Supplementary Material

Supplementary Tables

Table S1. Texture variables formulation employed in the study.

Texture variable	Equation
Angular Second Moment (*SEC*)	$SEC = \sum_i \sum_j \{p(i,j)\}^2$
Contrast (*CON*)	$CON = \sum_{\substack{n=0 \\ \lvert i-j \rvert = n}}^{N_{g-1}} n^2 \left\{ \sum_{i=1}^{N_g} \sum_{j=1}^{N_g} p(i,j) \right\}$
Correlation (COR)	$COR = \frac{\sum_i \sum_j (ij) p(i_1 j) - \mu_x \mu_y}{\sigma_x \sigma_y}$
Dissimilarity (*DIS*)	$DIS = \sum_{i,j=0}^{N-1} i \, P_{i,j} \, [i-j]$
Energy (*ENE*)	$ENE = \sum_{i,j} \{P(i,j)\}^2$
Entropy (*ENT*)	$ENT = -\sum_i \sum_j p(i,j) log\big(p(i,j)\big)$
Homogeneity (*HOM*)	$HOM = \sum_{i,j=0}^{N-1} i \frac{P_{i,j}}{1+(i-j)^2}$
Mean (*MEN*)	$ME = \sum_{i,j=1}^{N_g} i \cdot p_{(i,j)}$
	$f_6 = \sum_{i=2}^{2N_g} i \, p_{x+y}(i)$
Standard Deviation (*STD*)	$STD = \sqrt{\sum_{i,j=1}^{N_g} (i-\mu)^2 \, p(i,j)}$

where, p(i,j); (i,j)th entry in a normalized gray-tone spatial-dependence matrix, = P(i,j)/R; px(i) ith entry in the marginal-probability matrix obtained by summing the rows of p(i,j) ∑jNg P(i,j).

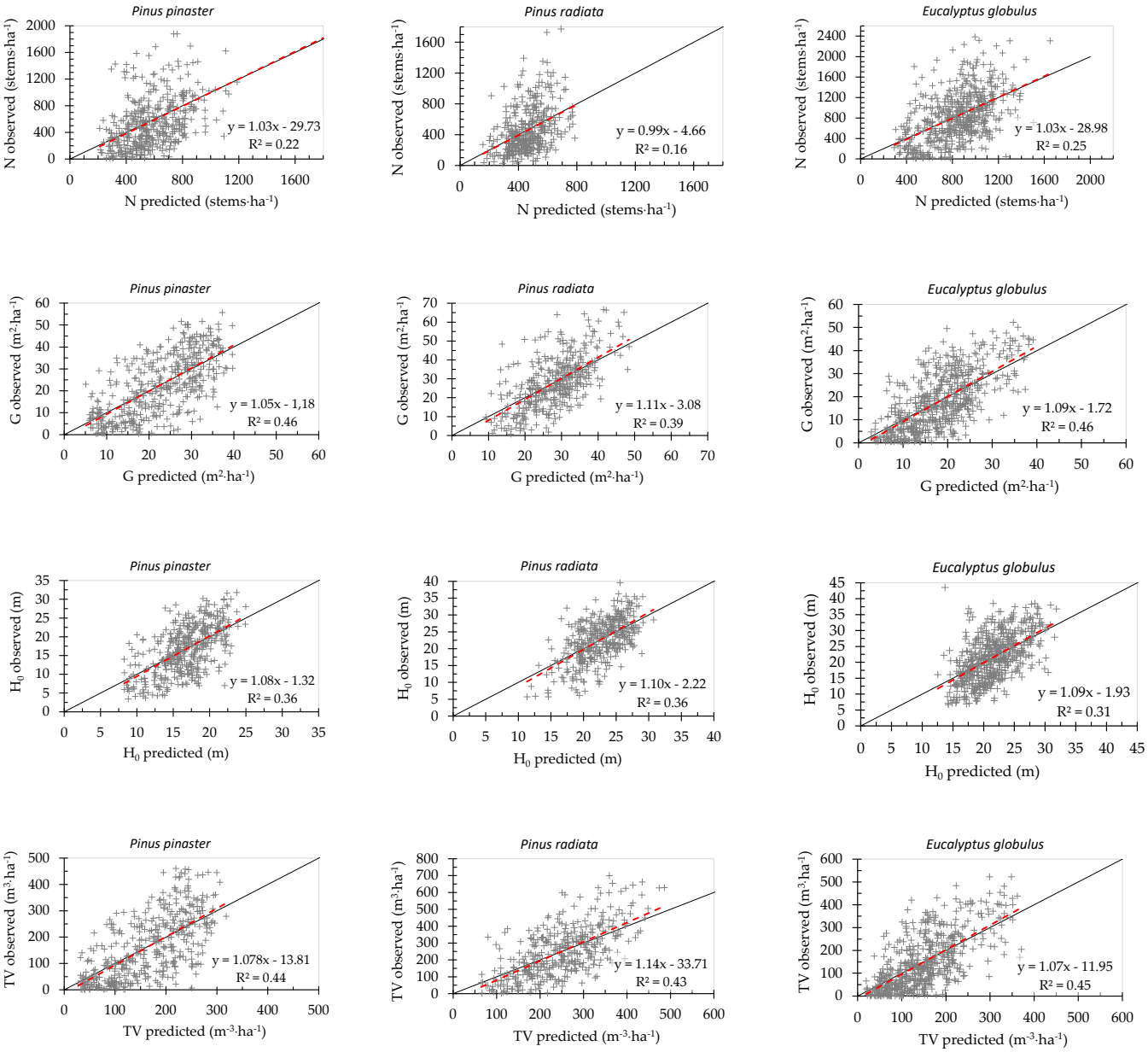
Table S2. Terrain variables formulation employed in the study.

