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四川芦山7.0地震和汶川8.0地震震源区地壳岩石圈变形特征分析

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An analysis of the deformation of the crust and LAB beneath the Lushan and Wenchuan earthquakes in Sichuan province

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摘要 参考文献 相关文章

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摘要

地壳和岩石圈变形特征研究对于深入了解中强地震的深部孕震环境具有重要科学意义.本文联合P和S波远震接收函数偏移成像结果,对发生过芦山7.0地震和汶川8.0地震的龙门山断裂带及附近区域地壳和岩石圈结构进行分析.结果揭示出在青藏高原向四川盆地过渡的龙门山断裂带,Moho面和岩石圈底界面(LAB)呈现出强烈变形,特别是芦山地震和汶川地震震源区下方地壳出现了错断、下凹,岩石圈也呈现下凹变形特征.这种地壳及岩石圈变形所代表的高应力的积累可能是汶川和芦山地震发生的重要深部地球动力学背景.

关键词 芦山地震, 汶川地震, S波接收函数, P波接收函数, 岩石圈

Abstract:

Study of the crustal and lithospheric deformation is important to understanding of the deep environment of moderate and major earthquakes. In this work, the P and S receiver functions from the Sichuan seismic network are jointly used to study the crustal and lithospheric structures beneath the Lushan 7.0 earthquake on 20 April 2013 and Wenchuan 8.0 earthquake on 12 May 2008. The results indicate that there is strong deformation of the Moho and LAB (lithosphere-asthenosphere boundary) beneath the transition region from the Tibetan plateau to the Sichuan basin. The offset and downward warping of the Moho are observed beneath the Lushan and Wenchuan earthquakes with the sinking LAB. Such intense deformation may imply the accumulation of high stresses, which is probably the important geodynamic context of the Lushan and Wenchuan earthquakes.

Keywords Lushan earthquake, Wenchuan earthquake, S receiver function, P receiver function, Lithosphere

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