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Supplement of

Wood density variation in European forest species: drivers and implications for multiscale biomass and carbon assessment in France

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Supplementary Figures

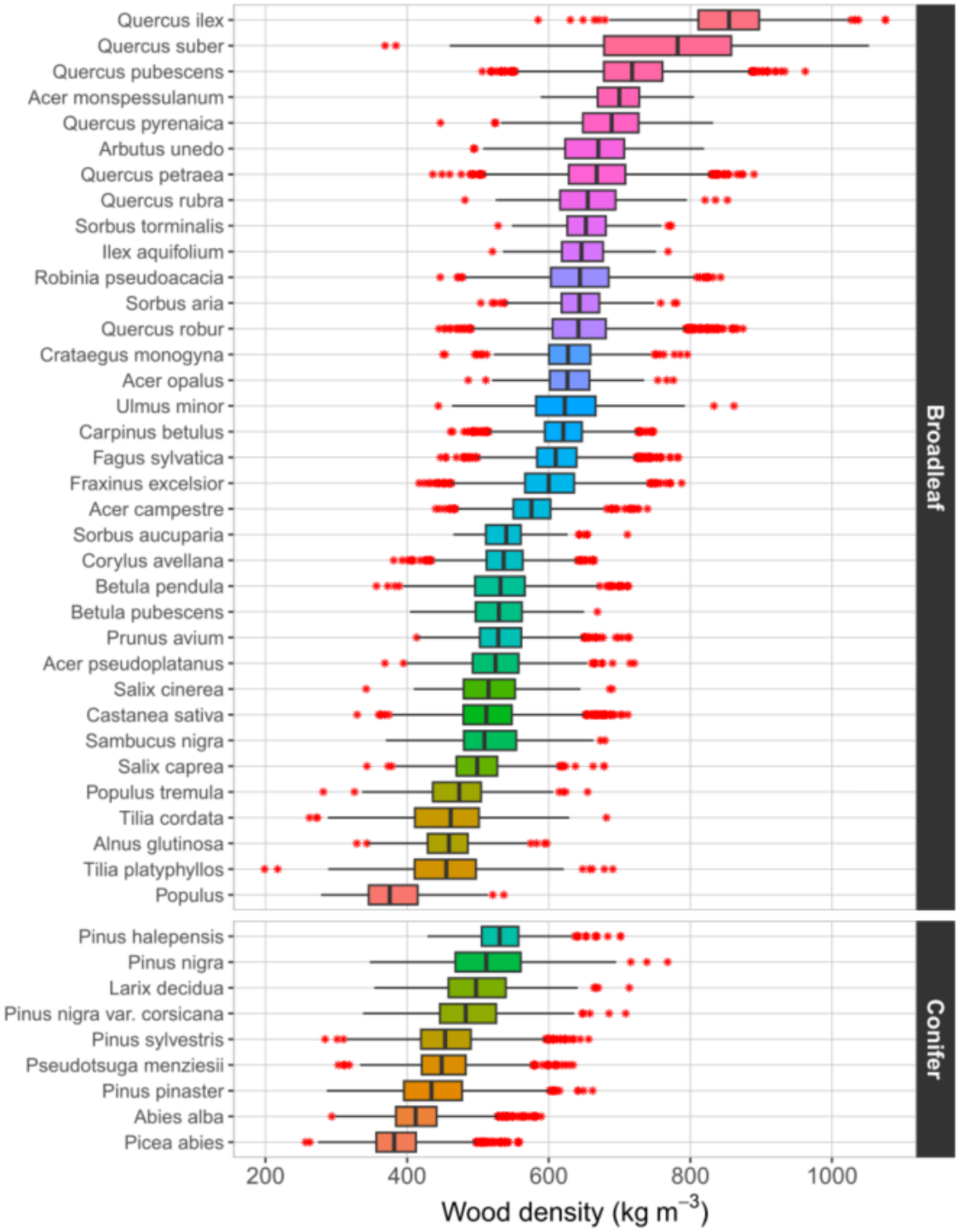

Figure S1: Boxplots of wood density by species. The 44 species present in the subset of XyloDensMap data selected for wood density modelling are represented. Species are sorted by decreasing order of average wood density, with a distinction between broadleaf and conifer species.

