

Effects of bubbles on oscillation of volcanoes

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Acoustic phenomena in bubbly liquids have been investigated by means of laboratory experiments, theoretical analysis, and numerical calculation. The results are applied to two natural phenomena. The first is volcanic tremors. Resonant oscillation of a body of magma containing bubbles is one of the most likely models for the tremor source. We propose a criterion for the applicability of this model to a viscous magma system. The second is micro-earthquakes in geothermal areas. It has been found that pressure waves measured in a boiling geyser have characteristics typical to pressure waves in a bubbly liquid. A model for seismic source generation in a geyser is proposed based on theoretical studies of bubble cloud oscillation.