

Kotowska et al. - Supplementary Material

Table S1 (1/3): List of selected tree traits for the sampled tree species. Given are average values of the traits and Sulawesi (Sul.), Sumatra (Sum.) and total (Tot.) observation counts. Shown are diameter at breast height (*DBH*), tree height and wood density (*WD*). The complete dataset including aboveground net primary production (*ABI*), hydraulically weighted vessel diameter (*D_h*), vessel density (*VD*), potential hydraulic conductivity (*K_p*), sap flux density (*J_s*) and daily water use per tree (*DWU*) will be uploaded to the TRY database (Kattge et al. 2020).

Family	Species	Sul.	Sum.	Tot.	DBH (cm)	Height (m)	WD (g cm ⁻³)
Anacardiaceae	<i>Camposperma auriculatum</i>	0	1	1	21.0	17.3	0.40
Anacardiaceae	<i>Mangifera caesia</i>	0	1	1	56.0	36.6	0.69
Anacardiaceae	<i>Mangifera foetida</i>	0	2	2	33.2	25.8	0.61
Anacardiaceae	<i>Mangifera torquenda</i>	0	1	1	79.5	38.8	0.56
Anacardiaceae	<i>Melanochyla beccariana</i>	0	1	1	28.4	27.1	0.52
Annonaceae	<i>Drepananthus biovulatus</i>	0	1	1	21.8	23.8	0.38
Annonaceae	<i>Drepananthus ramuliflorus</i>	0	1	1	15.6	21.7	0.55
Annonaceae	<i>Maasia glauca</i>	0	1	1	17.3	22.1	0.63
Annonaceae	<i>Mezzettia parviflora</i>	0	1	1	55.8	44.5	0.63
Annonaceae	<i>Polyalthia lateriflora</i>	1	0	1	25.2	22.3	0.48
Apocynaceae	<i>Alstonia angustifolia</i>	0	2	2	28.7	18.5	0.47
Apocynaceae	<i>Alstonia pneumatophora</i>	0	1	1	17.2	7.5	0.19
Burseraceae	<i>Burseraceae sp. 27</i>	0	1	1	22.4	24.6	0.60
Burseraceae	<i>Burseraceae sp. 28</i>	0	1	1	86.6	40.2	0.66
Burseraceae	<i>Canarium megalanthum</i>	0	1	1	30.2	27.3	0.62
Burseraceae	<i>Santiria apiculata</i>	13	0	13	29.2	23.5	0.49
Burseraceae	<i>Santiria griffithii</i>	0	3	3	21.5	18.4	0.58
Burseraceae	<i>Santiria laevigata</i>	0	2	2	47.2	26.4	0.52
Cannabaceae	<i>Gironniera nervosa</i>	0	2	2	32.3	26.4	0.51
Combretaceae	<i>Terminalia subspathulata</i>	0	1	1	28.2	17.7	0.45
Compositae	<i>Strobocalyx arboreus</i>	10	0	10	23.3	23.3	0.31
Dilleniaceae	<i>Dillenia eximia</i>	0	1	1	18.2	21.1	0.50
Dipterocarpaceae	<i>Hopea sangal</i>	0	1	1	25.3	25.0	0.45
Dipterocarpaceae	<i>Shorea acuminata</i>	0	1	1	55.5	42.3	0.49
Dipterocarpaceae	<i>Shorea bracteolata</i>	0	1	1	21.8	19.2	0.48
Dipterocarpaceae	<i>Shorea ovalis</i>	0	6	6	44.5	30.5	0.47
Dipterocarpaceae	<i>Shorea parvifolia</i>	0	4	4	49.9	34.7	0.43
Dipterocarpaceae	<i>Shorea singkawang</i>	0	2	2	49.0	28.3	0.46
Ebenaceae	<i>Diospyros coriacea</i>	0	1	1	19.5	26.9	0.78
Escalloniaceae	<i>Polyosma integrifolia</i>	1	0	1	14.2	27.1	0.39
Euphorbiaceae	<i>Endospermum diadenum</i>	0	7	7	35.9	22.8	0.45
Euphorbiaceae	<i>Macaranga gigantea</i>	0	2	2	15.3	15.2	0.40
Euphorbiaceae	<i>Macaranga hosei</i>	0	3	3	20.3	15.6	0.36
Euphorbiaceae	<i>Macaranga hypoleuca</i>	0	2	2	27.0	16.7	0.42
Euphorbiaceae	<i>Macaranga sumatrana</i>	0	4	4	25.4	19.4	0.44
Euphorbiaceae	<i>Neoscortechinia kingii</i>	0	1	1	12.9	17.8	0.63
Fabaceae	<i>Archidendron fagifolium</i>	0	1	1	22.9	18.2	0.41
Fabaceae	<i>Callerya atropurpurea</i>	0	3	3	23.8	18.6	0.67
Fabaceae	<i>Koompassia malaccensis</i>	0	3	3	56.6	37.4	0.75
Fabaceae	<i>Parkia speciosa</i>	0	2	2	50.5	29.7	0.50

