

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

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We are grateful to our colleague Dr. Lorenzo Marchi for his comment related to the terminology used in our paper. His comment gives us the opportunity to highlight some aspects of the modified representation of the connectivity index that were not possible to outline in the paper, being this not the central part of the work since the paper is more focused on roughness than on connectivity index. In general, we agree with Dr. Marchi on the necessity to “avoid spreading of a plethora of names” related to the index of connectivity (IC); accordingly, we differentiated the degree of connectivity derived with isotropic roughness from the one derived with flow-directional roughness using the subscripts (“iso” and “flow”); this is a quite good solution considering the fact that the formulation of the isotropic and flow-directional indices is the same, with the unique

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difference in the choice of the impedance factor related to roughness. However, in relation to the terminology “Degree of connectivity” versus “IC” the perspective is slightly different. As authors we discussed a bit about the convenience about the two possibilities; the choice to use the new term “Degree of connectivity” was mainly due to the fact that, unlike IC, the new representation of the index of connectivity permits to express connectivity in terms of probability and thus expresses a potential degree of connectivity. We have chosen to name the modified version of IC “degree of connectivity” to highlight its probabilistic meaning and, consequently, its more intuitive significance. At the end, even if this is not central to the paper, the choice to use the new term was related to the will to emphasize the shift in perspective of the new version of the index. However, we will wait also the response of the reviewers to eventually decide the renaming of the reviewed index (e.g., just with a subscript, ICProb).

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