Appendix Tables

Appendix Table A1. Linear relationships between the random error (RE; µmol m^{-2} s^{-1}; σ and µ) and soil flux (µmol m^{-2} s^{-1}).

Location	Site	Ecosystem	Parameters			
σ			Intercept	Slope	R^2	*P-value*
Atlantic	Highland	Boreal forest	0.71	0.07	0.70	0.0032
	Woods Harbour	Ecotone	0.61	0.16	0.97	< 0.0001
	Gros Morne	Coastal grassland	0.55	0.14	0.79	< 0.0001
Goodwater	Site 1	Grassland	0.63	0.12	0.67	0.0023
	Site 2	Grassland	0.40	0.15	0.97	< 0.0001
Wisconsin	Willow Creek	Temperate forest	0.25	0.21	0.57	< 0.0001
ALL			0.37	0.18	0.65	< 0.0001
µ			Intercept	Slope	R^2	*P-value*
Atlantic	Highland	Boreal forest	-0.77	0.23	0.91	< 0.0001
	Woods Harbour	Ecotone	-0.91	0.24	0.83	< 0.0001
	Gros Morne	Coastal grassland	-0.67	0.18	0.64	0.0002
Goodwater	Site 1	Grassland	-0.91	0.37	0.73	0.0012
	Site 2	Grassland	-0.54	0.31	0.95	0.0001
Wisconsin	Willow Creek	Temperate forest	-1.31	0.30	0.63	< 0.0001
ALL			-0.86	0.25	0.65	< 0.0001

Appendix Table A2. Linear relationships between the random error (RE; μmol m^{-2} s^{-1}; σ and μ) and soil temperature (^{o}C). Because R-square is defined as the proportion of variance explained by the fit, if the fit is actually worse than just fitting a horizontal line then R-square is negative.

Location	Site	Ecosystem	Parameters			
σ			Intercept	Slope	R^2	*P-value*
Atlantic	Highland	Boreal forest	0.54	0.03	0.31	0.0001
	Woods Harbour	Ecotone	0.36	0.05	0.43	< 0.0001
	Gros Morne	Coastal grassland	0.61	0.04	0.48	< 0.0001
Goodwater	Site 1	Grassland	0.39	0.04	0.44	0.0116
	Site 2	Grassland	0.39	0.03	0.67	< 0.0001
Wisconsin	Willow Creek	Temperate forest	0.69	0.01	-0.01	0.4412
ALL			0.51	0.03	0.18	< 0.0001
μ			Intercept	Slope	R^2	*P-value*
Atlantic	Highland	Boreal forest	0.00	0.00	0.00	0.3444
	Woods Harbour	Ecotone	-0.02	0.00	-0.01	0.4743
	Gros Morne	Coastal grassland	-0.01	0.01	0.01	0.2160
Goodwater	Site 1	Grassland	0.02	0.00	-0.02	0.5521
	Site 2	Grassland	0.0	0.00	-0.01	0.4054
Wisconsin	Willow Creek	Temperate forest	-0.01	0.00	-0.01	0.6334
ALL			-0.02	0.00	0.00	0.8575

Appendix Table A3. Linear relationships between the random error (RE; μmol m^{-2} s^{-1}; σ and μ) and soil moisture (v/v). Because R-square is defined as the proportion of variance explained by the fit, if the fit is actually worse than just fitting a horizontal line then R-square is negative.

Location	Site	Ecosystem	Parameters			
σ			Intercept	Slope	R^2	*P-value*
Atlantic	Highland	Boreal forest	1.35	-1.27	0.16	0.0888
	Woods Harbour	Ecotone	1.94	-1.66	0.21	0.0295
	Gros Morne	Coastal grassland	1.44	-2.20	-0.03	0.4201
Goodwater	Site 1	Grassland	0.33	0.28	0.19	0.0773
	Site 2	Grassland	0.51	0.74	0.03	0.2825
Wisconsin	Willow Creek	Temperate forest	0.99	-0.01	-0.07	0.9953
ALL			1.10	-0.28	-0.01	0.4644
μ			Intercept	Slope	R^2	*P-value*
Atlantic	Highland	Boreal forest	-0.05	0.22	-0.07	0.9200
	Woods Harbour	Ecotone	-0.05	-0.34	0.00	0.3299
	Gros Morne	Coastal grassland	0.08	-0.23	-0.14	0.7216
Goodwater	Site 1	Grassland	0.02	-0.06	-0.08	0.7219
	Site 2	Grassland	0.08	-0.73	0.32	0.0319
Wisconsin	Willow Creek	Temperate forest	0.28	-1.72	0.31	0.0149
ALL			0.04	-0.39	0.00	0.2948

Appendix Table A4. Full models on the effects of site, and soil flux, soil temperature and soil moisture on the random error (RE; σ and μ). SD=Standard deviation.

Models	Variables	Parameters		
σ		df	*F-value*	*P-value*
Model 1: SD ~ Flux	RE ~ Flux	76		
Model 2: SD ~ Flux + Site		71	0.6	0.7189
Model 3: SD ~ Flux + Site + Flux:Site		66	1.2	0.2996
μ				
Model 1: mean ~ Flux	RE ~ Flux	80		
Model 2: mean ~ Flux + Site		75	1.7	0.1450
Model 3: mean ~ Flux + Site + Flux:Site		70	1.0	0.4194
σ				
Model 1: SD ~ Temperature	RE ~ Temperature	281		
Model 2: SD ~ Temperature + Site		276	4.8	0.0001
Model 3: SD ~ Temperature + Site + Temperature:Site		271	3.3	0.0001
μ				
Model 1: mean ~ Temperature	UC ~ Temperature	281		
Model 2: mean ~ Temperature + Site		276	3.3	0.0067
Model 3: mean ~ Temperature + Site + Temperature:Site		271	1.2	0.3118
σ				
Model 1: SD ~ Moisture	RE ~ Moisture	79		
Model 2: SD ~ Moisture + Site		74	7.0	0.0001
Model 3: SD ~ Moisture + Site + Moisture:Site		69	1.7	0.1492
μ				
Model 1: mean ~ Moisture	RE ~ Moisture	81		
Model 2: mean ~ Moisture + Site		76	0.7	0.6758
Model 3: mean ~ Moisture + Site + Moisture:Site		71	0.4	0.8169