Geophysical Research Abstracts
Vol. 15, EGU2013-1955, 2013
EGU General Assembly 2013

2D Intrinsic And Scattering Attenuation Tomography Of Tenerife And Deception Island (Antarctica) From Active Seismic Experiments

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In the present work we are going to analyze the same data-set used to develop the 3D velocity tomographies to realize 2D intrinsic and scattering attenuation tomography. For that we are going to apply the diffusion model which is an approximation of the general energy transport theory developed by Wegler et al. (2001) and Wegler (2003). So, this new models will be a complement to the better understanding of velocity anomalies and will allow remove some grades of uncertainty of the other studies. As a result of the inversion using the diffusion model we have obtained values of S-waves intrinsic attenuation coefficient (b) and diffusivity coefficient (d) in the frequency range of 6-12 Hz for Tenerife and 4-20 Hz for Deception Island. We have quantified the attenuation by the quality factor because is more representative. We also compare attenuation images with velocity tomographies. For the case of Tenerife we confirm that Tenerife Island is a very heterogeneous area. Moreover we corroborate that high velocity zones are coincident with low attenuation zones and low velocity zones are coincident with high attenuation zones. If we compare these results with those obtained by Zandomeneghi et al. (2009) we can observe the greater concordance between velocity tomography model and this model. If we observe the high attenuation anomaly of the center of the island and we combine with other studies is highly compatible with the presence of partially molten material.