Supplement to

Data-mining analysis of factors affecting the global distribution of soil carbon in observational databases and Earth system models

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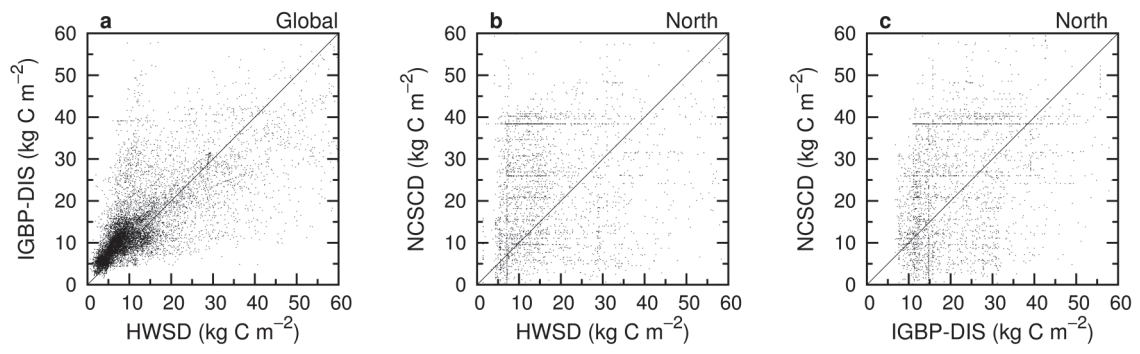
Figure S1: Grid-scale comparison (1°) of SOC databases (a: global; b and c: north).
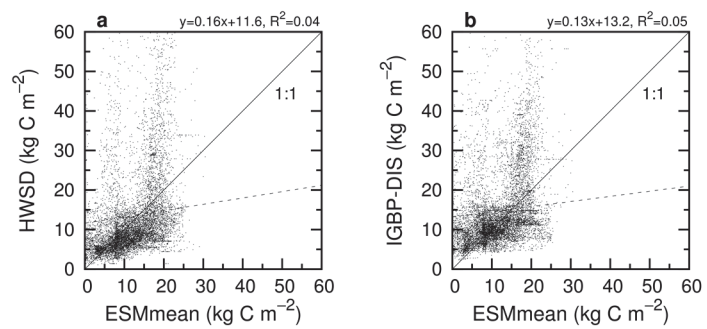
Figure S2: Relationship between ESM ensemble and observational databases at the grid scale (global, 1°).
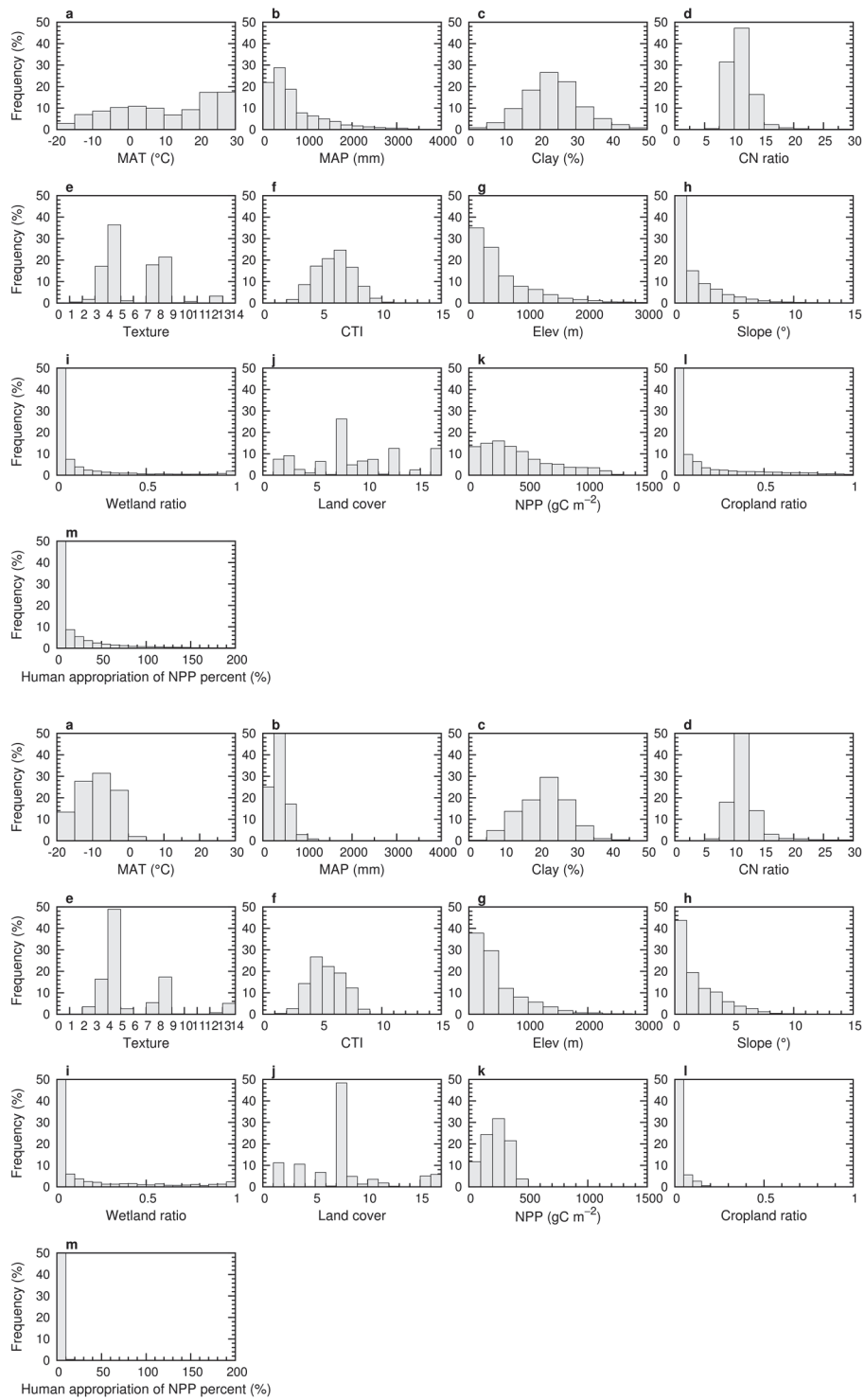
Figure S3: Histogram of variables for global (top) and northern (bottom) databases.

