

## ***Interactive comment on “Recent human impacts and change in dynamics and morphology of ephemeral rivers” by J. A. Ortega et al.***

### **Anonymous Referee #2**

Received and published: 29 June 2013

This is a useful study of the impacts of human development on two ephemeral streams in Spain. I believe this is an interesting case study, which documents many useful observations. However, there are a number of revisions that I believe are necessary before the paper is ready for final publication. A few general comments are provided immediately below, with line-specific suggestions following.

The paper has a considerable number of grammatical errors (only a few of which I have noted below), which made the paper very difficult to review. Also, in many places the language is vague and/or misleading. For example, in the second sentence of the abstract “Human pressure changes the fluvial environment and so enhances the effects of natural dynamics.” The authors should be more specific about which types of human pressures and which natural effects they refer to. Many human practices (engi-

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neered/structures placed in the channel, enhancement of riparian vegetation, water extraction, etc., etc.) actually dampen fluvial response. Second, the study has generated a considerable amount of quantitative information, but the text is largely qualitative and descriptive in nature. I would urge the authors to make better use of their quantitative predictions. Also, I believe the paper would benefit from a more rigorous description of the study catchments and compare/contrast of the two.

Line-specific comments:

918, Line 8: I’m unsure what the authors mean by ‘harmful’. Harmful to human infrastructure? Harmful to the stream ecosystem? Channel change itself may actually be beneficial for the ecosystem.

919, Line 3: There are words missing, grammatical errors in the following: “together with its sporadic character further difficult to obtain rainfall registers that helps understanding of the hydrodynamics of flash-floods.”

919, Line 6: The statement regarding anthropic impacts being greater in Mediterranean streams than anywhere else is difficult to support. In my opinion, it would be more helpful to concisely explain the anthropic impacts explicitly and leave it as ‘an environment that has been profoundly modified by human activities’.

920: Line 29: Insert ‘a’ before ‘name’.

921, Line 5: While this stream may or may not have had much human ‘affection’ until mid-20th century, I believe the word the authors meant to use was ‘influence’ or ‘impacts’ instead of ‘affection’.

921, Line 7: There are grammatical errors in: “that may originated hazards in a future flood.”

921, Line 7: “detritical” should be “detrital”

921, line 15: It would be helpful to provide more information on the climate and geo-

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morphology of the basin. For example, average channel gradient is not a particularly useful metric. I would suggest extracting longitudinal profiles and conducting a simple slope area analysis using the stream profiler available at geomorphools.org. Areas of threshold changes in slope are locations requiring further investigation. A rapid decrease in slope, for example, would promote deposition. I might also suggest the authors consider a rapid assessment technique such as the RiverStyles Framework developed by Gary Brierley and Kristie Fryirs. In addition, more information is needed regarding the climate. What types of rainfall events occur in this basin, convective, frontal, orographic?

921, Line 20: What is meant by “roughly defined”? In the next sentence, are the authors referring to additional morphometric aspects that suggest a predisposition to magnification of storm events (in which case they should discuss them explicitly) or are they referring to those discussed above (which don't seem terribly out of the ordinary).

922, Line 14: Erroneous space in “Azoh'Ás a”

922, Line 18: “bulted” should be “built”

923, Line 10: Explain the method used for grain size analysis. 924, Line 16: More information is needed on inputs/assumptions used in the HEC-RAS model. What type of friction coefficient was used and how was this number obtained/estimated? How was 7 cms determined to be the bankfull discharge? If the authors determined this as a particular return interval event (e.g., 1.5 year flood) please state that instead of ‘bankfull’, lest we continue to propagate the common misconception that the two are synonymous...which they of course, are not. If, on the other hand, the authors are referring to the actual bankfull event...the flow at which the water surface elevation is the same as the geomorphic/depositing bank, then the authors should explain how this measure was constrained.

924, Line 18: I do not understand what is meant by this first sentence. Please reword.

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925, Line 27: The air photo analyses are not mentioned in the methods. The orthorectification and georeferencing procedures should be explained as well as the digitization/mapping methods (e.g., how was the channel identified, etc.).

926, Line 10: There are many human impacts other than dams that can affect the flood regime. Climate change can also significantly change flood regime and flow duration. A basic hydrologic analysis of flow duration curves and flood frequency is needed to demonstrate whether or not flows have changed.

927, Line 15: How was the increase in bedload mapped/constrained? An increase in size/exposure of bars?

927, Line 22: Explain what is meant by ‘dehesa type’. This is not a common term.

928, Line 15: I also refer the authors to “Dean and Schmidt, 2010 The role of feedback mechanisms in historic channel changes of the lower Rio Grande in the Big Bend region. Geomorphology” for another important paper on channel-vegetation dynamics.

930, Line 5: “These” should be “this”. In next line, ‘are’ should be ‘is’.

930, Line 12: ‘Significative’ is not a word. Perhaps ‘significantly’ is the word the authors were searching for, but the sentence should be revised to make the point more clear.

931, Line 21: How was ‘anthroposized’ quantified?

932, Line 13: “modellized” (here and elsewhere) should be ‘modeled’

935, Line 2: The two previous sentences are summing up an important part of the paper. Be more specific to ensure readers have absorbed the key points from the many observations discussed in the previous few pages. For example, rather than saying ‘where the response is anomalous’...concisely state how it is anomalous.

935, Line 11: Hooke and Mant, 2000 is a fine citation, but certainly many more appropriate citations exist for this statement, not the least of which is Lane, 1953. Another critical citation would be Francis Henderson's Open Channel Flow, 1966.

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939, Line 20: The key points of the paper are summed up nicely in this last paragraph. The writing is very direct and clear. I would like to see more of this style used in other sections of the paper.

Figure 5: Possible to thicken the lines slightly or increase contrast between black lines and the background photo to allow the mapped features to be more easily studied? This figure is important and more could be done to allow the reader to connect the features discussed in the text with where they can be observed in the photos (perhaps using some unobtrusive labels?).

Figure 11: Font is too small in all of the legends. Perhaps use only one (larger font) legend for all three of the figures on the right and expand the size of the legends for all three figures on the left.

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