



Supplementary Figure 1. Associations of vascular shoot biomass with soil characteristics across the Tiksi tundra field plots (see Fig. 9 for an explanation of the data and graphs).

Supplementary Table 1. Number of study plots and mean values of the main soil and plant attributes in different land cover types.

	Bare soil	Lichen tundra	Shrub tundra	Flood meadow	Graminoid tundra	Bog	Dry Fen	Wet fen
<i>n</i>	3	6	19	10	16	11	21	6
Soil OM concentration (% of dry mass)	2.8	4.9	20	22	33	40	42	37
Soil bulk density (kg dm ⁻³)	1.44	1.20	0.61	0.45	0.34	0.30	0.24	0.24
Soil OM content (g dm ⁻³)	11	17	76	89	97	98	93	79
Litter layer depth (cm)	0.07	0.27	2.1	2.0	2.8	4.9	3.6	2.8
Soil pH	6.0	5.8	5.6	5.6	5.5	5.2	5.4	5.7
Soil water concentration (% of fresh mass)	13	25	47	57	70	70	76	77
Total moss dry mass (g m ⁻²)	0	57	280	238	523	820	674	86
<i>Sphagnum</i> dry mass (g m ⁻²)	0	0	0	6	265	391	309	23
Other moss dry mass (g m ⁻²)	0	57	280	232	258	429	365	63
Total vascular plant dry mass (g m ⁻²)	7	47	112	88	78	93	58	86
<i>Betula nana</i> dry mass (g m ⁻²)	0	3.6	29	1.2	0.2	23	5.8	0
Dwarf shrub dry mass (g m ⁻²)	3.3	7.0	48	0	0	35	1.1	0
<i>Salix</i> dry mass (g m ⁻²)	0	3.3	11	16	35	23	15	2.0
Herb dry mass (g m ⁻²)	2.5	31	17	14	2.6	1.1	4.1	1.7
Graminoid dry mass (g m ⁻²)	1.0	1.8	6.7	56	40	11	32	82
Vascular plant LAI (m ² m ⁻²)	0.04	0.20	0.51	0.95	0.62	0.42	0.44	0.85
<i>n</i>	2	11	14	11	15	14	15	8
Early July (160 DD) soil T (°C) at 15 cm depth	6.7	6.6	2.5	2.6	1.7	1.9	1.8	3.1
Early August (380 DD) soil T (°C) at 15 cm depth	15	13	6.9	9.1	6.8	5.2	6.3	8.8
Early July (160 DD) active soil layer depth (cm)	24	24	14	22	16	15	16	24
Mid-August (550 DD) active soil layer depth (cm)	26	25	28	41	35	35	35	43

Supplementary Table 2. Accuracy assessment of the land cover classification (values in the table refer to 2 m resolution pixels).

		Reference data									Total predicted	User's accuracy
		Dry fen	Wet Fen	Bog	Lichen tundra	Shrub tundra	Graminoid tundra	Flood meadow	Bare soil	Water		
Predicted data	Dry fen	1202	129	316	0	350	685	70	0	0	2752	44 %
	Wet Fen	593	1073	288	8	303	410	203	0	0	2878	37 %
	Bog	325	125	1094	34	309	388	176	0	0	2451	45 %
	Lichen tundra	55	0	0	1072	464	75	37	213	0	1916	56 %
	Shrub tundra	451	31	316	135	1484	367	176	0	0	2960	50 %
	Graminoid tundra	367	217	103	0	64	965	469	0	0	2185	44 %
	Flood meadow	0	0	0	14	62	0	135	33	0	244	55 %
	Bare Soil	0	0	0	571	0	0	98	929	0	1598	58 %
	Water	0	0	0	0	15	0	48	83	858	1004	86 %
	Total in reference	2993	1575	2117	1834	3051	2890	1412	1258	858		
Producer's accuracy	40 %	68 %	52 %	59 %	49 %	33 %	10 %	74 %	100 %			