

Gašper Rak:

ANALIZA HIDRAVLIČNIH LASTNOSTI VODOTOKA Z UPORABO GIS ORODJA

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Povzetek

Prednosti hidravličnih analiz, ki jih prinaša uporaba GIS orodij, bodo navkljub zapletenosti postopkov in potrebi po dodatni usposobljenosti hidro-inženirjev, povzročili, da se bomo vse bolj odločali zanje. Pogosto so te prednosti zapostavljene in nedosegljive inženirjem, ki niso specializirani za delo z GIS podatki. Razširitev GIS programskega orodja ArcView pa omogoča prav to. Razvit je bil za pripravo prostorskih podatkov, katere bi lahko uporabili v programskem orodju za izračun hidravličnih presoj v odprtih vodotokih (HEC-RAS), kot način, s katerim bi lahko zajeli rečno geometrijo. Orodje je razvil inštitut za raziskovanje okolja (ESRI, Environmental System Research Institute) v sodelovanju z centrom za hidrološko inženirstvo (HEC, Hydrologic Engineering Center). V seminarski nalogi sem predstavil delo s to programsko, opremo od priprave digitalnega modela terena, kreiranja vhodne datoteke za HEC-RAS s pripadajočimi geometrijskimi podatki (prečni profili, rečno korito, nasipi..), do prikaza s HEC-RAS-om pridobljenih hidravličnih rezultatov v tridimenzionalni obliki s pomočjo ArcView-ja. Orodja, hidravlične postopke in prednosti, ki jih ponuja razširitev ArcView-ja HEC-GeoRAS, sem uporabil za analizo odseka reke Soče med Avčami in Plavami.

Ključne besede: hidravlični model, odprti vodotoki, poplavni tok, HEC-GeoRAS, GIS

Abstract

Although hydraulic analysis can benefit from digital terrain models and other GIS data sets, the complexity and unfamiliarity of GIS programs deters hydraulic engineers from using them. Because of that reason benefits derived from using a GIS to assist in hydraulic analysis are often unavailable to engineers not specialized in GIS knowledge. HEC-GeoRAS allows an engineer with little GIS training to use ArcView to develop geometric data for import in HEC-RAS and view exported water surface profile data. The HEC-GeoRAS is an ArcView extension specifically designed to process geospatial data for use with HEC-RAS. It was developed as part of the Hydrologic Engineering Center's "New Generation" of hydrologic engineering software in cooperation with Environmental System Research Institute (ESRI). In the content of my paper I want to represent work with this software from preparing digital terrain model, create an HEC-RAS import file containing geometric attribute data of river (cross section lines, overbanks, main channel, levees..), to export results from HEC-RAS and process them into GIS data sets to reference spatial depiction and visualization of flood depths and velocities. In my work i was used HEC-GeoRAS, a set of procedures, tools, and utilities for processing spatial data in ArcView to assist in hydraulic model development for section of river Soča near Avče.

Key words: hydraulic model, floodcurrent, flow in open channel, HEC-GeoRAS, GIS