Supporting Information

Table S1. The total number of 2 meters pixels in each of the six sites as well as the number of pixels remaining after filtering for reflectance and estimated leaf trait data. Pixels were removed using 1) a shade mask, 2) a normalized difference vegetation index (NDVI) layer with a threshold of 0.7, and 3) a top of canopy height (TCH) layer with a threshold of 2 meters. Columns four-six represent the percent of pixels masked by each layer, calculated individually.

			% Pixels Masked by each Layer Individually			
Site	Total Pixels	Remaining Pixels (Reflectance)	Shade	NDVI	Height	Remaining Pixels (Estimated Leaf Trait)
Young-Low	23373	12997	36.8	6.1	1.1	7760
Young-High	27381	18402	29.7	0.8	0.5	7474
Middle-Low	131326	71453	37.3	0.2	0.5	52424
Middle-High	121634	81831	31.3	4.1	3.0	52420
Old-Low	20282	18918	5.0	0.0	1.9	13642
Old-High	25566	24604	3.5	0.0	2.4	23204

Table S2. Principal Component (PC) loadings for the first 16 PCs of the PCA applied to reflectance data of all six sites (referred to as the global PCA).

PC	Loading	PC	Loading
1	0.87970	9	0.00100
2	0.07202	10	0.00075
3	0.01969	11	0.00055
4	0.01366	12	0.00040
5	0.00373	13	0.00025
6	0.00226	14	0.00022
7	0.00164	15	0.00018
8	0.00140	16	0.00018

Table S3. Euclidean distance between the site centroids in principal component (PC) space. Distances were calculated using (top triangle) reflectance PCs 1-16 and (bottom triangle) canopy trait PCs. Site acronyms indicate soil substrate age (Y-young <200-750; M-medium 5,000-64,000; O-old 260,000-500,000) and elevation (L-low 200-900 m; H-high 1,100-1,500 m).

	YL	YH	ML	MH	OL	OH
YL	0	91	198	139	74	123
YH	77	0	148	97	126	70
ML	102	126	0	63	255	86
MH	120	74	102	0	199	38
OL	20	74	118	126	0	177
OH	58	41	89	64	63	0

Table S4. Mean and standard deviation (std) for each site of all 15 chemistries estimated from reflectance spectra. Site acronyms indicate soil substrate age (Y-young <200-750; M-medium 5,000-64,000; O-old 260,000-500,000) and elevation (L-low 200-900 m; H-high 1,100-1,500 m)

	Calcium		**Carotenoids**		**Chlorophyll**	
	Mean	Std	Mean	Std	Mean	Std
YL	1.37	1.25	0.57	0.25	2.53	1.43
YH	2.67	1.18	0.25	0.09	0.80	0.37
ML	1.03	1.25	0.85	0.43	3.60	1.93
MH	0.59	0.68	0.44	0.14	1.71	0.65
OL	3.66	1.48	0.27	0.05	0.90	0.24
OH	2.59	1.17	0.37	0.10	1.39	0.53
	Iron		**LMA**		**Nitrogen**	
	Mean	Std	Mean	Std	Mean	Std
YL	6.46	6.03	199.78	47.29	1.03	0.37
YH	3.38	3.57	271.15	42.35	0.73	0.19
ML	9.96	6.85	198.56	46.90	1.79	0.77
MH	6.42	5.52	289.11	71.22	1.13	0.32
OL	1.10	1.16	196.59	22.58	0.54	0.08
OH	9.59	6.04	247.87	28.38	0.85	0.18
	Phosphorus		**Soluble Carbon**		**Total Carbon**	
	Mean	Std	Mean	Std	Mean	Std
YL	0.19	0.04	43.12	10.40	40.10	10.24
YH	0.09	0.02	48.63	8.52	29.38	6.80
ML	0.21	0.07	67.99	13.75	57.70	10.91
MH	0.25	0.08	69.28	16.23	50.06	9.05
OL	0.05	0.01	14.02	11.09	25.61	7.02
OH	0.21	0.04	53.10	9.12	43.37	7.56

Figure S1. Filtered red, green, and blue (true color) composites of the six sites. Shaded pixels, pixels with canopy height less than 2 m, and pixels with NDVI less than 0.7 were removed from each image.

