

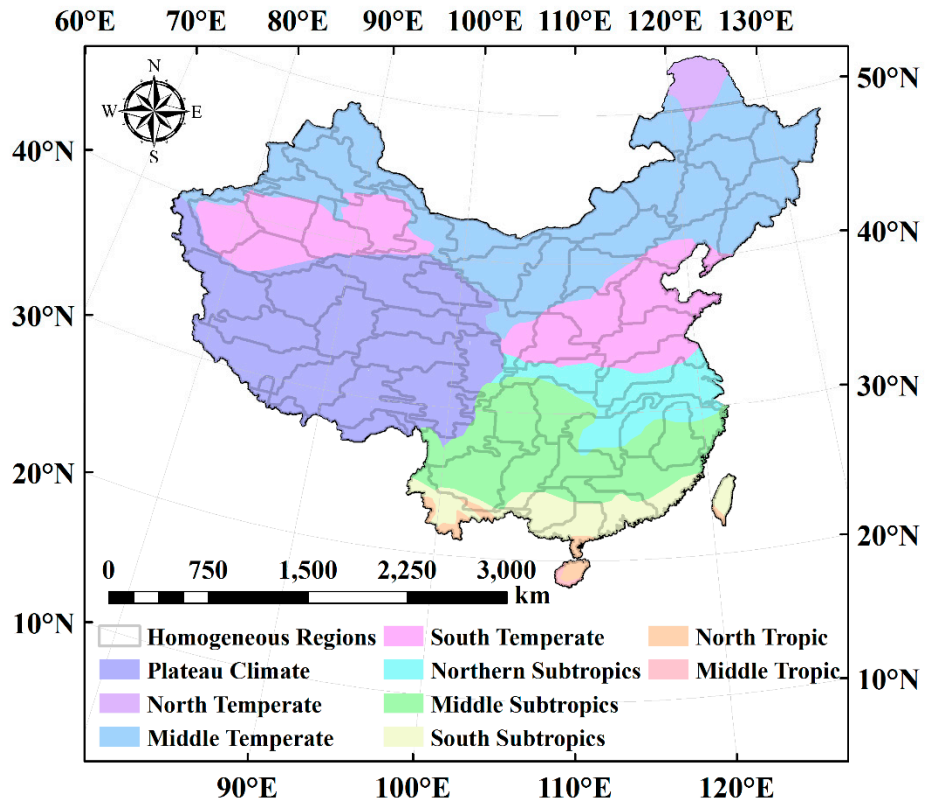


Figure S1 Nine climate zones over China and the homogeneous region boundaries determined by the FCM algorithm.

Table S1. Characteristics of 60 regions obtained by adjusting clusters resulting from the use of FCM method