Table S1 (2/3): (continued)

Family	Species	Sul.	Sum.	Tot.	DBH (cm)	Height (m)	WD (g cm ⁻³)
Fabaceae	<i>Parkia timoriana</i>	0	1	1	40.0	23.1	0.48
Fabaceae	<i>Peltophorum pterocarpum</i>	0	1	1	19.5	17.9	0.59
Fagaceae	<i>Castanopsis buruana</i>	21	0	21	47.2	34.6	0.50
Fagaceae	<i>Castanopsis inermis</i>	0	2	2	37.7	21.4	0.46
Fagaceae	<i>Castanopsis javanica</i>	0	1	1	79.3	38.7	0.59
Hypericaceae	<i>Cratoxylum sumatranum</i>	0	2	2	13.1	12.9	0.63
Icacinaceae	<i>Platea excelsa</i>	14	0	14	25.1	22.3	0.34
Ixonanthaceae	<i>Ixonanthes petiolaris</i>	0	2	2	27.4	28.3	0.49
Lauraceae	<i>Cinnamomum porrectum</i>	0	1	1	20.7	16.7	0.52
Lauraceae	<i>Cryptocarya laevigata</i>	13	0	13	18.0	18.0	0.43
Lauraceae	<i>Dehaasia incrassata</i>	0	1	1	56.3	26.6	0.52
Lauraceae	<i>Litsea firma</i>	0	1	1	64.8	46.7	0.47
Lauraceae	<i>Persea rimosa</i>	0	2	2	23.0	16.8	0.55
Malvaceae	<i>Durio zibethinus</i>	0	2	2	34.0	24.0	0.49
Malvaceae	<i>Pterocymbium tubulatum</i>	0	1	1	42.5	34.6	0.50
Malvaceae	<i>Scaphium affine</i>	0	3	3	49.1	34.1	0.58
Melastomataceae	<i>Pternandra caerulescens</i>	0	1	1	41.9	25.5	0.52
Meliaceae	<i>Aglaia malaccensis</i>	0	2	2	47.2	33.8	0.61
Meliaceae	<i>Dysoxylum densiflorum</i>	0	1	1	36.2	16.9	0.60
Moraceae	<i>Artocarpus elasticus</i>	0	5	5	27.1	17.7	0.44
Moraceae	<i>Artocarpus integer</i>	0	3	3	34.1	21.3	0.55
Moraceae	<i>Artocarpus nitidus</i>	0	1	1	26.1	17.4	0.57
Moraceae	<i>Artocarpus rigidus</i>	0	1	1	35.2	21.2	0.61
Moraceae	<i>Ficus variegata</i>	0	1	1	31.3	27.4	0.27
Myristicaceae	<i>Gymnacranthera farquhariana</i>	0	2	2	39.8	29.7	0.52
Myrtaceae	<i>Myrtaceae sp. 10</i>	2	0	2	17.8	29.2	0.68
Myrtaceae	<i>Myrtaceae sp. 2</i>	1	0	1	14.0	17.4	0.64
Myrtaceae	<i>Myrtaceae sp. 3</i>	2	0	2	17.8	21.1	0.49
Myrtaceae	<i>Myrtaceae sp. 5</i>	5	0	5	23.9	20.4	0.60
Myrtaceae	<i>Myrtaceae sp. 8</i>	2	0	2	13.3	12.2	0.64
Myrtaceae	<i>Syzygium cf. borneense</i>	0	1	1	68.1	26.6	0.69
Myrtaceae	<i>Syzygium sp. 02</i>	0	1	1	115.9	38.6	0.59
Myrtaceae	<i>Syzygium sp. 03</i>	0	1	1	69.4	36.8	0.67
Myrtaceae	<i>Syzygium sp. 08</i>	0	1	1	27.2	25.0	0.67
Olacaceae	<i>Ochanostachys amentacea</i>	0	8	8	35.3	23.0	0.69
Olacaceae	<i>Strombosia ceylanica</i>	0	1	1	31.8	22.6	0.76
Oxalidaceae	<i>Sarcotheca diversifolia</i>	0	2	2	88.5	36.5	0.60
Pandaceae	<i>Galearia maingayi</i>	0	2	2	35.9	22.1	0.59
Passifloraceae	<i>Paropsia varecifomis</i>	0	1	1	23.5	19.3	0.65
Phyllanthaceae	<i>Baccaurea macrocarpa</i>	0	2	2	18.7	13.7	0.48
Phyllanthaceae	<i>Aporosa nervosa</i>	0	1	1	25.2	23.8	0.52
Phyllanthaceae	<i>Baccaurea dulcis</i>	0	2	2	29.7	13.2	0.56
Polygalaceae	<i>Xanthophyllum eurhynchum</i>	0	1	1	32.0	27.5	0.60
Polygalaceae	<i>Xanthophyllum stipitatum</i>	0	1	1	51.0	34.1	0.72
Putranjivaceae	<i>Drypetes longifolia</i>	0	1	1	48.0	36.5	0.75
Rosaceae	<i>Prunus polystachya</i>	0	2	2	29.6	23.3	0.41
Rubiaceae	<i>Porterandia anisophylla</i>	0	1	1	10.2	12.7	0.63

