Supplemental Materials

Plant Hydraulic Trait Covariation: A Global Meta-Analysis to Reduce Degrees of Freedom in Trait-Based Hydrologic Models

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Table S1: Outliers which were removed manually for extremophile species. Additional excluded outliers include conduit densities greater than 300 mm^{-1}, root depths greater than 15 m, and precipitation values less than zero.

Species	*a*	MAP	Ψ_{50}	K_{max}	Wood density
Abies balsamea	17.17				
Astronium urundeuva				16.03	
Betula occidentalis				10.00	
Bursera simaruba				20.80	
Cedrus atlantica	13.21				
Cordia alliodora				9.74	
Dodonaea viscosa					1.05
Garrya veatchii					0.00
Hybanthus prunifolius				10.94	
Juniperus monosperma	25.21		-11.28		
Leptospermum scoparium					1.03
Lomariopsis japurensis		4000			
Lomariopsis vestita		4000			
Pinus elliottii				10.36	
Populus deltoides				16.39	
Populus trichocarpa	15.62				
Solanum riparium				11.29	
Swartzia simplex				13.53	
Tsuga canadensis	15.26				

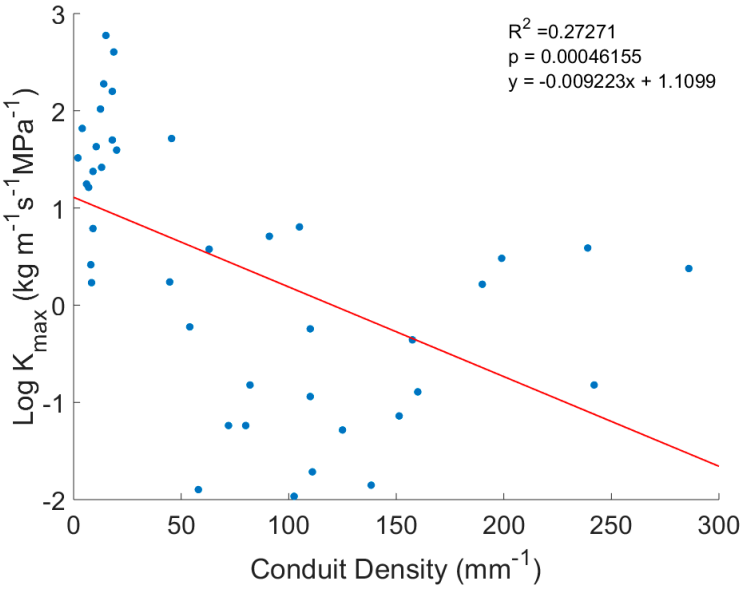

Figure S1: Log-transformed K_{max} increases with lower conduit density ($R^2 = 0.27$, $p = 0.0005$), Markers represent individual species ($n = 41$).

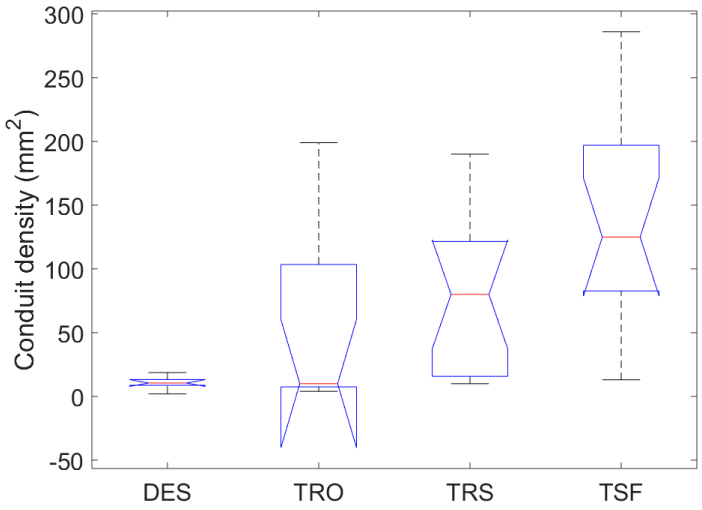

Figure S2: ANOVA analysis with conduit density per biomes desert (DES), tropical forest (TRO), tropical seasonal forest (TRS), temperate seasonal forest (TSF). Desert species have the lowest conduit density while tropical forests have the highest (Prob > F = .0019).

