

## Online Resource 5: Land use change in individual locations

Table S5.1. Characterization of sites. ID refers to Fig. S5.1. Ref. refers to sites in Jones et al. (2005) and Schaphoff et al. (2006). Topography refers to the diversity of slope angles at 10' resolution within the pixel (30'). Pixels with highly diverse slopes ( $SD > 0.08575$ ) were classified as 'ridged', those with lower diversity as 'rolling' ( $SD > 0.03125$ ) or 'flat'.

Jones C., McConnell C., Coleman K., Cox P., Falloon P., Jenkinson D., Powlson D. (2005) Global climate change and soil carbon stocks; predictions from two contrasting models for the turnover of organic carbon in soil. *Global Change Biology* 11, 154-166. doi: 10.1111/j.1365-2486.2004.00885.x

Schaphoff S., Lucht W., Gerten D., Sitch S., Cramer W., Prentice I. C. (2006) Terrestrial biosphere carbon storage under alternative climate projections. *Climatic Change* 74, 97-122. doi: 10.1007/s10584-005-9002-5

ID	Ref.	chracterization	long. East	lat. North	topography
473		Taymur Peninsula, Siberia	101.25	76.25	flat
974		Sirmlik Nat. P., Borden Pen., Baffin Isl., Canada	-82.25	73.25	ridged
1358	J1	Anabarskoye Plateau, Siberia	105.25	72.25	ridged
1472	S1	Borden Pen., Baffin Isl., Canada	-83.25	71.75	rolling
2423		Cape Dalhusie, NWT, Canada	-128.25	69.75	rolling
2665	S2b	Yano-Indigirskaya Lowland, N-Siberia	146.75	69.75	flat
2935	J1K	Anabarskoye Plateau, Siberia	103.75	69.25	rolling
3631		N Scandes Range, Norway/Sweden	18.25	68.25	ridged
3724		N Siberian Lowlands	81.25	68.25	flat
4156		Bolshesamol'skaya tundra, Siberia	58.25	67.75	rolling
4705		Putorana Plateau, Siberia	86.75	67.25	rolling
5612		lakes between Ii and Kemi R., Finland	26.25	66.25	flat
6645		lakes between Oulu R. and Ii R., Finland	26.75	65.25	flat
7457		Anadyr' R. delta, Siberia	174.75	64.75	ridged
7576		wetlands and lakes, SE-NWT, Canada	-104.25	64.25	ridged
7779		Yennisey-Ob R. lowlands, Siberia	84.25	64.25	flat
8494		forest tundra, Anchorage, Alaska, USA	-148.25	63.25	ridged
8883	S2a	mountain tundra, Suntar-Hayata Mts, E-Siberia	142.75	63.25	ridged
9021		Klondike Plateau, Yukon, Canada	-132.25	62.75	ridged
9230	S3	wetlands and lakes, Irtysh-Ob R., C-Siberia	73.25	62.75	flat
11127		wetlands and lakes, Irtysh-Ob R., C-Siberia	69.25	60.75	flat
11654		Prilensk Plateau, C-Siberia	110.25	60.25	flat
12797		wetlands and lakes, Irtysh-Ob R., Siberia	74.75	58.75	flat
13444		Småland, Sweden	16.25	57.75	flat
14171		central Labrador, Canada	-69.25	56.75	ridged
14979		Zarasai, E. Lithuania	26.25	55.75	flat
15269	J2	Lac La Ronge Provincial Park, Saskatchewan, Canada	-104.75	55.25	flat
16012		Rocky Mts. eastern foothills, Alberta, Canada	-115.25	54.25	ridged
16376		southern Kamchatka, Russia	157.25	54.25	ridged
17184		Amur R., northern Heil-long-jiang Prov., China	121.25	53.25	rolling
19690		High Altai Mts.	92.75	50.25	rolling
19932		Upper Franconia, Germany	10.75	49.75	rolling
20183		Amur wetlands, E Siberia	136.25	49.75	ridged
20391		western Ukraine	36.25	49.25	flat
21924		Acadia, New Brunswick, Canada	-67.75	47.25	rolling
22059		steppe, central Kazakhstan	64.25	47.25	flat
22148		steppe, northern Inner Mongolia	108.75	47.25	ridged

22299		forest/lakes, SW Québec, Canada	-78.25	46.75	flat
22340		Burgundy, France	4.25	46.75	rolling
23390		central Minnesota, USA	-94.75	45.25	flat
24423		central Wyoming, USA	-106.75	43.75	ridged
24792		southern Minnesota, USA	-94.75	43.25	flat
24938		steppe, Kazakhstan	69.75	43.25	ridged
27811		agriculture, steppe on loess, NE Iran	45.25	38.75	ridged
