

Review of: "Exploring the Impact of Future Land Uses on Flood Risks and Ecosystem Services, With Limited Data: Coupling a Cellular Automata Markov (CAM) Model, With Hydraulic and Spatial Valuation Models"

Ignacio Villanueva¹

¹ Instituto de Hidrología de Llanuras

Potential competing interests: No potential competing interests to declare.

The paper is well focused, clear and concise, and promotes a new coupling of items to estimate flood risk in the long term.

I make three observations in order of relevance to improve it:

Clarify how the flooding extent and pixel water depth variation change the ESV estimation. Is it due to the variation of water bodies' extent or to the damage of water over the rest of land uses, or is it a combination of both?

How the mathematical models are configured is not essential at this level, but an estimate of the CPU demand, regarding mainly the HEC-RAS running and CAM land map processing, would be indicative.

Strictly regarding the hydraulic modelling with HEC-RAS, page 11, for the paragraph:

The Full Momentum method takes into account the conservation of both momentum and energy as water flows through the channels, while it considers the influence of all the other input factors such as channel shape, roughness, and slope.

Note that HEC-RAS, for the Shallow-Water-Equations (both 1D and 2D), while working in transient regimes, only deals with mass and momentum conservation. The energy conservation is only used by 1D steady profiles.