Supplementary data to: van Dongen et al. (submitted): Cosmogenic ^{10}Be in river sediment: where grain size matters and why.

A preview of the supplementary data submitted to GFZ Data Services can be accessed here:

http://pmd.gfz-potsdam.de/panmetaworks/review/7e2ca6729138f15a0d253c93ce86526664c5cc559856fa9af357300e6c171818/.

Once the manuscript is accepted the dataset will be accessible via the following DOI: http://doi.org/10.5880/GFZ.3.3.2018.004.

Data Supplement to:

Cosmogenic ^{10}Be in river sediment: where grain size matters and why

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Sheets:

Table S1 Characteristics of the sampled catchments in the Chilean Coastal Cordillera.
Table S2 ^{10}Be-concentrations measured in different grain size fractions from the Chilean Coastal Cordillera.
Table S3 Global compilation of ^{10}Be-concentrations in different grain sizes.
Table S4 Grain size dependencies as linear function (y= ax + b) of mean basin slope, MAP and mean travel distance.
Table S5 Multivariate statistics and relative importance (RI) for the factors mean basin slope (MBS), mean annual precipitation (MAP) and mean travel distance (MTD).

Metric	Units	Sheet	Description
Latitude	*°E*	Table S1, S3	Geographic coordinates based on World Geodetic System 1984
Longitude	*°N*	Table S1, S3	Geographic coordinates based on World Geodetic System 1984
Catchment area	km^2	Table S1, S3	Catchment size calculated using a 30m (Table S1) or 90m (Table S2) SRTM DEM
Mean elevation	*m*	Table S1	Mean catchment elevation calculated using a 30m SRTM DEM
Mean basin slope	°	Table S1, S3, S4, S5	Mean basin slope calculated using a 30m (Table S1) or 90m (Table S2) SRTM DEM
Mean channel steepness	$m^{0.9}$	Table S1	Mean channel steepness calculated using a 30m SRTM DEM
D_{50}	*mm*	Table S1	Median grain size resulting from a Wolman pebble counts in the active channel
D_{84}	*mm*	Table S1	84^{th}-percentile grain size resulting from a Wolman pebble counts in the active channel
Bedrock exposed in channel	*%*	Table S1	How often bedrock was observed in the active channel during the Wolman pebble count
MAP	$mm\ yr^{-1}$	Table S1, S3, S4, S5	Mean Annual precipitation derived from the GPCC Global precipitation dataset
IGSN	-	Table S2	International Geo Sample Number (www.igsn.org), Link to sample description
Grain size	*mm*	Table S2, S3	Grain size class
Quartz mass	*g*	Table S2	Mass of clean quartz used for ^{10}Be analysis
^{9}Be carrier mass	*mg*	Table S2	Mass of ^{9}Be carrier added to sample
^{10}Be/^{9}Be ratio	-	Table S2	^{10}Be/^{9}Be ratios measured by Accelerator Mass Spectrometry (AMS) at the University of Cologne
1σ-^{10}Be/^{9}Be ratio	-	Table S2	1σ-error on the ^{10}Be/^{9}Be ratio
[^{10}Be]	$atoms\ g^{-1}$	Table S2, S3	^{10}Be-concentration calculated using the Lal (1991)/Stone (2000) production scheme
2σ-[^{10}Be]	$atoms\ g^{-1}$	Table S2, S3	2σ-error on the ^{10}Be-concentration
Denudation rate	$mm\ kyr^{-1}$	Table S2	Speed of landscape denudation (chemical weathering + physical erosion)
2σ-Denudation rate	$mm\ kyr^{-1}$	Table S2	2σ-error on the denudation rate
Internal ID	-	Table S3	Sample ID given by the authors of the paper
Author	-	Table S3	Author of the paper from which we acquired the data
Year	-	Table S3	Year of publication
Official sample name	-	Table S3	Sample name given by the original authors

Lithology	-	Table S3, S4, S5	Lithology classified based on published data combined with the GLiM (Global Lithological Map)
Mean travel distance	*m*	Table S3, S4, S5	Mean travel distance calculated from each grid cell to the sample location
Factor	-	Table S4, S5	Environmental factor (Mean basin slope, MAP or Mean travel distance)
Mean a	-	Table S4	Mean regression coefficient from a linear model (y=ax+b)
2σ-a	-	Table S4	2σ-regression coefficient from a linear model (y=ax+b)
Mean b	-	Table S4, S5	Mean intercept from a linear model (y=ax+b) (Table S4) and multivariate model (Table S5)
2σ-b	-	Table S4, S5	2σ-intercept from a linear model (y=ax+b) (Table S4) and multivariate model (Table S5)
Mean R^2	-	Table S4, S5	Mean coefficient of determination of the linear model fit
2σ-R^2	-	Table S4, S5	2σ-coefficient of determination of the linear model fit
Mean p	-	Table S4, S5	Mean significance of the linear model fit
2σ-p	-	Table S4, S5	2σ-significance of the linear model fit
Significance code	-	Table S4, S5	Significance code corresponding to mean p-values: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘•’ 0.1 ‘ ’ 1
Mean RI	-	Table S5	Mean relative importance (RI) of the multivariate model
2σ-RI	-	Table S5	2σ-relative importance (RI) of the multivariate model
Mean adjusted-R^2	-	Table S5	Mean adjusted coefficient of determination of the linear model fit
2σ-adjusted-R^2	-	Table S5	2σ-adjusted coefficient of determination of the linear model fit
Mean p-value multivariate model	-	Table S5	Mean significance of the multivariate model fit
2σ-p-value multivariate model	-	Table S5	2σ-significance of the multivariate model fit

Table S1: Characteristics of the sampled catchments in the Chilean Coastal Cordillera

Catchment	Latitude	Longitude	MAP[a]	Area	Mean elevation	Mean slope[b]	Mean channel steepness[c]	D_{50} [d]	D_{84} [d]	Bedrock exposed in channel[d]
	(°N)	*(°E)*	*(mm yr^{-1})*	*(km^2)*	*(m)*	*(°)*	*$m^{0.9}$*	*(cm)*	*(cm)*	*(%)*
Pan de Azúcar (AZ)	-26.112	-70.551	13	0.04	339.6	8.2	7.1	0.5	1.47	39
Santa Gracia (SG)	-29.76	-71.168	88	0.88	773.2	17.2	32.2	4	19	0
La Campana (LC)	-32.954	-71.069	358	7.41	1323.8	23.1	88.8	0.35	28.3	3.9
Nahuelbuta (NA)	-37.808	-73.014	1213	5.79	1308.4	8.9	20.5	10	22	2.9

[a] Mean annual precipitation (MAP) is derived from the GPCC dataset (Meyer-Christoffer et al., 2015).

[b] Total mean basin slope calculated with a 30m DEM.

[c] Normalized channel steepness index.

[d] Results derived from Wolman pebble count.

Table S2: ^{10}Be-concentrations measured in different grain size fractions from the Chilean Coastal Cordillera