Region	TN	RX1DAY			RX3DAY			RX5DAY		
		PN	FN	H	PN	FN	H	PN	FN	H
1	295	286	9	-2.20	292	3	-0.78	289	6	-0.73
2	268	255	13	1.21	260	8	-0.23	257	11	0.12
3	265	255	10	-1.22	260	5	0.00	258	7	0.08
4	236	234	2	-0.42	232	4	-1.79	229	7	-1.49
5	272	261	11	-0.11	264	8	-3.14	260	12	-2.90
6	220	214	6	-2.56	212	8	-3.12	214	6	-3.00
7	162	160	2	-1.09	156	6	0.33	158	4	1.04
8	190	183	7	-1.89	187	3	-0.19	187	3	0.35
9	240	233	7	-0.08	235	5	0.96	233	7	1.03
10	222	220	2	-4.12	218	4	-2.01	219	3	-1.60
11	330	316	14	-1.76	317	13	-2.77	321	9	-2.28
12	370	360	10	0.68	362	8	-0.57	357	13	-0.20
13	206	195	11	-3.64	197	9	0.28	198	8	0.46
14	194	190	4	0.72	190	4	0.54	187	7	0.35
15	225	217	8	0.21	218	7	0.41	218	7	0.37
16	251	248	3	-0.32	247	4	-1.70	246	5	-1.52
17	345	337	8	0.37	338	7	1.18	337	8	1.51
18	262	248	14	-3.44	258	4	-1.88	258	4	-1.55
19	281	273	8	0.34	276	5	0.84	274	7	1.17
20	266	258	8	-1.45	260	6	-1.42	257	9	-1.34
21	314	299	15	-1.47	302	12	-1.18	304	10	-0.80
22	240	232	8	-0.67	233	7	-0.09	234	6	-0.01
23	229	222	7	-1.24	224	5	1.96	221	8	1.89
24	218	211	7	-0.43	210	8	-3.18	209	9	-2.79
25	269	265	4	-4.17	264	5	-1.08	260	9	-1.39
26	241	237	4	-1.36	235	6	-2.77	230	11	-2.81
27	205	201	4	0.03	198	7	-0.49	195	10	-0.13
28	319	307	12	1.83	305	14	0.62	304	15	1.26
29	156	151	5	0.31	152	4	-1.86	149	7	-2.08
30	278	269	9	0.97	270	8	-3.07	275	3	-2.60
31	378	362	16	-2.06	368	10	-4.73	366	12	-4.73
32	272	262	10	-1.99	264	8	-1.12	262	10	-0.39
33	262	255	7	-0.05	255	7	-0.30	254	8	-0.02
34	367	350	17	-1.17	349	18	-0.13	352	15	0.58
35	324	312	12	-0.12	314	10	0.31	312	12	0.00
36	230	226	4	-1.88	220	10	-1.66	218	12	-1.04
37	213	205	8	-1.14	207	6	-2.18	207	6	-2.14
38	272	267	5	-1.28	261	11	-1.20	262	10	-0.95
39	291	286	5	-1.56	280	11	-2.70	286	5	-2.36
40	218	212	6	-2.21	211	7	0.43	214	4	0.73

Region	TN	RX1DAY			RX3DAY			RX5DAY		
		PN	FN	H	PN	FN	H	PN	FN	H
41	256	245	11	-1.74	249	7	-1.27	247	9	-0.98
42	239	226	13	0.14	229	10	1.46	230	9	1.92
43	253	242	11	-2.20	243	10	-2.55	245	8	-1.79
44	278	270	8	-0.91	271	7	-1.77	269	9	-1.82
45	231	225	6	-1.96	223	8	-2.48	227	4	-1.65
46	251	243	8	0.47	243	8	-0.83	241	10	-0.42
47	232	226	6	-0.90	228	4	0.16	226	6	-0.02
48	205	194	11	-0.76	199	6	-3.06	199	6	-2.16
49	235	230	5	-0.45	231	4	-1.96	233	2	-1.71
50	293	286	7	-1.62	283	10	1.25	284	9	1.82
51	271	264	7	-1.54	260	11	-0.88	264	7	0.13
52	312	307	5	0.91	306	6	1.09	308	4	1.32
53	254	247	7	-1.51	243	11	-0.27	244	10	0.18
54	309	297	12	1.19	297	12	-2.89	302	7	-2.26
55	303	294	9	-0.16	296	7	-0.68	300	3	-0.10
56	203	194	9	-0.76	194	9	-1.74	200	3	-0.99
57	234	225	9	-3.05	223	11	-2.24	225	9	-1.96
58	378	369	9	-0.02	365	13	-0.30	362	16	-0.43
59	142	139	3	-0.95	139	3	-2.25	139	3	-2.04
60	336	323	13	-1.67	323	13	-0.24	322	14	-0.29

TN, the total number of points in each region; PN, the number of points pass the discordancy measure;
FN, the number of points fail to pass the discordancy measure.

Table S2. Goodness-of-fit test of regional distribution for each homogeneous region

