Supplementary Information

to

Not all biodiversity richspots are climate refugia

by

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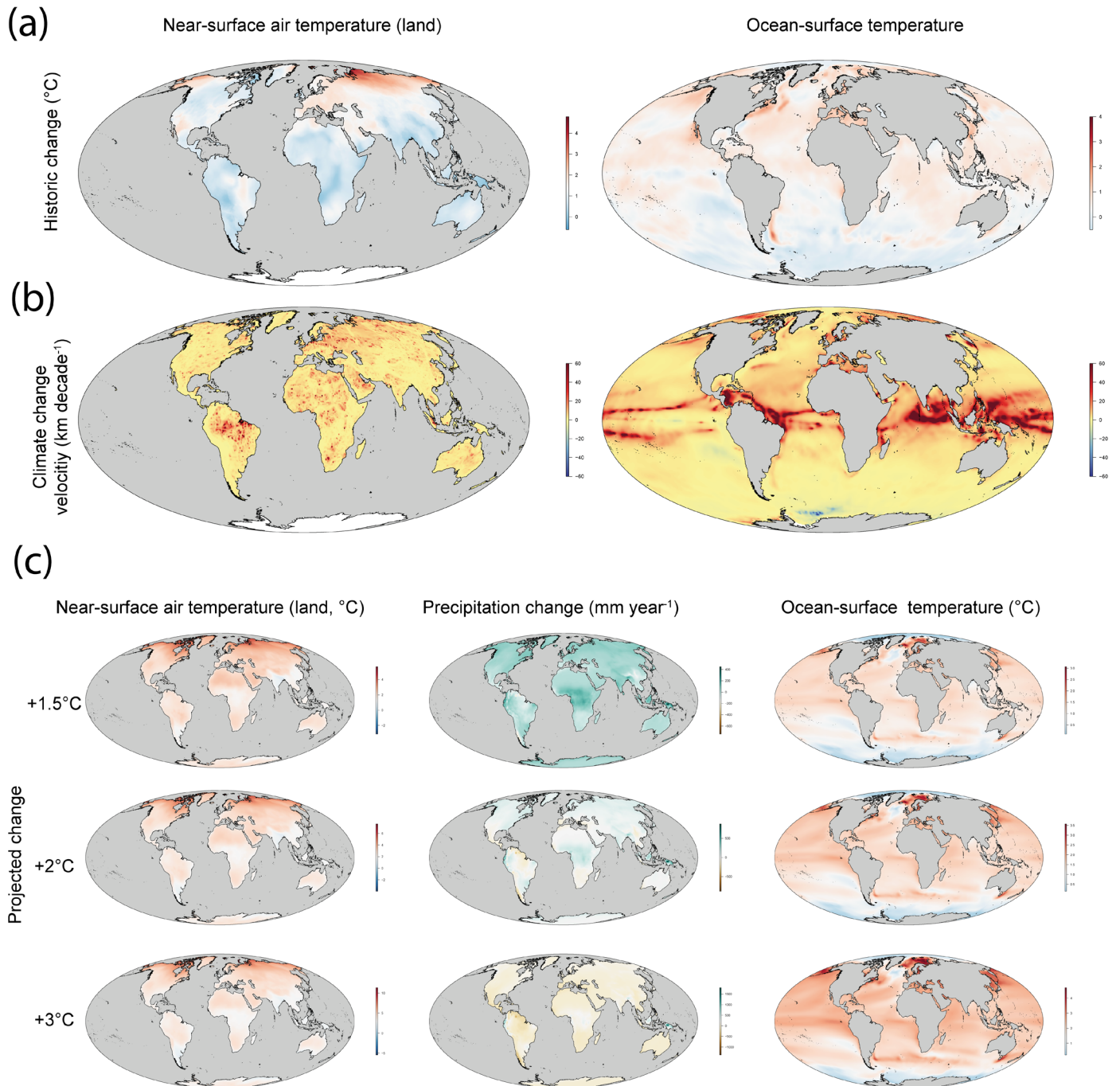
Supplementary Figures

