Supplementary Materials

Table S1 Original rockburst dataset compiled from literatures (Li et al., 2017; Pu et al., 2019; Xue et al., 2020; Yin et al., 2021; Sun et al., 2021; Guo et al., 2022; Xue et al., 2022)

No	σ_θ(MPa)	σ_c(MPa)	σ_t(MPa)	*SCF*	B_1	B_2	W_{et}	*D*(m)	Rockburst grade
1	90	170	11.3	0.53	15.04	0.88	9	200	2
2	90	220	7.4	0.41	29.73	0.93	7.3	194	1
3	62.6	165	9.4	0.38	17.53	0.89	9	400	1
4	55.4	176	7.3	0.32	24.11	0.92	9.3	300	2
5	30	88.7	3.7	0.34	23.97	0.92	6.6	400	2
6	48.75	180	8.3	0.27	21.69	0.91	5	700	2
7	80	180	6.7	0.44	26.87	0.93	5.5	250	1
8	89	236	8.3	0.38	28.43	0.93	5	890	2
9	98.6	120	6.5	0.82	18.46	0.90	3.8	150	2
10	108.4	140	8	0.77	17.5	0.89	5	NaN	3
11	57	180	8.3	0.32	21.69	0.91	5	NaN	2
12	50	130	6	0.38	21.67	0.91	5	NaN	2
13	62.5	175	7.25	0.36	24.14	0.92	5	NaN	2
14	75	180	8.3	0.42	21.69	0.91	5	NaN	2
15	11	115	5	0.1	23	0.92	5.7	NaN	0
16	43.4	123	6	0.35	20.5	0.91	5	NaN	2
17	18.8	178	5.7	0.11	31.23	0.94	7.4	NaN	0
18	34	150	5.4	0.23	27.78	0.93	7.8	NaN	0
19	56.1	131.99	9.44	0.43	13.98	0.87	7.44	NaN	2
20	54.2	134	9.1	0.4	0.15	0.87	7.1	NaN	2
21	70.3	128.3	8.7	0.55	0.15	0.87	6.4	NaN	2
22	60.7	111.5	7.86	0.54	14.19	0.87	6.16	NaN	3
23	54.2	134	9.09	0.4	15	0.87	7.08	NaN	2
24	70.3	129	8.73	0.55	11.4	0.87	6.43	NaN	2
25	91.23	157.63	11.96	0.58	13.18	0.86	6.27	203	3
26	66.77	148.48	8.47	0.45	17.53	0.89	5.08	827	1
27	51.5	132.05	6.33	0.39	20.86	0.91	4.63	896	2
28	35.82	127.93	4.43	0.28	28.9	0.93	3.67	1117	1
29	21.5	107.52	2.98	0.2	36.04	0.95	2.29	1124	0
30	18.32	96.41	2.01	0.19	47.93	0.96	1.87	1140	0
31	110.3	167.19	12.67	0.66	13.2	0.86	6.83	983	3
32	26.06	118.46	3.51	0.22	33.75	0.94	2.89	853	1
33	16.62	156.86	10.66	0.11	14.71	0.87	4.83	644	2
34	16.47	156.9	10.33	0.11	15.19	0.88	4.39	692	2
35	16.43	157.95	11.06	0.1	14.28	0.87	4.99	970	3
36	16.3	155.28	10.63	0.11	14.61	0.87	4.4	850	2
37	15.97	114.07	11.96	0.14	9.54	0.81	2.4	174	0
38	19.14	106.31	11.96	0.18	8.89	0.80	2.07	275	0

