Supporting Information for "Collective behavior of asperities before large stick-slip events"

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Figure S1. Natural earthquakes usually show the characteristic of the cluster of seismicity which actually implies that the isolated events are uncommon. In our experiments, we consider the percentage of isolated slip episodes as a function of different values of the coefficient of D_i^{med}. We find the percentage first decreases sharply and then keeps relatively constant. We, therefore, determine the value of 6 which controls the transition as the optimal coefficient of D_i^{med}.

Table S1. Details of the parameters for each experiment are listed in Table S1.

Table S2. We list the b value of each experiment with a specific normal load and displacement rate in Table S2. It shows that the b value has no clear dependence on the loading rate of the system. In addition, our experimental results show that the b value is insensitive as well to the imposed normal load.

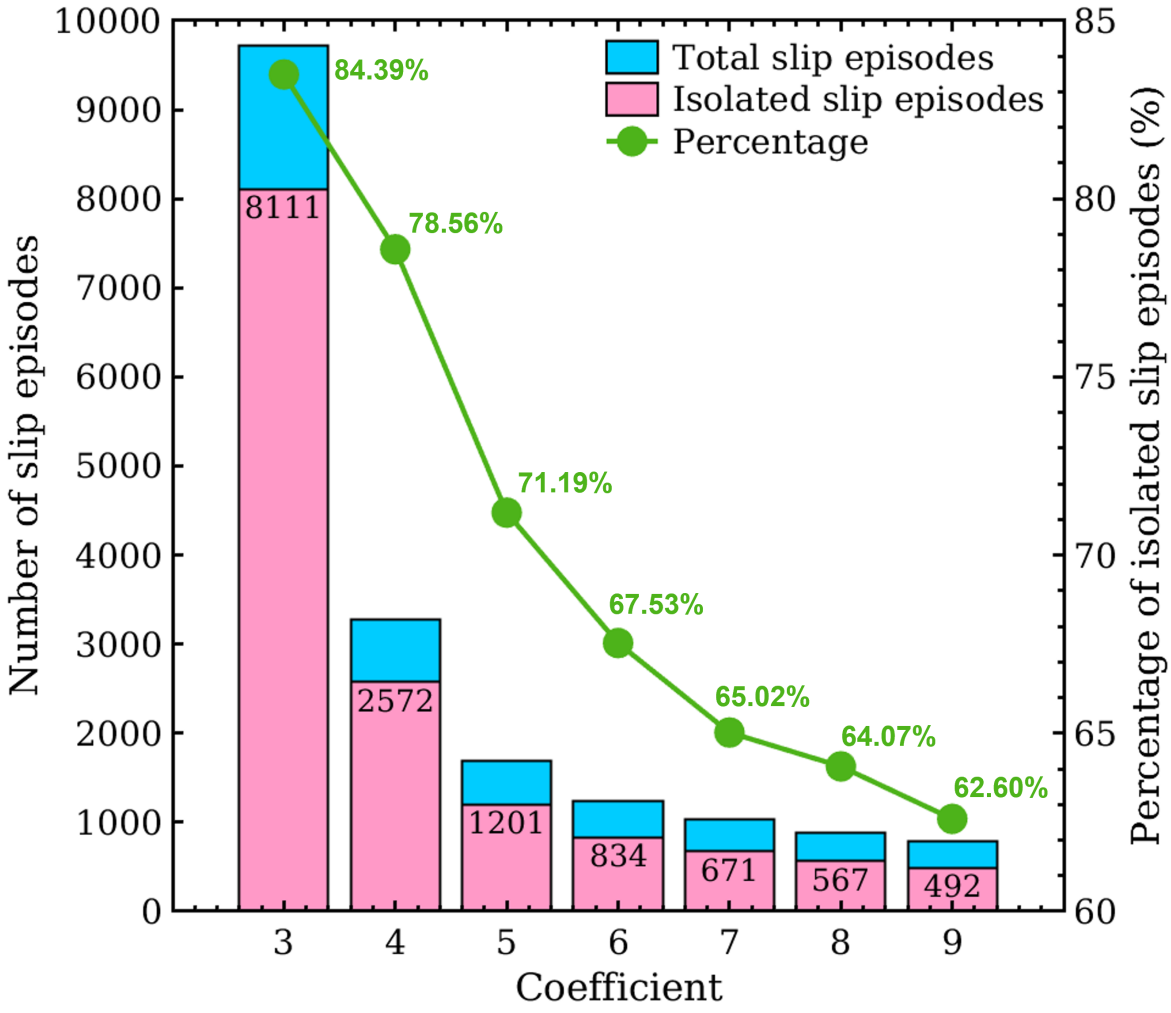

Figure S1. Quantitative comparison for determining the optimal value of the coefficient of D_i^{med}. With the increase of the value of the coefficient, the percentage of isolated slip episodes first decreases sharply and then keeps relatively stable. The value of 6 that controls the transition is determined as the optimal coefficient of D_i^{med}.

Table S1. Parameters of each experiment

	Displacement rate (μm/s)		
Normal load (N)	5.0	10.0	15.0
10	Exp.26		
25	Exp.25		
50	Exp.24		
100	Exp.6	Exp.7	Exp.8, Exp.27, Exp.28
200	Exp.1, Exp.9	Exp.10	Exp.11
400	Exp.2, Exp.12	Exp.13	Exp.14
600	Exp.15	Exp.3, Exp.16	Exp.17
700	Exp.18	Exp.19	Exp.20
800	Exp.21	Exp.4, Exp.22	Exp.23
1000			Exp.5

Table S2. Parameters and b value of each experiment

Experiment	Normal load (N)	Displacement rate (μm/s)	b value
1	200	5.0	1.08±0.13
2	400	5.0	1.22±0.08
3	600	10.0	1.16±0.11
4	800	10.0	1.17±0.13
5	1000	15.0	1.05±0.14
6	100	5.0	1.25±0.11
7	100	10.0	1.28±0.11
8	100	15.0	1.08±0.08
9	200	5.0	1.35±0.11
10	200	10.0	1.49±0.15
11	200	15.0	1.40±0.15
12	400	5.0	1.21±0.05
13	400	10.0	1.44±0.10
14	400	15.0	1.35±0.12
15	600	5.0	1.28±0.12
16	600	10.0	1.19±0.09
17	600	15.0	1.29±0.10
18	700	5.0	1.17±0.10
19	700	10.0	1.17±0.10
20	700	15.0	1.45±0.07
21	800	5.0	1.18±0.15
22	800	10.0	1.13±0.10
23	800	15.0	1.88±0.16
24	50	5.0	1.58±0.10
25	25	5.0	1.60±0.09
26	10	5.0	2.04±0.09
27	100	15.0	1.30±0.08
28	100	15.0	1.11±0.05