Hydroinformatics in Hydrology, Hydrogeology and Water Resources (Proc. of Symposium JS.4 at the Joint IAHS & IAH Convention, Hyderabad, India, September 2009). IAHS Publ. 331, 2009, 20-29.

A hydroinformatic approach to development of design temporal patterns of rainfall

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Abstract Estimation of the design rainfall for design flood estimation remains a problem for many engineering hydrologists despite many research studies into appropriate methodologies. An important aspect of flood flow estimation through catchment simulation is the design rainfall. Presented herein is a new approach for estimation of the temporal pattern of rainfall during a hypothetical design storm. The basis of the approach is a conditional random walk in non-dimensional space to create a finite number of storm patterns based on the probability that the storm event is convective or frontal and the probability that the storm centre of mass is located at the beginning, middle, or end of the storm event. It is shown that the resultant storm patterns more closely reflect historical patterns than alternative methods for estimating the design temporal pattern of rainfall.

Key words temporal patterns; rainfall; design; flood