# Terrain and parent material controls on texture contrast in Uganda: GLS regression and thin-plate splines. (S05brown182647-Oral)

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## Abstract:

The catena concept posits that topographic controls on hydrology and parent material can be related to the spatial variability of soils at the landscape scale. On the landscape of origin for the catena concept in central Uganda, we test theories of texture-contrast formation by examining terrain and parent material controls on surface texture for the well-drained portion of the landscape. In this study, we use Generalized Least Squares (GLS) regression (regression with residual spatial covariance modeled explicitly) to support inferential analysis of individual controls on soil formation. Terrain-derived indices (e.g. slope and curvature) are computed directly from a thin-plate spline model fit to elevation data, allowing the smoothing parameter to control the scale of topographic variability examined. Surprisingly, the results suggest that parent material composition and relatively fine-scale convexities (decayed termite mounds) have a greater effect on surface texture than hillslope-scale features.

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