

Geosci. Model Dev. Discuss., referee comment RC2
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Comment on gmd-2022-119

Anonymous Referee #2

Referee comment on "Transfer learning for landslide susceptibility modeling using domain adaptation and case-based reasoning" by Zhihao Wang et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2022-119-RC2>, 2022

Paper review on "Transfer learning for landslide susceptibility modelling using domain adaptation and case-based reasoning".

This paper evaluates the performance of different transfer algorithms for LSM including case-based reasoning (CBR) and domain adaptation (DA). The study is very interesting, relevant and suitable for GMD. However, the following issues should be carefully addressed before publication:

- The problem is very well characterized and the objectives clearly established.
- Authors should explain strategies they have adopted to select non-landslide points from landslide points randomly. What are the criteria and the distance they have set as thresholds for considering non-landslide regions, especially when they have a low-resolution dataset?
- What is the spatial and temporal resolution of the rainfall dataset? How did the authors handle the spatial resolution difference between the rainfall dataset and DTM-derived parameters? Considering rainfall data's dynamic characteristics, how could authors relate the other statistic parameters (topographic condition, etc.) to dynamic parameters and predict and produce a reliable landslide inventory? How do authors handle the spatio-temporal characteristics of landslide events in the different regions?

The methodology's major limitation is the different types of mass movements! I want to ask how the author handled and incorporated the geometric differences of different mass movements (landslides) into the models to correctly predict the different types of mass movements, especially knowing that each landslide type has its own geometric and physical characteristics.

- Finally, Why authors just contended the simple Logistic GAM for implementing the DA algorithm while more robust algorithms exist for solving the non-linearity relationship of the input parameter and also considering the binary case of the classification

Please also note the supplement to this comment:

<https://gmd.copernicus.org/preprints/gmd-2022-119/gmd-2022-119-RC2-supplement.pdf>