



Origin of river sediment exports: Taking into account hillslopes characteristics and spatial variability

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Sediment fluxes within continental areas play a major role in the global biogeochemical cycles and are often at the source of soil surface degradation as well as water and ecosystems pollution. In a context where a high proportion of the land surface is experiencing significant land use and climate change, it appears important to be able to carry out local and regional distributed sediment (and associated particles) budgets to assess potential future impacts induced by such changes. Several research efforts have already investigated either global budgets at the river basin or continental scale or local detailed budget at the plot to the field scale. However, very few studies have tried to analyse the connectivity between fluxes and storages and to draw the links between the different scales. In this broad context, the objectives of this study are to investigate what is the fraction of hillslope production which reaches the oceans (is SDR a relevant concept or do we need to identify dominant processes at each different scale?). These investigations will be based on French river basins for which mean annual sediment loads are estimated from measurements at their outlet. The characterisation of the basin properties through spatialised approach should be developed to describe the sediment redistribution processes over the drained areas. Based on sediment budget, the source-to-sink dynamic of the sediment cycle can be examined by considering the redistribution processes within the landscape and the rivers networks.

Our method is based on the use of indicators to describe hillslope processes, potential downstream retention, attempting to link river basin characteristics to a prediction of sediment exports in rivers. It provides insight in the identification of the most influent sediment redistribution processes on the total sediment fluxes, and the difference between various basin typologies.