39	12.96	117.81	11.96	0.11	9.85	0.82	2.49	187	0
40	31.05	147.85	11.96	0.21	12.36	0.85	3	267	2
41	29.09	138.5	11.96	0.21	11.58	0.84	2.77	215	0
42	32.4	140.88	11.96	0.23	11.78	0.84	2.86	272	1
43	34.89	151.7	10.66	0.23	14.23	0.87	3.17	644	1
44	16.21	135.07	10.33	0.12	13.08	0.86	2.49	692	1
45	30.56	160.83	11.06	0.19	14.54	0.87	3.63	970	3
46	19.36	113.87	4.43	0.17	25.7	0.93	2.38	1107	1
47	33.15	106.94	2.98	0.31	35.89	0.95	2.15	1205	2
48	9.74	88.51	2.98	0.11	29.7	0.93	1.77	1184	0
49	11.75	83.96	2.98	0.14	28.17	0.93	2.15	1373	0
50	39.94	117.48	2.98	0.34	39.42	0.95	2.37	1689	1
51	39.82	128.46	2.98	0.31	43.11	0.95	2.4	1606	2
52	46.22	140.07	2.01	0.33	69.69	0.97	3.29	1220	1
53	30.95	123.79	12.67	0.25	9.77	0.81	2.57	920	1
54	40.99	186.3	12.67	0.22	14.7	0.87	4.1	785	2
55	20.82	122.47	12.67	0.17	9.67	0.81	2.81	772	1
56	36.09	164.05	12.67	0.22	12.95	0.86	3.59	644	2
57	7.28	52	3.7	0.14	14.05	0.87	1.3	NaN	0
58	9.57	99.7	4.8	0.1	20.77	0.91	3.8	NaN	0
59	34.15	54.2	12.1	0.63	4.48	0.63	3.17	920	1
60	60	135	15.04	0.44	8.98	0.80	4.86	1000	1
61	60	66.49	9.72	0.9	6.84	0.74	2.15	1000	1
62	60	106.38	11.2	0.56	9.5	0.81	6.11	1000	1
63	60	86.03	7.14	0.7	12.05	0.85	2.85	1000	1
64	60	149.19	9.3	0.4	16.04	0.88	3.5	1000	1
65	60	136.79	10.42	0.44	13.13	0.86	2.12	1000	1
66	63.8	110	4.5	0.58	24.4	0.92	6.31	750	2
67	2.6	20	3	0.13	6.67	0.74	1.39	750	0
68	44.4	120	5	0.37	24	0.92	5.1	750	1
69	13.5	30	2.67	0.45	11.2	0.84	2.03	750	1
70	70.4	110	4.5	0.64	24.4	0.92	6.31	700	2
71	3.8	20	3	0.19	6.67	0.74	1.39	700	0
72	57.6	120	5	0.48	24	0.92	5.1	700	2
73	19.5	30	2.67	0.65	11.2	0.84	2.03	700	2
74	81.4	110	4.5	0.74	24.4	0.92	6.31	600	3
75	4.6	20	3	0.23	6.67	0.74	1.39	600	0
76	73.2	120	5	0.61	24	0.92	5.1	600	2
77	30	30	2.67	1	11.2	0.84	2.03	600	3
78	15.2	53.8	5.56	0.28	9.68	0.81	1.92	510	0
79	88.9	142	13.2	0.63	10.7	0.83	3.62	510	3
80	59.82	85.8	7.31	0.7	11.7	0.84	2.78	510	2
81	32.3	67.4	6.7	0.48	10.1	0.82	1.1	510	0

82	30.1	88.7	3.7	0.34	23.97	0.92	6.6	225	3
83	18.8	171.5	6.3	0.11	27.22	0.93	7	375	0
84	34	149	5.9	0.23	25.25	0.92	7.6	435	1
85	38.2	53	3.9	0.72	13.59	0.86	1.6	250	0
86	11.3	90	4.8	0.13	18.75	0.90	3.6	100	0
87	92	263	10.7	0.35	24.58	0.92	8	300	1
88	62.4	235	9.5	0.27	24.74	0.92	9	330	3
89	43.4	136.5	7.2	0.32	18.96	0.90	5.6	223	3
90	11	105	4.9	0.1	21.43	0.91	4.7	425	0
91	46.4	100	4.9	0.46	20.4	0.91	2	NaN	1
92	23	80	3	0.29	26.8	0.93	0.85	NaN	1
93	46.2	105	5.3	0.44	19.7	0.90	2.3	NaN	1
94	35	133.4	9.3	0.26	14.34	0.87	2.9	204	1
95	13.9	124	4.22	0.11	29.4	0.93	2.04	NaN	0
96	17.4	161	3.98	0.14	31.4	0.95	2.19	NaN	1
97	19	153	4.48	0.15	28.1	0.94	2.11	NaN	1
98	19.7	142	4.55	0.16	27.9	0.94	2.26	NaN	1
99	18.7	81.2	10.6	0.23	7.66	0.77	1.5	428	0
100	23.6	82.8	11.2	0.29	7.39	0.76	1.5	510	0
101	28.6	123.6	11.5	0.23	10.75	0.83	2.5	460	0
102	72	120.5	14.9	0.6	8.09	0.78	2.5	580	0
103	29.8	132.2	7.8	0.23	16.95	0.89	4.6	460	0
104	44.6	130.5	11.09	0.34	11.77	0.84	4.6	530	0
105	66.1	135.2	10.9	0.49	12.4	0.85	4.6	569	1
106	99.4	129.5	11.3	0.77	11.46	0.84	4.6	650	1
107	33.6	156.3	10.2	0.21	15.32	0.88	5.2	515	1
108	109.5	155.8	11.77	0.7	13.24	0.86	5.2	650	2
109	26.9	92.6	9.52	0.29	9.73	0.81	3.7	520	1
110	38.3	90.1	10.2	0.43	8.83	0.80	3.7	550	2
111	83.9	95.6	8.69	0.88	11	0.83	3.7	630	1
112	55.9	126.8	6.56	0.44	19.33	0.90	8.1	560	3
113	109.9	128.5	9.63	0.86	13.34	0.86	8.1	670	3
114	59.9	96.5	8	0.62	12.06	0.85	1.8	570	1
115	68	106.8	6.1	0.64	17.51	0.89	7.2	600	3
116	50.6	63.83	5.06	0.79	12.61	0.85	2.23	682	1
117	50.6	85.36	4.91	0.59	17.38	0.89	3.41	682	1
118	50.6	104.97	6.18	0.48	16.99	0.89	10.9	682	3
119	50.6	153.1	10.48	0.33	14.61	0.87	3.14	682	1
120	120.8	151.6	10.1	0.8	15.01	0.88	20	490	3
121	119.32	138.6	7.74	0.86	17.91	0.89	30	590	3
122	95.67	127.37	10.51	0.75	12.12	0.85	30	595	3
123	114.44	174.71	14.42	0.66	12.12	0.85	10	784	3
124	127.6	145.42	13.7	0.88	10.61	0.83	10	858	3

