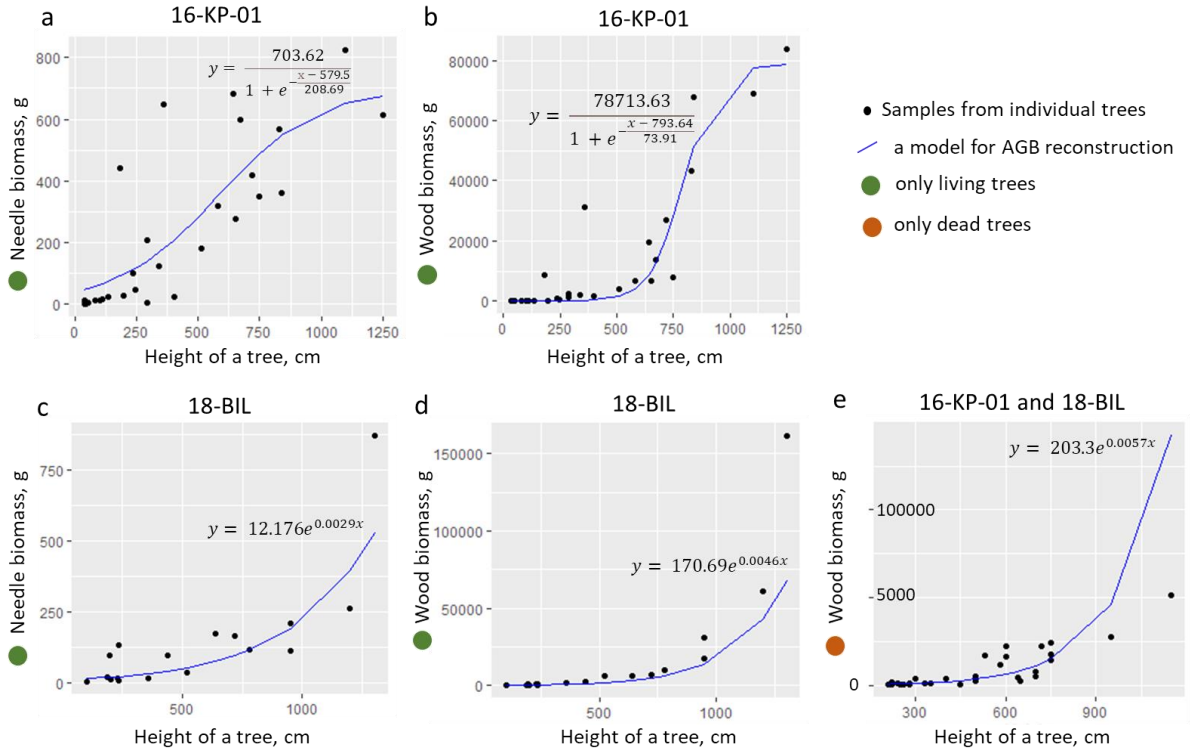

Figure A2: Allometric models, established for larch AGB: a- for a needle biomass of a living tree in the area 16-KP-01, b - for a wood biomass of a living tree in the area 16-KP-01, a- for a needle biomass of a living tree in the area 18-BIL, b - for a wood biomass of a living tree in the area 18-BIL, e – for a wood biomass of a dead tree in both areas.