Field site	IGSN	Sample name	Grain size (mm)	Quartz mass (g)	^{9}Be Carrier mass (mg)	^{10}Be/^{9}Be ratio x 10^{-14}	1σ-^{10}Be/^{9}Be ratio x 10^{-14}	[^{10}Be] (x 10^{5} atoms g^{-1})	2σ-[^{10}Be] (x 10^{5} atoms g^{-1})	Denudation rate (mm kyr^{-1})	2σ-Denudation rate (mm kyr^{-1})
Pan de Azúcar	GFRD10010	AZ 0.5-1	0.5-1	9.9	0.153	43.0	1.5	4.48	0.33	6.04	0.69
Pan de Azúcar	GFRD10011	AZ 1-2	1-2	17.9	0.153	79.9	2.8	4.60	0.34	5.86	0.67
Pan de Azúcar	GFRD10012	AZ 2-4	2-4	18.7	0.154	78.6	5.8	4.36	0.32	6.21	0.72
Pan de Azúcar	GFRD10013	AZ 4-8	4-8	18.2	0.153	65.3	3.6	3.69	0.42	7.5	1.1
Pan de Azúcar	GFRD10014	AZ 8-16	8-16	18.1	0.154	55.2	2.1	3.14	0.24	8.9	1.0
Pan de Azúcar	GFRD10015	AZ16-32	16-32	15.0	0.153	40.8	1.5	2.80	0.21	10.2	1.1
Pan de Azúcar	GFRD10016	AZ 32-64	32-64	18.7	0.153	57.6	2.0	3.16	0.22	8.9	1.0
Santa Gracia	GFRD1000Q	SG 0.5-1	0.5-1	18.7	0.154	85.4	2.9	4.71	0.33	8.26	0.91
Santa Gracia	GFRD1000R	SG 1-2	1-2	14.1	0.153	55.1	2.3	4.02	0.34	9.8	1.2
Santa Gracia	GFRD1000S	SG 2-4	2-4	13.8	0.153	49.0	2.1	3.62	0.32	11.0	1.4
Santa Gracia	GFRD1000T	SG 4-8	4-8	13.8	0.153	50.3	2.4	3.76	0.37	10.5	1.4
Santa Gracia	GFRD1000U	SG 8-16	8-16	20.0	0.154	82.5	2.7	4.25	0.29	9.3	1.0
Santa Gracia	GFRD1000V	SG16-32	16-32	19.3	0.154	97.0	3.2	5.17	0.35	7.48	0.82
Santa Gracia	GFRD1000W	SG 32-64	32-64	19.5	0.154	90.9	3.0	4.79	0.33	8.12	0.89
La Campana	GFRD1000C	LC 0.5-1	0.5-1	19.4	0.154	4.98	0.28	0.264	0.030	257	35
La Campana	GFRD1000D	LC 1-2	1-2	20.0	0.154	3.44	0.20	0.177	0.021	384	55
La Campana	GFRD1000E	LC 2-4	2-4	17.0	0.154	6.05	0.30	0.366	0.037	185	24
La Campana	GFRD1000F	LC 4-8	4-8	16.9	0.154	5.70	0.32	0.348	0.039	194	27
La Campana	GFRD1000G	LC 8-16	8-16	19.5	0.154	12.29	0.54	0.648	0.059	104	12
La Campana	GFRD1000H	LC16-32	16-32	20.0	0.154	9.69	0.44	0.498	0.047	135	17
La Campana	GFRD1000J	LC 32-64	32-64	16.5	0.154	9.43	0.43	0.588	0.055	144	14
Nahuelbuta	GFRD10002	NA 0.5-1	0.5-1	19.8	0.154	51.4	1.8	2.67	0.19	26.0	2.8
Nahuelbuta	GFRD10003	NA 1-2	1-2	18.7	0.153	49.5	2.4	2.72	0.27	25.6	3.3
Nahuelbuta	GFRD10004	NA 2-4	2-4	18.7	0.153	51.8	1.9	2.84	0.22	24.5	2.8
Nahuelbuta	GFRD10005	NA 4-8	4-8	19.2	0.154	49.7	1.8	2.67	0.20	26.1	2.9
Nahuelbuta	GFRD10006	NA 8-16	8-16	20.0	0.153	56.6	1.9	2.90	0.21	23.9	2.6
Nahuelbuta	GFRD10007	NA16-32	16-32	19.6	0.154	43.5	1.6	2.29	0.18	30.6	3.4
Nahuelbuta	GFRD10008	NA 32-64	32-64	19.6	0.153	33.5	1.3	1.76	0.14	40.2	4.5

Table S3: Global compilation of ^{10}Be-concentrations in different grain sizes

First Author	Year	Official sample name	Latitude	Longitude	[^{10}Be]	1σ-[^{10}Be]	Min Grain size	Max Grain size	Mean basin slope	MAP	Lithology	Travel distance	Catchment area
			(°N)	*(°E)*	*(atoms g^{-1})*	*(atoms g^{-1})*	*(mm)*	*(mm)*	*(°)*	*(mm yr^{-1})*		*(m)*	*(km^2)*
Aguilar	2014	Transito	-28.990	-70.280	4.80E+05	1.36E+04	0.5	1	24.05	63.80	Mixed[a]	34117.33	3417.45
Aguilar	2014	Transito	-28.990	-70.280	3.32E+05	1.78E+04	50	100	24.05	63.80	Mixed[a]	34117.33	3417.45
Aguilar	2014	Carmen	-28.800	-70.460	8.33E+05	5.35E+04	0.5	1	24.77	69.14	Mixed[a]	41366.77	3290.45
Aguilar	2014	Carmen	-28.800	-70.460	3.19E+05	2.66E+04	10	30	24.77	69.14	Mixed[a]	41366.77	3290.45
Belmont	2007	Upper EFMC	47.687	-124.242	2.16E+04	7.45E+02	0.25	0.5	19.41	2882.30	Sedimentary	972.14	3.59
Belmont	2007	Upper EFMC	47.687	-124.242	1.63E+04	5.25E+02	22.6	90	19.41	2882.30	Sedimentary	972.14	3.59
Belmont	2007	Lower EFMC	47.658	-124.243	2.75E+04	7.45E+02	0.25	0.5	17.75	2882.30	Sedimentary	2650.95	14.30
Belmont	2007	Lower EFMC	47.658	-124.243	3.45E+04	9.40E+02	22.6	90	17.75	2882.30	Sedimentary	2650.95	14.30
Belmont	2007	Upper WC	47.740	-124.046	2.98E+04	8.80E+02	0.25	0.5	25.44	3008.40	Sedimentary	712.26	2.06
Belmont	2007	Upper WC	47.740	-124.046	2.11E+04	8.15E+02	22.6	90	25.44	3008.40	Sedimentary	712.26	2.06
Belmont	2007	Lower WC	47.730	-124.038	2.23E+04	1.16E+03	0.25	0.5	24.01	3008.40	Sedimentary	1177.90	4.92
Belmont	2007	Lower WC	47.730	-124.038	9.46E+03	7.35E+02	22.6	90	24.01	3008.40	Sedimentary	1177.90	4.92
Brown	1995	ICA	18.252	-65.786	4.06E+04	7.80E+03	4	8	13.84	2159.60	Magmatic	1121.09	7.02
Brown	1995	ICA	18.252	-65.786	3.66E+04	6.80E+03	2	4	13.84	2159.60	Magmatic	1121.09	7.02
Brown	1995	ICA	18.252	-65.786	5.24E+04	6.40E+03	1	2	13.84	2159.60	Magmatic	1121.09	7.02
Brown	1995	ICA	18.252	-65.786	8.03E+04	9.10E+03	0.5	1	13.84	2159.60	Magmatic	1121.09	7.02
Brown	1995	ICA	18.252	-65.786	1.69E+05	1.64E+04	0.25	0.5	13.84	2159.60	Magmatic	1121.09	7.02
Brown	1995	ICA	18.252	-65.786	2.26E+05	1.81E+04	0.125	0.25	13.84	2159.60	Magmatic	1121.09	7.02
Brown	1995	ICA	18.252	-65.786	2.18E+05	2.01E+04	0.063	0.125	13.84	2159.60	Magmatic	1121.09	7.02
Carretier	2015	ELK1-5	-29.848	-70.494	1.77E+05	2.30E+04	0.5	1	25.77	88.04	Mixed[a]	39751.03	3324.72
Carretier	2015	ELK1-5	-29.848	-70.494	1.87E+05	1.70E+04	0.5	1	25.77	88.04	Mixed[a]	39751.03	3324.72
Carretier	2015	ELK1-5	-29.848	-70.494	1.38E+05	1.20E+04	50	100	25.77	88.04	Mixed[a]	39751.03	3324.72
Carretier	2015	ELK1-5	-29.848	-70.494	3.71E+05	3.00E+04	10	30	25.77	88.04	Mixed[a]	39751.03	3324.72
Carretier	2015	ILL1-3	-31.600	-71.113	4.69E+05	1.30E+04	0.5	1	22.77	236.60	Mixed[a]	24053.62	1363.74
Carretier	2015	ILL1-3	-31.600	-71.113	7.68E+05	6.40E+04	10	30	22.77	236.60	Mixed[a]	24053.62	1363.74
Carretier	2015	CHO1-3	-31.692	-71.268	1.96E+05	6.70E+03	0.5	1	21.16	246.68	Mixed[a]	40290.21	4129.30
Carretier	2015	CHO1-3	-31.692	-71.268	7.95E+04	3.10E+03	50	100	21.16	246.68	Mixed[a]	40290.21	4129.30
Carretier	2015	CHO1-3	-31.692	-71.268	4.21E+05	3.80E+04	10	30	21.16	246.68	Mixed[a]	40290.21	4129.30
Carretier	2015	ACO1-3	-32.835	-70.545	1.01E+05	2.90E+03	0.5	1	27.53	248.10	Mixed[a]	23826.16	2515.76
Carretier	2015	ACO1-3	-32.835	-70.545	1.94E+05	1.90E+04	10	30	27.53	248.10	Mixed[a]	23826.16	2515.76
Carretier	2015	TIN1-3	-34.677	-70.871	9.94E+04	5.30E+03	0.5	1	26.42	967.95	Mixed[a]	30354.61	1699.45
Carretier	2015	TIN1-3	-34.677	-70.871	1.77E+05	1.70E+04	10	30	26.42	967.95	Mixed[a]	30354.61	1699.45
Carretier	2015	TIN1-3	-34.677	-70.871	7.39E+04	1.35E+04	50	100	26.42	967.95	Mixed[a]	30354.61	1699.45
Carretier	2015	LON1-2	-35.184	-71.116	6.44E+04	2.91E+04	0.5	1	19.56	905.21	Mixed[a]	23700.45	1965.70
Carretier	2015	LON1-2	-35.184	-71.116	4.66E+04	1.17E+04	10	30	19.56	905.21	Mixed[a]	23700.45	1965.70
Carretier	2015	MAU1-3	-35.727	-71.021	1.29E+05	1.50E+04	0.5	1	20.99	900.01	Mixed[a]	31146.17	2983.92
Carretier	2015	MAU1-3	-35.727	-71.021	1.26E+04	2.50E+03	50	100	20.99	900.01	Mixed[a]	31146.17	2983.92
Clapp	2002	YGP 2	33.040	-114.522	1.11E+05	9.00E+03	0.25	0.5	8.32	106.44	Magmatic	6017.34	189.61
Clapp	2002	YGP 2	33.040	-114.522	1.39E+05	1.00E+04	0.5	1	8.32	106.44	Magmatic	6017.34	189.61
Clapp	2002	YGP 2	33.040	-114.522	1.08E+05	8.00E+03	1	2	8.32	106.44	Magmatic	6017.34	189.61
Clapp	2002	YGP 2	33.040	-114.522	1.18E+05	1.00E+04	2	4	8.32	106.44	Magmatic	6017.34	189.61
Clapp	2002	YGP 2	33.040	-114.522	9.90E+04	1.30E+04	4	12.7	8.32	106.44	Magmatic	6017.34	189.61
Clapp	2002	YGP 2	33.040	-114.522	1.09E+05	1.20E+04	12.7	25.4	8.32	106.44	Magmatic	6017.34	189.61
Clapp	2002	YGP 4	33.089	-114.531	1.15E+05	1.10E+04	0.25	1	8.66	95.16	Magmatic	4523.64	40.74

