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Crustal Structure around the Marmara Sea and the Western Black sea

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The Marmara sea region of NW Turkey is a tectonically extremely active area. Large, and also frequent, earthquakes are triggered by the influence of the westward moving Anatolian platform along the North Anatolian Fault Zone (NAFZ) and the extensional part of the Aegean plate which combine to form a transtensional tectonic regime. The apparently rigid character of the Black Sea oceanic lithosphere also provides a simple explanation for the deviation of the NAF (North Anatolian Fault) from the small circle path in western Turkey. The depth of the crust-mantle boundary is expected to be around 30 km or less in the Marmara sea region. This boundary is around 20 km in the Western Black sea. Along the southern Black sea margin a passive margin sedimentary prism developed during the post-arc period since the Maastrichtian. Owing to the compressional regime affecting the region after the closing of the Intra-Pontide Suture most of the Western Pontides were uplifted during the Late Eocene. During the Latest Eocene-Oligocene period all the Western Pontides and the southern passive margin sediments of the Western Black Sea Basin were imbricated by mainly north-vergent thrusts. The Western Black Sea was opened by the separation of the Western and Central Pontide continental strip from the Moesian Platform and Odessa Shelf. The Western Black sea basin is floored by oceanic crust, whereas the Eastern Black sea is highly thinned continental, possibly also oceanic. The opening of the Black Sea basins and the crustal thinning of the area can be simulated by pure shear deformation, taking into account a finite duration of rifting and post-rift periods.