

## ***Interactive comment on “Delineating riparian zones for entire river networks using geomorphological criteria” by D. Fernández et al.***

**Anonymous Referee #1**

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### General comments

The manuscript presents an interesting riparian areas delineation study to identify hydrologically-meaningful zones for entire river networks. The topic is of relevance for HESS readers and the scientific community being still under discussion optimal methods and criteria to delineate these transitional environments. The comparison between two different geomorphological surfaces, assessed in more river types, and using two methods in the assessment should be appreciated. The MS is generally well written, although occasionally some sentences needs to be cut and/or rephrased to be clear.

Beyond these strengths, there are a couple of points which must be clarified in my view:

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1) the Authors need to specify/discuss that their hydrologically-meaningful zones are not all riparian sensu strictu (e.g. because in the middle of these surfaces it might be present even a village). In this sense, following the delineation phase it should be mentioned that a further processing to mask e.g. urban and/or to identify relevant ecological variables should be done. Without these processing they are more potential riparian zones than riparian zones de facto. I think the Authors are perfectly aware of this, but to be coherent with the riparian zones definition and characteristics listed in the Introduction (p.4047) this should be somewhere specified in the text.

2) few methodological steps in the second part of Section 2.2 are not fully clear or do not allow reproducibility as they are too vague (e.g. we reclassified original geological classes into broader ones and then we assigned them a numerical value...). some information must be here added to allow full method reproducibility.

To conclude, I suggest the paper should be published in HESS, but with the minor revisions discussed.

### - Specific comments / Technical corrections

P. 4047 line 27: Avoid 'sharp', at the contrary environmental gradients in R.Z. are often gradual.

P. 4048 line 7: why 'external' disturbance regimes? They are not part of the river-riparian system? Clarify or eliminate.

line 14: 'In this regard..' etc. As it is written this is a too general statement and can be easily subject to criticisms. Be more precise, e.g.-just a suggestion- by saying that 40 m is an averaged minimum buffer necessary to maintain eight relevant riparian functions, as calculated considering a number of buffer distances from published studies (in Sutula et al 2006, etc ).

Line 29: I would avoid confusion using the expression biological 'community' (word which refers to a precise organization level in ecology) followed by a general term as

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'vegetation'. Use instead e.g. based on biota, or 'vegetation communities'.

P. 4049 Line 19. Sentence should be cut/rephrased to be clearly readable.

Page 4051 Line 9-11: use full names of plants (Genus, species) Line 15: correct wrong position of open parenthesis. Add dot at the end of the sentence Line 27-.. is this approximation proposed by Ilhardt et al (2000)? clarify.

P. 4052 Equation 1: can you provide a measure of accuracy or fit of the equation? As it is now we have no information on how good this fit is.

P. 4054 Line 1: Did you mean GIS techniques (tools) in general? As it is written now it looks as there is one fast technique, not cited. Correct accordingly.

Line 23: Specify that the cost layer requested to calculate the path distance was associated in your analysis to the slope; this is important because in other cases other variables can be used to represent cost layers.

P. 4055

Equation 2: Which is the meaning of '100' at the denominator?

P. 4058 Line 1: avoid 'easily'. Line 22: specify membership to what

#### FIGURES

Figure 1. Scale bar is missing. Increase the size of the zoomed part, which is now almost a black dot in the upper left image. Is it possible to use colors instead of b/w for rivers? It would increase notably river network visibility.

Figure 4. right image. Correct legend using T50EA and GSEA

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 4045, 2012.

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