Terrain variable	Equation
Aspect (*ASP*)	$T\theta = \arctan\left(\frac{-H}{-G}\right)$
Aspect/Slope ratio (*ASR*)	$G = bo + Bs \, cos(a-\theta) + b_3 s$
Curvature (*CU*)	$C_x = C_w - C\phi$
Elevation (*ELV*)	$ELV = Z(x,y)$

Heat load index (*HLI*)	$HLI = \frac{1 - cos(\theta - 45)}{2}$
Plan curvature (*PLC*)	$C_w = 2\frac{DH^2 + EG^2 - FGH}{G^2 + H^2}$
Profile curvature (*PFC*)	$C\phi = 2\frac{DG^2 + EH^2 - FGH}{G^2 + H^2}$
Slope (*SLP*)	$s = arctan(\sqrt{p2 + q2})$
Wetness Index (*WI*)	$WI = \ln\left(\frac{A_s}{\tan B}\right)$

where, p and q, are the components of the gradient vector of slope; Z, elevation; R, point radio altitude units; As, drainage area specified; tan B, local slope angle; D, F, G and H were derived according to the equation of PLC; θ, Aspect in degrees east of north; G, growt response; bo, constant term or sum of the predictor effects in the regression; and Bs and b3 are coefficients according to the equation of ASR; a, azimuth in degress from north; s, slope in percent/100.

Supplementary Figures and Captions.



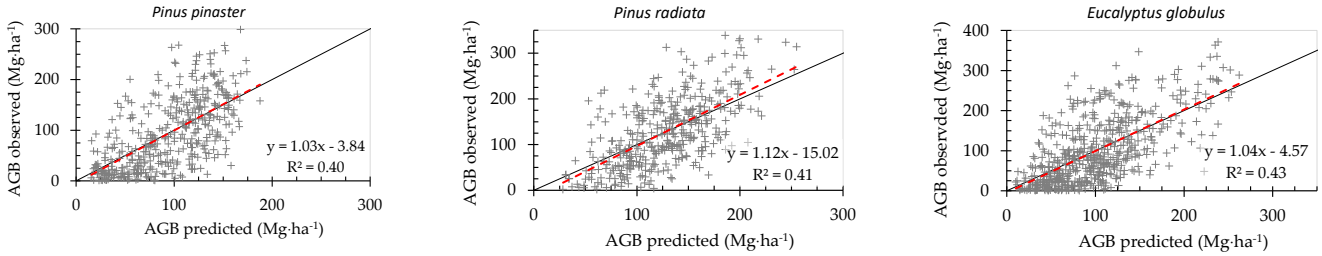


Figure S1. Scatter plots of the observed vs. predicted values after 10 repeated 10-fold cross-validation (100 model runs). The dashed red line represents the linear model fitted to the scatter plot, and the solid black line represents the line of slope equal to 1. N = number of stems per hectare, G = basal area, H0 = dominant height, TV = Total over bark volume, AGB = Total aboveground biomass.

