Geophysical Research Abstracts
Vol. 16, EGU2014-16729, 2014
EGU General Assembly 2014

Crustal structure in southeastern Egypt: Symmetric thinning of the northern Red Sea rifted margins

Ahmed Hosny (1) and Andrew Nyblade (2)

(1) Seismology Dept., National Research Institute of Astronomy and Geophysics NRIAG, Helwan, Cairo, Egypt, (2) Department of Geosciences, Pennsylvania State University, University Park, PA 16802 USA

Crustal structure in southeastern Egypt has been investigated to elucidate the nature of crustal thinning across the northern Red Sea. P-wave receiver function modeling for seven stations in southeastern Egypt yields typical Proterozoic crustal thicknesses of 35-38 km around Lake Aswan, and thinner crust (25-26 km) within 50 km of the Red Sea coast. Vp/Vs ratios are on average 1.78 and indicate an intermediate composition crust. These results, when combined with other estimates of crustal thickness in the region, reveal a symmetric pattern of crustal thickness beneath the conjugate margins of the northern Red Sea. Such a pattern is consistent with a pure shear model of extension, and suggests that the greater amounts of uplift and volcanism on the eastern side of the Red Sea compared to the western side may be the result of deeper flow in the mantle associated with the African superplume and not directly a consequence of the rifting process.