Region	GLO	GEV	GNO	PE3	GPA	best fit
RX1Day						
1	10.62	2.74	2.02	-0.25	-14.50	PE3
2	7.03	-0.33	-0.63	-2.29	-16.09	GEV
3	6.47	0.03	-0.93	-3.30	-14.40	GEV
4	9.33	2.35	1.77	-0.17	-12.88	PE3
5	9.17	3.02	1.46	-1.71	-11.34	GNO
6	2.76	-2.63	-3.68	-5.99	-14.94	WAK
7	8.03	2.80	1.74	-0.56	-9.17	PE3
8	9.74	3.52	2.77	0.74	-10.27	PE3
9	3.42	-2.37	-3.48	-5.96	-15.57	WAK
10	3.63	-0.35	-2.61	-6.64	-10.64	GEV
11	8.48	3.37	0.81	-3.81	-9.58	GNO
12	9.83	1.41	0.68	-1.72	-17.00	GNO
13	6.29	1.87	0.02	-3.40	-9.03	GNO
14	10.89	4.12	3.65	1.89	-10.55	WAK
15	7.40	2.53	0.63	-2.91	-9.39	GNO
16	8.26	1.36	0.72	-1.28	-13.75	GNO
17	9.54	3.37	1.08	-3.22	-11.63	GNO
18	10.03	3.59	2.54	0.06	-10.93	PE3
19	4.41	-2.07	-3.19	-5.77	-16.74	WAK
20	7.21	1.13	-0.11	-2.81	-12.79	GNO
21	8.97	0.00	0.10	-1.40	-18.74	GEV
22	6.78	-0.72	-0.72	-2.05	-16.47	GNO
23	5.24	0.90	-0.99	-4.45	-9.88	GEV
24	11.32	4.83	3.92	1.62	-9.67	PE3
25	4.97	0.29	-1.87	-5.79	-11.43	GEV
26	5.45	-0.25	-1.64	-4.51	-13.50	GEV
27	6.88	0.31	-0.19	-1.97	-13.98	GNO
28	8.61	1.41	0.27	-2.46	-14.79	GNO
29	6.08	-0.94	-0.38	-1.05	-15.11	GNO
30	5.88	-0.80	-1.88	-4.43	-15.85	GEV
31	11.42	5.24	2.50	-2.51	-10.13	WAK
32	4.17	-2.08	-3.10	-5.51	-16.17	WAK
33	8.02	3.74	1.25	-3.19	-7.37	GNO
34	12.17	4.50	2.97	-0.38	-13.02	PE3
35	4.70	-0.52	-2.87	-7.15	-13.55	GEV
36	6.74	-0.49	-0.94	-2.77	-16.13	GEV
37	5.80	0.28	-1.01	-3.70	-12.51	GEV
38	6.47	-0.19	-1.36	-4.04	-15.28	GEV
39	0.86	-4.06	-6.08	-9.80	-16.16	GLO
40	5.04	-0.86	-1.73	-3.88	-14.07	GEV

Region	GLO	GEV	GNO	PE3	GPA	best fit
41	6.82	1.11	-0.62	-3.99	-12.46	GNO
42	5.42	-0.03	-1.42	-4.25	-12.73	GEV
43	2.93	-1.68	-3.59	-7.12	-13.03	WAK
44	5.54	-0.89	-2.05	-4.67	-15.48	GEV
45	6.57	0.45	-0.51	-2.81	-13.30	GEV
46	2.97	-2.36	-3.87	-6.87	-14.92	WAK
47	5.21	0.04	-1.34	-4.12	-12.07	GEV
48	8.31	2.56	1.52	-0.84	-10.50	PE3
49	6.68	-0.08	-0.75	-2.77	-14.93	GEV
50	6.83	-0.22	-1.19	-3.68	-15.94	GEV
51	6.11	-0.77	-1.51	-3.64	-15.91	GEV
52	3.49	-2.03	-3.99	-7.70	-15.38	WAK
53	7.35	2.10	0.32	-3.08	-10.51	GNO
54	10.16	1.82	1.51	-0.34	-16.02	PE3
55	7.14	-0.87	-1.20	-3.00	-18.02	GEV
56	7.03	1.77	0.65	-1.75	-10.31	GNO
57	4.26	-1.51	-2.50	-4.80	-14.56	GEV
58	11.60	3.77	2.48	-0.56	-13.91	PE3
59	2.35	-2.34	-3.04	-4.75	-12.86	WAK
60	8.72	1.25	0.01	-2.90	-15.62	GNO
RX3Day						
1	12.31	4.17	3.46	1.15	-13.63	PE3
2	4.92	-2.81	-2.93	-4.44	-19.15	WAK
3	5.76	-0.92	-1.85	-4.21	-15.82	GEV
4	10.13	3.08	2.44	0.41	-12.35	PE3
5	6.45	0.45	-0.96	-3.89	-13.44	GEV
6	7.35	1.41	0.28	-2.24	-12.12	GNO
7	3.60	-1.08	-1.91	-3.80	-11.70	GEV
8	7.45	1.36	0.61	-1.42	-12.14	GNO
9	3.10	-2.57	-3.71	-6.20	-15.55	WAK
10	7.77	3.05	1.03	-2.67	-8.63	GNO
11	6.85	1.85	-0.79	-5.52	-10.91	GNO
12	9.52	0.53	0.17	-1.86	-18.71	GNO
13	10.83	4.73	3.79	1.52	-8.96	PE3
14	7.77	1.50	1.00	-0.72	-12.16	PE3
15	7.15	1.65	0.24	-2.61	-11.20	GNO
16	6.71	0.18	-0.59	-2.72	-14.27	GEV
17	8.95	2.89	0.62	-3.63	-11.85	GNO
18	6.94	0.97	-0.61	-3.79	-13.00	GNO
19	6.76	0.20	-1.04	-3.80	-14.74	GEV
20	7.09	0.72	-0.57	-3.38	-13.85	GNO
21	7.11	-0.89	-1.29	-3.18	-18.09	GEV
22	9.08	1.63	1.49	0.00	-14.16	PE3