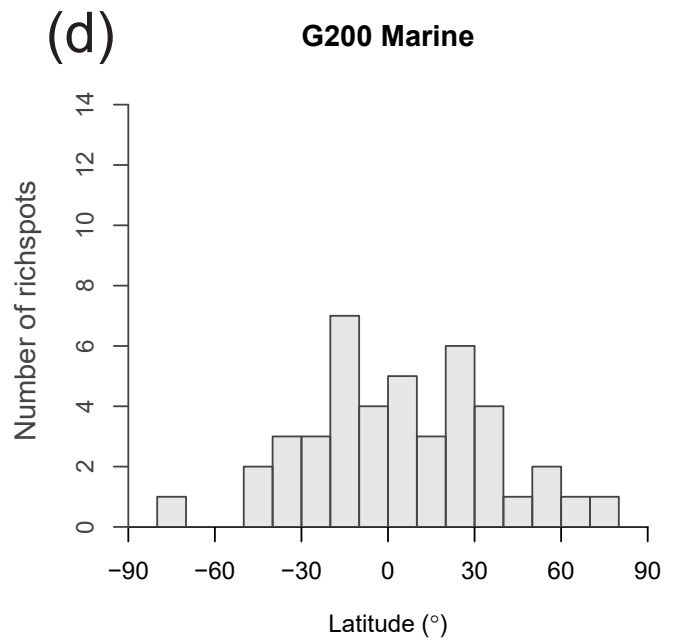Figure S1. Abiotic layers used to characterize the richspot schemes and richspots.
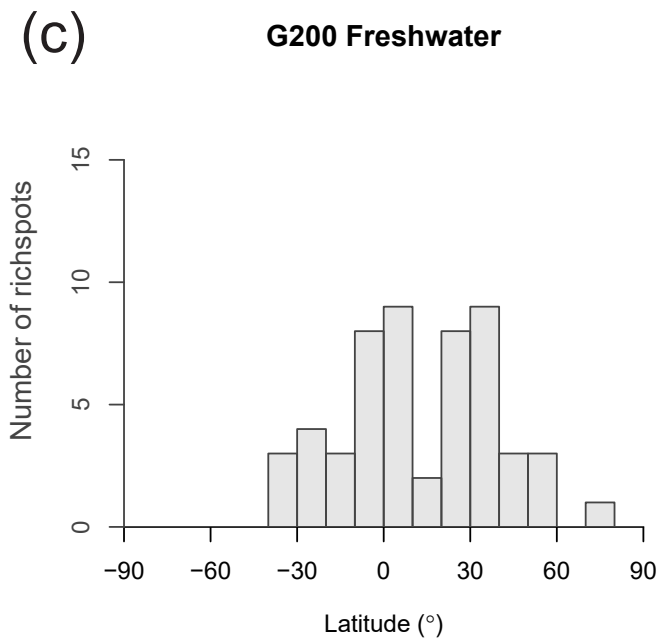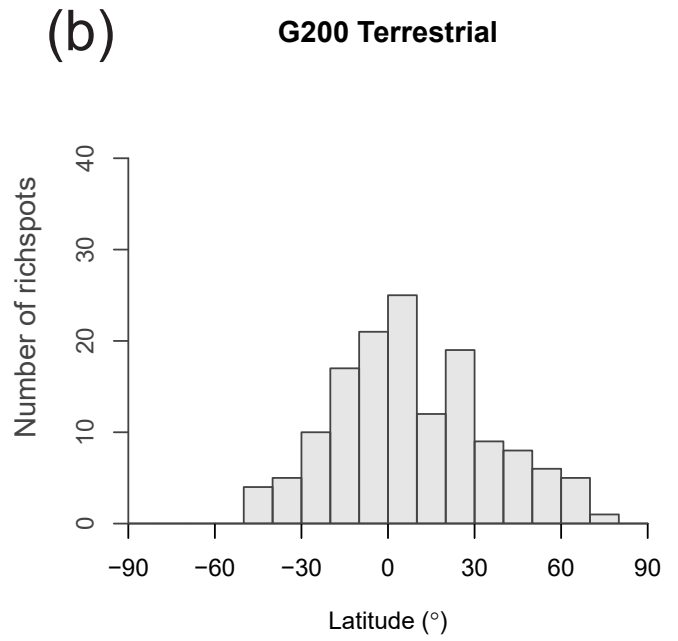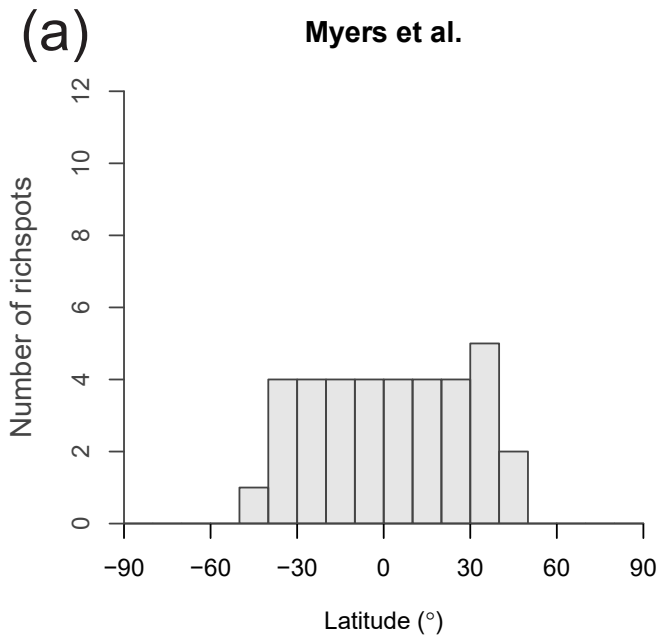
