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晓天—磨子潭韧性剪切带变形模拟及其对北大别穹隆构造演化的指示

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摘要：

现今出露在北大别穹隆北界上的晓天—磨子潭韧性剪切带是早白垩世造山后伸展活动的产物。野外观测、室内石英C轴组构与运动学涡度测量指示，这一NWW—SEE走向、倾向NNE的韧性剪切带，呈现为正左旋走滑运动，以简单剪切变形为主。该剪切带内现今所保留运动学特征及其在空间上的变化反映其形成后经历过旋转改造。以实测组构为约束的变形模拟揭示，该剪切带在早期伸展活动时为中地壳内上盘向280°方位运动的水平韧性剪切带，后在北大别穹隆上拱中被动地抬升而成为现今状态。北大别穹隆西强东弱的上隆幅度是晓天—磨子潭韧性剪切带被不均匀抬升和旋转的主要原因。该剪切带与北大别穹隆皆为早白垩世造山后重力垮塌中形成的，具有科迪勒拉型变质核杂岩特征。

关键词：晓天—磨子潭剪切带 拆离剪切带 理论模拟 运动学涡度 北大别穹隆。

Deformation Modeling of the Xiaotian—Mozitan Ductile Shear Zone and Its Implications to the North Dabie Dome Evolution

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Abstract:

As the northern boundary of the north Dabie dome, the Xiaotian—Mozitan ductile shear zone separates the North Dabie unit from the Beihuaiyang (north Huaiyang) unit. It strikes NWW—SEE and dips toward NNE. The shear zone is interpreted as having resulted from post orogenic extension in the Dabie orogen. Field investigation as well as analyses of quartz C axis fabric and kinematic vorticity for the shear zone mylonite demonstrates that the shear zone mostly experienced sinistral motion under simple shear deformation. The disharmonious kinematic character in the middle part relative to the rest parts indicates that the shear zone had been rotated since its formation. The strain modeling limited with real fabrics shows that the shear zone originated from a horizontal, mid crust level ductile shear zone with shear sense of top to NWW(280°) and then was uplifted and rotated to its present attitudes by doming of the North Dabie dome. The western segment of the North Dabie dome experienced more intensely doming than its eastern segment, therefore leading to unequal uplifting and rotation of the shear zone. The shear zone and North Dabie dome both resulted from gravity collapse during Early Cretaceous. The current North Dabie unit was similar to the Cordilleran type metamorphic core complex.

Keywords:Xiaotian—Mozitan shear zone detachment shear zone Theoretic modeling kinematic vorticity North Dabie dome

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