

## Supplementary Material

### **Drought and frost resistance vary between evergreen and deciduous Atlantic Forest canopy trees**

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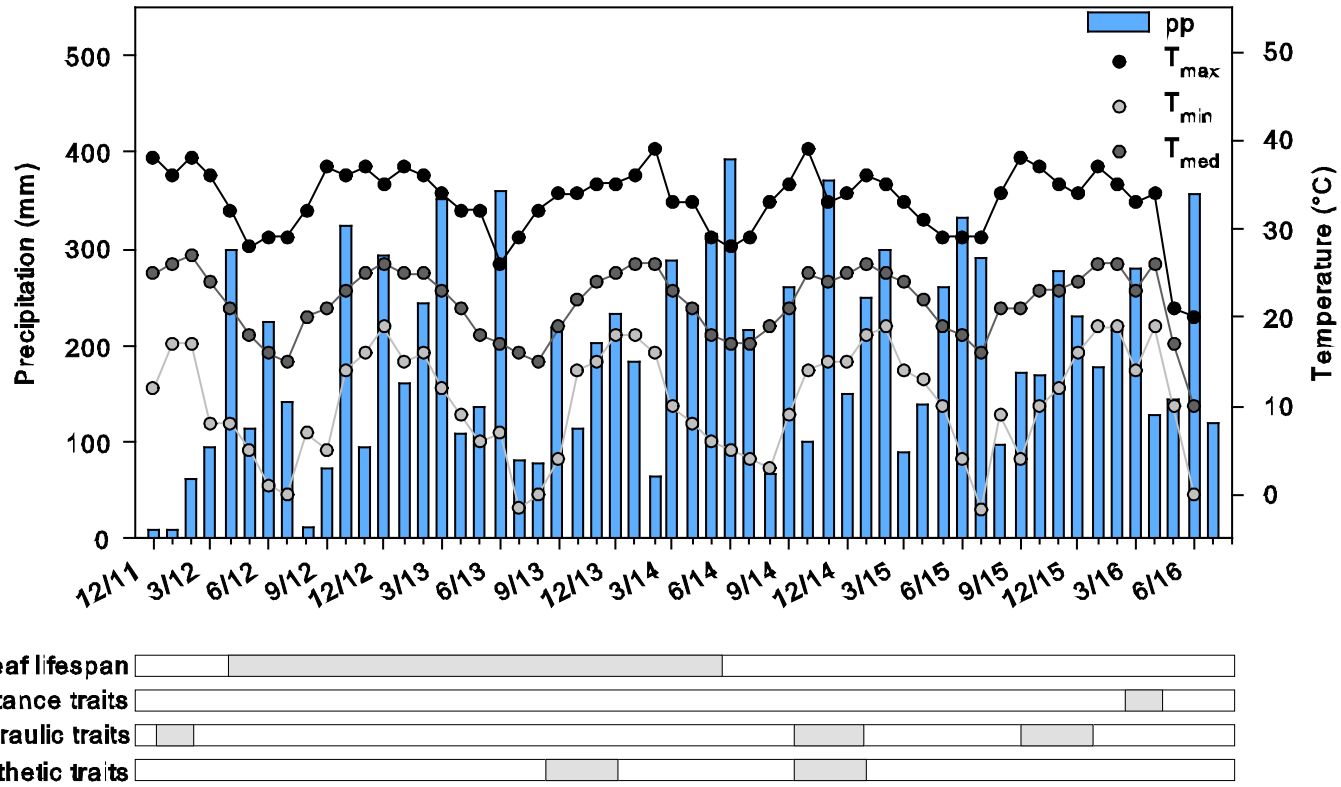
