Geophysical Research Abstracts
Vol. 15, EGU2013-10591, 2013
EGU General Assembly 2013

Locating changes on an active volcano using ambient seismic noise cross-correlations

Anne Obermann (1), Planès Thomas (1), Bérénice Froment (2), Eric Larose (1), and Michel Campillo (1)
(1) ISTerre, Grenoble, France (anne.obermann@ujf-grenoble.fr), (2) Massachusetts Institute of Technology, USA

We analyze continuous ambient seismic noise records from the active volcano Piton de la Fournaise on la Reunion Island from June to December 2010. During this time two volcanic eruptions occurred. We calculate the cross-correlation functions between 21 broadband stations for this period. We monitor the apparent relative velocity changes with the stretching technique, as well as the evolution of the decoherence of the signals. The temporal variations of both parameters are precursors of volcanic eruptions.

We compute sensitivity kernels between the stations using a radiative transfer approach for the intensity propagation. Then we use a least-square inversion to locate the changes associated to the eruptions (apparent velocity changes and waveform decorrelation) in space: prior, during, and after the eruption.