Supporting Information to the paper: Trujillo L.N., Granzow-de la Cerda, Í., Pardo, I., Macía, M.J., Cala, V. Arellano, G., Niche-based processes out-perform neutral processes when predicting distance decay in co-dominance along the Amazon – Andes rainforest gradient. *Journal of Vegetation Science.*

Appendix S3. Importance of variables in Random Forest models that predict residuals from a neutral model of distance decay. Four forest types in Amazonian and Andean forests in the Madidi region og northwestern Bolivia were studied across an elevational gradient: Amazonian forest (<1000 m elevation), lower montane forest (1200–1500 m), intermediate montane forest (2000–2300 m) and upper montane forest (2800–3200 m); and two geographical extents: : local (pairs of plots < 12 km apart) and regional (pairs of plots 38–120 km apart). Importance was measured by the Increase in Node Purity (INP), and standard deviations are given in parenthesis. Variables are grouped as: environmental: bioclimatic (Elevation, Bio1 to Bio19, descriptions in legend for Appendix Table S1); soil chemistry; topographic. Variables excluded because they were highly correlated ($|r| > 0.70$) with others are replaced with their best-correlated "~representative" variable.

Forest type / Variable	Amazonian local	Amazonian regional	Lower montane local	Lower montane regional	Interm. montane local	Interm. montane regional	Upper montane local	Upper montane regional
Elevation	0.17 (0.0071)	0.19 (0.0036)	0.03 (0.0017)	0.01 (9e-04)	-0.01 (0.0049)	0 (2e-04)	0.01 (0.0058)	0.01 (0.0015)
Bio1	~Elevation	~Elevation	0.05 (0.0022)	0.02 (0.0012)	0.01 (0.0065)	0 (3e-04)	0.06 (0.0072)	0.05 (0.0027)
Bio3	~Bio7	~Bio15	0.01 (0.0011)	0.01 (8e-04)	0 (0.0033)	0 (3e-04)	~Bio1	~Bio1
Bio6	~Elevation	~Elevation	~Bio1	0 (4e-04)	~Bio1	~Bio1	~Bio1	~Bio1
Bio7	0.06 (0.0043)	~Bio15	~Bio1	~Bio1	~Bio1	~Bio1	~Bio1	~Elevation
Bio12	~Elevation	0.18 (0.0037)	0.01 (0.001)	0.04 (0.0016)	0.01 (0.0037)	0 (2e-04)	0.02 (0.0058)	0.03 (0.0019)
Bio13	0.06 (0.0033)	~Bio12	~Bio16	0 (6e-04)	~Bio12	~Bio12	~Bio12	~Bio12
Bio14	0.19 (0.0054)	0.08 (0.0022)	~Bio12	0.02 (0.0013)	0.01 (0.003)	~Bio12	~Bio17	~Bio17
Bio15	0.15 (0.0058)	0.3 (0.0043)	~Bio1	0 (9e-04)	~Bio14	~Bio12	~Bio17	~Bio17
Bio16	~Bio13	~Bio12	0 (0.001)	~Bio14	~Bio12	~Bio12	~Bio12	~Bio12
Bio17	0.57 (0.0129)	0.11 (0.0024)	~Bio12	~Bio12	0.11 (0.0077)	0 (2e-04)	0.06 (0.0077)	0.04 (0.002)
Bio18	~Elevation	~Elevation	~Bio12	0.01 (7e-04)	0.03 (0.0048)	~Bio12	~Bio12	~Bio12
Bio19	0.03 (0.0022)	~Bio12	~Bio16	~Mn	~Bio17	~Bio17	0.07 (0.0123)	0.38 (0.0065)
pH	0.18 (0.0056)	0.02 (0.0018)	0.17 (0.0034)	0 (7e-04)	0.33 (0.0122)	0 (3e-04)	0.93 (0.0286)	0.15 (0.0035)
Al	0.05 (0.0039)	0.03 (0.0021)	0 (0.0011)	0.01 (0.0012)	0.12 (0.0082)	0 (3e-04)	0.08 (0.0084)	0.05 (0.0028)
C	-0.01 (0.0028)	0.11 (0.0032)	0.02 (0.0017)	0 (6e-04)	-0.01 (0.0043)	0 (2e-04)	0.44 (0.0211)	0.05 (0.0025)
N	~C	0 (0.0013)	~C	~C	0.01 (0.0037)	0 (2e-04)	0.05 (0.0087)	0.01 (0.0014)
C:N	0.02 (0.0027)	0.02 (0.0015)	~C	0.04 (0.0015)	0.15 (0.0086)	0 (3e-04)	0.09 (0.0094)	0.01 (0.0015)
S	0 (0.0019)	0.01 (0.001)	~C	0 (7e-04)	0 (0.004)	0 (1e-04)	0.3 (0.0144)	0.01 (0.0017)
Ca	0.04 (0.0047)	0.06 (0.0022)	0 (9e-04)	0.05 (0.0017)	~pH	~pH	~pH	~pH
Mg	0.01 (0.0026)	0.06 (0.0024)	0.02 (0.0013)	0.02 (0.001)	0.13 (0.0094)	0 (2e-04)	~pH	0.01 (0.0016)
K	0.04 (0.0033)	~Ca	0 (0.0013)	0 (7e-04)	~Mg	0 (3e-04)	0.01 (0.0073)	0.01 (0.0015)
P	~C	~C	0.02 (0.0012)	0 (6e-04)	~Bio17	~Bio17	0.11 (0.0103)	0.07 (0.003)
Fe	0.03 (0.0028)	0.03 (0.0017)	0 (0.001)	0 (8e-04)	-0.03 (0.0042)	0 (3e-04)	0.06 (0.0086)	0.01 (0.0017)
Mn	0.01 (0.0022)	0.12 (0.0034)	0 (0.0011)	0 (6e-04)	0.17 (0.0085)	0.01 (4e-04)	~pH	~pH
Co	~K	0.02 (0.0019)	0.01 (0.001)	0 (9e-04)	0.01 (0.0039)	0 (3e-04)	0.83 (0.0239)	~pH
Ni	0.04 (0.0033)	0.02 (0.0018)	~Co	~Co	-0.01 (0.0054)	0 (2e-04)	0.22 (0.0131)	0.07 (0.003)
Cu	~K	~Ca	-0.01 (0.001)	0.03 (0.0015)	0.06 (0.0073)	0 (2e-04)	0.06 (0.0108)	0 (0.0014)
Zn	~K	~Co	0.01 (0.0014)	0.01 (0.001)	-0.01 (0.0045)	0 (2e-04)	~pH	~pH
Slope	0.09 (0.0039)	0.06 (0.002)	0 (8e-04)	0.01 (9e-04)	0.04 (0.0056)	0 (2e-04)	-0.05 (0.0067)	0 (0.001)
Northness	0.04 (0.0026)	0.01 (0.0014)	~Eastness	~Bio14	0.02 (0.0064)	0 (2e-04)	0.78 (0.0196)	0.06 (0.0028)
Eastness	0.08 (0.0044)	0 (0.0015)	-0.01 (0.0012)	0 (9e-04)	0.01 (0.0044)	0 (2e-04)	0.18 (0.0113)	0 (0.001)