125	126.41	158.03	14.32	0.8	11.04	0.83	10	951	3
126	108.53	113.37	10.43	0.96	10.87	0.83	10	1170	3
127	29.04	124.15	5	0.23	24.83	0.92	4.39	240	0
128	40.87	139	6	0.29	23.17	0.92	0.81	437	0
129	50.09	124	5	0.4	24.8	0.92	6.53	490	1
130	59.09	88.25	3.6	0.67	24.51	0.92	6.14	720	2
131	62.13	124	5	0.5	24.8	0.92	4.62	620	1
132	40.9	88.25	3.6	0.46	24.51	0.92	4.61	470	1
133	22.93	88.25	3.6	0.26	24.51	0.92	0.81	220	0
134	47.5	86.3	15.6	0.55	5.53	0.69	6.3	720	2
135	47.5	61.1	5.3	0.78	11.53	0.84	7.2	720	2
136	47.5	99.2	7.3	0.48	13.59	0.86	8.31	720	2
137	47.5	91.3	14.5	0.52	6.3	0.73	21	720	2
138	67.2	86.3	15.6	0.78	5.53	0.69	6.3	780	2
139	67.2	61.1	5.3	1.1	11.53	0.84	7.2	780	2
140	67.2	99.2	7.3	0.68	13.59	0.86	8.31	780	2
141	67.2	91.3	14.5	0.74	6.3	0.73	21	780	2
142	77	86.3	15.6	0.89	5.53	0.69	6.3	840	3
143	77	61.1	5.3	1.26	11.53	0.84	7.2	840	3
144	77	99.2	7.3	0.78	13.59	0.86	8.31	840	3
145	77	91.3	14.5	0.84	6.3	0.73	21	840	3
146	225.5	86.3	15.6	2.61	5.53	0.69	6.3	900	3
147	225.5	61.1	5.3	3.69	11.53	0.84	7.2	900	3
148	225.5	99.2	7.3	2.27	13.59	0.86	8.31	900	3
149	225.5	91.3	14.5	2.47	6.3	0.73	21	900	3
150	274.3	86.3	15.6	3.18	5.53	0.69	6.3	960	3
151	274.3	61.1	5.3	4.49	11.53	0.84	7.2	960	3
152	274.3	99.2	7.3	2.77	13.59	0.86	8.31	960	3
153	274.3	91.3	14.5	3	6.3	0.73	21	960	3
154	297.8	86.3	15.6	3.45	5.53	0.69	6.3	1020	3
155	297.8	61.1	5.3	4.87	11.53	0.84	7.2	1020	3
156	297.8	99.2	7.3	3	13.59	0.86	8.31	1020	3
157	297.8	91.3	14.5	3.26	6.3	0.73	21	1020	3
158	77.69	74.04	8.96	1.05	8.26	0.78	1.33	805	0
159	77.07	78.3	6.8	0.98	11.51	0.84	3.11	795	2
160	67.18	132.2	16.4	0.51	8.06	0.78	3.97	635	2
161	75.03	128.6	13	0.58	9.89	0.82	5.76	762	2
162	80.54	237.2	17.66	0.34	13.43	0.86	6.38	851	2
163	80.04	171.3	22.6	0.47	7.58	0.77	7.27	843	3
164	72.56	304.2	20.9	0.24	14.56	0.87	10.57	722	3
165	47.56	58.5	3.5	0.81	16.71	0.89	5	900	1
166	43.62	78.1	3.2	0.56	24.41	0.92	6	1030	1
167	47.56	80.3	3.5	0.59	22.94	0.92	5	1032	2

