

Table S1. Riegl VUX-1 specification

Parameter	Value
Scanning pattern	Line
Height AGL, m	110
Pulse Rate (maximum), kHz	550
Collection speed kn	65
Scan Rate (maximum), lps	105
Field of View, deg	55
Laser beam divergence, mrad	0.5
Angular step width, deg	0.0687
Point density med	17.9

Table S2. Summary of the LIDAR-derived metrics computed including abbreviations and categories

Category	LiDAR metric	Acronym
Height	Mean	Elev. Mean
	Variance	Elev.Var
	Standard deviation	Elev. Sd
	Coefficient of variation	Elev. Cv
	Mode	Elev. Mo
	Maximum	Elev. Max
	10th percentile	Elev.P10
	20th percentile	Elev.P20
	25th percentile	Elev.P25
	30th percentile	Elev.P30
	40th percentile	Elev.P40
	50th percentile	Elev.P50
	60th percentile	Elev.P60
	70th percentile	Elev.P70
	75th percentile	Elev.P75
	80th percentile	Elev.P80
	85th percentile	Elev.P85
	90th percentile	Elev.P90
	95th percentile	Elev.P95
	99th percentile	Elev.P99
	Height kurtosis	Elev. Kur
	Height skewness	Elev. Ske
	Elev.SQRT.mean.SQ	Elev.SQM
	(All returns above height break) / (Total first returns) * 100	ARA2/TFR
	(All returns above mode) / (Total first returns) * 100	ARAMO/TFR
	Percentage first returns above mode	PFRAMO
	Percentage first returns above mean	PFRAM
	All returns above height break	ARA2
	All returns above mode	ARAMO
Cover	Canopy relief ratio	CRR
	Canopy Cover (Percentage of first return above 1.30m)	CC

Table S3. Models for estimating total volume (TV, m³ ha⁻¹), total above ground biomass (AGB, Mg ha⁻¹) and Assmann's dominant height (Ho, m) of *Eucalyptus grandis* and *Eucalyptus dunnii* in Uruguay using LIDAR metrics. R²-adj= adjusted coefficient of determination, RMSE=root mean squared error, nRMSE=normalized root mean squared error, AIC= Akaike information criterion

Variable	Models	R ² -adj	RMSE	nRMSE (%)	AIC	
TV (m ³ ha ⁻¹)	<i>E. grandis</i>	-71.51 +14.58*Elev.P70	0.91	20.48	13.65	679.50
		-74.43 +14.36*Elev.P75	0.88	23.20	15.47	692.30
		-89.58 +14.16*Elev.P90	0.86	25.36	16.91	703.63
		-110.02 +14.12*Elev.P99	0.85	26.05	17.36	706.09
		-131.75 +14.46* Elev.SQM	0.82	28.81	19.21	724.98
	<i>E. dunnii</i>	-82.16 +15.52*Elev.P75	0.92	18.80	12.95	653.89
		-75.61 +15.47*Elev.P70	0.90	19.96	13.07	661.80
		-106.23 +15.53*Elev.P90	0.89	21.15	13.67	670.32
		-116.31 +14.77*Elev.P99	0.87	22.84	14.76	675.62
		-41.73 +14.17*Elev.P60	0.87	23.09	14.92	679.40
		21.58 +2.84*Elev.var	0.87	23.59	15.25	685.28
AGB (Mg ha ⁻¹)	<i>E. grandis</i>	-0.111 +0.044*Elev.P70	0.86	82.30	12.52	-169.63
		-0.109 +0.044*Elev.P75	0.82	91.72	14.03	-154.64
		-0.093 +0.056* Elev.SQM	0.79	95.25	14.22	-145.19
		-0.146 +0.042*Elev.P90	0.78	96.48	14.69	-144.23
		-0.037 +0.043*Elev.P60	0.77	100.2	15.31	-143.58
		-0.203 +0.041*Elev.P99	0.77	101.3	15.34	-140.85
	<i>E. dunnii</i>	-0.105+0.052*Elev.P75	0.85	84.23	12.35	-161.83
		-0.075+0.051*Elev.P70	0.83	90.73	13.12	-151.73
		-0.185+0.051*Elev.P90	0.81	93.57	13.68	-142.9
		-0.218+0.049* Elev.P99	0.79	101.3	14.65	-139.29
Ho (m)	<i>E. grandis</i>	1.726 +0.973*Elev.P99	0.98	0.67	3.13	162.57
		3.118 +0.976*Elev.P90	0.98	0.68	3.19	165.57
		4.262 +0.984*Elev.P75	0.97	0.80	3.73	187.24
		4.703 +0.985*Elev.P70	0.94	1.07	4.99	228.39
		5.913 +0.983*Elev.P60	0.92	1.25	5.85	254.52
		5.091+1.25* Elev.SQM	0.91	1.35	6.32	264.98
		<i>E. dunnii</i>	1.376 +1.086*Elev.P90	0.96	0.80	4.07
	4.036 +1.048*Elev.P70		0.94	1.00	5.10	218.30
	5.705 +1.006*Elev.P60		0.94	1.05	5.36	223.00
	4.832 +1.245*Elev.SQM		0.92	1.16	5.93	238.48
	10.85 +0.187*Elev.Var		0.92	1.15	5.88	239.18
	3.932 +1.027*Elev.P75		0.92	1.20	6.14	247.90