28030		northern Kentucky, USA	-85.25	38.25	flat
29092	S4K	Chai-da (Quaidam) basin, China	96.25	36.75	ridged
30196		northeastern Iraq	45.25	34.75	ridged
30299	S4	Upper Hung-He (Yellow) River	96.75	34.75	ridged
30382		central New Mexico, USA	-105.75	34.25	ridged
32562		R. Nile delta, Egypt	31.25	30.75	flat
32948		Punjab, Pakistan	72.75	30.25	flat
33532		Thar Desert, India	72.75	29.25	flat
34104		northern Rajasthan, India	74.25	28.25	flat
34453		agric./forest, SE Chinese highlands	109.25	27.75	ridged
35020		agric./forest, SE Chinese highlands	113.25	26.75	ridged
35414		western Egypt	25.75	25.75	flat
36571		Yunnan, China	101.75	23.75	ridged
36807		Jessore, R. Ganges delta, Bangladesh	89.25	23.25	flat
37345		western Myanmar	99.25	22.25	ridged
37434		southern Algeria	3.75	21.75	flat
37938		Tibesti Mts., Chad	18.25	20.75	ridged
39958	S5	Darfur, Sudan	24.75	15.75	rolling
40849		western Sudan	23.25	13.25	rolling
41633	S7	Salamat R. marshes, Chad	21.75	10.75	flat
42237		Cord. de Mérida, Venezuela	-71.75	8.75	ridged
42710		wetland, Gambelia, Nat.P., Ethiopia	34.25	7.75	rolling
42713		western Ethiopia	35.75	7.75	ridged
42714		forest/agric., Jima (City), Ethiopia	36.25	7.75	ridged
42930		forest/ agric., Central Cordilleras, Medellín, Columbia	-75.25	6.75	ridged
43225		forest/agric., Mendebo Highland, Ethiopia	38.75	6.25	ridged
43762		La Gran Sabana, Venezuela	-63.25	4.25	ridged
44386		Congo Basin, Kongo-Brazaville	17.75	2.25	flat
44387		Congo Basin, Dem.Rep.Kongo	18.25	2.25	flat
44589		Benadir Plain, Somalia	43.75	1.75	flat
44724		western Kenya	35.25	1.25	ridged
44800	S9	Laranjal, Rio Negro, Brazil	-65.25	0.75	ridged
45210		coastal wetland, Sumatra, Indonesia	102.75	-0.25	flat
45318		central Dem. Rep. Congo	21.75	-0.75	flat
45714		Cordilleras, Ecuador	-78.75	-2.25	ridged
45748	J4	P. Nacional do Jaú, Brazil	-61.75	-2.25	flat
46402		western Highlands, New Guinea, Indonesia	137.75	-3.75	ridged
47080		forest/agric., Western Highlands, Papua-New Guinea	144.75	-5.75	ridged
47125		Amazonas, Brazil	-63.75	-6.25	flat
49290	S6	Kitwe, Zambia	27.75	-13.25	rolling
49472		Kakadu National Park, NT, Australia	132.75	-13.75	rolling
49644		Cordilleras, Peru	-71.25	-14.75	ridged
50426		central range, Madagascar	48.75	-16.75	ridged
51222		NW Namibia	20.75	-19.25	flat
51276		NT, Australia	129.25	-19.25	flat
51419		central range, Madagascar	47.25	-19.75	ridged
51986		Great Divide, Queensland, Australia	145.75	-21.25	rolling

52213	Sao Paulo, Brazil	-49.25	-22.25	flat
52365	shrubland/agric., Gran Chaco, Argent./Parag./Boliv.	-62.75	-22.75	flat
52415	Gobabis, Namibia	18.75	-22.75	flat
52673	Alice Springs, central Australia	134.75	-23.25	rolling
52737	Mato Grosso do Sul, Brazil	-54.25	-23.75	rolling
52975	southern Madagascar	46.75	-24.25	ridged
53094	Paraná, Brazil	-50.25	-24.75	ridged
53838	SW Queensland, Australia	143.25	-26.75	flat
54027	Gran Chaco, Argentina	-64.75	-27.75	rolling
55427	NW New South Wales, Australia	141.75	-32.25	rolling
55497	Great Karoo, South Africa	23.25	-32.75	rolling
55593	central Uruguay	-55.75	-33.25	flat
55968	Pampa, Argentina	-67.25	-35.75	ridged
56048	S8 Little Desert, southern Australia	141.75	-36.25	flat
56113	Australian Alps, New South Wales, Australia	148.25	-36.75	ridged
56486	central Tasmania, Australia	146.25	-42.25	ridged
56566	Cordillera Patagonica, Chile	-71.75	-44.25	ridged
56571	southern Patagonia, Argentina	-69.25	-44.25	ridged
56582	central South Island, New Zealand	170.25	-44.25	ridged

Fig. S5.1. Location of sites used in Table S5.1.