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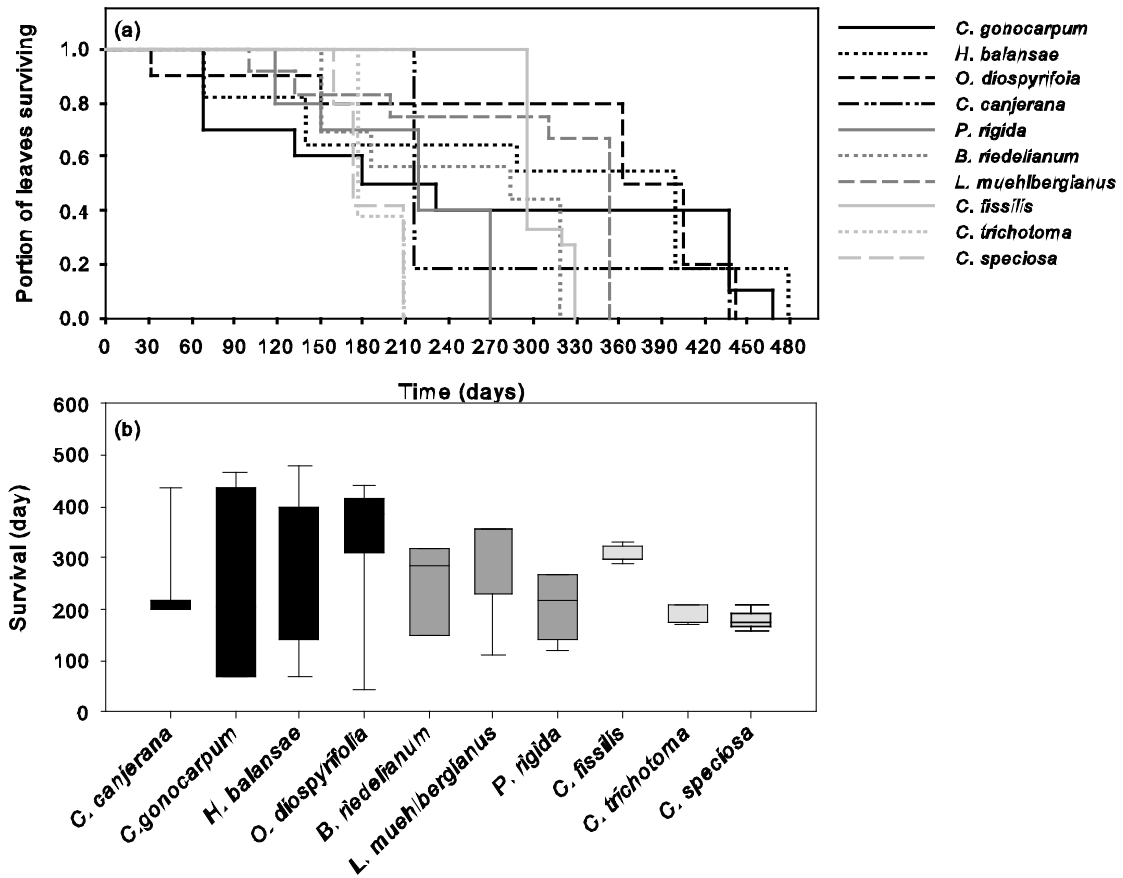
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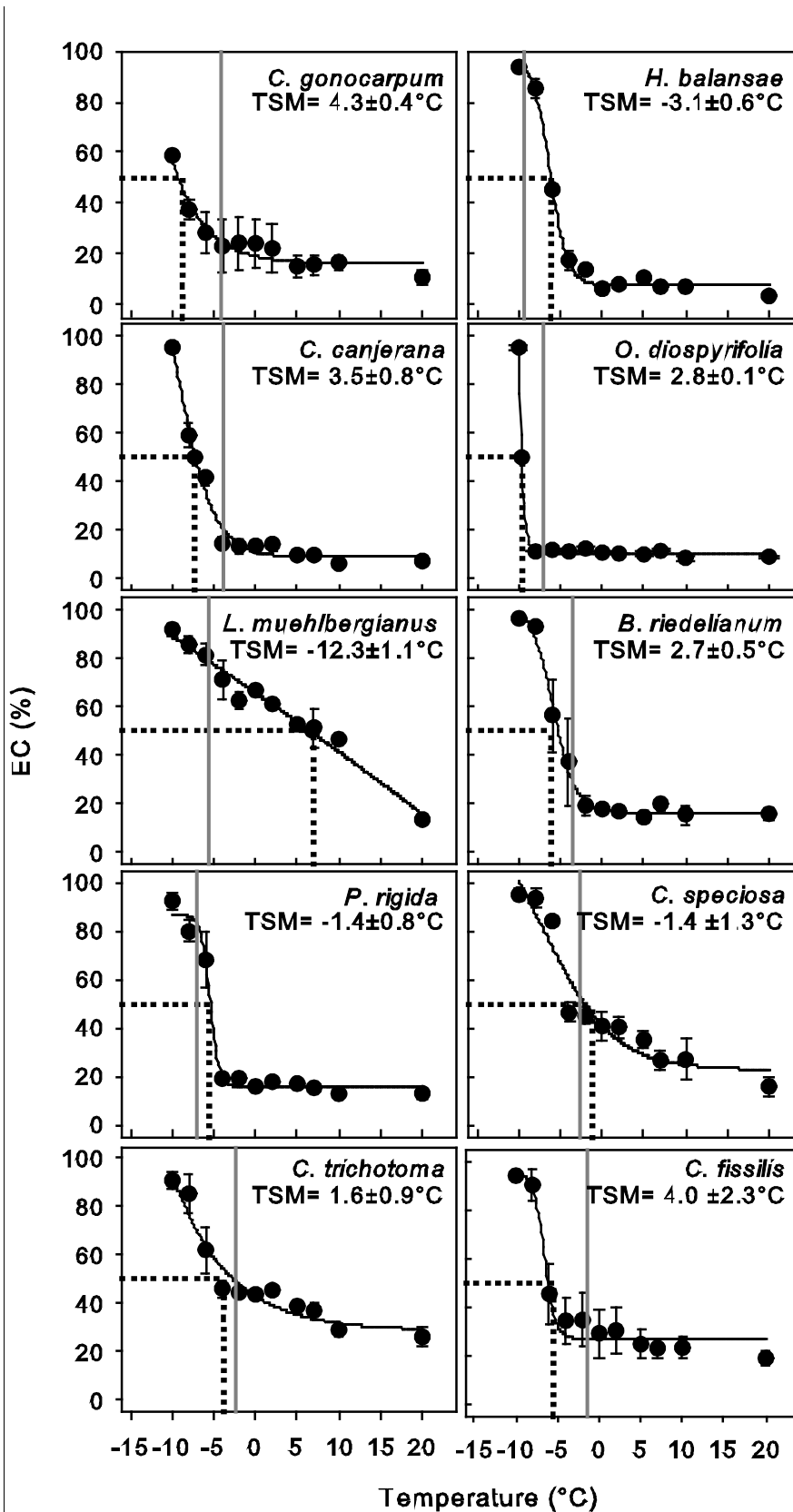
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