

Precipitation measurement biases in an arid setting of central Asia: using different methods to divide precipitation types

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Table S1. Average snow, rain and mixed precipitation days based on two methods of dividing different precipitation types (Method 1: the new scheme, Method 2: the dual temperature threshold method, $-2^{\circ}\text{C}/2^{\circ}\text{C}$) at each meteorological station of Xinjiang in spring from 1960 to 2014. (—) Non-occurrence of precipitation type

Meteorological Station	Average snow days (d)		Average rain days (d)		Average mixed precipitation days (d)	
	Method 1	Method 2	Method 1	Method 2	Method 1	Method 2
Akqi	4.26	2.24	11.05	11.55	1.83	3.10
Aksu	1.77	1.00	6.04	6.13	1.25	1.53
Aral	1.00	—	4.34	4.40	1.00	1.00
Alashankou	2.81	2.39	12.45	12.58	1.00	1.70
Altay	5.91	4.06	11.84	12.07	1.89	2.61
Bachu	1.33	1.00	4.52	4.52	1.00	2.00
Barkol	7.33	3.87	8.47	9.04	1.57	3.36
Balguntay	1.77	1.14	8.24	8.49	1.00	1.59
Bayanbulak	14.04	7.62	11.71	13.25	1.38	5.29
Baicheng	2.04	1.50	9.08	9.15	2.00	2.42
Beitashan	11.07	7.87	6.58	7.04	1.07	3.37
Caijiahu	3.67	2.61	12.20	12.31	1.50	2.25
Dabancheng	1.80	1.33	3.28	3.24	1.00	1.31
Fuhai	4.40	2.93	11.73	11.87	1.29	2.24
Habahe	7.33	5.13	13.51	13.67	1.26	2.92
Hami	1.16	1.20	4.13	4.25	—	1.00
Hoboksar	6.36	4.40	11.09	11.49	1.17	2.40
Hotan	2.00	—	4.30	4.31	1.00	1.75
Jinghe	3.71	3.05	12.07	12.15	1.50	2.21
Kashi	1.86	1.00	6.81	6.83	1.60	2.11
Kalpin	1.50	—	6.63	6.69	1.50	1.80
Karamay	3.15	2.55	11.55	11.58	1.33	1.81
Kuqa	1.60	1.50	5.94	6.02	1.50	1.20
Korla	1.17	1.00	4.81	4.89	1.00	1.11
Kumux	1.23	1.00	4.07	4.07	1.00	1.40
Luntai	1.08	1.00	5.19	5.22	1.25	1.17
Minfeng	1.40	—	3.72	3.74	1.00	1.75
Qitai	4.91	3.24	12.04	12.22	1.27	2.37
Qiemo	1.29	2.00	2.64	2.64	—	1.17
Qinghe	6.80	4.04	9.20	9.69	1.25	2.90
Ruoqiang	1.20	—	2.94	2.94	1.00	1.17
Shache	1.33	—	5.08	5.00	3.00	1.43
Tacheng	6.20	3.67	18.04	18.29	1.66	3.96
Taxkorgan	4.16	1.91	6.63	7.65	1.00	2.37
Tikanlik	1.22	—	2.64	2.70	1.00	1.29
Torugart	35.22	19.67	2.66	5.44	1.18	12.15
Turpan	1.00	—	2.24	2.24	—	1.00
Toli	8.89	5.43	16.82	17.11	1.33	4.00
Wuqia	5.39	2.87	10.65	11.13	1.31	3.61
Usu	4.00	2.85	14.36	14.49	1.12	2.35
Yanqi	1.50	1.00	4.60	4.65	1.67	1.80
Yining	3.67	2.82	20.20	20.33	2.08	3.41
Yiwu	4.16	2.46	5.67	6.04	2.00	2.17
Yutian	1.33	—	4.08	4.12	1.00	1.33
Zhaosu	10.87	6.75	26.22	26.65	2.18	5.44

Table S2. Average snow, rain and mixed precipitation days based on two methods of dividing different precipitation types (Method 1: the new scheme, Method 2: the dual temperature threshold method, $-2^{\circ}\text{C}/2^{\circ}\text{C}$) at each meteorological station of Xinjiang in autumn from 1960 to 2014. (—) Non-occurrence of precipitation type

