
Supplementary Materials:

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Table S1. Cover types used from the ecological mapping of the vegetation of northern Québec.

Cover types	Cover class codes
Deciduous forest (< 25% of coniferous leaf area)	Deciduous forest stand (61-80% cover, FB)
	Deciduous forest stand (41-60% cover, FC)
	Deciduous forest stand (26-40% cover, FD)
	Deciduous forest stand (10-25% cover, FL)
Mixed forest (coniferous leaf area between 25% and 75%)	Mixed forest stand (41-60% cover, MC)
	Mixed forest stand (26-40% cover, MD)
	Mixed forest stand (10-25% cover, ML)
Coniferous forest (coniferous leaf area >75%)	Coniferous forest stand (41-60% cover) with a deciduous shrub understory (RaC)
	Coniferous forest stand (26-40% cover) with a deciduous shrub understory (RaD)
	Coniferous forest stand (10-25% cover) with a deciduous shrub understory (RaL)
	Coniferous forest stand (>80% cover) with mosses and ericaceous shrubs (RmA)
	Coniferous forest stand (61-80% cover) with mosses and ericaceous shrubs (RmB)
	Coniferous forest stand (41-60% cover) with mosses and ericaceous shrubs (RmC)
	Coniferous forest stand (26-40% cover) with mosses and ericaceous shrubs (RmD)
	Coniferous forest stand (10-25% cover) with mosses and ericaceous shrubs (RmL)
Lichen woodland	Coniferous forest stand (41-60% cover) with a lichen cover >60% (RcC)
	Coniferous forest stand (26-40% cover) with a lichen cover >60% (RcD)
	Coniferous forest stand (10-25% cover) with a lichen cover >60% (RcL)
	Coniferous forest stand (41-60% cover) with a lichen cover from 40-60% (RcmC)
	Coniferous forest stand (26-40% cover) with a lichen cover from 40-60% (RcmD)
	Coniferous forest stand (10-25% cover) with a lichen cover from 40-60% (RcmL)
Shrubland with > 70% shrub cover	Low shrub in tundra (0.3 to 1 m, AAB)
	High shrub in tundra (> 1 m, AAH)
	Low shrub and thermokarst ponds in tundra (AAM)
	Low shrub (0.3 to 2 m, AB)
	Low shrub and thermokarst ponds (ABM)
Shrubland with 30 to 70% shrub cover	High shrub (> 2m, AB)
	Lichen-heath with 30-70% deciduous shrubs (LLA)
	Subarctic lichen-heath with 30-70% deciduous shrubs (LSA)
	Erect-shrub tundra with frostboils and 30-70% erect shrubs (TAO)
	Erect-shrub tundra with 30-70% erect shrubs (TDA)

Shrubland with < 30% shrub cover	Lichen-heath (LL)
	Subarctic lichen-heath (LS)
	Subarctic lichen-heath of snow bed (LSC)
	Subarctic lichen-heath and thermokarst ponds (LSM)
	Erect shrub tundra (TD)
	Erect shrub tundra of snow bed TDC)
	Erect shrub tundra with thermokarst ponds (TDM)
	Erect shrub tundra with frostboils (TDO)
Rock substrate-dominated vegetation	Lichen-heath with > 10% rock substrate (LLR)
	Subarctic lichen-heath with 10-50% rock substrate (LSR)
	Subarctic lichen-heath dominated by the rock substrate (RLS)
	Erect shrub tundra dominated by the rock substrate (RTD)
	Prostrate shrub tundra dominated by the rock substrate (RTP)
Prostrate-shrub tundra	Erect shrub tundra with 10-50% rock substrate (TDR)
	Herb tundra with prostrate shrubs (TH)
	Prostrate shrub tundra (TP)
Wetland	Prostrate shrub tundra with frost-boils (TPO)
	Freshwater marsh/shrub swamp (MR)
	Saltwater marsh (MS)
	Arctic fen with 30-70% erect shrubs (TAA)
	Arctic fen or wet tundra (TAR)
	Riparian fen (TMR)
	String fen (TMS)
	Uniform fen (TMU)
	Bog with pools (TOM)
	Palsa peatland (TOP)
	Patterned bog without pools (TOR)
	Patterned bog with pools (TOS)
	Uniform bog (TOU)
Bedrock	Rock outcrops and fragments (AR)
	Boulder fields (CB)
	Snow (NE)
	Bare ground (SD)

