

Interactive comment on “An integrated user-friendly ArcMAP tool for bivariate statistical modeling in geoscience applications” by M. N. Jebur et al.

M. N. Jebur et al.

biswajeet24@gmail.com

Received and published: 3 January 2015

Dear Editor, We would like to thank you and two anonymous reviewers for their helpful comments which helped us to improve the quality of the manuscript. We have revised the manuscript GMD-2014-168 - entitled “An integrated user-friendly ArcMAP tool for bivariate statistical modeling in geoscience applications” to incorporate minor revision, strictly based on the reviewer’s report.

We have revised the paper based on the feedback and comments given by the anonymous reviewers. As a result, you can see that there are changes in the new submission. All the comments and feedback have been taken very seriously and hence addressed

C2838

them carefully in the revised manuscript. Please find the next page onwards of this document wherein we have answered to the issues raised by the referees in a point format. Additionally, I am uploading the manuscript with “track changes” (in supplement) in order to view those changes made during the new submission. We sincerely expect that this revised manuscript can be published in “GMD”. With best regards,

Prof. Dr. Biswajeet Pradhan (Corresponding author) _____
Comments from Second Reviewer General Comments: Authors add bivariate statistical modules to ArcGIS using the python language. This GIS tool includes three models: evidential belief function (EBF), frequency ratio (FR) and weights-of-evidence (WoE). They are all data-driven techniques aiming to predict the hazard susceptibility and other geoscience applications. Such tool can assist geo-scientists in performing statistical analyses in the GIS environment since its procedure is simple and efficient. However this module could be improved by following:

(1) The Area under the curve (AUC) should be calculated in the ArcMAP tool so that three models can be compared directly in ArcGIS. Author’s response: Thanks for the comment. This paper aims to deal with the bivariate analysis only. The AUC is one of the various available techniques for validating the results. We have used this validation technique to check the efficiency of FR, WoE, and EBF algorithm in the particular application. Therefore, creating AUC would be out of the scope of this paper.

(2) It would be better to provide the functions that could select the ratio of training set to the testing set. It will be convenient for users to test the models. Author’s response: Actually, this would be valuable if the tool create the training and testing or doing the sampling itself. However, the aim of this paper is to run the bivariate techniques in GIS after the training and testing layer are created. Moreover, selecting the ratio depends of the quantity of the samples and the application. Therefore, the authors did not include them in the tool.

(3) It would be better to provide functions for testing the modeling results. For example,

C2839

the Bootstrapping (statistics) approach can be adopted. This method allows assigning measures of accuracy (defined in terms of bias, variance, confidence intervals, prediction error or some other such measure) to sample estimates. It will facilitate selecting the model and judging the modeling results judge. Author's response: Judging the modeling result may be varying from one application to another. The main point here is that, authors didn't propose new method for performing susceptibility or other mapping. We programmed the BSA algorithms which can be used in numerous modeling. Hence, the accuracy of the results that the user can attain is only related to the data used, nature of the study area and precision of their original data. For the users who attempt to use this tool, a full understanding of the provided bivariate technique should be attained before using the tool. To do such, a literature review is required; moreover, running the success rate using AUC algorithm would help for judging the modeling results judge.

Specific comments: There are also some typos or grammar problems in the MS. For example: (1) On page 7241, line 18, 'is' should be deleted. Author's response: Thanks, correction is made.

(2) On page 7246, line 25, the equation (2) was wrong. Author's response: Thanks for the comment. Amended as suggested. Moreover, the manuscript was reviewed by the authors and many errors were corrected with track change and it can be seen in the revised version.

Please also note the supplement to this comment:

<http://www.geosci-model-dev-discuss.net/7/C2838/2015/gmdd-7-C2838-2015-supplement.pdf>

Interactive comment on Geosci. Model Dev. Discuss., 7, 7239, 2014.