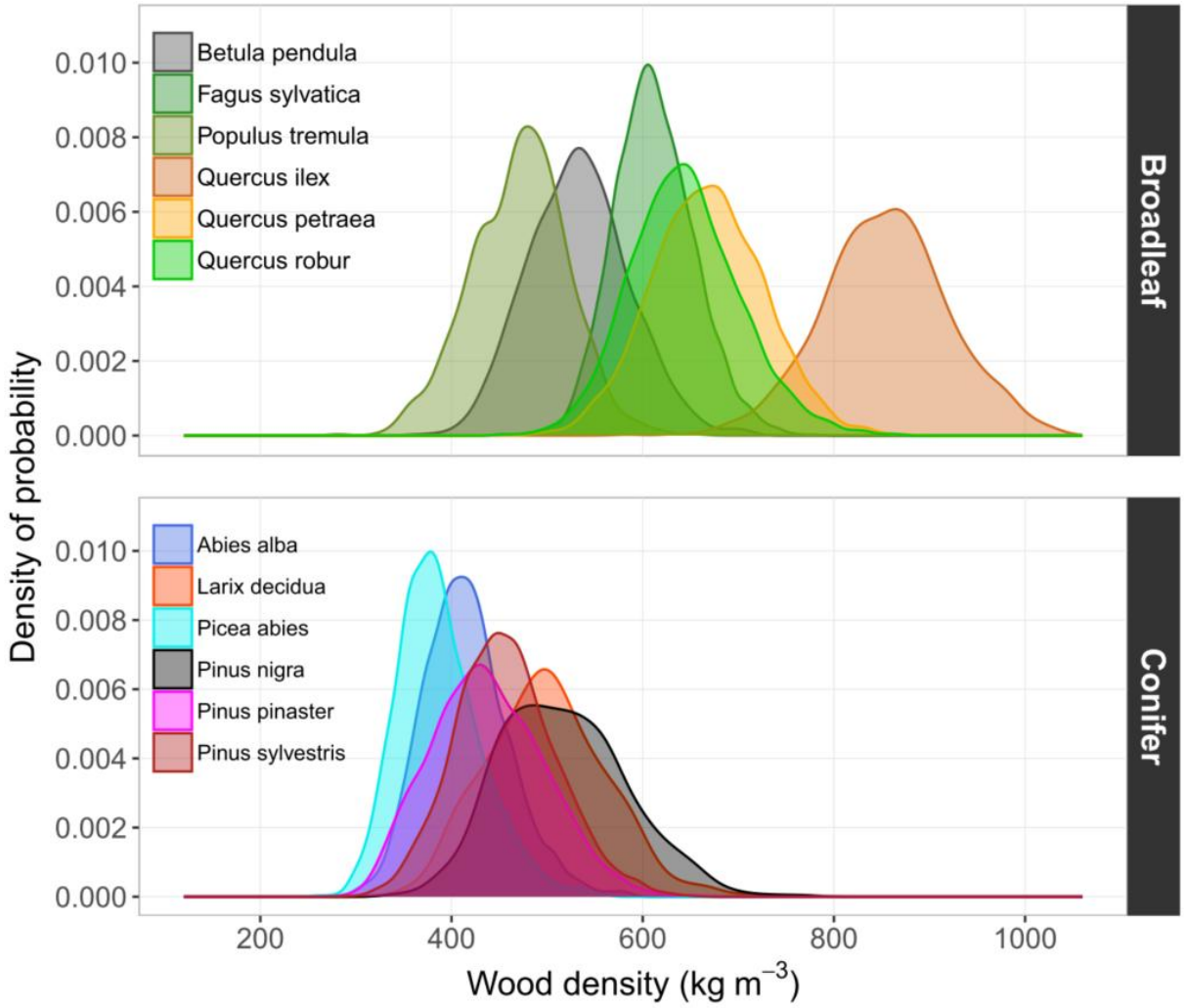

Figure S2: Distribution of wood density values by species in the *XyloDensMap* data selected for wood density modelling. Results are shown for a subset of 6 conifer and 6 broadleaf species.

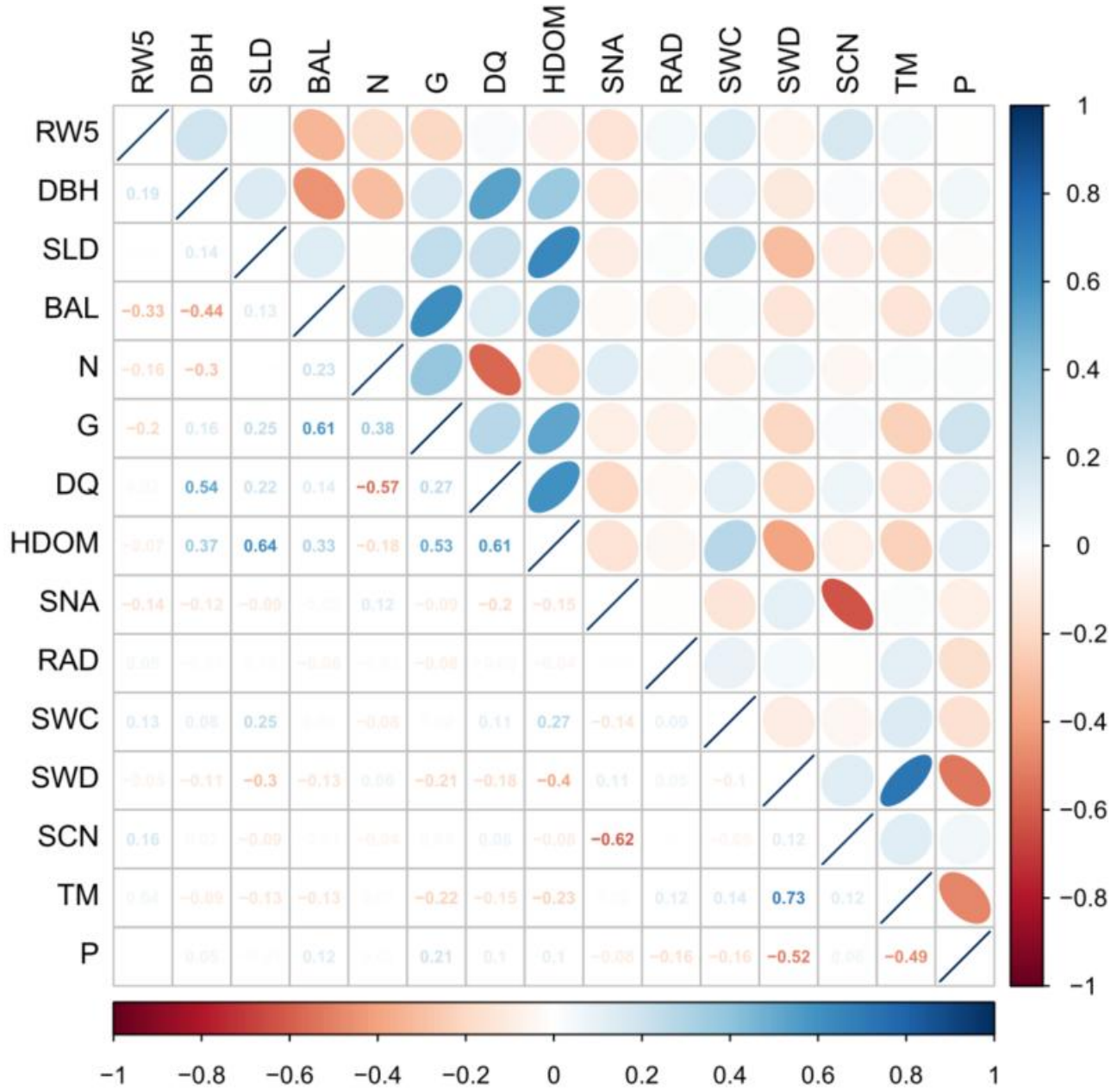

Figure S3: Correlation matrix between the 15 continuous or discrete variables considered for modelling wood density.

