

EGU21-14520

<https://doi.org/10.5194/egusphere-egu21-14520>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Analyzing the tremor of the Holuhraun eruption 2014-2015 using tremor modelling

Thoralf Dietrich and Eva P.S. Eibl

Potsdam, Berlin, Germany (tdietric@uni-potsdam.de)

The 2014-2015 Holuhraun eruption was the largest eruption in Iceland in the last 230 years. After magma ascended below the Bárðarbunga volcano's icecap, an about 2 week long lateral migration of earthquakes was observed; later interpreted as dike formation in 4km to 6km depth. An eruption started on 29th and 31st of August 2014 at Holuhraun. During dike formation and eruption a long-lasting seismic signal called tremor was recorded by seismometers in the area. Eruptive tremor emerged with the onset of the eruptions on 29th and 31st of August. Tremor sources were located and interpreted in the context of the fissure and the lava flow field. However, a complete geophysical model to explain these is missing. Our starting point is the model on tremor generation based on conduit wall vibrations excited by laminar flow (B. Julian 1994) to replicate the observed tremor signals. We performed a grid search and compare it with other models. In the range of rock parameter tolerance, we present implied characteristics of frequency and amplitude of the signals, if the Julian model were used as explanation for the tremor signals.