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Earthquake recurrence is studied from the temporal variation in slip through numerical simulations based on the normalized form of equation of motion of a one-body spring-slider model with thermal-pressurized slip-weakening friction and viscosity. The wear process, whose effect is included in the friction law, is also taken into account in this study. The main parameters are the normalized characteristic displacement, U_c, of the friction law and the normalized damping coefficient (to represent viscosity), η. Define T_R, D, and t_D to be the recurrence time of events, the final slip of an event, and the duration time of an event, respectively. Simulation results show that T_R increases when U_c decreases or η increases; D and t_D decrease with increasing η; and t_D increases with U_c. The time- and slip-predictable model can describe the temporal variation in cumulative slip. When the wear process is considered, the thickness of slip zone, h which depends on the cumulated slip, $S(t)=\Sigma D(t)$, i.e., $h(t)=CS(t)$ (C=a dimensionless increasing rate of h with S) is an important parameter influencing T_R and D. U_c is a function of h and thus depends on cumulated slip, ΣU, with an increasing rate of C. In the computational time period, the wear process influences the recurrence of events and such an effect increases with C when $C>0.0001$. When viscosity is present, the effect due to wear process becomes stronger. Both T_R and D decrease when the fault becomes more mature, thus suggesting that it is more difficult to produce large earthquakes along a fault when it becomes more mature. Neither the time-predictable model nor the slip-predictable one can describe the temporal variation in cumulative slip of earthquakes under the wear process with large C.

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