Table S1 (3/3): (continued)

Family	Species	Sul.	Sum.	Tot.	DBH (cm)	Height (m)	WD (g cm ⁻³)
Rubiaceae	<i>Timonius wallichianus</i>	0	1	1	15.7	15.9	0.67
Rutaceae	<i>Acronychia pedunculata</i>	1	0	1	14.0	13.9	0.49
Rutaceae	<i>Tetractomia tetrandra</i>	0	1	1	29.5	19.3	0.51
Sapindaceae	<i>Pometia pinnata</i>	0	2	2	23.6	24.4	0.65
Sapindaceae	<i>Xerospermum laevigatum</i>	0	1	1	44.2	21.6	0.60
Sapindaceae	<i>Xerospermum noronhianum</i>	0	1	1	33.1	19.0	0.71
Sapotaceae	<i>Palaquium gutta</i>	0	5	5	48.9	36.0	0.54
Sapotaceae	<i>Palaquium hexandrum</i>	0	1	1	76.2	38.6	0.52
Sapotaceae	<i>Palaquium luzoniense</i>	11	0	11	32.1	25.6	0.40
Sapotaceae	<i>Palaquium obovatum</i>	0	1	1	33.4	25.8	0.41
Sapotaceae	<i>Pleioluma firma</i>	17	0	17	29.7	27.8	0.47
Simaroubaceae	<i>Ailanthus integrifolia</i>	0	3	3	38.6	24.0	0.51

Table S2: Results of the SMA regressions. Given are the estimates and 95% confidence intervals of the elevation and slope parameters of the common relationship, as well as the p-value for the null hypothesis that there is no association and the proportion of variance explained by the relationship (R^2).

Response	Predictor	Elevation			Slope			p-Value	R^2
		Estimate	lower CI	upper CI	Estimate	lower CI	upper CI		
log(DWU)	WD	8.164	6.784	9.544	-10.382	-13.170	-8.184	0.867	0.000
log(J_s)	WD	4.689	4.059	5.320	-5.008	-6.285	-3.991	0.011	0.090
log(ABI)	WD	-2.887	-4.256	-1.517	10.321	8.191	13.004	0.842	0.001
log(Height)	WD	1.511	1.170	1.853	3.048	2.498	3.720	0.164	0.020
log(DWU)	log(D_h)	-13.120	-16.440	-9.799	3.131	2.543	3.857	< 0.001	0.317
log(J_s)	log(D_h)	-5.307	-7.025	-3.589	1.449	1.148	1.828	0.002	0.146
log(ABI)	log(D_h)	-12.761	-16.203	-9.320	3.067	2.466	3.816	< 0.001	0.148
log(Height)	log(D_h)	-1.265	-2.131	-0.399	0.879	0.725	1.066	< 0.001	0.151
log(ABI)	log(DWU)	-0.762	-1.531	0.006	1.271	1.028	1.572	< 0.001	0.397