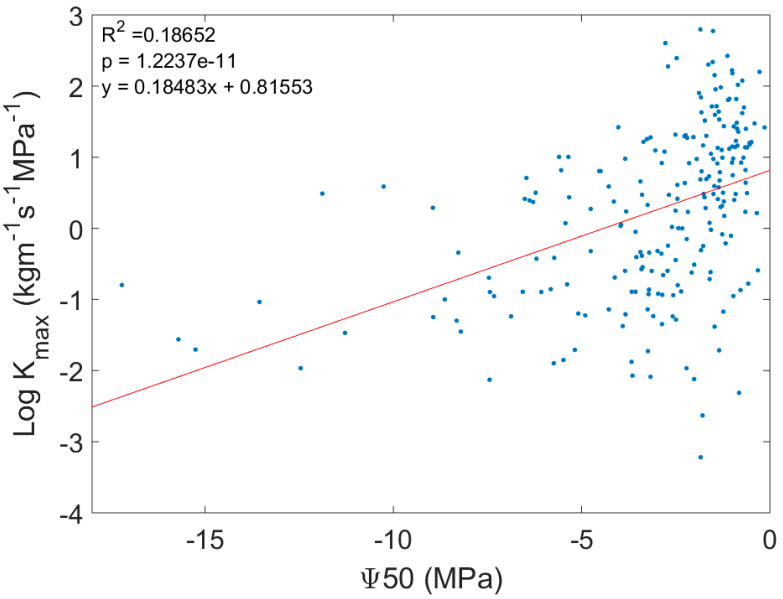

Figure S3: The positive linear relationship between log-transformed K_{max} and the water potential at which 50% of hydraulic conductivity is lost (R^2 = 0.19, p <0.0001), Markers represent individual species (n=225).

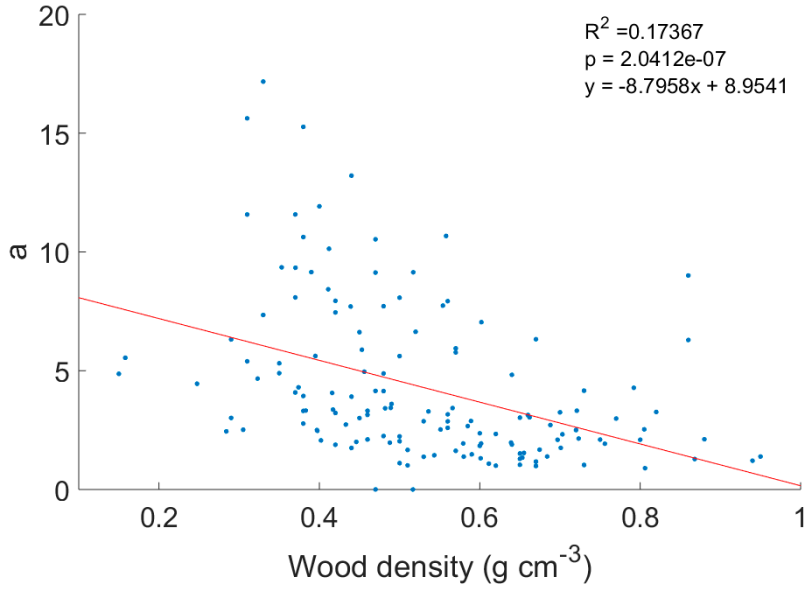

Figure S4: Increased wood density promotes resistance to embolism which can be seen as a lower *a*. *a* is representative of the steepness of the xylem cavitation curve at Ψ_{50}. Large values of a represent faster losses in conductivity with decreasing Ψ, while smaller values represent slower declines in conductivity. (R^2=0.17, p <0.0001) Markers represent individual species (n = 144).

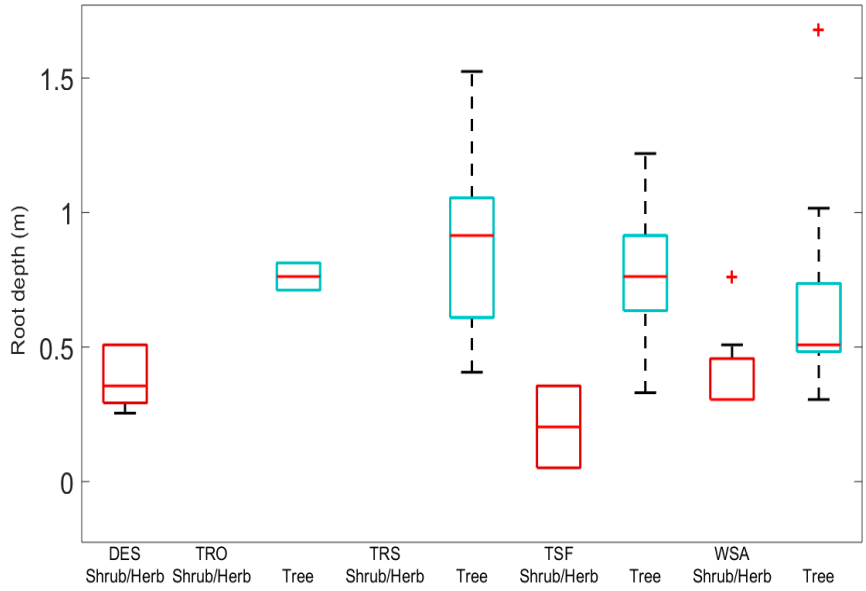

Figure S5: Rooting depth differs substantially across biomes with growth form. From left to right along the *x*-axis biomes are desert (DES), tropical forest (TRO), tropical-seasonal forest (TRS), temperate-seasonal forest (TSF), and woodland/shrubland (WSA). Trees tend to be more deeply rooted than shrubs and grasses. Missing bars are indicative of growth forms not represented within the data set for a particular biome.