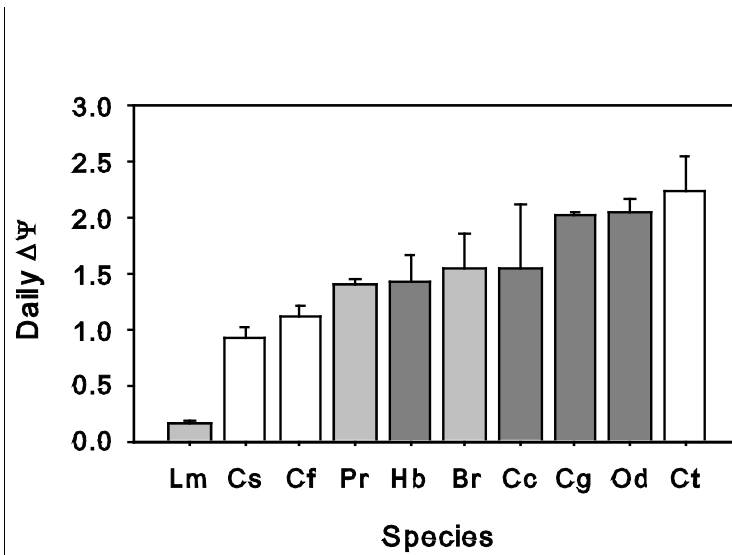
**Fig. S1.** Monthly precipitation, maximum, mean, and minimum temperature recorded during the study period, from December 2011 to July 2016, and the time when the different measurements occurred.



