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接收函数方法估计Moho倾斜地区的地壳速度比

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Estimation of crustal V_p/V_s with dipping Moho from receiver functions

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摘要 造山带地区的复合力系作用往往使Moho界面发生变形，局部表现为倾斜状态·为了得到这些区域精确地壳速度比结构，本文基于 H-κ 方法发展了 H-κ-θ 方法·该方法不仅考虑了倾斜Moho层的响应，同时利用径向和切向接收函数信息，增加了对扫描的约束·利用该方法对青藏高原东南缘地壳厚度和速度比结构进行研究，结果表明：研究区内地壳明显存在不均匀性，松潘—甘孜地体平均地壳厚度约为60 km，四川盆地西缘约为47 km，扬子地台约为43 km，三江块体和扬子地台东南缘已接近正常地壳厚度；松潘—甘孜地体与扬子地台相邻部位地壳平均地震波速度比（V_p/V_s）普遍偏高，且四川盆地西侧发现一绕盆地边缘的弧形高 V_p/V_s 异常区（>1.88），我们推测该异常可能由青藏高原向东逃逸的地壳流体受到高强度的四川盆地阻挡，在其西侧堆积所致·

关键词 接收函数，Moho倾斜地区，青藏高原东南缘， 地壳速度比

Abstract： The Moho discontinuity is often deformed by complex forces in tectonic zones, which presents as a dipping Moho locally. In order to abtain acurate crustal V_p/V_s ratio for these regions, this paper proposed an H-κ-θ stacking method to estimate the crustal V_p/V_s and thickness, which considers the responses of a dipping Moho. Both radial and tangential receiver functions were stacked to improve the scanning precision. The results of its application to southeastern Tibet indicate that the crustal thickness beneath southeastern Tibet varied notably. The average crustal thickness is about 60 km, 47 km and 43 km in Songpan-Garzê fold system, Sichuan basin and Yangtze platform, respectively, with a normal value in Sanjiang fold zone and southeastern Yangtze platform. The crustal V_p/V_s ratio is higher in the region between the Songpan-Garzê fold system and Yangtze platform, and is abnormally highest to the west of Sichuan basin (>1.88). We presume that the eastward crustal material flow was resisted by the Sichuan basin with high strength, and accumulated at west of Sichuan, consequently shows the unusual high V_p/V_s anomaly.

Keywords Receiver function, Dipping Moho Zone, Southeastern Tibet, Crustal V_p/V_s rati

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