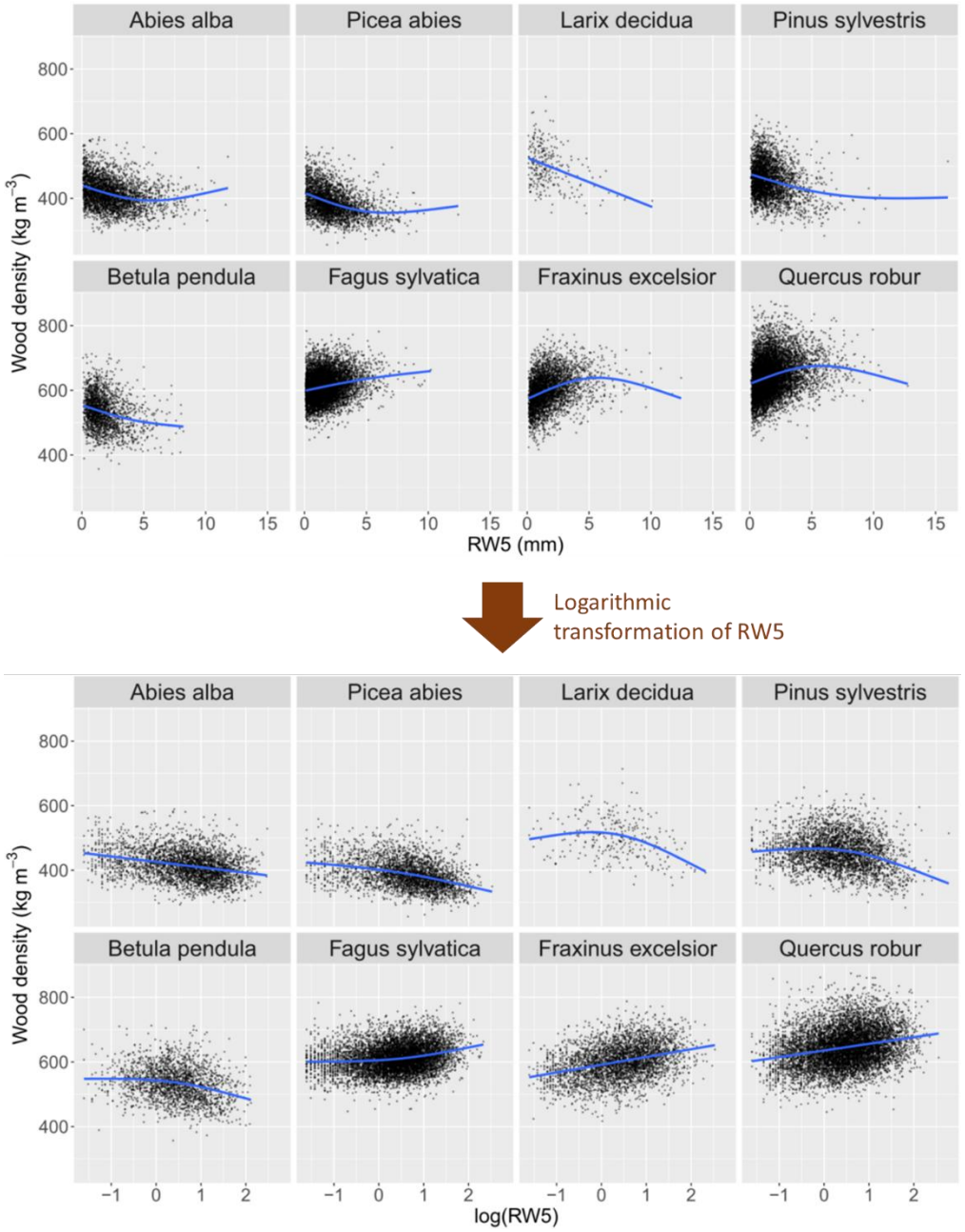

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Figure S4: Relationship between wood density and the average width of the last five rings (RW5) in the *XyloDensMap* data selected for modelling. The relationship is shown for a subset of 4 conifer and 4 broadleaf species. The logarithmic transformation of RW5 generally helps having a more centred distribution and a more linear relationship, which varied between species.

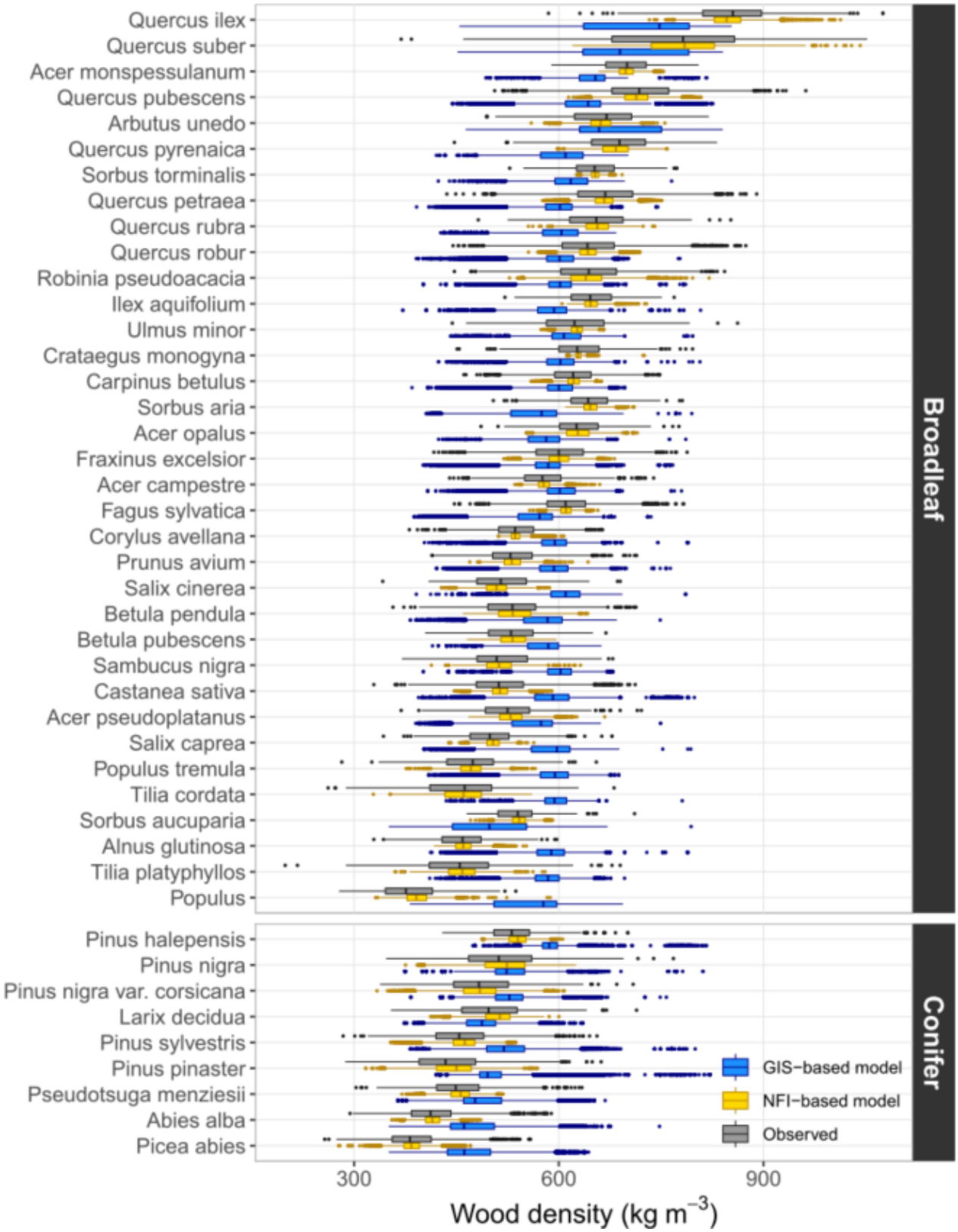
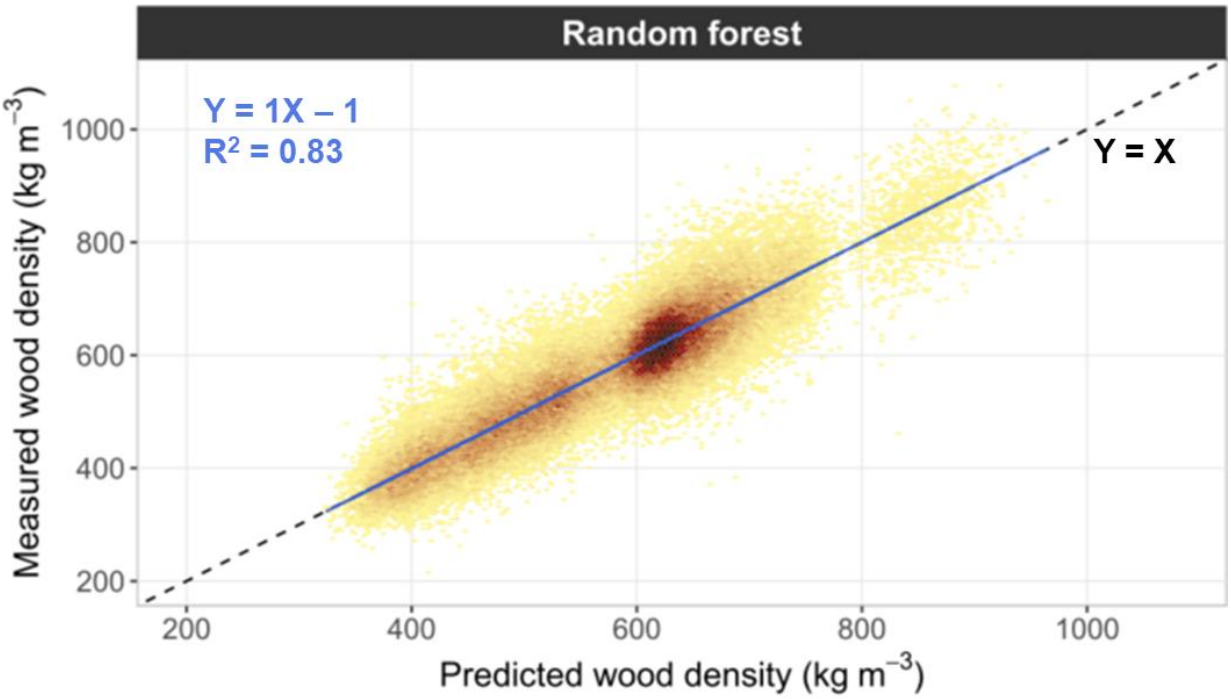