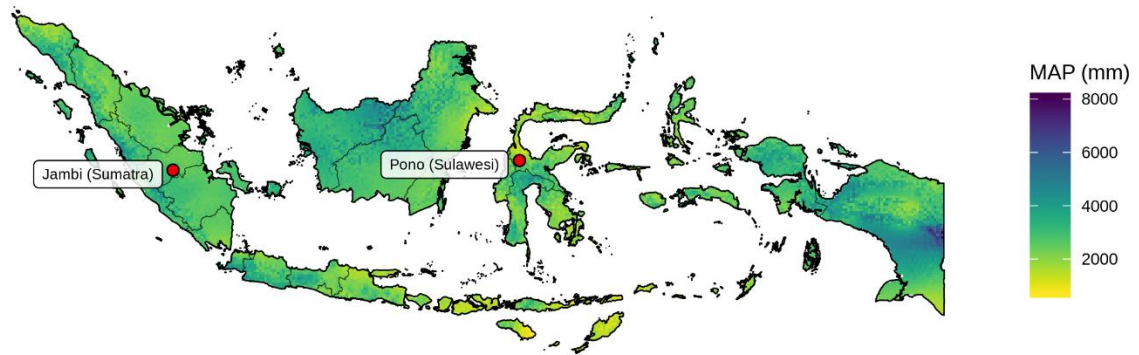


Figure S1: Map of the Indonesia showing the location of the two research areas overlaid with long-term mean annual precipitation based on data from the CHELSA climatologies (Karger et al. 2017).

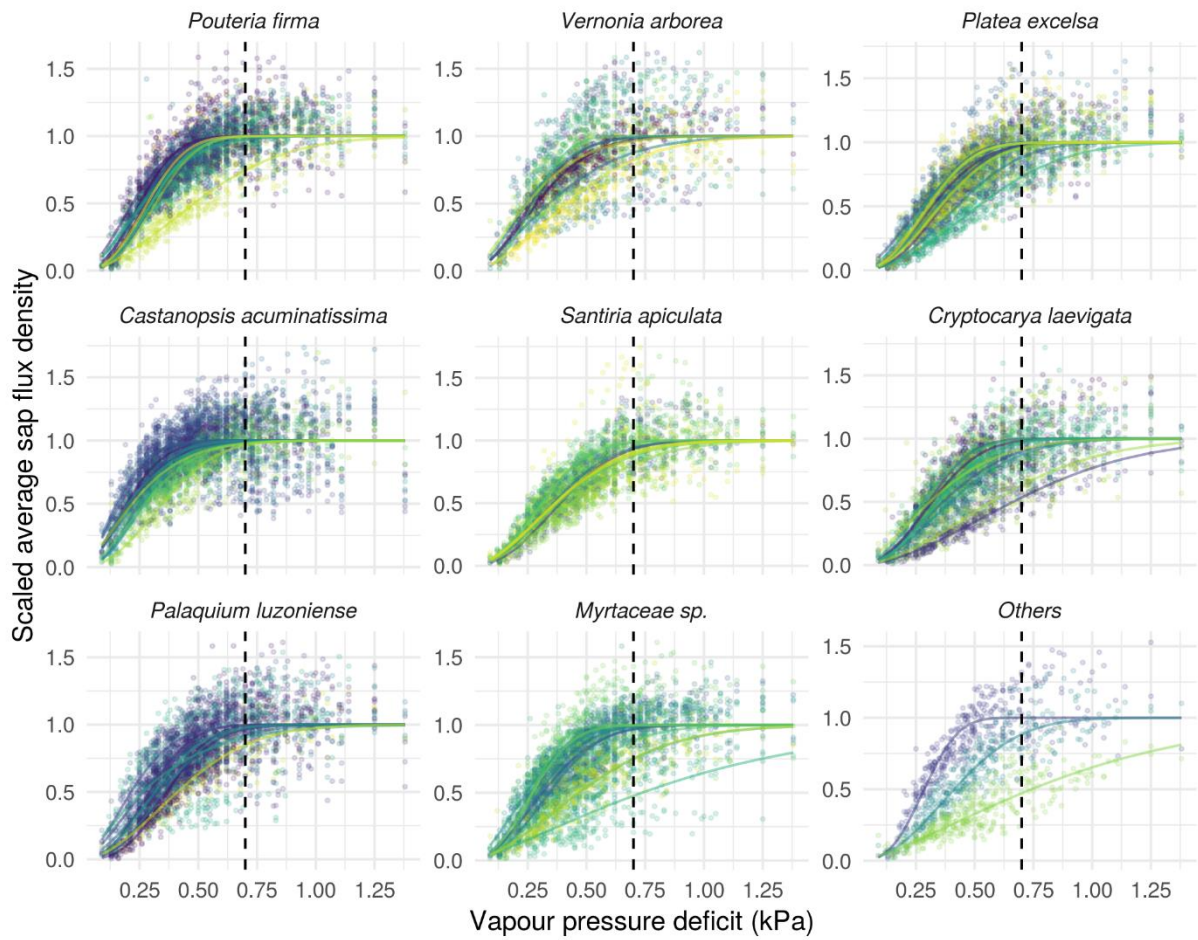


Figure S2: Harmonized daily mean sap flux density (J_s) in relation to daily mean vapour pressure deficit (VPD) for all trees from Sulawesi for 2008. The dashed line indicates a VPD of 0.7 kPa. To model the relationship between J_s and VPD , a cumulative distribution function of a Weibull function has been used separately for each tree (colours indicate tree individuals).

