Supplementary

Table S1. 53 bioclimatic variables for statistical clustering. The newly calculated variables, denoted by *, 42 variables used by Metzger et al. [1] denoted by O, and the newly added variables are denoted by X. The newly added variables are described on the following page.

Variable Name	Description	Source	Metzger (2013)
var1	Annual mean T(℃)	WorldClim	O
var2	Annual Mean diurnal range(℃)	WorldClim	O
var3	Isothermality(%)	WorldClim	O
var4	T seasonality(℃)	WorldClim	O
var5	Maximum T of the warmest month(℃)	WorldClim	O
var6	Minimum T of the coldest month(℃)	WorldClim	O
var7	Annual T range	WorldClim	O
var8	Mean T of wettest quarter(℃)	WorldClim	O
var9	Mean T of driest quarter(℃)	WorldClim	O
var10	Mean T of warmest quarter(℃)	WorldClim	O
var11	Mean T of coldest quarter(℃)	WorldClim	O
var12	Growing degree-days on 0℃ base	WorldClim*	O
var13	Growing degree-days on 5℃ base	WorldClim*	O
var14	Mean T of the coldest month(℃)	WorldClim*	O
var15	Mean T of the warmest month(℃)	WorldClim*	O
var16	Maximum T coldest month(℃)	WorldClim*	O
var17	Minimum T warmest month(℃)	WorldClim*	O
var18	Number of months with mean T >10℃	WorldClim*	O
var19	Thermicity index	WorldClim	O
var20	Annual precipitation (mm)	WorldClim	O
var21	Precipitation of the wettest month(mm)	WorldClim	O
var22	Precipitation of the driest month(mm)	WorldClim	O
var23	Precipitation seasonality(%)	WorldClim	O
var24	Precipitation of wettest quarter(mm)	WorldClim	O
var25	Precipitation of driest quarter(mm)	WorldClim	O
var26	Precipitation of warmest quarter(mm)	WorldClim	O
var27	Precipitation of coldest quarter(mm)	WorldClim	O
var28	Minimum June July August precipitation	WorldClim*	O
var29	Maximum June July August precipitation	WorldClim*	O
var30	Maximum December January Februrary precipitation	WorldClim*	O
var31	Minimum December January Februrary precipitation	WorldClim*	O
var32	Total precipitaion for months with a mean monthly T is above 0℃	WorldClim*	O
var33	Annual actual evapotranspiration	CGIAR-CSI	O
var34	Annual potential evapotranspiration	CGIAR-CSI	O
var35	Coefficient of annual moisture availability	CGIAR-CSI*	O
var36	Ariditiy Index	CGIAR-CSI	O
var37	PET seasonality	CGIAR-CSI*	O
var38	Thornthwait 1948 humidity index	WorldClim - CGIAR-CSI*	O
var39	Thornthwait 1948 aridity index	WorldClim - CGIAR-CSI*	O

var40	Emberger's pluviothermic quotient	WorldClim*	O
var41	Annual solar radiation	CGIAR-CSI	O
var42	Altitude	WorldClim	O
var43	Growing degree-days on 10℃ base	WorldClim*	X
var44	PET Coldest Quarter	WorldClim*	X
var45	PET Warmest Quarter	WorldClim*	X
var46	PET Wettest Quarter	WorldClim*	X
var47	PET Driest Quarter	WorldClim*	X
var48	PEI (Precipitation Effectiveness Index)	WorldClim*	X
var49	Climatic moisture index	WorldClim*	X
var50	Continentality	WorldClim*	X
var51	WI (Warmth Index)	WorldClim*	X
var52	Aspect	WorldClim*	X
var53	Slope	WorldClim*	X

var 43. Growing degree-days(GDD) on 10 ℃ base

GDD are a measure of heat accumulation to predict plant and animal development rates such as a specific crop stage [2]. 10 ℃ is the most common base for GDD calculations. Calculated by summation of mean monthly temerature for all months with a mean temperature greater than 10 ℃, and multiplying by the tothal number of days in those months.

var 44, var45, var46, var 47. Potential Evapotranspiration Extremes (PET Coldest Quarter, PET Warmest Quarter, PET Wettest Quarter, PET Driest Quarter)

PET is the amount of evapotranspiration that occurs at the optimal condition (when a sufficient water source is available). In this case, the amount of evapotranspiration is affected by meteorological variables (radiant energy, temperature, vapor pressure, wind speed, etc.), which means the maximum possible loss of water under normal meteorological conditions [3]. In the current study, various PET parameters in extreme climatic conditions were added. Although many equations for estimating PET exist, the CGIAR-CSI data used in the current study were calculated via the FAO application of Hargreaves model [4].

