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## 利用H-K叠加方法和CCP叠加方法研究中国东北地区地壳结构与泊松比

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Study of crustal structure and Poisson ratio of NE China by H-K stack and CCP stack methods

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摘要

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**摘要** 利用中国东北布设的流动地震台阵(116个)以及国家和区域台网(121个)的宽频带台站记录的824个远震事件,采用P波接收函数CCP叠加和H-K叠加两种方法获得了研究区详尽的地壳厚度图像.研究结果显示,两种方法获得的地壳厚度分布特征具有很好的一致性,中国东北下方地壳厚度存在明显的东西横向差异.重力梯度带西侧和佳木斯地块的台站下方地壳较厚,介于36~41 km之间,而在兴蒙槽地槽带中重力梯度带往东从36 km减薄至34 km左右.松辽盆地北侧、东侧和南侧地壳厚度较薄,为29~34 km,反映了该区复杂的地壳变形过程.CCP剖面显示郯庐断裂深切地壳,敦化-密山断裂下方莫霍面出现错断.H-K叠加得到的地壳平均泊松比显示,东北地区绝大部分台站下方的泊松比值较大,0.24~0.29.长白山、松辽盆地东部、燕山台隆东部和大兴安岭北部,泊松比值达到0.27~0.30,可能有幔源物质上涌,下地壳铁镁组分含量增加.

**关键词** 接收函数, 东北地区, CCP叠加, H-K叠加, 地壳厚度, 泊松比

**Abstract:** We use 824 tele-seismic records from 116 temporary stations and 121 national earthquake network stations in NE China to calculate the receiver functions and got the information of crustal thickness and Poisson's ratio by CCP stacking and H-K stacking methods. The thicknesses resulted from the two methods have very good consistency. The results show that crustal thickness beneath northeast China has an obvious west-east difference. The crustal thickness beneath the stations west of the gravity lineament and in the Jiamusi massif in NE China is between 36 km and 41 km. And from the gravity lineament to east in the Xingmeng geosynclines fold belt the crustal thickness thins to 34 km from 36 km. In the north side, east side and south side of Songliao Basin, the thickness of crust is thinner, about 29~34 km. CCP profiles show that the Tanlu Faults cut deep into the crust, the Moho shows an apparent dislocation beneath the Dunhua-Mishan fault. The result of Poisson ratio from H-K stacking shows that the values of Poisson ratio are relatively high beneath most stations in NE China, it is about 0.24~0.29. Near Changbai mountain, eastern Songliao Basin, eastern Yanshan bold belt and northern part of Grater Khingan Mountain, the value of Poisson's ratio reached 0.27~0.30. Maybe upwelling occurred, making the content of iron and magnesium components increasing in the lower crust.

**Keywords** Receiver function, Northeast China, CCP stacking method, H-K stacking method, Crust thickness, Poisson's ratio

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