Dear Editor,

Thanks again for your comments, which led to improve and clarify some of the methodological choices in our manuscript.

Regarding your last concern:

> *Specifically, equation Eq. A1.4 attributes to the wave set-up the same periodicity of the incoming breaking wave. This is really puzzling to me. The wave set-up is defined as the increase of mean sea level at the shore that is caused by the loss of wave momentum in the surf zone. The presence of such periodicity in your expression is not justified on the basis of the common definition of wave set-up. This point should be clarified or supported by a clear bibliographic reference.*

The literature from which we obtained (among others) the wave data (Perini et al 2016, based on Armaroli et al, 2009; Armaroli et al. 2012) accounts for wave runup+setup using a formula that considers the wave period (T):

1, 1-in-10, 1-in-100 years return period values of Table 2. Wave parameters were used to compute the run-up along each beach profile using the Holman (1986) formula modified by Komar (1998) to include the set-up (Eq. (2)):

$$R_{2\%}^{T} = 0.36g^{1/2}SH_{\infty}^{1/2}T \tag{2}$$

where $R_{2\%}$ is the 2% exceedance run up level, g is the acceleration of gravity, S is the beach slope, H_{∞} is the deep water wave height and T is the deep water wave period.

In our methodology, given the limitation of the 2D hydrodynamic model not resolving vertical convection and waves breaking (thus not allowing us to directly model wave run-up), we decided to include the wave motion intrinsic wave run-up as part of the wave set-up component, thus accounting for a periodicity equal to the incoming breaking waves. Indeed, calling the resulting variable wave set-up is theoretically questionable as wave set-up is considered as the static component of wave run-up (swash being considered the dynamic component). Even so, we believe that such can represent the motion of wave in a 2D hydrodynamic modelling framework, leading to a better consideration of the waves action on the resulting flood when compared to a simple static accounting of wave set-up.

Specifically, we propose the following edits to respond to your comment:

➢ add definitions of wave set-up and wave run-up and highlight the way in which wave action has been considered in literature and our manuscript; define the two combined variable as "*wave action contribution*", thus hopefully removing the ambiguity present in the previous version of the manuscript.

➢ reference the study where the wave runup/setup is computed considering period T (Armaroli et al. 2009; 2012).

➢ highlight the limitation of our wave-action approach in the conclusions, suggesting to explore in future works the chance to combine wave set-up and the swash component in a 2D-hydrodynamic model.

We thank you for your exhaustive revision of our manuscript (soon celebrating one year since the first submission), and we hope that such clarification is considered sufficient for the final acceptance of our manuscript.

Best regards

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