$$PET = 0.0023 * RA * (Tmean + 17.8) * TD0.5 \text{ (mm / month)} \quad (1)$$

Where Tmean is mean temperature (C°); TD is daily temperature range (C°); RA is extra-terrestrial radiation on top of atmosphere expressed in mm/month as equivalent of evaporation

var 48 Precipitation Effectiveness Index (PEI)

The PEI is an index devised by Thornthwaite [5], which is based on the fact that not only the amount of precipitation but also evaporation is important for the growth of natural vegetation. As an index representing the long-term efficiency of precipitation, it is calculated by the sum of the 12 monthly PE ratios (monthly precipitation/monthly evaporation). In this study, the PEI was applied because it affects the vegetation distribution indirectly by influencing the productivity of vegetation [6].

$$PE \text{ ratio } (i) = 0.165 \times [Pi/(Ti + 12.2)]10/9 \quad (2)$$

where i is the number of the month (from 1 = January to 12 = December), Pi is the normal monthly precipitation in mm, and Ti is the normal monthly temperature in °C. All temperatures < −2°C are given the value of −2°C, PE ratios > 40 are counted as 40 [7] *var49. Climatic Moisture Index (CMI)*

The CMI is an index of the water availability potential imposed solely by climate and evaluates water scarcity. In this paper, the CMI was calculated using the ratio of annual precipitation to annual potential evapotranspiration (PET) following [8].

$$P/PET - 1 \text{ when } P < PET$$
$$1 - PET/P \text{ when } P \geq PET \quad (3)$$

var50. Continentality Index (CI)

The CI (yearly thermic interval) presents the range between the average temperature of the warmest and coldest months of the year and distinguishes between continental climate and oceanic climate [9].

$$CI = Tmax - Tmin, \quad (4)$$

where Tmax is the average temperature of the warmest months, and Tmin is the average temperature of the coldest months of the year.

var51. Warmth Index (WI)

The WI is an important thermal index associated with effective heat of vegetation [10]. Therefore, the WI has been used to understand the predicting of potential vegetation distributions and spatial movement [11]. WI was calculated using the following formula, which determines the annual sum of positive differences between monthly mean temperature and 5 °C.

$$WI = \Sigma(t - 5) \quad \text{where t is the monthly mean temperature} > 5\ °C \quad (5)$$

var 52, var53. Topography

Topographic variation controls the water availability, temperature, and solar radiation on the landscape, thus, it can affect the habitats [12]. In this study, simple topographic variables such as elevation, slope, and aspect were included.

