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## Crustal and uppermost mantle structure of Cape Verde from ambient noise tomography

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Using seismic data from 38 broadband seismic stations deployed across the volcanic islands of Cape Verde, we construct the first 3D-model of Sv-wave velocities for the uppermost 30 km of the region. We computed phase cross-correlations for vertical component recordings for all possible inter-island stations followed by a time-frequency phase-weighted stack to obtain robust Rayleigh wave group velocity dispersion curves in the period band between 10 s and 24 s. Next, the dispersion curves were inverted, through the Fast Marching Surface Tomography package (FMST), in order to obtain the 2D group velocity-maps. We then inverted the group-velocity maps for the 3D shear-wave velocity structure of the crust and uppermost mantle beneath Cape Verde. As major features we considered the following: 1) low-velocity anomalies beneath and in the vicinities of the islands of Brava and Fogo, which we attribute to the predominance of melting pockets in these islands. Furthermore, the local seismicity also suggests the occurrence of ongoing intrusive processes beneath Fogo and Brava, which translates into a hotter, melt-rich upper crust and uppermost mantle 2) high-velocity anomalies in the northern islands, especially strong in the area surrounding the island of São Nicolau, that can reflect non-altered crust or remnants of magma chambers or solidified basaltic intrusions, which fed the ancient volcanism in these islands. The observed features are also distributed in three domains, according to the island volcanism age and latest major shield-building stages. If this is more than a coincidence, it can reflect different states of thermal maturity of the crust and uppermost mantle as a result of modification by magmatism and as a function of time. Our study, which allowed to image the crustal and uppermost mantle structure beneath Cape Verde, complements earlier deeper structure studies of the region and may also contribute to the characterization of the local seismicity by providing a new velocity model for structure.