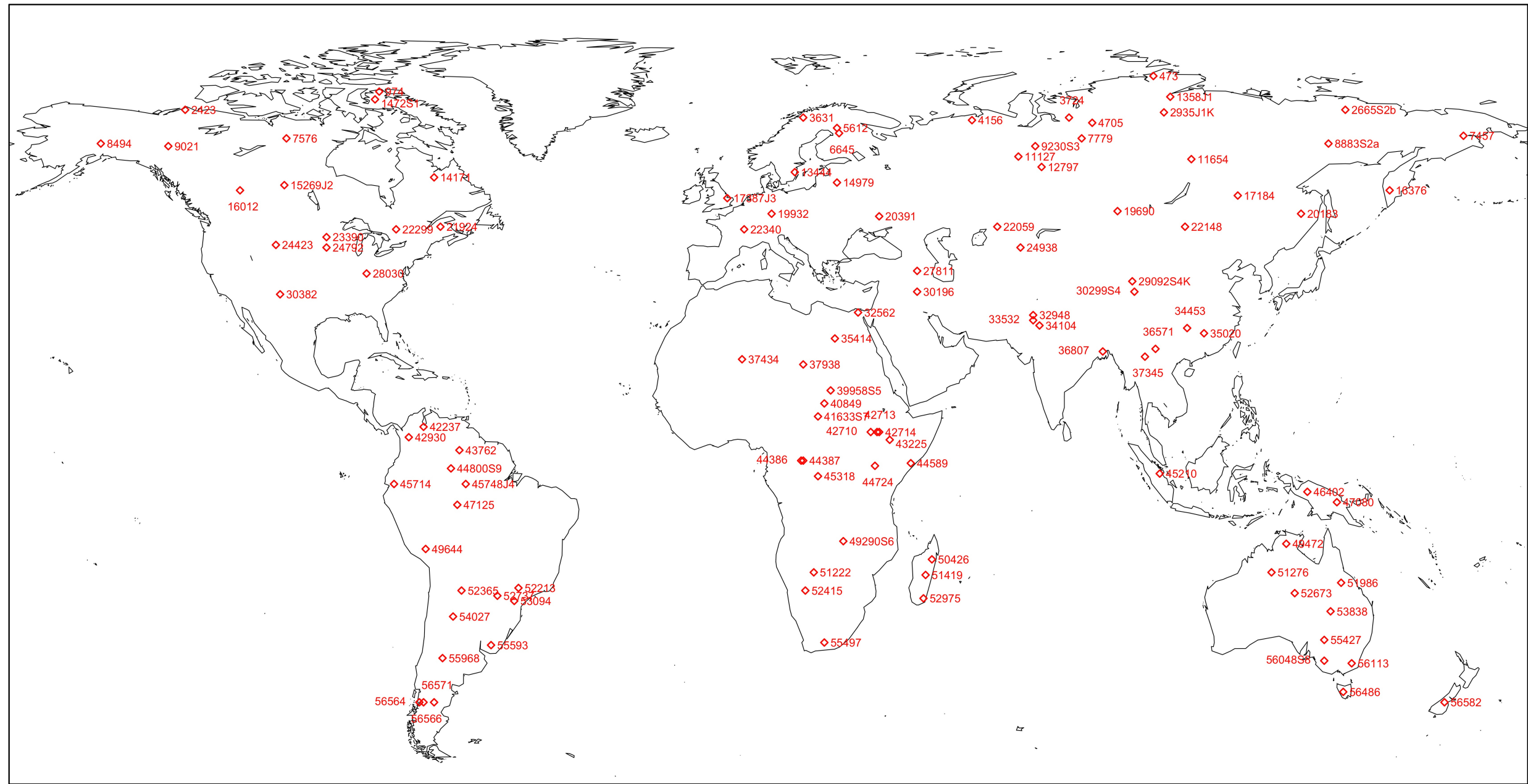


Table S5.2. Effect of land use changes at specific locations under the enhanced-NPP scenario. \* to wetland if reference is wetland, NC: not conceivable under the settings of the other variables

	zonal veg.	reference land use	ID	<i>f<sub>mf</sub></i>	frost cm	NPP <sub>0</sub> kg m <sup>2</sup> yr <sup>-1</sup>	NPP <sub>t</sub> kg m <sup>2</sup> yr <sup>-1</sup>	C ref. kg/m <sup>2</sup>	HWSO kg/m <sup>2</sup>	Δ <i>f<sub>mf</sub></i>	Δfrost cm	ΔNPP <sub>0</sub> kg/m <sup>2</sup>	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P
													to zonal*			to plantation			to pasture			to crops		
Tundra	zonal		974	0.13	26	0.00	0.00	7.0	6.4	0.01	10	0.00	0.00	-0.1		0.00	-0.1		0.00	-0.1		0.00	-0.1	
Tundra	zonal		1472	0.13	34	0.00	0.00	6.8	6.3	0.01	11	0.03	0.10	0.9		0.12	1.1		0.10	0.9		0.10	0.9	
Tundra	zonal		30299	0.14	53	0.08	0.10	8.9	9.3	0.01	18	0.41	0.40	4.7	++	0.20	2.2	+	0.33	3.8	++	0.35	4.1	++
Tundra	zonal		473	0.13	33	0.22	0.30	14.8	7.8	0.01	14	-0.03	-0.20	-2.9	++	-0.18	-2.6	+	-0.20	-2.9	++	-0.20	-2.9	++
Tundra	zonal		3631	0.14	55	0.26	0.30	17.8	14.8	0.01	16	0.11	0.00	-0.9		-0.10	-2.2	+	-0.03	-1.3		-0.02	-1.2	
Tundra	zonal		7576	0.14	58	0.33	0.30	13.8	6.5	0.00	12	0.10	0.20	2.5		0.01	-0.1		0.13	1.5		0.15	1.9	
Tundra	zonal		8494	0.14	63	0.34	0.30	17.3	12.9	0.00	11	0.03	0.00	-0.5		-0.10	-1.8		-0.03	-0.9		-0.02	-0.8	
Tundra	zonal		3724	0.14	63	0.35	0.30	18.0	13.8	0.00	12	0.09	0.20	2.5		0.01	-0.4		0.13	1.5		0.15	1.9	
Tundra	zonal		3034	0.14	61	0.35	0.30	18.1	14.3	0.00	9	0.13	0.20	2.5		0.01	-0.4		0.13	1.4		0.15	1.8	
Boreal Forest	plantation		4705	0.14	71	0.35	0.28	16.3	10.6	0.00	11	0.06	0.22	2.8		0.01	-0.3		0.15	1.6		0.18	2.2	
Boreal Forest	plantation		11654	0.14	80	0.44	0.46	21.3	10.8	0.00	11	0.08	0.04	-0.1		-0.17	-3.3	+	-0.03	-1.4		0.00	-0.8	
Boreal Forest	plantation		5612	0.08	100	0.51	0.46	41.6	25.2	0.02	0	0.12	0.24	2.6		-0.10	-4.3		0.07	-1.0		0.13	0.3	
Boreal Forest	plantation		17184	0.14	86	0.52	0.46	18.3	9.9	0.00	12	0.10	0.24	2.7		-0.10	-1.9		0.07	0.2		0.13	1.3	
Boreal Forest	plantation		6645	0.08	100	0.52	0.46	41.5	25.8	0.03	0	0.12	0.24	0.9		-0.10	-5.4	+	0.07	-2.4		0.13	-1.1	
Boreal Forest	plantation		20183	0.09	100	0.53	0.46	33.5	19.5	0.03	0	0.05	0.04	-2.2		-0.17	-5.6	+	-0.03	-3.5		0.00	-2.9	
Boreal Forest	plantation		13551	0.08	100	0.56	0.46	42.7	23.6	0.00	0	0.10	0.24	5.4		-0.10	-2.3		0.07	1.4		0.13	2.8	
