



Block motion: the origin of Wenchuan earthquake

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The deformation and tectonic activity of Tibetan Plateau is one of the focus of geoscience research in nowadays, the great earthquake is the features of the recent tectonic activity. The November 14, 2001 Kunlun Mountain Pass Earthquake, the March 21, 2008 Yutian Earthquake and the May 12, 2008 Wenchuan Earthquake occurred in the middle of Tibet Plateau compose the new seismicity cluster. Kunlun Mountain Pass Earthquake and Wenchuan Earthquake located at the northern and eastern boundary of Bayankala Block respectively and Yutian earthquake on the western end of it. According to the Harvard University Centroid Moment Tensor, Kunlun Mountain Pass Earthquake is left-lateral strike slip caused by E-W structure, the southern wall in the middle of Bayankala Block moved to east, the west part of the block was extended, the eastern part was extruded, subsequently the normal earthquake of Yutian and thrust earthquake of Wenchuan were occurred in the west and east part of the block respectively. The rupture characteristics of Kunlun Mountain Pass, Yutian and Wenchuan earthquakes occurred in the different point afford us the evidences of mechanical consistency of Bayankala Block movement.

There are aftershocks in the Yutian earthquake region when the Wenchuan earthquake happened. According to the Yutian earthquake sequence authorized by Earthquake Administration of Xinjiang Uygur Autonomous Region, the magnitude-time distribution and day frequency of the $M_L \geq 3.0$ earthquake was shown the sequence decays quickly. But the intensity and frequency of Yutian sequence has three significantly increase in May, corresponding to the Wenchuan main shock of May 12, M6 stronger aftershocks of 18, 25 respectively. The contact is not accidental coincidence but the result caused by internal mechanical factor. From two sequences, the west part of block moved and the eastern end respond, which indicated the Bayankala Block move eastward. It is consistent with GPS observational results.