

ESTIMATING SEDIMENT TRAPPING EFFICIENCY FOR CASCADE RESERVOIRS ON THE DA RIVER BASIN

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Summary

Reservoir sedimentation deposition has been an important issue for reservoir operation and watershed management, which is the crucial of accurate estimation of the deposite sediment amount. In this paper, based on the long-term dataset of sediment concentration and suspended sediment load from 1961-2014 for four hydrological stations such as Lai Chau, Ta Bu, Hoa Binh and Ban Cung to calculate the actual sedimentation rate for the reservoirs. The measured annual trap efficiencies (TE) of the reservoirs before and after building cascade dams has a significant variable such as Hoa Binh station when only Hoa Binh reservoir operation has a deposition coefficient of 90%, however, after the cascade reservoir system built in upstream, the deposition coefficient is 98%. Applying nine differents empirical methods for calculating sediment trapping coefficients, were developed base on four commonly formulas (Brown, Brune, Churchill and Siyam) to compute the sedimentation rates for the cascade reservoir system as Tukehe (China), Lai Chau, Son La, Nam Chien, Ban Chat and some stations as Hoa Binh, Ta Bu, Ban Cung. The results of the study show that the Kummu et al (2010) equation (was developed from the Brune formulation) combined with the Vorosmarty et al. (2003) formula, were calculated the sedimentation coefficient at measured stations which are most suitable for the cascade dams in the Da river basin.

Keywords: *Sediment trapping, measurement data, empirical method, cascade reservoirs, Da river basin.*