عنوان مقاله:

auto-calibration of flood forecasting using shuffled complex evolution (sce) method

محل انتشار:

سمپوزیوم برآورد عدم قطعیت در مهندسی سد (سال: 1384)

تعداد صفحات اصل مقاله: 8

نویسندگان:

H. R. ESLAMI - *Head of R&D Department in Jamab Consultant engineering*

K. QADERI - *Water structures department, Tarbiat Modares University*

J. M. V. SAMANI - *Water structures department, Tarbiat Modares University*

خلاصه مقاله:

The successful application of a flood forecasting model depends in large measure on how well the model is calibrated. it is typically difficult to apply these models without obtaining unique optimal values for their parameters using automatic calibration method. Also the model construction and parameters must be defined with high precision to place reasonable degree of confidence on the estimated parameter values. In this research the watershed flood forecasting is being accomplished by incorporating hydrological and meteorological data. Flood forecasting used in this research is a combination of watershed model that consists of two parts: conceptual rainfall-runoff (CRR) model in the basin and Muskingum-Cung routing method in the river. Because the calibration process is difficult and complex, there is a need for robust, effective, efficient and reliable automatic calibration procedure. In addition, those procedures must have a high probability of finding the global optimum without being trapped in a local optimum. Therefore, in this research we use the shuffled complex evolution method that is a new global optimization strategy designed to be effective and efficient for a broad class of problems. The SCE method combines the strengths of the simplex procedure with the concept of controlled random search, competitive evolution and the newly developed concept of complex shuffling. In this method, search begins with an initial population of points sampled randomly from the feasible space. The population is partitioned into one or more complexes, each containing a fixed number of points. As the search progresses, the entire population tends to converge toward the neighborhood of the global optimum, provided the initial population size is sufficiently large. This method is used for flood forecasting in Seimareh River in southwest of Iran and its results indicate that it is a reasonably accurate and reliable method.

کلمات کلیدی:

Flood forecasting, Auto calibration, SCE method, Muskingum-Cung routing