

Thursday, November 9, 2023

Dear Drs. Tremblay and Balco,

Upon receiving and reviewing proofs for our article, “Early Holocene ice retreat from Isle Royale in the Laurentian Great Lakes constrained with ^{10}Be exposure-age dating,” (GCHRON-2023-16), the author team noticed some numerical rounding corrections in some of our data tables that really ought to be fixed before the final draft of the paper is approved. Without these corrections, we feel we would be compelled to issue a Corrigendum on the paper, which would be unfortunate.

In **Table 1**, we did not need to carry out shielding calculations to six decimal places since the corrections being made are really ineffectual to the resultant exposure ages, so we would like to round these to three places, which still provides an opportunity to discuss sample IR-18-11, which had some complex shielding to consider. There were additional comments we made to copyeditors with regards to Table 1 (i.e. adding “-“ symbols for longitude so that copying-and-pasting coordinate data directly from the table is more direct); we also apply those changes in our corrected/formatted tables below.

Exposure ages in the **Appendix Tables B1, B2, B3, and B5** were shown as being precisely known to the year, which with ^{10}Be exposure age dating is not the case. We would like to round the exposure-ages and uncertainties presented in these tables to at least the decade. Output from Jones et al.’s (2019) Ice-TEA calculator already made this rounding, so values in Table B6 do not need to be changed.

Correctly formatted data tables are included in this PDF document.

The changes we are proposing to our Data Tables do not, in any way, change the outcome of the results of our study, nor do they affect, in any way, the figures or values we cite in the main text of the paper. We apologize for our oversight of these items until now, but we are all very excited for this work to make it out to the community.

Please reach out if there are concerns or other questions at this time.

Kind regards,

Eric W. Portenga, David J. Ullman, Lee B. Corbett, Paul R. Bierman, Marc W. Caffee

Table 1. Sample Locations and Characteristics

Sample ID	Lat. (°)	Long. (°)	Elev. ^a (m)	Shielding	Thickness (cm)	Rock type	Dimensions (cm) L x W x H
IR-18-01	47.95536	-89.01206	421	1.000	2.0	Granite	80 x 80 x 35
IR-18-02	47.98524	-89.01217	421	1.000	3.0	Granite	90 x 70 x 25
IR-18-03	47.95000	-89.01228	421	1.000	3.3	Granite	135 x 110 x 30
IR-18-04	47.95499	-89.01215	421	1.000	1.5	Granite	130 x 110 x 40
IR-18-05	47.95890	-89.01457	419	1.000	4.3	Granite	130 x 80 x 50
IR-18-06	47.95174	-89.02392	412	1.000	2.0	Granite	240 x 150 x 40
IR-18-07	47.94902	-89.02894	393	1.000	2.5	Granite	270 x 190 x 75
IR-18-08	47.95077	-89.02398	401	1.000	1.5	Granite	265 x 240 x 65
IR-18-09	47.94488	-89.03035	373	1.000	3.0	Gneiss	150 x 120 x 65
IR-18-10	47.91520	-89.06030	402	1.000	2.8	Granite	145 x 150 x 60
IR-18-11	47.93444	-89.04440	387	0.997 ^b	3.8	Granite	250 x 200 x 75

^a Elevations are present-day, meters above sea level, and are not corrected for glacial isostatic adjustment
^b IR-18-11 was collected along the sloped top side of the erratic, which was adjacent to an even-larger mafic erratic. In addition to topographic shielding, shielding for IR-18-11 accounts for self-shielding of the erratic's sloped surface (strike 308°, dip 12°) and local horizon shielding from the adjacent erratic ([170°, 0.64], [180°, 0.86], [205°, 0.64]) using Balco et al.'s (2008) shielding calculator (wrapper 2.0, skyline 2.0).