Boreal Forest	plantation		12797	0.13	100	0.56	0.46	26.0	16.1	0.00	0	0.10	0.24	4.2		-0.10	-1.5		0.07	1.2		0.13	2.3	
Boreal Forest	wetland		7779	0.13	76	0.45	0.47	26.0	12.4	0.00	13	0.04	0.00	-0.1		-0.18	-4.9	++	-0.05	-2.8	+	-0.02	-2.1	
Boreal Forest	wetland		9230	0.13	79	0.51	0.47	37.7	25.5	0.00	13	0.06	0.00	-0.3		-0.18	-5.0	+	-0.05	-3.3	+	-0.02	-2.7	
Boreal Forest	wetland		11127	0.13	100	0.52	0.47	37.6	20.9	0.00	0	0.07	0.00	-0.5		-0.18	-5.6	++	-0.05	-3.9	+	-0.02	-3.4	+
Boreal Forest	wetland		15269	0.10	100	0.58	0.47	35.2	17.0	0.00	0	0.14	0.09	2.1		-0.12	-5.0	+	0.05	-1.7		0.11	-0.4	
Boreal Forest	zonal		2423	0.14	53	0.02	0.10	12.4	11.8	0.00	10	-0.02	0.00	-0.3		0.04	0.1		0.00	-0.4		0.00	-0.3	
Boreal Forest	zonal		16376	0.14	50	0.12	0.10	23.7	29.6	0.00	16	0.26	0.20	2.3		0.06	0.2		0.16	1.6		0.18	2.0	
Boreal Forest	zonal		7452	0.14	61	0.32	0.30	13.6	9.8	0.00	11	0.10	0.20	2.4		-0.01	-0.4		0.13	1.2		0.16	1.8	
Boreal Forest	zonal		7457	0.14	63	0.32	0.30	29.4	20.1	0.00	11	0.11	0.20	2.1		-0.01	-0.5		0.13	1.1		0.16	1.6	
Boreal Forest	zonal		7959	0.13	63	0.32	0.30	30.0	27.1	0.00	11	0.11	0.20	2.3		-0.01	-0.4		0.13	1.3		0.16	1.8	
Boreal Forest	zonal		2665	0.14	59	0.32	0.30	18.1	10.7	0.00	10	0.08	0.20	2.4		-0.01	-0.7		0.13	1.2		0.16	1.8	
Boreal Forest	zonal		1358	0.13	55	0.33	0.30	18.2	13.3	0.00	12	0.05	0.00	-0.5		-0.14	-2.5	+	-0.04	-1.2		-0.02	-0.8	
Boreal Forest	zonal		4156	0.14	64	0.34	0.30	28.5	23.1	0.00	15	0.15	0.20	1.8		-0.01	-0.9		0.13	0.7		0.16	1.3	
Boreal Forest	zonal		8883	0.14	62	0.35	0.30	18.2	14.0	0.00	12	0.05	0.00	-0.5		-0.14	-2.4	+	-0.04	-1.1		-0.02	-0.7	
Boreal Forest	zonal		2935	0.14	63	0.35	0.30	17.3	11.3	0.00	10	0.06	0.20	2.4		-0.01	-0.6		0.13	1.2		0.16	1.8	
Boreal Forest	zonal		9021	0.14	67	0.37	0.30	13.5	5.3	0.00	11	0.05	0.20	2.4		-0.01	-0.4		0.13	1.3		0.16	1.9	
Boreal Forest	zonal		14171	0.14	66	0.38	0.30	8.9	1.4	0.00	14	0.11	0.20	2.6	+	-0.01	-0.2		0.13	1.5		0.16	2.1	
Temperate Grassland	crops		56048	0.16	100	0.49	0.25	9.3	5.5	0.00	0	0.16	0.42	4.3	++	0.09	1.0		0.31	3.2	+	0.35	3.4	+
Temperate Grassland	crops		20391	0.15	100	0.52	0.25	13.6	14.8	0.00	0	0.19	0.42	4.6	++	0.09	1.0		0.31	3.5	+	0.35	3.7	+
Temperate Grassland	crops		23390	0.15	100	0.64	0.35	15.1	10.5	0.01	0	0.11	0.32	3.1	+	0.00	-0.6		0.22	1.9		0.25	2.3	
Temperate Grassland	crops		24792	0.15	100	0.67	0.35	16.0	13.1	0.01	0	0.12	0.32	3.2	+	0.00	-0.4		0.22	2.1		0.25	2.3	