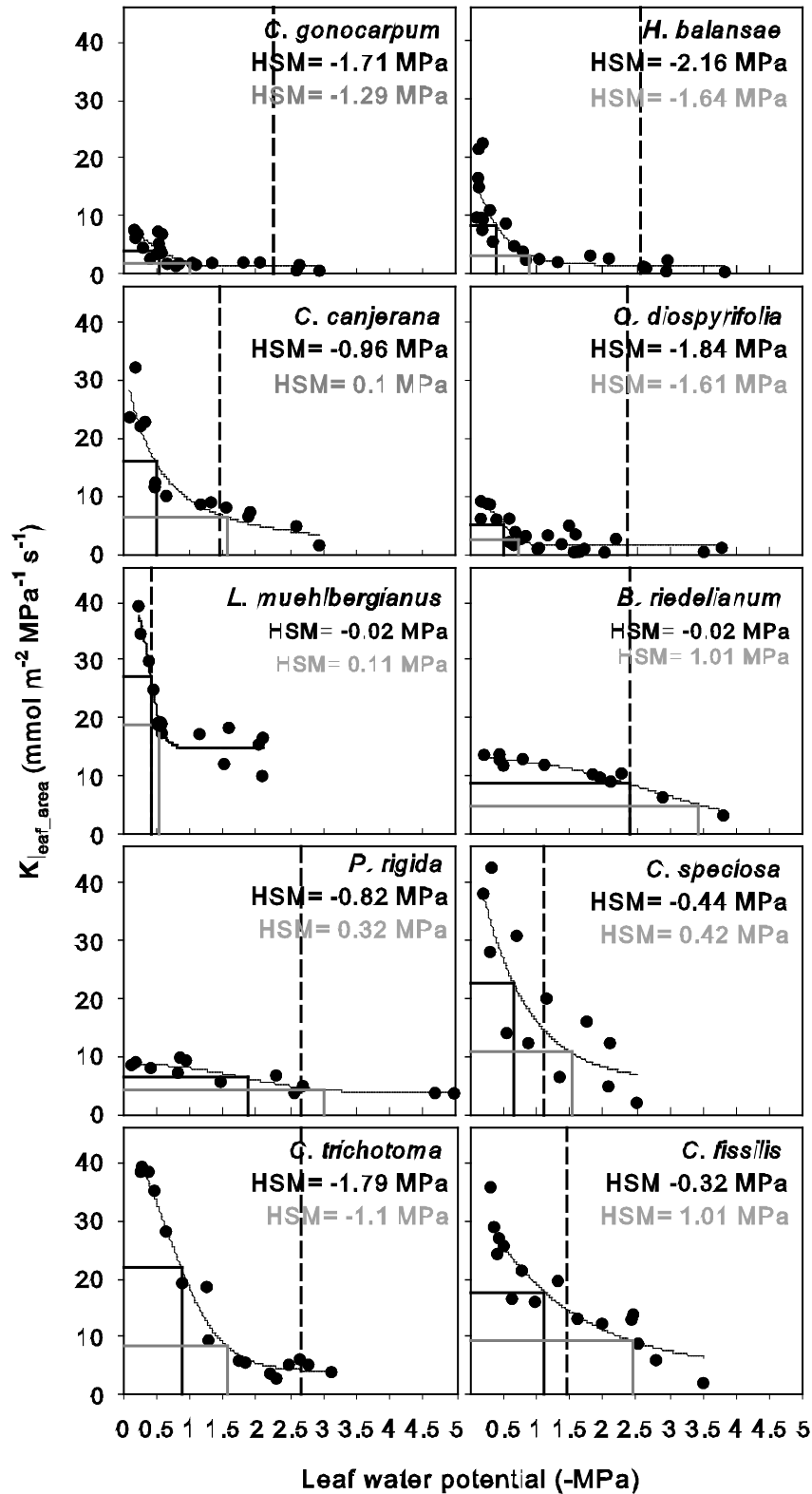
**Fig. S2.** (a) Kaplan–Meier survival curves, and (b) boxplot of survival time for the 10 tree species. Colors indicate leaf habit, black= evergreen species, dark grey= brevideciduous species, and grey = deciduous species.



