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Analysis of Dark Slope Streaks on Mars based on Multitemporal HRSC Data

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Recurring slope lineae (RSL) on Mars are dark and narrow downhill oriented surface features found in equatorial regions (1) associated with water or hydrated salt flows (2). On the other hand there are Dark Slope Streaks which seem to be dry avalanches on dust covered slopes (3). The origin of both ist still under discussion. We found linear features in eastern Noctis Labyrinthus region (6°S, 265°E) with lengths of up to several kilometres and lateral extensions of 20-30 metres. As described by (4), RSL fade and recur in the same location over multiple Mars years. Similarily, Dark Slope Streaks form on at least annual to decade-long timescales (5). During 10 years of HRSC observation time (2005-2015) several linear features in Noctis Labyrinthus changed in visibility. Slope parameters and seasonal illumination conditions are investigated based on a digital elevation model derived from HRSC data. For large datasets a feature identification is presented which involves spatial filtering in conjunction with elevation data analysis.

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