

论文

中国东部黄山的成山过程及其构造意义

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摘要:

黄山是否存在过冰川是长期争议的科学问题,反对者的证据之一是黄山的海拔高度不能满足终年积雪的要求。这种认识源于地理学家对黄山成山过程的推测,没有考虑黄山岩体和区域地质演化所反映的成因信息。黄山岩体为一个主要由4个岩性单元组成的早白垩世复式小岩基,从早到晚、由边缘到中心依次为温泉细粒黑云母二长花岗岩、云谷寺连续不等粒粗粒黑云母正长花岗岩、狮子岭斑状黑云母正长花岗岩和贡阳山细粒黑云母碱长花岗岩组成。这种结构变化表明黄山地区发生过同侵位剥蚀作用,暗示岩浆侵位深度越来越小,受挤压构造力的驱动。与此相应,狮子岭单元的钾长石斑晶定向排列和云谷寺单元中的原生节理垂直于相邻两单元的接触界面,暗示黄山花岗岩具有强力侵位的特点。因此,黄山岩体形成于挤压构造环境,而不是前人推测的伸展环境。这种认识与区域构造变形和盆地分析的证据一致,暗示黄山地区曾经处于挤压造山环境,具有造山带型厚陆壳。对比岩浆起源深度和现今地壳厚度,可以合理地推测,晚白垩世以来黄山地区地壳减薄了约14~29 km,其地貌响应约为1 94~4 18 km。据此,黄山在早白垩世的海拔高度可能达到2 693~4 776 m。因此,黄山形成于地壳沉陷过程中的差异侵蚀,而不是地壳的阶段式隆升。

关键词: [花岗岩](#); [黄山](#); [风景](#); [地貌](#); [冰川](#); [岩石圈减薄](#)

The mountain building process of the Huangshan Mountain, East China, and its tectonic implications

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Abstract:

Abstract: Whether there was a glacier on the Huangshan Hill is a topic long in debate and the opponents take an advantageous position. One of the interpretations from the opponents is that the previous elevation of the Huangshan Hill can not satisfy the condition of the hill being covered with snow all the year round. Such view point is from the interpretation of geographers for the mountain building process of the Huangshan Hill without considering the information from the Huangshan massif and regional geology. The Huangshan massif is a small Early Cretaceous composite batholith mainly consisting of four intrusive units as the following in order from central to rim and from early to late: Wenquan unit (fine granular Bi montzogranite), Yungusi unit (coarse and continuously heterogranular Bi syenogranite), Shiziling unit (porphyritic Bi syenogranite) and Gongyangshan unit (fine granular alkali feldspar granite with biotite). Such textural variation suggests that the Huangshan Hill has undergone syn emplacement erosion, that the depth of magma emplacement decreased from early to late and that the emplacement process was driven by the tectonic pressing. Accordingly, the K feldspar phenocrysts of the Shizifeng unit are oriented in the same direction and the primary joints in the Yungusi unit are perpendicular to the contact interfaces with both neighbor units. Both above facts suggest forceful emplacement of the Huangshan granites. Therefore, the Huangshan massif was produced in compressing condition instead of stretching environment as interpreted by the previous authors. The new interpretation is in accordance with the analysis of sedimentary basins and regional structure deformations and indicates that the Huangshan was in orogenic condition and had thick crust. Comparing the magma originated depth and the recent crust thickness, it is reasonable to interpret that the crust of the Huangshan district has been thinned about 1429 km since the late Cretaceous. Its geomorphic response is about 1.944.18 km. Accordingly, the elevation of the Huangshan at the late Cretaceous may have reached up to 26934776 m. Therefore, the Huangshan Hill is formed by differential erosion during the surface subsidence instead of by episodic rising.

Keywords:

Key words: [granite](#); [the Huangshan Hill](#); [landscape](#); [landforms](#); [glacier](#); [lithospheric thinning](#)

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