

Optimization of the Dam Management to Satisfy the Irrigation Demand: A Case Study in Algeria

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Abstract : In Algeria, water resources play a crucial role in economic development. But over the last decades, they are relatively limited and gradually decreasing to the detriment of agriculture. The agricultural irrigation is the primary water consuming sector followed by the domestic and industrial sectors. The research presented in this paper focuses on the optimization of irrigation water demand. Dynamic Programming-Neural Network (DPNN) method is applied to investigate reservoir optimization. The optimal operation rule is formulated to minimize the gap between water release and water irrigation demand. As a case study, Boukerdane dam's reservoir system in North of Algeria has been selected to examine our proposed optimization model. The application of DPNN method allowed increasing the satisfaction rate (SR) from 34% to 60%. In addition, the operation rule generated showed more reliable and resilience operation for the examined case study.

Keywords : water management, agricultural demand, Boukerdane dam, dynamic programming, artificial neural network

Conference Title : ICWRE 2020 : International Conference on Water Resources Engineering

Conference Location : Jeddah, Saudi Arabia

Conference Dates : November 16-17, 2020