Table B1. Exposure ages calculated using Balco et al. (2008) versus Ice-TEA

Sample ID	Balco et al. (2008)			Ice-TEA (Jones et al., 2019)			% diff.
	Age (ka)	± 1σ (int.)	± 1σ (ext.)	Age (ka)	± 1σ (int.)	± 1σ (ext.)	
IR-18-01	10130	800	1000	10820	940	1260	6.9%
IR-18-02	11450	750	1010	12250	790	1250	7.0%
IR-18-03	8980	750	920	9580	830	1110	6.7%
IR-18-04	9210	830	990	9820	910	1220	6.7%
IR-18-05	9370	1000	1140	10020	1080	1350	6.9%
IR-18-06	12390	1030	1260	13140	1100	1470	6.1%
IR-18-07	9970	990	1160	10660	1080	1370	6.9%
IR-18-08	9620	680	880	10280	760	1090	6.9%
IR-18-09	9830	560	810	10510	590	1010	6.9%
IR-18-10	9950	870	1050	10630	970	1290	6.8%
IR-18-11	6980	840	940	7390	860	1030	5.8%

Table B2. Exposure ages calculated in Balco et al. (2008) using the default versus Northeast North America calibration datasets							
Sample ID	Default production rate calibration			Northeast North America calibration			% diff.
	Age (ka)	± 1σ (int.)	± 1σ (ext.)	Age (ka)	± 1σ (int.)	± 1σ (ext.)	
IR-18-01	10130	800	1000	10080	800	1160	0.5%
IR-18-02	11450	750	1010	11390	740	1210	0.5%
IR-18-03	8980	750	920	8940	740	1050	0.5%
IR-18-04	9210	830	990	9160	820	1120	0.5%
IR-18-05	9370	1000	1140	9330	990	1260	0.5%
IR-18-06	12390	1030	1260	12320	1020	1450	0.5%
IR-18-07	9970	990	1160	9930	990	1290	0.5%
IR-18-08	9620	680	880	9570	670	1050	0.5%
IR-18-09	9830	560	810	9780	560	990	0.5%
IR-18-10	9950	870	1050	9910	870	1200	0.5%
IR-18-11	6980	840	940	6950	840	1020	0.5%

Table B3. Exposure ages calculated in Balco et al. (2008) using difference ¹⁰ Be production rate scaling schemes											
Sample ID	LSDn	St			Lm			% diff.			
	Age (ka)	± 1σ (int.)	± 1σ (ext.)	Age (ka)	± 1σ (int.)	± 1σ (ext.)	Age (ka)		± 1σ (int.)	± 1σ (ext.)	% diff.
IR-18-01	10130	800	1000	10160	800	1140	0.3%	9910	780	1080	2.1%
IR-18-02	11450	750	1010	11480	750	1180	0.3%	11190	730	1110	2.3%
IR-18-03	8980	750	920	9020	750	1040	0.4%	8800	730	990	2.0%
IR-18-04	9210	830	990	9240	830	1110	0.3%	9020	810	1060	2.1%
IR-18-05	9370	1000	1140	9410	1000	1250	0.3%	9180	980	1200	2.1%
IR-18-06	12390	1030	1260	12330	1020	1410	0.5%	12040	1000	1350	2.8%
IR-18-07	9970	990	1160	10000	1000	1270	0.2%	9760	970	1220	2.2%
IR-18-08	9620	680	880	9660	680	1020	0.4%	9430	660	970	2.0%
IR-18-09	9830	560	810	9860	560	960	0.3%	9620	550	910	2.1%
IR-18-10	9950	870	1050	9980	870	1180	0.2%	9740	850	1120	2.2%
IR-18-11	6980	840	940	6940	840	1000	0.7%	6790	820	960	2.7%

Table B5. Exposure ages calculated in Balco et al. (2008) without versus with snow shielding							
Sample ID	Without snow shielding			With snow shielding			% diff.
	Age (ka)	± 1σ (int.)	± 1σ (ext.)	Age (ka)	± 1σ (int.)	± 1σ (ext.)	
IR-18-01	10130	800	1000	10410	820	1030	2.8%
IR-18-02	11450	750	1010	11790	770	1040	3.0%
IR-18-03	8980	750	920	9240	770	940	2.9%
IR-18-04	9210	830	990	9460	850	1020	2.8%
IR-18-05	9370	1000	1140	9630	1030	1170	2.7%
IR-18-06	12390	1030	1260	12790	1060	1300	3.3%
IR-18-07	9970	990	1160	10250	1020	1190	2.8%
IR-18-08	9620	680	880	9900	700	910	3.0%
IR-18-09	9830	560	810	10110	580	830	2.9%
IR-18-10	9950	870	1050	10230	900	1080	2.8%
IR-18-11	6980	840	940	7170	860	960	2.6%