Region	GLO	GEV	GNO	PE3	GPA	best fit
23	4.42	-0.93	-2.27	-5.00	-13.38	GEV
24	3.73	-0.89	-2.64	-5.91	-12.14	GEV
25	11.37	5.20	3.52	0.17	-9.28	PE3
26	7.97	2.36	0.79	-2.32	-10.86	GNO
27	7.77	0.80	0.76	-0.52	-13.90	PE3
28	4.12	-2.09	-3.70	-6.97	-16.60	WAK
29	7.39	0.89	1.06	0.09	-12.60	PE3
30	9.69	2.23	1.50	-0.71	-14.15	PE3
31	10.32	4.34	1.66	-3.24	-10.54	WAK
32	5.90	-1.23	-2.15	-4.57	-17.08	GEV
33	10.22	5.11	2.81	-1.38	-7.64	PE3
34	10.69	2.20	1.34	-1.22	-16.45	PE3
35	4.77	-0.75	-2.64	-6.24	-14.05	GEV
36	5.24	-0.86	-1.59	-3.59	-14.36	GEV
37	3.54	-1.17	-2.79	-5.88	-12.51	GEV
38	7.22	-1.03	-1.19	-2.85	-18.51	GEV
39	1.26	-4.24	-5.71	-8.65	-17.12	GLO
40	8.71	2.69	1.62	-0.84	-10.95	PE3
41	6.45	0.88	-0.74	-3.93	-12.30	GNO
42	8.19	2.17	0.94	-1.74	-11.62	GNO
43	4.90	-0.41	-2.09	-5.33	-13.08	GEV
44	4.80	-0.74	-2.41	-5.67	-13.90	GEV
45	6.69	0.62	-0.42	-2.83	-13.10	GNO
46	4.62	-0.89	-2.65	-6.04	-14.05	GEV
47	7.58	1.71	0.56	-1.99	-11.70	GNO
48	5.54	-0.03	-1.11	-3.50	-12.73	GEV
49	6.71	-0.45	-0.67	-2.20	-15.71	GEV
50	9.21	1.64	0.98	-1.17	-14.88	GNO
51	5.19	-1.51	-2.30	-4.47	-16.35	GEV
52	8.33	1.82	0.18	-3.17	-13.35	GNO
53	9.71	3.83	2.14	-1.18	-10.07	PE3
54	6.45	-1.58	-1.92	-3.74	-18.79	GEV
55	9.00	-0.29	-0.07	-1.47	-19.59	GNO
56	8.71	2.10	1.64	-0.09	-12.22	PE3
57	7.35	0.66	0.12	-1.72	-13.92	GNO
58	11.33	3.21	2.08	-0.78	-14.93	PE3
59	1.68	-3.31	-3.66	-4.96	-14.13	WAK
60	6.63	-0.79	-1.79	-4.36	-17.33	GEV
RX5Day						
1	12.53	4.42	3.76	1.51	-13.28	PE3
2	4.91	-2.74	-2.84	-4.32	-18.92	WAK
3	5.73	-0.84	-1.80	-4.18	-15.56	GEV
4	10.14	3.07	2.39	0.30	-12.44	PE3