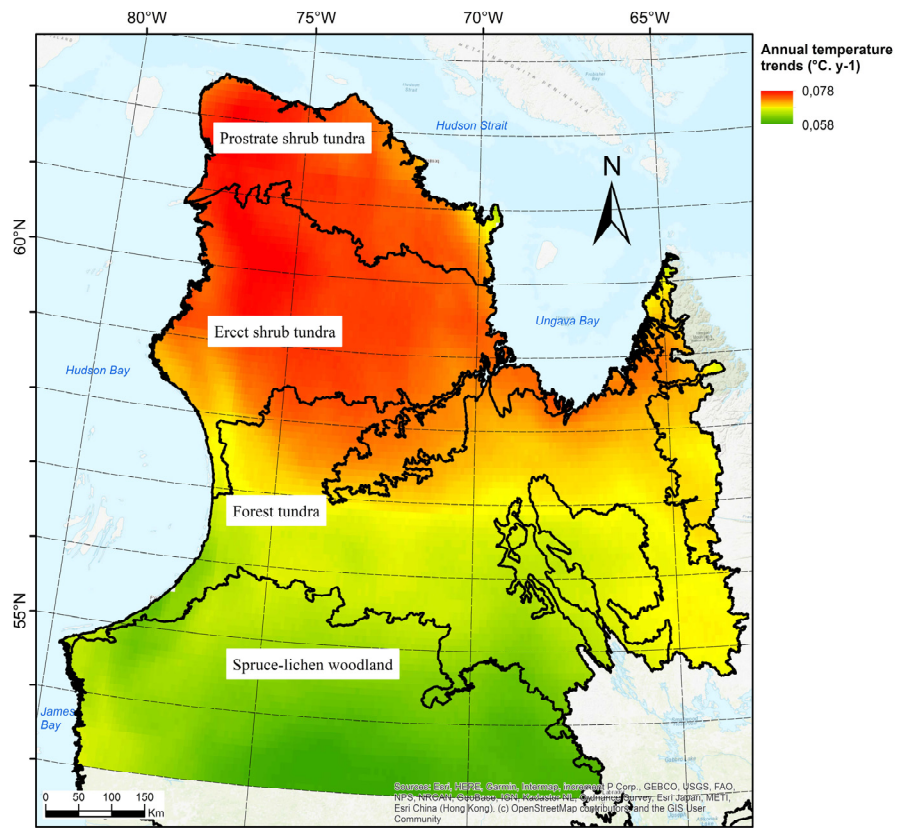


Figure S1. Annual temperature trends for the 1992-2020 period in Nunavik.

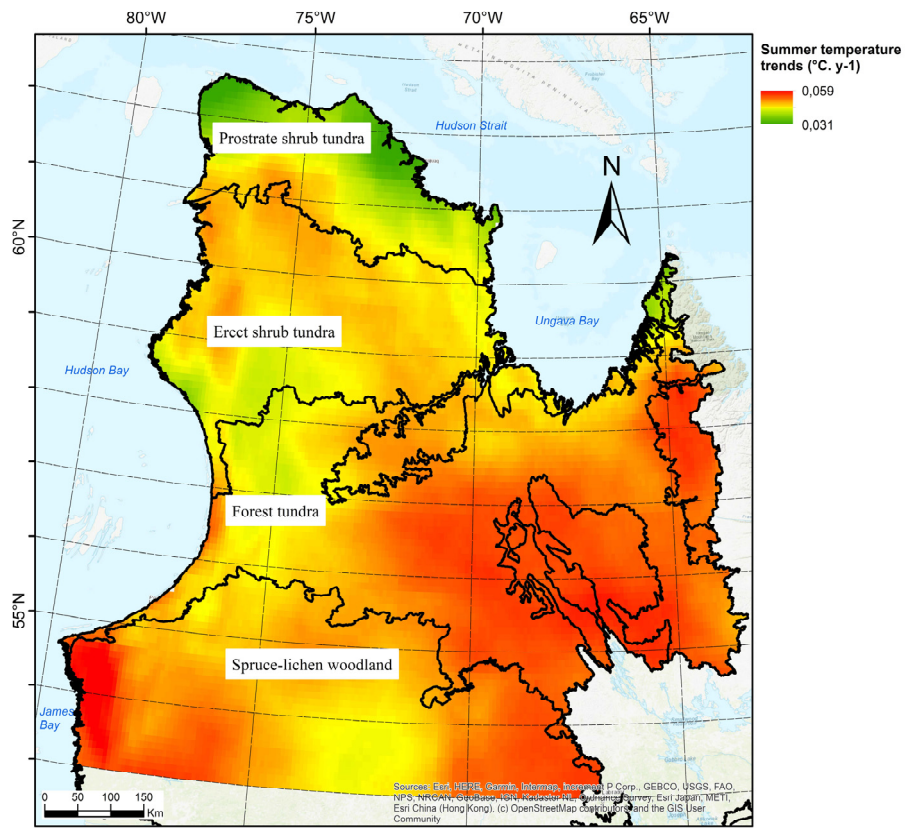


Figure S2. Summer temperature trends for the 1992-2020 period in Nunavik.

