



Shallow Sedimentary Structure Characterization across Western Arequipa-Peru from Inversion of Horizontal-to-Vertical Spectral Ratio (HVSr) Method

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Abstract

The Western margin of Arequipa (Fore-arc and Andean Belt) presents a complex tectonic and structural framework due to crustal deformation as a consequence subduction process between the Nazca and South American plates. Studies of the shallow sedimentary structure, applying geophysical methods, can potentially provide us with information to contrast the geological mapping and infer its composition. In this study, we apply the Horizontal-to-Vertical Spectral Ratio (HVSr) to investigate the sedimentary structure. For the analysis, we use seismic ambient noise data in the frequency range of 0.2–50 Hz recorded at 36 broadband seismic stations (including two dense linear arrays) from the PeruSE - Peru Subduction Experiment seismological project. The H/V spectra obtained were inverted as a function of depth (1-D Vs and Vp profiles) to create a 2-D model of the sedimentary structure. The preliminary results correlate with the shallow geological and tectonic features of the study area.

Keywords: HVSr Method; Sedimentary Structure; Seismic Ambient Noise; PeruSE