Figure S2. Latitudinal distribution of individual richspots in the (a) Myers, (b) G200 terrestrial, (c) freshwater and (d) marine schemes.
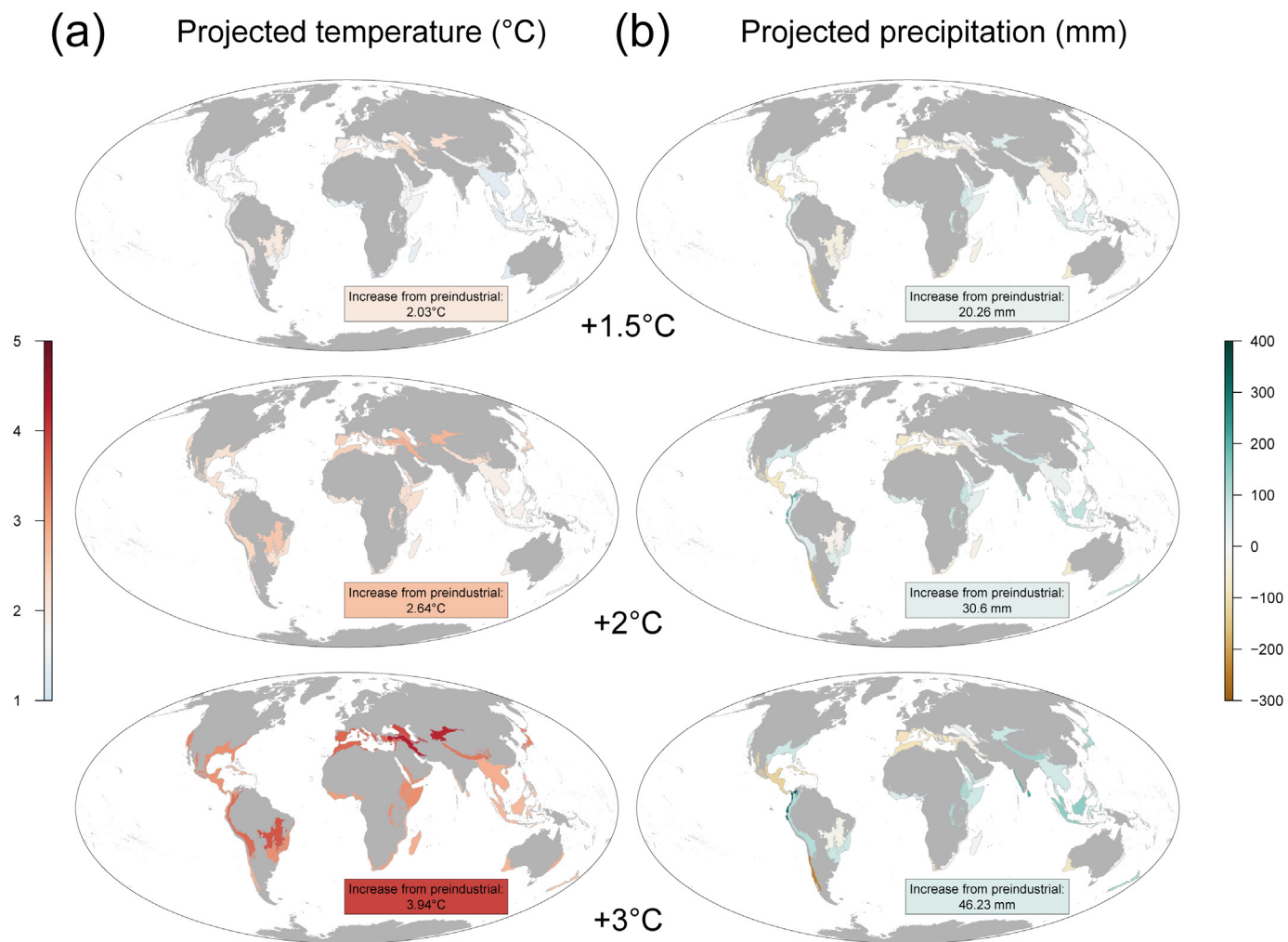
Figure S3. Projected climate change in the Myers et