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Interactive comment on "Sediment loss and its causes in Puerto Rico watersheds" *by* Y. Yuan et al.

Anonymous Referee #2

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This paper aims to identify the mayor factors that influence the sediment yield and sediment concentrations in several watersheds of Puerto Rico. The paper itself not introduces relevant aspects in terms of a new method/approach; but gives a potential analysis for better land use planning. Overall, this paper is of a great interest for the scientific community, technicians and managers and falls within the scope of the journal. There are however, some issues that need to be addressed before its publication. In general terms, the manuscript requires some rework. In some cases, information has to be eliminated and, in contrast, additional information has to be introduced. Explanations of data analysis and methods have to be largely improved. In addition, authors

could consider group Sections 2.1.1, 2.1.2 and 2.1.3 in a single section (called, for instance, Study area). Figure 2 and 3 should be improved. The information shown in these figures is extremely difficult to visually interpret. The information gave in the Study area 2.1.1. section is not relevant for the paper; despite is highly interesting!!!. Please consider to eliminate. In contrast, a better general picture of the island (distribution of the precipitation, main geographic features of the island: localization of the mountain region; land uses distribution, soil types, etc...) could be given. To better understand the obtained results, authors should give this general information to the lector (not everybody is familiarized with PR). In section 2.2. authors start indicating that 20 independent watersheds are analysed but at the end, only 11 stations are used for the PLS analysis. This is confusing me. Please, clarify what stations were used and how these were selected?. Overall, check the writing of the paper (there is some redundant information).

In the following paragraphs I give some other suggestions.

Introduction. Mostly OK. Some minor ticks: 1) Better is change "sediment and nutrient runoff" by "sediment and nutrient load". Line 25 and 26 consider change by "PREVIOUS studies in PR have SHOWED that sediment contaminants have increased 5- to 10-fold since pre-colonial levels, with a (eliminate "a") 2- to 3-fold increase in the last 40–50 years (Sturm et al., 2012)". 2) There is an excess of references such as, for instance, in page 479 line 16 to 18. Please, give no more than 2 or 3 references per topic. 3) Consider move line 25 (page 479) to line 2 (page 480) to line 19 (page 479); the final text could be: "Watershed-scale studies regarding the potential effect of land use changes on water quality are essential to minimize water pollution. Various studies have linked stream pollutants to landscape variables using process-based hydrological models (Jha et al., 2010; Kirsch et al., 2002; Ullrich and Volk, 2009; Hu et al., 2014) and/or statistical methods (Lenat and Crawford, 1994; Liu et al., 2009; Lopez et al., 2008; Meha_ey et al., 2005; Nash et al., 2009; Nie et al., 2011; Mbonimpa et al., 2014). For example, Lenat and Crawford (1994), (using statistical models; eliminate),

found that urban land use is the highest contributor to sediment loss when they analyzed water samples from three watersheds each having a different dominant land use (forest, urban, agricultural) in the Piedmont ecoregion of North Carolina. Mbonimpa et al. (2014), using partial least squares (PLS) regression analysis, identified urban land use and agricultural land growing corn as main factors that produce an? (were associated, eliminate with) increases in total suspended sediment and total phosphorous in streams. However, these models require detailed input data, which often are not available for all areas of interest".

Methods. Study area 2.1.1. 1) Please, consider eliminate from line 6 to 9 (page 482) or move to introduction. Data acquisition. 1) In section 2.3 authors mix methods and results. For instance: from line 13 to line 15 (page 483). Idem from line 18 to 20 or line 24 and 25. 2) Line 18: "Soils in the studied watersheds varied, but with the majority of the soils in the study watersheds...". Rewrite. 3) What means "developed" ("...other land uses include developed..")? 4) Better if change the order of the table 2 and 3. In the present format, in table 3 are described the soil types (code, name, etc.) but not in table 2. Then, changing the order of tables, lectors could know the soil name and the SSURGO Code and understand the nomenclature of table 2. 5) In page 484: consider eliminate the land use categories (these are indicated in table 2). Idem for slope (categories described in table 6). At that point, what means slope = 0.0 (not slope or for instance <0.001)? 7) In page 484, authors explain that: "Although the USGS stations do not have measured data in exactly the same time periods, they do overlap in their monitoring periods as shown in Figs. 2 and 3." This is accomplished for some stations but not always (in some cases the data set of the stations is only composed by 2 to 4 years data....). 8) Eliminate paragraph from line 15 to 20 (page 484). Is repeated!!!

Results. 1) The variable "water" is not representative (only 1 station has "water") and this should be eliminated from all the analysis carried out. 2) In the ANOVA test there is a large difference between the number of years recorded in stations 5, 10, 12 and

19 versus 18... Results should be carefully read. 3) Could be interesting summarize the results in one table indicating the basin features and the main factor/s that produce an increase of the sediment load. In contrast, table 5 is not necessary.

Interactive comment on SOIL Discuss., 2, 477, 2015.