

Interactive comment on “Estimating soil erosion risk and evaluating erosion control measures for soil conservation planning at Koga Watershed, Ethiopian Highlands” by Tegegne Molla and Biniam Sisheber

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Authors' Response to the Referee #2 Comments Title of Paper: Estimating soil erosion risk and evaluating erosion control measures for soil conservation planning at Koga Watershed, Ethiopian Highlands Authors: Tegegne Molla and Biniam Sisheber We greatly appreciate the time and efforts by Pacheco in reviewing this manuscript and the constructive comments offered. We have included the concepts as suggested.

Comment 1: OUTLINE AND GENERAL APPRECIATION: This is a conventional study on soil erosion rates estimated by the RUSLE equation, with indication of conservation

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measures for soil loss attenuation. It brings nothing conceptually new but it provides insights on soil erosion of a specific region of Ethiopia (the Koga watershed). The study is well written and documented and merits publication in *Solid Earth*, with a minor revision. Response: Thanks for the appreciation and we fully agree with your idea. As you mentioned our purpose is to illustrate scientifically the rate and risk of soil loss by adopting RUSLE to the local context. In this study, we assume that environmental planners can get information about the magnitude of soil erosion and status of SWC structures in the Koga watershed which is the source Blue Nile River and Koga Irrigation Dam.

Comment 2: MINOR COMMENT 1) In lines 15-16 of page 1, the authors should include the environmental land use conflicts (ELUC) as another major cause of soil loss amplification, as recently recognized by Pacheco et al. (2014) and Valle Junior et al. (2014). The ELUC are related to land uses not conforming to soil's capability, meaning that are uses which deviate from the soil's natural use (e.g. practice of agriculture in soils solely capable of being used for forestry). Apart from the amplification of soil erosion, the ELUC have been demonstrated to provoke a decline in soil fertility (Valera et al., 2016). Somehow, these aspects of soil erosion / decline of soil fertility should be referred to in the revised manuscript. Response: Based on the suggestion, we have included the ELUC as major cause of soil loss. The Authors' also added the land use conflict of Koga watershed under the Result and Discussion section. The referred documents are put in the revised manuscript on page 1 as follows: "Soil erosion is further aggravated by environmental land use conflicts (ELUC), as recently recognized by Pacheco et al. (2014) and Valle Junior et al. (2014). The ELUC are uses of the land that ignore soil capability to use and treat according to the soil's natural use. Aggravation of the land use conflicts have been investigated in developing countries which provoke a decline in soil fertility (Valera et al., 2016)."

The citations referred above are written under the reference section as follows: Pacheco, F.A.L., Varandas, S.G.P., Sanches Fernandes, L.F., and Valle Junior, R.F.:

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Soil losses in rural watersheds with environmental land use conflicts. *Science of the Total Environment*, v. 485–486C, p. 110–120, 2014. Valera, C.A., Valle Junior, R.F., Varandas, S.G.P., Sanches Fernandes, L.F., Pacheco, F.A.L. The role of environmental land use conflicts in soil fertility: A study on the Uberaba River basin, Brazil. *Science of the Total Environment*, v. 562, p. 463–473, 2016. Valle Junior, R.F., Varandas, S.G.P., Sanches Fernandes, L.F., & Pacheco, F.A.L.: Environmental land use conflicts: A threat to soil conservation. *Land Use Policy*, v. 41, p. 172–185, 2014.

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