ID: Type: **Oral**

3-D acoustic wavefield observations and modeling at Yasur Volcano, Vanuatu using a dense infrasound network

Sampling of volcano seismic and acoustic wavefields have traditionally been limited to two dimensions due to the surrounding topography. However, volcano seismo-acoustic sources are known to be anisotropic and the resultant waves strongly influenced by crater morphology and topography. Between 26 July – 2 August 2016 we deployed a dense network of seismic and infrasonic sensors at the very active Yasur Volcano, Vanuatu to overcome these wavefield sampling limitations. Notably, two infrasound sensor packages were deployed on tethered balloons above the active vents. Additionally, 6 single infrasound sensors were deployed close to the vent along the crater rim, along with 7 small-aperture, 3-element infrasound arrays and 11 broadband seismometers. Extensive visual and infrared imagery was taken, as well as measurements of gas composition and flux. Here we discuss the preliminary results from this experiment and highlight future work on the dataset. Volcanic activity was high during the period with high-amplitude explosions occurring every 1-5 minutes. Extensive shock waves were recorded both visually and acoustically. Results from numerical modeling of the acoustic wavefield integrated with a high-resolution digital elevation model will also be compared to observations.

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Track Classification: 5. Analysis of Sources and Scientific Applications