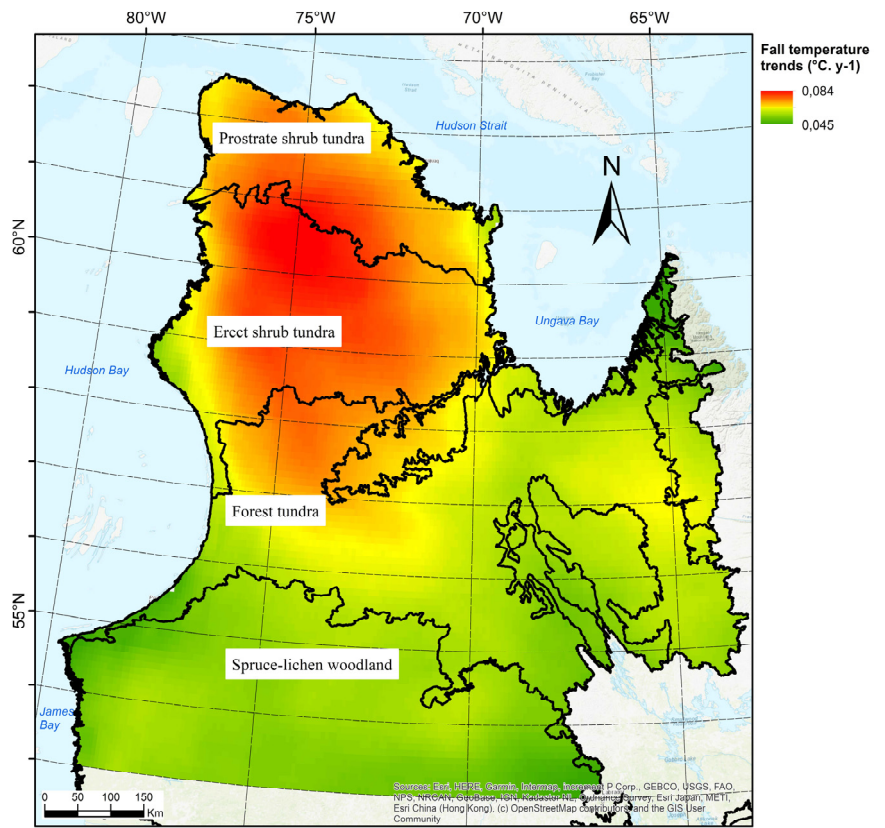


Figure S3. Fall temperature trends for the 1992-2020 period in Nunavik.

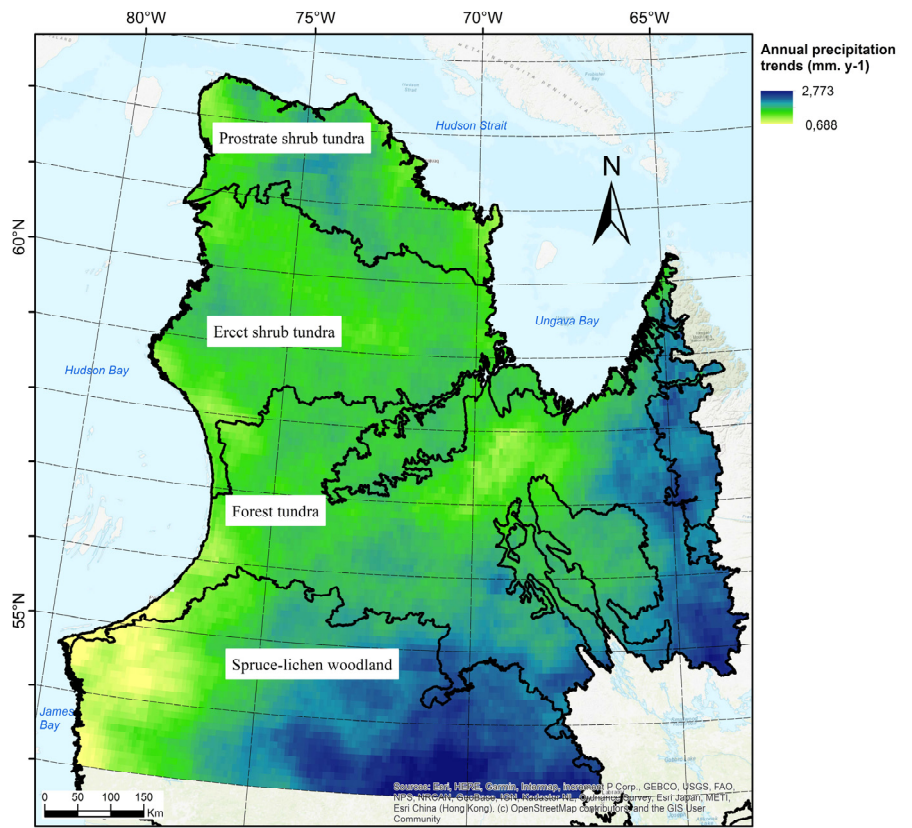


Figure S5. Annual precipitation trends for the 1992-2020 period in Nunavik.