Temperate Grassland	pasture		55427	0.15	100	0.12	0.10	6.2	5.4	0.01	0	0.24	NC			0.03	0.4		0.15	1.5	+	0.16	1.5	+
Temperate Grassland	pasture		22162	0.14	100	0.21	0.25	11.7	9.6	0.01	0	0.51	0.42	4.7	+	0.09	0.7		0.31	3.4	+	0.34	3.8	+
Temperate Grassland	pasture		27811	0.15	100	0.23	0.25	7.8	4.8	0.01	0	0.23	0.22	2.1	+	-0.01	-0.2		0.16	1.4		0.17	1.5	
Temperate Grassland	pasture		22148	0.14	100	0.24	0.25	14.6	10.3	0.00	0	0.58	0.61	7.9	++	0.19	2.6		0.49	6.4	++	0.51	6.5	++
Temperate Grassland	pasture		22927	0.14	100	0.30	0.25	11.7	7.6	0.00	0	0.52	0.61	7.8	++	0.19	2.2		0.49	6.1	++	0.51	6.4	++
Temperate Grassland	pasture		21760	0.14	100	0.32	0.25	11.7	9.3	0.00	0	0.54	0.61	7.8	++	0.19	2.2		0.49	6.1	++	0.51	6.4	++
Temperate Grassland	pasture		56571	0.15	100	0.47	0.41	13.9	5.0	0.00	0	-0.09	-0.12	-1.6		-0.27	-3.2	++	-0.16	-2.0		-0.15	-1.9	
Temperate Grassland	pasture		21864	0.15	100	0.53	0.41	14.7	7.3	0.00	0	0.15	0.26	2.9		-0.07	-0.9		0.15	1.5		0.18	2.0	
Temperate Grassland	pasture		49644	0.15	100	0.59	0.41	13.1	5.8	0.00	0	0.53	0.65	6.9	++	0.11	1.2		0.49	5.3	++	0.52	5.6	++
Temperate Grassland	pasture		56582	0.15	100	0.67	0.58	17.5	8.7	0.00	0	0.21	0.29	2.8		-0.14	-1.8		0.16	1.4		0.19	1.7	
Temperate Grassland	pasture		55593	0.23	100	0.75	0.58	20.4	15.8	0.04	0	0.52	0.70	4.3		0.08	-0.2		0.54	3.1		0.59	3.4	
Temperate Grassland	plantation		24938	0.15	100	0.42	0.43	15.1	5.6	0.01	0	-0.03	-0.14	-2.0		-0.29	-3.5	++	-0.18	-2.4		-0.17	-2.2	
Temperate Grassland	plantation		56486	0.15	100	0.71	0.60	19.2	10.9	0.00	0	0.52	0.68	6.9	++	0.06	0.7		0.52	5.5	+	0.56	5.9	+
Temperate Grassland	plantation		46402	0.15	100	1.17	0.94	26.5	12.1	0.09	0	0.16	0.34	-0.2		-0.28	-4.9	+	0.18	-1.3		0.22	-1.0	
Temperate Grassland	wetland		19690	0.11	100	0.18	0.10	10.9	7.3	0.00	0	0.27	0.30	5.8	++	0.12	1.4		0.26	4.1		0.28	4.3	
Temperate Deciduous Forest	crops		17817	0.15	100	0.58	0.23	9.0	8.1	0.00	0	0.10	0.47	4.7	++	0.09	0.9		0.24	2.4	+	0.29	2.8	+
Temperate Deciduous Forest	crops		17387	0.15	100	0.60	0.23	9.7	9.7	0.01	0	0.09	0.47	4.8	++	0.09	0.7		0.24	2.1	+	0.29	2.7	+
Temperate Deciduous Forest	zonal		28030	0.16	100	0.61	0.70	19.3	7.9	0.09	0	0.11	0.00	-2.2		-0.38	-5.1	++	-0.23	-3.9	+	-0.18	-3.6	+
Temperate Deciduous Forest	zonal		19932	0.15	100	0.63	0.70	22.6	11.3	0.01	0	0.07	0.00	-0.6		-0.38	-4.8	++	-0.23	-3.2		-0.18	-2.6	



