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The Evolutionary History of the Mesozoic Xuefeng Intracontinental Orogenic Belt in South China: Restrictions and Implications from the Deformation System of Chuangdong-Xuefeng Fold-thrust Belt

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The Chuangdong-Xuefeng Fold-thrust Belt exceeds 400 km and across the Yangtze Block, is an important component of the Mesozoic intracontinental deformation system in Xuefeng Orogenic Belt. It is mainly composed of a series of Chevron Anticline-Box Synclines to Chevron Syncline-Box Anticlines and related fault system. The most of the faults, which includes slip-slid featured thrust fault and normal faults, are NE-NNE trending in parallel with the axes of the folds. The minor faults, in the formal of normal faults, are NW trending and oblique or orthogonal to the axes.
The deformation mainly occurred during the Mesozoic, could be recognized as two independent stages, shows a great connection to the evolution of the Mesozoic Xuefeng Intracontinental Orogenic Belt. The thickening and thinning of the lithosphere, as the dynamic mechanism processes, had formed the folds and fractures system.
The Mesozoic Xuefeng Intracontinental Orogenic Belt partially inherited the characteristics of the early Paleozoic intracontinental deformation. With the converging of Yangtze and Cathaysia blocks in the South China Plate, the SE sourced compressing force formed the NE trend folds and the main fracture system. During which, the frontal deformation zone of the Chuandong-xuefeng tectonic belt still within the realm which between the Qiyueshan Fault and the Cili-Baojing Fault. The orogenic belt began to uplift with the lithosphere thicken and the crustal remelting occurred in the middle and lower crust. The foreland area of the orogenic belt began to extend gradually from Cili-Baojing fault to Qiyueshan fault or Pengshui-Jianshi fault, and the overall deformation growth rate was slowly increased by the gravity of the thickened lithosphere. The deformation front is about 150 km away from core of the orogenic belt. The extrusion direction and stress source are mainly SE direction.
Afterward, the SEE sourced compressing force formed the NNE trend folds and overprinted the former NE trend folds. The forming of the fold-related fractures dwarfed facing the fractures formed during the former stage. A small part of the SE trend faults which formed during the first stage had turned to be the left-lateral characteristic, and the SE trend small scale normal faults formed during the second stage. The lithosphere may begin to destabilize. Subsequently, the Xuefeng Intracontinental Orogeny occurred lithospheric weakening, which resulted in the decrease of the relative convergence rates of Cathaysia and Yangtze blocks. Under this dynamic background, the partition fold area was generated and gradually extended from Qiyueshan fault to Huayingshan fault. On the basis of the first stage of deformation, the Chevron Syncline-Box Anticlines and the thick-skinned structural area were overprinted by NNE-trending and NE-trending structural lines. It is undeniable that the intracontinental deformation system may also be affected by the subduction the Paleo-Pacific Plate, but the main dynamic mechanism is within the South China Plate.