

Interactive comment on “Reconstruction of the 1945 Wieringermeer Flood” by O. A. C. Hoes et al.

Anonymous Referee #2

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Review of manuscript Reconstruction of the 1945 Wieringermeer Flood Hoes et al.

This manuscript proposes to present a reconstruction of a historical inundation event of a polder in the North-West of the Netherlands. While I agree with the authors that this is an interesting case given some of the historical documentation available, I do think that the structure of the article is not quite as expected for a scientific article, nor is the scientific contribution very clear.

The first thing I found surprising when reading the article is the lack of reference to related work, in particular some very similar work in the Netherlands. A paper by Hesselink et al, 2003 addresses a very similar case and approach for a river polder but is not considered at all. There is also very little review of the wide body of literature on inundation modelling (including work by Bates, Horritt, Baldassare, Hunter, Werner, Aronica, Chatterjee and several others - I am sure the authors can find these references

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easily) that also consider the use of historical observations to assess performance of inundation models. Some of the domains these authors discuss may be slightly different than the polder consider here (though there are some that are quite similar), but this body of work should at least be considered. The question of breach growth, inherent uncertainties and difficulties in modelling is also poorly addressed. The largest part of the article deals with an historic account of the event, which is described in very great detail. Though interesting in its own right it may be more suitable in a different type of journal that focuses on historical accounts. The section that discusses the model is very brief, though some conclusions are suggested based on these results later on. Only very limited historical data was presented that was used in calibration. Validation or a critical assessment is lacking. This leaves many open questions – what was the calibration sensitive to – breach growth parameters, roughness values 1D/2D representation of channels – and how were these sensitivities explored? Some are stated but none are properly founded by work done. What other data was available than that of the sacristan – there are some mentioned but nothing if these could all be well represented? In short it is not really clear what new insights are gained, other than that a model was applied to the available data.

A section I also found confusing was that of the breach growth (section 5) – this seems to be a mix between what is expected from a theoretical point of view (as described in some of the literature cited) and what was observed in the case of the Wieringermeer. There is some suggestion of there being observations – but the only statement as to a real observations is the time of the blowing up of the dyke. It could be the use of the English language, which would benefit some improvement throughout the article – but it is quite confusing.

Currently the manuscript proposes key findings for flood risk management practice – but the only paragraph that alludes to this is at the end of section 6. In other cases conclusions the suggestion of for example establishing compartments in the water body from which the inundation volume originates does seem to be specific to the situation

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and less general than is suggested.

In summary, I would suggest the authors reconsider what this article sets out to do. Once decided they can then ensure that robust scientific evidence is presented to support conclusions made. They will also need to decide the scope of the journal they would like to publish in – and leave out details irrelevant to that scope and strengthen details relevant to that scope. They should then resubmit, and given careful consideration of these points I am sure this can develop into an interesting article.

Hesselink, A., Stelling, G., Kwadijk, J. Middelkoop, H., 2003, Inundation of a Dutch river polder, sensitivity analysis of a physically based inundation model using historic data. *Water Resources Research*, 39(9). DOI: 10.1029/2002WR001334

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