Prediction of reservoir sedimentation: A case study of Pleikrong Reservoir

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Abstract

Sedimentation is a natural process that occurs in all reservoirs. Sedimentation problem reduces the storage capacity of the reservoir and limits its ability to provide water for various uses, such as irrigation, hydropower generation, and flood control. Therefore, predicting reservoir sedimentation is important for ensuring the efficient operation and sedimentation management of a reservoir and . In this study, the HECRAS model was applied to predict longitudinal distribution of deposited sediment in the Pleikrong reservoir to 2050. Different scenarios was considered: (i) no climate change, (ii) climate change (under two emissions scenarios, RCP4.5 and RCP8.5), and (iii) climate change and land use change (followed land use planning of the watershed). The computation results with different scenarios were analyses and compared. The results show that the reservoir reduced storage volume's rate and sedimentation proceed toward to the dam in the case of climate change is faster than in the case of no climate change. Analyses also indicates that following the land used planning could also improve the long-term problem of the reservoir sedimentation. The outcomes of this study will be helpful for a sustainable plan of sediment management for the Pleikrong reservoir.