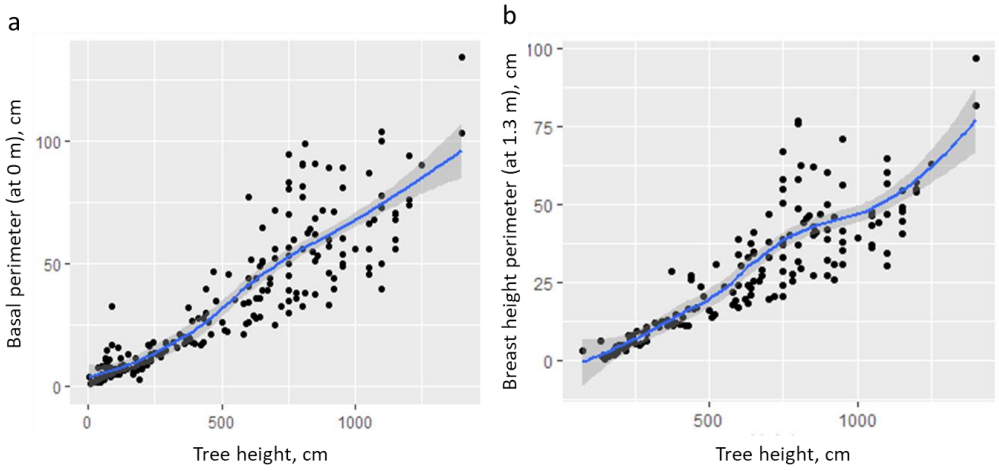

Figure A3: Relationship between tree height and perimeter of the tree stem at 0 m (a) and 1.3 m (b).

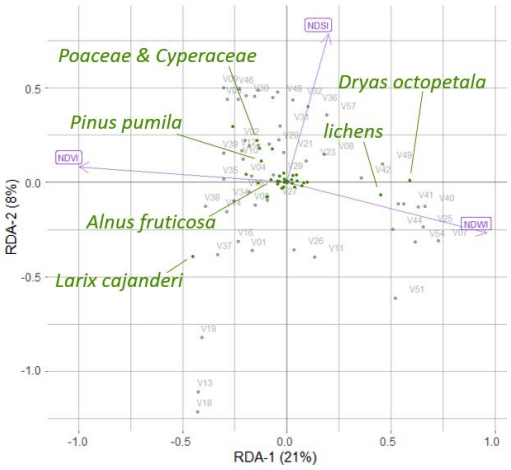

Figure B1: The positions of the major taxa in the RDA space, based on foliage projective cover data of the plot taxa and Landsat spectral indices (Normalised Difference Vegetation Index (NDVI), Normalised Difference Water Index (NDWI) and Normalised Difference Snow Index (NDSI)), where V01-V58 are the 52 vegetation field sites (Shevtsova et al, 2020a).

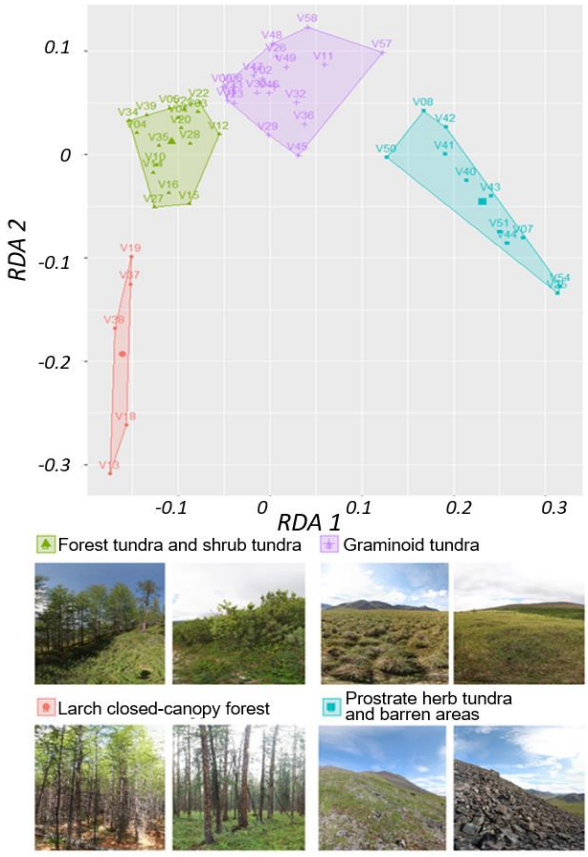

Figure B2: *K*-means classes based on two redundancy analysis (RDA) axes using Normalised Difference Vegetation Index (NDVI), Normalised Difference Water Index (NDWI) and Normalised Difference Snow Index (NDSI) as predictors. Images: extracts from 360x180 degree panoramic images, Stefan Kruse.

