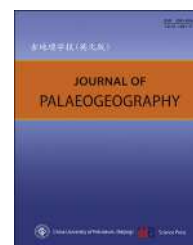


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Facies analysis and sedimentary environments

Evolution of a confined gravelly river to a braided-meandering river in the Late Cretaceous Khasi group, southern Shillong plateau, NE India

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Abstract This paper intends to unravel the depositional condition of the Basal Conglomerate/Jadukata Formation and the Lower Mahadek Formation in southern Shillong Plateau, NE India deposited during the Late Cretaceous period. The studied succession is entirely siliciclastics in composition and was built up on the Precambrian basement rocks. State-of-art facies analysis and palaeocurrent evidence helped us to reconstruct the palaeogeography and palaeoenvironment. The facies tracts reveal that frequent hyperconcentrated mass flow deposits dominated the proximal part of the river channels. Gradually, the river evolved to a sandy braided and finally mud-dominated, meandering system. The river channel changed its pattern through onlapping and progressive elimination of the accommodation space created by the tectonic subsidence/upliftment. Major shifts in palaeocurrent direction at different stages of the river evolution confirm the role of tectonics on the river channel evolution. QFL detrital modes of the sandstones reflecting lithic wacke composition and the recycled orogeny corroborate the interpretation. Rapid lateral and vertical facies transition suggests a pull-apart type basin due to ongoing rifting. Geochemical analyses also show signatures of the overlapping tectonic conditions supporting the pull-apart basin model.

Keywords Tectonics, Hyperconcentrated flows, Braided-meandering system, Pull-apart rift basin, Late Cretaceous, south Shillong Plateau

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