



The search for magma reservoirs in Long Valley caldera: single vs. distributed sources.

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Long Valley Caldera and the Mono-Inyo Craters chain form a large volcanic complex in eastern California that has had persistent earthquake activity and ground uplift in the past 25 years. The central part of Long Valley Caldera (an area of more than 100 square km) has been slowly rising since 1980 at an average rate of 3 cm/yr. Inversion of micro-gravimetry and deformation data using a single vertical prolate ellipsoid source has helped to define the existence of a relatively shallow (5-8 km) silicic magma intrusion of $0.11 - 0.19 \text{ km}^3$ beneath the caldera resurgent dome. We use the information from the single source inversion as bounds to determine a more general three dimensional distribution of volume changes in the sub-surface. The distributed inversion identifies two main inflation areas beneath the resurgent dome: one following the regional trend of north-south faults, and another in the dome southern section, parallel to a strike-slip fault that is responsible for most of the seismic activity in the caldera south moat.