



## **Subsurface signature of North Anatolian Fault Zone and its relation with old sutures: New insight from receiver function analysis.**

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The North Anatolian Fault Zone (NAFZ) is an active continental transform plate boundary that accommodates the westward extrusion of the Anatolian plate. The central segment of NAFZ displays northward convex surface trace which coincides partly with the Paleo-Tethyan suture formed during the early Cenozoic. The depth extent and detailed structure of the actively deforming crust along the NAF is still under much debate and processes responsible from rapid uplift are enigmatic. In this study, over five thousand high quality P receiver functions are computed using teleseismic earthquakes recorded by permanent stations of national agencies and temporary North Anatolian Fault Passive Seismic experiment (2005-2008). In order to map the crustal thickness and  $V_p/V_s$  variations accurately, the study area is divided into grids with 20 km spacing and along each grid line Moho phase and its multiples are picked through constructed common conversion point (CCP) profiles. According to our results, nature of discontinuities and crustal thickness display sharp changes across the main strand of NAFZ supporting a lithospheric scale faulting that offsets Moho discontinuity. In the southern block, crust is relatively thin in the west ( $\sim 35$  km) and becomes thicker gradually towards east ( $\sim 40$  km). In contrast, the northern block displays a strong lateral change in crustal thickness reaching up to 10 km across a narrow roughly N-S oriented zone which is interpreted as the subsurface signature of the ambiguous boundary between Istanbul Block and Pontides located further west at the surface.