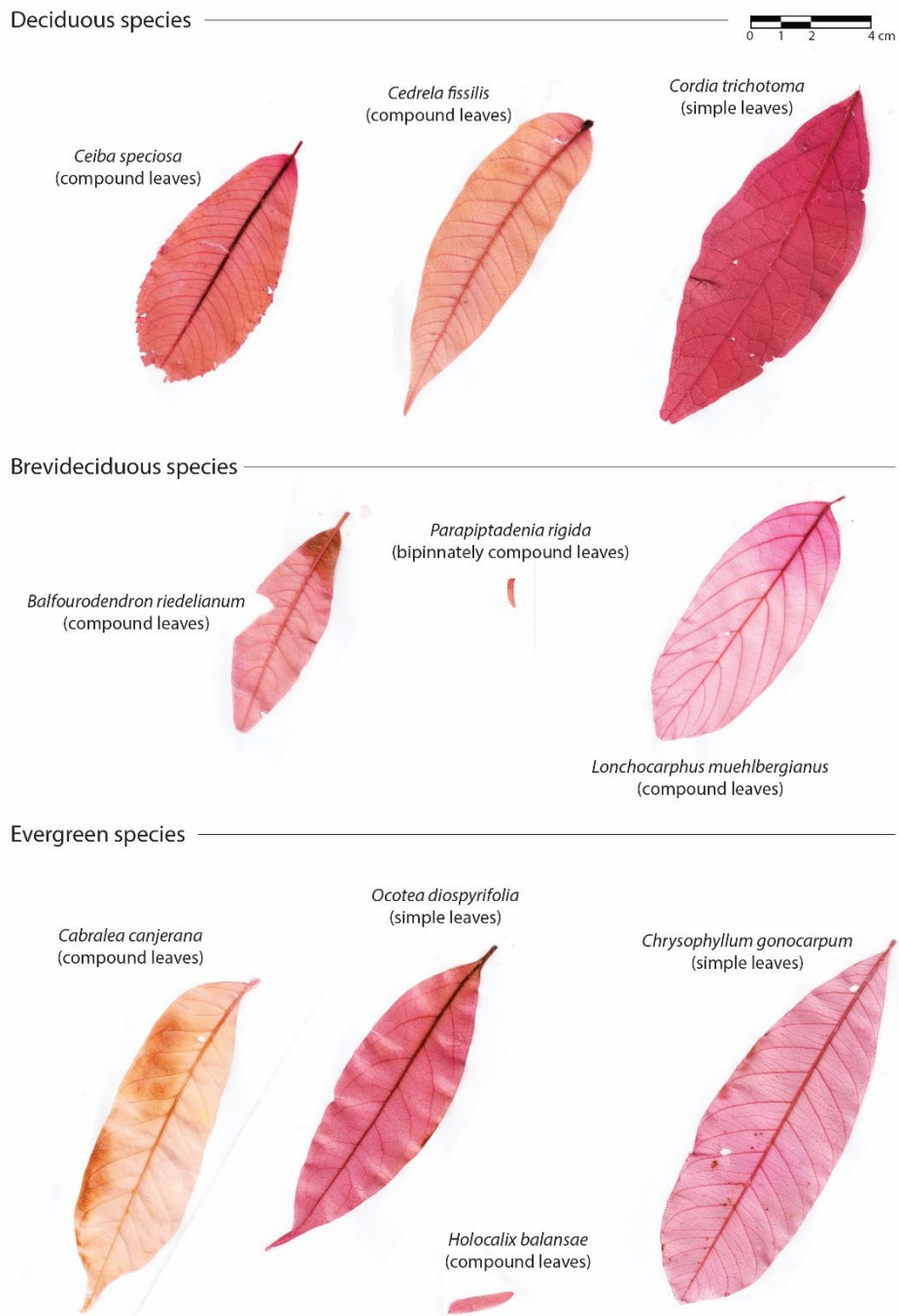
**Fig. S3.** Response of electrical conductivity to leaf tissue temperature in 10 tree species. Sigmoid functions were fitted to the data ( $P < 0.001$ ) for all the regressions. Grey lines indicate ice nucleation temperature, dotted lines indicate lethal leaf temperature, and TSM indicates thermal safety margin.



