



How well do we understand the role of ancient sutures in landscape development? An example from Thailand.

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The largest tectonic features that may influence regional landscape geomorphology are ancient plate boundaries. Although ancient suture zones are recognised as an important factor in long-term landscape development understanding of the mechanisms that controls their reactivation is generally poor. For example Asia comprises a number of continental slithers that rifted from Gondwana in the early Mesozoic, drifted north and rejoined in the Mesozoic. In eastern Myanmar and western Thailand a network of strike-slip faults reflect these ancient sutures and these reactivated in the Cenozoic in response to escape tectonics linked to the Himalayan orogeny. Western Thailand belongs to the Sibumasu terrane and is an area of significant topographic relief. It is clear the strike-slip faults have had a major control on Cenozoic denudation and topographic development reflected by high rates of rock uplift and erosion. In marked contrast low relief eastern Thailand belongs to the Indochina block and has seen relatively little Cenozoic deformation and erosion. The strong polarity in landscape geomorphology between eastern and western Thailand must relate to the physical properties of these two blocks. One possibility for strain localisation is that as a former active margin western Thailand is dominated by Triassic and Cretaceous granites that collectively would have reduced the rheology of the upper crust through increased geothermal gradients. In this scenario there is a strong positive feedback between erosion and rheology through progressive exhumation of the heat producing granitic rocks. Whether this model is applicable at a regional scale is debateable but as an example it serves to highlight a major gap in research linking landscape development to structural inheritance.