	var1	var2	var3	var4	var5	var6	var7	var8	var9	var10	var11	var12	var13	var14	var15	var16	var17	var18	var19	var20	var21	var22	var23	var24	var25	var26	var27	var28	var29	var30	var31	var32	var33	var34	var35	var36	var37	var38	var39	var40	var41	var42	var43	var44	var45	var46	var47	var48	var49	var50	var51	var52	var53
var1	1.00	-0.72	0.40	0.57	0.84	0.97	-0.87	0.76	0.97	0.92	0.98	0.83	0.55	0.98	0.89	0.93	0.99	-0.55	0.60	0.61	-0.50	0.43	0.63	0.49	0.61	0.47	0.59	0.62	0.59	0.13	0.13	-0.53	0.39	0.98	0.78	-0.31	-0.62	0.20	-0.53	0.67	0.93	0.04	-0.34	0.97	0.88	0.37	0.86	0.12	0.41	-0.86	0.97	-0.02	-0.01
var2	-0.72	1.00	0.14	-0.53	-0.36	-0.81	0.86	-0.34	-0.78	-0.52	-0.77	-0.70	-0.56	-0.77	-0.47	-0.66	-0.76	0.45	-0.48	-0.69	0.79	-0.39	-0.71	-0.44	-0.68	-0.53	-0.48	-0.69	-0.66	-0.11	-0.23	0.43	-0.68	-0.72	-0.27	0.44	0.89	-0.37	0.75	-0.72	-0.72	-0.03	0.28	-0.58	-0.46	-0.10	-0.59	-0.04	-0.69	0.80	-0.65	0.00	0.06
var3	0.40	0.14	1.00	0.11	0.30	0.41	-0.38	0.26	0.42	0.29	0.45	0.32	0.24	0.46	0.27	0.33	0.45	-0.32	0.43	0.24	0.05	0.23	0.23	0.32	0.22	0.29	0.43	0.21	0.23	0.00	0.01	-0.26	0.01	0.52	0.28	-0.17	-0.11	-0.04	-0.11	0.31	0.48	0.00	-0.27	0.57	0.59	0.36	0.42	0.04	0.08	-0.48	0.34	-0.02	-0.03
var4	0.57	-0.53	0.11	1.00	0.50	0.58	-0.53	0.40	0.58	0.53	0.56	0.62	0.38	0.57	0.53	0.62	0.57	-0.44	0.31	0.55	-0.54	0.25	0.56	0.28	0.54	0.43	0.31	0.55	0.53	0.07	0.07	-0.41	0.34	0.54	0.46	-0.16	-0.46	0.10	-0.46	0.52	0.57	0.02	-0.03	0.52	0.41	-0.04	0.52	0.07	0.35	-0.49	0.59	0.01	-0.01
var5	0.84	-0.36	0.30	0.50	1.00	0.69	-0.48	0.86	0.72	0.98	0.72	0.63	0.30	0.71	0.98	0.85	0.74	-0.39	0.31	0.33	-0.17	0.21	0.34	0.21	0.35	0.15	0.30	0.37	0.32	0.09	-0.09	-0.41	-0.03	0.73	0.99	-0.02	-0.13	-0.05	-0.16	0.34	0.66	0.04	-0.15	0.82	0.79	0.31	0.72	0.16	-0.01	-0.47	0.91	-0.03	0.06
var6	0.97	-0.81	0.41	0.58	0.69	1.00	-0.96	0.62	0.99	0.80	1.00	0.86	0.62	1.00	0.75	0.89	0.99	-0.59	0.63	0.71	-0.62	0.46	0.73	0.52	0.70	0.55	0.62	0.71	0.68	0.12	0.16	-0.54	0.51	0.98	0.61	-0.41	-0.77	0.24	-0.65	0.76	0.95	0.03	-0.39	0.93	0.82	0.32	0.84	0.11	0.54	-0.95	0.91	-0.02	-0.04
var7	-0.87	0.86	-0.38	-0.53	-0.48	-0.96	1.00	-0.44	-0.94	-0.62	-0.95	-0.81	-0.65	-0.95	-0.56	-0.77	-0.94	0.57	-0.65	-0.74	0.70	-0.48	-0.76	-0.56	-0.72	-0.62	-0.65	-0.73	-0.71	-0.11	-0.23	0.51	-0.63	-0.93	-0.39	0.50	0.89	-0.32	0.74	-0.81	-0.92	-0.03	0.42	-0.83	-0.72	-0.28	-0.77	-0.08	-0.66	0.99	-0.77	0.01	0.07
var8	0.76	-0.34	0.26	0.40	0.86	0.62	-0.44	1.00	0.63	0.88	0.65	0.53	0.22	0.64	0.88	0.73	0.67	-0.24	0.27	0.15	-0.05	0.13	0.15	0.19	0.10	0.14	0.28	0.10	0.11	0.05	0.09	-0.35	-0.07	0.66	0.85	0.07	-0.13	-0.02	-0.05	0.21	0.58	0.03	-0.20	0.74	0.72	0.53	0.63	0.21	-0.08	-0.42	0.80	-0.05	0.06