al. (2000) richspots. (a) temperature, (b) precipitation. Global means are based on values over land.
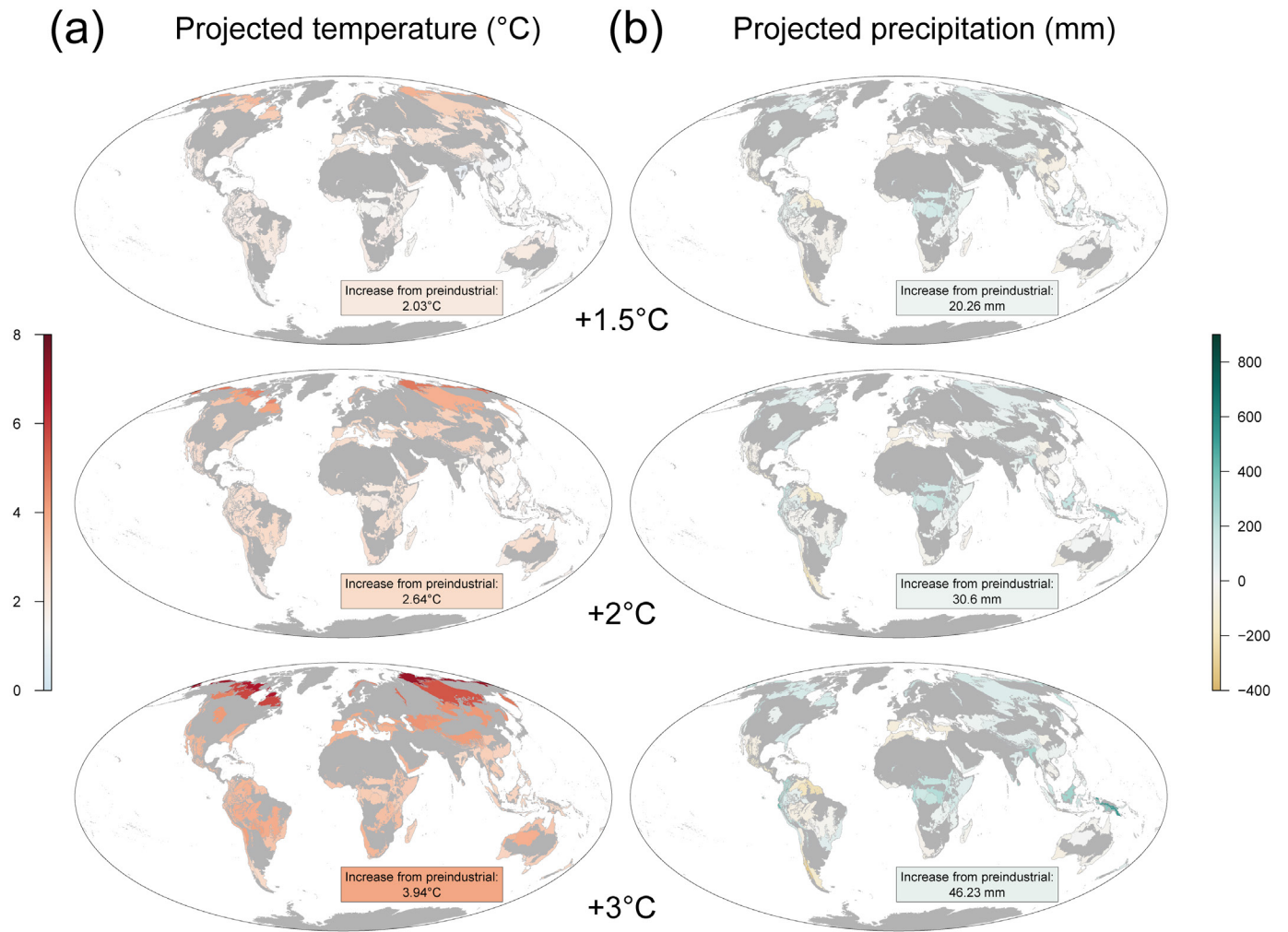
Figure S4. Projected climate change in the G200 terrestrial richspots. (a) temperature, (b) precipitation. Global