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Forecasting Temporal and Spatial Rainfall and Temperature Trends for Calculating Climate variables for Land suitability Evaluation

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The principle purpose of land suitability evaluation is to predict the potential and limitation of the land for crop production and other land uses. Therefore, suitability is a function of crop requirements and land characteristics. This study was carried out to predict the temperature and rainfall trends as one of the major factor for evaluating land suitability. For this study, climatic data such as monthly mean temperature, total monthly rainfall, maximum daily rainfall value for each month and total annual rainfall for the last 30 (1986-2015) consecutive years of three weather stations located in Bentota River basin was collected from Meteorological Department, Sri Lanka. Collected data were analyzed applying time series analysis method, correlation analysis and Manna Kendall trend test method. Forecasted and actual spatial and temporal rainfall distribution pattern was illustrated applying inverse distance weighted tool in Arc GIS software and XLSTAT software. The main findings revealed that monthly mean temperature and maximum daily rainfall value for each month had a general increasing trend whereas, total monthly rainfall and total annual rainfall showed a general decreasing trend in Bentota River basin. Analysis of the 30 years total monthly rainfall data from three representative ground based meteorological stations indicated relatively high rainfall situations during May and October while low rainfall situations during January and February by highlighting the extreme variability of rainfall once per five years during any month from April to November making flood situation in the area. To conclude, development planners and agricultural scientists should evaluate land suitability of Bentota River basin area by taking into account a declining rainfall and increasing temperature impacts in the context of climate change.

Key words: *Climate factor, Land suitability Evaluation*

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