Review of Hydrologic Applications of Conceptual Models for Precipitation-Runoff Process

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Abstract : The relationship between rainfall and runoff is an important issue in surface water hydrology therefore the understanding and development of accurate rainfall-runoff models and their applications in water resources planning, management and operation are of paramount importance in hydrological studies. This paper reviews some of the previous works on the rainfall-runoff process modeling. The hydrologic applications of conceptual models and artificial neural networks (ANNs) for the precipitation-runoff process modeling were studied. Gradient training methods such as error back-propagation (BP) and evolutionary algorithms (EAs) are discussed in relation to the training of artificial neural networks and it is shown that application of EAs to artificial neural networks training could be an alternative to other training methods. Therefore, further research interest to exploit the abundant expert knowledge in the area of artificial intelligence for the solution of hydrologic and water resources planning and management problems is needed.