Geophysical Research Abstracts
Vol. 14, EGU2012-2219, 2012
EGU General Assembly 2012

Renewed Geodetic Unrest at Santorini Caldera, Greece

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Santorini Caldera, in the southern Aegean, is part of a well-developed, and very active volcanic system fueled by subduction along the Hellenic arc that is responsible for the largest volcanic eruption in human history ($\sim$1650 B.C.). After approximately 50 years of relative seismic quiescence within the caldera and an episode of minor inflation, the volcano has recently reawakened with an exponentially increasing inflation signal, beginning in January 2011. The GPS network, including 3 continuous stations and biennial surveys of 19 campaign stations, showed essentially no deformation between 2006 and 2010. Following a cluster of microseismicity within the caldera two surveys in June and August 2011 were made, while two additional permanent GPS stations were installed. From this data, we found uplift and nearly-radial expansion up to 1 cm/month. This deformation is well-explained by a Mogi-source at the northern part of the caldera, with an approximately 6-10 million m3 volumetric growth at approximately 4 km depth, and tendency for development of a new dome offshore. It is likely that stresses from this magma source are responsible for a cluster of microseismity that began in January 2011 along a radial lineament of young volcanics, called the 'Kameni Line'.