

Assessing the spatio-temporal climate variability in semi-arid Karamoja sub-region in north-eastern Uganda

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Semi-arid areas show climatic variability on a spatio-temporal scale. There are few studies on the long-term trends and intensity of this variability from East Africa. We used National Ocean and Atmospheric Administration re-analysis climate data (1979–2009) in this study. Rainfall exhibited a non-significant long-term trend. The climate of the area is variable (coefficient of variation-CV >35.0%) with spatio-temporal oddities in rainfall and temperature. A rise in minimum (0.9 °C), maximum (1.6 °C) and mean (1.3 °C) temperature occurred between 1979 and 2009. There were more months with climate variability indices below the threshold (<1.0) from 1979 to 1994 than between 1995 and 2009, with wetness intensity increasingly common after 2000, leading to the observed reduction in the recurrence of multi-year drought events. More extreme wet events (rain-fall variability index >2.6) were experienced between 2004 and 2009 than between 1984 and 2003. We consider that the use of spatio-temporal climatic information for timely adjustment to extreme climate variability events is essential in semi-arid areas.

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