

## ***Interactive comment on “Soil erosion and organic carbon export by wet snow avalanches” by O. Korup and C. Rixen***

**Anonymous Referee #1**

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The paper is well written and represents a further step in the study of the effects of wet snow avalanches on soils. One of the intrinsic limits of the work, recognized by the authors, is the risk of under or overestimations due to statistical modeling. Other limits might be the limited time series and the choice of a unique value for bulk density of sediment. However, the paper contains a wide dataset that can be a good basis for further studies. I just have some questions: 1) The authors found a sediment release by avalanche that, converted into t/ha y ranged from close to 0 to around 8. Such values, and also the average values presented in the results section, are in line with several literature examples in the text. Other recent advances on winter erosion and avalanche effects are provided by Stanchi, S., Freppaz, M., Ceaglio, E., Maggioni, M., Meusburger, K., Alewell, C., and Zanini, E.: Soil erosion in an avalanche release site (Valle d’Aosta: Italy): towards a winter factor for RUSLE in the Alps, *Nat. Hazards Earth*

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*Syst. Sci. Discuss.*, 2, 1405-1431, doi:10.5194/nhessd-2-1405-2014, 2014. This study (discussion paper on NHESS) which discussed the effects of winter erosion related with avalanches and snow gliding, and also by Confortola, G., Maggioni, M., Freppaz, M., and Bocchiola, D.: Modelling soil removal from snow avalanches: a case study in the Italian Alps, *Cold Reg. Sci. Technol.*, 70, 43–52, 2012, which pointed out the relevance of avalanche erosion, underlining the importance of avalanche on soil removal. However for the Carbon yield, the results are very far from literature data. Do the authors have any explanation or hypothesis for this? Did the authors observe any patterns of sediment and POC yield depending on topographic variables (length of runout area, slope, aspect...?)

Technical corrections: page 5 line 16 change fine soil into fine earth

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Interactive comment on The Cryosphere Discuss., 8, 1, 2014.