Table DR1. Cosmogenic exposure ages (arranged in decreasing age per moraine)

Sample	Latitude (N)	Longitude (W)	Site (Fig. 2)	Elevation (m asl)	sample thickness (cm)	Topography factor	^{10}Be (10^5 atoms g^{-1})	^{26}Al (10^5 atoms g^{-1})	^{10}Be age (ka)	^{26}Al age (ka)	Average age (ka)	Emin age† (ka)	Emax age† (ka)
Chuilnuk Mountains													
Chuilnuk moraine													
WM01-1D	61° 16' 37.4"	157° 53' 14.3"	1	343	2.0	0.998	1.09±0.16	-	15.8±1.8	-	-	16.0±1.9	17.7±2.1
WM01-1C	61° 16' 44.6"	157° 53' 19.9"	2	355	2.0	0.998	1.02±0.13	-	14.6±1.5	-	-	14.8±1.5	16.2±1.6
WM01-1A	61° 17' 44.3"	157° 53' 28.6"	3	380	2.0	0.998	0.87±0.16	-	12.1±2.0	-	-	12.2±2.0	13.2±2.2
WM01-1B	61° 16' 58.3"	157° 53' 26.2"	4	366	3.0	0.998	0.66±0.14	-	9.3±1.8	-	-	9.4±1.8	10.0±1.9
Buckstock moraine													
WM01-2E	61° 17' 36.3"	157° 51' 42.0"	5	372	3.0	0.990	1.26±0.15	-	17.7±1.5	-	-	17.9±1.5	20.1±1.7
WM01-2C	61° 17' 40.0"	157° 51' 39.5"	6	377	3.0	0.990	1.18±0.16	-	16.4±1.7	-	-	16.6±1.7	18.5±1.9
WM01-2D	61° 17' 36.1"	157° 51' 42.4"	7	372	1.0	0.990	1.08±0.14	-	15.2±1.5	-	-	15.4±1.5	16.9±1.7
WM01-2B	61° 17' 45.8"	157° 51' 34.1"	8	391	2.0	0.990	1.04±0.12	-	14.3±1.2	-	-	14.4±1.2	15.8±1.3
Lime Hills region													
North Lime Lake moraine													
NLL-00-2	61° 27' 27.6"	155° 21' 30.6"	9	243	4.0	1.000	2.29±0.40	13.18±0.66	38.1±2.1	34.8±1.7	36.5±2.3	37.6±2.5	49.8±2.2
NLL-00-1	61° 27' 33.0"	155° 21' 35.0"	10	235	5.0	1.000	1.53±0.08	-	25.6±4.5	-	-	26.1±4.6	31.2±5.4
Swift River Farewell II moraine													
SR2-00-2	61° 28' 51.6"	154° 32' 7.1"	11	650	5.0	1.000	1.96±0.08	11.01±0.67	21.3±0.9	19.4±1.2	20.4±1.4	20.7±1.4	23.7±1.9
SR2-00-5	61° 28' 28.3"	154° 30' 12.9"	12	641	3.0	1.000	1.76±0.09	11.03±0.67	19.3±1.0	19.6±1.2	19.4±0.2	19.7±0.2	22.4±0.3
SR2-00-3	61° 29' 09.1"	154° 34' 3.0"	55	613	5.0	1.000	1.74±0.07	-	19.2±0.8	-	-	19.5±0.8	22.1±0.9
SR2-00-4	61° 27' 34.0"	154° 27' 57.6"	56	655	4.0	1.000	1.72±0.07	-	18.2±0.7	-	-	18.5±0.7	20.8±0.8
Swift River Farewell I moraine													
SR1-00-2	61° 28' 25.7"	154° 32' 24.5"	57	607	2.0	1.000	4.97±0.13	-	55.4±1.4	-	-	58.1±1.5	99.8±2.5
SR1-00-4	61° 28' 12.3"	154° 30' 12.1"	13	633	3.0	1.000	4.63±0.14	30.43±0.97	51.4±1.6	55.4±1.8	53.4±2.8	55.9±3.1	93.5±10.5
SR1-00-1	61° 28' 26.5"	154° 32' 37.3"	14	597	4.0	1.000	4.18±0.14	-	47.9±1.7	-	47.9±1.7	49.9±1.7	75.9±2.6
SR1-00-3	61° 28' 3.7"	154° 29' 19.1"	15	631	4.0	1.000	3.98±0.16	-	44.2±1.8	-	44.2±1.8	45.9±2.2	66.3±2.7
										-			
Kokrines Hills													
Outer moraine													
