

Probability distribution of rainfall in the Bia watershed: contribution of Markov chains

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Abstract This study aims to highlight the occurrence of dry and wet years in the basin of the Bia by modelling using a Markov chain for the period 1901–2009. From the rainfall data from six stations (Ayame, Bianouan, Agnibilekro, Enchi, Buakuc and Sunyani), the test of sequential patterns of standardized drought index rainfall ISSP has confirmed the existence of three major periods during the last century. An increase of precipitation from 1945 to 1946 that followed a relatively dry phase and a decrease in precipitation since the 1970s. Using Markov chains, some maps are given to illustrate the irregularity of the time and spatial distribution of rainfall occurrence probability.

Key words Markov chain; occurrences probability of dry/wet years; time/spatial distribution