Clapp	2002	YGP 4	33.089	-114.531	1.34E+05	1.10E+04	1	4	8.66	95.16	Magmatic	4523.64	40.74
Clapp	2002	YGP 11	33.076	-114.572	1.51E+05	7.00E+03	1	4	13.17	95.16	Magmatic	547.51	1.60
Clapp	2002	YGP 11	33.076	-114.572	1.70E+05	9.00E+03	4	8	13.17	95.16	Magmatic	547.51	1.60
Clapp	2002	YGP 12	33.076	-114.572	1.39E+05	1.00E+04	0.25	1	8.87	95.16	Magmatic	215.14	0.28
Clapp	2002	YGP 12	33.076	-114.572	1.38E+05	7.00E+03	1	4	8.87	95.16	Magmatic	215.14	0.28
Clapp	2002	YGP 12	33.076	-114.572	1.32E+05	9.00E+03	4	8	8.87	95.16	Magmatic	215.14	0.28
Clapp	2002	YGP 13	33.077	-114.570	1.36E+05	1.10E+04	0.25	1	9.34	95.16	Magmatic	505.68	2.15
Clapp	2002	YGP 13	33.077	-114.570	1.58E+05	8.00E+03	1	4	9.34	95.16	Magmatic	505.68	2.15
Clapp	2002	YGP 13	33.077	-114.570	1.78E+05	1.00E+04	4	8	9.34	95.16	Magmatic	505.68	2.15
Clapp	2002	YGP 14	33.086	-114.558	1.20E+05	8.00E+03	0.25	1	9.98	95.16	Magmatic	1127.38	3.34
Clapp	2002	YGP 14	33.086	-114.558	1.30E+05	5.00E+03	1	4	9.98	95.16	Magmatic	1127.38	3.34
Clapp	2002	YGP 14	33.086	-114.558	1.22E+05	6.00E+03	4	8	9.98	95.16	Magmatic	1127.38	3.34
Clapp	2002	YGP 15	33.082	-114.535	1.20E+05	7.00E+03	0.25	1	9.08	95.16	Magmatic	1220.81	4.39
Clapp	2002	YGP 15	33.082	-114.535	1.22E+05	1.10E+04	1	4	9.08	95.16	Magmatic	1220.81	4.39
Clapp	2002	YGP 15	33.082	-114.535	1.35E+05	6.00E+03	4	8	9.08	95.16	Magmatic	1220.81	4.39
Clapp	2002	YGP 19	33.155	-114.516	1.77E+05	1.00E+04	0.25	0.5	9.04	106.44	Magmatic	4776.46	60.75
Clapp	2002	YGP 19	33.155	-114.516	1.93E+05	9.00E+03	0.5	1	9.04	106.44	Magmatic	4776.46	60.75
Clapp	2002	YGP 19	33.155	-114.516	2.06E+05	9.00E+03	1	4	9.04	106.44	Magmatic	4776.46	60.75
Clapp	2002	YGP 19	33.155	-114.516	1.63E+05	8.00E+03	4	12.7	9.04	106.44	Magmatic	4776.46	60.75
Derrieux	2014	Ta-3	24.320	121.280	1.09E+04	3.25E+03	0.25	1	30.60	2134.40	Sedimentary	8706.79	185.34
Derrieux	2014	Ta-3	24.320	121.280	3.05E+03	7.10E+02	4	8	30.60	2134.40	Sedimentary	8706.79	185.34
Derrieux	2014	Ta-4	24.300	121.260	1.18E+04	3.33E+03	0.25	1	29.55	2139.30	Sedimentary	10980.83	299.53
Derrieux	2014	Ta-4	24.300	121.260	2.47E+03	5.00E+02	4	8	29.55	2139.30	Sedimentary	10980.83	299.53
Derrieux	2014	Cho-3	23.790	121.000	3.12E+03	7.40E+02	0.25	1	31.31	2518.90	Sedimentary	23431.84	1795.06
Derrieux	2014	Cho-3	23.790	121.000	1.17E+03	3.40E+02	4	8	31.31	2518.90	Sedimentary	23431.84	1795.06
Derrieux	2014	Mu-2	23.960	121.490	2.48E+03	7.30E+02	0.25	1	31.76	2263.00	Metamorphic	13631.11	502.64
Derrieux	2014	Mu-2	23.960	121.490	1.85E+03	4.60E+02	4	8	31.76	2263.00	Metamorphic	13631.11	502.64
Derrieux	2014	Lu0808	22.900	121.080	3.70E+03	5.50E+02	0.25	1	29.29	2147.90	Sedimentary	16699.73	549.71
Derrieux	2014	Lu0808	22.900	121.080	2.83E+03	7.10E+02	4	8	29.29	2147.90	Sedimentary	16699.73	549.71
Derrieux	2014	Lu0808	22.870	121.040	2.73E+03	5.80E+02	0.25	1	29.29	2147.90	Sedimentary	16699.73	549.71
Granger	1996	B-2	40.095	-120.065	3.00E+05	1.00E+04	0.5	1	14.27	319.76	Magmatic	460.53	0.88
Granger	1996	B-2	40.095	-120.065	3.00E+05	2.00E+04	1	2	14.27	319.76	Magmatic	460.53	0.88
Granger	1996	B-2	40.095	-120.065	3.70E+05	5.00E+04	2	4	14.27	319.76	Magmatic	460.53	0.88
Heimsath	2009	TC	-12.453	133.270	2.60E+05	4.00E-02	0.125	2	5.26	1452.70	Sedimentary	13451.52	391.31
Heimsath	2009	TC	-12.453	133.270	3.69E+05	4.70E-02	4	64	5.26	1452.70	Sedimentary	13451.52	391.31
Matmon	2003	GSCO-1	35.504	-83.301	2.64E+05	1.00E+04	0.25	0.85	21.39	1395.40	Metamorphic	10903.36	365.09
Matmon	2003	GSCO-1	35.504	-83.301	2.66E+05	7.00E+03	0.85	2	21.39	1395.40	Metamorphic	10903.36	365.09
Matmon	2003	GSCO-1	35.504	-83.301	1.65E+05	4.00E+03	2	4	21.39	1395.40	Metamorphic	10903.36	365.09
Matmon	2003	GSCO-1A	35.504	-83.301	2.95E+05	9.00E+03	0.25	0.85	21.39	1395.40	Metamorphic	10903.36	365.09
Matmon	2003	GSCO-1A	35.504	-83.301	2.92E+05	1.00E+04	0.85	2	21.39	1395.40	Metamorphic	10903.36	365.09
Matmon	2003	GSCO-1A	35.504	-83.301	2.62E+05	9.00E+03	2	10	21.39	1395.40	Metamorphic	10903.36	365.09
Matmon	2003	GSCO-1A	35.504	-83.301	1.89E+05	6.00E+03	10	20	21.39	1395.40	Metamorphic	10903.36	365.09
Matmon	2003	GSCO-7	35.600	-83.413	2.78E+05	7.00E+03	0.25	0.85	21.43	1408.90	Metamorphic	1746.52	2.75
Matmon	2003	GSCO-7	35.600	-83.413	2.78E+05	7.00E+03	0.85	2	21.43	1408.90	Metamorphic	1746.52	2.75
Matmon	2003	GSCO-7	35.600	-83.413	3.05E+05	8.00E+03	2	4	21.43	1408.90	Metamorphic	1746.52	2.75
Matmon	2003	GSLR-2	35.598	-83.515	2.56E+05	8.00E+03	0.25	0.85	21.43	1391.00	Mixed[a]	1746.52	8.66
Matmon	2003	GSLR-2	35.598	-83.515	2.30E+05	8.00E+03	0.85	2	21.43	1391.00	Mixed[a]	1746.52	8.66
Matmon	2003	GSLR-2	35.598	-83.515	1.65E+05	6.00E+03	2	10	21.43	1391.00	Mixed[a]	1746.52	8.66
Matmon	2003	GSLR-2	35.598	-83.515	1.45E+05	5.00E+03	10	20	21.43	1391.00	Mixed[a]	1746.52	8.66
Matmon	2003	GSLR-3	35.598	-83.516	1.78E+05	6.00E+03	0.25	0.85	22.66	1391.00	Mixed[a]	1995.53	16.58

