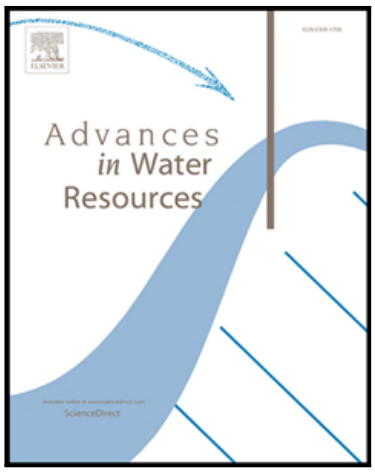

A Novel Generic Optimization Method for Irrigation Scheduling under Multiple Objectives and Multiple Hierarchical Layers in a Canal Network

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Highlights

- Proposing a generic approach to optimize canal scheduling under multiple objectives in a canal network consisting of multiple hierarchical layers.
- Using the concept of Pareto frontier to generate scheduling plans.
- Validating the proposed method using a hypothetical and a realistic scenario.
- Providing flexibility in setting up the optimization problem with more than two objectives across a number of hierarchical layers in the canal network.
- Giving a network-wide solution while still being optimal for lower hierarchical layers.
- Providing the decision maker the flexibility to change the priorities based on the network priorities (e.g. ignore equity objective during a drought).
- Solvable using available multi-objective evolutionary algorithms.
- Being independent of the mathematical formulations of the objectives and process modeling of network hydraulics, allowing details to be added easily.