Figure S5: Wood density values predicted on the French NFI dataset and values observed in the *XyloDensMap* data selected for modelling. Observed values correspond to measurements on wood increment cores, while predicted values were obtained from the "NFI-based model" (yellow) and the "GIS-based model" (blue) developed on these measurements. Results are shown for the 44 species considered for modelling.



35 **Figure S6: Measured versus predicted values of wood density on the full dataset, using random forest models instead of a linear model (same input variables as the "NFI-based model"). Colour depends on the number of points (the darker the colour, the higher the number of points). The solid blue line represents the OLS regression between predicted and measured values, and the dashed black line represents the 1:1 reference line.**

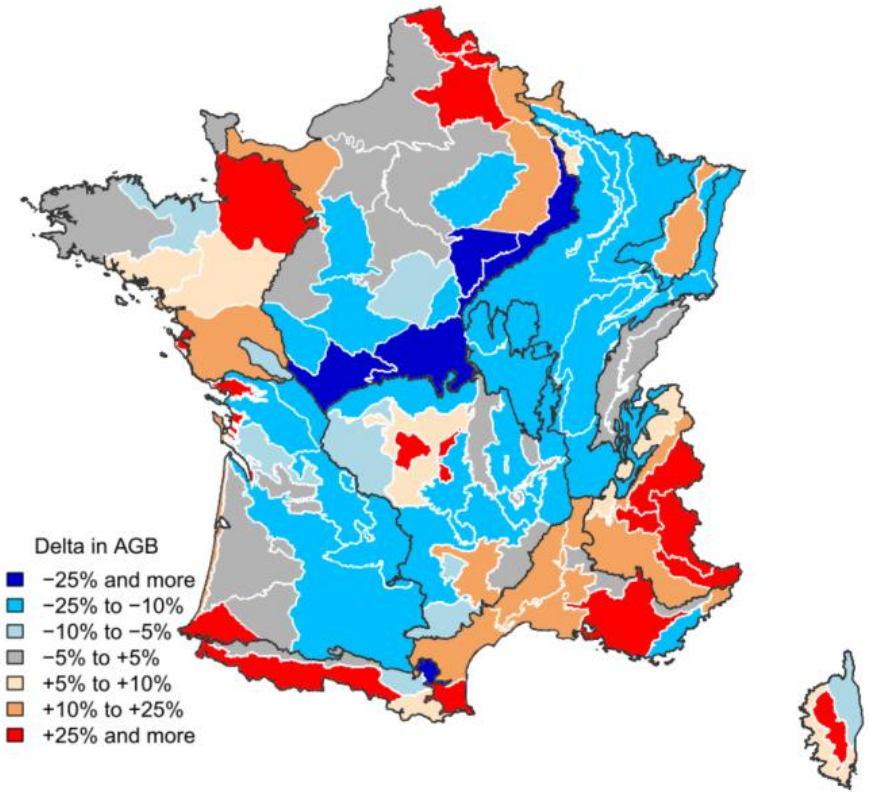


Figure S7: Relative difference in forest aboveground biomass (AGB) stocks between estimates from our "NFI-based model" and a biomass map produced by the European Space Agency. All values represent relative differences with respect to the AGB estimated using the "NFI-based model". Comparisons are shown across biogeographical subregions.

Supplementary Tables

Table S1: Overview of the 20 candidate variables considered for wood density modelling, including details on the calculation method for each variable.

