Prediction and verification of March-May seasonal rainfall over Kenya using empirical statistical models

R. A. Ojala and C. Mutai
Kenya Meteorological Department, Nairobi, Kenya
amunyelet@yahoo.com

The fundamental goal of this study is to understand the mechanisms that govern the interannual rainfall variability and hence improve existing climate monitoring and forecasting in Kenya. Data utilised include station rainfall data, global sea-surface temperature (SST), Southern Oscillation Index (SOI), Quasi-Binniel Oscillation. The methods employed were correlation analysis, Principal Component Analysis (PCA), multiple linear regression (MLR). Developments of MLR models were using 1961-90 as "training period", and "verification period" based on 1991-2001. The forecast is the given for March-April-May (MAM) 2002 seasonal rainfall anomaly.

It is shown that Kenya could be divided into 12 climatic zones. Seasonal MAM rainfall anomaly in each zone showed substantial correlations with pre-rainfall December-January global SSTs variability, including tropical Pacific, Atlantic and Indian Oceans. The spatial variations in skill suggest interaction with orographic features may modulate the large-scale SST (SOI, QBO, etc.) anomaly signals in the country.

MLR models suggested that between 20% to 60% of MAM rainfall variability is accounted for by December/January SST variability. The models forecasted that most parts of the country would receive near normal to above normal rainfall during this year (2002) MAM season.. However, the northwestern and some parts of western areas are expected to receive near normal to below normal.

Meteorology (Poster)