



Supplement of

Regional effects and local climate jointly shape the global distribution of sexual systems in woody flowering plants

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Table S1. Correlation among bioclimate factors across the 55 forest plots. Variables (in bold) with pairwise Pearson correlation coefficients >0.95 were excluded to avoid collinearity.

	MAT	MAP	PET	Bio1	Bio2	Bio3	Bio4	Bio5	Bio6	Bio7	Bio8	Bio9	Bio10	Bio11	Bio12	Bio13	Bio14	Bio15	Bio16	Bio17	Bio18	Bio19
MAT	1.00	0.62	0.60	0.97	-0.58	0.72	-0.87	0.62	0.95	-0.89	0.69	0.87	0.81	0.95	0.75	0.70	0.38	-0.15	0.71	0.40	0.44	0.49
MAP	0.62	1.00	0.26	0.62	-0.63	0.50	-0.60	0.22	0.65	-0.67	0.43	0.58	0.46	0.63	0.83	0.71	0.45	-0.14	0.76	0.51	0.58	0.61
PET	0.60	0.26	1.00	0.71	-0.03	0.60	-0.62	0.67	0.65	-0.54	0.39	0.73	0.63	0.70	0.37	0.42	0.06	0.19	0.40	0.10	0.07	0.32
Bio1	0.97	0.62	0.71	1.00	-0.54	0.73	-0.89	0.69	0.97	-0.89	0.68	0.92	0.85	0.98	0.73	0.69	0.34	-0.08	0.70	0.37	0.42	0.47
Bio2	-0.58	-0.63	-0.03	-0.54	1.00	-0.17	0.47	-0.08	-0.59	0.64	-0.48	-0.42	-0.47	-0.53	-0.67	-0.66	-0.30	0.17	-0.66	-0.34	-0.65	-0.25
Bio3	0.72	0.50	0.60	0.73	-0.17	1.00	-0.84	0.33	0.78	-0.78	0.37	0.78	0.41	0.80	0.55	0.39	0.38	-0.18	0.41	0.41	0.05	0.67
Bio4	-0.87	-0.60	-0.62	-0.89	0.47	-0.84	1.00	-0.35	-0.96	0.98	-0.41	-0.94	-0.52	-0.96	-0.66	-0.59	-0.33	0.17	-0.59	-0.37	-0.27	-0.57
Bio5	0.62	0.22	0.67	0.69	-0.08	0.33	-0.35	1.00	0.53	-0.31	0.59	0.57	0.90	0.57	0.39	0.39	0.16	0.06	0.40	0.15	0.17	0.20
Bio6	0.95	0.65	0.65	0.97	-0.59	0.78	-0.96	0.53	1.00	-0.97	0.56	0.96	0.72	0.99	0.75	0.68	0.37	-0.17	0.69	0.41	0.38	0.55
Bio7	-0.89	-0.67	-0.54	-0.89	0.64	-0.78	0.98	-0.31	-0.97	1.00	-0.46	-0.91	-0.55	-0.96	-0.73	-0.65	-0.37	0.20	-0.66	-0.41	-0.38	-0.57
Bio8	0.69	0.43	0.39	0.68	-0.48	0.37	-0.41	0.59	0.56	-0.46	1.00	0.42	0.79	0.58	0.56	0.56	0.29	0.05	0.56	0.29	0.60	0.10
Bio9	0.87	0.58	0.73	0.92	-0.42	0.78	-0.94	0.57	0.96	-0.91	0.42	1.00	0.66	0.96	0.67	0.62	0.29	-0.08	0.63	0.33	0.24	0.58
Bio10	0.81	0.46	0.63	0.85	-0.47	0.41	-0.52	0.90	0.72	-0.55	0.79	0.66	1.00	0.73	0.62	0.62	0.27	0.02	0.62	0.28	0.46	0.25
Bio11	0.95	0.63	0.70	0.98	-0.53	0.80	-0.96	0.57	0.99	-0.96	0.58	0.96	0.73	1.00	0.72	0.66	0.35	-0.13	0.67	0.38	0.36	0.53
Bio12	0.75	0.83	0.37	0.73	-0.67	0.55	-0.66	0.39	0.75	-0.73	0.56	0.67	0.62	0.72	1.00	0.87	0.67	-0.21	0.90	0.71	0.68	0.65
Bio13	0.70	0.71	0.42	0.69	-0.66	0.39	-0.59	0.39	0.68	-0.65	0.56	0.62	0.62	0.66	0.87	1.00	0.30	0.21	0.98	0.34	0.70	0.44
Bio14	0.38	0.45	0.06	0.34	-0.30	0.38	-0.33	0.16	0.37	-0.37	0.29	0.29	0.27	0.35	0.67	0.30	1.00	-0.67	0.35	0.99	0.43	0.46
Bio15	-0.15	-0.14	0.19	-0.08	0.17	-0.18	0.17	0.06	-0.17	0.20	0.05	-0.08	0.02	-0.13	-0.21	0.21	-0.67	1.00	0.16	-0.67	-0.01	-0.27
Bio16	0.71	0.76	0.40	0.70	-0.66	0.41	-0.59	0.40	0.69	-0.66	0.56	0.63	0.62	0.67	0.90	0.98	0.35	0.16	1.00	0.40	0.71	0.51
Bio17	0.40	0.51	0.10	0.37	-0.34	0.41	-0.37	0.15	0.41	-0.41	0.29	0.33	0.28	0.38	0.71	0.34	0.99	-0.67	0.40	1.00	0.45	0.51
Bio18	0.44	0.58	0.07	0.42	-0.65	0.05	-0.27	0.17	0.38	-0.38	0.60	0.24	0.46	0.36	0.68	0.70	0.43	-0.01	0.71	0.45	1.00	0.03
Bio19	0.49	0.61	0.32	0.47	-0.25	0.67	-0.57	0.20	0.55	-0.57	0.10	0.58	0.25	0.53	0.65	0.44	0.46	-0.27	0.51	0.51	0.03	1.00

