



Moving our understanding of the role of soil erosion in the global C cycle forward (junior presentation)

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In the context of a global change and raising atmospheric carbon dioxide concentrations, the potential role that soil erosion processes may be playing in the biogeochemical cycling of carbon (C) in terrestrial ecosystems has raised large interest among the scientific community. The effects that accelerated erosion could have on the fate of the detached soil C were brought to light by field studies experimenting with factors involved in short-term processes, often in sediment transport-limited conditions (i.e. plots or short slopes). Gradually, studies conducted in laboratories or small plots gave way to landscape approaches (i.e. large slopes, catchments) integrating various geomorphic positions and diverse erosion processes. However, as the spatial scale of observation broadens, studies become challenged by the complex effect of erosion-induced lateral C fluxes on soil C dynamics at different landform positions and temporal horizons.

Recent publications indicate that currently ongoing research is aiming at improving regional and global-scale estimates of erosion-induced C fluxes, while, at the same time, it pursues detailed knowledge on C stabilization mechanisms in depositional settings. As in many other disciplines, we observe that dealing with uncertainties on specific mechanisms and processes does not impede the quantification and evaluation of the influence of soil erosion processes on C fluxes at various spatial scales. Thus, how much uncertainty can be dealt with to reach reliable local and global estimates that contribute to the evaluation of the role of soil erosion in the C cycle? An integration of results obtained at different spatial scales of study will be presented to raise a discussion on priority areas of research.