168	44.71	82.4	4.7	0.54	17.53	0.89	6.6	900	2
169	25.7	59.7	1.3	0.43	45.9	0.96	1.7	362	0
170	26.9	62.8	2.1	0.42	29.9	0.94	2.4	374	1
171	40.4	72.1	2.1	0.56	34.3	0.94	1.9	775	1
172	39.4	65.2	2.3	0.6	28.3	0.93	3.4	799	2
173	38.2	71.4	3.4	0.53	21	0.91	3.6	811	2
174	45.7	69.1	3.2	0.66	21.5	0.91	4.1	816	2
175	35.8	67.8	3.8	0.52	17.8	0.89	4.3	841	2
176	39.4	69.2	2.7	0.57	25.6	0.92	3.8	959	2
177	40.6	66.6	2.6	0.61	25.6	0.92	3.7	984	2
178	39	70.1	2.4	0.56	29.2	0.93	4.8	1112	2
179	57.2	80.6	2.5	0.71	32.2	0.94	5.5	981	3
180	55.6	114	2.3	0.49	49.5	0.96	4.7	808	2
181	56.9	123	2.7	0.46	45.5	0.96	5.2	799	2
182	62.1	132	2.4	0.47	55	0.96	5	768	2
183	29.7	116	2.7	0.26	42.9	0.95	3.7	764	1
184	29.1	94	2.6	0.31	36.1	0.95	3.2	760	1
185	27.8	90	2.1	0.31	42.8	0.95	1.8	729	0
186	30.3	88	3.1	0.34	28.3	0.93	3	724	1
187	55.6	114	2.3	0.49	49.5	0.96	4.7	808	2
188	41.6	67.6	2.7	0.61	25	0.92	3.7	1048	2
189	40.1	72.1	2.3	0.55	31.3	0.94	4.6	1074	2
190	58.2	83.6	2.6	0.69	32.1	0.94	5.9	980	3
191	56.8	112	2.2	0.5	50.9	0.96	5.2	839	2
192	47.56	58.5	3.5	0.81	16.71	0.89	5	900	1
193	42.4	50	6.1	0.85	8.2	0.78	5.3	610	1
194	63.6	50	4	1.27	12.5	0.85	5.3	1010	2
195	18.64	70	4.85	0.27	14.43	0.87	7.27	400	3
196	18.2	60	1.9	0.3	31.58	0.94	2.84	400	1
197	53	147.2	7.18	0.36	20.5	0.91	5	290	2
198	16.4	156.23	10.51	0.1	14.86	0.87	4.14	NaN	1
199	16.4	156.14	10.3	0.11	15.16	0.88	4.04	NaN	1
200	16.4	157.34	10.55	0.1	14.91	0.87	4.26	NaN	2
201	16.4	155.63	10.42	0.11	14.94	0.87	4.2	NaN	2
202	12	30	5.58	0.4	5.38	0.69	5.1	380	0
203	50.28	77.3	7.65	0.65	10.11	0.82	2.47	660	1
204	50.28	94.7	5.26	0.53	18.01	0.89	2.96	660	2
205	50.28	59	5.23	0.85	11.28	0.84	0.88	660	0
206	44.8	77.3	7.65	0.58	10.11	0.82	2.47	630	1
207	48	77.3	7.65	0.62	10.11	0.82	2.47	630	1
208	53.4	77.3	7.65	0.69	10.11	0.82	2.47	630	1
209	54.9	77.3	7.65	0.71	10.11	0.82	2.47	630	1
210	44.8	94.7	5.26	0.47	18.01	0.89	2.96	630	2

