

Interactive comment on “Negative trade-off between changes in vegetation water use and infiltration recovery after reforesting degraded pasture land in the Nepalese Lesser Himalaya” by C. P. Ghimire et al.

D. Tongway (Referee)

dtongway@iinet.net.au

Received and published: 2 April 2014

HESS Review 010414 David Tongway CSIRO Ecosystem Sciences, Canberra ACT
This is a very impressive manuscript, with many very nice measurements and a very useful output summary. I am an applied ecologist interested in taking the findings of papers like this one and developing monitoring systems that local land managers can use to improve landscape functioning by modifying their behaviour. With colleagues in CSIRO, I have developed a monitoring procedure that might be put to use in the

C758

lands described in the Ms. This procedure is described in “Restoring Disturbed Landscapes: Putting Principles into Practice” by David J Tongway and John A Ludwig, Island Press, 2011. This book will direct people interested in implementing this landscape function procedure to a website where data sheets and spreadsheets can facilitate self-improvement in management. This procedure in no way calls into question the results of this Ms: rather the Ms underlines the usefulness of the monitoring for people who cannot do the experiments themselves. The functional differences between sites where local people harvest tree litter to the detriment of hillslope functioning might be modified by adopting leaving proportions of the hillslope litter intact. I have appended a few questions which, if attended to might make the Ms a bit more useful to a wide range of readers

1. When was the pasture created and what has been its grazing use? 2. Temperature → evaporation differences? 3. Any recognition of differences in soil macro-faunal activities? 4. Need to acknowledge differences in precipitation (amount and rate, esp storms) and temperature between different sites. Maybe a table would assist here. The text is “too global” and doesn’t distinguish between sites with very different rainfall/evaporation/cultural/slope backgrounds. 5. Yes, rainfall amounts, relative to soil infiltration capacity need to be more prominent in the text. P 3442, line 10 6. The objective in p3443, lines 5-8 needs to be related to a time period, as forest maturation takes some time to develop and equilibrate. 7. P3443, last lines: need to say what vegetation type has replaced the forest and what soil disturbance has occurred. 8. P3444, line 16: delivered to what exactly – a gauged stream perhaps? 9. Can differences in clay and sand content be attributed to differential erosion or just to innate differences? 10. I would be interested to know to what extent litter harvesting etc gives rise to hard-setting or physically crusted soils, compared to soils where litter is retained and allowed to be decomposed by fungi and soil fauna. 11. Is pattern of runoff examined outside the plot outflow context? Is runoff all inter-rill or are there rills and gullies involved?