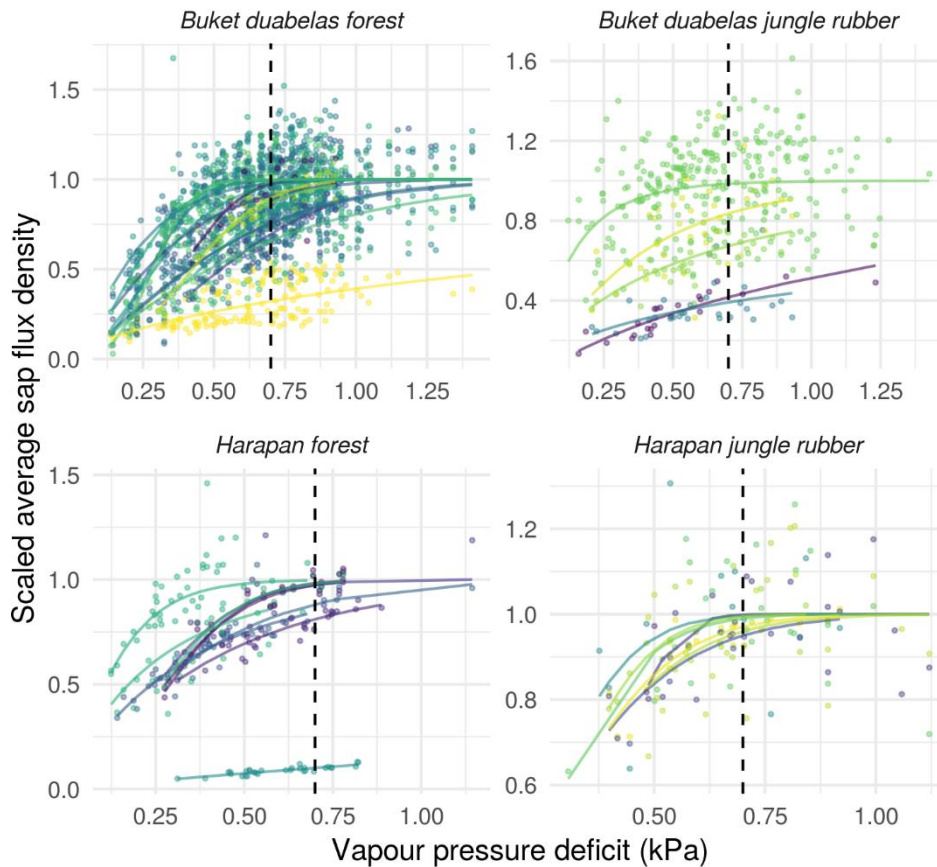


Figure S3: Harmonized daily mean sap flux density (J_s) in relation to daily mean vapour pressure deficit (VPD) for all trees from Sumatra. The dashed line indicates a VPD of 0.7 kPa. To model the relationship between J_s and VPD, a cumulative distribution function of a Weibull function has been used separately for each tree (colours indicate tree individuals).

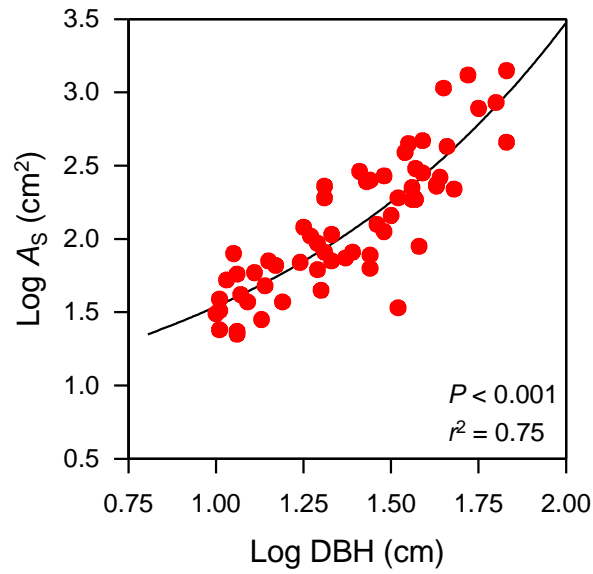


Figure S4: Logarithmized sapwood area (A_s) identified by dye injection in relationship to logarithmized diameter at breast height (DBH) for 13 tropical tree species from Indonesia ($n = 66$ mature trees).

