Table S1. Trends of winter flow, Q_{Min} and Q_{Max}/Q_{Min} on the QTP and northern/boreal basins.

Location	Drainage area (km^2)	Latitude	Longitude	Permafrost areal extent (%)	Trend of winter flow (%)	Trend of Q_{Min} (%·yr^{-1})	Trend of Q_{Max}/Q_{Min} (yr^{-1})	Data period	Reference
Northern basins									
Lena									
Kusur	2,430,000	70.68°N	127.39°E	83.8		0.03	−0.79	1935-2000	[1,2]
Indigirka-Voronstsovo	305,000	69.57°N	147.53°E	95.0		0.02	−3.84	1937-1994	[1,2]
Vilui at Ust'Ambardah	18,600	64.08°N	109.58°E	65.0			−0.14	1966-1990	[1,3]
Aldan at Suon-Tilt	18,500	63.32°N	132.02°E	78.0	0.86~2.01		−0.21	1942-1999	[1,4]
Buotama at Brolog	12,200	61.05°N	128.65°E	95.0		0.90		1958-1989	[5]
Namana at Myakinda	16,600	60.90°N	120.80°E	95.0		−0.18		1958-1989	[5]
Amga at Buyaga	23,900	59.67°N	127.05°E	95.0		0.73		1958-1989	[5]
Lena at Zmeinovo	140,000	57.78°N	108.32°E	31.4		−0.00	0.06	1936-1988	[1,2]
Lena at Gruznovka	41,700	55.13°N	105.23°E	21.6		−0.01	0.07	1936-1988	[1,2]
Ob									
Taz at Sidorovsk	100,000	66.60°N	82.28°E	72.0		−0.02	0.72	1962-1979	[1,2]
Poluy at Poluy	15,100	66.03°N	68.73°E	70.0		0.19		1958-1989	[5]
Nadym at Nadym	48,000	65.62°N	72.67°E	65.0		−0.00	0.05	1955-1991	[1,2]
Lyapin at Saran-Paul	18,500	64.25°N	60.95°E	70.0		−0.18		1958-1989	[5]
Severnaya Sosva at Larim	87,800	63.18°N	64.40°E	48.0		0.00	−0.25	1958-1999	[1,2]
Nazim at Kishik	11,500	61.45°N	68.93°E	6.0			−0.00	1969-1999	[1,2]
Chulim at Kop'evo	9,990	55.03°N	89.87°E	4.0		0.01	−0.76	1961-2000	[1,2]
Yenisey									
Tembenchy at Tembenchy	18,900	64.95 °N	98.90°E	95.0		0.30		1958-1989	[5]
Podkamennaya Tunguska at Kuz'movka	218,000	62.32°N	92.12°E	52.0			−0.03	1939-1989	[1,2]
Kan at Irebei'skoje	8,710	55.65°N	95.48°E	36.0		−0.00	0.07	1937-1993	[1,2]

Hamsyra at Hamsara	4,890	52.75°N	97.42°E	84.0		0.00	−0.15	1961-1989	[1,2]
Utulik at Utulik	959	51.53°N	104.07°E	95.0		1.29		1958-1989	[5]
Yukon									
Porcupine R. at Old Crow	55,400	67.56°N	139.88°W	74.6		0.02	−0.13	1969-1980	[1,2]
Tanana R. at Big Del at AK	34,965	64.15°N	145.85°W	78.5		−0.01	−0.11	1949-1957	[1,2]
Stewart R. at the mouth	51,000	63.28°N	139.24°W	71.3		−0.00	−0.11	1964-2000	[1,2]
Yukon R. at Carmacks	81,800	62.09°N	136.27°W	33.0		0.01	−0.10	1952-1993	[1,2]
Yukon R. at Pilot Station AK	831,386	61.93°N	162.88°W	82.0		0.00	−0.03	1976-2003	[1,2]
Mackenzie									[1,2]
Snake R. near the mouth	8,910	65.96°N	134.02°W	95.0		0.01		1976-1995	[1,2]
Peel R. above Canyon Creek	25,700	65.89°N	136.03°W	86.6		0.01		1969-1997	[1,2]
Silverberry R. near Little Dal	1,420	62.76°N	126.69°W	94.1		0.06	−14.77	1981-1990	[1,2]
Rancheria R. near the mouth	5,100	60.2°N	129.55°W	30.0		0.01		1985-2000	[1,2]
Hyland R. near lower Post	9,450	59.95°N	128.15°W	60.0		0.00	−0.07	1958-1993	[1,2]
Firebag R. near the mouth	5,990	57.65°N	111.2°W	8.0		0.01	−0.01	1972-1987	[1,2]
QTP basins									
Yangtze River									
Yangtze R. at Tuotuohe	15,924	34.20°N	92.4°E	70.0	0.02			1981-2015	[6]
Yangtze R. at Zhimenda	137,740	33.02°N	97.23°E	75.0	0.1	0.0		1960-2014	[7]
Yangtze R. at Gangtuo	149,072	31.63°N	98.59°E	63.7	+			1961-2015	[2,8]
Yangtze R. at Batang	180,055	29.77°N	99.01°E	52.7	+			1961-2015	[2,8]
Yangtze R. between Zhimenda and Shigu	157,780	26.87°N	99.96°E	19.6	-			1954-2013	[2,9]
Yalong R. at Xiaodeshi	128,440	26.76°N	101.84°E	3.0	0.01			1960-2004	[2,10]
Yellow River									
Yellow R. above Huanghe'yan	21,000	34.88°N	98.17°E	86.0	+0.01	+0.01	–0.08	1955-2019	this paper
Yellow R. between Huanghe'an and Jimai	23,600	33.77°N	99.65°E	42.0	+0.01	+0.01		1961-2017	[11]

