



Monitoring changes in crustal properties with seismic noise

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The seismic noise is a continuous source of waves due to the interaction between the solid Earth and its fluid envelopes. Theoretically, the time correlation of the field measured at two distant points allows retrieving the Green function between the points for a random distribution of sources or in presence of a diffuse field. We use this property and study the stability of the correlation functions. We show that the velocity measurements made with correlations are very stable. Using doublet analysis, we found that we can monitor relative velocity changes smaller than 10^{-4} . We demonstrate how this method can be used to monitor volcanoes (Piton de la Fournaise volcano, La Réunion, France) and active faults (San Andreas fault, California, USA).