



Statistical properties of explosions during the last two eruptions at Stromboli volcano, Italy

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We analyze the seismicity recorded during the eruption of Stromboli occurred in 2002-2003 recorded by broadband seismic stations. We characterize the explosions occurring before and after the onset of the effusion in terms of spectral content, inter-occurrence times and amplitude behaviour in order to study how this volcano leaves and returns to its state of stationary activity. A similar study has been performed on the eruption of Stromboli volcano occurred in 2007. It reveals that the explosions' times are always ruled by a Poisson process even approaching the effusion phase, with the only difference in shortening the inter-times just during the effusion. A slightly different process can be advocated for the swarms, because a maximum in the distribution of inter-times can be evidenced. The amplitudes of the explosion-quakes have a log-normal distribution until the effusion onset as in the standard Strombolian activity (stationary phase). The actual departure from that stationarity seems to be traced by a precursor evidenced in the tidal regime. It appears as a transient oscillating signal at about 3-days that modulates the explosion amplitudes. The successive activity can be interpreted as the response of volcano to restore the equilibrium condition.