

Interactive comment on “The impact of road and railway embankments on runoff and soil erosion in eastern Spain” by P. Pereira et al.

P. Pereira et al.

paulo@mruni.eu

Received and published: 16 February 2016

This manuscript includes interesting information on runoff and erosion rates in road and railway embankments. These areas act as sources of sediment and water under high intensity precipitation. The results are expected, but they are useful for increasing the information available on the hydro-geomorphological effects of roads. The authors should be taken into account the following considerations:

Answer: Thank you very much for the time that you took to review the paper. Your comments were important to increase the quality of this work.

The objective of this study is to assess the impact of road and railway embankments as a source of sediment and water, and compare them to other land use (citrus plantations

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



and shrublands). However, this aspect is not reflected in the title of the article.

Answer: Thank you very much. We agree with you. We changed the title to “Road and railway impacts on runoff and soil erosion: A comparison to surrounding land uses.

”In the abstract, the authors indicate that erosion rates were 3 Mg ha⁻¹ y⁻¹ for road embankment and 1.5 Mg ha⁻¹ y⁻¹ for citrus plantations. This is a mistake, because the values of the simulation can not be expressed in years. As the authors show in Table 4 and in the text, the values should be specified in Mg ha⁻¹ h⁻¹.

Answer: We changed

In page 12950, lines 20-25, the authors say: “Land degradation (in Mediterranean landscape) is a consequence of forest fire, intense ploughing, use of herbicides, land abandonment, but also due to construction of road and railway infrastructures. . .” It would be interesting to add some quantitative data on the impact of roads and hillroads in the erosion of watersheds.

Answer: Thank you very much for your comment. To our knowledge, there are no works about the impact of road infrastructures at the watershed scale. The studies carried out were focused at plot scale. We recognized that studies at catchment scale should be carried out, but much more measurements will be needed to assess the impact at watershed scale.

It is necessary to provide more information on the study area. It would also be desirable to include more data of the simulator. It would be important to include photos of the simulator and plots.

Answer: We added a picture of the rainfall simulator used in this work

Simulation experiments were carried out with an intensity of 78 mm h⁻¹. Is it really possible to maintain a constant intensity of precipitation with a rainfall simulator? Does the rainfall intensity not change in 60 experiments?

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Answer: Yes the intensity is constant. The rainfall simulator was calibrated before the experiments.

It is necessary to include a section on erosion and sediment yield in the Discussion. On the other hand, it is not appropriate to insert a section (4.3) on connectivity since the experiments were performed on small plots. The information provided in this section and in section 4.4 (Implications for restoration) can be incorporated in the Conclusions Page 12963, line, 28. Error: 3 Mg ha⁻¹ h⁻¹ 8.

Answer: Thanks we changed.

References: Page 12950, line 24. In text, Tarolli et al., 2014; in References, Tarolli et al., 2015. Answer: Corrected Check it. Page 12951, line 8. In text, Cerdà, 2005; in References, Cerdà and Doerr, 2005. Check it. Answer: We corrected it. Is Cerdà 2007 Page 12952, line 20. In text, Cerdà (1998). Is it “a” or “b”? Answer: We corrected it. Is Cerdà 1998a Page 12953, line 13. Cerdà (2015) is not include in References. Answer: We corrected is Cerdà et al. (2015) Page 12954, line 5. Cerdà, 1998. Is it “a” or “b”? Answer: We deleted this part. We followed the suggestion of the first reviewer. Page 12963, line 19. Humphreys, 1982, is not included in References. Answer: We deleted this part. We followed the suggestion of the first reviewer. Page 12963, line 20. Coa et al, 2013, are not included in References. Answer: We deleted this part. We followed the suggestion of the first reviewer. Page 12963, line 20. Blong and Arnáez et al., 2004 is a wrong reference. Check it Answer: We deleted this part. We followed the suggestion of the first reviewer. Page 12967, line 24. Cerdà and Doerr, 2005, are not included in the text. Answer: We deleted this citation Page 12970, line 30. Keesstra, et al., 2009a, are not included in the text Answer: We deleted this citation Page 12972, line 7. Megahan et al., 2001, are not included in the text Answer: We deleted this citation Page 12973, line 25, Sajjan et al., 2013 are not included in the text Answer: We deleted this citation Page 12974, line 22, Yuan et al., 2015 are not included in the text. Answer: We deleted this citation Page 12974, line 27, Zhao et al., 1997 are not included in the text Answer: We deleted this citation Page 12974, line 29. Ziegler and

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Giambelluca, 1997 is not included in the text. Answer: We deleted this citation We thank you very much for the time that you took to review our paper the paper, The authors

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 12947, 2015.

HESD

12, C6780–C6783, 2016

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

C6783