zonal veg.	reference land use	ID	<i>fmf</i>	frost cm	NPP <sub>0</sub> kg m <sup>2</sup> yr <sup>-1</sup>	NPP <sub>t</sub> kg m <sup>2</sup> yr <sup>-1</sup>	C ref. kg/m <sup>2</sup>	HWSO kg/m <sup>2</sup>	Δfmf	Δfrost cm	ΔNPP <sub>0</sub> kg/m <sup>2</sup>	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P
Temperate Mixed Forest	plantation	16012	0.14	100	0.57	0.39	15.7	9.3	0.01	0	0.30	0.51	6.0	+	0.02	-0.4		0.29	2.9		0.36	3.9	+
Temperate Mixed Forest	plantation	56566	0.15	100	0.57	0.39	24.7	26.1	0.00	0	0.47	0.71	7.8	++	0.12	1.2		0.40	4.4	+	0.57	6.4	++
Temperate Mixed Forest	plantation	14979	0.14	100	0.60	0.39	16.8	11.6	0.01	0	0.14	0.31	3.0		-0.07	-1.7		0.14	0.9		0.15	1.1	
Temperate Mixed Forest	plantation	22299	0.13	100	0.60	0.39	23.3	19.2	0.01	0	0.22	0.51	5.7	+	0.02	-0.9		0.29	2.6		0.36	3.6	
Temperate Mixed Forest	plantation	21924	0.14	100	0.62	0.56	25.2	15.9	0.01	0	0.17	0.14	0.5		-0.24	-4.2	+	-0.02	-1.5		-0.01	-1.5	
Temperate Mixed Forest	plantation	56564	0.15	100	0.62	0.56	21.2	20.0	0.00	0	0.54	0.54	6.1	+	-0.04	-0.6		0.23	2.5		0.40	4.6	+
Temperate Mixed Forest	zonal	37101	0.23	100	0.56	0.50	12.6	7.0	0.05	0	0.80	0.85	5.6	+	0.12	0.1		0.44	2.3		0.72	4.6	+
Temperate Mixed Forest	zonal	22340	0.15	100	0.65	0.70	19.9	7.7	0.02	0	0.10	0.00	-0.9		-0.38	-4.7	++	-0.17	-2.6		-0.15	-2.6	
Temperate Evergreen Forest	plantation	13444	0.15	100	0.56	0.40	16.1	11.2	0.00	0	0.16	0.31	3.3	+	-0.07	-1.3		0.03	-0.2		0.17	1.6	
Temperate Evergreen Forest	plantation	35029	0.26	100	0.67	0.56	13.6	8.8	0.04	0	-0.06	0.14	0.3		-0.24	-2.2	+	-0.14	-1.7		0.00	-0.7	
Temperate Evergreen Forest	plantation	56113	0.15	100	0.76	0.56	16.3	9.4	0.00	0	0.33	0.54	5.7	+	-0.05	-0.7		0.21	2.0		0.34	3.6	
Temperate Evergreen Forest	wetland	12687	0.12	100	0.62	0.47	23.2	9.7	0.01	0	-0.03	-0.06	-2.0		-0.19	-5.9	++	-0.11	-4.8	+	0.00	-3.4	+
Temperate Evergreen Forest	zonal	34453	0.24	100	0.64	0.70	16.8	9.9	0.04	0	-0.06	-0.20	-2.5		-0.47	-4.3	++	-0.39	-3.8	++	-0.31	-3.2	+
Shrubland	crops	32948	0.26	100	0.04	0.14	5.8	5.2	0.07	0	0.39	0.36	1.5	+	0.15	0.5		NC			0.27	1.1	+
Shrubland	zonal	34104	0.19	100	0.05	0.10	3.9	4.9	0.03	0	0.44	0.40	3.1	++	0.19	1.5	+	0.33	2.6	++	0.31	2.4	++
Shrubland	zonal	52673	0.17	100	0.13	0.10	4.1	4.7	0.07	0	0.31	0.40	2.7	++	0.19	1.3		0.33	2.3	++	0.31	2.2	+
Shrubland	zonal	55497	0.15	100	0.13	0.10	6.1	6.0	0.01	0	0.27	0.20	1.9	++	0.09	1.0		0.16	1.7	+	0.15	1.5	+