Matmon	2003	GSLR-3	35.598	-83.516	2.02E+05	9.00E+03	0.85	2	22.66	1391.00	Mixed[a]	1995.53	16.58
Matmon	2003	GSLR-3	35.598	-83.516	1.47E+05	5.00E+03	2	10	22.66	1391.00	Mixed[a]	1995.53	16.58
Matmon	2003	GSLR-3	35.598	-83.516	1.45E+05	6.00E+03	10	20	22.66	1391.00	Mixed[a]	1995.53	16.58
Matmon	2003	GSLR-7	35.663	-83.593	2.40E+05	8.00E+03	0.25	0.85	19.71	1391.00	Mixed[a]	8154.97	109.58
Matmon	2003	GSLR-7	35.663	-83.593	2.45E+05	8.00E+03	0.85	2	19.71	1391.00	Mixed[a]	8154.97	109.58
Matmon	2003	GSLR-7	35.663	-83.593	1.65E+05	5.00E+03	2	10	19.71	1391.00	Mixed[a]	8154.97	109.58
Matmon	2003	GSLR-7	35.663	-83.593	1.32E+05	4.00E+03	10	20	19.71	1391.00	Mixed[a]	8154.97	109.58
Palumbo	2010	Y2	39.210	99.614	1.02E+05	7.50E+03	20	200	17.70	153.48	Sedimentary	674.01	1.35
Palumbo	2010	Y2	39.210	99.614	1.34E+05	9.00E+03	0.2	0.71	17.70	153.48	Sedimentary	674.01	1.35
Palumbo	2010	Y10	39.046	100.021	7.00E+04	7.50E+03	0.2	0.71	20.49	131.07	Sedimentary	898.05	3.14
Palumbo	2010	Y10	39.046	100.021	3.50E+04	6.00E+03	20	200	20.49	131.07	Sedimentary	898.05	3.14
Palumbo	2010	L7	39.046	100.649	1.08E+05	8.50E+03	0.2	0.71	30.23	145.87	Metamorphic	593.71	1.24
Palumbo	2010	L7	39.046	100.649	7.00E+04	7.50E+03	20	200	30.23	145.87	Metamorphic	593.71	1.24
Reinhardt	2007	MRS3	36.998	-3.497	2.11E+05	1.05E+04	0.25	0.5	18.94	468.09	Metamorphic	678.63	1.35
Reinhardt	2007	MRS3	36.998	-3.497	3.12E+05	1.40E+04	8	16	18.94	468.09	Metamorphic	678.63	1.35
Reinhardt	2007	MRS12B	36.998	-3.497	6.50E+05	2.51E+04	0.25	0.5	15.60	575.71	Metamorphic	465.00	0.51
Reinhardt	2007	MRS12B	36.998	-3.497	5.20E+03	6.00E+02	8	16	15.60	575.71	Metamorphic	465.00	0.51
Reinhardt	2007	MRS17	36.998	-3.497	1.70E+04	1.00E+03	0.25	0.5	18.81	578.24	Metamorphic	1371.00	3.38
Reinhardt	2007	MRS17	36.998	-3.497	1.22E+04	9.00E+02	8	16	18.81	578.24	Metamorphic	1371.00	3.38
Reinhardt	2007	MRS21A	36.998	-3.497	1.40E+04	2.20E+03	0.25	0.5	22.17	516.74	Metamorphic	2568.50	14.75
Reinhardt	2007	MRS21A	36.998	-3.497	9.00E+02	5.00E+02	8	16	22.17	516.74	Metamorphic	2568.50	14.75
Reinhardt	2007	MRS21B	36.998	-3.497	1.05E+04	1.20E+03	0.25	0.5	21.40	516.74	Metamorphic	2603.48	18.62
Reinhardt	2007	MRS21B	36.998	-3.497	1.70E+04	3.00E+03	8	16	21.40	516.74	Metamorphic	2603.48	18.62
Safran	2005	Bol-34	-16.801	-67.213	5.71E+04	5.00E+03	0.25	1	28.12	761.46	Sedimentary	6865.98	208.11
Safran	2005	Bol-34	-16.801	-67.213	4.07E+04	3.00E+03	1	4	28.12	761.46	Sedimentary	6865.98	208.11
Safran	2005	Bol-34	-16.801	-67.213	5.96E+04	3.50E+03	4	8	28.12	761.46	Sedimentary	6865.98	208.11
Safran	2005	Bol-35b	-16.779	-67.222	1.03E+05	4.80E+03	0.25	1	35.29	819.50	Sedimentary	1017.25	4.18
Safran	2005	Bol35b	-16.779	-67.222	8.97E+04	4.00E+03	1	4	35.29	819.50	Sedimentary	1017.25	4.18
Safran	2005	Bol35b	-16.779	-67.222	8.83E+04	3.80E+03	4	8	35.29	819.50	Sedimentary	1017.25	4.18
Safran	2005	Bol46	-16.357	-67.809	6.42E+04	5.50E+03	0.25	1	30.91	815.99	Sedimentary	2886.08	28.05
Safran	2005	Bol46	-16.357	-67.809	6.70E+04	4.10E+03	1	4	30.91	815.99	Sedimentary	2886.08	28.05
Safran	2005	Bol46	-16.357	-67.809	1.06E+05	5.10E+03	4	8	30.91	815.99	Sedimentary	2886.08	28.05
Stock	2009	RM creek	40.540	-111.800	1.20E+05	3.10E+03	0.25	0.5	29.52	475.84	Magmatic	1169.72	1.78
Stock	2009	RM creek	40.540	-111.800	1.18E+05	3.10E+03	2	4	29.52	475.84	Magmatic	1169.72	1.78
Sullivan	2007	CS-01A	36.618	-80.778	6.44E+05	1.70E+04	0.25	0.85	6.26	1124.20	Sedimentary	671.44	2.03
Sullivan	2007	CS-01B	36.618	-80.778	7.16E+05	2.00E+04	0.85	2	6.26	1124.20	Sedimentary	671.44	2.03
Sullivan	2007	CS-01C	36.618	-80.778	6.75E+05	1.90E+04	2	9	6.26	1124.20	Sedimentary	671.44	2.03
Sullivan	2007	CS-01D	36.618	-80.778	1.11E+06	3.20E+04	9	18	6.26	1124.20	Sedimentary	671.44	2.03
Sullivan	2007	CS-02A	36.446	-80.848	5.11E+05	1.60E+04	0.25	0.85	7.93	1205.70	Metamorphic	1087.43	3.18
Sullivan	2007	CS-02B	36.446	-80.848	5.00E+05	1.30E+04	0.85	2	7.93	1205.70	Metamorphic	1087.43	3.18
Sullivan	2007	CS-02C	36.446	-80.848	4.60E+05	1.20E+04	2	9	7.93	1205.70	Metamorphic	1087.43	3.18
Sullivan	2007	CS-02D	36.446	-80.848	6.26E+05	1.90E+04	9	18	7.93	1205.70	Metamorphic	1087.43	3.18
Sullivan	2007	CS-03A	36.466	-80.834	3.73E+05	1.20E+04	0.25	0.85	11.57	1164.90	Metamorphic	7293.54	93.56
Sullivan	2007	CS-03B	36.466	-80.834	3.68E+05	1.20E+04	0.85	2	11.57	1164.90	Metamorphic	7293.54	93.56
Sullivan	2007	CS-03C	36.466	-80.834	3.24E+05	1.00E+04	2	9	11.57	1164.90	Metamorphic	7293.54	93.56
Sullivan	2007	CS-03D	36.466	-80.834	4.36E+05	1.20E+04	9	18	11.57	1164.90	Metamorphic	7293.54	93.56
Sullivan	2007	CS-04A	36.472	-80.858	3.30E+05	1.10E+04	0.25	0.85	10.99	1205.70	Metamorphic	1165.05	5.19
Sullivan	2007	CS-04B	36.472	-80.858	3.44E+05	1.10E+04	0.85	2	10.99	1205.70	Metamorphic	1165.05	5.19
Sullivan	2007	CS-04C	36.472	-80.858	3.01E+05	9.00E+03	2	9	10.99	1205.70	Metamorphic	1165.05	5.19
Sullivan	2007	CS-04D	36.472	-80.858	3.10E+05	9.00E+03	9	18	10.99	1205.70	Metamorphic	1165.05	5.19

