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Stochastic Rainfall Modelling in the Upper Nile

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This paper reviews various methods applicable for stochastic rainfall modelling in the Upper Nile. A class of stochastic models called Generalised Linear Models (GLMs) were developed and applied for infilling rainfall datasets in the Lake Kyoga basin in Uganda. Given that GCM climate projections cannot be relied on to provide information at scales finer than the GCM model-grid resolutions, fine scale information can be achieved by the use of high spatial resolution in dynamical models or empirical statistical downscaling. However, in the absence of both this application for the Upper Nile, this paper gives a briefly review of alternative methods of downscaling climate projections with particular emphasis on rainfall simulation. The results of a first attempt to apply Generalised Linear Models (GLMs) for statistical downscaling in the Upper Nile (a challenging equatorial climate of East and Central Africa) are presented.