



Detecting Changes at the Soufriere Hills Volcano Using Passive Seismic Interferometry

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The ongoing eruption of the Soufrière Hills Volcano on Montserrat is one of the longest at an andestite dome building volcano. We use noise correlation Green's functions to measure detect changes in seismic properties during 2005/2006 and compare these to changes in volcanic behaviour. Continuous three component seismic data recorded at pairs of stations are cross-correlated to retrieve nine component Green's functions along paths that intersect the volcanic edifice. Particle motion analysis shows that the Green's functions are dominated by Rayleigh waves and are consistent with the expected Green's tensor for a vertical point force source at one station recorded by a receiver at the other. Comparison of the Green's functions for each day with a reference Green's function reveals clear decorrelation and phase shifts that may be linked to small changes in sub-surface velocity.