211	48	94.7	5.26	0.51	18.01	0.89	2.96	630	2
212	53.4	94.7	5.26	0.56	18.01	0.89	2.96	630	2
213	54.9	94.7	5.26	0.58	18.01	0.89	2.96	630	2
214	44.8	59	5.23	0.76	11.28	0.84	0.88	630	0
215	48	59	5.23	0.81	11.28	0.84	0.88	630	0
216	53.4	59	5.23	0.91	11.28	0.84	0.88	630	0
217	54.9	59	5.23	0.93	11.28	0.84	0.88	630	0
218	12	85	3.6	0.14	23.61	0.92	1.5	463	0
219	21	103	4.1	0.2	25.12	0.92	2.4	731	1
220	28	100	3.9	0.28	25.64	0.92	2.3	1456	1
221	47	122	5.5	0.39	22.18	0.91	3.4	1735	1
222	52	117	4.8	0.44	24.38	0.92	3.2	2372	1
223	42	117	4.8	0.36	24.38	0.92	3.2	1765	1
224	32	117	4.8	0.27	24.38	0.92	3.2	1878	1
225	24	110	4.4	0.22	25	0.92	3	630	1
226	20	112	4.7	0.18	23.83	0.92	2.5	630	0
227	32.8	160	6.6	0.21	24.3	0.92	4.6	NaN	1
228	44.8	160	6.8	0.28	23.6	0.92	4.9	NaN	1
229	50.9	160	7.5	0.32	21.3	0.91	5.3	NaN	2
230	44.8	160	6.7	0.28	23.8	0.92	4.8	NaN	1
231	22.4	160	6.6	0.14	24.1	0.92	4.3	NaN	1
232	20.61	54.23	21.49	0.38	2.52	0.43	3.17	440	1
233	48	120	1.5	0.4	80	0.98	5.8	275	2
234	49.5	110	1.5	0.45	73.33	0.97	5.7	275	2
235	63	115	1.5	0.55	76.67	0.97	5.7	275	2
236	17.39	102.3	1.3	0.17	78.69	0.97	6.58	369	2
237	17.02	85.09	1.3	0.2	65.45	0.97	6.14	369	2
238	16.7	83.5	1.3	0.2	64.23	0.97	6.53	373	2
239	17.35	86.77	1.3	0.2	66.75	0.97	3.22	373	2
240	16.87	80.33	1.3	0.21	61.79	0.97	6.92	374	2
241	17.08	94.9	1.3	0.18	73	0.97	6.91	374	2
242	61.72	92.4	8.28	0.67	11.16	0.84	5.43	365	1
243	126.72	189.7	8.95	0.67	21.2	0.91	5.43	365	1
244	57.97	125.37	7.74	0.67	21.2	0.88	2.86	700	1
245	57.97	96.16	3.77	0.46	16.2	0.92	2.53	700	1
246	57.97	70.68	4.19	0.6	25.51	0.89	2.87	700	1
247	98.02	148.52	6.66	0.66	22.3	0.91	3.23	NaN	2
248	116.88	162.33	12.3	0.72	13.2	0.86	5.23	NaN	3
249	43.21	116.78	3.93	0.37	29.73	0.93	3.52	NaN	1
250	45.92	109.33	3.34	0.42	32.77	0.94	2.97	NaN	1
251	27.6	98.56	2.31	0.28	42.73	0.95	2.17	NaN	0
252	76.8	156.73	7.79	0.49	20.13	0.91	3.82	NaN	2
253	38.12	100.32	3.49	0.38	28.77	0.93	3.02	NaN	1

