



Receiver Function Analysis at Stromboli Volcano (Italy)

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This study focuses on constraining the crust and upper mantle discontinuities at Stromboli volcano by applying the receiver function (RF) analysis. This technique utilizes the waveforms of P-SV conversions generated by discontinuities to infer the structure beneath the seismic stations. RFs have been obtained by deconvolving the vertical component of teleseismic P-wave records from the corresponding rotated horizontal components applying the Multi-Taper Spectral Correlation technique. For this study the seismograms of about 125 teleseismic earthquakes (M greater than 6.0), recorded between 2004 and 2006 at 13 broad-band seismic stations deployed by the INGV, have been considered. A preliminary characterization of the structure beneath the stations has been inferred from the stacking of teleseismic Ps converted waves and multiply converted waves at the seismic interface. The analysis, at frequency of 1 and 2 Hz, show a horizontal seismic discontinuity at an average depth of about 17 km and a Vp/Vs ratio lower than 1.73. This discontinuity explains the positive pulses about 1.9 s and 7.5 s after the direct P arrival. These pulses can be interpreted as Ps and PpPs converted phases, respectively. The depth of this discontinuity is in agreement with the Moho-depth obtained in independent studies.