



Does the sedimentary archive mean anything?

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A common aim of many stratigraphic analyses (over a wide range of temporal scales) is to use the depositional record to back calculate past drivers –whether they be climate, tectonics or anthropogenic. This interpretation is hampered by the plurality of the record – that is these drivers are often all operating at the same time, making it hard to determine what the control is. A further complication is introduced by autogenic processes whereby the internal basin processing of external signals can lead to their eradication of “shredding” or lead to false positives. This study uses a numerical landscape evolution model (CAESAR) to explore what the relative role of climate, tectonics and internal autogenics are in shaping sediment output from river basins. This allows us to begin to constrain what we may expect to see reflected in a sediment based record – and what we have little hope of determining from it. Encouragingly, whilst the influence of climate and tectonic drivers can often be hidden - some parts of the signal remain and indicators in bulk sediment tend to reflect climate signals and those in grainsize tectonic changes.