



## **Insights into the dynamic processes of the 2007 Stromboli eruption and possible meteorological influences on the magmatic system**

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The unrest of Stromboli volcano leading to the February 27-April 2, 2007 eruptive period and to the March 15 paroxysm is constrained by combining broadband seismic data and 1-Hz GPS (High Rate GPS - hereinafter HRGPS) measurements. During the pre-eruptive stage, the simultaneous examination of seismic and HRGPS data, together with weather parameters, suggests the possible influence of external perturbations on the magmatic system, which evolved toward a critical state after January 2007. Some days after the onset of the eruption, a sudden change of the seismic and eruptive behaviour was recognized, while ground deformation began to show a deflation. The March 15 paroxysm was preceded, about two days before, by a peak of the HRGPS spectral power densities (a small inflation) and by the occurrence of a few VT earthquakes located at depths down to 3.5 km b.s.l.. These findings constrain, for the first time at Stromboli volcano, the deep origin of a fast rising magma batch, rich in gas, that led to a strong explosive event.