Sullivan	2007	CS-06	36.539	-80.860	2.39E+05	6.00E+03	0.25	0.85	16.85	1124.20	Metamorphic	523.81	1.12
Sullivan	2007	CS-06A	36.539	-80.860	2.20E+05	7.00E+03	0.85	2	16.85	1124.20	Metamorphic	523.81	1.12
Sullivan	2007	CS-06B	36.539	-80.860	2.25E+05	7.00E+03	2	9	16.85	1124.20	Metamorphic	523.81	1.12
Sullivan	2007	CS-06C	36.539	-80.860	2.66E+05	8.00E+03	9	18	16.85	1124.20	Metamorphic	523.81	1.12
Sullivan	2007	CS-06D	36.539	-80.860	4.81E+05	1.60E+04	0.25	0.85	17.77	1124.20	Metamorphic	1389.10	5.67
Sullivan	2007	CS-07A	36.556	-80.799	3.55E+05	1.20E+04	0.85	2	17.77	1124.20	Metamorphic	1389.10	5.67
Sullivan	2007	CS-07B	36.556	-80.799	2.87E+05	1.00E+04	2	9	17.77	1124.20	Metamorphic	1389.10	5.67
Sullivan	2007	CS-07C	36.556	-80.799	2.48E+05	7.00E+03	9	18	17.77	1124.20	Metamorphic	1389.10	5.67
Puchol	2014	CA-950	28.376	84.289	2.61E+04	2.20E+03	0.072	0.25	29.78	2420.46	Metamorphic	3075.50	32.52
Puchol	2014	CA-950	28.376	84.289	2.65E+04	2.10E+03	0.25	0.5	29.78	2420.46	Metamorphic	3075.50	32.52
Puchol	2014	CA-950	28.376	84.289	9.20E+03	6.00E+02	0.5	1	29.78	2420.46	Metamorphic	3075.50	32.52
Puchol	2014	CA-950	28.376	84.289	1.42E+04	1.50E+03	1	2	29.78	2420.46	Metamorphic	3075.50	32.52
Puchol	2014	CA-950	28.376	84.289	1.44E+04	3.10E+03	2	4.7	29.78	2420.46	Metamorphic	3075.50	32.52
Puchol	2014	CA-950	28.376	84.289	6.60E+03	1.10E+03	4.7	9.4	29.78	2420.46	Metamorphic	3075.50	32.52
Puchol	2014	CA-948	28.375	84.289	8.90E+03	9.00E+02	0.075	0.25	27.58	2312.50	Metamorphic	906.08	2.50
Puchol	2014	CA-948	28.375	84.289	8.40E+03	7.00E+02	0.25	0.5	27.58	2312.50	Metamorphic	906.08	2.50
Puchol	2014	CA-948	28.375	84.289	5.60E+03	5.00E+02	0.5	1	27.58	2312.50	Metamorphic	906.08	2.50
Puchol	2014	CA-948	28.375	84.289	2.70E+03	7.00E+02	1	2	27.58	2312.50	Metamorphic	906.08	2.50
Puchol	2014	CA-948	28.375	84.289	1.97E+04	5.10E+03	2	4.7	27.58	2312.50	Metamorphic	906.08	2.50
Puchol	2014	CA-953	28.372	84.294	1.36E+04	1.20E+03	0.075	0.25	20.75	2312.50	Metamorphic	907.21	2.70
Puchol	2014	CA-953	28.372	84.294	1.70E+04	1.40E+03	0.25	0.5	20.75	2312.50	Metamorphic	907.21	2.70
Puchol	2014	CA-953	28.372	84.294	8.00E+03	1.80E+03	1	2	20.75	2312.50	Metamorphic	907.21	2.70
Puchol	2014	CA-953	28.372	84.294	1.01E+04	3.40E+03	2	4.7	20.75	2312.50	Metamorphic	907.21	2.70
Puchol	2014	CA-953	28.372	84.294	8.90E+03	1.20E+03	4.7	9.4	20.75	2312.50	Metamorphic	907.21	2.70
Puchol	2014	CA-957	28.371	84.296	1.44E+04	1.50E+03	0.075	0.25	28.94	2473.00	Metamorphic	2919.75	38.72
Puchol	2014	CA-957	28.371	84.296	7.90E+03	6.00E+02	0.25	0.5	28.94	2473.00	Metamorphic	2919.75	38.72
Puchol	2014	CA-957	28.371	84.296	8.40E+03	8.00E+02	0.5	1	28.94	2473.00	Metamorphic	2919.75	38.72
Puchol	2014	CA-957	28.371	84.296	7.00E+03	1.00E+03	1	2	28.94	2473.00	Metamorphic	2919.75	38.72
Puchol	2014	CA-957	28.371	84.296	4.60E+03	1.40E+03	2	4.7	28.94	2473.00	Metamorphic	2919.75	38.72
Puchol	2014	CA-957	28.371	84.296	5.30E+03	1.40E+03	4.7	9.4	28.94	2473.00	Metamorphic	2919.75	38.72
Puchol	2014	CA-964	28.306	84.330	1.90E+04	1.80E+03	0.075	0.15	29.55	2473.00	Metamorphic	6100.94	138.54
Puchol	2014	CA-964	28.306	84.330	2.16E+04	2.60E+03	0.15	0.25	29.55	2473.00	Metamorphic	6100.94	138.54
Puchol	2014	CA-964	28.306	84.330	2.25E+04	1.70E+03	0.25	0.5	29.55	2473.00	Metamorphic	6100.94	138.54
Puchol	2014	CA-964	28.306	84.330	1.13E+04	2.50E+03	1	2	29.55	2473.00	Metamorphic	6100.94	138.54
Puchol	2014	CA-964	28.306	84.330	1.97E+04	3.40E+03	2	4.7	29.55	2473.00	Metamorphic	6100.94	138.54
Puchol	2014	CA-964	28.306	84.330	9.60E+03	2.00E+03	4.7	9.4	29.55	2473.00	Metamorphic	6100.94	138.54
van Dongen	2018	NA 0.5-1	-37.808	-73.014	2.67E+05	9.64E+03	0.5	1	8.93	1213.00	Magmatic	1026.09	5.79
van Dongen	2018	NA 1-2	-37.808	-73.014	2.72E+05	1.34E+04	1	2	8.93	1213.00	Magmatic	1026.09	5.79
van Dongen	2018	NA 2-4	-37.808	-73.014	2.84E+05	1.10E+04	2	4	8.93	1213.00	Magmatic	1026.09	5.79
van Dongen	2018	NA 4-8	-37.808	-73.014	2.67E+05	9.98E+03	4	8	8.93	1213.00	Magmatic	1026.09	5.79
van Dongen	2018	NA 8-16	-37.808	-73.014	2.90E+05	1.04E+04	8	16	8.93	1213.00	Magmatic	1026.09	5.79
van Dongen	2018	NA 16-32	-37.808	-73.014	2.29E+05	8.73E+03	16	32	8.93	1213.00	Magmatic	1026.09	5.79
van Dongen	2018	NA 32-64	-37.808	-73.014	1.76E+05	6.83E+03	32	64	8.93	1213.00	Magmatic	1026.09	5.79
van Dongen	2018	LC 0.5-1	-32.954	-71.069	2.64E+04	1.48E+03	0.5	1	23.05	358.00	Magmatic	1457.47	7.41
van Dongen	2018	LC 1-2	-32.954	-71.069	1.77E+04	1.03E+03	1	2	23.05	358.00	Magmatic	1457.47	7.41
van Dongen	2018	LC 2-4	-32.954	-71.069	3.66E+04	1.86E+03	2	4	23.05	358.00	Magmatic	1457.47	7.41
van Dongen	2018	LC 4-8	-32.954	-71.069	3.48E+04	1.96E+03	4	8	23.05	358.00	Magmatic	1457.47	7.41
van Dongen	2018	LC 8-16	-32.954	-71.069	6.48E+04	2.93E+03	8	16	23.05	358.00	Magmatic	1457.47	7.41
van Dongen	2018	LC 16-32	-32.954	-71.069	4.98E+04	2.33E+03	16	32	23.05	358.00	Magmatic	1457.47	7.41
van Dongen	2018	LC 32-64	-32.954	-71.069	5.88E+04	2.77E+03	32	64	23.05	358.00	Magmatic	1457.47	7.41

