



## **Can using all three components of broadband seismometers through the use of the amplitude source location (ASL) method better constrain volcanic phenomena location estimates?**

Braden Walsh (1), Jonahan Procter (1), and Arthur Jolly (2)

(1) Volcanic Risk Solutions, Massey University, Palmerston North, New Zealand (b.walsh@massey.ac.nz), (2) GNS, 1 Fairway Drive, Avalon, Lower Hutt 5010, New Zealand

In order to improve estimations of locations for source locations of various volcanic phenomena, we here use a combination of all the components of the seismic station. Our hypothesis is that if we add additional station components to the ASL methodology, we may be able to achieve minimal residual errors closer to the true source location. Determining if all three components improve location estimates, we used active source events that were conducted on Te Maari Volcano, Tongariro National Park, New Zealand. To establish results, we compared the vertical component ASL results with that of using all three components. We then used statistical analysis to resolve if one approach improves source location estimates over the other. The statistical analysis showed that all three components averages out the combined signals, eliminating the extreme values that one component could have. This produces an increase in precision for the source location estimates. The slight increase in accuracy, however, could be from the location and type of source, and using all three components may not necessarily always decrease the true distance error to the real source location.