

Matej Müller:

VPLIV ZARASTI NA VISOKOVODNE RAZMERE PRI 2D HIDRAVLIČNEM MODELIRANJU

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Zagovor: september 2009

Povzetek

Zaradi večanja neprepustnih površin in podnebnih sprememb se pogostost visokih voda v zadnjih desetletjih večja. Vzporedno s tem se večja tudi škoda, ki pri njih nastaja. Potreba po pripravljenosti na takšne dogodke in izdelavi protipoplavnih ukrepov je tako vedno večja. Za zmanjševanje poplavne nevarnosti in za napoved obsega poplav so potrebne hidravlične analize. Z razvojem računalnikov so v vedno večji uporabi tudi 2D hidravlični modeli. Natančnost takšnih modelov je v precejšnji meri odvisna od vnesenih topografskih podatkov, natančnosti robnih pogojev in postopka umerjanja modela. V nalogi je predstavljeno 2D hidravlično modeliranje odseka Drave pri Malečniku, kjer visoke vode ogrožajo zasebna in javna zemljišča. Model je bil izdelan s pomočjo programske opreme MIKE FLOOD. Pri umerjanju je bil upoštevan oblikovni upor visoke vegetacije ter medsebojna odvisnost globine vode in koeficientov hrapavosti. Narejena je bila analiza občutljivosti spreminjanja hrapavosti v 2D hidravličnem modelu za visokovodne razmere. Za omenjeno območje so bile izdelane karte poplavne nevarnosti ter analiza protipoplavnih ukrepov, ki zajemajo redčenje vegetacije in nižanje prodišč.

Ključne besede: visoke vode, 2D hidravlično modeliranje, zarast, MIKE FLOOD

Abstract

Due to increasing impervious surfaces and climate change, the frequency of high water is increasing in recent decades. In parallel, the damage produced by them also increases. The need for preparedness for such events and for constructing flood measures grows. Hydraulic analyses are necessary for the assessment of the flood hazard and for flood extension forecasting. In recent years the development of advanced computers increased the use of complex 2D hydraulic models. The accuracy of such models largely depends on topographic data, boundary conditions and model calibration process. In this report, a 2D hydraulic modeling was done for the reach of the Drava in Malečnik, where high waters threaten public and private land. Hydraulic modeling software MIKE FLOOD, which connects the MIKE 11 and MIKE 21 software was used. This research work also includes a sensitivity analysis of changing the roughness of the 2D hydraulic model on high waters, where the impact of the vegetation on flow conditions was also observed. Furthermore, flood hazard maps were done and analysis of flood measures, which include the reduction of the vegetation as well.

Key words: high waters, 2D hydraulic models, vegetation, MIKE FLOOD