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Reservoirs performances under climate variability: a case study

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Abstract A case study, the Piano della Rocca dam (southern Italy) is discussed here in order to quantify the system performances under climate variability conditions. Different climate scenarios have been stochastically generated according to the tendencies in precipitation and air temperature observed during recent decades for the studied area. Climate variables have then been filtered through an ARMA model to generate, at the monthly scale, time series of reservoir inflow volumes. Controlled release has been computed considering the reservoir is operated following the standard linear operating policy (SLOP) and reservoir performances have been assessed through the calculation of reliability, resilience and vulnerability indices (Hashimoto *et al*. 1982), comparing current and future scenarios of climate variability. The proposed approach can be suggested as a valuable tool to mitigate the effects of moderate to severe and persistent droughts periods, through the allocation of new water resources or the planning of appropriate operational rules.

Key words reservoir; drought mitigation; climate variability