



Pre-assessment of catchment management scenarios using hydrologic modelling

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This study is focused on the application of an optimised hydrological model previously developed to the assessment of catchment-scale landscape management and its implications for the useable lifetime of the Wala Dam. An exploration of published literature suggests this is among the first such robust, physically-based quantitative scenario modelling anywhere in the region. Integrated watershed management (IWM) is a critical component of the major UN-funded Badia Restoration Project in Jordan, but informed decision-making is limited by a lack of context-specific prediction of the impacts of different interventions. To date, money has been spent on limited experimental field trials with mixed outcomes. The approach followed in this study involves application of an optimised SWAT model for the Wala catchment to examine hypothetical and object-based catchment management scenarios in semi-arid areas on a one-at-a-time basis and assess them in terms of water and sediment quantities delivered to selected locations within and throughout the catchment. The results find that the effects of different scenarios vary spatially with both location and scale. Changes in annual sediment and water delivery to the Wala reservoir are linked to a simple model of dam functional lifetime to establish a rational model framework for integrating hydrological and ecological decision-making in this highly-stressed setting.