



Geodynamic modelling the stress evolution process in the Longmen Shan fault zone during the seismic circle

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Abstract: The destructive 2008 Mw 7.9 Wenchuan earthquake occurred in the Longmen Shan (LMS) fault zone and devastated cities in Sichuan province, China. Understanding the stress evolution process in the Longmen Shan fault zone during the seismic circle is important to know the feature of seismic activity and to analyze the seismic hazard in the fault area. In this research the inter-seismic stress loading process prior to the 2008 Mw 7.9 Wenchuan earthquake is simulated by developing 3D lithospheric model of the LMS fault zone through numerical experiments. The co-seismic stress drop and the post-seismic stress relaxation of the 2008 Mw 7.9 Wenchuan earthquake are simulated through dislocation source models. The recurrence interval of the Mw 7.9 earthquake is estimated to be about 4,200-6,500 years by considering the duration needed to accumulate the magnitude of the stress drop. This research sheds new light on the seismic activities in the Longmen Shan fault zone.