



GEODETIC MONITORING OF THE THERA (SANTORINI) CALDERA

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Abstract: The Santorini (Thera) volcano caldera in the southern Aegean, is part of a well developed volcanic system, partly submerged and famous for the eruption which buried the prehistoric town of Akrotiri about 3500 yrs ago. This volcanic system is very active and small-scale eruptions occurred till the 20th century.

Since 1985 there have been efforts at a systematic surveillance of the volcano using geodetic techniques in order to identify periods of tectonomagmatic unrest, pour some light in the mechanism of deformation and even predict future eruptions.

Analysis of a geodetic, EDM radial monitoring network revealed a small-scale (up to 10cm length changes and up to $2 \cdot 10^{-5}$ strain) non-uniform inflation of the north part of the caldera between 1994-2003. Between 1985-1988 centimeter-scale vertical movements were also observed along a leveling traverse following a zone of recent magmatic and hydrothermal activity in the Nea Kammeni Islet, at the central part of the caldera, and especially close to a site where an up to 60-70cm transient coastal uplift occurred in 1996, as is inferred from non-instrumental data.

In late-spring 2006, with UNAVCO field support, a network 18 GPS stations has been established. Most stations coincide with triangulation stations and cover the whole of the non-submerged part of the caldera. In addition, continuous GPS recording stations have also been established in the northern part of the caldera. Preliminary analysis of the latter revealed no significant coordinate changes, most-likely indicating that for the moment the volcano is in a state of dormancy.

Key words: Volcano, Thera, geodetic surveillance, EDM, GPS stations

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