

## ***Interactive comment on “Soil erosion and sediment delivery in a mountain catchment under land use change: using point fallout $^{137}\text{Cs}$ for calibrating a spatially distributed numerical model” by L. C. Alatorre et al.***

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Received and published: 2 March 2012

*Reviewer: The manuscript represents a good contribution to the study of the role of land use change on sediment delivery using spatially distributed erosion models. It is well written and the methodological process is clearly explained. The results are discussed in an appropriate way. In summary, I believe that work can be published in HESS. However, the authors should consider the following suggestions and comments:*

1) *It would be appropriate to modify the title of the article. I think that the  $^{137}\text{Cs}$  is*

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the method to calibrate WATEM/SEDEM and not the object of the work. Therefore, a more accurate title might be: "Soil erosion and sediment delivery in a mountain catchment under scenarios of land use change using a spatially distributed numerical model".

Authors: We find this a useful suggestion, and have modified the title accordingly.

*R: 2) Page 11134, line 9. "Its study" ... Does this refer to the qualitative studies?*

A: It refers to the impact of land use change on soil erosion and sediment yield. We have rephrased the sentence to make it clearer.

*R: 3) Page 11139, line 12. Navas et al. (1995) are not included in the references.*

A: The correct reference is Navas et al. (2005). We have corrected it in the manuscript.

*R: 4) Page 11139, line 22. It is not necessary to add: "(left side)". R: 5) Page 11139, line 27. It is not necessary to add: "(right side)". It is confusing.*

A: We have avoided using 'right' and 'left side' in the revised manuscript.

*R: 6) Page 11141, line 4. Lana-Reanult et al. . . is Lana-Renault. R: 7) Page 11141, line 4. Lana Renault and Regués is Lana-Renault and Regués.*

A: We have corrected both references.

*R: 8) Page 11141, line 7 to 11. Reference to Figure 2 should be included in this paragraph.*

A: We have included a reference to Figure 2 in the same paragraph in the revised

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*R: 9) Page 11141, line 12. Although the number of  $^{137}\text{Cs}$  samples (19) may seem insufficient for the calibration, the data of seven years of sediment yield, recorded at the catchment outlet, help to strengthen the validity of the model results and the calibration of  $k_{\text{tc}}$  using  $^{137}\text{Cs}$ .*

A: Using an independent sample was important for validating the simulation. We have tried to stress that on the manuscript.

*R: 10) Page 11141. A table with the main characteristics of the instrumentation of Arnas catchment should be included in the manuscript.*

A: Since very detailed information about the instrumentation implemented in the catchment has been published elsewhere, we decided to refer the interested reader to the original paper by Lana-Renault and Regués (2009).

*R: 11) Page 11144, line 21. The number 925 is 926 according to table 4.*

A: True. We have corrected this value.

*R: 12) Page 11144. It would be useful to explain more clearly the paragraph 19 ... 22.*

A: We have tried to explain it better.

*R: 13) Page 11146, line 3. Fig. 7a is Fig. 8a. R: 14) Page 11146, line 12. Fig. 7a is Fig. 8a.*

A: We have corrected these references, which now refer to Figure 9 due to the addition of a new Figure 8 as requested by another reviewer.

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R: 15) Page 11150 1150 and subsequent. The references are not ordered by year of publication.

A: We have ordered the references.

R: 16) Page 11151. Box, J.R. . . . is not cited in the text. R: 17) Page 11151. Buurman. . . . are not cited in the text. R: 18) Page 11153. García-Ruiz, J.M., Arnáez, J.... are not cited in the text. R: 19) Page 11153. Lana-Renault, N., Regués. . . 2006 are not cited in the text. R: 20) Page 11154. Planchon . . . . are not cited in the text. R: 21) Page 11155. Seeger. . . . are not cited in the text. R: 22) Page 11156. Verstraeten. . . . 2001 are not cited in the text. R: 23) Page 11a56. Verstraeten. . . . 2008 are not cited in the text. R: 24) I think the number of references is too high and repetitive.

A: We are sorry for the inconsistencies in the references. We have removed all uncited references.

R: 25) Table 1. Replace “right side” by “northeast-facing slope (forest)” and “left side” by “southwest-facing slopes (shrub).

A: We have corrected this in the table.

R: 26) Table 2 is not cited in the text.

A: We have eliminated this table in the revised manuscript.

R: 27) Table 3. . . . Location of the  $^{137}\text{Cs}$  inventories is shown in Fig.1d

A: We have corrected this in the table title.

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