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Moho Depth and Crustal Velocity Structure Beneath Stations RTC and TAM from Teleseismic P-Wave Receiver-Function Analysis

We apply the P-wave receiver-function technique to invert teleseismic data to investigate the S-wave velocity structure beneath stations RTC and TAM in West Africa. Our results show that the crust beneath RTC is relatively complex with large velocity fluctuations. In the upper crust, a low velocity layer extends from 8 to 12 km deep. This shallow low velocity layer is mainly due to the station's location on a zone of transition between a thick continental crust and the thinner oceanic crust. At Tamanrasset (Algeria), the crustal structure of the East and the West of the station differs. We found a high-velocity zone between 2 and 8 km to the east that we attribute to a high conductivity unit corresponding to intrusions described in the literature. We find no similar feature west of the station. Our velocity models for RTC and TAM are consistent with the respective tectonic environments. TAM, located on a stable craton, displays a fairly homogeneous velocity structure while RTC, located on thick sediments in an ocean-continent transition zone, has more heterogeneous structure. This structural difference is reflected as well by the depth of the Moho, ~22 km at RTC and nearly 38 km at TAM.

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