Variable	Unit	Type	Signification	Measurement/Calculation	Source
Botanical class	-	Categorical	Tree botanical class (broadleaf or conifer)	Determined from the tree species identified in the field	NFI
Genus	-	Categorical	Tree genus	Determined from the tree species identified in the field	NFI
Species	-	Categorical	Tree species	Identified in the field by NFI operators for each tree recorded during the inventory	NFI
RW5	mm	Continuous	Average width of the last five tree rings	Measured in the field by NFI operators for each tree of the plot on increment cores taken at breast height (1.30 m) using a binocular magnifier, excluding the ring currently in formation.	NFI
DBH	cm	Continuous	Tree diameter at breast height	Calculated from the circumference at breast height (CBH, in cm) measured in the field using a tape: $DBH_i = \frac{CBH_i}{\pi}$ where DBH_i is the diameter at breast height of the i^{th} tree and CBH_i its circumference	NFI
SLD	-	Continuous	Tree slenderness	Calculated as the ratio between the tree height and the square root of the diameter at breast height (Vallet et al., 2006): $SLD_i = \frac{H_i}{\sqrt{DBH_i}}$ where SLD_i is the slenderness of the i^{th} tree, H_i its total height (in m) as measured in the field, and DBH_i its diameter at breast height (in cm)	NFI
BAL	$m^2\ ha^{-1}$	Continuous	Basal area of larger trees (competition index)	Calculated for each tree in the plot as the sum of the basal areas of all trees with a diameter at breast height greater than that of the subject tree (Wykoff, 1983): $BAL_i = \sum_{j:DBH_j>DBH_i} BA_j \times w_j$ where BAL_i denotes the basal area of larger trees for the i^{th} tree, and BA_j and w_j are the basal areas (m^2) and statistical weights (in trees ha^{-1}) of the j^{th} trees in the sampling plot with a diameter at breast height (DBH) greater than that of the i^{th} tree	NFI
N	trees ha^{-1}	Continuous	Number of trees per hectare in the stand	Calculated as the sum of the statistical weights assigned to each tree in the plot, as determined by the French NFI: $N = \sum_{i=1}^{n} w_i$ where N is the number of trees per hectare in the stand, obtained as the sum of the statistical weights (w, in trees ha^{-1}) of the n trees inventoried on the plot	NFI
G	$m^2\ ha^{-1}$	Continuous	Basal area per hectare of the stand	Calculated as the sum of the basal areas of all trees recorded within the plot, weighted by their statistical weight: $G = \sum_{i=1}^{n}(BA_i \times w_i)$ where G is the basal area per hectare of the stand, obtained as the sum of the basal area (BA, in m^2) of the n trees inventoried on the plot, multiplied by their statistical weight (w, in trees ha^{-1})	NFI
DQ	cm	Continuous	Quadratic mean diameter of the stand	Calculated as the square root of the weighted sum of squared diameters at breast height of all inventoried trees (Curtis and Marshall, 2000): $DQ = \sqrt{\frac{\sum_{i=1}^{n} w_i \times DBH_i^2}{N}}$ where DQ is the quadratic mean diameter of the stand, obtained as the sum of the squared diameter at breast height (DBH, in cm) of the n trees inventoried in the plot, each multiplied by its statistical weight (w, in trees ha^{-1}), and divided by the number of trees per hectare in the stand (N, in trees ha^{-1})	NFI

HDOM	m	Continuous	Dominant height of the stand (mean height of the 100 tallest trees per hectare)	Calculated by replicating each tree according to its statistical weight (w, in trees ha^{-1}), and by computing, for each plot, the mean height of the 100 tallest trees in the replicated sample	NFI
VSTR	-	Categorical	Vertical structure of the stand	Calculated at the plot level by the French National Forest Inventory by combining information on the height, origin, crown free cover percentage, and basal area of each inventoried tree; it comprises four classes: regular forest, irregular forest, coppice, and forest–coppice mix	NFI
COMP	-	Categorical	Forest composition type	Estimated from the French BD Forêt® version 2 map, developed between 2007 and 2018 using photo-interpretation of color infrared BD ORTHO® imagery. The map assigns a vegetation formation type to each polygon ≥0.5 ha, based on a national nomenclature of 32 hierarchical classes that distinguish, for example, pure stands of the main forest species of metropolitan France. Produced at the departmental level, BD Forêt® version 2 covers the entire metropolitan territory. The map is available here: https://www.data.gouv.fr/datasets/bd-foret-r/	NFI
SNA	-	Discrete	Soil nutrient availability index	Calculated from the understory flora surveyed in the field; each plant species is assigned a trophic level as defined in *La Flore forestière française* (Rameau et al., 1989, 1994, 2008); this index aims to indicate the overall nutrient richness of the soil	NFI
RAD	-	Discrete	Solar radiation index	Radiation is estimated by French NFI from reference charts, as a function of latitude, slope, aspect, and the opposite horizon mask of the point. An index value of 100 represents the average condition (e.g., flat terrain). Values >100 correspond to sunny situations, while values <100 correspond to shaded situations	NFI
SWC	mm	Continuous	Soil water capacity	Calculated by the French NFI from the coarse fragment content, the depth of the soil horizons, and a coefficient associated with the texture of each horizon	NFI
SWD		Continuous	Summer soil water deficit (June-August)	Calculated as the difference between potential and actual evapotranspiration for June, July, and August and assigned to each forest plot based on a corresponding map at one-kilometer resolution (see Piedallu et al., 2016 for details)	Piedallu et al. (2016)
SCN	-	Continuous	Soil carbon-to-nitrogen ratio	Carbon-to-nitrogen ratio in the upper A horizon inferred from the flora and assigned to each forest plot based on a corresponding map at one-kilometer resolution (see Piedallu et al., 2016 for details)	Piedallu et al. (2016)
TM	°C	Continuous	Mean annual temperature	Assigned to each forest plot based on the spatialised climatic normal (over the 30-year period from 1991 to 2020) calculated at a one-kilometer resolution by Météo-France using the AURELHY method (Canellas et al., 2014)	Météo France
P	mm	Continuous	Total annual precipitation	Assigned to each forest plot based on the spatialised climatic normal (over the 30-year period from 1991 to 2020) calculated at a one-kilometer resolution by Météo-France using the AURELHY method (Canellas et al., 2014)	Météo France

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Table S2: List of the 44 species present in the *XyloDensMap* data subset selected for wood density modelling, with for each the corresponding botanical class and wood structure, the number of wood density records, and the proportion it represents in the growing stock in mainland France.

