

Construction of the basin geomorphological instantaneous unit hydrograph from self-similar networks

PENG SHI, XIAO-FANG RUI & SI-MIN QU

State Key Laboratory of Hydrology, Water Resources and Hydraulic Engineering, Hohai Univ., Nanjing 210098, China
ship_sohu@sohu.com

Abstract Basin discharge is significantly controlled by the configuration of the river system. A tree-like shape is exhibited in natural river systems and then a river network is often described statistically as a self-similar system. Considering the fractal self-similar characteristics of river systems, an ideal Self-similar Network (SSN) is constructed based on the former study and then a modification corresponding to a Width Function is derived. Based on the Width Function, the basin's geomorphological instantaneous unit hydrograph is derived. Yanduhe basin in China was selected to test the rationality of this function. The result of the test of 11 floods in this basin is satisfactory.

Key words basin; geomorphological instantaneous unit hydrograph; fractal; self-similar network; width function
