



Modeling the Mogi source of a small-scale inflation episode of the Santorini volcano (Aegean Sea) using EDM data and a numerical-topological approach

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Analysis of a radial geodetic EDM monitoring record indicated small-scale inflation of the NW part of the Thera (Santorini) caldera (up to 10cm baseline length increase) between 1994 and 2000, corresponding to up to $2 \cdot 10^{-5}$ strain, and subsequent stabilization, as EDM and GPS data indicate. Using a stochastic approach based on numerical analysis and a topological approach, the Mogi source of the magma intrusion responsible for the partial, small-scale caldera inflation was modeled. It was found that the Mogi source remained practically stable during the whole inflation period, between Nea Kammeni and the Therasia islets, at a depth of approximately 1200m, while the parameter C was of the order of $5 \cdot 10^5$, indicative of a small source with a rather constant pressure. This explains the absence of seismicity changes during the inflation period of the Santorini volcano, in contrast to what is observed in various other volcanoes.