

# Surface dust levitates above the ground when the sun rises on Mars

**Diurnal CO<sub>2</sub> frost sublimation maintains a vertical wind within the regolith that lifts individual grains, and triggers dust avalanches.**

- The initiation mechanism of low albedo dust avalanches dubbed “slope streaks” (Fig. 1) has puzzled the science community since their discovery in Viking images.
- Slope streaks are some of the most active surface features today on Mars and displace large amounts of dust.
- Recent Mars Odyssey THEMIS temperature and color images (Fig. 2) show that diurnal CO<sub>2</sub> frost forms **on top** of the regolith on typical Martian terrains. These data also demonstrate that diurnal CO<sub>2</sub> frost forms **within** the regolith when dust is present.
- This exclusive regolith/frost configuration found in dusty regions is conducive to grains levitation at sunrise when the ice sublimates, triggering dust avalanches on steep slopes (Fig. 1). This model suggests that the CO<sub>2</sub> frost cycle is an active geomorphological agent at all latitudes and not just at high or polar latitudes, and possibly a key factor maintaining mobile dust reservoirs at the surface.

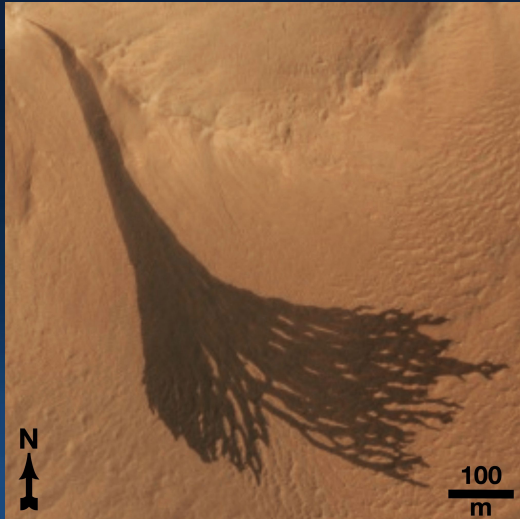


Fig 1: Slope Streak

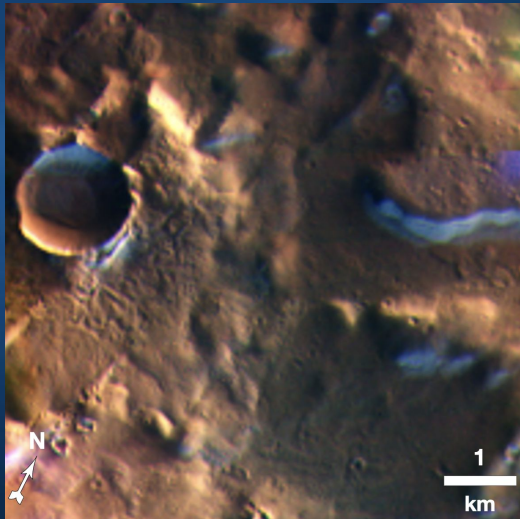


Fig 2: Dawn frost (blue) on Mars