Region	GLO	GEV	GNO	PE3	GPA	best fit
5	6.13	0.10	-1.39	-4.43	-13.95	GEV
6	7.06	1.36	0.21	-2.31	-11.68	GNO
7	4.00	-0.99	-1.75	-3.60	-12.18	GEV
8	7.05	1.20	0.50	-1.42	-11.74	GNO
9	2.91	-2.74	-3.79	-6.15	-15.60	WAK
10	7.41	2.85	0.87	-2.74	-8.47	GNO
11	6.34	1.54	-1.05	-5.69	-10.75	GNO
12	8.90	0.05	-0.35	-2.40	-18.93	GEV
13	10.79	4.62	3.72	1.47	-9.19	PE3
14	7.48	1.08	0.56	-1.20	-12.88	GNO
15	6.97	1.60	0.23	-2.55	-10.92	GNO
16	7.05	0.17	-0.64	-2.87	-15.07	GEV
17	8.76	2.73	0.46	-3.79	-11.96	GNO
18	6.60	0.94	-0.60	-3.69	-12.36	GNO
19	7.08	0.09	-1.14	-3.95	-15.75	GEV
20	7.15	0.85	-0.44	-3.25	-13.60	GNO
21	6.98	-1.07	-1.43	-3.30	-18.33	GEV
22	9.09	1.45	1.32	-0.20	-14.74	PE3
23	4.54	-0.72	-2.03	-4.71	-12.97	GEV
24	3.99	-0.80	-2.55	-5.83	-12.42	GEV
25	11.61	5.37	3.67	0.28	-9.29	PE3
26	8.55	2.90	1.39	-1.65	-10.33	GNO
27	8.01	0.94	0.91	-0.39	-13.95	PE3
28	4.12	-2.07	-3.62	-6.78	-16.49	WAK
29	7.42	0.98	1.23	0.35	-12.29	PE3
30	9.01	1.68	0.95	-1.25	-14.43	GNO
31	10.08	4.24	1.55	-3.36	-10.36	GNO
32	4.85	-1.84	-2.69	-4.94	-16.69	WAK
33	9.63	4.70	2.41	-1.75	-7.64	WAK
34	10.07	1.72	0.94	-1.49	-16.57	GNO
35	5.27	-0.60	-2.56	-6.31	-14.68	GEV
36	5.33	-0.96	-1.71	-3.75	-14.89	GEV
37	3.50	-1.18	-2.81	-5.89	-12.47	GEV
38	6.57	-1.42	-1.56	-3.15	-18.36	GEV
39	1.12	-4.77	-6.31	-9.43	-18.57	GLO
40	8.35	2.30	1.16	-1.38	-11.47	GNO
41	6.27	0.79	-0.83	-3.99	-12.18	GEV
42	8.12	2.18	0.98	-1.65	-11.43	GNO
43	4.34	-0.92	-2.67	-6.03	-13.52	GEV
44	5.52	-0.15	-1.85	-5.18	-13.59	GEV
45	5.79	0.02	-1.03	-3.41	-13.10	GEV
46	4.25	-0.86	-2.58	-5.86	-13.13	GEV
47	7.12	1.56	0.36	-2.20	-11.23	GNO

Region	GLO	GEV	GNO	PE3	GPA	best fit
48	5.62	0.11	-1.05	-3.55	-12.55	GEV
49	6.41	-1.03	-1.26	-2.85	-16.89	GEV
50	8.80	1.05	0.30	-2.00	-15.96	GNO
51	4.20	-2.31	-3.27	-5.64	-16.90	WAK
52	7.73	1.31	-0.32	-3.63	-13.66	GNO
53	9.71	3.75	2.09	-1.21	-10.27	PE3
54	5.57	-2.42	-2.74	-4.53	-19.52	WAK
55	8.46	-0.67	-0.56	-2.07	-19.75	GNO
56	7.78	1.20	0.77	-0.91	-13.05	GNO
57	7.46	0.75	0.23	-1.60	-13.85	GNO
58	12.19	3.55	2.26	-0.90	-15.83	PE3
59	1.66	-3.29	-3.64	-4.95	-14.02	WAK
60	6.21	-1.32	-2.29	-4.83	-18.06	GEV