

For role of chemical evolution to lava viscosity

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Sinuuous rilles on terrestrial planets are conspicuous and enigmatic features. Although their process of formation is unknown, it has been suggested that, assuming sustained turbulent or laminar flow, lavas of low-viscosity produce deep lava channels by thermal erosion. We evaluate the role of material assimilation eroding into the substrate by thermal and mechanical erosion. Whenever the substrate material that reveals a low liquidus temperature, assimilates into a lava flow by thermal erosion, the chemical composition of the lava should vary. In our model, we estimate lava viscosity as a function of chemical composition. It can be shown that the variation of lava viscosity using varying chemical composition as calculated by Bottinga and Weill[1972] is very small or negligible.