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Solid Earth Discussions

Interactive comment on "Spatial and temporal evaluation of erosion with RUSLE: a case study in an olive orchard microcatchment in Spain" *by* E. V. Taguas et al.

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Dear Reviewer, Thank you for the time you devoted to reading this manuscript and the valuable comments. We took all your remarks and suggestions into account to improve our manuscript.

Specific Comments: Paragraph 2.2.2 line 25: "When the water level rises to a determined level, the automatic sampler (ISCO 3700C) turns on and fills a bottle at 10 min intervals." Which is the level? How long is the sampled time?

The standard level to take suspended sediment is equal to 4.5 cm and the time sampled 10 minutes but we adjust the sampling program according to the soil mositure and the

storms. Due to the flow is ephemeral, the standard program included in the data logger allows to record the flow data for an interval of 30 s and larger level than 2.5 cm (0.5 l/s) while the samples water-sediment are taken when flow is larger than 2.9 l/s for an interval of 10 minutes (level = 4.5 cm). In addition, currently we can control the program though GSM system; so we modified the sampling conditions in order to optimize the use of the sampling bottles under very humid periods (for example, during December 2009). Therefore, flows of 18.7 l/s (10 cm) have to be exceeded for a period of 30 minutes to set on the sampling under very humid periods.

We have added the following comment for clarifying this subject: "The standard program included in the data logger is conceived to take the samples of suspended sediment when flow is larger than 2.9 l/s for an interval of 10 minutes (level = 4.5 cm). However, the programme though GSM system was modified in order to optimize the use of the sampling bottles; so under very humid periods, flows of 18.7 l/s (10 cm) have to be exceeded for a period of 30 minutes to set on the sampling."

Moreover, did you use the sediment concentration data to evaluate the RUSLE estimates at least for the period April 2005 – April 2007?

Yes, in spite of the accumulated values of sediment loads are not complete for the period April 2005-April 2007 due to the interruptions of data recording for 83 days, we have calculated a sediment load equal to 1.1 Mg.ha-1 (Taguas et al., 2009) for the period September 2005- September 2006 which means an annual sediment delivery ratio for the whole catchment of 47.2 % (the rate of erosion calculated was about double accumulated sediment load).

"The sediment load calculated in the catchment for the period September 2005-September 2006 was 1.1 Mg.ha-1 (Taguas et al., 2009), which means an annual sediment delivery ratio for the whole catchment of 47.2 %".

Paragraph 2.4 line 4: "(EI =a.Pb where EI is the daily erosivity (MJ.mm.ha-1 h-1)" this type of equation was already introduced in the paragraph 2.3.2 line 15; I think it should

be explained here. Our apologies, we have defined the terms of the Eq. 4 in the chapter 2.3.2.

Technical corrections: Paragraph 2.3 line 13: a space between “A” and “is” is missing. Our apologies: this has been corrected.

Paragraph 2.3.1 line 19: It should be 3 instead of 2 and 4 instead of 3. Our apologies: this has been corrected.

Caption of table 2: I would write “(period 2004-2005)” just one time. This has been corrected.

REFERENCES:

Taguas, E.V., Ayuso, J.L, Peña, A., Yuan, Y., Pérez, R., 2009. Evaluating and modelling the hydrological and erosive behaviour of an olive orchard microcatchment under non tillage with bare soil in Spain. Earth Surf. Proc. Land., 34(5): 738-751.

Interactive comment on Solid Earth Discuss., 2, 275, 2010.