Table S4. Selected Normalized variance (Vnorm), normalized Moran's Index (MInorm) and global scores (GS) for all spatial radius (SR), range radius (RR) and minimum size of the region segmentations (MR), with theirs resulting number of segments. OTB Mean Shift segmentation approach for TV

Site	SR	RR	MR	TV band			H0 band			Two-band average			Number segments
				Vnorm	MInorm	GS	Vnorm	MInorm	GS	Vnorm	MInorm	GS	
B1A	10	4	20	0,098	0,911	1,009	0,098	0,823	0,921	0,098	0,823	0,921	275
	12	6	35	0,596	0,921	1,517	0,594	0,854	1,448	0,594	0,854	1,448	160
	14	4	40	0,511	0,504	1,015	0,496	0,902	1,399	0,496	0,902	1,399	197
	14	8	20	0,504	0,838	1,342	0,514	0,693	1,207	0,514	0,693	1,207	152
	8	4	20	0,000	0,952	0,952	0,000	0,905	0,905	0,000	0,905	0,905	287
B1B	10	4	30	0,187	0,797	0,984	0,167	0,577	0,743	0,167	0,577	0,743	60
	12	6	20	0,434	0,736	1,170	0,416	0,427	0,843	0,416	0,427	0,843	48
	12	8	40	0,909	0,687	1,596	0,862	0,530	1,392	0,862	0,530	1,392	24
	14	8	40	0,919	0,726	1,645	0,834	0,680	1,513	0,834	0,680	1,513	25
	8	4	20	0,023	0,547	0,569	0,014	0,968	0,982	0,014	0,968	0,982	86
B2A	10	4	20	0,035	0,934	0,969	0,028	0,852	0,880	0,028	0,852	0,880	459
	12	4	40	0,522	0,975	1,497	0,558	0,938	1,495	0,558	0,938	1,495	286
	14	4	20	0,000	0,959	0,959	0,000	0,913	0,913	0,000	0,913	0,913	432
	8	4	40	0,443	0,983	1,426	0,412	0,965	1,377	0,412	0,965	1,377	297
	8	8	40	0,720	0,984	1,704	0,726	0,971	1,697	0,726	0,971	1,697	229
B2B	10	8	40	0,954	0,594	1,548	0,972	0,019	0,991	0,972	0,019	0,991	57
	12	4	20	0,047	0,958	1,005	0,026	0,888	0,913	0,026	0,888	0,913	88
	14	8	35	1,000	0,597	1,597	1,000	0,024	1,024	1,000	0,024	1,024	55
	14	8	40	1,000	0,597	1,597	1,000	0,024	1,024	1,000	0,024	1,024	55
	8	6	20	0,480	0,799	1,279	0,515	0,507	1,022	0,515	0,507	1,022	66
B3	10	4	20	0,000	1,000	1,000	0,000	0,024	0,024	0,000	0,024	0,024	411
	10	8	20	0,552	0,797	1,349	0,563	0,837	1,399	0,563	0,837	1,399	196
	12	6	35	0,503	0,681	1,185	0,542	0,681	1,223	0,542	0,681	1,223	185
	14	4	40	0,483	0,772	1,255	0,502	0,794	1,296	0,502	0,794	1,296	210
	8	8	40	0,677	0,625	1,302	0,709	0,644	1,353	0,709	0,644	1,353	140

