

An instability in the transportation of magma due to the viscous dissipation

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The rheology of magma indicates a complex behavior involving in a temperature depend viscosity, and the existence of a bubble and a crystal. The purpose of this study is to investigate an instability of magma flow, which is rapidly increasing of the mass flux and the thermal runaway, with the complex rheology. We numerically solve the thermal conduction equation considering the coupling between the heterogeneity of stress and temperature field, and flow field occurred to a temperature dependent viscosity.

Here we present numerical results for the interaction between a temperature and flow.