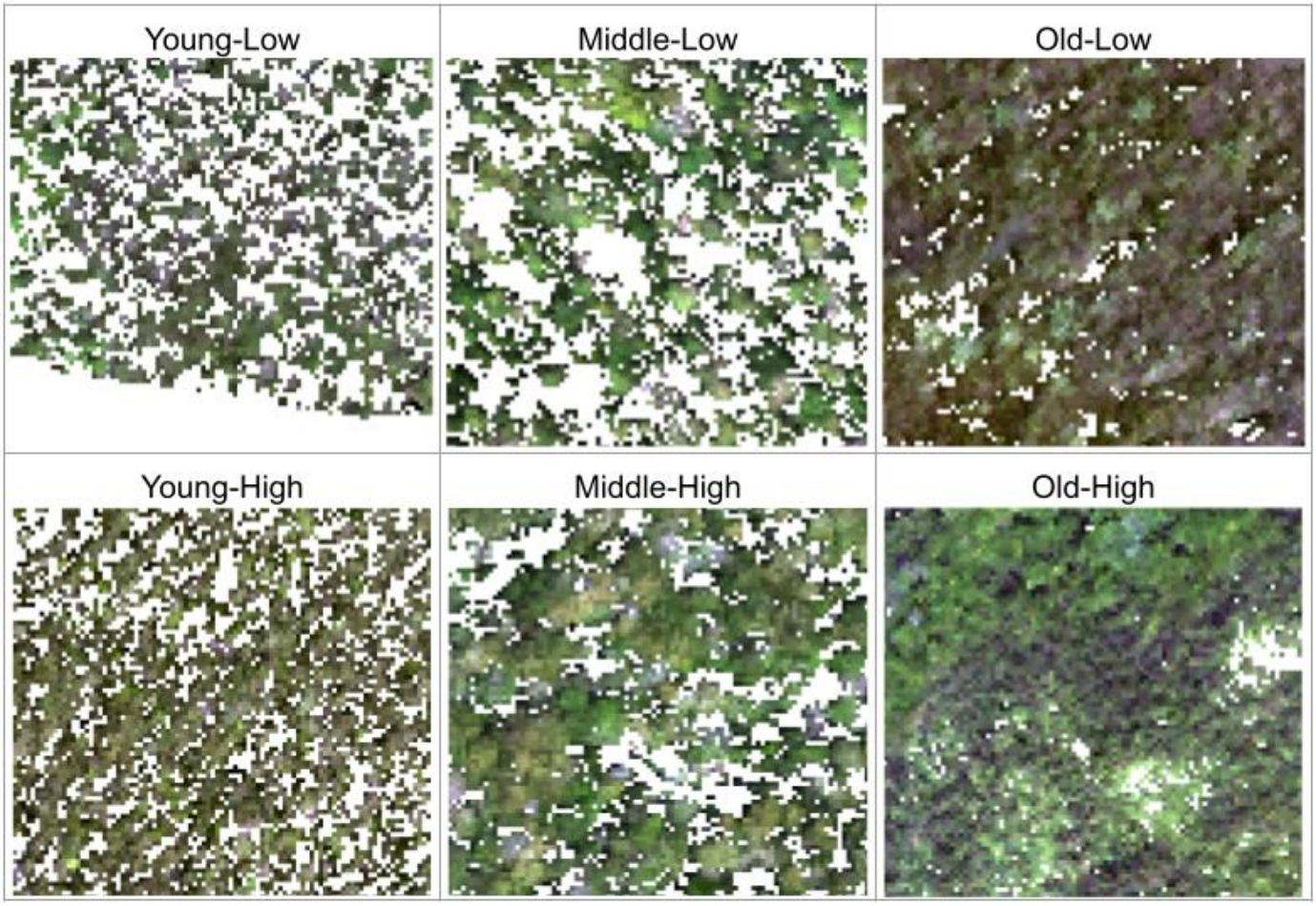


Figure S2. Mean and standard deviation (grey fill) brightness normalized reflectance from Figure 3b with each site separated for clarity.