van Dongen	2018	SG 0.5-1	-29.760	-71.168	4.71E+05	1.64E+04	0.5	1	17.23	88.00	Magmatic	480.83	0.88
van Dongen	2018	SG 1-2	-29.760	-71.168	4.02E+05	1.71E+04	1	2	17.23	88.00	Magmatic	480.83	0.88
van Dongen	2018	SG 2-4	-29.760	-71.168	3.62E+05	1.61E+04	2	4	17.23	88.00	Magmatic	480.83	0.88
van Dongen	2018	SG 4-8	-29.760	-71.168	3.76E+05	1.87E+04	4	8	17.23	88.00	Magmatic	480.83	0.88
van Dongen	2018	SG 8-16	-29.760	-71.168	4.25E+05	1.45E+04	8	16	17.23	88.00	Magmatic	480.83	0.88
van Dongen	2018	SG 16-32	-29.760	-71.168	5.16E+05	1.77E+04	16	32	17.23	88.00	Magmatic	480.83	0.88
van Dongen	2018	SG 32-64	-29.760	-71.168	4.79E+05	1.66E+04	32	64	17.23	88.00	Magmatic	480.83	0.88
van Dongen	2018	AZ 0.5-1	-26.112	-70.551	4.48E+05	1.63E+04	0.5	1	8.20	13.00	Magmatic	120.00	0.04
van Dongen	2018	AZ 1-2	-26.112	-70.551	4.60E+05	1.67E+04	1	2	8.20	13.00	Magmatic	120.00	0.04
van Dongen	2018	AZ 2-4	-26.112	-70.551	4.36E+05	1.62E+04	2	4	8.20	13.00	Magmatic	120.00	0.04
van Dongen	2018	AZ 4-8	-26.112	-70.551	3.69E+05	2.10E+04	4	8	8.20	13.00	Magmatic	120.00	0.04
van Dongen	2018	AZ 8-16	-26.112	-70.551	3.14E+05	1.22E+04	8	16	8.20	13.00	Magmatic	120.00	0.04
van Dongen	2018	AZ 16-32	-26.112	-70.551	2.80E+05	1.02E+04	16	32	8.20	13.00	Magmatic	120.00	0.04
van Dongen	2018	AZ 32-64	-26.112	-70.551	3.16E+05	1.11E+04	32	64	8.20	13.00	Magmatic	120.00	0.04

[a] Mixed lithology: >3 different lithologies

Table S4: Grain size dependencies as linear function (y= ax + b) of mean basin slope, MAP and mean travel distance.

Factor	Lithology	Mean[a] a	2σ[a] a	Mean[a] b	2σ[a] b	Mean[a] R^2	2σ[a] R^2	Mean[a] p	2σ[a] p	Significance code[b]
Mean basin slope	All	-1.18E-02	2.91E-03	1.07E-01	5.84E-02	0.067	0.025	0.065	0.06	•
Mean basin slope	Mixed	5.39E-02	2.20E-02	-1.44E+00	5.34E-01	0.174	0.107	0.248	0.194	
Mean basin slope	Sedimentary	-1.97E-02	6.77E-03	2.71E-01	1.67E-01	0.187	0.08	0.141	0.105	
Mean basin slope	Magmatic	4.06E-03	3.14E-03	-2.98E-02	6.51E-02	0.029	0.026	0.6	0.185	
Mean basin slope	Metamorphic	-5.83E-03	4.88E-03	-3.52E-02	8.84E-02	0.018	0.023	0.655	0.214	
MAP	All	-7.47E-05	2.40E-05	-4.97E-02	3.19E-02	0.04	0.023	0.174	0.147	
MAP	Mixed	-1.12E-04	5.74E-05	-1.18E-01	5.54E-02	0.038	0.029	0.593	0.175	
MAP	Sedimentary	-9.79E-05	5.32E-05	-2.23E-02	1.13E-01	0.08	0.054	0.384	0.225	
MAP	Magmatic	-2.07E-04	4.98E-05	9.65E-02	4.54E-02	0.416	0.126	0.024	0.049	*
MAP	Metamorphic	8.94E-05	5.14E-05	-2.81E-01	8.04E-02	0.038	0.032	0.484	0.212	
Mean travel distance	All	-4.73E-02	1.45E-02	2.46E-01	1.10E-01	0.042	0.023	0.166	0.143	
Mean travel distance	Mixed	-3.75E-02	4.98E-02	1.75E-01	1.85E-01	0.017	0.015	0.721	0.134	
Mean travel distance	Sedimentary	-5.85E-02	4.98E-02	2.76E-01	3.76E-01	0.057	0.054	0.496	0.253	
Mean travel distance	Magmatic	6.53E-03	3.87E-02	-2.34E-02	2.51E-01	0.015	0.024	0.745	0.192	
Mean travel distance	Metamorphic	-4.40E-02	3.42E-02	1.77E-01	2.64E-01	0.022	0.024	0.611	0.215	

[a] Mean ± 2σ values result from 10,000 Monte Carlo runs.

[b] Significance codes correspond to mean p-values: 0 '***' 0.001 '**' 0.01 '*' 0.05 '•' 0.1 ' ' 1

Table S5: Multivariate statistics and relative importance (RI) results for the factors mean basin slope (MBS), mean annual precipitation (MAP) and mean travel distance (MTD).

Lithology	Factor	Mean[a] b	2σ[a] b	Mean[a] p	2σ[a] p	Sign. code[b]	Mean[a] RI	2σ[a] RI	Mean[a] R^2	2σ[a] R^2	Mean[a] Adjusted-R^2	2σ[a] Adjusted-R^2	Mean[a] p-value multivariate model	2σ[a] p-value multivariate model	Sign. code[b]
All	MBS	-6.73E-03	3.30E-03	0.361	0.194		4.27	1.92	0.111	0.037	0.065	0.039	0.118	0.116	
All	MAP	-6.38E-05	2.69E-05	0.285	0.212		3.33	1.95	0.111	0.037	0.065	0.039	0.118	0.116	
All	MTD	-5.48E-06	2.12E-06	0.253	0.199		3.48	2.03	0.111	0.037	0.065	0.039	0.118	0.116	
Mixed	MBS	3.89E-02	2.25E-02	0.357	0.265		15.07	9.28	0.576	0.139	0.417	0.192	0.1	0.107	•
Mixed	MAP	-6.45E-04	1.24E-04	0.071	0.061	•	17.48	4.71	0.576	0.139	0.417	0.192	0.1	0.107	•
Mixed	MTD	-2.89E-05	5.01E-06	0.035	0.038	*	25.04	4.66	0.576	0.139	0.417	0.192	0.1	0.107	•
Sedimentary	MBS	-1.77E-02	6.93E-03	0.205	0.118		16.21	7.52	0.282	0.115	0.086	0.146	0.334	0.219	
Sedimentary	MAP	-7.19E-05	4.96E-05	0.486	0.226		6.1	4.45	0.282	0.115	0.086	0.146	0.334	0.219	
Sedimentary	MTD	-6.96E-06	9.57E-06	0.581	0.252		5.85	5.82	0.282	0.115	0.086	0.146	0.334	0.219	
Magmatic	MBS	6.88E-03	2.11E-03	0.324	0.184		4.53	3.09	0.502	0.126	0.366	0.16	0.081	0.107	•
Magmatic	MAP	-2.19E-04	4.89E-05	0.025	0.054	*	43.76	13.05	0.502	0.126	0.366	0.16	0.081	0.107	•
Magmatic	MTD	-3.25E-06	2.22E-05	0.644	0.215		1.88	2.4	0.502	0.126	0.366	0.16	0.081	0.107	•
Metamorphic	MBS	-1.21E-02	6.03E-03	0.469	0.193		0.03	0.03	0.107	0.061	-0.061	0.072	0.625	0.199	
Metamorphic	MAP	1.54E-04	6.09E-05	0.309	0.152		0.06	0.04	0.107	0.061	-0.061	0.072	0.625	0.199	
Metamorphic	MTD	-1.04E-05	9.84E-06	0.654	0.211		0.02	0.02	0.107	0.061	-0.061	0.072	0.625	0.199	

[a] Mean ± 2σ values result from 10,000 Monte Carlo runs.

[b] Significance codes correspond to mean p-values: 0 '***' 0.001 '**' 0.01 '*' 0.05 '•' 0.1 ' ' 1

Supplementary figures to: van Dongen et al. (submitted): Cosmogenic ^{10}Be in river sediment: where grain size matters and why.

