



Seismicity of a geothermal system at Lastarria volcano, Chile

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Geothermally active systems are known to produce not only seismic events but also long-lasting, emergent signals referred to as tremor. Boiling in such a system is thought to be a viable generation mechanism for tremor that was adapted in other environments such as glaciers or volcanic conduits. Field experiments in Yellowstone however suggest that the associated seismic signal is weak and can merely be recorded up to a few 100 m distance, which might question this generation mechanism in cases where tremor is visible at several kilometres distance.

We present seismic data from a month long experiment at Lastarria volcano, Chile, where six seismometers were installed around and at close distance to a geothermally active system. Events range from a few seconds in duration to tens of seconds. Some show a frequency content normal for tectonic earthquakes while other are strongly harmonic with several overtones. We present the different event types and discuss reasons that might lead to the observed differences. We compare the occurring events to surface monitoring stations, where we recorded variations at high temperature fumaroles, showing a weak oscillatory behaviour and an interaction with hydrometeorological changes.