Shrubland	zonal	30382	0.15	100	0.14	0.10	4.2	4.0	0.01	0	0.49	0.60	5.6	++	0.28	2.8	++	0.50	4.9	++	0.47	4.6	++
Shrubland	zonal	24423	0.14	100	0.29	0.30	11.5	5.8	0.00	0	0.41	0.40	4.2	+	0.08	0.9		0.30	3.4	+	0.27	3.0	
Shrubland	zonal	30196	0.23	100	0.40	0.50	10.0	4.2	0.06	0	-0.08	-0.20	-1.9	+	-0.31	-2.5	++	-0.24	-2.0	+	-0.25	-2.2	+
Shrubland	zonal	55968	0.15	100	0.62	0.70	16.9	2.9	0.02	0	-0.14	-0.20	-2.4		-0.41	-4.3	++	-0.27	-2.9		-0.29	-3.2	+
Shrubland	zonal	51276	0.27	100	0.68	0.70	11.8	4.8	0.13	0	-0.03	0.00	-2.4	+	-0.32	-3.3	++	-0.10	-2.7	+	-0.13	-2.8	+
Shrubland	zonal	54027	0.22	100	0.79	0.70	15.9	7.7	0.06	0	-0.24	-0.20	-2.6		-0.41	-3.9	++	-0.27	-2.9	+	-0.29	-3.0	+
Shrubland	zonal	42713	0.16	100	1.04	1.10	29.8	14.6	0.23	0	0.36	0.24	-6.3	++	-0.41	-8.7	++	0.08	-6.6	++	0.02	-6.9	++
Hot Desert	crops	32562	0.16	100	0.01	0.88	23.0	6.5	0.02	0	0.05	-0.78	-8.5	++	0.00	-0.5		NC			-0.78	-8.6	++
Hot Desert	zonal	35414	0.17	100	0.00	0.00	1.8	2.6	0.06	0	0.01	0.10	0.4	+	0.88	7.2	++	0.10	0.4	+	0.10	0.5	+
Hot Desert	zonal	37434	0.15	100	0.00	0.00	1.8	3.7	0.00	0	0.05	0.10	0.6	++	0.88	9.4	++	0.10	0.6	++	0.10	0.7	++
Hot Desert	zonal	37938	0.15	100	0.00	0.00	1.9	2.2	0.00	0	0.23	0.30	2.9	++	0.94	10.4	++	0.27	2.7	++	0.30	2.9	++
Hot Desert	zonal	33532	0.27	100	0.03	0.10	5.2	5.6	0.09	0	0.33	0.20	0.6		0.84	3.7	++	0.17	0.5		0.20	0.7	
Hot Desert	zonal	29092	0.11	100	0.18	0.10	9.3	6.4	0.01	0	0.22	0.40	6.7	++	0.75	11.9	++	0.33	5.6	++	0.38	6.4	++
Hot Desert	zonal	39958	0.28	100	0.18	0.10	3.3	4.3	0.11	0	0.04	0.20	0.3		0.84	2.6	++	0.17	0.2		0.20	0.2	
Tropical Grassland	pasture	53838	0.19	100	0.11	0.10	4.0	4.7	0.04	0	0.37		NC		0.12	0.8		0.31	2.3	++	0.32	2.4	++
Tropical Grassland	pasture	22059	0.11	100	0.12	0.10	5.9	3.6	0.01	0	0.18	0.20	2.8	+	0.02	0.1		0.15	2.1		0.16	2.1	+
Tropical Grassland	pasture	52415	0.17	100	0.14	0.10	4.1	3.0	0.06	0	0.42		NC		0.12	0.8		0.31	2.3	++	0.32	2.3	++
Tropical Grassland	pasture	44589	0.39	100	0.19	0.10	5.3	5.1	0.03	0	0.61	0.60	1.4	++	0.20	0.5		0.48	1.1	++	0.49	1.2	++
Tropical Woodland, Savanna	pasture	40849	0.29	100	0.47	0.40	7.4	3.1	0.07	0	0.12	0.10	-0.3		-0.20	-1.5	+	-0.01	-0.7		0.03	-0.6	
Tropical Woodland, Savanna	pasture	41633	0.38	100	0.52	0.40	8.2	7.1	0.06	0	0.29	0.50	0.6		-0.03	-0.5		0.31	0.2		0.36	0.3	
Tropical Woodland, Savanna	pasture	51222	0.20	100	0.63	0.57	12.7	3.2	0.10	0	0.06	0.14	-0.9		-0.27	-3.3	++	-0.01	-1.7		0.03	-1.5	