KH 1-3	65° 10' 6.6"	154° 25' 19.0"	16	570	5.0	1.000	4.39±0.38	-	51.6±1.7	-	-	54.0±1.8	86.8±2.8
KH 1-1	65° 10' 2.2"	154° 25' 7.1"	17	579	5.0	1.000	2.10±0.19	-	23.9±1.1	-	-	24.4±1.1	28.7±1.3
KH 1-2	65° 10' 1.0"	154° 25' 9.4"	18	579	3.0	1.000	1.64±0.16	-	18.8±1.2	-	-	19.1±1.2	21.6±1.3
Inner moraine													
KH 2-1	65° 8' 30.4"	154° 21' 32.3"	19	777	5.0	0.990	3.07±0.29	-	30.0±1.4	-	-	30.8±1.5	38.2±1.8
KH 2-2	65° 8' 28.1"	154° 21'20.8"	20	792	3.0	0.990	2.49±0.22	-	23.7±1.0	-	-	24.2±1.0	28.4±1.2
KH 2-3	65° 8' 26.0"	154° 21'18.1"	21	792	5.0	0.990	2.41±0.26	-	23.3±1.7	-	-	23.7±1.7	27.8±2.0
KH 2-4	65° 8' 31.8"	154° 21' 24.4"	22	792	6.0	0.990	2.17±0.22	-	21.1±1.3	-	-	21.4±1.3	24.7±1.5
Yukon-Tenana Upland													
Ramshorn moraine													
WM00-09A	64° 40.374'	143° 21.418'	23	1260	5.0	0.980	-	26.0 ± 1.1	-	28.4 ± 1.1	-	29.1±1.2	32.2±1.4
WM00-09B	64° 40.383'	143° 21.284'	24	1262	1.5	0.980	3.96 ± 0.27		25.4 ± 1.8	-	-	26.0±1.8	28.4±1.9
WM00-09D	64° 40.385'	143° 21.170'	25	1258	2.0	0.980	2.84 ± 0.18	16.5 ± 0.9	18.3 ± 1.2	17.6 ± 0.9	17.9 ± 1.2	18.2±0.6	19.3±0.6
WM00-09E‡	64° 40.321'	143° 21.264'	26	1260	2.0	0.980	-	~14.4	-	~15.7	-	~15.9	~16.7
Salcha moraine													
WM00-08B	64° 42.185'	143° 22.031'	27	1062	1.5	0.994	3.76 ± 0.14	23.7 ± 1.0	28.2 ± 1.2	29.2 ± 1.3	28.7 ± 1.3	29.4±0.8	32.6±1.0
WM00-08E	64° 42.125'	143° 22.649'	28	1052	2.0	0.994	2.77 ± 0.16	-	20.9 ± 1.2	-	-	21.3±0.9	22.8±1.0
WM00-08D	64° 42.137'	143° 22.595'	29	1053	2.0	0.994	2.27 ± 0.10	-	17.1 ± 0.9	-	-	17.3±0.8	18.3±0.8
WM00-08C	64° 42.189'	143° 22.113'	30	1061	1.0	0.994	2.21 ± 0.14	-	16.4 ± 1.1	-	-	16.6±1.1	17.6±1.1
Eagle moraine													
WM00-06B	64° 39.677'	143° 31.656'	31	980	2.0	0.990	7.63 ± 0.46	-	61.4 ± 3.9	-	-	64.7±3.8	84.1±4.9
WM00-06D	64° 39.731'	143° 32.137'	32	968	1.0	0.990	5.78 ± 0.31	-	46.4 ± 2.7	-	-	48.3±2.6	57.9±3.1
WM00-06A	64° 39.677'	143° 31.656'	33	980	1.5	0.990	4.92 ± 0.15	27.8 ± 1.1	39.2 ± 1.4	36.6 ± 1.4	37.9 ± 1.4	39.1±2.0	45.1±2.6
WM00-06C	64° 39.722'	143° 31.913'	34	972	3.0	0.990	3.12 ± 0.11	18.7 ± 0.7	25.3 ± 1.0	24.9 ± 1.0	25.1 ± 1.0	25.6±0.3	28.0±0.3
Mt. Harper moraine													
WM00-07D	64° 37.979'	143° 32.876'	35	998	2.0	1.000	14.5 ± 0.35	90.2 ± 2.8	115.9 ± 3.7	122.5 ± 3.9	119.2 ± 3.9	133.1±6.1	NA
WM00-07C	64° 37.992'	143° 32.860'	36	998	5.0	1.000	-	66.7 ± 1.9	-	91.4 ± 2.5	-	99.3±1.8	167.7±1.9
WM00-07B	64° 38.060'	143° 32.746'	37	995	2.0	1.000	9.75 ± 0.34	59.7 ± 2.2	77.6 ± 3.1	79.6 ± 2.9	78.6 ± 3.1	84.3±1.7	124.4±4.9
WM00-07A	64° 38.202'	143° 32.445'	38	999	1.5	1.000	8.48 ± 0.22	43.3 ± 0.9	66.9 ± 2.2	56.6 ± 1.1	61.8 ± 2.2	65.2±8.1	85.5±14.1
