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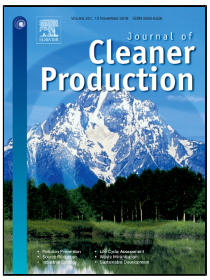

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Novel Reservoir System Simulation Procedure for Gap Minimization Between Water Supply and Demand

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Abstract: In recent years, with the quick growth of the economy and living standards in Malaysia, keeping up with the water demand is essential for the growth of cultivation, domestic and industrial. With the merits of having dams and reservoirs, water releases from dams are usually used to respond to the water requirements of downstream dams. To match the practical water requirement considering spatial and temporal conditions, a novel optimization operation model has been formulated for minimizing the gap between the water release from a dam and the water requirement. In this context, there is a need to develop an optimization model to alleviate the complexity and multidimensionality of a dam and reservoir as water supplies and the water demand system. In this research, an optimization algorithm, namely, the shark machine learning algorithm (SMLA) that has high inertia for obtaining its targets, is proposed that mimics the natural shark process. The major objective for the proposed model is attaining the minimum difference between the water demand volume and water release. To examine the proposed model, SMLA has been utilized in determining the optimal operation policies for Timah Tasoh Dam, located in Malaysia. A new procedure to evaluate the performance of optimization models by integrating