

1 **SUPPLEMENTARY MATERIAL**

2 **Table S1 | (a) ¹⁰Be data from the accelerator and quartz and carrier masses; (b) Input to**
 3 **CRONUS calculator and (c) output from CRONUS calculator for Torngat high elevation lake**
 4 **age estimates (See TorngatLake_TableS1.xls).**

5 **(a)**

Sample Name	CNEF ID	Quartz Mass (g)	Mass of ⁹ Be Added (µg)*	AMS Cathode Number
LAB-02-LAKE-217	JG-1328	40.1520	555.0	BE17226
LAB-02-LAKE-218	JG-1329	40.0000	555.0	BE17227
Blank1153	JG-1153	0.0000	563.0	BE17221

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Sample Name	Uncorrected ¹⁰ Be/ ⁹ Be Ratio**	Uncorrected ¹⁰ Be/ ⁹ Be Ratio Uncertainty**	Background-Corrected ¹⁰ Be/ ⁹ Be Ratio	Background-Corrected ¹⁰ Be/ ⁹ Be Ratio Uncertainty
LAB-02-LAKE-217	4.480E-13	1.116E-14	4.453E-13	1.13E-14
LAB-02-LAKE-218	4.479E-13	1.120E-14	4.453E-13	1.14E-14
Blank1153	1.081E-13	4.420E-15	1.060E-12	9.55E-06

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Sample Name	¹⁰ Be Concentration (atoms g ⁻¹)	¹⁰ Be Concentration Uncertainty (atoms g ⁻¹)
LAB-02-LAKE-217	4.080E+05	2.821E+03
LAB-02-LAKE-218	4.095E+05	3.639E+03
Blank1153	---	---

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9 *⁹Be was added through a carrier made from Homestake mine beryll with a concentration of 1015 µg mL⁻¹.

10 **Isotopic analysis was conducted at LLNL Center for Accelerator Mass Spectrometry; ratios were normalized
 11 against standard LLNL3000

12 **(b)**

Sample name	Latitude (DD)	Longitude (DD)	Elevation (m)	Elv/pressure flag
LAB-02-LAKE-217	58.73	-65.79	890	std
LAB-02-LAKE218	58.73	-65.79	890	std

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Sample name	Thickness (cm)	Density (g cm-2)	Shielding correction	[Be-10] ^l atoms g-1
LAB-02-LAKE-217	2	2.7	1	4.08E+05
LAB-02-LAKE218	2	2.7	1	4.090E+05

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Sample name	+/- atoms g-1	Be standardization	[Al-26] atoms g- 1	+/- atoms g- 1	Al standardization
LAB-02-LAKE-217	2.821E+03	LLNL3000	0	0	KNSTD
LAB-02-LAKE218	3.639E+03	LLNL3000	0	0	KNSTD

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16 **(c)**

<i>Online erosion rate calculator v3 results</i>	
Version info:	wrapper: 3.0
	3/9/21
	muons: 3.0-dev
	validate: validate_v2_input.m - 3.0
	consts: 3.0.4

Sample name	Nuclide	Age (y)	Age (ky)	Internal uncert (ky)	External uncert (ky)
LAB-02- LAKE-217	Be-10 (qtz)	35880	35.88	1.07	3.11
LAB-02- LAKE218	Be-10 (qtz)	36010	36.01	1.07	3.12

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18 **Table S2 | Summary of sample location, elevation, and calculated ¹⁰Be ages.**

Sample Name	Nuclide	Age (y)	Age (ky)	Internal uncertainty (ky)	External uncertainty (ky)
LAB-02-LAKE-217	Be-10 (qtz)	35880	35.88	1.07	3.11
LAB-02-LAKE218	Be-10 (qtz)	36010	36.01	1.07	3.12

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Sample name	Latitude (DD)	Longitude (DD)	Elevation (m)
LAB-02-LAKE-217	58.73	-65.79	890
LAB-02-LAKE218	58.73	-65.79	890

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