means are based on values over land.
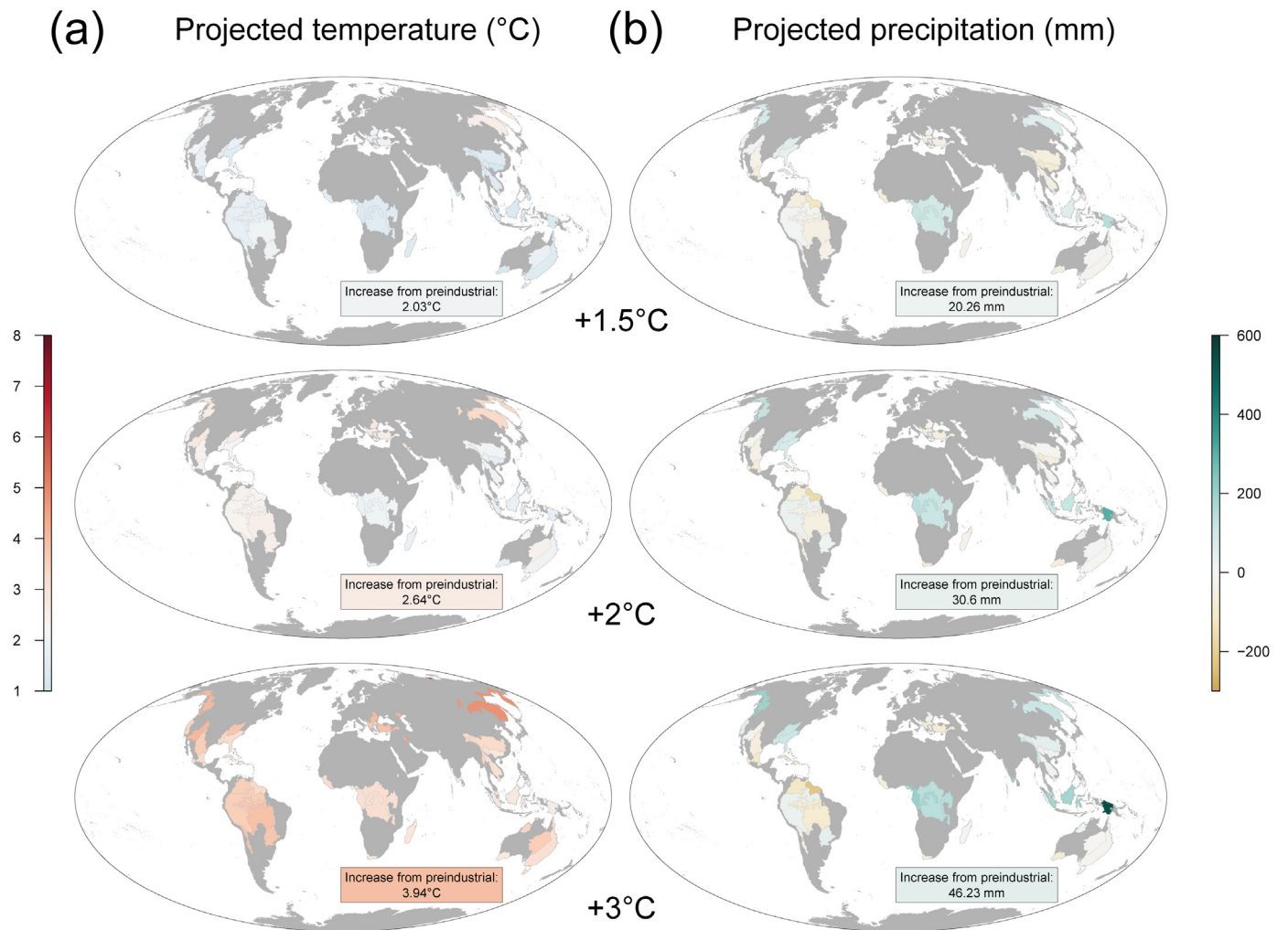
Figure S5. Projected climate change in the G200 freshwater richspots. (a) temperature, (b) precipitation. Global means are based on values over land.

