

李江海,刘守偈,牛向龙,高危言. 2009. 早期碰撞造山带的构造样式及其板块构造演化意义: 以华北克拉通五台山花岗岩—绿岩区为例. 岩石学报, 25(3): 481-494

早期碰撞造山带的构造样式及其板块构造演化意义: 以华北克拉通五台山花岗岩—绿岩区为例

作者	单位
李江海	教育部造山带与地壳演化重点实验室, 北京大学地球与空间科学学院, 北京 100871
刘守偈	教育部造山带与地壳演化重点实验室, 北京大学地球与空间科学学院, 北京 100871
牛向龙	教育部造山带与地壳演化重点实验室, 北京大学地球与空间科学学院, 北京 100871
高危言	教育部造山带与地壳演化重点实验室, 北京大学地球与空间科学学院, 北京 100871

基金项目: 国家自然科学基金项目(40472097)

摘要:

早期碰撞造山带的研究是探索板块构造早期体制的前缘领域。五台山地貌高差巨大(达2437m)、山体雄伟、地质露头连续完整,是我国早前寒武纪地质研究的经典地区和认识大陆克拉通早期地壳演化的窗口,已成为世界早前寒武纪碰撞造山带的典型实例。围绕五台山构造样式的深入研究,对于揭示早期板块构造演化及中浅地壳构造层次具有重要的地质意义。大量的野外地质调查及构造横剖面研究表明,五台山东冶亚群为华北克拉通的早期沉积盖层,它以开阔复式向形为特征,不整合于造山杂岩及其前陆冲断带和前陆盆地之上。区域变质相的分布及豆村亚群主期褶皱枢纽指示,五台山花岗岩—绿岩区向西南掀斜,出露了新太古代碰撞造山带不同构造单元(造山杂岩及前陆冲断带和前陆盆地)中浅层次上连续而完整的构造剖面。前陆冲断带以沉积岩系大规模平卧褶皱和逆断层、蛇绿岩混杂带和基底构造活化为特征。造山杂岩发育低角度逆断层和复杂叠加褶皱,伴随不同时期花岗岩类的侵入。从浅部层次向深部,绿岩带复式褶皱逐渐被与TTG杂岩构造叠置的表壳岩构造岩片取代,构造面理由陡立趋于平缓。与世界其他花岗岩—绿岩区相比,五台山区完好保留了造山带挤压构造及其前陆盆地沉积,指示早期碰撞造山过程的强烈构造缩短和大规模地壳隆升作用,是研究早期板块碰撞造山过程的重要例证。

英文摘要:

The kinematics of Early Precambrian collisional belt has been the target topics for plate tectonics. Wutaishan granite greenstone belt (WGGB) is a key area to understand early collisional belt. Because of its large elevation difference, continuous and widespread rock outcrops, the Wutaishan area has been widely investigated, and represents one of the most important windows to understand early crustal evolution. Based on the widespread geological research and the structural analysis of across section, WGGB is divided into two distinct tectonic levels, i.e. upper tectonic level composed of cover sequence (Dongye Subgroup) with open synclines and lower tectonic level consisting of orogenic complex, foreland basin and fold-thrust belt. As indicated by the distribution of metamorphic facies and fold hinges of main phase, WGGB is tilted to the southwest, a complete section across the different units of collisional belt have been exposed with shallow to middle crustal levels. The foreland basin is characterized by large-scale recumbent folds and thrusts, structural emplacement of ophiolitic mélanges and reactivation of cratonic basement. Whereas, the orogenic complex is associated with lower-angle thrust fault and complicate interference folds, accompanied by the emplacement of TTG granite gneiss. From the shallow to middle level of the orogenic belt, folded greenstone belts were gradually replaced by tectonic packages of supracrustal sequence interleaved with TTG gneiss. Compared with other Archean granite-greenstone belts of the world, the tectonic pattern and foreland basin molass sequence of WGGB record intense crustal shortening and uplifting associated with collisional orogeny, which is important example for reconstruction of the Early Precambrian plate tectonic evolution of continent.

关键词: [新太古代](#) [绿岩带](#) [前陆盆地](#) [叠加褶皱](#) [构造变形](#) [碰撞作用](#) [五台山](#)

投稿时间: 2009-01-08 最后修改时间: 2009-01-14

[HTML](#) [查看全文](#) [查看/发表评论](#) [下载PDF阅读器](#)

