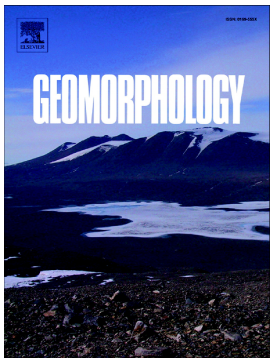

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Sand Coatings in Paleosols: Evidence of Weathering across the Plio-Pleistocene Boundary to Modern Times on Mt. Kenya

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Abstract

A comparison of younger post-Olduvai paleosol horizons with older buried horizons of Plio/Pleistocene age shows that primary and secondary minerals and organic molecules in sand coatings in these paleosols remain intact and provide a record of past weathering events. From IR spectra, concentrations of organic and some inorganic constituents within these coatings reveal supporting evidence of variable weathering trends from Late Pliocene to Holocene time. With some variability, hematite and goethite concentrations in sand coatings parallel similar variable concentrations of secondary Fe-extractable concentrations previously determined for pre- and post-Olduvai paleosols in these Mt. Kenya sections. Negative correlations between metahalloysite and gibbsite, previously determined to result from aggressive leaching of Si from metahalloysite in paleosols, tend to follow similar distributions in the sand coatings reported here. Similarly, additions of gibbsite in selected paleosol horizons are followed by reductions of lesser concentrations of metahalloysite, suggesting that individual horizons within paleosols have independent leaching histories different from the entire paleo-pedon. As with these paleosols