



Landscape evolution of south-central England: evidence from geomorphological features.

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River incision is used as evidence that, despite being located in a plate interior far from plate boundaries, south-central England has been influenced by Quaternary uplift. The landscape has several proud escarpments running across it that are separated by low-lying clay vales. Volumes of offshore Quaternary deposits are similar in magnitude to those calculated to have been eroded and removed from the topographic depressions onshore. A proposed mechanism for the production of the regional relief (both the flanking highs and clay vale depressions) is flexural uplift in response to river valley excavation. A linear relationship between material removed and local scarp height is observed from the landscape and can be similarly seen in unloading models. The scale of the response is dependent upon the rheology of the lithosphere and shape fitting of the model to the escarpment edge generates a value for the effective elastic thickness (T_e). Further evidence for regional uplift comes from the flanking region, primarily the heavily incised plateau surface of the Cotswold Hills. Flights of fluvial terraces in the Severn and Thames valleys support this model, with dating of the deposits constraining the timing of initiation and rate of uplift. River profile analysis is undertaken to evaluate stream power law parameters. Variations in the values across a region can represent differential uplift patterns, while channel form provides information about the degree of stability and equilibrium in the system. The degree of incision is similarly dependent upon the local uplift. This paper examines a) the evidence from longitudinal river profiles (and their valley incision) for local uplift, b) the use of stream power law parameters as evidence for spatially varying uplift, and c) the use of landscape evolution models in demonstrating the pinning of a drainage divide to a scarp edge when there is a flexural response to fluvial erosion.