Supplement of Nat. Hazards Earth Syst. Sci., 19, 1119–1127, 2019
https://doi.org/10.5194/nhess-19-1119-2019-supplement
© Author(s) 2019. This work is distributed under
the Creative Commons Attribution 4.0 License.

Natural Hazards and Earth System Sciences
Open Access

Supplement of

Taylor's power law in the Wenchuan earthquake sequence with fluctuation scaling

Peijian Shi et al.

Correspondence to: Mei Li (mei_seis@163.com) and Yang Li (yangli@d.umn.edu)

The copyright of individual parts of the supplement might differ from the CC BY 4.0 License.

Supplementary tables

Table S1. Fitted results of two linear equations for different block sizes *A* (time interval in days) from 2008−2016

A	Equation $\log_{10}(\text{variance}) = c + b \log_{10}(\text{mean})$								Equation $\log_{10}(\text{variance}) = d + 2 \log_{10}(\text{mean})$			
	$\hat{c}$	95% CI of $\hat{c}$		$\hat{b}$	95% CI of $\hat{b}$		R^2	RMSE_1	$\hat{d}$	95% CI of $\hat{d}$		RMSE_2
4	0.016	−0.404	0.435	2.080	2.053	2.107	0.9670	0.4083	1.263	1.234	1.292	0.4170
5	0.034	−0.450	0.518	2.085	2.054	2.116	0.9654	0.4180	1.359	1.325	1.392	0.4276
6	0.120	−0.399	0.640	2.084	2.051	2.117	0.9670	0.4073	1.433	1.397	1.469	0.4169
7	0.285	−0.270	0.839	2.077	2.041	2.112	0.9677	0.4016	1.489	1.451	1.527	0.4097
8	0.345	−0.251	0.941	2.077	2.039	2.115	0.9676	0.3924	1.561	1.521	1.600	0.4004
9	0.352	−0.285	0.989	2.079	2.039	2.120	0.9673	0.3958	1.606	1.563	1.648	0.4043
10	0.702	−0.004	1.409	2.060	2.015	2.105	0.9634	0.4091	1.648	1.602	1.694	0.4136
11	0.669	−0.077	1.415	2.064	2.017	2.111	0.9634	0.4135	1.683	1.634	1.732	0.4187
12	0.526	−0.234	1.286	2.075	2.027	2.123	0.9656	0.3976	1.714	1.665	1.763	0.4049
13	0.725	−0.099	1.548	2.066	2.014	2.117	0.9626	0.4097	1.767	1.715	1.820	0.4150
14	0.533	−0.290	1.356	2.079	2.027	2.131	0.9657	0.3979	1.788	1.735	1.842	0.4059
15	0.647	−0.242	1.537	2.073	2.017	2.128	0.9626	0.4145	1.801	1.744	1.859	0.4210
16	0.780	−0.147	1.707	2.066	2.008	2.125	0.9619	0.4118	1.838	1.779	1.896	0.4172
17	0.878	−0.045	1.800	2.063	2.006	2.121	0.9645	0.3959	1.888	1.830	1.947	0.4009
18	0.855	−0.168	1.878	2.064	2.00	2.128	0.9590	0.4215	1.870	1.806	1.934	0.4262
19	0.886	−0.086	1.859	2.065	2.004	2.126	0.9648	0.3928	1.928	1.866	1.989	0.3981
20	1.057	0.027	2.087	2.055	1.991	2.120	0.9625	0.4008	1.943	1.879	2.007	0.4046
21	0.982	−0.018	1.982	2.061	1.998	2.123	0.9663	0.3853	1.951	1.888	2.015	0.3901
22	0.875	−0.244	1.994	2.068	1.998	2.138	0.9605	0.4149	1.964	1.895	2.034	0.4203
23	0.728	−0.345	1.802	2.078	2.011	2.145	0.9654	0.3959	1.979	1.911	2.048	0.4036

