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Latitudinal and altitudinal gradients of riverine landscapes in Andean rivers

Evelyn Habit[1,2]*, Alejandra Zurita[1], Gustavo Díaz[2], Aliro Manosalva[2], Pedro Arriagada[3], Oscar Link[4], Konrad Górski.[5,6]

Supplementary Materials: The following supporting information can be downloaded at: www.mdpi.com/xxx/s1, Figure S1: a) Dominant geology, and b) Channel planform of the seven riverine FPZs (1=AHA; 2=ASDS; 3=SSC; 4=SMC; 5=SMR; 6=BGDS; 7=BIR) and lakes and reservoirs (8); Figure S2. Examples of high downstream river slope FPZs. a) AHA from the Mataquito River basin; b) ASDS from the Puelo River basin. Google Earth images year 2020; Figure S3. Examples of sinuous rivers FPZs. a) SSC from the Bueno River basin; b) SMC from the Toltén River basin; c) SMR from the Imperial River basin. Google Earth images year 2020; Figure S4. Examples of braided FPZs. a) BGDS from the Rapel River basin; b) BIR from the Maipo River basin. Google Earth images year 2020. Table S1: Number of river sections (NRS) clustered in 8 FPZs and average of each geomorphic variable used for the cluster analysis. Dominant geology and channel planform are shown in Figure S1. Mean elevation and mean annual precipitation by FPZ are included for descriptions. FPZ 8 represents lakes and reservoirs. (See Table 1 for abbreviations; RVS and LVS are replaced by VSmax: maximum valley slope and VSmin: minimum valley slope): Table S2. Pairwise comparisons among the seven riverine FPZs based on the geomorphic char-acteristics.

