

Research on River Annual Runoff Prediction Model Based on EEMD-ANFIS

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Abstract

Rivers play an important role in human production and life. On the one hand, rivers provide water for human production and life. On the other hand, when the river has too much water, it will bring flood disasters to human beings. Therefore, the prediction of river runoff is particularly important. Accurate runoff prediction can not only provide basic data for the allocation and operation of water resources, but also provide reference for flood control and waterlogging control of the basin. The formation process of runoff is affected by rainfall, underlying surface, human activities and other factors. The improvement of runoff prediction accuracy has always been a difficult problem in the hydrological field. Because the runoff is affected by many factors and contains a lot of noise, the prediction accuracy will be reduced by using the data containing noise. EEMD is a good tool to separate signal and noise. This method is used to preprocess the runoff series, decompose the runoff series into multiple IMF intrinsic modulus, and then use the ANFIS algorithm with strong nonlinear approximation ability to predict each IMF function, and then reconstruct the predicted data to improve the prediction accuracy of runoff. By comparison, the prediction accuracy of EEMD-ANFIS model is about 34% higher than that of ANFIS model.

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