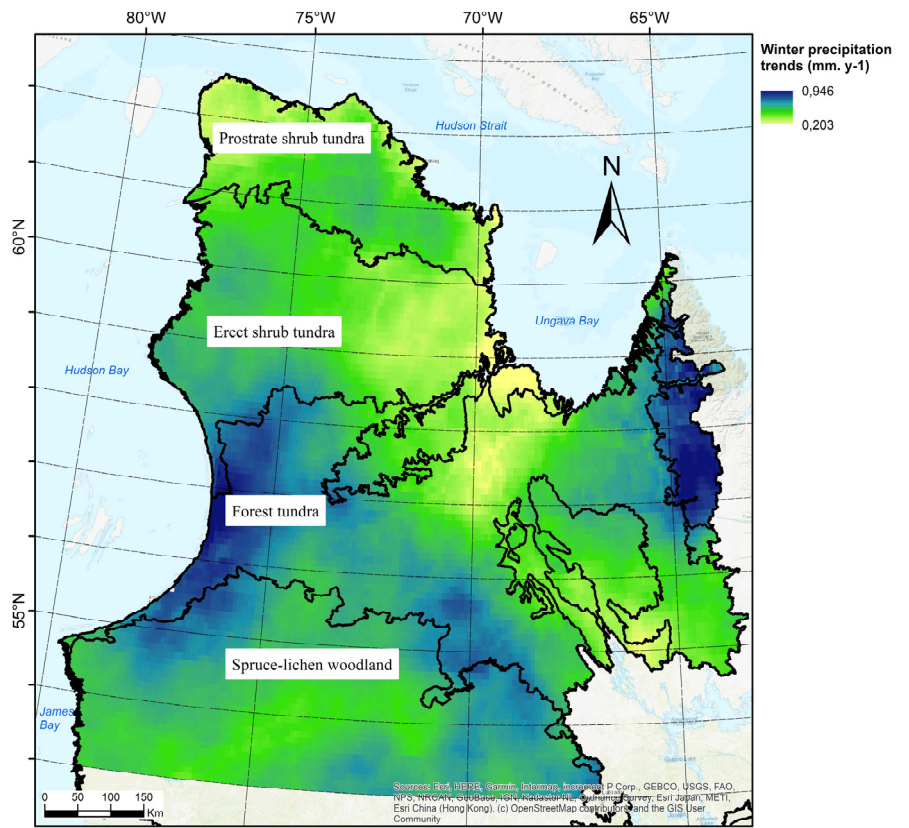


Figure S8. Winter precipitation trends for the 1992-2020 period in Nunavik.

