Numerical simulations of earthquakes based on the two-dimensional block-spring model: Effects of healing during a dynamic rupture

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We performed numerical simulations based on the two-dimensional block-spring model with a constant dynamic friction, in which slipped blocks do not heal during a dynamic rupture. While the constant dynamic friction with the healing produces strong heterogeneity of static stress field, one without the healing results in relatively smooth stress field. Trends of statistical features of events obtained for the constant dynamic frictions do not depend on the friction parameter, suggesting that dependence of friction on velocity and/or slip is essentially important to produce variations of statistical features of events in our model.