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Seismicity associated with the 2004-2006 renewed ground uplift at Campi Flegrei caldera, Italy.

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Following the significant ground uplift ($\sim$ 1.8 m) of the 1982-1984 bradyseismic crisis, the recent history of Campi Flegrei volcanic complex (Italy) has been dominated by a subsidence phase. Recent geodetic data demonstrate that the subsidence has terminated, and that positive ground deformation renewed in November 2004, at a low but accelerating rate leading to about 4 cm of uplift by the end of October, 2006. As in previous episodes, ground uplift has been accompanied by swarms of microearthquakes ($M \leq 1.4$) in three distinct episodes: on October 2005, October 2006 and December 2006. Hypocenters of these earthquakes are mainly located beneath the Solfatara Volcano at depths ranging between 0.5 and 4 km. Inversion of S-wave spectra indicates source radius and stress drop on the order of 30-60 m and 10^4 – 9 x10^5 Pa, respectively. Fault plane solutions indicate predominantly normal mechanisms. Accompanying the October 2006 swarm, we detected intense Long-Period (LP) activity for about one week. These signals consist of weak, monochromatic oscillations whose spectra exhibit a main peak at frequency $\sim$ 0.8 Hz. This peak is common to all the stations of the network, and not present in the noise spectra, suggesting that it is a source effect. About 75% of the detected LPs cluster into three groups of mutually similar events. Adjustment of waveforms using cross-correlation allows for precise alignment and stacking, which enhances signal onsets and permits accurate absolute arrival picks, and thus better absolute as well as relative locations. Locations associated with the three different clusters are very similar, and appear to delineate the SE rim of the Solfatara Volcano at a depth of about 500 m. The most likely source pro-

cess for the LP events involves the resonance of a fluid-filled, buried cavity. Quality factors of the resonator cluster in a narrow interval around 4, which is consistent with the vibration of a buried cavity filled with a water-vapour mixture at poor gas-volume fractions. We propose a conceptual model to interpret the temporal and spatial patterns of the observed seismicity.