Table S2. The variance inflation factors (VIFs) of variables were included in the full models. Variables with VIF>10 (in bold) were excluded except for two plot character variables (Number of species and Number of trees).

Explanatory variables	Variance inflation factors (VIF)	
	Proportion of species	Proportion of individuals
Latitude	15.832	28.563
Longitude	22.900	108.820
Region	3.963	6.228
Elevation	6.565	11.413
Island	7.856	11.397
Number of species	46.251	71.214
Number of stems	50.495	68.233
Area	17.281	23.811
Mean species age	6.532	6.976
MAT (Observed Mean Annual Temperature)	59.503	59.879
MAP (Observed Mean Annual Precipitation)	8.130	10.375
Mean species age×MAP	6.339	6.746
PET (Potential Evapotranspiration)	17.035	20.671
BIO2 (Mean Diurnal Range)	16.059	21.447
BIO3 (Isothermality)	25.646	30.448
BIO5 (Max Temperature of Warmest Month)	43.546	65.928
BIO6 (Min Temperature of Coldest Month)	64.098	80.874
BIO8 (Mean Temperature of Wettest Quarter)	20.075	22.494
BIO10 (Mean Temperature of Warmest Quarter)	52.460	82.824
BIO12 (Annual Precipitation)	33.850	54.377
BIO13 (Precipitation of Wettest Month)	21.750	40.514
BIO14 (Precipitation of Driest Month)	14.029	16.702
BIO15 (Precipitation Seasonality)	10.819	21.922
BIO18 (Precipitation of Warmest Quarter)	9.395	16.641
BIO19 (Precipitation of Coldest Quarter)	7.322	10.482

Table S3. The results of multivariate multinomial logistic model for the proportion of dioecious, monoecious, and hermaphroditic individuals in woody flowering plants. Dioecy is set as the baseline. M and H represent monoecy and hermaphroditism respectively. The region effects were coded in reference to Tropical Africa. *P* values indicate the significance of the *z* test. β 's are the coefficients of the multinomial logistic regression model given in the main text.

