

SUBAERIAL EXPOSURE PALUSTRINE LITHOFACIES OF A SEMI-ARID MAASTRICHTIAN REGOLITH FROM CENTRAL INDIA

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Detailed information on non-lacustrine, semi-arid, palustrine carbonate-calcrete lithofacies association in a regolith setting is sparse. This is addressed by studying the Lower Limestone of the Lameta Beds, a Maastrichtian regolith in the Narmada region of Central India. The general vertical lithofacies assemblage for the Lower Limestone palustrine environments comprises, from base to top; a) charcophyte, ostracode, and gastropod bearing calcareous siltstone and marls; b) compact, buff micritic limestones associated in their upper part with calcretised fissure-fill sandstone; c) sheetwash as fissure-fill diamictites and thin pebbly sheets, locally developed over a few meters; and d) sandy, nodular brecciated and pisolitic calcretes. The sequence is 'regressive', with filling up of topographic lows by increased up-section sheetwash. There is no evidence for the presence of deep-water lakes. Evidence for rhobrecciation and other biological calcrete fabrics is sparse. Stable isotopic ($\delta^{18}\text{O}$ and $\delta^{13}\text{C}$) values are consistent with the palustrine limestones being fed from meteoric-derived groundwater with a strong input of soil-one carbon. There is overlap of both $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ values from the palustrine and calcrete fabrics co-occurring at outcrop, suggesting that in groundwater supported wetlands, conversion from palustrine carbonate to calcrete need not show isotopic expression as the groundwater source and input of soil-one carbon is mostly unchanged.