Natural Hazards
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Discussions

Interactive comment on "Automatic landslide flow direction estimation based on the geometric processing of the bounding box and the geomorphometric analysis of DEMs" *by* M. Niculiţă

Anonymous Referee #2

Received and published: 9 April 2016

It was a pleasure to read the paper, "Automatic landslide flow direction estimation based on the geometric processing of the bounding box and the geomorphic analysis of DEMs" by Mihai NiculìÈŻă. The author describes a method to classify landslides as long or wide using GIS algorithms and digital elevation models. The method is validated with a previously published landslide inventory. The writing is generally well structured, although the writing needs much work. I provided recommendations to improve the clarity of some sentences in my "Technical Comments" section below.

The following major items should be addressed. The introduction does not describe

why determining wide versus long landslide is important task. Also, the author does a sufficient job of describing elevation patterns within the mapped polygons (landslides), but does not relate these patterns to the expected morphology of landslides. Lastly, the author should briefly describe how long and wide classification was determined in the previously published landslide inventory. It is not clear in the methods that the inventory was used to (1) provide landslide polygons, and (2) act as the validation dataset. I elaborate upon some of these points below.

Specific Comments

Page 2

Line 24: Was the 2015 landslide inventory used to validate the method described in this paper? I recommended stating this explicitly here for your readers.

29: How was the long or wide type determined in the initial landslide inventory? Please describe.

Page 3

28: My understanding of the method to classify landslides as long or wide follows. Long landslides have a greater elevation difference between MP2 and MP4 than MP1 and MP3. I do not imagine why wide landslides would not have this elevation trend as well. May you please further describe how the criteria to distinguish long versus wide is relevant to landslide morphology.

31: What is meant by "certain relative altitudes" and how does this affect wide and long classification?

Page 4

14: The use of the phrases "false negative" and "false positive" is confusing and does not follow standard usage. In the context of landslide mapping, a false negative is an area that is a landslide, but was not mapped. A false positive is an area mapped as

a landslide, but actually is not a landslide. In this paper it appears false and positive designations were arbitrarily assigned to cases of misclassification. Eliminating true positive, false negative, etc., removes the contradiction with the literature, lessens the cognitive load placed on your readers, and allows the author to not have to indicate both the case and definition each time its mentioned.

20: Please define and describe AUROC either here or in the methodology.

25: The landslide in Figure 8c appears to be a long landslide. Although, you indicate that it is a wide landslide misclassified as a long landslide. How is this landslide wide given that its length is 522 m and its width is 165 m?

Page 5:

30: It is not clear what is meant by 3D approach. Please describe.

Technical Corrections

Page 1

8: Please consider replacing "certain" with "characteristic"

10: It is not clear what is meant by "enter in the same category". Please revise.

11: Consider: "…having a greater length than width."

Page 2

8: Replace "Lyon et al., 2013" with "Lyons et al., 2014"

9: generates

10: Consider: "While not as frequent as flows…"

18: landslides

18: Consider: "Wide landslides most commonly appear along…"

19: Consider: "…and along the scarps of cuesta landforms (…"

21: This sentence is confusing. Its not clear what is meant by "correct". Please rewrite.

27: Please remove "both" because this word refers only to two things: "…landslides appear along…"

30: I suggest indicating that you are referring to the horizontal resolution when mentioning five meters.

Page 3

2: This sentence is confusing. Please consider splitting it into multiple sentences.

20: Should "where introduced" be "were introduced"

24: Replace "Using this four" with "Using these four"

25: Please split the sentence beginning with "Altitudes" into multiple sentences to improve readability.

25: "Altitude" should be used to indicate the distance above ground to an object. "Elevation" is a better word choice when describing the vertical distance between a geoid and the ground surface, as you are here. Please evaluate the use of "altitude" throughout the paper.

26: Replace "Mp4" with "MP4"

27: Replace "raised at power" with "raised to the power"

28: Its not clear what is meant by "biggest" (i.e., bigger than what?). I believe what you are comparing is the altitude difference between MP1 and MP3 to MP2 and MP4. Landslide type "long" or "wide" is determined by which of the midpoint pairs has a greater difference in altitude. Please clarify.

Page 4

2: Replace "inforce" with "enforce"

14-15: Consider "were misclassified" instead of "wrongly"

15: The abbreviate "FP" is not used in the text. It is used in a figure, but it is also defined in the figure caption. Please remove "FP" here because it serves no purpose.

16: There is a missing word or wrong word(s) used in "This algorithm give flow distance..." Please revise. Perhaps "This algorithm can output flow distance that is more similar to hillslope length because surface water flow is modeled as a..."

19: Replace "classify" with "classified"

24: Replace "there a bigger difference" with "there is a greater difference"

26: Replace "landslides which, are" with "landslides, which are"

Page 5

4: Replace "inventories were" with "inventories where"

7: Examine extra character: "SRTM 1elevation"

20: Consider "challenges" or "problems" instead of "fails"

Page 6

3: Consider "challenging" or "difficult" instead of "hard"

5: The sentence beginning with "If their length..." is not clear. Please revise.

11: Replace "manage" with "managed"

11: Replace "represent" with "represents"

Page 8

2: This paper was published 2014, not 2013.

Figure Captions:

1: Replace "up there" with "top" and "down" with "bottom"

2: Please indicate that the upper-right inset is a topographic map of Romania.