

## Source process of long-period volcanic seismic events: a laboratory model of pulsation of magma flow in deformable porous media

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We have conducted laboratory experiments on dynamic behavior of solid-liquid mixtures, which is excited by fluid motion in deformable porous media. The aim of this study is to clarify source process of long-period seismic events in relation to magmatic and hydrothermal activities beneath volcanoes.

Our experiments were conducted in a transparent rectangular tank containing gel beads as deformable porous media. A viscous fluid that simulates magmatic fluid was vertically injected at a constant flow rate.

We identified three types of fluid flow: (1) continuous permeable flow, (2) long-period pulsating flow, and (3) continuous plume. The second type of the flow had a characteristic period (~1 min) of pulsation. This oscillating phenomenon of the fluid motion will be dynamically coupled with viscoelastic deformation of the porous media. In this presentation, we will discuss the effects of some parameters on the excitation of oscillation, such as flow rate, fluid properties (density and viscosity), porosity, and elastic properties of porous media.