The southern Granulite Terrain (SGT) is unique in the sense of its geological importance and structural complexities. Numerous studies have been done for picturising the actual history of evolution of SGT. The determination of crustal structure and the depth of upper mantle discontinuities will help. Lack of local events forced to depend on tele-seismic events. Receiver functions can be constructed from teleseismic waveforms to obtain the crustal structure. Receiver function is dominated with near receiver response by eliminating the source time function and the instrumental response. Preliminary estimation of depth of Moho discontinuity and Poisson’s ratio are done with H-k stacking method. To minimise the effect of non-linearity and non-uniqueness while inverting these receiver function Neighbourhood Algorithm method is adopted since the method is based on random choice of model samples. Twelve stations data were used and the data were supplied by Centre for Disaster Mitigation and Management (CDMM)-Anna University, National Geophysical Research Institute (NGRI) and India Meteorological Department (IMD).

Major shear zones present in SGT divides it into several blocks. These blocks are distinct from nearby ones. The distinction may be structural, geological or geo-chronological and hence their history of evolution may also differ. Block wise variation is evident in the result. Half of the stations were from the Madras Block in SGT to give more focus on this area.

Six layered inversion is done and the velocity structures obtained are very much depending on the parameters given. Velocity structure varies from station to station and clearly showing the Moho discontinuity. Deeper discontinuities are not prominent in the receiver function of many stations.

The present study supports the major shear zones (Moyar Bhavani Shear Zone, MBSZ and Palghat Cauvery Shear Zone, PCSZ) as sutures
connecting blocks with different ages. The study reveals the identity of Madras Block which lies behind the curtain till recent days. Salem-Attur Shear Zone (SASZ) can be considered as the boundary zone separating Madras Block from the others. Among the stations 6 are in this Block and their results show that it has a thicker crust than the Northern Block. Results show a range of values 36-39 km for Moho thickness of Madras block while the values estimated from 3 locations in Northern Block have a value of 35km. This is supported by the different geological formations and corresponding Poisson’s ratio. The velocity contrast at Moho is very clear in most of the stations and it is evident in the S-wave velocity models.