



SV-wave velocity model (1D) for the Lithosphere of the Carajás Domain in Brazil

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Abstract

Recently, Vale S.A. enabled the installation of 30 stations in the Carajás Mineral Province (CMP) region, which were installed between October and November 2021. The objective of this initiative is to study the crust and mantle under the region from the continuous seismographic record for 2 years. This work seeks to calculate the Lithosphere-Asthenosphere Boundary (LAB) in the region of the Carajás Domain (CD) of the CMP using measurements of phase and group velocities, for the fundamental vibration mode for the Rayleigh waves, recorded in the seismograms. We apply the Multiple Filtering Technique and the Stacking method to obtain the group and phase velocities mean dispersion curves for the stations. The inversion of the mean dispersion curves allowed to obtain SV-wave velocity models (1D) for Carajás Domain. We used the Surf96's linear method for the inversion. In the results, it was observed that the LAB beneath the CD appears to be around 135-150 km. Our results are consistent with the value of 160 km for LAB obtained by Ciardelli et al. (2022), based on the negative gradient of vertical SV wave profiles, calculated from seismic tomography data. The difference between the values may be related to the different databases used in the two works, Ciardelli et al. having used only data from the Brazilian Seismographic Network, since the Carajás network was not installed at the time.