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運用遺傳演算法推求水庫操作規線之研究 - 以明德水庫為例

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摘　　要　由於社會結構之改變，國內用水需求日增，使得水資源之調配、運用越來越依賴水 庫的儲存與調節。研究如何改善水庫操作方式、強化水庫操作機能，提高水庫對於水資源的經 營與運用效率實為重要工作。本研究運用優選法水庫操作模式，以明德水庫為例找出明德水庫 近似最佳操作策略，達到提高水資源之利用效率。首先建立水庫操作之目標函數與限制條件， 再根據水庫歷史入流量、預定需水量等資料，利用遺傳演算法求得在滿足制定條件且達缺水指 數最小要求下之系統近似最佳解，即可結合現有水庫操作規線之優點，並考慮未來入流量之大 小，控制水庫之放流量，提供水庫管理局決定未來操作之參考策略。

關鍵詞：遺傳演算法、水庫操作規線。

Using Genetic Algorithm Method to Analyze Reservoir Operating Rule Curves—A Case Study on Min-Dar Reservoir

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ABSTRACT　As a result of the continuous increase in water demand, water resource management is becoming more significant. Consequently, it's very important to determine an optimal reservoir operating schedule for effective water distribution among different users. This study uses an intelligent control theorem incorporating the Genetic Algorithm(GA) and takes Min-Dar reservoir as an example for searching for more appropriate operation rule curves in order to achieve the optimum reservoir operation. Firstly, one must construct the objective function and constrain conditions of reservoir. Then, based on the inflow record of the reservoir and water requirement, one should apply the GA to search for the optimal release to reach a more suitable strategy of operation. It is expected that this study will provide the reservoir administration bureau a reference for future operations.

Key Words:　Genetic Algorithm Method, Reservoir Operation Rule Curve.

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