

FORMATION MECHANISM OF THE ALTUN FAULT AND ITS DYNAMIC

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The Altun sinistral strike-slip fault located in a transitional zone between the rigid Tarim massif and ductile Kunlun-Qilian massif belongs to intracontinental transform (thrusting to sinistral strike-slip) fault in a post-continent-continent collision orogenic stage related to strong intracontinental collision in the Qinghai-Tibet plateau and inhomogeneous deformations of the massifs on its two sides. It experienced a dynamic process of segment-by-segment breakup and connection and gradual spreading, which was synchronous with the development of the thrust sequences and basins in the Qilian massif and uplift of the Qinghai-Tibet plateau. With southward propagation of the thrust sequence and continued uplift of the Qinghai-Tibet plateau, the northeastern tip of the Altun fault moved in a northeast direction, while the southwestern tip shifted in a southwest direction. The formation of the Altun fault has an intensive coupling with the development of the basin-range structure in Qilian Mountains, the thrust-propagation rate and the sinistral strike-slip rate are in the normal interrelation with the basin sedimentary rate. As the depth increase, the transformation-type strike-slip fault at the shallow level gradually transforms into latitudinal strike-slip fault. The main driving force of the formation of the Altun fault came from the Qinghai-Tibet hinterland, especially from strong thermal-uplift spreading occurring owing to the subduction of the Tarim plate towards the Kunlun Mountains and the Indian plate towards the Eurasian plate and northward spreading with the Kunlun intracontinental subduction zone as the obduction boundary.