24	0.829	−0.315	1.974	2.073	2.001	2.144	0.9624	0.4043	1.993	1.922	2.065	0.4106
25	0.749	−0.418	1.917	2.079	2.006	2.152	0.9626	0.4127	2.012	1.938	2.086	0.4203
26	0.898	−0.303	2.098	2.072	1.998	2.147	0.9621	0.4055	2.057	1.982	2.131	0.4117
27	1.028	−0.069	2.124	2.064	1.996	2.133	0.9692	0.3696	2.059	1.990	2.128	0.3752
28	0.844	−0.309	1.996	2.078	2.006	2.149	0.9679	0.3813	2.096	2.022	2.169	0.3893
29	0.733	−0.566	2.033	2.083	2.002	2.164	0.9610	0.4132	2.069	1.988	2.149	0.4212
30	1.111	−0.169	2.391	2.061	1.981	2.140	0.9624	0.3973	2.089	2.010	2.167	0.4018
31	1.401	0.043	2.760	2.045	1.961	2.129	0.9590	0.4096	2.125	2.043	2.207	0.4119
32	0.951	−0.385	2.287	2.072	1.989	2.155	0.9623	0.4045	2.100	2.017	2.183	0.4107
33	1.401	0.116	2.686	2.044	1.964	2.123	0.9653	0.3838	2.102	2.023	2.181	0.3862
34	1.367	−0.041	2.775	2.047	1.96	2.135	0.9601	0.4068	2.131	2.046	2.216	0.4095
35	1.171	−0.221	2.562	2.061	1.975	2.147	0.9624	0.4017	2.152	2.067	2.238	0.4062
36	1.185	−0.174	2.543	2.061	1.976	2.145	0.9653	0.3853	2.159	2.075	2.243	0.3899
37	1.175	−0.203	2.552	2.063	1.978	2.148	0.9654	0.3881	2.189	2.104	2.275	0.3931
38	0.881	−0.553	2.316	2.082	1.993	2.17	0.9641	0.3981	2.198	2.109	2.288	0.4062
39	1.230	−0.045	2.504	2.062	1.983	2.141	0.9721	0.3492	2.228	2.149	2.308	0.3546
40	1.197	−0.057	2.451	2.064	1.986	2.141	0.9737	0.3392	2.229	2.151	2.307	0.3451
41	0.855	−0.734	2.443	2.083	1.984	2.181	0.9601	0.4200	2.190	2.091	2.288	0.4279
42	1.437	−0.004	2.878	2.049	1.960	2.138	0.9664	0.3780	2.231	2.142	2.319	0.3811
43	1.213	−0.302	2.729	2.064	1.970	2.157	0.9645	0.3831	2.243	2.152	2.335	0.3880
44	1.586	−0.064	3.235	2.041	1.939	2.143	0.9585	0.4068	2.255	2.157	2.352	0.4087
45	1.789	0.227	3.351	2.029	1.932	2.126	0.9627	0.3875	2.259	2.165	2.352	0.3886
46	0.929	−0.527	2.384	2.081	1.991	2.171	0.9700	0.3678	2.235	2.143	2.327	0.3767
47	0.738	−0.804	2.28	2.094	1.999	2.189	0.9674	0.3760	2.259	2.164	2.354	0.3871
48	1.043	−0.612	2.699	2.076	1.973	2.178	0.9631	0.4000	2.265	2.164	2.367	0.4068
49	1.694	−0.022	3.409	2.036	1.931	2.142	0.9597	0.4023	2.284	2.182	2.385	0.4038