Botanical class	Wood structure	Species	Number of wood density records	Proportion in growing stock (%)
Broadleaf	Ring-porous	Quercus robur	7 879	12.51
		Quercus petraea	6 731	11.42
		Quercus pubescens	4 202	4.5
		Fraxinus excelsior	3 516	3.43
		Castanea sativa	3 453	5.79
		Robinia pseudoacacia	1 043	1.26
		Ulmus minor	561	0.17
		Quercus pyrenaica	266	0.29
		Quercus rubra	261	0.31
	Semi ring-porous	Fagus sylvatica	7 256	11.57
		Corylus avellana	1 317	0.32
		Prunus avium	1 308	0.9
		Quercus ilex	1 091	1.7
		Populus tremula	1 025	1.1
		Salix caprea	878	0.32
		Sorbus torminalis	722	0.2
		Sorbus aria	608	0.21
		Ilex aquifolium	390	0.09
		Salix cinerea	235	0.12
		Arbutus unedo	218	0.17
		Sorbus aucuparia	183	0.07
		Sambucus nigra	162	0.02
		Quercus suber	159	0.3
	Diffuse-porous	Carpinus betulus	6 006	4.79
		Betula pendula	1 980	1.44
		Acer campestre	1 645	0.93
		Acer pseudoplatanus	1 251	1.16
		Crataegus monogyna	998	0.18
		Alnus glutinosa	810	1.2
		Populus	597	1.06
		Tilia cordata	443	0.42
		Tilia platyphyllos	382	0.4
		Betula pubescens	364	0.31
		Acer monspessulanum	241	0.11
		Acer opalus	195	0.15
Conifer	Conifer	Pinus sylvestris	3 273	4.68
		Abies alba	3 202	6.47
		Picea abies	3 003	4.97
		Pinus pinaster	2 466	4.83
		Pseudotsuga menziesii	1 833	3.54
		Pinus nigra	600	1.28
		Pinus halepensis	562	0.77
		Pinus nigra var. corsicana	553	1.01
		Larix decidua	281	0.68
Total			**74 149**	**97.2**

Table S3: Correlation coefficients between wood density and the candidate variables for the 44 species present in the subset of *XyloDensMap* data selected for wood density modelling. For variables relative to ontogenetic tree traits (RW5, DBH, SLD and BAL), the logarithm instead of the raw value was used.

Botanical class	Wood structure	Species	RW5	DBH	SLD	BAL	N	G	DQ	HDOM	SNA	RAD	SWC	SWD	SCN	TM	P
Broadleaf	Ring-porous	Castanea sativa	0.05	-0.08	-0.19	-0.03	-0.07	-0.12	-0.04	-0.18	-0.08	0.07	-0.04	0.19	0.08	0.19	-0.04
		Fraxinus excelsior	0.33	0.08	-0.18	-0.27	-0.05	-0.21	-0.13	-0.31	0.01	0.02	-0.01	0.11	0.05	0.12	-0.02
		Quercus petraea	0.26	0.02	-0.09	-0.16	0.02	-0.11	-0.08	-0.18	0.09	0	-0.06	0.15	0.02	0.11	-0.05
		Quercus pubescens	0.3	0.28	0.05	-0.22	-0.06	-0.04	0.05	0.02	-0.01	0	0.06	0.08	-0.04	0.17	-0.04
		Quercus pyrenaica	0.33	0.31	0.07	-0.31	-0.09	-0.13	0.04	-0.07	0.13	-0.05	0.14	0.01	-0.17	0.03	0.06
		Quercus robur	0.25	0.04	-0.07	-0.1	-0.04	-0.08	-0.01	-0.14	-0.02	0	-0.02	0.15	0.1	0.2	0.03
		Quercus rubra	0.32	0.36	-0.13	-0.24	-0.14	-0.06	0.15	0.11	-0.14	0.04	0.19	0.02	-0.02	0.09	0.02
		Robinia pseudoacacia	0.33	0.37	0.03	-0.31	-0.14	-0.1	0.06	-0.06	-0.02	0.02	0	0.04	0.13	0.13	0.09
		Ulmus minor	0.07	0	-0.06	-0.06	0.06	-0.05	-0.12	-0.19	0.07	0.03	-0.04	0.08	-0.01	0.09	-0.01
	Semi ring-porous	Arbutus unedo	0.23	0.24	0.09	-0.03	0.09	0.03	-0.07	-0.03	-0.07	-0.06	0.09	0.04	-0.1	0.06	-0.1
		Corylus avellana	0.06	0.23	-0.11	-0.05	0.03	0	-0.02	-0.05	-0.05	0.03	0.06	0.02	0.06	0.05	0.02
		Fagus sylvatica	0.19	-0.01	-0.07	-0.08	0.01	-0.12	-0.1	-0.12	0.08	0.01	0	0.04	-0.05	0.08	-0.04
		Ilex aquifolium	-0.02	0.19	-0.12	-0.11	0.01	-0.08	-0.09	-0.07	0.02	0.03	-0.06	0.06	-0.02	-0.07	-0.06
		Populus tremula	-0.06	0.29	-0.06	-0.11	-0.05	0.06	0.13	0.1	-0.07	0	-0.01	0.16	0.05	0.19	0.01
		Prunus avium	0.05	-0.11	-0.33	-0.1	-0.06	-0.15	-0.08	-0.29	0.04	0.07	-0.12	0.11	0.02	0.05	-0.08
		Quercus ilex	0.37	0.36	0	-0.11	0.04	0.08	0.08	0.01	-0.09	-0.04	0.06	-0.06	0.06	-0.03	-0.09
		Quercus suber	-0.09	0.42	-0.1	-0.23	-0.05	0.02	0.19	-0.19	0.08	-0.01	-0.09	0.09	-0.01	0.09	-0.17
		Salix caprea	0.03	-0.06	-0.14	-0.01	-0.02	-0.08	-0.03	-0.17	-0.01	-0.02	-0.11	0.09	0.06	0.07	0.04
		Salix cinerea	-0.06	-0.01	-0.13	-0.1	0.01	-0.06	-0.1	-0.17	-0.23	0.1	-0.03	0.18	0.11	0.2	0.07
		Sambucus nigra	0.25	0	0	-0.14	-0.21	-0.15	0.05	-0.08	-0.11	-0.18	0.11	-0.21	0.07	-0.24	0.18
		Sorbus aria	0.17	0.07	-0.26	-0.19	-0.03	-0.11	-0.1	-0.23	-0.01	-0.06	-0.01	-0.01	0.01	0.03	0.03
		Sorbus aucuparia	-0.04	-0.21	-0.14	-0.09	0.02	-0.12	-0.19	-0.14	0.03	0.04	-0.07	0.14	0.03	0.05	-0.05
		Sorbus torminalis	0.08	-0.06	-0.11	-0.06	-0.06	-0.09	-0.03	-0.07	-0.02	-0.04	0.02	0.05	0.03	0.06	-0.07
	Diffuse-porous	Acer campestre	-0.02	0.13	-0.17	-0.17	0.01	-0.06	-0.08	-0.17	0.11	-0.06	-0.03	0.07	0.04	0.05	0.02
		Acer monspessulanum	0.06	0.23	-0.22	-0.26	-0.15	-0.16	-0.02	-0.2	0.01	0.07	-0.13	-0.02	0.07	0.01	0.04
		Acer opalus	0.03	0.15	-0.37	-0.26	-0.26	-0.25	-0.02	-0.28	0.05	0.06	-0.22	0.05	0.04	-0.07	-0.12
		Acer pseudoplatanus	-0.09	0.29	-0.22	-0.16	-0.02	0.02	0.04	-0.12	0.02	-0.06	-0.22	-0.11	0.03	-0.19	0.19
		Alnus glutinosa	-0.07	0.18	-0.15	0,00	-0.02	0.1	0.1	-0.05	-0.1	-0.07	-0.03	0.17	0.13	0.18	0.09
		Betula pendula	-0.23	0.45	0	0.04	-0.09	0.22	0.29	0.27	0.02	-0.06	-0.02	0	-0.01	0	0.05
		Betula pubescens	-0.12	0.4	0.02	-0.07	-0.06	0.11	0.14	0.15	-0.07	-0.05	-0.06	-0.06	-0.04	-0.03	0.05
		Carpinus betulus	-0.01	0.23	0.16	-0.07	0.03	0.01	0	0.03	0.09	0.02	-0.05	0.05	-0.05	-0.01	-0.02
		Crataegus monogyna	0	0.02	-0.07	-0.03	-0.02	0.01	0.03	-0.03	-0.01	0.04	-0.04	-0.04	0	-0.04	0.02
		Populus	-0.25	-0.08	-0.17	0.05	0.08	0.08	-0.09	-0.1	-0.03	-0.05	-0.09	0.06	0.13	0.05	0.05
		Tilia cordata	-0.01	0.48	0.16	-0.29	0.01	-0.01	0.06	-0.09	0.05	0.01	-0.22	-0.02	-0.06	-0.06	0.07
		Tilia platyphyllos	-0.11	0.34	0	-0.19	-0.01	-0.03	0	-0.11	0.07	-0.05	-0.13	0	-0.13	-0.01	0.02
Conifer	Conifer	Abies alba	-0.31	-0.15	-0.07	0.18	-0.09	0.03	0.09	0.09	-0.08	-0.04	-0.01	-0.01	0.07	0.04	-0.02
		Larix decidua	-0.29	0.25	0.1	0.1	-0.11	0.18	0.28	0.23	0.06	-0.11	-0.19	0.19	0	-0.25	-0.11
		Picea abies	-0.37	-0.21	-0.07	0.2	0.02	-0.05	-0.06	0.01	0.09	-0.01	-0.1	0.09	-0.11	0.07	0
		Pinus halepensis	-0.2	0.26	0.06	0.09	0.06	0.29	0.15	0.25	-0.15	0.07	0.02	-0.05	0.03	0.07	0.04
		Pinus nigra	-0.25	0.47	0.38	-0.05	-0.02	0.3	0.36	0.49	0.01	-0.02	-0.04	-0.19	-0.2	0.02	-0.07
		Pinus nigra var. corsicana	-0.23	0.44	0.35	0.04	-0.03	0.25	0.27	0.48	-0.11	-0.18	-0.12	0.15	0.05	0.11	0.16
		Pinus pinaster	-0.44	0.56	0.44	0.05	-0.13	0.36	0.45	0.54	0.14	-0.09	0.08	0.14	-0.27	-0.12	-0.01
		Pinus sylvestris	-0.21	0.28	0.26	0.02	-0.04	0.18	0.2	0.28	-0.05	0.02	0.04	0.08	-0.04	0.19	-0.1
		Pseudotsuga menziesii	-0.07	0.18	0.26	0.08	-0.12	0.02	0.14	0.22	-0.06	0.02	0.11	0.1	-0.05	0.29	-0.04