Table S5. Selected Normalized variance (Vnorm), normalized Moran's Index (MInorm) and global scores (GS) for all spatial radius (SR), range radius (RR) and minimum size of the region segmentations (MR), with theirs resulting number of segments. OTB Mean Shift segmentation approach for AGB

Site	SR	RR	MR	AGB band			H0 band			Two-band average			Number segments
				Vnorm	MInorm	GS	Vnorm	MInorm	GS	Vnorm	MInorm	GS	
B1A	10	4	20	0,030	0,950	0,980	0,047	0,003	0,051	0,039	0,477	0,515	311
	12	6	35	0,595	0,954	1,549	0,674	0,920	1,594	0,635	0,937	1,572	187
	14	6	20	0,292	0,961	1,252	0,403	0,948	1,352	0,347	0,955	1,302	228
	8	4	35	0,337	0,976	1,313	0,336	0,968	1,304	0,336	0,972	1,308	254
	8	6	30	0,509	0,947	1,456	0,529	0,909	1,438	0,519	0,928	1,447	214
B1B	10	4	30	0,349	0,694	1,042	0,171	0,000	0,171	0,260	0,347	0,607	71
	12	8	40	0,955	0,748	1,703	0,920	0,429	1,348	0,937	0,588	1,526	34
	14	4	30	0,295	0,618	0,913	0,235	0,000	0,235	0,265	0,309	0,574	68
	8	4	20	0,000	0,681	0,681	0,000	0,483	0,483	0,000	0,582	0,582	97
	8	4	30	0,288	0,733	1,021	0,136	0,534	0,669	0,212	0,633	0,845	80
B2A	10	4	20	0,024	0,973	0,997	0,019	0,000	0,019	0,021	0,487	0,508	436
	12	4	40	0,555	0,991	1,545	0,516	0,985	1,501	0,535	0,988	1,523	292
	12	8	40	0,956	0,953	1,909	0,956	0,876	1,833	0,956	0,915	1,871	213
	8	4	20	0,013	0,922	0,935	0,000	0,855	0,855	0,007	0,889	0,895	447
	8	4	40	0,485	0,975	1,459	0,473	0,955	1,427	0,479	0,965	1,443	299
B2B	10	8	40	0,817	0,689	1,506	0,751	0,270	1,021	0,784	0,479	1,263	59
	12	4	20	0,088	1,000	1,088	0,075	1,000	1,075	0,081	1,000	1,081	87
	14	8	40	1,000	0,653	1,653	1,000	0,225	1,225	1,000	0,439	1,439	56
	8	4	30	0,353	0,916	1,269	0,280	0,850	1,131	0,317	0,883	1,200	73
	8	8	35	0,913	0,673	1,586	0,874	0,269	1,143	0,894	0,471	1,365	60
B3	10	4	20	0,046	0,896	0,943	0,008	0,901	0,909	0,027	0,899	0,926	366
	10	8	35	0,649	0,756	1,405	0,767	0,660	1,427	0,708	0,708	1,416	147
	12	6	35	0,513	0,605	1,118	0,496	0,558	1,054	0,505	0,581	1,086	167
	14	4	40	0,548	0,756	1,304	0,506	0,760	1,266	0,527	0,758	1,285	200
	8	6	30	0,378	0,019	0,397	0,307	0,725	1,033	0,343	0,372	0,715	210