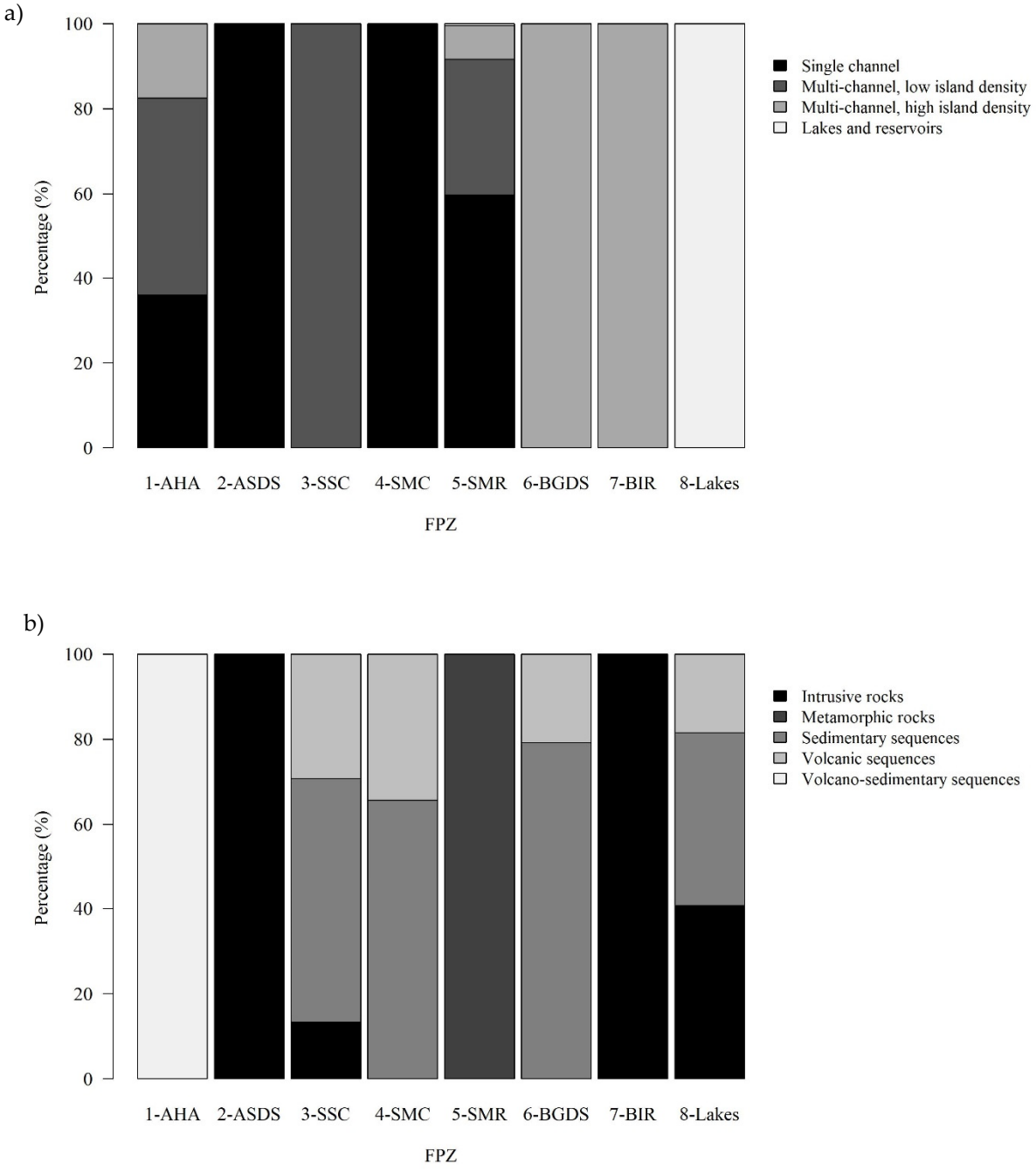

Figure S1. a) Dominant geology, and b) Channel planform of the seven riverine FPZs (1=AHA; 2=ASDS; 3=SSC; 4=SMC; 5=SMR; 6=BGDS; 7=BIR) and lakes and reservoirs (8).

a)

b)

Figure S2. Examples of high downstream river slope FPZs. a) AHA from the Mataquito River basin; b) ASDS from the Puelo River basin. Google Earth images year 2020.

a)

b)

c)

Figure S3. Examples of sinuous rivers FPZs. a) SSC from the Bueno River basin; b) SMC from the Toltén River basin; c) SMR from the Imperial River basin. Google Earth images year 2020.

a)

b)

Figure S4. Examples of braided FPZs. a) BGDS from the Rapel River basin; b) BIR from the Maipo River basin. Google Earth images year 2020.

Table S1. Number of river sections (NRS) clustered in 8 FPZs and average of each geomorphic variable used for the cluster analysis. Dominant geology and channel planform are shown in Figure S1. Mean elevation and mean annual precipitation by FPZ are included for descriptions. FPZ 8 represents lakes and reservoirs. (See Table 1 for abbreviations; RVS and LVS are replaced by VSmax: maximum valley slope and VSmin: minimum valley slope).

Hydrogeomorphic variables	Riverine FPZs							Lake FPZ
	1 AHA	2 ASDS	3 SSC	4 SMC	5 SMR	6 BGDS	7 BIR	8
NRS	1203	391	2235	3110	358	1225	98	189
ELE	1137.50	463.50	325.82	463.50	159.22	482.97	559.46	417.47
PRE	80.59	124.21	121.35	124.20	113.77	89.18	99.55	141.25
DVS	7.67	12.44	4.02	4.02	4.40	2.89	5.84	1.45
VFW	171.09	380.54	466.52	498.30	366.56	796.44	695.89	2882.90
VW	2075.00	2477.40	2281.20	2261.30	2326.40	2600.60	2897.70	5885.60
RAT	17.13	12.98	8.32	8.31	12.67	6.71	9.12	3.27
CBW	24.36	21.41	39.14	43.44	66.92	192.32	161.45	2601.70
RCS	1.21	1.26	1.31	1.30	1.39	1.17	1.21	1.06
CBS	2.03	2.03	2.04	2.05	2.05	2.10	2.05	2.92
CBL	2243.40	2188.80	2252.70	2281.30	2312.60	2363.50	2296.10	3358.90
CO	0.47	0.50	0.38	0.32	0.51	0.43	0.39	0.89
NC	1.92	1.00	1.00	2.00	1.49	3.61	3.78	1.01
VSmax	23.65	19.83	9.43	10.24	14.95	9.68	16.41	7.74
VSmin	19.35	15.30	6.45	7.30	11.89	6.36	12.03	4.06

Table S2. Pairwise comparisons among the seven riverine FPZs based on the geomorphic characteristics.

Groups	t	P(perm)	Unique permutations
1 (AHA) – 5 (SMR)	28.478	0.001	998
1 (AHA) – 3 (SSC)	49.759	0.001	998
1 (AHA) – 2 (ASDS)	34.795	0.001	997
1 (AHA) – 4 (SMC)	47.455	0.001	998
1 (AHA) – 6 (BGDS)	52.885	0.001	997
1 (AHA) – 7 (BIR)	22.847	0.001	999
5 (SMR) – 3 (SSC)	20.705	0.001	999
5 (SMR) – 2 (ASDS)	13.513	0.001	999
5 (SMR) – 4 (SMC)	21.073	0.001	999
5 (SMR) – 6 (BGDS)	31.293	0.001	998
5 (SMR) – 7 (BIR)	14.079	0.001	999
3 (SSC) – 2 (ASDS)	28.482	0.001	998
3 (SSC) – 4 (SMC)	38.651	0.001	998
3 (SSC) – 6 (BGDS)	49.700	0.001	999
3 (SSC) – 7 (BIR)	23.460	0.001	999
2 (ASDS) - 4 (SMC)	33.809	0.001	999
2 (ASDS) - 6 (BGDS)	44.506	0.001	999
2 (ASDS) - 7 (BIR)	14.284	0.001	999
4 (SMC) - 6 (BGDS)	35.840	0.001	997
4 (SMC) - 7 (BIR)	16.505	0.001	999
4 (BGDS) - 7 (BIR)	13.331	0.001	998

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