

Prediction of Malawi Rainfall from Global Sea Surface Temperature Using a Simple Multiple Regression Model

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Abstract : This study deals with a way of predicting Malawi rainfall from global sea surface temperature (SST) using a simple multiple regression model. Monthly rainfall data from nine stations in Malawi grouped into two zones on the basis of inter-station rainfall correlations were used in the study. Zone 1 consisted of Karonga and Nkhatabay stations, located in northern Malawi; and Zone 2 consisted of Bolero, located in northern Malawi; Kasungu, Dedza, Salima, located in central Malawi; Mangochi, Makoka and Ngabu stations located in southern Malawi. Links between Malawi rainfall and SST based on statistical correlations were evaluated and significant results selected as predictors for the regression models. The predictors for Zone 1 model were identified from the Atlantic, Indian and Pacific oceans while those for Zone 2 were identified from the Pacific Ocean. The correlation between the fit of predicted and observed rainfall values of the models were satisfactory with $r=0.81$ and 0.54 for Zone 1 and 2 respectively (significant at less than 99.99%). The results of the models are in agreement with other findings that suggest that SST anomalies in the Atlantic, Indian and Pacific oceans have an influence on the rainfall patterns of Southern Africa.

Keywords : Malawi rainfall, forecast model, predictors, SST

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