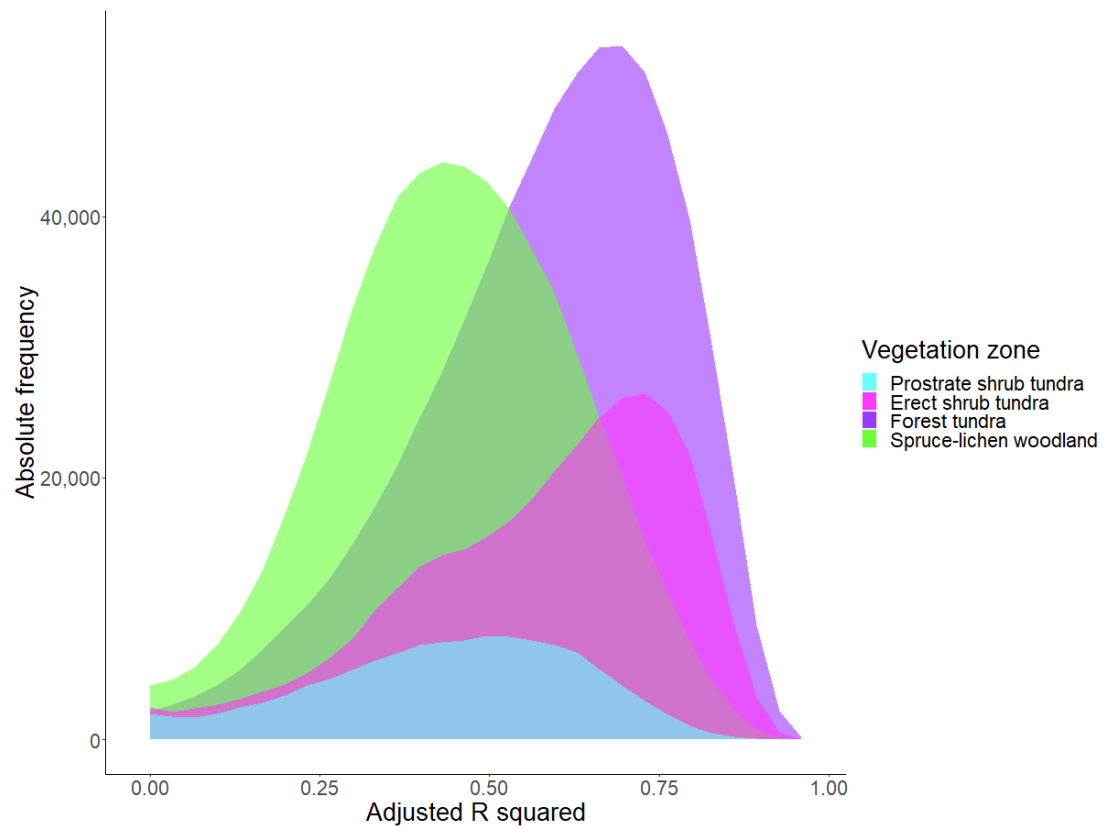


Figure S9. Frequency distribution of the adjusted R-squared values obtained from the NDVI time series regressions conducted on vegetation polygons over the period of 1992-2020. This histogram provides an overview of the goodness-of-fit of the regression models and indicate the variability in explained variance across the vegetation polygons.

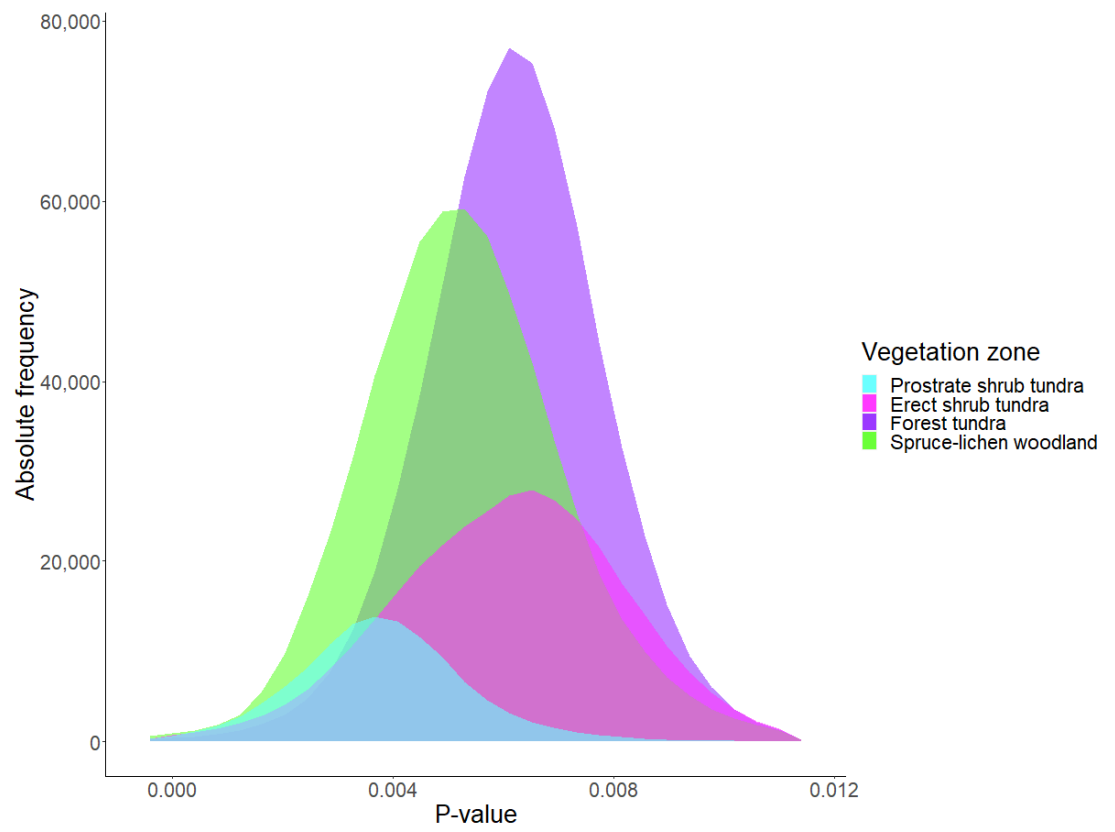


Figure S10. Frequency distribution of the p-values resulting from the NDVI time series regressions conducted on vegetation polygons over the period of 1992-2020. This histogram provides insight into the statistical significance of the regression models and help evaluate the strength of the relationships between NDVI and the vegetation polygons.

