Geoscientific

Model Development

Discussions

[GMDD]

Interactive
comment

Interactive comment on "A Bayesian Framework Based on Gaussian Mixture Model and Radial Basis Function Fisher Discriminant Analysis for Flood Spatial Prediction (BayGmmKda V1.1)" *by* Dieu Tien Bui and Nhat-Duc Hoang

Anonymous Referee #1

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The authors use a data-driven tool to establish a relationship between 10 "flood influencing factors" and the flood itself in a district in Vietnam. While there is a merit in experimenting with statistical tools for trying understand flood occurrence, the current version of the manuscript lacks to demonstrate such a value in using data-driven algorithms for flood prediction. particularly, I have concern with the description and evaluation of the tool. Unless a substantial improvement is made both in the methodology framing and presentation of the manuscript, I would not decremented for publication on GMD.

Major comments: 1) There is no clear objective of the work. And it is not clear how the "tool" can be used for flood mapping or prediction(?). A more focused and talored decription of the tool would be helpful to understand and potentially use for the readers of GMD.

2) The abstract is too short and lacks details of what they attempt to do.

3) There is no definition of flood/no flood. In fact it is not clear at all as to what flood is made in the paper. I think flood extent maps should be used for the evaluation, instead of just the selected points. As it is currently used, then streamflow should be used for the evaluation.

4) While describing the methodology (section 3), there is no connection made between the statistics and the physical flood characteristics? For example, what are the classes (in the classification of section 3.1) deal with?

5) The paper fails to explain the physical relationship between the "Influencing factors" (Table 1) and the flood processes. And why were those particular factors selected? How about antecedent soil moisture and other potential factors?

6) Poor writing throughout. The following is partial list. - L14: to facilitate - L20: cause heavy loss of - L23-24 is that number refers to annual deaths? - L26: the country - L28: 60% of the area in the country is ... a report produced by - L33: It is possible - L47: what does "sceintific manner" means? - L51-52: that is not an accurate description of Dottori etal., because they also provide a water depth. The are based on physical models as well. - L63: can yield - L77: Wha tis that exactly the limitations of the hydrolgical models? And what is the limitations of the proposed method? - L109: by far a heavly affected - L110: located between - L112: Doesn't watershed include mountains and rivers? - L119: have been damaged... must be relocated - L125; reasonable strategy - many more language corrections through out the text! - A more common terms in flood community such as probability of detection and false alarm ratio (rate) can be used - Remove the background color from figure 2 (the region outside of the study region

should be white)

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