

An incompressible/compressible model for magma flow in a volcanic conduit

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In this work we develop a liquid/gas model for magmatic flow that describes the physical processes from the microscopic and macroscopic scales. The resulting two-phase model considers an incompressible liquid phase and a compressible gas phase that exchange mass. It also preserves the conservation of mass and momentum, and a dissipative energy balance under appropriate temperature equations for both phases compatible with thermodynamics theory.

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