



The analysis and interpretation of very-long-period seismic signals on volcanoes

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The study of very long period (VLP) seismic signals became possible with the widespread use of broadband instruments. VLP seismic signals are caused by transients of pressure in the volcanic edifice and have periods ranging from several seconds to several minutes. For the VLP events recorded in March 2012 and 2014 at Soufriere Hills Volcano, Montserrat, we model the ground displacement using several source time functions: a step function using Richards growth equation, Küpper wavelet, and a damped sine wave to which an instrument response is then applied. This way we get a synthetic velocity seismogram which is directly comparable to the data. After the full vector field of ground displacement is determined, we model the source mechanism to determine the relationship between the source mechanism and the observed VLP waveforms. Emphasis of the research is on how different VLP waveforms are related to the volcano environment and the instrumentation used and on the processing steps in this low frequency band to get most out of broadband instruments.