The following supplement accompanies the article

The relative importance of spatial and temporal variation in predicting community structure at different scales as estimated from Markov chain models

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Table S1: Results comparing likelihood ratios to chi-square distributions to test whether transition probability tables were at least first-order Markovian processes, as opposed to zero-order.

Site	X^2	df	p-value
SP	261.3	8	< 0.0001
GN	217.2	10	< 0.0001
SW	94.6	5	< 0.0001
OW	354.8	12	< 0.0001
DC	479.0	12	< 0.0001
EB	546.3	12	< 0.0001
LL	410.4	12	< 0.0001
SC	456.0	13	< 0.0001
FS	547.9	11	< 0.0001

Note: Tests used (n – 1) degrees of freedom (df) as outlined by Tanner et al. (1994), where n is the number of unique species-states measured at a site.

Table S2: PERMDISP results for differences between MMCM predicted and empirical $log(x+1)$ transformed species percent cover incorporating increasing amounts of natural spatial (local-, meso-, and regional-scale) and temporal (annual, average annual, biannual, average biannual, seasonal, average seasonal) variation.

Model		**Effect**			**Residual**			
Scale	**Ending Season**	**df**	**SS**	**MS**	**df**	**SS**	**MS**	**Pseudo-F**
Spatial								
Local	Full Year	1	0.011	0.011	16	0.096	0.006	1.831
Meso	Full Year	1	1.201	1.201	1798	8.508	0.005	253.794
Regional	Full Year	1	0.564	0.564	1798	3.934	0.002	257.861
Temporal								
Annual	Full Year	1	0.003	0.003	4	0.019	0.005	0.522
Average Annual	Full Year	1	0.002	0.002	4	0.02	0.005	0.475
Biannual	Full Year	1	0.009	0.009	4	0.036	0.009	0.952
Biannual	Fall and Winter	1	0.007	0.007	4	0.039	0.010	0.728
Biannual	Spring and Summer	1	0.012	0.012	4	0.057	0.014	0.813
Average Biannual	Fall and Winter	1	0.004	0.004	4	0.033	0.008	0.457
Average Biannual	Spring and Summer	1	0.004	0.004	4	0.042	0.011	0.406
Seasonal	Full Year	1	0.004	0.004	4	0.026	0.006	0.614
Seasonal	Spring	1	0.002	0.002	4	0.013	0.003	0.524
Seasonal	Summer	1	0.007	0.007	4	0.037	0.009	0.797
Seasonal	Fall	1	0.011	0.011	4	0.065	0.016	0.654
Seasonal	Winter	1	0.004	0.004	4	0.028	0.007	0.564
Average Seasonal	Spring	1	0.002	0.002	4	0.023	0.006	0.351
Average Seasonal	Summer	1	0.003	0.003	4	0.016	0.004	0.679
Average Seasonal	Fall	1	0.007	0.007	4	0.039	0.010	0.752
Average Seasonal	Winter	1	0.004	0.004	4	0.025	0.006	0.645

Table S3: PERMANOVA results for differences between MMCM predicted and empirical $log(x+1)$ transformed species percent cover incorporating increasing amounts of natural spatial (local-, meso-, and regional-scale) and temporal (annual, average annual, biannual, average biannual, seasonal, average seasonal) variation.

Model		**Effect**			**Residual**			
Scale	**Ending Season**	**df**	**SS**	**MS**	**df**	**SS**	**MS**	**Pseudo-F**
Spatial								
Local	Full Year	1	0.022	0.022	16	1.270	0.079	0.282
Meso	Full Year	1	2.100	2.100	1798	105.187	0.059	35.892
Regional	Full Year	1	2.394	2.394	1798	39.449	0.022	109.104
Temporal			0.050	0.050	4	0.133	0.033	1.497
Annual	Full Year	1	0.007	0.007	4	0.132	0.033	0.205
Average Annual	Full Year	1	0.012	0.012	4	0.178	0.045	0.259
Biannual	Full Year	1	0.016	0.016	4	0.171	0.043	0.368
Biannual	Fall and Winter	1	0.028	0.028	4	0.203	0.051	0.56
Biannual	Spring and Summer	1	0.012	0.012	4	0.149	0.037	0.335
Average Biannual	Fall and Winter	1	0.016	0.016	4	0.157	0.039	0.411
Average Biannual	Spring and Summer	1	0.004	0.004	4	0.146	0.037	0.121
Seasonal	Full Year	1	0.035	0.035	4	0.122	0.031	1.157
Seasonal	Spring	1	0.011	0.011	4	0.172	0.043	0.257
Seasonal	Summer	1	0.009	0.009	4	0.203	0.051	0.172
Seasonal	Fall	1	0.013	0.013	4	0.148	0.037	0.344
Seasonal	Winter	1	0.020	0.020	4	0.130	0.032	0.611
Average Seasonal	Spring	1	0.008	0.008	4	0.133	0.033	0.238
Average Seasonal	Summer	1	0.009	0.009	4	0.174	0.044	0.205
Average Seasonal	Fall	1	0.009	0.009	4	0.145	0.036	0.241
Average Seasonal	Winter	1	0.022	0.022	16	1.270	0.079	0.282