Projected temperature (°C)

+1.5°C

Increase from preindustrial:
1.03°C

+2°C

Increase from preindustrial:
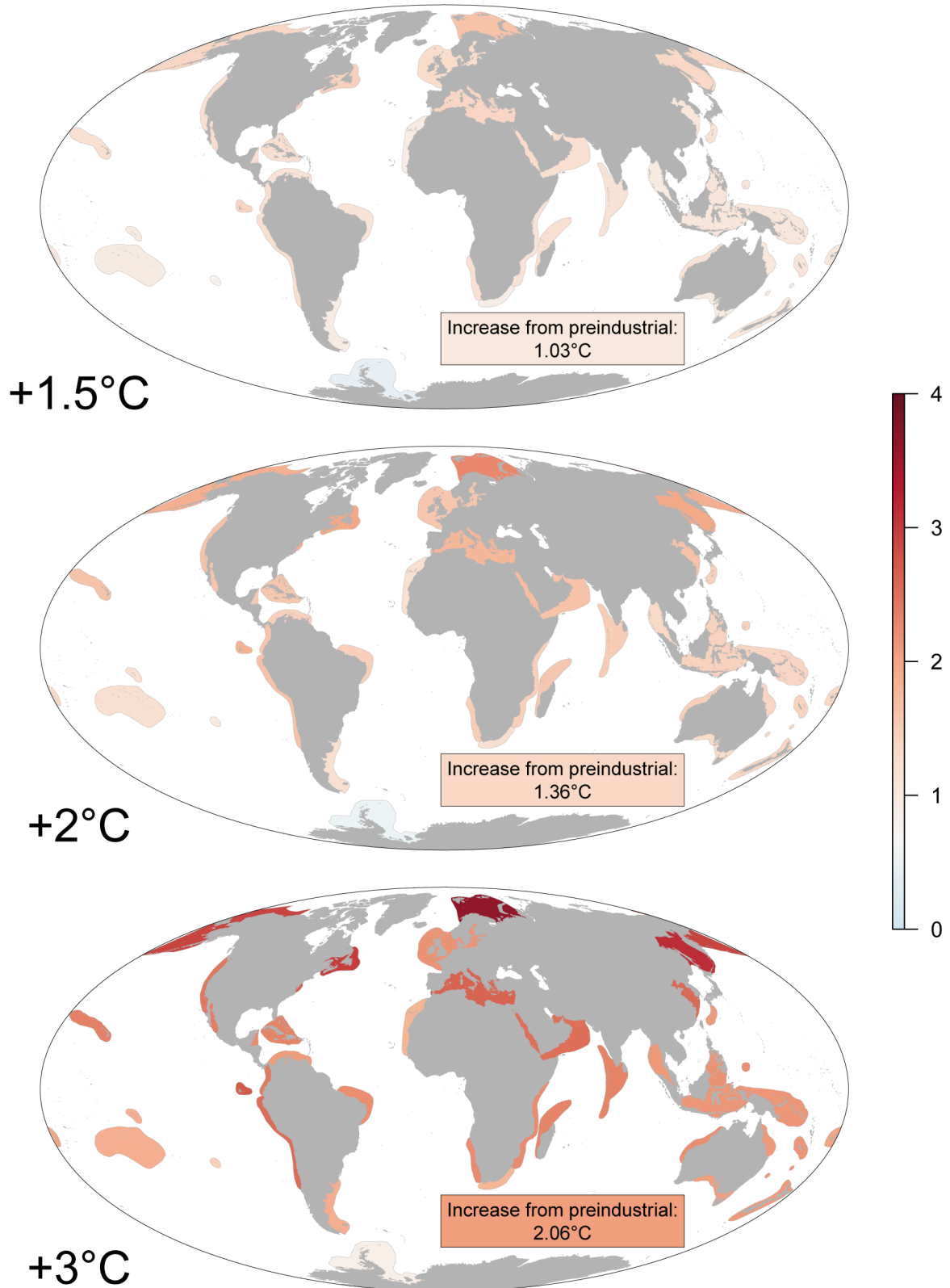1.36°C

+3°C

Increase from preindustrial:
2.06°C

Figure S6. Projected global warming in the G200 marine richspots.
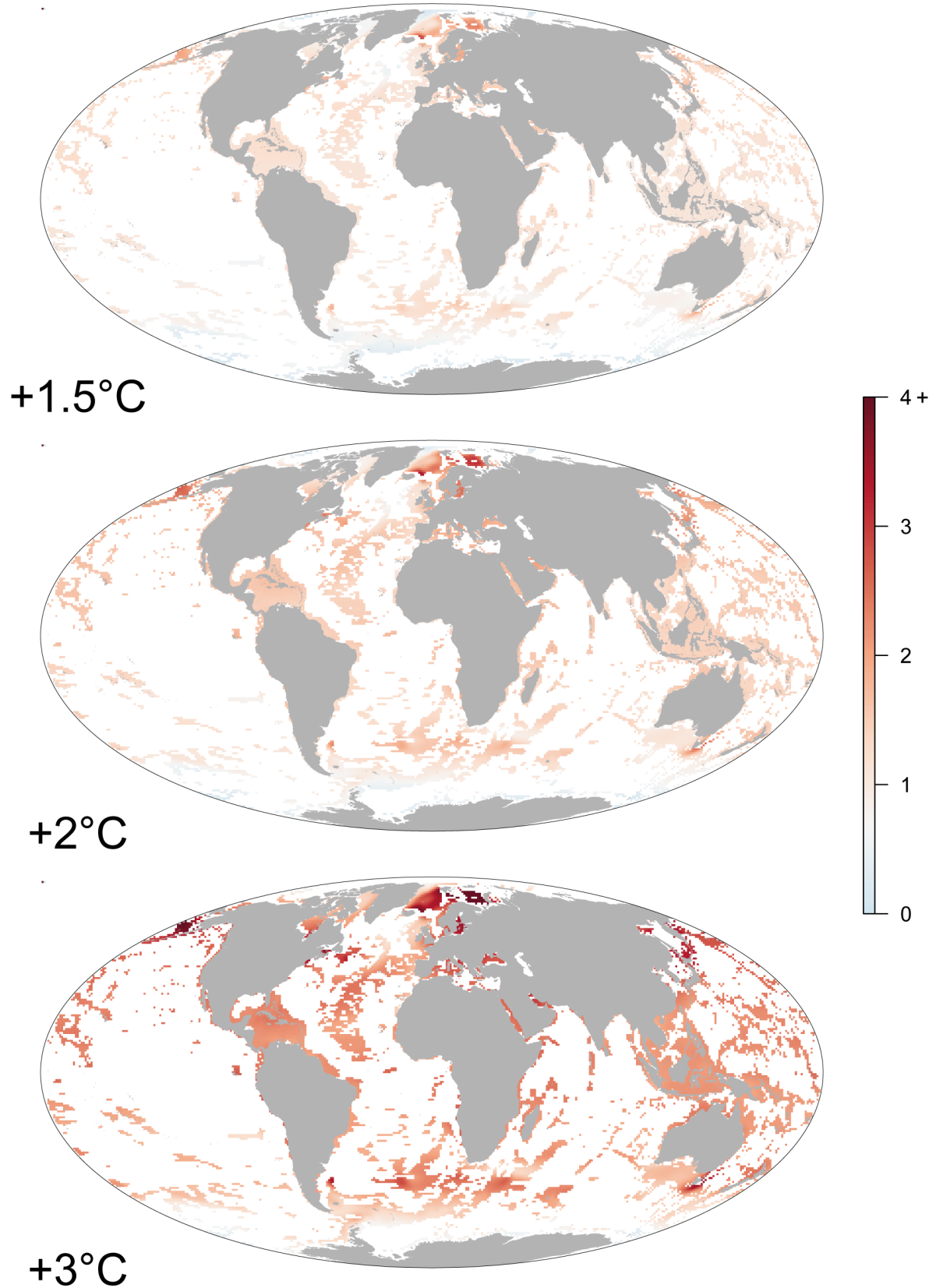
Projected temperature (°C)

Figure. S7. Projected global warming in the Zhao et al. (2020) 30% representative biodiversity area.

Supplementary Tables

Table. S1. Recorded global warming (1971-2020) within and outside richspots (°C).

Richspot	Inside	Inside SD	Richspot-based SE (SD of boot-strap)	Outside	Global	Inside / Outside (%)
Myers	0.91	0.36	0.07	1.12	1.08	81.71
G200 terrestrial	1.05	0.63	0.1	1.1	1.08	95.14
G200 freshwater	0.89	0.4	0.07	1.14	1.08	78.18
G200 marine	0.53	0.38	0.06	0.38	0.39	140.74
Zhao	0.41	0.37	-	0.39	0.39	104.12

Table. S2. Climate change velocities (1971-2020) within and outside richspots (km decade-1).

Richspot	Inside	Inside SD	Richspot-based SE (sd of bootstrap)	Outside	Global	Mean Inside / Outside (%)
Myers	2.61	6.58	0.42	4.94	4.56	52.78
G200 terrestrial	3.61	5.75	0.36	5.08	4.56	71.11
G200 freshwater	4.2	6.55	0.6	4.66	4.56	90.13
G200 marine	11.24	16.81	1.87	6.64	7.19	169.41
Zhao	8.86	15.21	-	6.66	7.19	133.07

Table. S3. Projected climate change within and outside richspots.