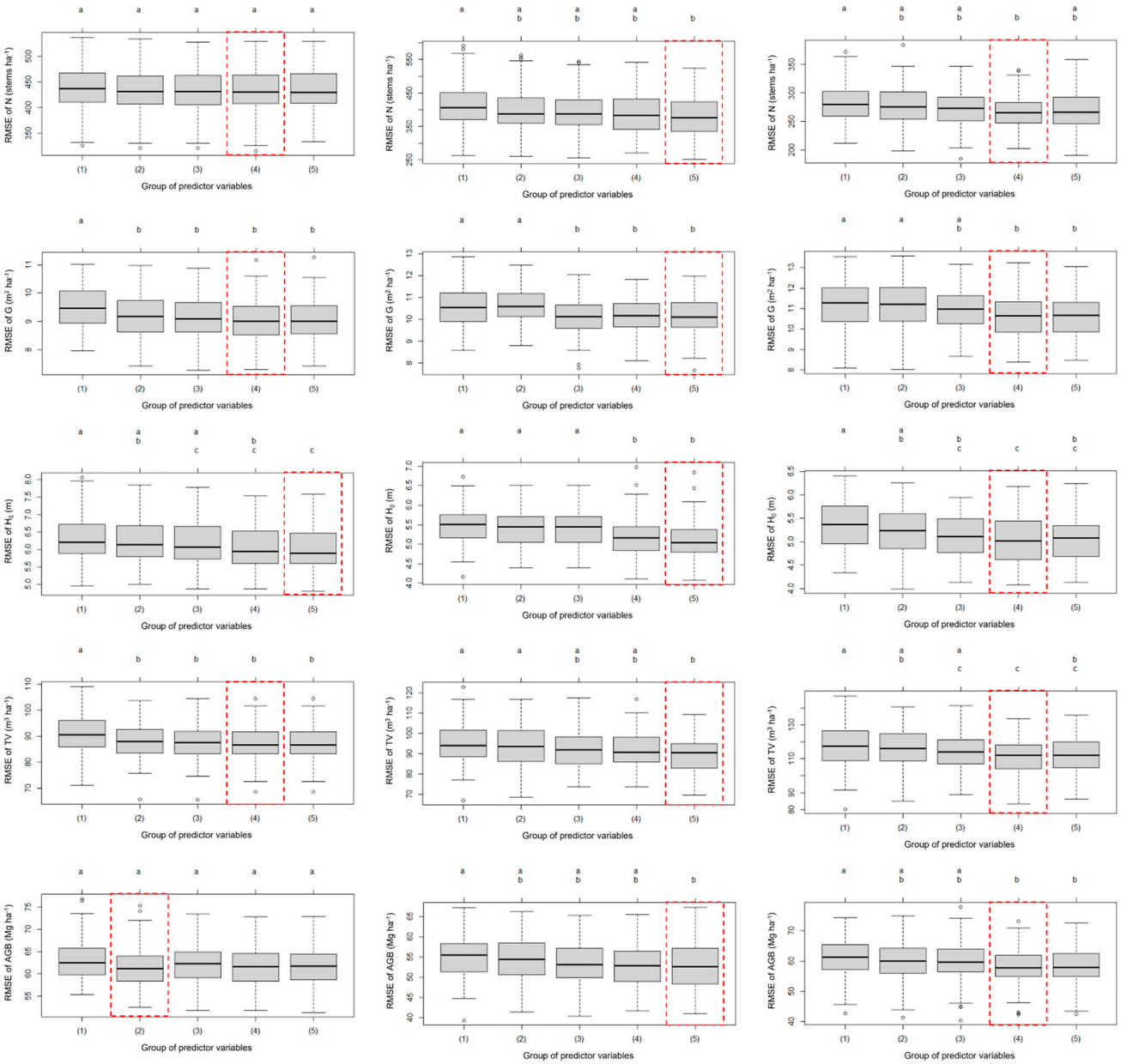


Figure S2. Results of the Tukey HSD multiple comparisons test for RMSE of the five forest predictor variables for the three different species (Pinus pinaster, left column; Pinus radiata, centre column; and Eucalyptus globulus, right column) and the five groups of independent variables considered. The same letter indicates that the values are not significantly different. Different letters indicate that the values are significantly different

($p \leq 0.05$). (1) = Spectral bands; (2) = Spectral bands + spectral dices; (3) = Spectral bands + spectral indices + texture variables; (4) = Spectral bands + spectral indices + texture variables + terrain variables; (5) = Spectral bands + spectral indices + texture variables + terrain variables + climatic variables; *N*= Number of stems per hectare; *G* = Basal Area; H_0 = Dominant height; *TV* = Total over bark volume; *AGB* = Total aboveground biomass. The box-plot inserted in a red-dashed line rectangle correspond to the data group selected as the best option for each species.