Calibration of the non-linear river model NLN–Danube for Kienstok–Šturovo reach of the Danube River

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Model NLN–Danube goes out from model NONLIN by A. Svoboda (IH SAS). Model of each section of the simulated system is based upon the concept of series of equal non-linear reservoirs, thus belong to the category of hydrological conceptual non-linear models (the model works with hourly step).

In the first, the calibration of this non-linear river model was done. The calibration for Kienstock–Štúrovo reach of Danube River for August flood 2002 was done. After the calibration, verification of the model was done for two flood events - March 2002 and July 1997. There, simulations by model NLN–Danube of transformation of the waves of river bank for interest reach were done too. The mean absolute percentage error (MAPE) of simulation was less than 5 % for verification. This value is allowable error of discharge measurements.

In the second, the capability of the model NLN–Danube to simulate longer input data set was checked (verified). For this purpose the hourly discharge data from 1999 and 2000 years were used.

Calibration and verification results showed, that model adequately represents the present hydraulic conditions in the given river reach. The NLN–Danube model is a good tool for simulation of the flood waves and for capability of the model to simulate of the longer input data set.