Northeastern Brooks Range													
Okpilak River valley lateral ridge													
BR02-15	69° 27.281'	144° 04.929'	39	939	2.0	1.000	9.15±0.77	-	76.0±1.9	-	-	81.2±6.8	NA
BR02-16	69° 27.492'	144° 04.861'	40	946	2.0	1.000	6.09±0.52	-	50.0±1.3	-	-	52.2±4.4	81.7±6.9
BR02-14	69° 27.223'	144° 04.898'	41	940	1.0	1.000	3.35±0.29	-	27.3±0.9	-	-	27.9±2.4	33.8±2.9
Jago River valley lateral ridge													
BR02-8	69° 27.591'	143° 47.657'	42	754	3.0	1.000	5.69±0.48	-	55.7±1.4	-	-	58.4±4.9	100.8±8.5
BR02-7	69° 27.575'	143° 48.020'	43	758	2.0	1.000	2.74±0.23	-	26.3±0.7	-	-	26.9±2.3	32.3±2.7
BR02-6	69° 27.491'	143° 48.063'	44	772	1.0	1.000	2.63±0.22	-	24.8±0.6	-	-	25.3±2.1	29.9±2.5
BR02-5	69° 26.681'	143° 47.200'	45	779	1.0	1.000	2.31±0.20	-	21.6±0.6	-	-	22.0±1.9	25.4±2.2
BR02-9	69° 27.666'	143° 47.736'	46	749	1.0	1.000	2.10±0.19	-	20.1±0.7	-	-	20.4±1.8	23.3±2.1
Jago River valley-floor end moraine													
BR02-11	69° 27.650'	143° 42.757'	47	593	2.0	1.000	4.05±0.34	-	42.3±1.1	-	-	47.1±4.0	68.9±5.8
BR02-10	69° 27.611'	143° 42.658'	48	594	1.0	1.000	2.44±0.21	-	26.9±0.7	-	-	27.5±2.3	33.2±2.8
BR02-12	69° 27.522'	143° 42.926'	49	584	3.0	1.000	1.14±0.10	-	12.8±0.5	-	-	12.9±1.2	14.0±1.3
BR02-13	69° 26.950'	143° 44.609'	50	589	3.0	1.000	0.82±0.07	-	9.2±0.4	-	-	9.2±0.8	9.7±0.9
Hubley Creek moraine													
BR02-4	69° 20.573'	143° 33.659'	51	702	3.0	1.000	2.13±0.19	-	21.6±0.4	-	-	22.0±1.9	25.5±2.2
BR02-1	69° 20.318'	143° 34.698'	52	779	6.0	1.000	2.14±0.18	-	20.9±0.6	-	-	21.2±1.8	24.4±2.1
BR02-3	69° 20.944'	143° 34.573'	53	686	3.0	1.000	1.75±0.16	-	18.1±0.7	-	-	18.3±1.6	20.6±1.8
BR02-2	69° 20.229'	143° 34.503'	54	768	1.0	1.000	1.66±0.14	-	15.6±0.5	-	-	15.8±1.4	17.5±1.5

†Emin is 1 mm ky^{-1}; Emax is 8 mm ky^{-1}, except for the local YTU Emax of 4.8 mm ky^{-1}.

‡ ^{26}Al age for sample WM00-09E is an estimate only because there was not enough Al-oxide for multiple AMS runs.

Table 2. Cosmogenic isotope derived maximum erosion rates

Sample	Latitude (N)	Longitude (W)	Elevation (m asl)	^{10}Be (10^5 atoms g^{-1})	Minimum ^{10}Be age (ka)	Maximum erosion rate (mm ky^{-1})
Kokrines Hills, tors						
KH3-1	65° 9' 45.2"	154° 22' 10.4"	1098	10.72±0.91	79.0±2.1	7.6
KH3-2	65° 10' 55.1'	154° 22' 55.1"	960	8.22±0.70	68.7±1.7	8.7
						8.15±0.77
Yukon-Tenana Upland, oldest moraine boulder						
WM00-07D	64° 37.979'	143° 32.876'	998	NA	119.2 ± 3.9*	4.8
Northeastern Brooks Range, oldest moraine boulder						
BR02-15	69° 27.281'	144° 04.929'	939	9.15±0.77	76.0±1.9	7.8

†this age is an average Al/Be age