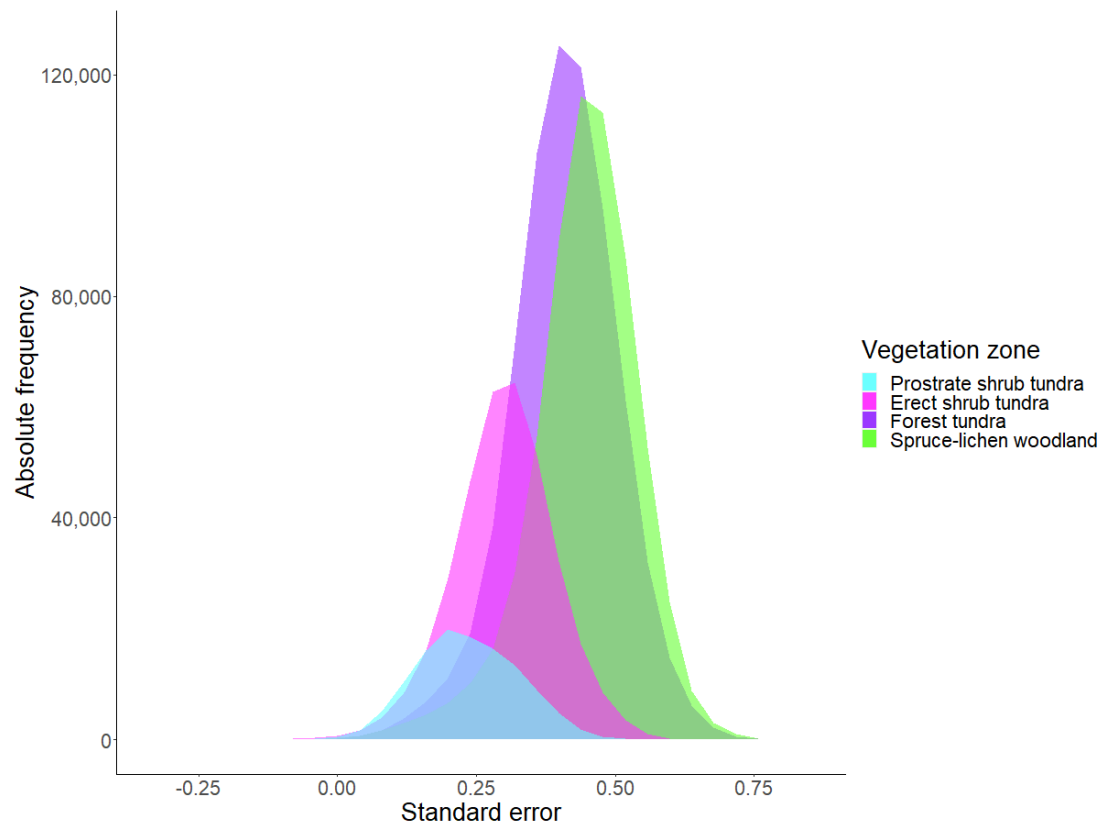


Figure S11. Frequency distribution of the standard error of regression for the NDVI time series regressions performed on vegetation polygons throughout the period of 1992-2020. This histogram offers insights into the variability and precision of the regression models' predictions, providing an assessment of the overall reliability of the regression analysis on the vegetation polygons.