Yellow R. between Jimai and Maqu	39,700	33.97°N	102.08°E	9.0	–0.07	−0.01		1961-2017	[11]
Yellow R. between Maqu and Tagnag	36,600	35.5°N	100.15°E	27.0	+0.00	+0.00		1961-2017	[11]
Qilian Mountain									
Danghe R. at Dangchengwan Station	14,325	39.5°N	94.9°E	83.0	0.20	0.30		1966-2014	[7]
Fengle R. at the mouth	568	39.4°N	98.9°E	72.0	0.00	0.90		1981-2014	[7]
Changma R. at Changmapu Station	10,961	39.82°N	96.85°E	83.0			−0.7392	1953-2005	[12]
Babao R. at Qilian Station	2,452	38.20°N	100.23°E	41.0	0.90	0.80		1967-2014	[7]
Heihe R. at Yingluoxia	10,009	38.8°N	100.18°E	58.0			−0.4272	1944-2005	[12]
Zamu R. at Zamusi	851	37.7°N	102.57°E	33.0			−1.14	1952-2005	[12]
Dazhuma R. at Wafangcheng	217			58.0	1.20	1.20		1960-2014	[7]
Taolai R. at Binggou Station	6,883			79.0	−0.10	0.00		1960-2001	[7]
Indus									
Indus R. at Kachura	115,289	35.45°N	75.45°E	23.9	+			1970-1997	[2,13]
Astore R. at Doyian	3,750	35.4°N	74.8°E	24.3	+			1974-1997	[2,13]
Indus R. at Kharmong	72,500	34.8°N	76.2°E	21.3	+			1982-1997	[2,13]
Mekong									
Mekong R. at Xiangda	17,909	32.15°N	96.53°E	59.9	+			1960-2010	[2,14]
Mekong R. at Changdu Station	53,512	31.13°N	97.18°E	38.4	+	+	-	1960-2018	[2,15]
Yarloo Tsangpoo									
Yarloo Tsangpo R.at Lhasa	32,588	29.64°N	91.15°E	16.8		+		1956-2015	[2,16]
Yarloo Tsangpo R. at Nuxia Station	201,809	29.47°N	94.65°E	31.3	+	+		1956-2018	[2,15]
Yarloo Tsangpo R.at Nugesha	106,060	29.32°N	89.71°E	33.1	-	-		1956-2015	[2,16]
Yarloo Tsangpo R.at Yangcun	153,191	29.25°N	91.77°E	32.2	+			1956-2015	[2,16]
Salween									

Salween R. at Jiayuqiao Station	73,632	30.88°N	96.20°E	26.0	+	+	1981-2018	[10]
Salween R. at Daojieba Station		25.85°N	98.85°E	21.9	+0.00	+	1960-2009	[2,17]

Notes:

1) Percentage trends referred from References [60] and [77] were calculated by the Sen's slope method and the other were computed using ordinary least squares regression, and;

2) In Reference [67], the Q_{Min} is the average of daily minimum streamflow of each month, and; the Q_{Min} in other references indicates annual minimum streamflow.

3) Data are missing at: Ust'Ambardah in the Vilui River in 1969; Nadym in the Nadym River in 1976; Kishik in the Nazim River in 1979; Hamsara in the Hamsyra River in 1974; Big Delta in the Tanana River, Alaska in 1953; Carmacks in the Yukon River in 1963, and; near the Lower Post in the Hyland River in 1965.

4) Most data periods are difference among the studies listed in the table

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