Tropical Woodland, Savanna	pasture	49472	0.38	100	0.74	0.57	6.7	4.7	0.06	0	0.25	0.33	0.1		-0.19	-1.1		0.15	-0.3		0.20	-0.2	
Tropical Woodland, Savanna	pasture	51986	0.24	100	0.74	0.57	13.3	5.4	0.11	0	0.06	0.33	-0.2		-0.19	-2.7	+	0.15	-1.1		0.20	-0.8	
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zonal veg.	reference land use	ID	<i>fmf</i>	frost cm	NPP <sub>0</sub> kg m <sup>2</sup> yr <sup>-1</sup>	NPP <sub>t</sub> kg m <sup>2</sup> yr <sup>-1</sup>	C ref. kg/m <sup>2</sup>	HWS D kg/m <sup>2</sup>	Δfmf	Δfrost cm	ΔNPP <sub>0</sub> kg/m <sup>2</sup>	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P	ΔNPP <sub>t</sub> kg/m <sup>2</sup>	ΔC kg/m <sup>2</sup>	P
Tropical Evergreen Forest	plantation	45210	0.16	100	1.08	0.98	39.2	25.3	0.00	0	0.18	0.37	3.9		-0.36	-4.2		-0.04	-0.9		0.24	2.4	
Tropical Evergreen Forest	plantation	44387	0.17	100	1.16	0.98	27.7	11.3	0.02	0	0.24	0.37	2.7		-0.36	-4.7	+	-0.04	-1.6		0.24	1.5	
Tropical Evergreen Forest	plantation	47080	0.24	100	1.22	1.21	26.8	11.5	0.15	0	0.12	0.13	-4.9	+	-0.59	-8.1	++	-0.27	-6.9	++	0.00	-5.4	+
Tropical Evergreen Forest	plantation	50426	0.19	100	1.37	1.21	30.9	10.8	0.03	0	0.03	0.13	0.0		-0.59	-6.9	++	-0.27	-4.0		0.00	-1.1	
Tropical Evergreen Forest	wetland	44386	0.17	100	1.15	0.92	31.4	14.9	0.02	0	0.25	0.22	1.6		-0.30	-7.5	++	0.02	-4.6	+	0.29	-1.8	
Tropical Evergreen Forest	zonal	53094	0.23	100	0.68	0.70	16.5	7.2	0.06	0	0.72	0.65	3.5		-0.08	-2.0		0.24	0.2		0.51	2.5	
Tropical Evergreen Forest	zonal	43225	0.15	100	0.88	0.90	24.4	9.8	0.23	0	0.52	0.45	-4.3	++	-0.27	-7.5	++	0.04	-6.3	++	0.32	-4.9	++
Tropical Evergreen Forest	zonal	42237	0.24	100	1.01	1.10	23.6	9.3	0.14	0	0.24	0.25	-3.7		-0.48	-7.0	++	-0.16	-5.7	++	0.11	-4.3	+
Tropical Evergreen Forest	zonal	42714	0.17	100	1.02	1.10	31.3	14.7	0.22	0	0.38	0.25	-6.4	++	-0.48	-9.9	++	-0.16	-8.4	++	0.11	-7.0	++
Tropical Evergreen Forest	zonal	43762	0.21	100	1.21	1.35	27.4	3.4	0.05	0	0.19	0.00	-1.9		-0.72	-8.1	++	-0.40	-5.5	+	-0.13	-2.9	
Tropical Evergreen Forest	zonal	44800	0.21	100	1.21	1.35	29.2	8.9	0.05	0	0.17	0.00	-1.8		-0.72	-8.0	++	-0.40	-5.4	+	-0.13	-2.9	
Tropical Evergreen Forest	zonal	42930	0.30	100	1.35	1.35	30.3	21.1	0.00	0	0.05	0.00	0.1		-0.72	-5.1	+	-0.40	-2.9		-0.13	-0.9	
Tropical Evergreen Forest	zonal	43096	0.30	100	1.37	1.35	37.8	31.7	0.00	0	0.03	0.00	0.1		-0.72	-4.5	+	-0.40	-2.4		-0.13	-0.7	