Biogeosciences Discuss., 11, C3325–C3326, 2014
www.biogeosciences-discuss.net/11/C3325/2014/

Biogeosciences Discussions
Open Access

Interactive comment on "Aggregates reduce transport distance of soil organic carbon: are our balances correct?" *by* Y. Hu and N. J. Kuhn

Anonymous Referee #5

Received and published: 7 July 2014

In general the manuscript addresses an interesting topic well suited for BG. The dependency between soil aggregate stability, erosion potential and soil translocation was on the one hand observed in many erosion studies but on the other hand could not be generalised and adequately integrated into erosion models jet. Focusing on soil organic carbon redistribution via water erosion faces the same dilemma but is even more challenging as SOC is associated with different aggregate size classes. The manuscript of Hu and Kuhn is one of the first explicitly focusing on the combined effect of aggregate stability, transport, aggregate specific SOC contents and aggregate specific C mineralisation. Therefore, the presented data are worth publishing. However, their attempt to transfer the results from a small plot experiment to a lager (even global) scale seemed to be very speculative due to the following reasons: (i) the soil preparation in the flume may represent in a best case one field situation, while many others can be expected

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

in the field (depending e.g. on soil moisture, tillage operations, temp., earth worm activity ...). Hence, a transfer of results to similar soil seemed to be impossible. (ii) The transport mechanisms in the flume only partly address all processes involved when transporting soil from erosional sites into water bodies (e.g. aggregate breakdown during prolonged transport with water). (iii) The conceptual model of Starr et al. 2000 is OK for a general estimate of transport mechanisms but using this general conceptual approach to extrapolate the results from a small flume to the global scale seemed to be pure speculation. Hence, I suggest major revisions of the paper. Therefore, the somewhat speculative global estimates should be omitted and the paper should focus upon the interesting experimental work which should be set into the context of other results dealing with soil aggregates, carbon contents in different aggregate classes and aggregate stability during erosion, transport and deposition.

Interactive comment on Biogeosciences Discuss., 11, 8829, 2014.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper