



The lithosphere-asthenosphere boundary in the Middle-Lower Yangtze Metallogenic Belt and its surrounding area of China revealed by Sp receiver functions

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A detailed knowledge of the thickness of the lithosphere in the Middle-lower Yangtze Metallogenic Belt (MLYMB) is of great importance for understanding the significant tectonic evolution and the formation mechanism of the ore deposits. We realize this goal by applying the CCP stacking of Sp receiver functions (SRFs) computed from 68 broadband seismic stations in this region. Distinct negative signals are identified below the Moho in all the four CCP stacking profiles, which we interpret as the S-to-P conversions from the lithosphere-asthenosphere boundary (LAB). The imaged LAB is as shallow as ~60-80 km in the whole region, and from east to west the LAB becomes deeper. These observations indicate the widespread lithospheric thinning in the study region in comparison with the > 100 km lithospheric thicknesses typical of most cratonic areas. The revealed topography of the LAB generally agrees with the lateral variations in upper mantle seismic anisotropy previously measured by SKS splitting analysis. In particular, a relatively shallower LAB depth of ~60 km is detected beneath the MLYMB region. The thinned lithosphere probably is related to the upwelling of the upper mantle soft material, while the relatively thicker lithosphere may reflect earlier contractional deformations of the region.