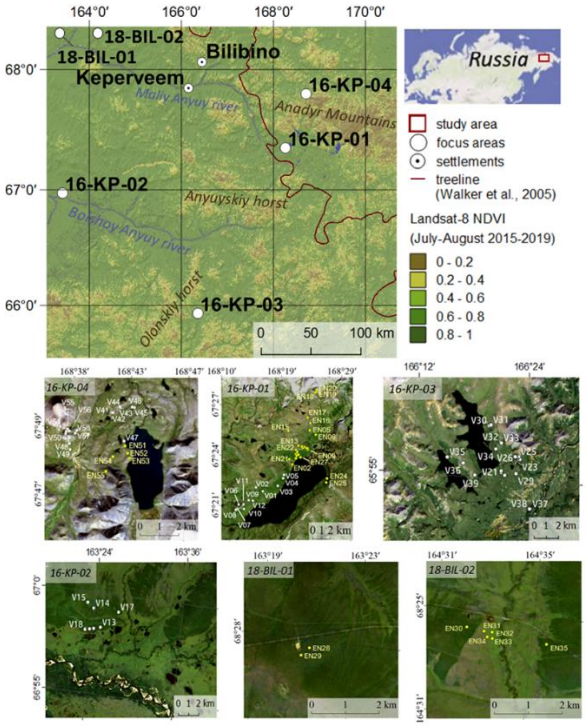

Figure 1: Overview of the study region and four focus areas: tundra (16-KP-04), northern tundra–taiga (16-KP-01), southern tundra–taiga (16-KP-03), and northern taiga (16-KP-02), and two areas with supplementary AGB sampling: 18-BIL-01 and 18-BIL-02 (tundra–taiga to northern taiga). Sample plot names of the 2016 expedition are V01-V58, sample plot names of the 2018 expedition are EN01-EN55 (abbreviated here to EN# rather than EN18#). Overview map modified from Shevtsova et al, 2020a. Base maps of study areas are Landsat-8 RGB composites. Black colour represents no data or water.

Table A1. Statistics of the models for reconstruction total tree (larch) AGB.

Model formula	R^2 adj	Estimate	Standard error	t value	Pr (>|t|)
log(TTAGB)=a*H + b* $\sqrt{BrPer1.3}$+Int	0.597	a=0.004	0.001	2.977	0.004
		b=0.130	0.233	0.56	0.579
		Int=5.381	0.417	12.91	< 2e-16
log(TTAGB)=a*H +Int	0.601	a=0.005	0.0005	10.31	1.31e-15
		Int=5.527	0.323	17.11	< 2e-16
log(TTAGB)= b*$\sqrt{BrPer1.3}$+Int	0.551	a=0.78	0.084	9.31	7.99e-14
		Int=4.93	0.410	12.02	< 2e-16

where TTAGB - total tree AGB, H - tree height,
BrPer1.3 - perimeter of tree stem at breast height or 1.3 m, a,b – coefficients, Int – intercept"

Table B1. Dates and short description of Landsat data used for retrieving spectral indices and further land-cover classification.

Focus area	Landsat acquisition			Short description (season/ Landsat mission/ spatial resolution)
	year	Month	day	
16-KP-01	2001	7	30	peak-summer, Landsat-7, 30 m
	2001	3	24	snow-covered, Landsat-7, 30 m
	2016	7	31	peak-summer, Landsat-8, 30 m
	2016	3	16	snow-covered, Landsat-8, 30 m
16-KP-02	2000	8	8	peak-summer, Landsat-7, 30 m
	2001	3	22	snow-covered, Landsat-7, 30 m
	2016	8	12	peak-summer, Landsat-8, 30 m
	2016	3	5	snow-covered, Landsat-8, 30 m
16-KP-03	2001	7	30	peak-summer, Landsat-7, 30 m
	2001	3	24	snow-covered, Landsat-7, 30 m
	2016	7	31	peak-summer, Landsat-8, 30 m
	2016	3	16	snow-covered, Landsat-8, 30 m
16-KP-04	2002	8	9	peak-summer, Landsat-7, 30 m
	2001	3	24	snow-covered, Landsat-7, 30 m
	2017	8	10	peak-summer, Landsat-8, 30 m
	2016	3	16	snow-covered, Landsat-8, 30 m