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华北克拉通泊松比与地壳厚度的关系及其大地构造意义

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嵇少丞 王茜 杨文采

加拿大蒙特利尔综合工学院民用、地质、采矿工程系，蒙特利尔，H3C 3A7,-,-

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摘要：

华北克拉通破坏和岩石圈减薄已成为我国乃至国际地学界研究的热点之一。本文作者对许卫卫和郑天愉（
海湾西北盆岭地区58个宽频地震台站下面地壳厚度和地壳泊松比的资料进行了详细的分析研究。在冀东北、辽西
地壳泊松比随地壳厚度增加呈非线性骤然陡降，说明在这些地区中新生代地壳减薄作用主要集中于长英质的中上
库—张家口—张北地区，地壳泊松比随地壳厚度增加作缓慢地线性减小，说明由玄武岩浆底侵作用造成的地壳泊
中上地壳减薄造成的泊松比减小。所以，在中新生代华北克拉通地壳减薄过程中，上地幔部分熔融及玄武岩浆底
官厅水库—张家口—张北等冀西北地区。

关键词：华北克拉通 泊松比 地壳成分 岩石圈减薄 基性岩浆底侵作用

Correlation between Crustal Thickness and Poisson's Ratio in the North China Craton Lithospheric Thinning

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Abstract:

Data of the crustal thickness and Poisson's ratio from 58 broadband seismic stations in the
by Xu and Zheng (2005, Chinese Journal of Geophysics, 48, 1077~1084) using the techniques of tele
have been carefully examined. Two types of correlation between the crustal thickness (H) and Pois
observed: with decreasing H, ν increases gently and linearly in the Baoding Datong and Guant
regions, while increasing abruptly and nonlinearly in the rest of the block (e.g., Northeastern H
southern Taihangshan area near Shijiazhuang). The linear correlation is interpreted as due to the
contribution of tectonic thinning of felsic crust and the addition of mafic rocks crystallized fr
bulk crustal ν . The abrupt increase of ν with decreasing H suggests that much larger thin
in the felsic upper and middle crust than in the mafic lower crust during Mesozoic Cenozoic tect
inferred that basaltic underplating has been localized mainly in the Zhangjiakou and adjacent reg

Keywords:North China craton Poisson's ratio Crustal composition Lithospheric thinning Underp