

WORKING GROUP 4 – USEABLE INDICES OF CONNECTIVITY

Think Tank Meeting, March 9<sup>th</sup>-10<sup>th</sup>, 2016

University of Tallinn, Estonia

## REPORT

From March 9<sup>th</sup>-10<sup>th</sup>, WG4 conducted a “think tank meeting” hosted by the University of Tallinn, Estonia. The workshop started with a short talk introducing connectivity and CONNECTEUR to colleagues from the hosting institution, and with a wrap-up of the progress made during and after the 2015 CONNECTEUR meeting at Durham.

The second meeting of this group of 9 participants from 5 countries (Estonia, France, Germany, Italy and Spain) had three main items on the agenda:

The first was to continue working on the manuscript on indices of sediment connectivity. Most importantly, we considerably broadened and deepened the sections dealing with:

- (i) the factors, drivers and spatiotemporal scales of sediment connectivity
- (ii) the questions related to the potential application of indices and stakeholder needs. Here, we collated different perspectives from the personal experience of workshop participants and from preliminary results of the stakeholder questionnaire survey that WG5 conducted in 2015. On the one hand, some stakeholders may indeed be interested in using index maps (e.g. for the prioritization of ‘connectivity hotspots’ for sediment management purposes), but on the other, many land managers would prefer to receive results (e.g. on sediment yield) without referring to methodological details involved with the calculations of indices.
- (iii) the relationship between indices and models. Starting from WG3 results communicated at the Durham meeting, we discussed our perspective on that relationship and visualized it in a new diagram. In this diagram, domains of models and indices are delineated in a continuum between coarse and fine spatial resolution (similarly, lumped vs. spatially distributed computation), and between empirical relationships and process representation.
- (iv) The definition of the case studies to be included in the manuscript dealing with indices of sediment connectivity at the plot, at the channel reach, and at the catchment scales.

Both plenary and break-out discussions were very fruitful, we were able to resolve a number of questions, and we arranged assignments for team members. Case studies will illustrate the benefits and shortcomings of available indices. We hope to maintain the momentum in the coming weeks and aim at submitting the manuscript in early summer.

Second, we finalized plans for the CONNECTEUR Training School jointly organized by WG2 and WG4.

Third, perspectives for future collaboration in WG4 and beyond were discussed. We see two main avenues: Case studies using different indices, in different environments, and in comparison with field measurements (WG2↔WG4), and investigations of models and indices (WG3↔WG4). For the latter, there are several interesting approaches, for example:

- (i) Compare results of spatially distributed models (surface runoff, sediment transport) and indices to assess the ability of indices to represent processes related to connectivity
- (ii) Use spatially distributed models of surface runoff/sediment transport in reaction to forcing / triggering events of different magnitude (scenarios) for the computation of indices
- (iii) Use indices, either aggregated or computed for larger spatial units, to transfer sub-scale information to (spatially lumped) models

Collaboration between WGs will be sought by STSMs, sending representatives to the respective other WG meetings, discussions during larger meetings, and the proposal of jointly organized think tank meetings in the remaining two years of CONNECTEUR.

Big thanks go to Elve Lode and Marko Vainu, the local organisers, for a perfectly organized meeting !

On behalf of WG4

Tobias Heckmann & Francesco Brardinoni