Table S1: BRT model performance for observational databases.

	Database	Slope	Y-intercept	P	R^2	RMSE	N
Global	HWSD	1.03	−0.38	<0.001	0.96	2.35	13854
	IGBP-DIS	1.02	−0.27	<0.001	0.98	1.47	13854
North	HWSD	1.02	−0.39	<0.001	0.98	2.08	3176
	IGBP-DIS	1.01	−0.24	<0.001	0.99	0.96	3176
	NCSCD	1.18	−4.46	<0.001	0.65	9.38	3176

Table S2: Performance of BRTs for ESM output.

	ESM	Slope	Y-intercept	P	R^2	RMSE	N
	BCC	1.02	−0.16	<0.001	0.97	0.82	13805
	BNU	1.03	−0.14	<0.001	0.97	0.72	13175
	CanESM2	1.03	−0.37	<0.001	0.96	2.00	13813
	CCSM4	1.03	−0.12	<0.001	0.96	0.64	13112
	CESM1	1.03	−0.10	<0.001	0.96	0.58	13147
	CMCC	1.01	−0.27	<0.001	0.99	3.13	10382
	GFDL	1.01	−0.11	<0.001	0.99	1.66	13854
Global	GISS	1.02	−0.42	<0.001	0.97	3.74	13164
	HadGEM2	1.03	−0.26	<0.001	0.96	1.25	13357
	INMCM4	1.04	−0.47	<0.001	0.96	1.81	12161
	IPSL	1.01	−0.11	<0.001	0.98	0.90	13728
	MIROC	1.01	−0.28	<0.001	0.98	1.88	10698
	MPI	1.03	−0.64	<0.001	0.97	2.39	11861
	MRI	1.03	−0.38	<0.001	0.96	1.77	12780
	NorESM	1.03	−0.12	<0.001	0.96	0.64	13530
	BCC	1.02	−0.18	<0.001	0.99	0.50	3170
	BNU	1.02	−0.10	<0.001	0.99	0.37	3134
	CanESM2	1.02	−0.33	<0.001	0.99	1.37	3174
	CCSM4	1.02	−0.06	<0.001	0.98	0.35	3145
	CESM1	1.02	−0.04	<0.001	0.99	0.33	3130
	CMCC	1.09	−4.75	<0.001	0.84	14.52	2600
	GFDL	1.02	−0.69	<0.001	0.99	1.30	3176
North	GISS	1.02	−0.61	<0.001	0.99	2.04	3108
	HadGEM2	1.01	−0.09	<0.001	0.99	0.45	3091
	INMCM4	1.01	−0.15	<0.001	0.99	0.63	2848
	IPSL	1.02	−0.29	<0.001	0.99	0.41	3167
	MIROC	1.01	−0.51	<0.001	0.99	0.92	2620
	MPI	1.01	−0.16	<0.001	0.99	0.79	2834
	MRI	1.02	−0.18	<0.001	0.99	0.64	3176
	NorESM	1.01	−0.04	<0.001	0.99	0.26	3176