Table 2b
Cosmogenic exposure ages and maximum erosion rates from the Kennar Valley drifts.

Drift	Sample	^{3}He[a] (10^8 at/g)	Elevation scaling factor[b]	Minimum ^{3}He age[c] (ka)	^{3}He-age 5 cm/Myr[d] (ka)	^{3}He-age 10 cm/Myr[d] (ka)	Max erosion rate[e] (cm/Myr)
K1	DXP-04-03	0.088 ± 0.003	4.58	17.5 ± 0.5	18	18	3600
	DXP-06-20	0.089 ± 0.003	4.58	17.7 ± 0.5	18	18	3600
	KSX-06-39	0.094 ± 0.003	4.54	19.5 ± 0.5	20	20	3300
$K2_m$[f]	DXP-04-01	0.692 ± 0.031	4.62	126 ± 6	127	127	460
	KSX-06-35	0.522 ± 0.021	4.62	95 ± 4	95	96	600
	KSX-06-41	0.624 ± 0.025	4.60	114 ± 5	114	115	500
	KSX-06-42	0.917 ± 0.037	4.60	167 ± 7	168	170	350
	KSX-04-43	0.487 ± 0.019	4.60	89 ± 4	89	89	650
	KSX-06-47	1.220 ± 0.037	4.75	215 ± 6	217	220	270
	KSX-06-49	0.669 ± 0.020	4.78	117 ± 4	118	120	500
$K2_d$[f]	DXP-04-02	0.786 ± 0.014	4.54	145 ± 3	146	150	400
	KSX-06-36	1.388 ± 0.056	4.56	255 ± 10	258	260	220
	KSX-06-37	1.533 ± 0.061	4.56	284 ± 11	287	290	200
	KSX-06-38	0.429 ± 0.017	4.56	79 ± 3	79	80	730
K3	KSX-06-45	1.070 ± 0.032	4.82	186 ± 6	188	190	310
	KSX-06-46	1.770 ± 0.053	4.84	306 ± 9	310	320	190
K4	DXP-04-06	2.810 ± 0.042	4.94	477 ± 7	490	500	120
	DXP-04-07	3.290 ± 0.058	4.90	562 ± 10	580	590	100
K5	KSX-06-50	5.390 ± 0.162	4.89	923 ± 28	960	1000	60
	KSX-06-63	2.410 ± 0.072	4.87	414 ± 12	420	430	140
K6	DXP-04-04	3.135 ± 0.065	4.94	532 ± 11	550	560	110
	DXP-04-05	2.370 ± 0.066	4.94	402 ± 11	410	420	140
K7	DXP-04-08	9.160 ± 0.140	4.91	1562 ± 24	1700	1800	37
	KSX-06-62	8.890 ± 0.267	4.92	1513 ± 45	1600	1800	38
K8	KSX 06-55	15.12 ± 0.60	5.38	2378 ± 94	2700	3100	25
UD[g]	DXP-04-09	15.39 ± 0.25	4.90	2630 ± 43	3000	3500	22
	KSX-06-61	16.40 ± 0.49	4.90	2803 ± 84	3200	3900	21

[a] 1σ errors of ^{3}He concentrations reflect propagated analytical uncertainties, based on statistical errors and variability in the sensitivity of the mass spectrometer.
[b] Cosmogenic production rates were scaled for elevation using equations from Stone (2000) for Antarctica.
[c] We used a sea level, high-latitude cosmogenic ^{3}He production rate of 120 at g^{-1} yr^{-1} (pyroxene) after Goehring et al. (2010). Minimum ages assume no erosion, accounting only for production rates and shielding factors at each sample location.
[d] Ages calculated with constant erosion rates of 5 and 10 cm Myr^{-1}, with an attenuation length of 155 g cm^{-2} and an average rock density of 2.7 g cm^{-3}.
[e] Maximum erosion rates are calculated from the measured cosmogenic ^{3}He assuming an infinite exposure time.
[f] K2 ice-cored moraines ($K2_m$) and K2 ice-cored drift ($K2_d$) (Fig. 2 and 3).
[g] Undifferentiated drift distal to moraine K7 and stratigraphically below moraines K4–K7.

