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内蒙古贝力克玄武岩地球化学特征及地质意义

作者	单位
<a href="#">陈生生</a>	<a href="#">中国科学院青藏高原研究所, 北京 100085</a> ; <a href="#">中国科学院大学, 北京 100049</a>
<a href="#">樊祺诚</a>	<a href="#">中国地震局地质研究所活动构造与火山重点实验室, 北京 100029</a>
<a href="#">赵勇伟</a>	<a href="#">中国地震局地质研究所活动构造与火山重点实验室, 北京 100029</a>
<a href="#">史仁灯</a>	<a href="#">中国科学院青藏高原研究所, 北京 100085</a>

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摘要:

内蒙贝力克地区存在一片面积为400km<sup>2</sup>、以发育三级熔岩台地为特征的新生代玄武岩,台地时代分别为2.31~2.41Ma、1.56~1.61Ma、0.51~0.61Ma。岩性为具有过渡性质的拉斑玄武岩,分为石英拉斑玄武岩与橄榄拉斑玄武岩,它们都起源于具有交代性质的石榴石橄榄岩源区。地球化学特征显示这两种岩性之间没有演化关系,而是源区不同程度、深度部分熔融的结果;并且在上升过程中,都受到下地壳麻粒岩的混染作用,其中石英拉斑玄武岩混染程度最大。大地构造背景上,贝力克与赤峰同处在兴蒙造山带南缘,它们表现出与华北西部北缘(集宁、大同、汉诺坝、繁峙)相似的岩浆源区和岩石圈地幔热状态,但不同的富集岩石圈地幔类型,即兴蒙造山带南缘呈现DMM-EM II特点,而华北西部北缘具有DMM-EM I混合趋势。这种差异可能与岩石圈地幔不同的时代及构造背景有关。在软流圈熔体与上覆岩石圈地幔相互反应的拉斑玄武岩成因模式基础上,认为华北岩石圈减薄现象不仅局限于克拉通内部,其处在克拉通西北部,乃至兴蒙造山带南缘也同样经历了岩石圈减薄过程,只是存在不同时间、程度的岩石圈减薄过程。

英文摘要:

The Beilike basalt, covering an area of about 400km<sup>2</sup>, consists of three levels of lava platforms at different elevations, and the age of each lava platform is 2.31~2.41Ma, 1.56~1.61Ma, 0.51~0.61Ma. The basalt which can be divided into quartz tholeiite and olivine tholeiite has an excessive nature of the characteristics, all being derived from the garnet peridotite source region. Based on the geochemistry characteristics, there does not exist the evolutionary relationship between the olive tholeiite and quartz tholeiite. They are interpreted to be resulted probably from the varying degrees of the garnet peridotite source region and the depth of partial melting. Both olive tholeiite and quartz tholeiite were affected by crustal contamination, but the latter is more obviously. Tectonically, both Beilike and Chifeng lie on the the southern margin of the Xing'an-Mongolia Orogen Belt, compared with the northern margin of North China Craton, they have a similar magma source and the lithospheric mantle thermal state, but different enrichment lithospheric mantle types, namely, the former displays a DMM-EM II array different from the latter, it may be related to different ages and tectonic settings of the lithospheric mantle. Based on the asthenosphere-lithospheric mantle interaction model, lithospheric thinning phenomenon in North China is not confined to the craton, instead in northwest craton, and even in the south margins of Xing'an-Mongolia Orogen Belt experienced lithospheric thinning too. They just have different time and degree of the lithospheric thinning process.

关键词: [内蒙贝力克](#) [新生代](#) [拉斑玄武岩成因](#) [岩石圈地幔演化](#)

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主办单位: 中国矿物岩石地球化学学会

单位地址: 北京9825信箱/北京朝阳区北土城西路19号

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