Table S4: Results of the analysis of variance performed on the "taxonomic model" of wood density.

Variable type	Variable	Degree of freedom	Sum of squares	F value	p-value	Variance explained (%)
Tree identity	Botanical class	1	374 234 919	139 322	<0.0001	40.1
	Genus	23	286 489 849	4 637	<0.0001	30.8
	Species	19	70 285 320	1 377	<0.0001	7.5
	Residuals	74 105	199 053 778	-	-	21.6

Table S5: Number of times variables are significant across the 44 species in the "NFI-based model" of wood density. For variables relative to tree dimensions (RW5, DBH, SLD, and BAL), a log-transformation was used.

Variable	Broadleaf			Conifer	Total
	Ring-porous	Semi ring-porous	Diffuse-porous		
RW5	8	6	9	9	32
SLD	5	11	10	6	32
DBH	7	7	10	7	31
TM	7	6	4	7	24
SNA	5	5	4	7	21
SWC	6	4	5	6	21
BAL	3	2	5	5	15
G	4	2	2	6	14
P	4	6	3	1	14
DQ	4	2	5	2	13
N	3	1	3	5	12
RAD	1	2	2	3	8

Table S6: Coefficients of the "NFI-based model" for the 44 species present in the subset of *XyloDensMap* data selected for wood density modelling. For variables relative to tree dimensions (RW5, DBH, SLD and BAL), a log-transformation was used so that coefficients are on the log scale. Significant parameters at the p-value threshold of 0.1 are symbolized by '*'.

