ABSTRACT

This paper attempts to delineate Uganda into climatological rainfall zones using the method of principal component analysis (PCA). Monthly rainfall records from 102 Uganda rain-gauge stations for the years 1940ï 1975 inclusive are used in the study. The rotated dominant PCA modes were used to delineate the temporal rainfall characteristics into homogeneous spatial regions. Statistical and other methods were then used to determine the physical reality of the spatial patterns of the delineated zones of the rainfall network in describing the climatological rainfall patterns of Uganda.

The PCA varimax rotated solutions showed that for the climatological data a maximum of four PCA modes, accounting for about 65 per cent of annual rainfall variance, were significant. However, a maximum of 16 PCA modes, accounting for over 81 per cent of the rainfall variance were obtained with the seasonal/monthly records. The PCA regional patterns delineated Uganda into 14 homogeneous climatological zones, which were also indicated by the spatial patterns of the physical features of Uganda and other tests. The derived rainfall zones would be useful in the planning and management of rainfall dependent activities in the country.