254	102.38	142.2	5.17	0.72	27.52	0.93	4.3	NaN	2
255	110.62	160.32	9.69	0.69	16.55	0.89	5.72	NaN	3
256	40.99	97.6	6.3	0.42	15.5	0.88	3.2	NaN	1
257	58.12	100.2	3.33	0.58	30.12	0.94	4.5	NaN	1
258	23.39	106.32	2.92	0.22	36.42	0.95	1.75	NaN	0
259	81.75	125.77	12.14	0.65	10.36	0.82	5.75	NaN	2
260	90.99	146.75	7.58	0.62	19.35	0.90	4.5	NaN	2
261	61.42	107.75	3.45	0.57	31.2	0.94	3.15	NaN	1
262	104.49	160.75	13.01	0.65	12.36	0.85	5.41	NaN	3
263	86.56	146.72	7.83	0.59	18.75	0.90	4.2	NaN	2
264	118.77	162.7	5.48	0.73	29.7	0.93	3.82	NaN	2
265	35.34	95.5	2.26	0.37	42.3	0.95	2.75	NaN	0
266	39.11	105.7	2.83	0.37	37.35	0.95	3.08	NaN	1
267	18.17	49.1	1.56	0.37	31.4	0.94	3.3	NaN	2
268	21	60	3.17	0.35	18.9	0.90	1.7	NaN	2
269	31.16	82	3.87	0.38	21.2	0.91	2.3	NaN	2
270	46.38	74.8	2.98	0.62	25.1	0.92	3.2	NaN	2
271	48.64	76	4.09	0.64	18.6	0.90	2.5	NaN	2
272	22.92	57.3	1.43	0.4	40	0.95	1.5	NaN	2
273	99.09	112.6	3.74	0.88	30.1	0.94	5.2	NaN	2
274	35.16	79.9	3.12	0.44	25.6	0.92	2.5	NaN	1
275	15.84	49.5	2.16	0.32	22.9	0.92	2.8	NaN	2
276	13.02	65.1	2.28	0.2	28.5	0.93	1.2	NaN	2
277	21.12	52.8	2.18	0.4	24.2	0.92	2.3	NaN	2
278	29.12	57.1	3.34	0.51	17.1	0.89	2.2	NaN	2
279	30.9	238	7.6	0.13	31.2	0.94	7.4	NaN	0
280	64.5	215	9	0.3	24	0.92	6.6	NaN	2
281	75.5	151	18.2	0.5	8.3	0.78	3.1	NaN	1
282	68.5	185	7.7	0.37	24.1	0.92	5	NaN	2
283	75.6	194	8.9	0.39	21.7	0.91	5	NaN	2
284	57.9	181	7.5	0.32	24.1	0.92	9.3	NaN	2
285	72.6	173	8	0.42	21.7	0.91	5.2	NaN	2
286	54.9	183	9	0.3	20.4	0.91	5.1	NaN	1
287	62.7	196	9	0.32	21.7	0.91	5	NaN	2
288	24.1	241	0.4	0.1	23	1.00	5.7	NaN	0
289	50.5	187	8.6	0.27	21.7	0.91	5	NaN	2
290	78.8	179	6.7	0.44	26.7	0.93	5.5	NaN	1
291	31.2	156	13.9	0.2	11.2	0.84	3.6	NaN	0
292	61.6	162	9.2	0.38	17.6	0.89	9	NaN	2
293	78.1	192	6.5	0.41	29.7	0.93	7.3	NaN	1
294	132.4	172	9.8	0.77	17.5	0.89	5.5	NaN	3
295	14.49	70.21	2.04	0.21	34.42	0.94	3.11	NaN	1
296	17.79	81.8	2.45	0.22	33.39	0.94	3.6	NaN	1

297	22.21	90	3.1	0.25	29.03	0.93	4.3	NaN	1
298	25.62	99.6	3.42	0.26	29.12	0.93	4.6	NaN	2
299	25.92	72.8	2.6	0.36	28	0.93	4.4	NaN	2
300	26.68	46.8	1.8	0.57	26	0.93	2.7	NaN	2
301	30.9	82.56	6.5	0.37	12.7	0.85	3.2	NaN	1
302	61	171.5	22.6	0.36	7.59	0.77	7.5	NaN	1
303	89	128.6	13.2	0.69	9.74	0.81	4.9	NaN	3
304	12.3	237.1	17.66	0.05	13.43	0.86	6.9	NaN	0
305	55.6	256.5	18.9	0.22	13.57	0.86	9.1	NaN	3
306	67.2	222.6	10.6	0.3	21	0.91	7.8	NaN	3
307	91.3	225.6	17.2	0.4	13.12	0.86	7.3	NaN	3
308	67.73	112.5	4.1	0.6	27.44	0.93	6.02	NaN	2
309	64.43	112.5	3.4	0.57	33.09	0.94	5.8	NaN	1
310	62.88	112.5	3.4	0.56	33.09	0.94	5.62	NaN	2
311	54.51	99.59	4.1	0.55	24.29	0.92	3.26	NaN	3
312	52.08	112.5	3.4	0.46	33.09	0.94	4.68	NaN	2
313	53.93	112.5	3.4	0.48	33.09	0.94	4.5	NaN	2
314	68.98	112.5	4.1	0.61	27.44	0.93	5.32	NaN	2
315	48.7	180	8.3	0.27	21.69	0.91	5	NaN	3
316	74.9	180	8.3	0.42	21.69	0.91	5	NaN	3
317	62.4	175	7.3	0.36	23.97	0.92	5	NaN	3
318	49.9	130	6	0.38	21.67	0.91	5	NaN	3
319	62.9	115	1.5	0.55	76.67	0.97	5.7	NaN	3
320	56.9	180	8.3	0.32	21.69	0.91	5	NaN	3
321	59.9	200	9.8	0.3	20.41	0.91	5	NaN	2
322	88.9	236	8.3	0.38	28.43	0.93	5	NaN	3
323	108.3	140	8	0.77	17.5	0.89	5.5	NaN	3
324	89.9	220	7.4	0.41	29.73	0.93	7.3	NaN	2
325	29.9	89	3.7	0.34	24.05	0.92	6.6	NaN	3
326	18.7	179	5.7	0.1	31.4	0.94	7.4	NaN	1
327	89.9	170	11.3	0.53	15.04	0.88	9	NaN	3
328	54.1	136	9.2	0.4	14.78	0.87	7.1	NaN	3
329	10.9	115	5	0.09	23	0.92	5.7	NaN	1
330	48.7	126	6.4	0.39	19.69	0.90	4.9	NaN	3
331	91.2	231	7.3	0.39	31.64	0.94	7.2	NaN	2
332	92.9	227	8.6	0.41	26.4	0.93	5.2	NaN	3
333	28.7	148	5.2	0.19	28.46	0.93	8.1	NaN	2
334	47.6	121	1.7	0.39	71.18	0.97	5.3	NaN	3
335	43.3	123	6	0.35	20.5	0.91	5	NaN	2
336	55.3	176	7.3	0.31	24.11	0.92	9.3	NaN	3
337	98.5	120	6.8	0.82	17.65	0.89	3.8	NaN	3
338	33.9	150	5.4	0.23	27.78	0.93	7.8	NaN	2
339	47.9	120	1.5	0.4	80	0.98	5.8	NaN	3