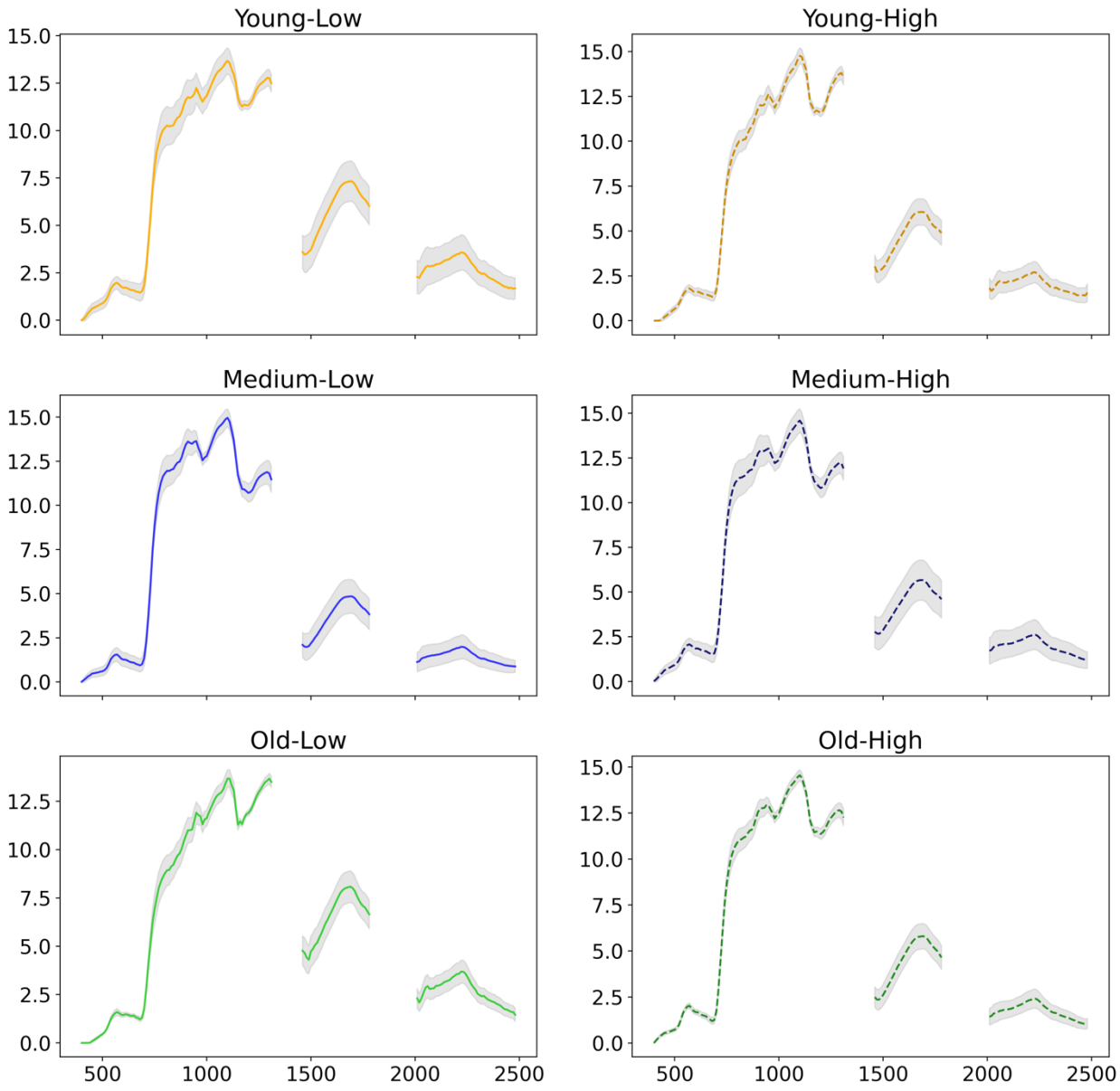


Figure S3. Kernel density estimates of canopy traits