Richspot	Variable	Warming	Inside	Inside SD	Richspot-based SE (sd of bootstrap)	Out-side	Global	Inside / Out-side (%)
Myers	Temperature increase (deg C)	1.5	1.68	0.29	0.06	2.09	2.03	80.16
G200 terrestrial	Temperature increase (deg C)	1.5	1.95	0.6	0.09	2.07	2.03	94.59
G200 freshwater	Temperature increase (deg C)	1.5	1.76	0.35	0.07	2.1	2.03	83.69
G200 marine	Temperature increase (deg C)	1.5	1.14	0.32	0.06	1.02	1.03	112
Zhao	Temperature increase (deg C)	1.5	1.04	0.3	NA	1.03	1.03	101.23
Myers	Temperature increase (deg C)	2	2.18	0.36	0.07	2.73	2.64	80.03
G200 terrestrial	Temperature increase (deg C)	2	2.56	0.78	0.12	2.69	2.64	95.15
G200 freshwater	Temperature increase (deg C)	2	2.31	0.43	0.09	2.73	2.64	84.52
G200 marine	Temperature increase (deg C)	2	1.51	0.43	0.08	1.33	1.36	113.1
Zhao	Temperature increase (deg C)	2	1.37	0.39	NA	1.35	1.36	101.14
Myers	Temperature increase (deg C)	3	3.27	0.5	0.09	4.07	3.94	80.29
G200 terrestrial	Temperature increase (deg C)	3	3.83	1.1	0.17	4	3.94	95.78
G200 freshwater	Temperature increase (deg C)	3	3.49	0.61	0.12	4.06	3.94	85.99
G200 marine	Temperature increase (deg C)	3	2.29	0.65	0.13	2.03	2.06	113.01
Zhao	Temperature increase (deg C)	3	2.07	0.55	NA	2.06	2.06	100.6
Myers	Precipitation increase (mm/year)	1.5	-7.23	57.73	7.84	25.71	20.26	-28.12
G200 terrestrial	Precipitation increase (mm/year)	1.5	13.73	60.11	6.3	24.02	20.26	57.19
G200 freshwater	Precipitation increase (mm/year)	1.5	9.55	67.14	10.9	23.32	20.26	40.93
Myers	Precipitation increase (mm/year)	2	11.26	81.73	10.55	34.43	30.6	32.7
G200 terrestrial	Precipitation increase (mm/year)	2	28.2	80.81	7.61	31.98	30.6	88.16
G200 freshwater	Precipitation increase (mm/year)	2	25.84	92.59	13.04	31.96	30.6	80.84
Myers	Precipitation increase (mm/year)	3	31.95	132.77	17.29	49.07	46.23	65.1
G200 terrestrial	Precipitation increase (mm/year)	3	44.8	125.41	11.36	47.06	46.23	95.18
G200 freshwater	Precipitation increase (mm/year)	3	39.39	144.61	19.9	48.2	46.23	81.72

Supplementary Data Items

`SD1_myers_by_richspot.csv:` Tabulation of values for richspots in the Myers richspot scheme.

`SD2_terr200_by_richspot.csv:` Tabulation of values for richspots in the G200 terrestrial richspot scheme.

`SD3_fresh200_by_richspot.csv:` Tabulation of values for richspots in the G200 freshwater richspot scheme.

`SD4_marine200_by_richspot.csv:` Tabulation of values for richspots in the G200 marine richspot scheme.

`SD5_historic_within.nc:` Netcdf raster data of observed temperature change within every richspot scheme (5 bands: Myers, G200 terrestrial, G200 freshwater, G200 marine and Zhao, in this order) .

`SD6_vocc _within.nc:` Netcdf raster data of climate change velocities within every richspot scheme. (5 bands: Myers, G200 terrestrial, G200 freshwater, G200 marine and Zhao, in this order) .

`SD7_proj15_temp_within.nc:` netcdf raster data of projected temperature change (+1.5°C warming) within every richspot scheme. (3 bands: Myers, G200 terrestrial and G200 freshwater, in this order).

`SD8_proj2_temp_within.nc:` netcdf raster data of projected temperature change (+2°C warming) within every richspot scheme. (3 bands: Myers, G200 terrestrial and G200 freshwater, in this order).

`SD9_proj2_temp_within.nc:` netcdf raster data of projected temperature change (+3°C warming) within every richspot scheme. (3 bands: Myers, G200 terrestrial and G200 freshwater, in this order).

`SD10_proj15_prec_within.nc:` netcdf raster data of projected precipitation change (+1.5°C warming) within every richspot scheme. (3 bands: Myers, G200 terrestrial and G200 freshwater, in this order).

`SD11_proj2_prec_within.nc:` netcdf raster data of projected precipitation change (+2°C warming) within every richspot scheme. (3 bands: Myers, G200 terrestrial and G200 freshwater, in this order).

`SD12_proj2_prec_within.nc:` netcdf raster data of projected precipitation change (+3°C warming) within every richspot scheme. (3 bands: Myers, G200 terrestrial and G200 freshwater, in this order).

`S1_hitoric_table.csv:` Data of Table S1.

`S2_vocc_table.csv:` Data of Table S2.

`S3_projections_table.csv:` Data of Table S3.