



## **An R package for the design, analysis and operation of reservoir systems**

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We present a new R package—named "reservoir"—which has been designed for rapid and easy routing of runoff through storage. The package comprises well-established tools for capacity design (e.g., the sequent peak algorithm), performance analysis (storage-yield-reliability and reliability-resilience-vulnerability analysis) and release policy optimization (Stochastic Dynamic Programming). Operating rules can be optimized for water supply, flood control and amenity objectives, as well as for maximum hydropower production. Storage-depth-area relationships are in-built, allowing users to incorporate evaporation from the reservoir surface. We demonstrate the capabilities of the software for global studies using thousands of reservoirs from the Global Reservoir and Dam (GRanD) database fed by historical monthly inflow time series from a 0.5 degree gridded global runoff dataset. The package is freely available through the Comprehensive R Archive Network (CRAN).