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# Investigating potential correlation between surface observation and LP seismic events at Lusi, indonesia

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Lusi is a unique sediment-hosted hydrothermal system (SHHS) located in North-East Java, Indonesia, permanently erupting since the 29th of May 2016. Everyday, since the eruption started, the craters erupt mud breccia, water, gas and oil. Based on petrography and geochemical analyses the Lusi feeder conduit may be traced up to a depth of ∼5 km. The heat source fuelling Lusi's activity is located at ∼4.5 km depth, and is caused by a magmatic body intruded from the neighbouring Arjuno-Welirang volcanic complex. During 10 years of eruption and overall caldera deflation, the mud edifice grew in the subsurface reaching a thickness of ∼300 m and it is still progressing today.
The Lusi geysering activity is characterized by four phases that cyclically reoccur every ∼15-20 minutes. These phases include: (1) regular bubbling activity; (2) clastic geysering; (3) clastic geysering with mud bursts and intense vapour discharge; (4) quiescent phase. Many of the mechanisms controlling the activity of this clastic-dominated geysering system remain still unknown. In order to investigate the Lusi dynamics, a multidisciplinary survey was conducted in May 2016 combining seismic, tilt and video records to infer possible joint signals generated by the geysering activity. The equipment was installed near by the edge of the hydrothermal pond, ∼300 m away from the active vents. Several LP events have been recorded. Tilt data show short term period deformations of very small amplitude in addition to a more prominent signal pointing out inflation of the system. The video records of the geysering activity captured the duration of all the daily pulsating phases throughout the survey period. Preliminary results show that the summit behaviour is more complex than previously described and that the geysering activity seems to correlate with long periods events recorded at seismic stations deployed in the area.