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Abstract: Reservoir sedimentation is a main concern in the Tarbela reservoir in Pakistan. This major storage reservoir on the Indus River, constructed between 1968 and 1974, plays a key role in the provision of water for irrigation, power generation and flood control. Sediments have reduced 30% the initial capacity of the reservoir (11,600Mm³). The advance of the foreset slope towards the dam also increases the risk of blocking the low level outlets that provide flows downstream to the irrigation system and to the power station. The paper presents historical data of the evolution of the sediment deposits in the reservoir and how this data has been used to validate a numerical model, RESSASS, that predicts the future development of the delta. The advance of the delta is clear when analysing the surveyed longitudinal profiles and the numerical model is able to predict very accurately this behaviour. Several aspects of the analysis of the future evolution of sediment deposits are discussed including the influence of upstream reservoirs that could reduce the incoming sediment towards Tarbela and the need to estimate the likely amounts of sediment passing through the turbines.

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