

SHP13

## Geometric aeolian dune crest migration model

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We present a geometric aeolian dune crest model that provides a predictive linkage between local lee face sediment deposition and wholesale landform change. The model is driven using an initial condition of 3D dune crest data obtained from a time series of airborne LIDAR surveys of White Sands, NM, and wind observations from nearby Holloman AFB. Transient dune migration is modeled by volume filling of a simple theoretical dune geometry with sediment flux derived using shear velocity dependent transport (Bagnold, 1941) modified by a new incidence angle dependent lee face sediment deposition function styled after Rubin and Hunter (1985). Model calibration is achieved using an azimuthal wind direction correction and threshold values for shear velocity dependent sediment transport. Agreement between observations and model results are presented using a l2 norm representing a global error estimate.

**Keywords:** Geometric model, dune, aeolian, sediment transport