

Continental like crust beneath the Andaman Island

The knowledge of crustal structure beneath the Andaman-Nicobar Island arc can provide a good insight to understand the evolution of the continental crust through Island arc. It is a matter of debate whether the nature of the crust beneath the Andaman-Nicobar arc is oceanic (basaltic bulk composition) or continental (andesitic bulk composition). In this study, Sandeep Gupta and his co-workers report the 1-D shear wave velocity model for the crust beneath the Andaman Island through joint inversion of Rayleigh wave group velocity calculated from ambient noise and the teleseismic receiver functions at 10 broadband seismographs in the Andaman Island. These results suggests that (i) the thickness of the crust (~24–30 km), (ii) average crustal $V_s \sim 3.6$ km/s are much closer to the continental average than oceanic average, indicating intermediate bulk crustal composition and, (iii) presence of three characteristic layers within the crust as near-surface (2–6 km thick) sediment layer ($V_s \sim 1.3$ –2.5 km/s), 12–14 km thick upper layer of silicic composition (average $V_s \sim 3.5$ km/s), and 8–12 km thick mafic layer ($V_s \sim 4.0$ km/s) in the lower crust. Based on these results, the authors have opined that the crustal structure beneath the Andaman Island is more like a continental crust rather than a typical oceanic crust or oceanic double crust.

The presented seismological crustal structure beneath the Andaman Island is the first of its kind and, along with other detailed geological/geophysical studies it may provide important constraint in understanding – (i) crustal evolutionary processes in the NE Indian Ocean as well as the tectonics of the Indian plate, leading to the Himalayan and Indo-Burma orogeny, in particular; and (ii) genesis and evolution of the continental crust through Island arc, in general.

Further details: Sandeep Gupta, Kajaljyoti Borah, Gokul Saha, Tectonophysics 2016,

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