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甘肃东南地区构造活动与2013年岷县—漳县M_S6.6级地震孕震机制

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Geometric pattern and active tectonics in Southeastern Gansu province: Discussion on seismogenic mechanism of the Minx Zhangxian M_S6.6 earthquake on July 22,2013

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摘要 位于南北地震带中北段的甘东南地区，其构造变形和构造活动特征与青藏高原向北东方向的扩展密切相关，该地区复杂的构造几何形态主要受控于东昆仑断裂和西秦岭北缘断裂，区域新构造运动主要动力来源于青藏高原向北东的扩展.近年来，甘东南地区中强地震频发，本文主要通过对该地区构造活动特征、历史地震等资料的综合分析讨论，结合地球物理、地震学和野外调查等资料，认为青藏高原东北部东昆仑断裂的向北挤压和向东的运动是该地区构造应力集中的主要原因，也是该地区中强地震的主要孕震环境和机制，而西秦岭北缘断裂的走滑及向南北两侧逆冲“花状构造”是临潭—宕昌断裂带上中强地震频繁发生的一个重要动力因素.2013年7月22日发生在甘肃岷县—漳县的M_S6.6级地震正好位于临潭—宕昌断裂带中东段上，是该断裂分段不均匀活动的结果.

关键词 活动构造, 构造转换, 岷县—漳县地震, 孕震机制, 甘东南

Abstract: Southeast Gansu province along the central-northern portion of the South-North Seismic Belt, the tectonic activities and deformation pattern are closely related to the northeastward growth of the Tibetan Plateau. Complicated structural geometries were controlled by both Eastern Kunlun and West-Qinling Northern Faults, and outward growth of the NE Tibet continuously contributes to the regional active deformation. In recent years, intermediate-strong earthquakes occurred frequently, calling for a detailed analysis. By integrating both structural and historical seismicity studies, and combining geophysical, seismological and field investigations, we conclude that northward indenting and eastward movement along the Eastern Kunlun Fault is the main tectonic stress source, and also it provides the basic setting and mechanism to generate strong earthquakes. Left-lateral slip and its bi-flanking thrusting 'flower structure' of the West-Qinling Northern Fault contributed to the frequent occurrence of intermediate-strong earthquakes along the Lintan-Tanchang fault to the south. Minxian-Zhangxian M_S6.6 earthquake on July 22, 2013 along the central-eastern Lintan-Dangchang fault is a consequence of differential activity due to heterogeneous segments.

Keywords Active tectonics, Tectonic transfer, Minxian-Zhangxian M_S6.6 earthquake, Seismogenic mechanism, Southeastern Gansu

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