

Interactive
Comment

Interactive comment on “Topography-based flow-directional roughness: potential and challenges” by S. Trevisani and M. Cavalli

L. Marchi

lorenzo.marchi@irpi.cnr.it

Received and published: 30 December 2015

As a colleague of the authors involved in previous papers on similar topics, I would like to propose a short comment on the terminology of connectivity indices.

The paper introduces some changes in the computation of a topography-based index of sediment connectivity (IC); the revised index is named “degree of connectivity” (DC). Actually the degree of linkage between the components of a system is intrinsic in the term connectivity, so that “degree of connectivity” sounds somewhat redundant. It is possible to recall one of the definitions of connectivity reported by Heckmann (2015): “Connectivity is the degree to which a system facilitates the movement of matter and energy through itself. It is an emergent property of the system state. Structural con-

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



nectivity derives from the system's anatomy. Functional connectivity is inferred from the system's process dynamics".

Moreover, the two changes proposed, i.e., the computation of the connectivity index by means of eq. 3 and assessment of the impedance factor using eq. 5 can be implemented separately, so that a total of three variants to the IC index proposed by Cavalli et al. (2013) based on a previous work by Borselli et al. (2008) can be recognized.

To avoid spreading a plethora of names for similar indices of sediment connectivity (Gay et al., 2015 have proposed a variant of IC for low-slope areas), the original acronym IC could be maintained, and the variant implemented could be indicated when presenting applications.

References

Borselli, L., Cassi, P. and Torri, D.: Prolegomena to sediment and flow connectivity in the landscape: a GIS and field numerical assessment. *Catena*, 75, 268-277, 2008.

Cavalli, M., Trevisani, S., Comiti, F. and Marchi, L.: Geomorphometric assessment of spatial sediment connectivity in small Alpine catchments. *Geomorphology*, 188, 31-41, 2013.

Gay, A., Cerdan, O., Mardhel, V. and Desmet, M.: Application of an index of sediment connectivity in a lowland area. *Journal of Soils and Sediments*, in press, doi:10.1007/s11368-015-1235-y, 2015.

Heckmann, T.: Report – Working Group 4: Usable indices of connectivity. Connecteur Conference, Durham 2015, COST Action ES 1306, 2015, http://connecteur.info/wp-content/uploads/2015/10/COST_Durham_ReportWG4.pdf, accessed on 23 December 2015.

Interactive comment on *Earth Surf. Dynam. Discuss.*, 3, 1399, 2015.