

# A Model Experiment of Fracture Induced Long-Period Events: Injection of Pressurized Gas Into a Viscoelastic Rock Analog

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Low-frequency seismic waves are frequently observed in volcanic areas. To understand the source mechanism of such low-frequency signals, we conducted model experiments simulating the volcanic gas injection into a rock. The rocks heated by the ascending magma and hydrothermal fluid may be very hot and damaged, such that their shear wave velocities are low. Similarly, solidifying magmas should have a low shear wave velocity. Our experiments show that the injection of pressurized air into such soft rocks creates multiple cracks and causes pulse-like seismic signals. When the rock analog is further softened, only high-frequency oscillation appears. These results suggest that the low-frequency component observed in the volcanic area before the initiation of eruptions may be the result of crack generation.

## Reference:

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