**Fig. S4.** Daily differences ( $\Delta\Psi$ ) between predawn ( $\Psi_{pd}$ ) and midday ( $\Psi_{md}$ ) leaf water potential for 10 tree species of the semi-deciduous Atlantic Forest. Lm: *L. muehlbergianus*, Cs: *C. speciosa*, Cf: *C. fissilis*, Pr: *P. rigida*, Hb: *H. balansae*, Br: *B. riedelianum*, Cc: *C. canjerana*, Cg: *C. gonocarpum*, Od: *O. diospyrifolia*, Ct: *C. trichotoma*. White bars: deciduous species, light gray bars: brevideciduous species, and dark gray bars: evergreen species.



**Fig. S5.** Response of  $K_{\text{leaf}}$  to  $\Psi_{\text{leaf}}$  in each of the 10 species studied. Each point represents the average  $K_{\text{leaf}}$  from two leaves per branch. Sigmoid functions were fitted to the data ( $P < 0.001$ ) for all the regressions. Dotted lines indicate the  $\Psi_{\text{md}}$ , black line indicate P50, and grey line P88.



**Fig. S6.** Diaphanized leaves of 10 deciduous, brevideciduous, and evergreen tree species.

**Table S1. Pearson correlation coefficients/p value for (a) deciduous and brevideciduous species, and (b) evergreen species corresponding the correlation networks in Figure 5**

INT, TL50, and TSM of *L. muehlbergianum* were excluded from the correlation in a

	INT	TL50	TSM	$\Psi_{md}$	$\Delta\Psi$	P50	P88	HSM <sub>P88</sub>	K <sub>leaf</sub>	TLP	$\varepsilon$	SLA	ETR
INT	1	0.37	0.01	1	0.35	0.41	0.85	0.95	0.02	0.18	1.0E-02	0.12	0.65
TL50	-0.22	1	2.2E-08	5.3E-04	3.2E-03	1.1E-03	1.2E-05	0.37	0.05	0.3	0.18	0.04	0.96
TSM	0.5	<b>-0.61</b>	1	0.01	4.0E-03	0.03	1.4E-03	0.44	0.45	0.7	0.83	0.01	0.84
$\Psi_{md}$	1.3E-03	0.21	-0.12	1	1.7E-07	2.8E-03	2.2E-03	0.4	0.04	0.01	0.04	0.02	0.33
$\Delta\Psi$	0.23	-0.24	0.02	<b>-0.91</b>	1	0.09	0.06	0.13	0.53	2.0E-02	0.45	5.2E-04	0.28
P50	0.21	<b>0.68</b>	-0.52	<b>0.66</b>	-0.41	1	1.6E-09	0.05	5.1E-07	0.16	2.6E-05	0.95	0.9
P88	0.05	<b>0.72</b>	-0.14	<b>0.67</b>	-0.45	<b>0.95</b>	1	0.02	5.1E-05	0.44	1.4E-03	0.64	0.76
HSM <sub>P88</sub>	0.01	-0.23	0.2	0.21	-0.37	-0.47	-0.53	1	0.06	0.02	0.14	0.08	0.06
K <sub>leaf</sub>	<b>0.7</b>	<b>0.67</b>	-0.19	0.49	-0.16	<b>0.9</b>	<b>0.81</b>	-0.44	1	0.2	1.3E-06	0.29	0.47
TLP	0.33	0.26	-0.1	<b>0.61</b>	-0.53	0.34	0.19	0.56	0.31	1	0.13	0.31	0.04
$\varepsilon$	<b>-0.75</b>	-0.33	0.05	-0.49	0.19	<b>-0.82</b>	<b>-0.69</b>	0.36	<b>-0.88</b>	-0.37	1	0.4	0.88
SLA	-3.8E-01	0.5	-0.56	0.53	<b>-0.73</b>	-0.02	0.12	0.42	-0.26	0.25	0.21	1	0.61
ETR	0.13	-0.02	0.06	-0.28	0.31	1.2E-04	0.09	-0.53	0.21	-0.09	-0.05	-0.15	1

