

Appendix

Table A1 Seasonal and annual fluxes of six Arctic rivers in 2004–2007 (units: Gg; PO₄³⁻ flux for 2009–2017; TSS flux for 2004–2018)

Season		HCO ₃ ⁻	TDN	NO ₃ ⁻	TDP	PO ₄ ³⁻	TSS
Spring	Yenisey	4288 [3484, 6218]	76.7 [70.2, 84.2]	4.5 [3.6, 6.6]	3.3 [3.0, 4.3]	1.7 [1.6, 2.1]	2663 [1595, 3181]
	Lena	5063 [4479, 6139]	88.5 [82.3, 111.8]	3.3 [2.8, 5.1]	3.3 [2.5, 4.7]	1.5 [1.1, 2.3]	8209 [6368, 13023]
	Ob'	3418 [2737, 4006]	58.2 [52.9, 64.0]	14.6 [9.6, 21.0]	4.0 [3.6, 5.2]	3.0 [2.0, 3.4]	4167 [2908, 6943]
	Mackenzie	4536 [4148, 4846]	24, 9 [21.2, 27.8]	5.0 [4.4, 5.3]	1.1 [0.9, 1.2]	0.3 [0.3, 0.5]	19261 [15906, 25101]
	Yukon	2778 [2711, 3979]	2.9 [2.4, 4.1]	2.9 [2.4, 2.1]	0.6 [0.5, 1.0]	0.3 [0.2, 0.4]	13846 [9773, 25215]
	Kolyma	585 [453, 856]	0.9 [0.8, 1.3]	0.9 [0.8, 1.3]	0.6 [0.3, 0.8]	0.3 [0.2, 0.3]	3532 [2606, 4494]
	Sum	18103 [20668, 26046]	33.6 [26.0, 46.5]	33.6 [26.0, 46.5]	12.7 [10.9, 17.1]	7.1 [5.3, 9.1]	51679 [39155, 77958]
Summer	Yenisey	6309 [5784, 6967]	39.4 [32.8, 44.2]	2.3 [1.7, 2.7]	1.5 [1.1, 1.9]	1.2 [1.1, 1.4]	491 [259, 809]
	Lena	12732 [11911, 14552]	75.2 [64.4, 77.1]	8.7 [7.3, 11.3]	2.1 [1.7, 3.9]	1.4 [1.3, 2.2]	6667 [4439, 8987]
	Ob'	6084 [5313, 7074]	72.1 [55.4, 80.3]	5.0 [4.4, 5.3]	4.0 [3.6, 5.2]	3.3 [2.7, 4.3]	4947 [3856, 5833]
	Mackenzie	6519 [5859, 6895]	35.4 [26.1, 43.2]	6.8 [6.4, 7.6]	1.2 [0.9, 1.4]	0.4 [0.3, 0.8]	9222 [8204, 11848]
	Yukon	5242 [7535, 9462]	32.1 [27.2, 36.3]	10.4 [9.4, 13.0]	0.7 [0.6, 1.2]	0.5 [0.4, 0.6]	29944 [23459, 31728]
	Kolyma	819 [701, 1125]	10.4 [82, 11.3]	1.7 [1.1, 2.2]	0.4 [0.3, 0.8]	0.2 [0.2, 0.4]	929 [407, 1773]
	Sum	37703 [34089, 42230]	264.0 [214.1, 290.2]	40.3 [31.7, 53.5]	12.6 [11.2, 19.4]	7.0 [5.9, 9.6]	52199 [40623, 60928]
Winter	Yenisey	5581 [4852, 6240]	156.2 [143.0, 173.1]	18.6 [15.0, 21.1]	1.3 [0.9, 1.9]	4.1 [3.6, 4.7]	247 [116, 353]
	Lena	2521 [2247, 2751]	182.3 [168.2, 212.1]	6.6 [4.6, 8.5]	0.6 [0.4, 0.8]	3.2 [2.6, 5.0]	248 [190, 270]
	Ob'	6084 [4052, 5416]	192.1 [160.3, 224.1]	17.2 [14.2, 19.2]	3.9 [2.9, 5.7]	2.1 [1.4, 2.5]	609 [482, 998]
	Mackenzie	3961 [3855, 4121]	73.7 [63.6, 87.6]	7.3 [6.9, 9.8]	0.5 [0.2, 0.6]	0.2 [0.1, 0.3]	767 [268, 936]
	Yukon	2458 [2267, 2577]	65.5 [60.7, 79.9]	6.3 [5.5, 7.0]	0.2 [0.2, 0.3]	1.0 [0.7, 1.3]	262 [141, 963]
	Kolyma	116 [86, 294]	1.4 [1.1, 1.7]	0.4 [0.3, 0.6]	0.1 [0.0, 0.1]	0.0 [0.0, 0.0]	15 [5, 34]
	Sum	20720 [17359, 21399]	144.8 [129.5, 172.6]	56.4 [46.5, 66.1]	6.6 [4.6, 9.4]	3.7 [2.5, 4.7]	2148 [1202, 3554]
Annual	Yenisey	16178 [15514, 18311]	154.4 [142.8, 173.1]	25.3 [22.5, 28.6]	6.6 [4.6, 9.4]	3.7 [2.5, 4.7]	2148 [1202, 3554]
	Lena	20316 [19247, 22494]	184.1 [168.1, 212.0]	18.6 [16.6, 21.7]	5.9 [4.7, 9.7]	3.2 [2.6, 5.0]	15125 [11203, 23939]
	Ob'	15586 [13022, 15984]	184.8 [159.6, 223.7]	42.3 [39.3, 49.2]	14.8 [12.9, 18.7]	8.4 [6.7, 9.3]	9722 [8240, 13202]
	Mackenzie	15015 [14179, 15553]	77.7 [63.0, 86.9]	19.1 [18.1, 20.9]	2.8 [2.3, 3.2]	0.8 [0.6, 1.6]	29249 [25748, 33852]
	Yukon	10477 [10240, 12102]	68.0 [60.5, 78.5]	21.9 [19.9, 25.0]	1.6 [1.4, 2.5]	1.0 [0.7, 1.3]	44052 [34011, 50991]
	Kolyma	1520 [1471, 2173]	23.1 [19.9, 25.0]	3.1 [2.4, 4.1]	1.1 [0.7, 1.5]	0.5 [0.3, 0.7]	4476 [3381, 7702]
	Sum	79092 [73673, 86617]	692.0 [613.8, 799.2]	130.3 [118.8, 149.6]	31.9 [27.2, 43.1]	17.7 [14.5, 22.6]	106026 [85006, 133689]

Note: It is shown in parentheses as the 25th and 75th percentile.