Explanatory variables	Coefficient (SE)		<i>P</i> (> <i>z</i>) value	
	M (β_2)	H (β_3)	M	H
Intercept	1.712 (0.032)	1.630 (0.023)	<2.2e-16	<2.2e-16
Region Europe	5.960 (0.098)	1.806 (0.100)	<2.2e-16	<2.2e-16
Region Neotropical	-0.250 (6.80e-3)	0.228 (4.55e-3)	<2.2e-16	<2.2e-16
Region North America	-0.185 (8.62e-3)	-0.952 (7.87e-3)	<2.2e-16	<2.2e-16
Region Oceania	-0.775 (7.37e-3)	-0.977 (4.95e-3)	<2.2e-16	<2.2e-16
Region Temperate Asia	-0.079 (4.64e-3)	-0.282 (3.50e-3)	<2.2e-16	<2.2e-16
Region Tropical Asia	-0.237 (4.46e-3)	-0.058 (3.09e-3)	<2.2e-16	<2.2e-16
Mean species age	1.142 (0.019)	-0.980 (0.015)	<2.2e-16	<2.2e-16
Number of species	-0.219 (3.29e-3)	-0.265 (2.18e-3)	<2.2e-16	<2.2e-16
Number of trees	-0.081 (2.78e-3)	0.063 (2.02e-3)	<2.2e-16	<2.2e-16
Mean species age × MAP	-3.122 (0.044)	3.120 (0.031)	<2.2e-16	<2.2e-16

Figure S1. The relationships between the proportion of flowering plants with different sexual systems and latitude.

(a), (c) and (e) are for the proportion of species, and (b), (d), and (f) are for the proportion of the individual. D, M, and H represent dioecy, monoecy, and hermaphroditism, respectively. The blue is the multinomial logistic model that only includes latitude as the explanatory variable (no other variables are included). The red curves are the fitted proportions based on the best selected model, i.e., the model presented in Table 1 and S3 for species and individuals, respectively. R^2 values associated with the models only including latitude are given in each panel.