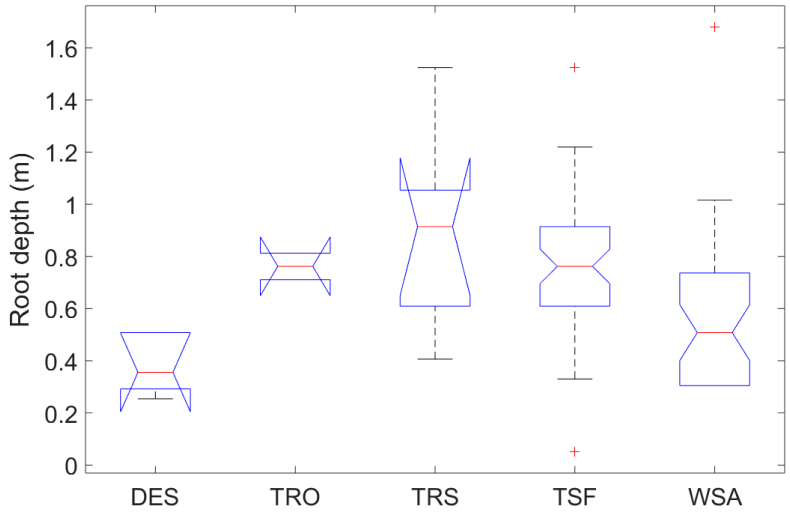

Figure S6: ANOVA analysis of rooting depth across desert (DES), tropical forest (TRO), tropical seasonal forest (TRS), temperate seasonal forest (TSF), and woodland/shrubland (WSA) categorized biomes (left to right) (Prob> *F* = .0004).

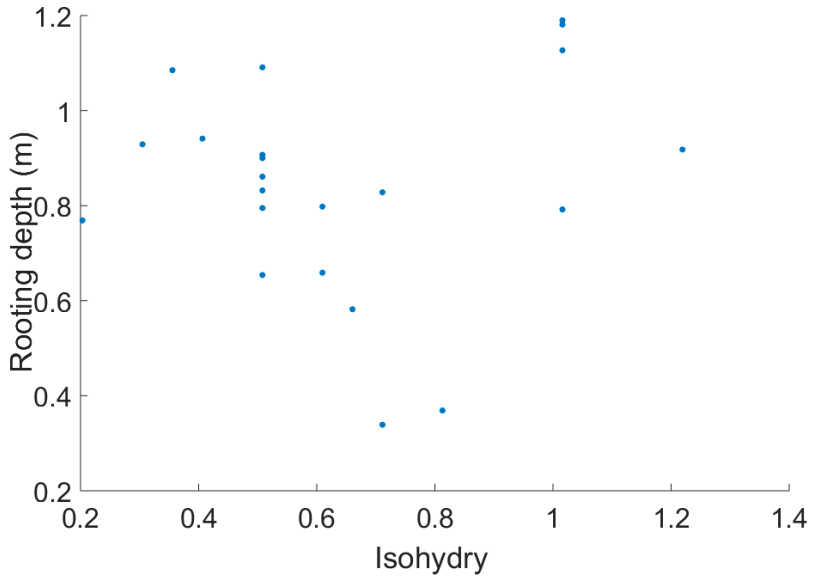

Figure S7: No significant relationship was found between isohydry and rooting depth for the 22 species for which data were available ($p = 0.57$)

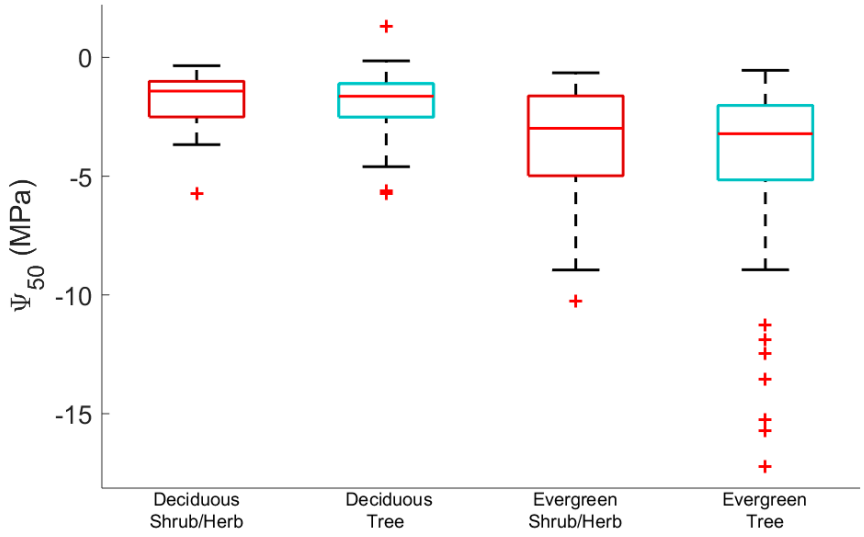

Figure S8: Evergreen trees withstand greater negative pressures than deciduous shrubs or herbs. While evergreen shrubs demonstrate a wider range of Ψ_{50} than deciduous species.