Geophysical Research Abstracts
Vol. 19, EGU2017-14947, 2017
EGU General Assembly 2017

Metrics for Geomorphological Landscape Evolution Modelling

Marco Van De Wiel (1) and Tom Coulthard (2)

(1) Coventry University, Centre for Agroecology, Water and Resilience, Coventry, United Kingdom (marco.vandewiel@coventry.ac.uk), (2) School of Environmental Sciences, University of Hull, UK

The simulated outputs of landscape evolution models (LEMs) can be compared and contrasted to observed topographies, to simulated outputs of other LEMs, and to simulated outputs from other scenarios using the same LEM. This, however, requires a suitable set of metrics to do perform these comparisons. Currently, no agreed set of such metrics exists, resulting in a wide range of different types of LEM comparisons reported in the literature, which themselves may not be comparable.

A comparison LEM simulation outputs essentially consists of three choices: 1) a choice of what exactly is to measured (e.g. erosion volumes, sediment yield, erosion rate, hypsometry, sediment grain sizes, . . .); 2) a choice of how to measure this (e.g. total value, time-averaged value, distribution of values, magnitude-frequency relation, . . .); and 3) a choice of comparison metric to compare the two datasets (e.g. Pearson correlation, Nash-Sutcliffe efficiency, root-mean-square differences,. . .).

Here we compare simulations from three LEMs (CAESAR, LAPSUS and SIBERIA) applied to two very different catchments. We use a range of measures and metrics to compare the simulation outputs, and evaluate which of these most effectively capture the differences and similarities between model outputs.