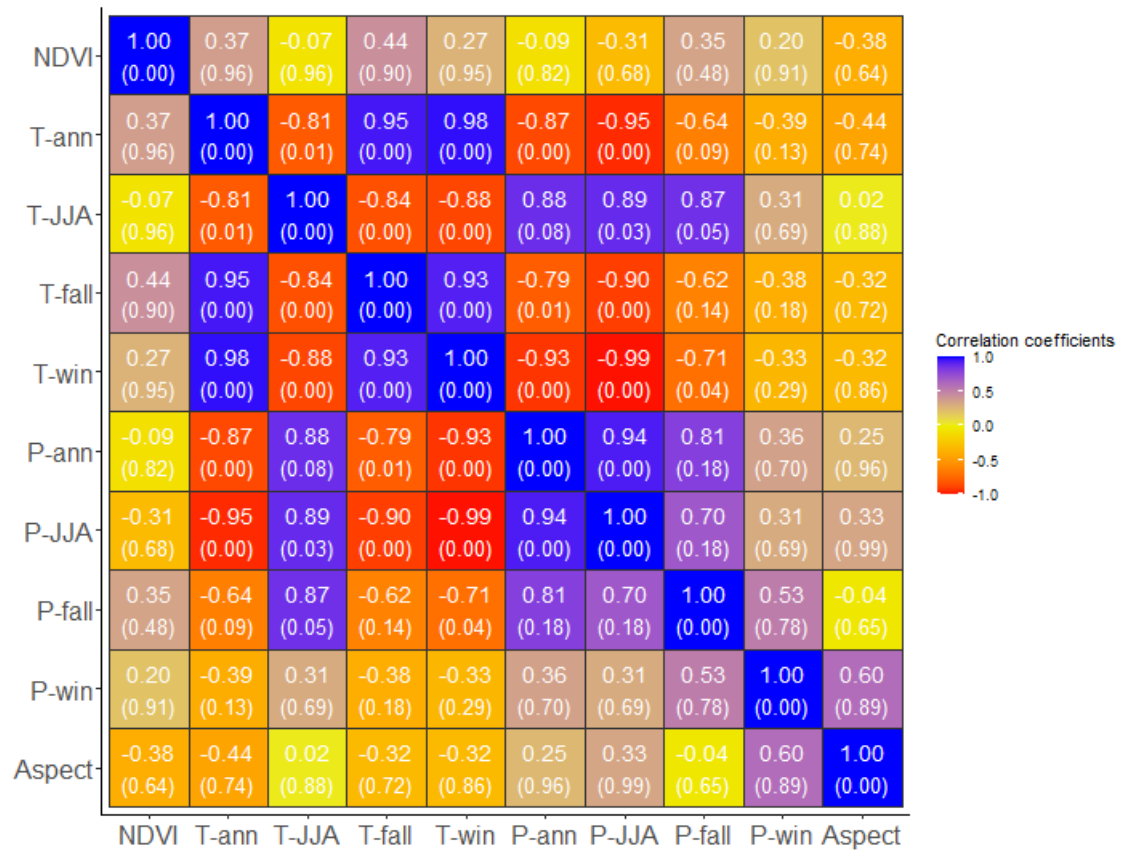


Figure S12. This figure presents the correlation matrix and Variance Inflation Factor (VIF) analysis results. The correlation matrix shows the relationships between the annual rate of change of climate variables (T and P) and the annual rate of change in NDVI for the period 1992-2020. The climate variables represent different time periods: Ann (annual), JJA (June to August), Win (December to February), and Fall (September to November). The correlation coefficients indicate the strength and direction of the relationships, while the figures in parentheses represent the p-values, providing information on the statistical significance of the correlations.

Table S2. Mean NDVI rate of increase and relative contribution to NDVI increase of cover types by vegetation zone.

Vegetation zone	Cover type	Area (km ²)	Area (%)	Mean NDVI rate of increase (NDVI/yr)	Contribution to NDVI increase (%)	Con to NDVI - Area
Prostrate shrub tundra	Bedrock	3187	0.60	0.0029	0.29	-0.3
	Open area	16548	3.14	0.0036	1.77	-1.4
	Prostrate-shrub tundra	39291	7.45	0.0039	5.37	-2.1
	Erect shrub (<30% cover)	1682	0.32	0.0051	0.32	0.0
	Erect shrub (30-70% cover)	160	0.03	0.0066	0.04	0.0
	Wetland	2599	0.49	0.0044	0.43	-0.1
	Total	63467	12.0	0.0038	8.2	-3.8
Erect shrub tundra	Bedrock	1655	0.31	0.0042	0.21	-0.1
	Open area	13603	2.58	0.0051	2.18	-0.4
	Prostrate-shrub tundra	2715	0.51	0.0044	0.38	-0.1
	Erect shrub (<30% cover)	57968	11.00	0.0062	12.64	1.6
	Erect shrub (30-70% cover)	22284	4.23	0.0067	5.58	1.4
	Erect shrub (>70% cover)	1695	0.32	0.0069	0.41	0.1
	Wetland	11363	2.16	0.0059	2.28	0.1
	Total	109628	21.1	0.0061	23.7	2.6
Forest tundra	Bedrock	630	0.12	0.0048	0.09	0.0
	Open area	13564	2.57	0.0061	2.60	0.0
	Prostrate-shrub tundra	10782	2.05	0.0056	1.76	-0.3
	Erect shrub (<30% cover)	46826	8.88	0.0066	10.65	1.8
	Erect shrub (30-70% cover)	30798	5.84	0.0066	7.07	1.2
	Erect shrub (>70% cover)	8776	1.66	0.0062	1.86	0.2
	Wetland	4823	0.91	0.0050	0.76	-0.2
	Lichen woodland	49083	9.31	0.0061	9.89	0.6
	Coniferous forest	38972	7.39	0.0060	7.67	0.3
	Total	179277	38.7	0.0062	42.4	3.6
Spruce-lichen woodland	Bedrock	182	0.03	0.0030	0.02	0.0
	Open area	287	0.05	0.0053	0.05	0.0
	Erect shrub (<30% cover)	5554	1.05	0.0050	0.95	-0.1
	Erect shrub (30-70% cover)	1116	0.21	0.0057	0.22	0.0
	Erect shrub (>70% cover)	977	0.19	0.0054	0.18	0.0
	Wetland	8776	1.66	0.0043	1.19	-0.5
	Lichen woodland	71851	13.63	0.0053	12.45	-1.2
	Coniferous forest	59408	11.27	0.0055	10.68	-0.6
	Total	147682	28.1	0.0053	25.7	-2.4

