

# SEASONAL FLOWS ON DARK MARTIAN SLOPES, THERMAL CONDITION FOR LIQUESCENCE OF SALTS

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RSLs are narrow, dark albedo features on relatively steep slopes that appear during warm seasons and fade in the cold ones. So far they have only been observed in mid-latitudes where surface temperature is too high, periodically exceeding 300 K, for the presence of shallow ground ice. We attempt to determine what conditions are needed for the liquescence of salt to occur exactly when the RSLs are observed. If the eutectic temperature is exceeded, and humidity is high enough, salts may produce liquid brines through absorption of water vapour and liquescence. We calculate regolith temperature as a function of time and depth, for two different macroscopic distributions of salt on the regolith grains. Model parameters which are varied include surface albedo, thermal inertia of the dry regolith, the depths at which salt is present, and the salt content. We find it is possible, although only within a narrow parameter range, to have regolith temperature and humidity conditions sufficient for liquescence of magnesium perchlorate in periods corresponding to those when RSLs have been observed.