4.1.1. Ice cored drift: K1 and K2

K1 drift includes the modern ice-cored moraine alongside Taylor Glacier and all visible clasts embedded in the margin of Taylor Glacier at the mouth of Kennar Valley (Fig. 2). The modern ice-cored moraine is sharp crested, ~2 m wide, and ~3 m high. The only evidence for surface alterations are thin iron-oxide stains that coat some rock surfaces (Fig. 4); otherwise the rocks at the surface, and those partly embedded in Taylor Glacier ice, are fresh, angular, and resemble those found in rockfall deposits elsewhere in the MDV (e.g., Swanger & Marchant, 2007).

K2 drift reaches a maximum elevation of ~1460 m, ~55 m above the base of nearby Taylor Glacier (Figs. 2 and 3). It includes an extensive sheet of matrix-supported, rocky debris that rests directly on stagnant glacier ice (designated $K2_d$); the drift is bound by multiple, largely ice-cored, and partially cross-cutting moraines ($K2_m$) (Figs. 2 and 3). K2 drift displays well-developed sublimation-type polygons (Marchant et al., 2002; Marchant and Head, 2007), with a relief of ~3 m from elevated polygon centers to deep marginal troughs. The contacts between drift (typically 25–50 cm thick) and underlying glacier ice are sharp, dry, and planar. The largest ice-cored moraine in K2 drift is 8 m high (with almost all of the relief arising from the ice core itself); this moraine circumscribes a ~0.4 km^2 region of ice-cored drift ($K2_d$) (Figs. 2 and 3a).

Clasts at the surface of K2 drift are composed of Ferrar Dolerite (80–90%), Feather Conglomerate, and undifferentiated sandstones, siltstones, and shales. The clasts of dolerite are typically ~1 to 2 m in diameter and exhibit weakly developed rock varnish (<1-mm thick) (Table 1).

4.1.2. Non-ice cored drift: K3–K8

K3 drift reaches a maximum elevation of 1475 m, ~70 m above the base of nearby Taylor Glacier. Its bounding moraine ridge is sharp-crested, 1–2 m high, and composed of dolerite (90%) and sandstone cobbles (Figs. 2 and 3). The surface dolerites exhibit minor wind-abraded facets and thin (<1-mm thick) rock varnish (Table 1).

K4–K7 drifts include a suite of closely spaced moraines and erratic cobbles that crop out between 1490 and 1500 m elevation, 85–95 m above the base Taylor Glacier (Fig. 2). The moraines and scattered erratics rest unconformably on an older, undifferentiated and matrix-supported drift sheet (UD). The bounding moraine that marks the outer edge of K4 drift is 2- to 3-m high, whereas moraines that mark the outer limits of drifts K5, K6 and K7 are relatively low and diffuse, reaching a maximum height of ~1 m. Lithologies within K4–K7 drifts are uniformly composed of ~80–90% dolerite and ~10–20% sandstone (with elevated numbers of isolated quartz pebbles from the Feather Conglomerate). Clast size decreases from an average maximum of ~100 cm (a axis) on the surface of K4 drift, to ~50 cm on K7 drift. Solution pits from salt weathering on the surface of clasts of Ferrar Dolerite increase from a maximum depth of ~15 mm on K4 drift to ~29 mm on K7 drift (Figs. 4 and 5; Table 1). Ventifacts and puzzle rocks are also relatively common (Fig. 4). Salt-cemented horizons bind iron-oxide stained quartz grains in the upper 20 cm of K4–K7 drifts (e.g., Bockheim, 2010).

K8 drift reaches a maximum elevation of 1610 m, ~205 m above the base Taylor Glacier at the mouth of Kennar Valley (~2.5 km away). It terminates in a narrow moraine ridge ~400-m long and 1-m high (Fig. 3). As for the other Kennar drifts, the concentration of surface erratics increases up to the bounding moraine (Fig. 3). The clasts