

## **CONSTRAINING UPLAND ERODIBILITY IN CATCHMENTS DELIVERING SEDIMENT TO THE GULF OF PAPUA**

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The landscape of Papua New Guinea is very young, shaped by Plio-Quaternary tectonic events. Tectonic uplift rates exceed 400 m/Myr and rainfall exceeds 10 m/yr. Uplift and rainfall combine to generate very high erosion rates. The Gulf of Papua is the ultimate sink for a very large terrigenous flux of  $\sim 365 \cdot 10^6$  t/yr stemming from the southern New Guinean mainland and from the Papuan Peninsula. Sediment cores indicate sediment accumulation rates of 0.12-0.8 mm/yr in the deep-sea basin since the Late Pleistocene.

Rock types and erosion rates determine the nature and burial rate of the sediments delivered to the basin. Understanding their evolution through space and time helps predict the petrological stratigraphy of the basin. We use Badlands, a surface process numerical model developed by the Basin Genesis Hub, which simulates sediment erosion, routing and deposition, in order to simulate present-day fluxes and assess their evolution in the past. To reproduce landscape evolution in deep time we need to constrain the erodibility of the source areas. To achieve this we calibrate the model over the present-day landscape, using the present-day topography, rainfall patterns, distribution of source rocks, recent surface uplift field, and estimates of Late Quaternary sediment fluxes. Relative uplift along the southern flank of the Papuan Peninsula is constrained by the elevation of remnants of extensive late Miocene volcanics and by the modern elevation of contemporary low-lying surfaces. They reveal an uplift rate that increases from 0 m/Myr at the coastline to 440 m/Myr in the headwaters.