(a)

(b)

	INT	TL50	TSM	$\Psi_{md}$	$\Delta\Psi$	P50	P88	HSM <sub>P88</sub>	K <sub>leaf</sub>	TLP	$\varepsilon$	SLA	ETR
INT	1	0.51	3.0E-04	0.1	0.56	4.9E-03	0.03	0.01	0.76	0.7	8.6E-01	0.52	0.86
TL50	-0.21	1	0.02	0.27	0.01	0.02	0.31	0.59	0.05	0.01	0.03	0.91	0.13
TSM	<b>0.86</b>	<b>-0.68</b>	1	0.53	0.08	3.8E-05	0.33	0.16	0.49	0.41	3.7E-01	0.67	0.4
$\Psi_{md}$	0.5	0.34	0.2	1	0.01	0.53	0.07	0.05	0.25	0.31	0.5	0.69	0.78
$\Delta\Psi$	0.19	<b>-0.75</b>	0.53	<b>-0.69</b>	1	0.14	0.44	0.58	0.15	0.16	0.21	0.96	0.53
P50	<b>-0.75</b>	<b>0.67</b>	<b>-0.91</b>	-0.2	-0.45	1	0.92	0.62	0.09	0.13	1.0E-01	0.89	0.19
P88	<b>-0.62</b>	-0.32	-0.31	-0.54	0.25	0.03	1	1.5E-08	9.3E-04	5.0E-03	2.9E-03	0.86	0.26
HSM <sub>P88</sub>	<b>0.69</b>	0.17	0.43	0.5	-0.18	-0.16	<b>-0.98</b>	1	4.0E-03	0.02	0.01	0.87	0.32
K <sub>leaf</sub>	0.1	0.5	-0.22	0.36	-0.44	0.51	<b>-0.83</b>	<b>0.76</b>	1	1.9E-04	2.0E-05	0.97	0.04
TLP	0.12	<b>0.69</b>	-0.26	0.32	-0.43	0.46	<b>-0.75</b>	<b>0.67</b>	<b>0.88</b>	1	6.0E-05	0.48	0.03
$\varepsilon$	-0.06	<b>-0.63</b>	0.28	-0.22	0.39	-0.49	<b>0.78</b>	<b>-0.7</b>	<b>-0.92</b>	<b>-0.9</b>	1	0.71	0.04
SLA	0.2	0.03	0.14	0.13	0.02	-0.05	-0.06	0.05	0.01	-0.22	0.12	1	0.73
ETR	-0.07	0.54	-0.32	0.11	-0.24	0.48	-0.42	0.38	<b>0.70</b>	<b>0.72</b>	<b>-0.64</b>	-0.14	1



**Table S2. Descriptors of trait network for (a) deciduous-breveciduous species, and (b) evergreen species**

Dw: defined as the sum of all significant coefficients of correlation of a node; D: defined as the number of edges of a node

	Deciduous-Breveciduous		Evergreen	
	Dw	D	Dw	D
INT	1.46	2	2.92	4
TL50	2.68	4	3.42	5
TSM	0.61	1	2.45	3
$\Psi_{md}$	2.85	4	0.69	1
$\Delta\Psi$	1.64	2	1.44	2
P50	<b>4.01</b>	<b>5</b>	2.33	3
P88	<b>3.84</b>	<b>5</b>	3.96	5
HSM <sub>P88</sub>	–	0	3.8	5
$K_{leaf-max}$	<b>3.97</b>	<b>5</b>	4.09	5
TLP	0.61	1	<b>4.61</b>	<b>6</b>
$\epsilon$	3.14	4	<b>4.57</b>	<b>6</b>
SLA	0.73	1	–	0
ETR	–	0	2.06	3
<i>Overall network</i>	<i>25.54</i>	<i>34</i>	<i>36.34</i>	<i>48</i>