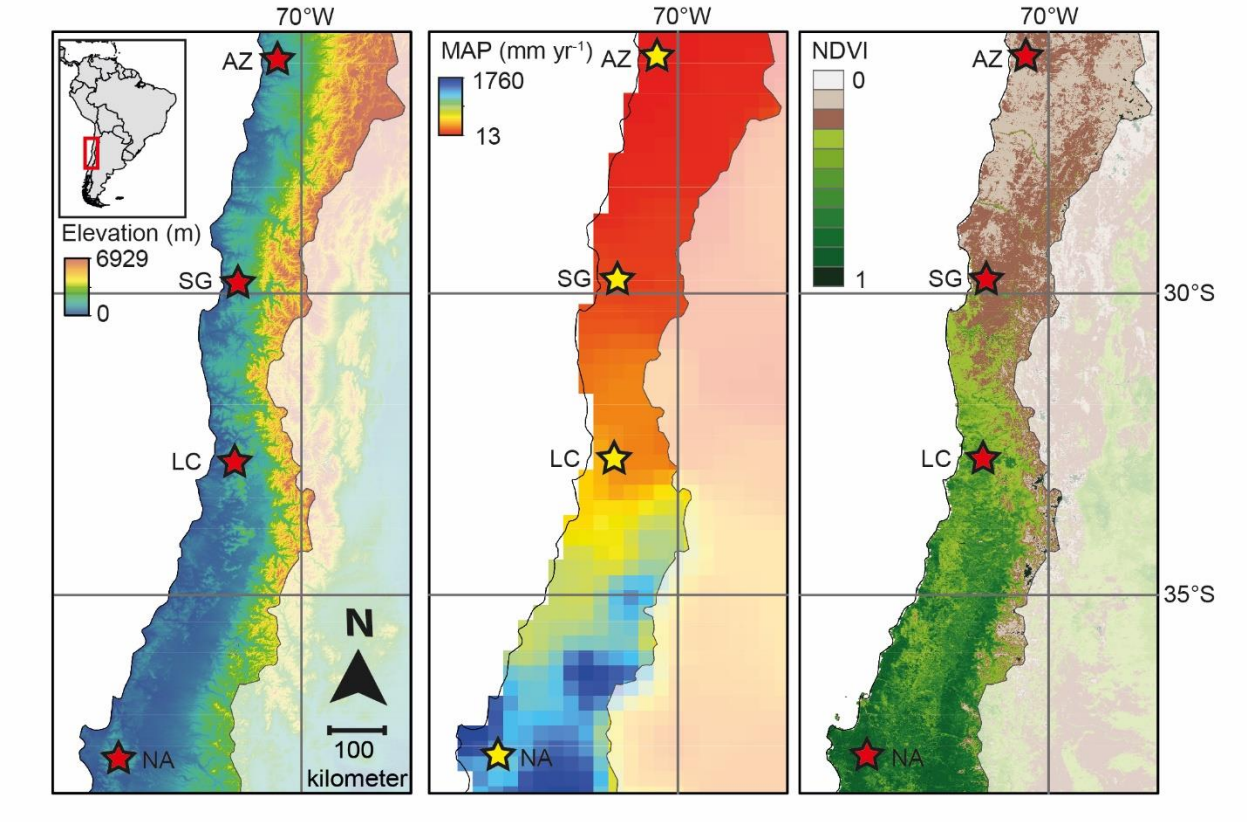

Figure S1: Elevation, mean annual precipitation (MAP) and Normalized Difference Vegetation Index (NDVI) maps of Chile with locations of the study areas (stars). AZ = Pan de Azúcar, SG = Santa Gracia, LC = La Campana, NA = Nahuelbuta.

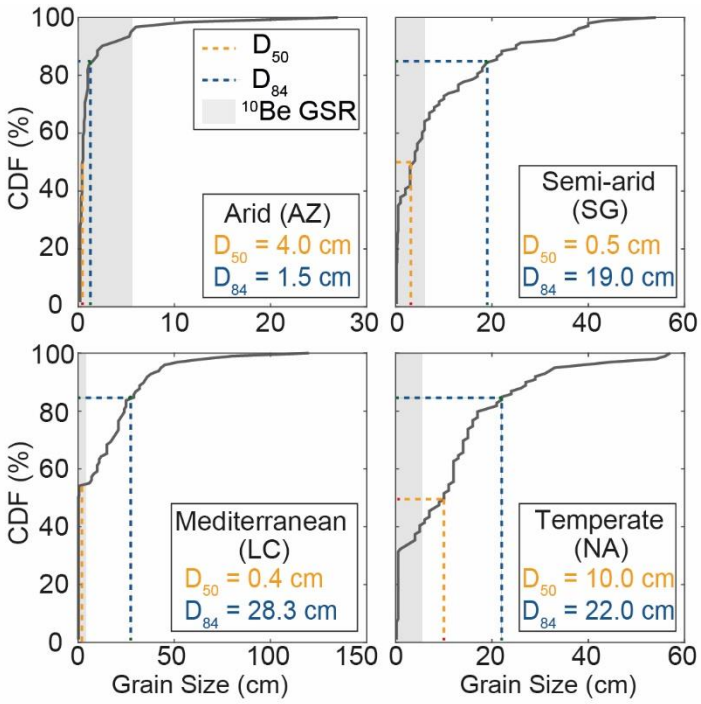

Figure S2: Cumulative distribution function (CDF) of Wolman pebble count results from the studied catchments in the Chilean Coastal Cordillera. Red lines indicate calculated D_{50} grain sizes and green lines indicate D_{84} grain sizes. Grey shaded areas indicate the grain size range (0.5-64 mm) used for ^{10}Be analysis (^{10}Be GSR).

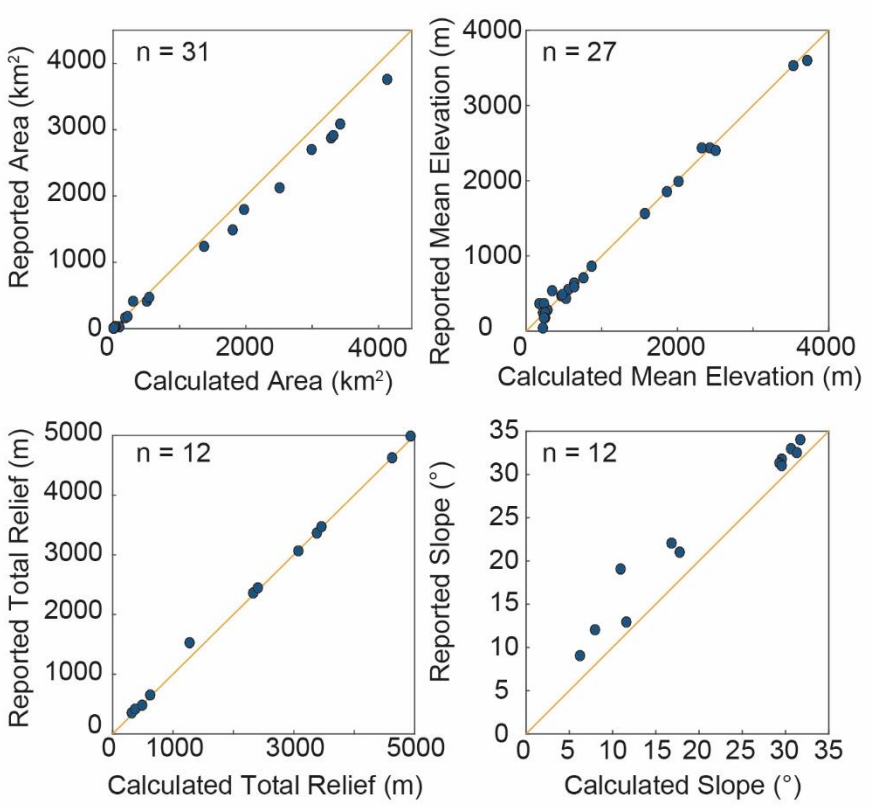

Figure S3: Comparison of published and recalculated catchment parameters. The slight offset of recalculated catchment area and hillslope angle is most likely related to the use of different DEM resolutions.