Meteorological Station	Average snow days (d)		Average rain days (d)		Average mixed precipitation days (d)	
	Method 1	Method 2	Method 1	Method 2	Method 1	Method 2
Akqi	2.91	2.23	9.56	9.75	1.00	1.71
Aksu	2.45	1.44	6.08	6.23	1.71	2.37
Aral	1.71	2.00	3.76	3.78	1.00	1.14
Alashankou	3.36	2.66	10.42	10.49	1.20	1.94
Altay	8.09	5.88	11.69	12.04	1.16	3.07
Bachu	2.20	2.50	3.79	3.81	1.00	1.40
Barkol	7.45	4.85	6.62	6.87	1.40	2.94
Balguntay	1.42	1.36	6.56	6.58	1.00	1.25
Bayanbulak	10.31	6.94	9.71	10.31	1.18	3.51
Baicheng	3.62	3.62	9.59	9.63	1.64	2.78
Beitashan	12.07	9.09	5.85	6.25	1.18	3.12
Caijiahu	4.76	3.09	9.80	9.96	1.29	2.90
Dabancheng	1.82	1.71	3.36	3.36	1.00	1.35
Fuhai	6.56	4.74	11.25	11.53	1.28	2.70
Habahe	9.55	6.43	13.27	13.38	1.32	3.83
Hami	1.59	1.42	3.38	3.45	1.00	1.42
Hoboksar	5.87	4.22	8.27	8.56	1.00	2.11
Hotan	4.67	3.67	2.50	2.50	1.50	1.50
Jinghe	3.89	2.89	8.78	8.85	1.20	2.11
Kashi	1.88	1.40	4.65	4.67	1.00	1.09
Kalpin	1.83	2.00	5.55	5.50	1.00	1.33
Karamay	3.21	3.03	9.85	9.89	1.88	1.90
Kuqa	2.18	1.67	5.37	5.37	1.25	1.73
Korla	1.65	1.57	4.38	4.42	1.00	1.42
Kumux	1.24	1.14	3.87	3.94	—	1.08
Luntai	1.80	1.20	5.06	5.06	1.00	1.60
Minfeng	1.57	1.25	2.15	2.18	—	1.25
Qitai	6.27	4.04	8.91	9.05	1.31	3.17
Qiemu	2.00	3.50	1.79	1.83	—	1.00
Qinghe	9.56	6.64	8.22	8.62	1.06	3.02
Ruoqiang	1.44	1.40	1.52	1.58	1.00	1.25
Shache	1.80	1.67	3.20	3.20	1.25	1.29
Tacheng	7.33	4.26	14.95	15.29	2.03	4.73
Taxkorgan	2.12	1.25	4.21	4.55	—	1.32
Tikanlik	1.00	1.00	2.32	2.32	1.00	1.00
Torugart	21.44	12.27	2.98	5.15	1.31	7.19
Turpan	1.50	2.00	2.76	2.76	—	1.00
Toli	10.24	6.38	12.38	12.58	1.41	4.64
Wuqia	3.11	2.33	8.96	9.20	1.33	2.21
Usu	4.22	3.23	9.82	9.87	1.67	2.40
Yanqi	3.05	1.88	4.98	4.98	1.00	3.00
Yining	3.98	2.46	14.93	15.18	1.84	3.09
Yiwu	3.51	2.36	4.50	4.88	1.00	1.54
Yutian	2.00	1.75	2.69	2.71	1.00	2.00
Zhaosu	10.13	6.25	16.44	16.84	2.00	5.02

Table S3. Annual mean observed precipitation, annual mean total correction, annual mean precipitation after correction and annual mean total correction factor at each meteorological station of Xinjiang from January 1, 1960 to December 31, 2014 based on Method 1 of dividing different precipitation types

Meteorological station	Annual mean observed precipitation (mm)	Annual mean total correction (mm)	Annual mean precipitation after correction (mm)	Annual mean total correction factor (%)
Akqi	219.63	49.69	269.32	22.63
Aksu	78.37	22.94	101.31	29.28
Aral	49.06	15.85	64.91	32.31
Alashankou	113.68	41.21	154.89	36.25
Altay	196.72	54.60	251.32	27.76
Bachu	59.79	16.12	75.91	26.96
Barkol	221.30	59.28	280.58	26.79
Balguntay	208.75	28.28	237.03	13.55
Bayanbulak	271.07	81.48	352.55	30.06
Baicheng	119.93	27.79	147.72	23.17
Beitashan	175.76	59.62	235.38	33.92
Caijiahu	142.73	44.16	186.89	30.94
Dabancheng	69.76	22.76	92.52	32.62
Fuhai	124.77	45.19	169.96	36.22
Habahe	191.23	61.21	252.44	32.01
Hami	38.83	13.85	52.68	35.68
Hoboksar	142.75	44.58	187.33	31.23
Hotan	39.32	12.28	51.6	31.23
Jinghe	104.33	38.41	142.74	36.82
Kashi	68.92	20.36	89.28	29.54
Kalpin	97.75	24.75	122.5	25.32
Karamay	115.22	43.10	158.32	37.41
Kuqa	70.41	22.54	92.95	32.01
Korla	55.77	20.53	76.3	36.82
Kumux	53.81	18.15	71.96	33.73
Luntai	64.73	18.54	83.27	28.64
Minfeng	40.04	12.04	52.08	30.06
Qitai	188.13	58.36	246.49	31.02
Qiemo	24.78	8.94	33.72	36.10
Qinghe	174.81	37.52	212.33	21.47
Ruoqiang	29.78	10.20	39.98	34.25
Shache	55.53	15.77	71.3	28.40
Tacheng	285.51	66.05	351.56	23.13
Taxkorgan	75.43	23.74	99.17	31.48
Tikanlik	33.73	10.91	44.64	32.34
Torugart	250.59	87.73	338.32	35.01
Turpan	15.03	8.66	23.69	57.62
Toli	247.05	71.28	318.33	28.85
Wuqia	184.79	41.10	225.89	22.24
Usu	170.83	50.76	221.59	29.71
Yanqi	74.73	21.85	96.58	29.24
Yining	277.48	59.21	336.69	21.34
Yiwu	98.77	33.00	131.77	33.41
Yutian	50.56	12.55	63.11	24.82
Zhaosu	503.54	101.93	605.47	20.24