

**Anonymous Referee 2 (nhes-2016-44-RC2.pdf):**

**General comments:**

1. **C:** The introduction does not describe why determining wide versus long landslide is important task.  
**R:** I have completed the abstract and the introduction part with a detailed review of the
2. **C:** 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.  
**R:** I have completed the introduction with more details.
3. **C:** 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.  
**R:** All the required information was stated in the introduction, methodology and discussion sections.

**Specific comments:**

1. **C:** 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.  
**R:** I have included clear statements and a description regarding the observations.
2. **C:** Page 2 Line 29: How was the long or wide type determined in the initial landslide inventory? Please describe.  
**R:** I have included a description on the methodology.
3. **C:** Page 3 Line 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  
**R:** Wide landslides should theoretically have the difference in altitude along their bounding box length (so not their real length, given by the direction of material displacement, but the geometrical length of the rectangle considered as bbox) smaller than that along the width, because the toe of the landslide should be at the same altitudinal level.
4. **C:** Page 3 Line 31: What is meant by “certain relative altitudes” and how does this affect wide and long classification?  
**R:** The fact is described further; the fact that the hillslope has a difference of elevation between the upstream part of the base and the downstream part of its base creates, which is higher than the difference in elevation between the scarp and the toe of the landslides, tricks the algorithm.
5. **C:** Page 4 Line 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.

I covered this at the beginning of the chapter 4 Results and Discussions. The confusion matrix is used for any case of classification. So I explain there the confusion matrix in regard to the present approach.

6. **C:** Page 4 Line 20: Please define and describe AUROC either here or in the methodology.  
**R:** I inserted a description of the ROC and discussed the obtained values.
7. **C:** Page 4 Line 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?  
**R:** Please observe the context of the landslide. The landslide is located on the hillslope of a gully
8. **C:** Page 5 Line 30: It is not clear what is meant by 3D approach. Please describe.  
**R:** I refer here to the use of 3D oriented bounding box, computed for a 3D version of the landslide polygon.

#### **Technical corrections:**

9. **C:** Page 1 Line 8: Please consider replacing “certain” with “characteristic”  
**R:** It was resolved by the deleting text, as advised by Anonymous Referee 1
10. **C:** Page 1 Line 10: It is not clear what is meant by “enter in the same category”. Please revise.  
**R:** Resolved through rephrasing and revision
11. **C:** Page 1 Line 11: Consider: “: : : having a greater length than width.”  
**R:** Resolved through correction
12. **C:** Page 2 Line 8: Replace “Lyon et al., 2013” with “Lyons et al., 2014”  
**R:** Resolved through correction
13. **C:** Page 2 Line 9: generates  
**R:** Resolved through correction as indicated by Anonymous Referee 1
14. **C:** Page 2 Line 10: Consider: “While not as frequent as flows: : :”  
**R:** Resolved through rephrasing of the paragraph.
15. **C:** Page 2 Line 18: landslides  
**R:** Every reference in the literature is to a landslide inventory not to landslides inventory, so I didn't changed
16. **C:** Page 2 Line 18: Consider: “Wide landslides most commonly appear along: : :”  
**R:** Resolved through correction
17. **C:** Page 2 Line 19: Consider: “: : : and along the scarps of cuesta landforms ( : : : )”  
**R:** Resolved through correction
18. **C:** Page 2 Line 21: This sentence is confusing. Its not clear what is meant by “correct”. Please rewrite.  
**R:** Resolved through correction as indicated by Anonymous Referee 1
19. **C:** Page 2 Line 27: Please remove “both” because this word refers only to two things: “: : : landslides appear along: : :”  
**R:** Resolved through correction as indicated by Anonymous Referee 1
20. **C:** Page 2 Line 30: suggest indicating that you are referring to the horizontal resolution when mentioning five meters.

**R: Resolved through correction**

21. **C:** Page 3 Line 3: This sentence is confusing. Please consider splitting it into multiple sentences.  
**R: Resolved through rephrasing of the paragraph.**
22. **C:** Page 3 Line 20: Should “where introduced” be “were introduced”?  
**R: Yes. Resolved through correction**
23. **C:** Page 3 Line 24: Replace “Using this four” with “Using these four”  
**R: Resolved through correction.**
24. **C:** Page 3 Line 25: Please split the sentence beginning with “Altitudes” into multiple sentences to improve readability.  
**R: Resolved through rephrasing and split.**
25. **C:** Page 3 Line 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.

**R: Resolved through replacing altitude with elevation through all the article.**

26. **C:** Page 3 Line 26: Replace “Mp4” with “MP4”  
**R: Resolved through correction.**
27. **C:** Page 3 Line 27: Replace “raised at power” with “raised to the power”  
**R: Resolved through correction.**
28. **C:** Page 3 Line 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.  
**R: Resolved through rephrasing and inclusion of the comparison for bigger.**
29. **C:** Page 4 Line 2: Replace “inforce” with “enforce”  
**R: Resolved through correction.**
30. **C:** Page 4 Line 14-15: Consider “were misclassified” instead of “wrongly”  
**R: Resolved through correction.**
31. **C:** Page 4 Line 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.

**R: I introduced extensive explanation of the terms and also a table to show this.!!!!!!**

32. **C:** Page 4 Line 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: : :”  
**R: Resolved through correction.**
33. **C:** Page 4 Line 19: Replace “classify” with “classified”  
**R: Resolved through correction.**
34. **C:** Page 4 Line 24: Replace “there a bigger difference” with “there is a greater difference”  
**R: Resolved through correction.**
35. **C:** Page 4 Line 26: Replace “landslides which, are” with “landslides, which are”  
**R: Resolved through correction.**
36. **C:** Page 5 Line 4: Replace “inventories were” with “inventories where”  
**R: Resolved through correction.**

37. **C:** Page 5 Line 7: Examine extra character: “SRTM 1elevation”  
**R: Resolved through correction.**

38. **C:** Page 5 Line 20: Consider “challenges” or “problems” instead of “fails”  
**R: Resolved through correction.**

39. **C:** Page 6 Line 3: Consider “challenging” or “difficult” instead of “hard”  
**R: Resolved through correction.**

40. **C:** Page 6 Line 5: The sentence beginning with “If their length: : :” is not clear. Please revise.  
**R: Resolved through rephrasing.**

41. **C:** Page 6 Line 11: Replace “manage” with “managed”  
**R: Resolved through correction.**

42. **C:** Page 6 Line 11: Replace “represent” with “represents”  
**R: Resolved through correction.**

43. **C:** Page 8 Line 2: This paper was published 2014, not 2013.  
**R: Resolved through correction.**

#### Figure Captions

1. **R: Replaced**
2. **R: I have indicated the inset in the caption**