50	1.127	−0.538	2.792	2.073	1.970	2.176	0.9639	0.3913	2.307	2.206	2.408	0.3977
51	1.343	−0.349	3.035	2.061	1.957	2.166	0.9637	0.3851	2.337	2.237	2.438	0.3896
52	1.218	−0.433	2.868	2.066	1.964	2.168	0.9660	0.3757	2.289	2.190	2.388	0.3812
53	1.859	0.173	3.544	2.030	1.926	2.134	0.9641	0.3770	2.346	2.247	2.446	0.3781
54	0.970	−0.778	2.718	2.081	1.973	2.189	0.9638	0.4051	2.278	2.169	2.388	0.4132
55	1.464	−0.330	3.258	2.054	1.943	2.164	0.9618	0.3963	2.338	2.231	2.445	0.3998
56	1.748	0.070	3.427	2.039	1.936	2.142	0.9667	0.3618	2.380	2.282	2.478	0.3637
57	1.597	−0.155	3.348	2.046	1.938	2.154	0.9647	0.3779	2.344	2.240	2.448	0.3806
58	1.115	−0.726	2.956	2.076	1.963	2.19	0.9629	0.3984	2.349	2.237	2.461	0.4053
59	2.030	0.258	3.802	2.022	1.914	2.131	0.9646	0.3735	2.395	2.291	2.499	0.3741
60	1.817	0.094	3.541	2.035	1.929	2.141	0.9675	0.3615	2.387	2.285	2.489	0.3631
61	1.691	−0.026	3.409	2.042	1.937	2.148	0.9685	0.3579	2.379	2.277	2.482	0.3602
62	1.985	0.138	3.833	2.025	1.912	2.139	0.9640	0.3717	2.396	2.289	2.503	0.3725
63	1.700	−0.286	3.686	2.040	1.918	2.163	0.9590	0.4010	2.354	2.238	2.469	0.4028
64	2.255	0.385	4.125	2.009	1.894	2.124	0.9633	0.3746	2.401	2.292	2.509	0.3747
65	2.174	0.319	4.029	2.013	1.899	2.127	0.9648	0.3719	2.385	2.276	2.494	0.3721
66	2.058	0.213	3.904	2.018	1.905	2.132	0.9661	0.3701	2.353	2.243	2.462	0.3706
67	2.410	0.479	4.34	1.999	1.880	2.118	0.9623	0.3747	2.398	2.286	2.509	0.3747
68	1.932	−0.025	3.888	2.028	1.908	2.149	0.9633	0.3772	2.391	2.278	2.505	0.3781
69	1.773	−0.301	3.847	2.042	1.914	2.169	0.9605	0.3957	2.450	2.329	2.571	0.3976
70	2.379	0.241	4.517	2.004	1.872	2.135	0.9565	0.3993	2.440	2.318	2.561	0.3993
71	1.169	−0.714	3.052	2.074	1.958	2.190	0.9687	0.3717	2.363	2.247	2.480	0.3789
72	2.381	0.400	4.363	2.003	1.882	2.125	0.9643	0.3661	2.433	2.319	2.547	0.3661
73	2.194	0.319	4.070	2.014	1.899	2.129	0.9681	0.3551	2.423	2.312	2.534	0.3553
74	2.322	0.484	4.161	2.006	1.893	2.119	0.9699	0.3414	2.422	2.314	2.529	0.3415
75	1.807	−0.255	3.87	2.039	1.913	2.166	0.9636	0.3826	2.448	2.327	2.569	0.3845