Botanical class	Wood structure	Species	Intercept	RW5	DBH	SLD	BAL	N	G	DQ	SNA	RAD	SWC	TM	P
Broadleaf	Ring-porous	Castanea sativa	481.2*	5.3*	-5.4*	-36*	0.5	-0.006*	0	-0.24	-1.55*	0.187*	-0.081*	9.1*	-0.013*
		Fraxinus excelsior	579.3*	18.6*	4.6*	-26.7*	-2.6*	0.005*	-0.39*	-0.4*	-0.02	-0.03	-0.024	4.5*	0.013*
		Quercus petraea	620.9*	25.8*	-4.3*	-16.2*	-2.3*	0.001	-0.03	-0.19*	2.39*	-0.043	-0.131*	7.5*	0.004
		Quercus pubescens	545.6*	21.9*	31.4*	-9.3*	-0.6	0.003	-0.16	-0.66*	0.8*	-0.013	-0.043*	8*	0.006
		Quercus pyrenaica	591.9*	19.4*	28.2*	2.7	-0.4	0.004	-0.74*	-0.02	5.41*	0.001	0.109	0.4	-0.011
		Quercus robur	528*	18.8*	1.9	-11.4*	0	-0.003*	0.05	-0.13	0.03	0.015	-0.082*	9.5*	0.016*
		Quercus rubra	486.8	10.1	36.8*	-10.2	4.7	0.017	-0.85*	0.49	-5.87*	0.038	0.182*	5.3	-0.019
		Robinia pseudoacacia	396.1	19.2*	46*	-4.2	-4.6*	0.008	-0.71*	1.21*	-0.38	0.162	-0.087*	8.1*	0.015*
		Ulmus minor	532.3*	7.4*	5.8	-7.4	5.8	0.002	-0.22	-1.12	2.13	0.112	-0.06	6.2*	-0.004
	Semi ring-porous	Arbutus unedo	548.6	23*	67.5*	34.9*	7.6	0	-0.16	-1.44	-4.09*	-0.022	0.1	-0.6	-0.034
		Corylus avellana	429.6	1.7	44.6*	-16.8*	1.6	0.001	-0.12	0.01	-1.12	0.096	0.039	1.2	0.004
		Fagus sylvatica	602.3*	11.7*	-0.8	-13*	1.7*	0.001	-0.16*	-0.27*	1.18*	-0.023	0.003	2.1*	0.005*
		Ilex aquifolium	644.3*	-3.9	38.8*	-30.8*	-2.6	0.004	-0.19	-0.28	0.18	0.057	-0.039	-2.5	-0.016
		Populus tremula	264.7*	-14.5*	37.9*	-19*	2.6	0.002	-0.2	-0.4	-1.71*	-0.001	-0.076*	12*	0.022*
		Prunus avium	610*	2.7	-8.7*	-50.8*	-2.5	-0.001	-0.08	-0.05	0.81	0.166*	-0.072*	1.2	-0.009
		Quercus ilex	977*	42.6*	23.8*	-5.3	-1.1	0.002	-0.03	0.37	-2.92*	-0.091	-0.021	-5.9*	-0.064*
		Quercus suber	662.9*	-7.1	78.2*	-37.4*	-13.9*	0.022	0.48	2.95*	-9.43	0.095	-0.288	-4.3	-0.1*
		Salix caprea	484.5*	2.7	-8.9	-25.7*	3.1	0.011*	-0.72*	0.75	-0.2	0.001	-0.126*	4.3*	0.017*
		Salix cinerea	457.2	-5.2	-5.8	-33.3*	-2.9	0.006	-0.56	-0.62	-6.53*	0.475	-0.087	8.7*	0.014
		Sambucus nigra	687.6*	18.6*	1.7	11.7	-9.1	-0.002	-0.09	1.03	0.96	-0.77*	0.166*	-14.7*	0.042*
		Sorbus aria	663.4*	8.6*	4	-35.8*	-8.2	-0.001	0.41	-0.44	0.28	-0.075	0.008	2.9	0.009
		Sorbus aucuparia	636.4*	-4.2	-19.1	-17.3	0.2	-0.016	0.31	-2.1	1.9	0.066	-0.111	2.5	-0.003
		Sorbus torminalis	722*	6.2	-7.6	-17.3*	1.6	-0.007	-0.1	-0.51	0.23	-0.114	0.021	0.6	-0.017
	Diffuse-porous	Acer campestre	548.9*	-6.6*	14.5*	-27.5*	-3.5	-0.001	0.05	-0.71*	3.2*	-0.166*	0.013	2.8*	0.005
		Acer monspessulanum	685.8*	1	24.5*	-25.4*	-3.3	-0.016	0.85	-2.33	-0.39	0.124	-0.118	2	-0.01
		Acer opalus	730.9*	-4.4	23.7*	-56*	0	-0.021*	0.56	-2.34	-1.66	0.041	-0.381*	-0.3	-0.021
		Acer pseudoplatanus	538.2*	-11.1*	29.6*	-46.6*	-0.5	0.002	-0.07	-0.43	-0.08	0.02	-0.131*	-1.9	0.011*
		Alnus glutinosa	389.5	-6*	23.3*	-25.9*	5.7*	-0.006	0.13	-0.91*	-2.57*	-0.255	0.018	6.3*	0.009
		Betula pendula	381.7	-16.2*	55.4*	-16.6*	6.6*	-0.006*	0.13	-0.42	-0.13	-0.103	-0.013	3.1*	0.002
		Betula pubescens	411	-11.5*	51.5*	4.2	5	-0.004	0.19	-0.69	-3.23	-0.217	-0.091	1.5	0.002
		Carpinus betulus	504.6*	-3.6*	26.5*	23*	4.5*	0.002	-0.22*	-0.44*	1.19*	0.086	-0.037*	1	-0.007*
		Crataegus monogyna	648*	0.4	-2.3	-10.2	-8.1*	0.005	0.21	0.93*	-0.2	0.105	-0.032	-1.3	0
		Populus	497.9	-21.1*	1.2	-69.2*	2.4	-0.002	0.34	-0.44	-0.23	-0.639	-0.056	7.2*	0.005
		Tilia cordata	214.3*	-11.4*	61.5*	30.9*	4.2	0.02*	-0.85*	0.42	-3.51*	0.282*	-0.312*	2.7	0.015
		Tilia platyphyllos	351.3	-20.3*	63.6*	-24.8*	9.6*	0.004	-0.53	-1.35*	-0.98	-0.133	-0.192*	2.1	-0.018*
Conifer	Conifer	Abies alba	408.1*	-17.2*	3.5	-8.5*	3.8*	-0.009*	-0.18*	0.11	-1.54*	-0.081*	-0.02	3.3*	0.003
		Larix decidua	477.7*	-19.3*	15.1*	18.6	1.2	-0.009	-0.06	0.4	0	-0.026	-0.155*	-3.8*	-0.008
		Picea abies	375.1*	-21.6*	4.6	-1.6	4.6*	-0.004	-0.38*	-0.35*	0.75*	0.053	-0.068*	2.7*	0.001
		Pinus halepensis	506.4*	-8.3*	15.1*	-9.9	0.9	-0.013*	1.24*	-0.16	-3.6*	0.144	0.016	0	-0.005
		Pinus nigra	333.8*	-16.1*	50*	37.3*	0.7	-0.02*	0.73*	-0.51	2.25*	-0.107	-0.197*	2.7	-0.028*
		Pinus nigra var. corsicana	138.8*	-10.5*	54.5*	54.6*	7.9*	0.011	-0.63*	-0.14	-2.91*	-0.397*	-0.14*	13.4*	0.013
		Pinus pinaster	257.4*	-23.2*	44.6*	24.9*	1.9	0	-0.13	0.03	1	-0.207*	0.026	3.4*	0.007
		Pinus sylvestris	270.6*	-16.1*	29.4*	20.7*	3.9*	-0.005*	0.1	-0.14	0.62*	0.053	-0.072*	7.1*	-0.003
		Pseudotsuga menziesii	239.2*	-4.1*	21.6*	33*	7.7*	-0.008*	-0.39*	-0.75*	-3.72*	0.087	0.068*	11.2*	0.005