



Magma “bright spots” mapped beneath Krafla, Iceland, using rVSP imaging of reflected waves from microearthquakes

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The geometry and distribution of magma in the crust remains a controversial topic with recent studies questioning the role of large magma chambers. In this investigation, high-resolution 3D reflection images of crustal discontinuities beneath the Krafla geothermal field in northern Iceland were generated by applying Vertical Seismic Profiling (VSP) techniques adapted from reflection seismology to microearthquake data. Exceptionally large amplitude reflections (bright spots) at a depth of 2.1 km correlate with rhyolitic magma encountered in the IDDP-1 borehole. Although similarly bright reflectors at about 4 km correspond in depth to the top of an inferred magma chamber from previous seismic studies, the scattered reflectivity that persists beneath this deeper reflector argues for a distributed magma system rather than a large feeder chamber.