340	49.4	110	1.5	0.45	73.33	0.97	5.7	NaN	3
341	79.9	180	6.7	0.44	26.87	0.93	5.5	NaN	2
342	56	130	9.3	0.43	13.98	0.87	7.4	NaN	3
343	60.6	112	7.9	0.54	14.18	0.87	6.2	NaN	3
344	62.5	165	9.4	0.38	17.55	0.89	9	NaN	2

Note: NaN is not available.

Table S2 Correlation coefficient matrix between initial variables and PCA factors

	F1	F2	F3	F4	F5	F6	F7	F8
σ_θ	0.63	-0.45	0.60	0.02	-0.18	0.00	0.01	-0.10
σ_c	0.28	0.81	0.45	0.17	-0.12	-0.11	-0.08	0.02
σ_t	0.90	0.35	-0.09	0.01	0.04	0.23	0.08	0.01
SCF	0.49	-0.73	0.40	-0.03	-0.18	0.03	-0.02	0.18
B_1	-0.77	0.10	0.51	-0.08	0.07	0.35	-0.01	0.00
B_2	-0.76	0.24	0.45	0.14	-0.10	-0.29	0.22	0.03
W_{et}	0.46	0.01	0.49	-0.37	0.61	-0.22	0.00	0.01
D	0.02	-0.36	0.09	0.84	0.39	0.05	-0.01	0.00

