentration pathways
Conference Title : ICCCGW 2019 : International Conference on Climate Change and Global Warming
Conference Location : London, United Kingdom
Conference Dates : September 25-26, 2019