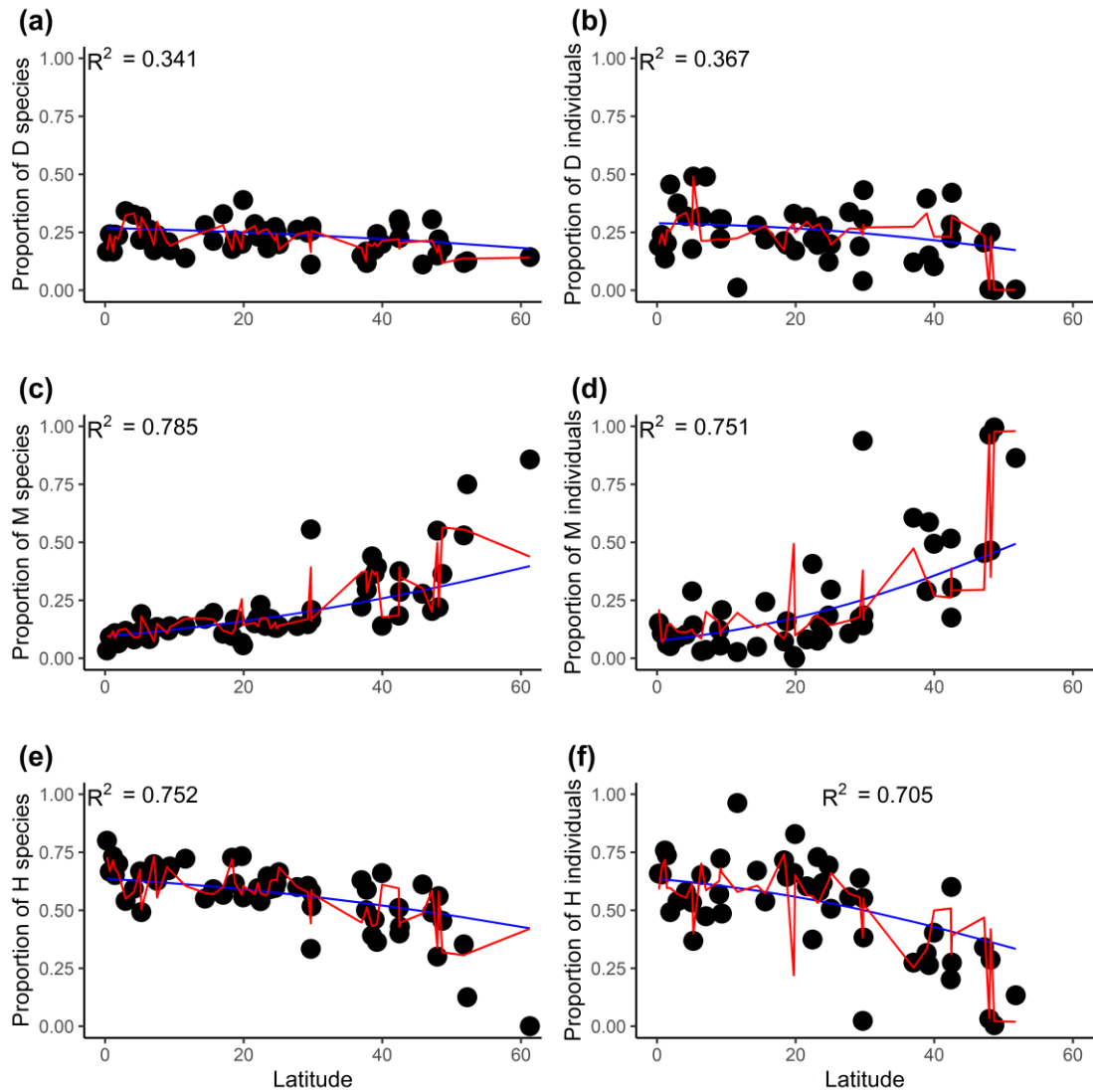


Figure S2. Phylogenetic distribution of sexual systems (D for dioecy, H for hermaphroditism, M for monoecy) in woody flowering plants of the 55 plots.

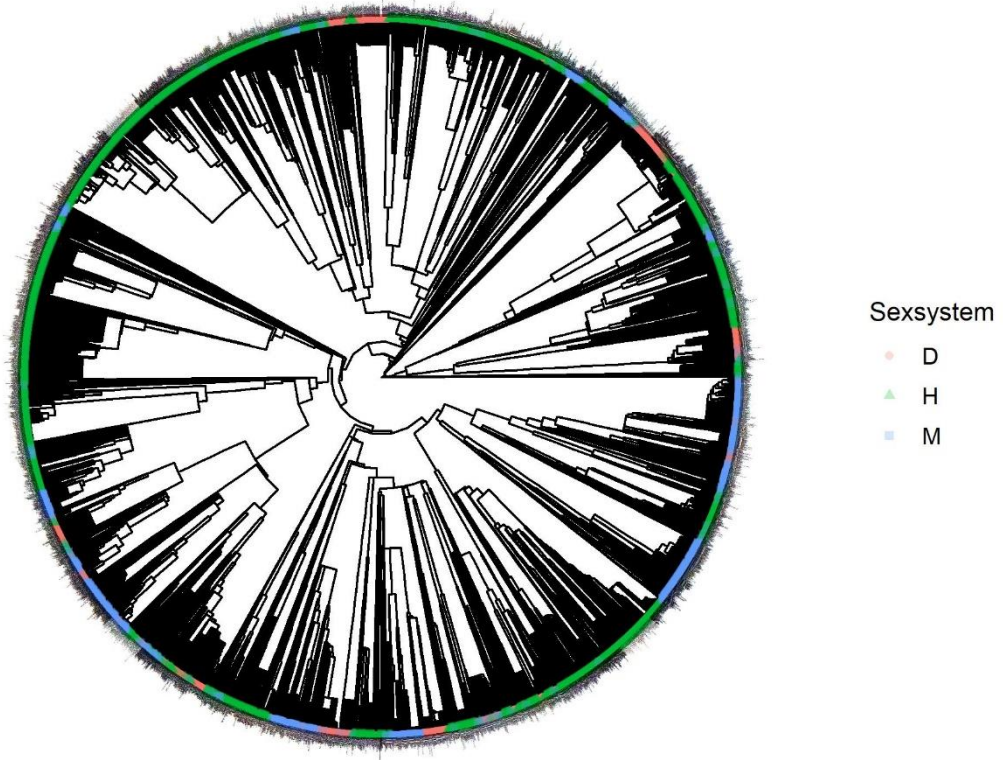


Figure S3. The relationships between the proportion of flowering plants with different sexual systems and precipitation of coldest quarter (BIO19). (a), (c) and (e) are for the proportion of species, and (b), (d), and (f) are for the proportion of the individual. D, M, and H represent dioecy, monoecy, and hermaphroditism, respectively. The blue line is the multinomial logistic model that only includes precipitation of coldest quarter as the explanatory variable (no other variables are included). The red curves are the fitted proportions based on the best selected model, i.e., the model presented in Table 1 and S3 for species and individuals, respectively. R^2 values associated with models only including precipitation of coldest quarter are given in each panel.

