



Can a non-parametric resampling generator model the Hurst phenomenon?

John Ndiritu

University of the Witwatersrand, Faculty of Engineering and the Built Environment, Civil and Environmental Engineering,
Johannesburg, South Africa (john.ndiritu@wits.ac.za)

Hurst phenomenon, the long-term persistence that characterises many hydrometeorological and geophysical processes is often ignored in the stochastic generation of data for water resources planning. The preservation of long-term persistence could however be essential for judicious design and operational decision making especially for water resource systems with large carry-over storage. The ability of a non-parametric resampling stochastic rainfall generator to preserve long-term persistence (The Hurst coefficient) is studied using monthly rainfall time series from 10 stations located in the Berg River catchment of South Africa. The generator is able to replicate long-term persistence with appropriate selection of two parameters; the minimum length of blocks and the number of blocks to cluster together.