



How tectonic inputs are ignored by the drainage basin

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Climate and tectonics are two of the main drivers for changes in sediment delivery from drainage basins and it is widely accepted that episodes of tectonic uplift as well as wetter climates may lead to elevated volumes of sediment output. However, the relationship between volumes of sediment generated in relation to the magnitude of either forcing is uncertain and this is further complicated by the action of autogenic processes.

In this presentation we use a numerical landscape evolution model (CAESAR) to establish the relative importance of climate, tectonic and autogenic forcings on sediment yields from a range of drainage basins. The results are startling, indicating that under certain transport limited conditions the impact of large tectonic uplift events on basin sediment output is negligible. Whereas the impact of climate changes are readily apparent. These results may have very important implications for our understanding of how drainage basins process environmental signals, and what sedimentary archives may actually represent.