These observations provide new challenges to the modeling community to incorporate detailed treatment of landscape microrelief and substrate composition into water cycling models for the martian surface. Conditions permitting localized accumulation and peak-insolation melting of surface ice are broadly consistent with peak climate conditions modeled to have prevailed at gully–polygon sites during the last ~1–10 My (Forget et al., 2007; Schon et al., 2009). Additional analysis of HiRISE images, coupled with ongoing modeling of late Amazonian climate conditions, will enhance our understanding of gully–polygon system morphology as an indicator of past climate processes on Mars.

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Supplementary data

Supplementary data for this article may be found on ScienceDirect, in the online version.

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