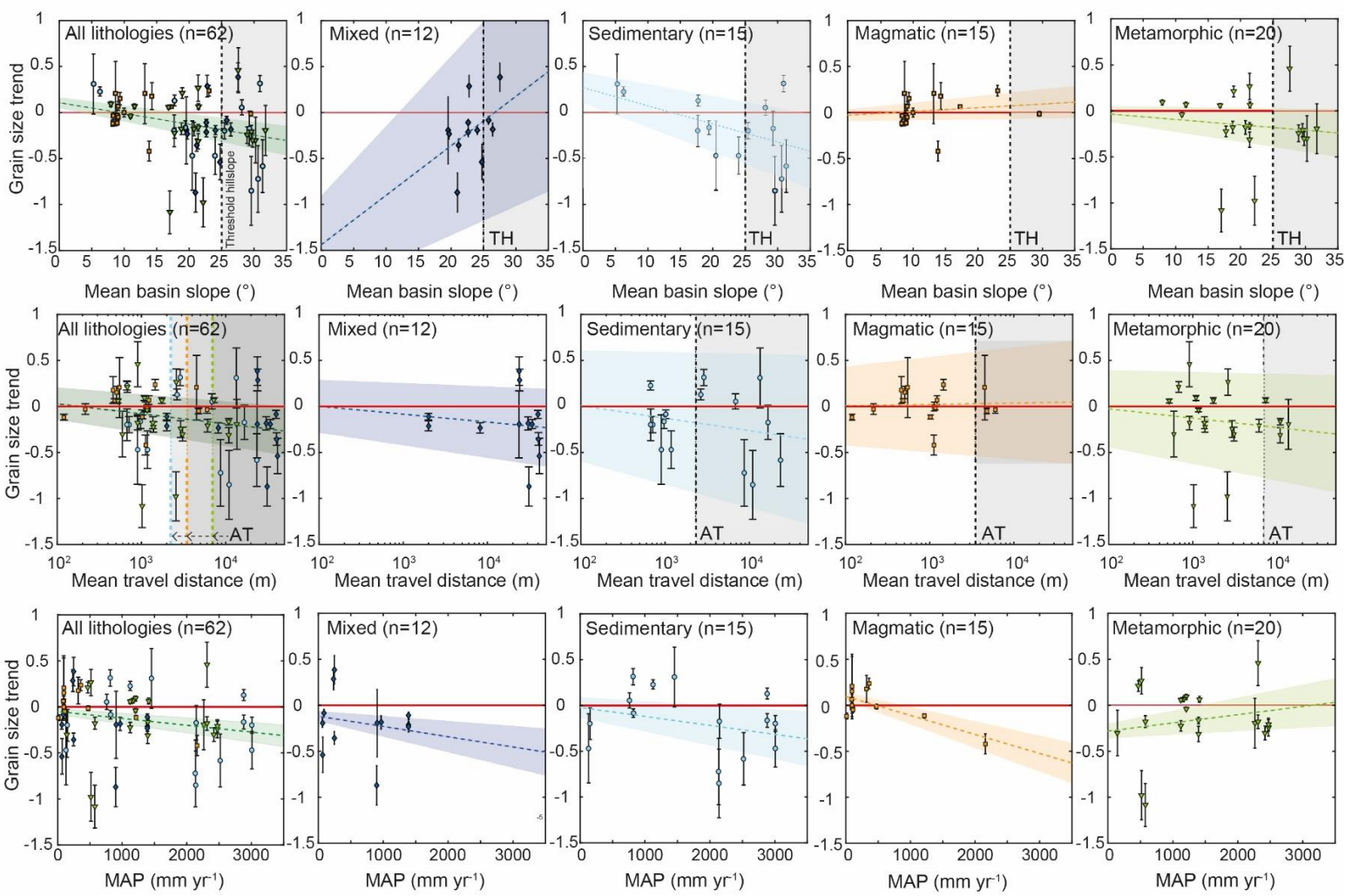

Figure S4: Grain size dependencies as a linear function (y= ax + b) of mean basin slope, mean annual precipitation and mean travel distance. Plots are shown for all lithologies combined, and each individual lithology. Shaded background of each linear fit is the standard deviation of the fit resulting from 10,0000 Monte Carlo runs. Grey shaded areas represent exceeded threshold hillslopes (TH; upper row) and lithology-dependent abrasion thresholds (AT; middle row). Linear model fit data is presented in Table S4.

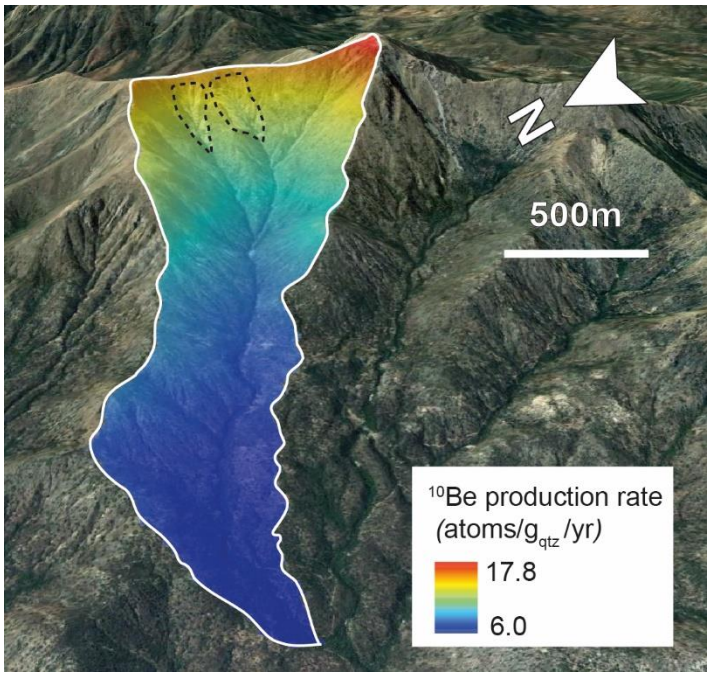

Figure S5: La Campana catchment with debris flow source areas (dotted outlines) and ^{10}Be production rates. Background is a Google Earth image (Google Earth Pro, 2018).

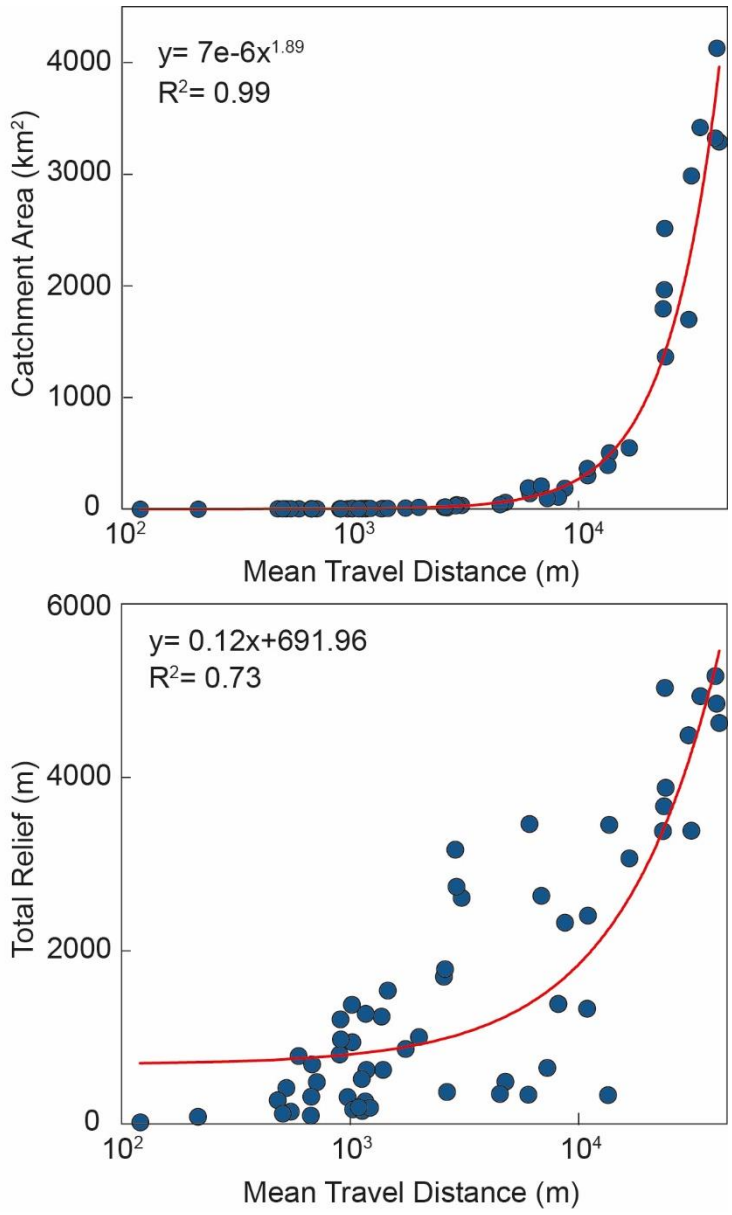

Figure S6: Covariance of catchment attributes in the global compilation catchments. Upper: covariance of mean travel distance (m) and catchment area (km^2), lower: covariance of mean travel distance (m) and total relief (m). Global compilation data is presented in Table S3.

35 **References:**

Google Earth Pro V 7.3.2.5491 (July 23, 2018). La Campana National Park, Chile. Lat: -32.960 Lon: -71.046, Eye alt 11.40 km. DigitalGlobe 2018. http://www.earth.google.com [December 22, 2018].