



Numerical modeling of reservoir sedimentation, effect of data aggregation

T. Kebede Gurmessa (1), B. Westrich (2)

(1, 2) Institute of Hydraulic Engineering, University of Stuttgart, Germany
(tesfaye.kebede@iws.uni-stuttgart.de / Phone: +49-711-6854726)

Long term modeling of reservoir sedimentation is very sophisticated because of the complexity of physically based numerical flow and transport models, the variation of governing input parameters, i.e. discharge, sediment load and field measurement required for model calibration and validation. The study is a systematic investigation on the impact of discharge, head and suspended sediment data aggregation on the sedimentation processes as predicted by model. The model analysis was performed as a case study based on the field data of a reservoir located on the River Iller, Germany.

The hydrodynamic model TELEMAC-2D coupled with the suspended sediment transport model SUBIEF-2D was used at different level of input data aggregation: 15 minutes; hourly; daily; in three steps and monthly averaged. Numerical computation was focused on a typical one month period. The simulation results show the effect of discharge, suspended sediment and head aggregation on total deposited sediment and spatial variability of sedimentation in comparison to the most discretized numerical solution.