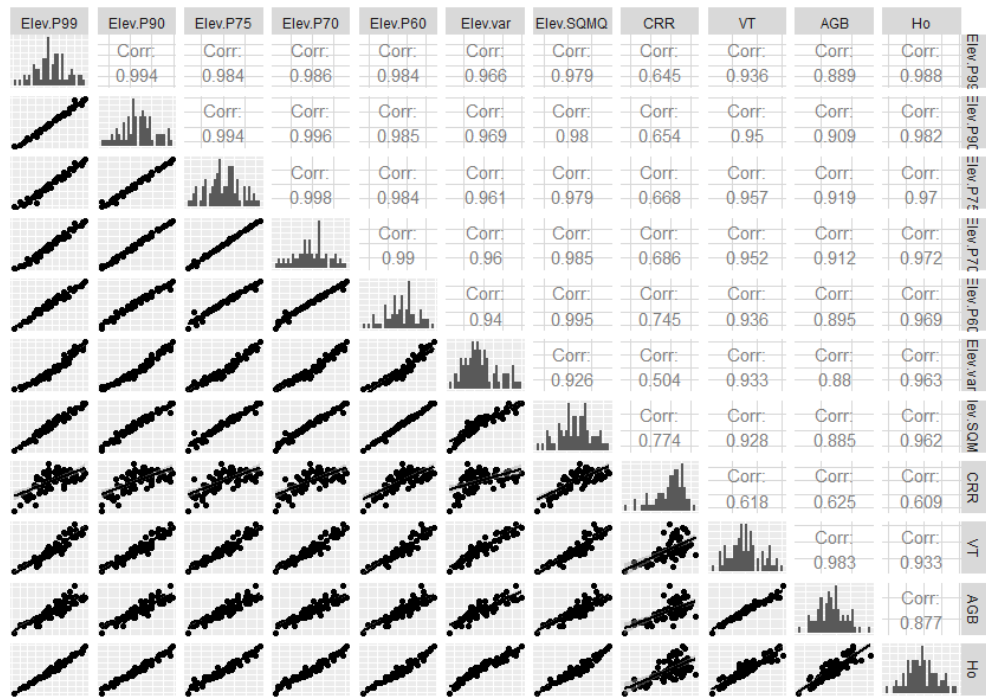


Figure S1. Selected LIDAR-derived metrics and its correlation with, total volume (TV), above ground biomass (AGB) and Assmann dominant height (H_0) to *Eucalyptus dunnii*

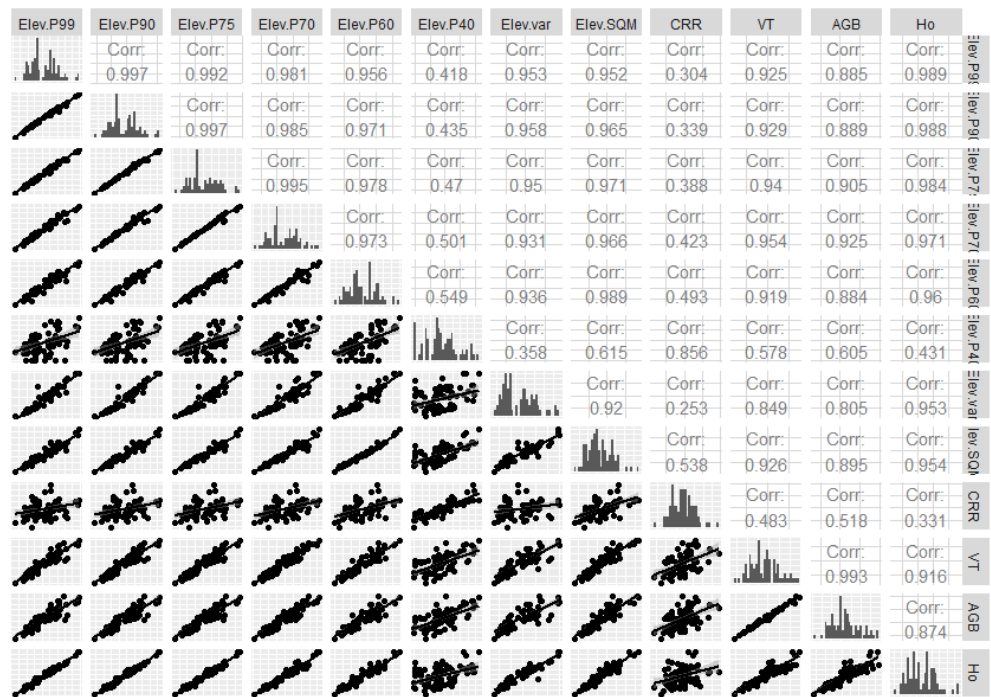


Figure S2. Selected LIDAR-derived metrics and its correlation with, total volume (TV), above ground biomass (AGB) and Assmann dominant height (Ho) to *Eucalyptus grandis*