Table S3. Interaction between surficial deposits and cover types. The symbol “+” stands for deposits which has an average annual rate of change in NDVI higher than the average annual rate of change in NDVI for all surficial deposits for one given cover class. The symbol “-” stands for deposits which has an average annual rate of change in NDVI lower than the average annual rate of change in NDVI for all surficial deposits for one given cover class. The number at the last line of the table represents the sum of the “+” symbols, indicating the number of cover types that have an annual rate of change in NDVI higher than all surficial deposits for a specific deposit.

	Lacustrine deposits	Fluvial de- posits	Glacial and glacioflu- vial depos- its	Slope and weathering	Anthropo- genic de- posits	Marine de- posits	Organic deposits	Bedrocks deposits	Coastal marine de- posits
Bedrock	+	+	-	-	+	-	+	-	-
Open area	+	+	+	+	-	+	+	-	-
Prostrate-shrub tundra	+	+	+	-	-	+	-	-	-
Erect shrub (<30% cover)	+	+	+	+	-	+	-	+	-
Erect shrub (30- 70% cover)	+	+	+	+	-	-	-	-	-
Erect shrub (>70% cover)	+	-	-	+	+	-	-	-	-
Wetland	+	+	+	-	-	+	-	-	-
Lichen woo- dland	+	+	+	+	+	-	-	-	-
Coniferous fo- rest	+	+	+	+	+	-	-	+	-
	9	8	7	6	4	4	2	2	0

Table S4. Most plausible models to explain the annual rate of change in NDVI in each of the vegetation zone in Nunavik. T_{ann}: Annual temperature; T_{jja}: Summer temperature; T_{fall}: Fall temperature; T_{win}: Winter temperature; P_{ann}: Annual precipitation; P_{jja}: Summer precipitation; P_{fall}: Fall precipitation; P_{win}: Winter precipitation; Surf. Dep: Surficial deposits. Green crosses indicate a positive and significant relationship between the climate variable and the annual rates of change in NDVI in the model, while red crosses indicate negative and significant relationship.

	T _{ann}	T _{jja}	T _{fall}	T _{win}	P _{ann}	P _{jja}	P _{fall}	P _{win}	Aspect	Surf. Dep * cover class	AIC	ΔAIC	R ²
Prostrate shrub tundra		X						X		X	-1214382	-	0.142
		X					X			X	-1214364	18	0.142
										X	-1214118	264	0.111
	X									X	-1212560	1822	0.121
		X						X		X	-1212456	1926	0.128
					X					X	-1211781	2601	0.118
Best climatic model		X					X	X	N.A.	N.A.	11435	0.055	- 120294 7
Erect shrub tundra										X	-3373883	-	0.109
		X					X	X		X	-3372410	1472	0.133
		X						X		X	-3372272	1610	0.133
								X		X	-3371068	2814	0.130
						X				X	-3368197	5685	0.123
		X					X			X	-3365362	8521	0.115
Best climatic model		X					X	X	N.A.	N.A.	-3335093	38790	0.035
Forest tundra										X	-7269416	-	0.074
	X									X	-7268908	507	0.082
					X					X	-7265938	3477	0.078
		X						X		X	-7263811	5604	0.076
		X						X		X	-7263716	5699	0.075
								X		X	-7263232	6183	0.075
Best climatic model		X					X	X	N.A.	N.A.	-7211128	58287	0.005
Spruce-lichen woodland		X					X	X		X	-6217164	-	0.121
		X					X			X	-6215901	1263	0.119
							X			X	-6215041	2122	0.118
		X					X	X			-6210211	6953	0.122
		X					X				-6208888	8275	0.120
							X		X	X	-6208051	9113	0.119
Best climatic model		X					X	X	N.A.	N.A.	-6174737	42426	0.059