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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "A hydro-sedimentary modelling system for flash flood propagation and hazard estimation under different agricultural practices" *by* N. N. Kourgialas and G. P. Karatzas

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The authors investigated the effect of riparian vegetation on flash flood propagation parameters, such as water depth (inundation), discharge, flow velocity, and sediment transport load. The paper is a continuation of their paper published in Hydrological Processes (HP). The aim is to study the impact of weed-cutting scenarios on velocity and sediment transport. The proposed modelling system is used to evaluate and illustrate the flood hazard for different cutting riparian vegetation scenarios, important from the point of view of flood hazard and taking into account ecological impacts. The relationship between riparian vegetation and flood propagation characteristics was in-

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corporated into the modelling system by means of three zones (the bottom zone, the bank zone and the overbank and floodplain zone). However, only the latter zone (3) was investigated in the paper, following the results of the previous work. The authors conclude that flow velocity increases with the increase of percent of weed-cutting and the flow velocity peak appears earlier. The simulations of sediment transport showed a similar tendency, i.e. the sediment load increased with the increase of weed-cutting. Flood hazard maps were generated for each weed-cutting scenario. Even though the whole flooded area decreased with the increase of weed-cutting, the extreme hazard zones increased for areas close to the main channel due to the increase of flow velocity. Also, the increase of sediment load increases the bank erosion thus having a negative effect on ecology. Thus as the authors point out, the riparian vegetation cutting plan should be optimal, or more correctly, well balanced to take into account adversary results of weed-cutting. The system includes the hydrological model HSPF, the hydrodynamic module MIKE11 and the advection-dispersion module of MIKE11 for the sediment load modelling. The scheme of the system, similar to that shown in the authors' HP paper (2013), would be helpful. The paper is well written, concise and to the point. It would help in the generalisation of the paper's results to explain in more detail how the values of Manning roughness coefficients were related to the weed-cutting scenarios. The authors refer to the literature for this assumption, which is not satisfactory. A discussion on the choices should be made, followed by a sensitivity analysis of the results. On a less important issue, I would encourage the authors to change the wording "optimal" to "well balanced", or "best" to avoid misunderstanding.

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