

Statistical Analysis of Rainfall Change over the Blue Nile Basin

Authors : Hany Mustafa, Mahmoud Roushdi, Khaled Kheireldin

Abstract : Rainfall variability is an important feature of semi-arid climates. Climate change is very likely to increase the frequency, magnitude, and variability of extreme weather events such as droughts, floods, and storms. The Blue Nile Basin is facing extreme climate change-related events such as floods and droughts and its possible impacts on ecosystem, livelihood, agriculture, livestock, and biodiversity are expected. Rainfall variability is a threat to food production in the Blue Nile Basin countries. This study investigates the long-term variations and trends of seasonal and annual precipitation over the Blue Nile Basin for 102-year period (1901-2002). Six statistical trend analysis of precipitation was performed with nonparametric Mann-Kendall test and Sen's slope estimator. On the other hands, four statistical absolute homogeneity tests: Standard Normal Homogeneity Test, Buishand Range test, Pettitt test and the Von Neumann ratio test were applied to test the homogeneity of the rainfall data, using XLSTAT software, which results of p-valueless than $\alpha=0.05$, were significant. The percentages of significant trends obtained for each parameter in the different seasons are presented. The study recommends adaptation strategies to be streamlined to relevant policies, enhancing local farmers' adaptive capacity for facing future climate change effects.

Keywords : Blue Nile basin, climate change, Mann-Kendall test, trend analysis

Conference Title : ICECC 2016 : International Conference on Environment and Climate Change

Conference Location : Zurich, Switzerland

Conference Dates : January 12-13, 2016