76	2.332	0.340	4.324	2.01	1.888	2.133	0.9660	0.3566	2.501	2.387	2.615	0.3568
77	2.128	−0.029	4.285	2.021	1.888	2.153	0.9618	0.3834	2.466	2.341	2.59	0.3840
78	2.325	0.269	4.381	2.009	1.883	2.135	0.9647	0.3608	2.468	2.351	2.585	0.3609
79	1.708	−0.270	3.685	2.044	1.922	2.165	0.9691	0.3529	2.418	2.301	2.535	0.3554
80	2.304	0.146	4.462	2.011	1.879	2.144	0.9624	0.3770	2.484	2.361	2.608	0.3772
81	2.428	0.248	4.608	2.002	1.868	2.136	0.9624	0.3743	2.458	2.333	2.583	0.3743
82	2.371	0.133	4.608	2.007	1.870	2.144	0.9606	0.3820	2.484	2.356	2.611	0.3821
83	1.727	−0.370	3.824	2.045	1.916	2.174	0.9664	0.3701	2.463	2.339	2.588	0.3728
84	2.479	0.176	4.783	2.003	1.862	2.144	0.9595	0.3871	2.529	2.398	2.659	0.3871
85	1.651	−0.623	3.926	2.051	1.912	2.191	0.9621	0.3958	2.488	2.353	2.623	0.3990
86	1.612	−0.503	3.727	2.053	1.923	2.183	0.9681	0.3528	2.473	2.351	2.596	0.3563
87	2.106	−0.041	4.252	2.026	1.894	2.158	0.9664	0.3430	2.531	2.413	2.649	0.3438
88	1.670	−0.597	3.937	2.051	1.912	2.19	0.9647	0.3625	2.498	2.371	2.625	0.3656
89	1.985	−0.095	4.064	2.031	1.903	2.159	0.9694	0.3322	2.487	2.371	2.603	0.3334
90	1.335	−0.885	3.555	2.071	1.934	2.207	0.9666	0.3598	2.487	2.360	2.615	0.3658
91	1.530	−0.905	3.964	2.061	1.911	2.210	0.9611	0.3802	2.516	2.380	2.652	0.3842
92	2.199	−0.110	4.509	2.022	1.880	2.163	0.9635	0.3581	2.550	2.423	2.677	0.3586
93	1.875	−0.519	4.268	2.042	1.895	2.189	0.9629	0.3736	2.558	2.422	2.693	0.3756
94	2.186	−0.291	4.663	2.024	1.872	2.176	0.9598	0.3803	2.578	2.441	2.715	0.3810
95	2.994	0.551	5.437	1.974	1.824	2.124	0.9588	0.3685	2.572	2.439	2.705	0.3692
96	1.673	−0.871	4.216	2.051	1.895	2.207	0.9600	0.3973	2.501	2.354	2.648	0.4002
97	1.990	−0.451	4.43	2.031	1.881	2.181	0.9623	0.3821	2.495	2.355	2.636	0.3833
98	3.249	0.679	5.818	1.959	1.801	2.116	0.9556	0.3819	2.576	2.436	2.717	0.3838
99	2.125	−0.416	4.666	2.025	1.87	2.181	0.9607	0.3832	2.536	2.393	2.679	0.3839
100	2.126	−0.241	4.492	2.026	1.881	2.171	0.9657	0.3575	2.546	2.413	2.680	0.3583

RMSE represents root-mean-square error; R^2 represents the coefficient of determination for the first linear equation.

Table S2. Fitted results using different data range when block size A = 10 days

Data range	Equation $\log_{10}(\text{variance}) = c + b \log_{10}(\text{mean})$								Equation $\log_{10}(\text{variance}) = d + 2 \log_{10}(\text{mean})$			
	$\hat{c}$	95% CI of $\hat{c}$		$\hat{b}$	95% CI of $\hat{b}$		R^2	RMSE_1	$\hat{d}$	95% CI of $\hat{d}$		RMSE_2
2008—2008	−2.329	−5.916	1.259	2.214	2.012	2.415	0.9614	0.3665	1.477	1.297	1.657	0.4068
2008—2009	−4.784	−6.699	−2.869	2.352	2.241	2.462	0.9696	0.3515	1.308	1.187	1.429	0.4602
2008—2010	1.311	−0.315	2.938	2.012	1.915	2.109	0.9475	0.4985	1.517	1.415	1.618	0.4986
2008—2011	1.110	−0.182	2.402	2.027	1.949	2.106	0.9529	0.4704	1.562	1.481	1.644	0.4713
2008—2012	0.945	−0.161	2.050	2.039	1.972	2.107	0.9549	0.4519	1.585	1.516	1.654	0.4536
2008—2013	1.031	0.063	1.998	2.037	1.977	2.097	0.9569	0.4459	1.627	1.565	1.689	0.4475
2008—2014	1.142	0.272	2.012	2.032	1.978	2.086	0.9579	0.4358	1.656	1.600	1.711	0.4370
2008—2015	0.918	0.134	1.701	2.046	1.997	2.096	0.9605	0.4244	1.657	1.606	1.707	0.4271
2008—2016	0.702	−0.004	1.409	2.06	2.015	2.105	0.9634	0.4091	1.648	1.602	1.694	0.4136

RMSE represents root-mean-square error; R^2 represents the coefficient of determination for the first linear equation.