



The benefits of integrating low frequency events analysis with conduit flow modelling.

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Recent magma flow models include physical magma properties that can vary both vertically and horizontally during magma ascent in a volcanic conduit (Massol et al., 2001; Collier, 2005). Time dependent parameters such as viscosity, density, gas-content, shear and bulk modulus have been included in a 2D finite element model in order to better understand how the variations of each parameter can affect the conduit flow.

Under specific conditions, small vertical shear cracks are opened in the cooling, brittle magma along the conduit walls. These cracks, increasing the permeability, may act as an escape route for trapped gas and consequently modify the magma ascent.

The characteristics of low frequency seismic events depend strongly on the magma properties in the conduit. Therefore we attempt a joint modelling approach of magma flow, as well as the generation and propagation of seismic events in and around the conduit. Such models might provide a better understanding of these processes, constituting a great help for risk assessment.