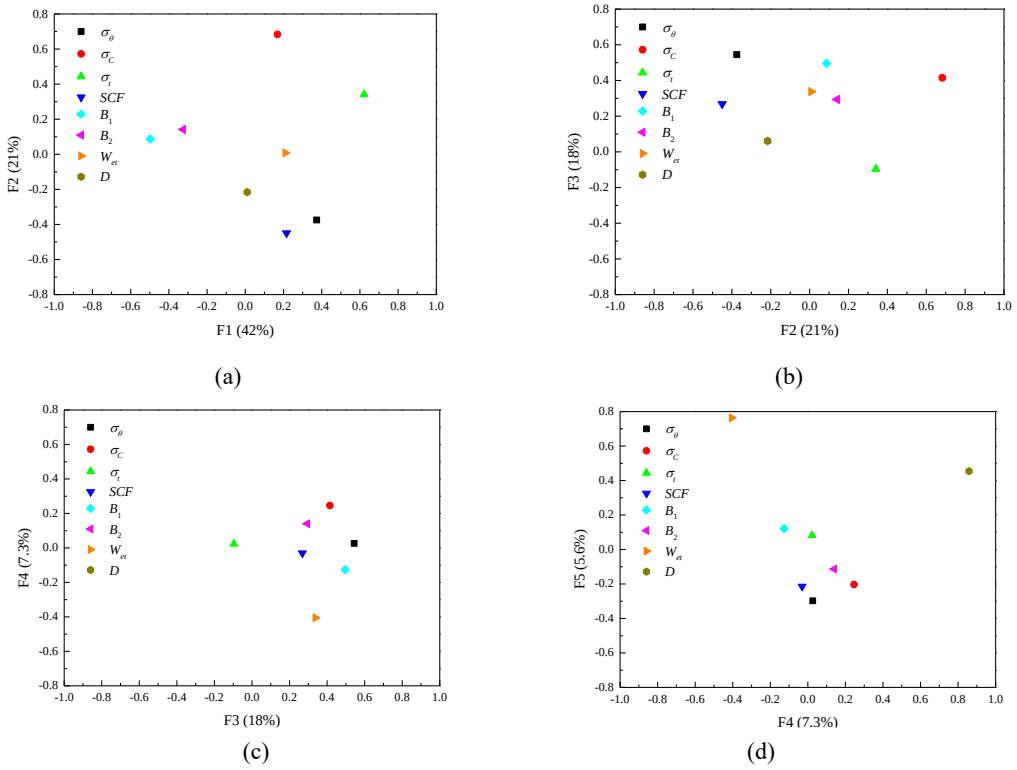

Figure S1. Factor loadings on the first five components after the PCA processing: (a) Display in F1-F2 space, (b) Display in F2-F3 space, (c) Display in F3-F4 space, (d) Display in F4-F5 space

Table S3 Loading matrix regarding the rotated factors

	RF1	RF2	RF3	RF4	RF5
$\sigma\theta$	0.03	0.36	0.71	0.07	-0.16
σ_c	0.10	0.79	-0.18	-0.10	0.31
σ_t	-0.56	0.38	-0.12	0.16	0.14
SCF	-0.01	0.06	0.56	0.02	-0.21
B_1	0.69	0.08	-0.07	0.20	-0.01
B_2	0.44	0.15	-0.02	-0.13	0.12
W_{et}	0.01	0.01	-0.06	0.95	0.01
D	0.01	-0.27	0.35	0.04	0.89

Table S4 Correlation coefficient matrix between initial variables and rotated factors

	RF1	RF2	RF3	RF4	RF5
σ_θ	-0.30	0.46	0.96	0.54	-0.17
σ_c	-0.06	0.90	-0.28	0.18	0.45
σ_t	-0.85	0.58	0.09	0.41	0.18
SCF	-0.26	0.11	0.89	0.41	-0.33
B_1	0.92	-0.14	-0.24	-0.08	0.02
B_2	0.88	-0.05	-0.31	-0.29	0.19
W_{et}	-0.20	0.42	0.26	0.97	-0.02
D	0.01	-0.23	0.43	0.02	0.72

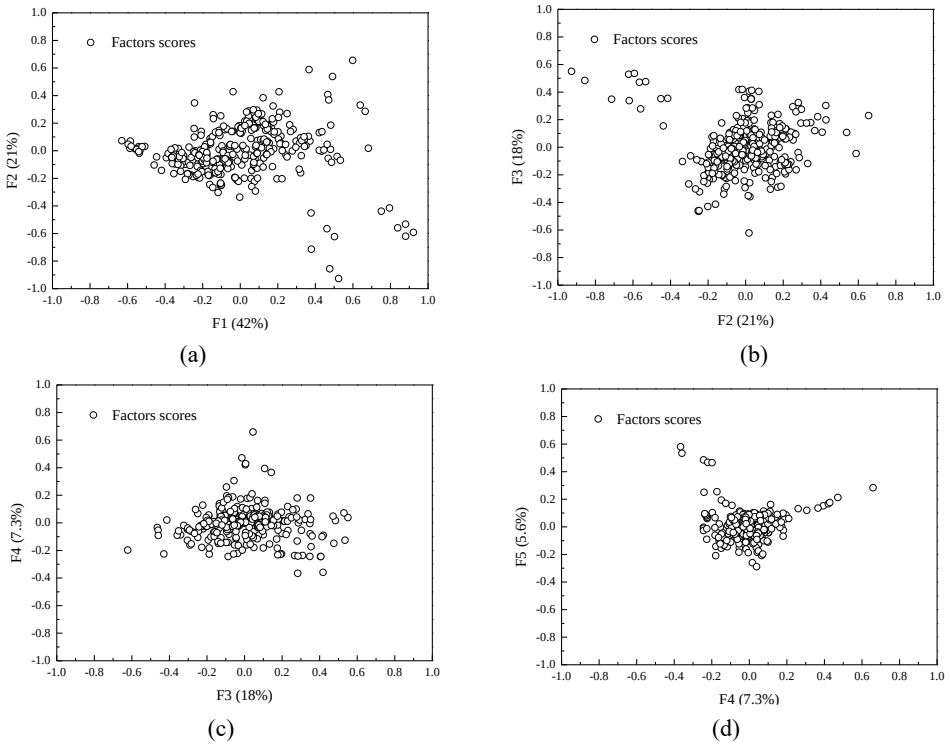

Figure S2. Factor scores on the first five components after the PCA processing: (a) Display in F1-F2 space, (b) Display in F2-F3 space, (c) Display in F3-F4 space, (d) Display in F4-F5 space

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