var9	0.97	-0.78	0.42	0.58	0.72	0.99	-0.94	0.63	1.00	0.82	0.99	0.85	0.61	0.99	0.78	0.89	0.99	-0.61	0.63	0.73	-0.62	0.47	0.74	0.53	0.72	0.55	0.63	0.74	0.70	0.14	0.15	-0.53	0.50	0.98	0.65	-0.42	-0.74	0.23	-0.64	0.77	0.96	0.04	-0.36	0.94	0.83	0.31	0.87	0.10	0.54	-0.94	0.92	-0.01	-0.03
var10	0.92	-0.52	0.29	0.53	0.98	0.80	-0.62	0.88	0.82	1.00	0.82	0.71	0.38	0.81	1.00	0.90	0.84	-0.42	0.41	0.41	-0.27	0.29	0.42	0.31	0.41	0.25	0.41	0.43	0.39	0.11	0.01	-0.44	0.10	0.82	0.95	-0.08	-0.30	0.05	-0.27	0.44	0.76	0.03	-0.22	0.88	0.82	0.36	0.77	0.16	0.12	-0.59	0.96	-0.03	0.04
var11	0.98	-0.77	0.45	0.56	0.72	1.00	-0.95	0.65	0.99	0.82	1.00	0.85	0.61	1.00	0.78	0.89	1.00	-0.59	0.65	0.69	-0.58	0.47	0.71	0.54	0.68	0.55	0.65	0.69	0.66	0.13	0.17	-0.53	0.49	1.00	0.65	-0.40	-0.74	0.24	-0.62	0.75	0.96	0.03	-0.38	0.95	0.85	0.35	0.86	0.11	0.52	-0.94	0.92	-0.02	-0.03
var12	0.83	-0.70	0.32	0.62	0.63	0.86	-0.81	0.53	0.85	0.71	0.85	1.00	0.71	0.85	0.68	0.78	0.85	-0.55	0.54	0.65	-0.58	0.40	0.66	0.45	0.64	0.50	0.54	0.66	0.62	0.13	0.08	-0.60	0.46	0.84	0.57	-0.33	-0.67	0.23	-0.59	0.68	0.84	-0.07	-0.34	0.81	0.66	0.14	0.77	0.10	0.49	-0.80	0.83	0.00	-0.02
var13	0.55	-0.56	0.24	0.38	0.30	0.62	-0.65	0.22	0.61	0.38	0.61	0.71	1.00	0.61	0.35	0.46	0.60	-0.40	0.41	0.51	-0.52	0.31	0.52	0.35	0.50	0.41	0.40	0.52	0.49	0.11	0.00	-0.52	0.47	0.60	0.25	-0.41	-0.61	0.23	-0.52	0.55	0.63	-0.14	-0.36	0.55	0.40	-0.01	0.56	0.04	0.48	-0.64	0.54	0.00	-0.04
var14	0.98	-0.77	0.46	0.57	0.71	1.00	-0.95	0.64	0.99	0.81	1.00	0.85	0.61	1.00	0.77	0.89	1.00	-0.59	0.65	0.70	-0.59	0.47	0.71	0.54	0.68	0.55	0.64	0.69	0.67	0.12	0.16	-0.53	0.49	1.00	0.64	-0.41	-0.74	0.24	-0.63	0.76	0.96	0.03	-0.39	0.95	0.85	0.34	0.86	0.11	0.53	-0.95	0.92	-0.02	-0.04
var15	0.89	-0.47	0.27	0.53	0.98	0.75	-0.56	0.88	0.78	1.00	0.78	0.68	0.35	0.77	1.00	0.88	0.80	-0.40	0.38	0.36	-0.23	0.27	0.38	0.27	0.38	0.21	0.37	0.40	0.35	0.11	-0.02	-0.43	0.06	0.78	0.97	-0.05	-0.23	0.02	-0.22	0.39	0.72	0.03	-0.19	0.86	0.78	0.33	0.76	0.16	0.07	-0.53	0.95	-0.03	0.05
var16	0.93	-0.66	0.33	0.62	0.85	0.89	-0.77	0.73	0.89	0.90	0.89	0.78	0.46	0.89	0.88	1.00	0.90	-0.54	0.55	0.61	-0.50	0.37	0.63	0.42	0.61	0.44	0.54	0.63	0.58	0.09	0.05	-0.54	0.35	0.89	0.80	-0.24	-0.53	0.17	-0.49	0.65	0.85	0.08	-0.20	0.90	0.79	0.26	0.81	0.08	0.37	-0.75	0.94	-0.01	0.01
var17	0.99	-0.76	0.45	0.57	0.74	0.99	-0.94	0.67	0.99	0.84	1.00	0.85	0.60	1.00	0.80	0.90	1.00	-0.58	0.64	0.68	-0.57	0.47	0.70	0.53	0.67	0.54	0.63	0.68	0.65	0.13	0.15	-0.53	0.47	1.00	0.67	-0.39	-0.72	0.23	-0.61	0.74	0.96	0.03	-0.38	0.96	0.86	0.35	0.86	0.11	0.50	-0.93	0.93	-0.02	-0.03
var18	-0.55	0.45	-0.32	-0.44	-0.39	-0.59	0.57	-0.24	-0.61	-0.42	-0.59	-0.55	-0.40	-0.59	-0.40	-0.54	-0.58	1.00	-0.59	-0.60	0.52	-0.55	-0.62	-0.58	-0.59	-0.50	-0.59	-0.61	-0.58	-0.17	-0.13	0.32	-0.54	-0.59	-0.34	0.65	0.51	-0.25	0.55	-0.63	-0.62	-0.04	0.13	-0.56	-0.43	-0.09	-0.58	-0.07	-0.59	0.59	-0.51	-0.02	0.07
var19	0.60	-0.48	0.43	0.31	0.31	0.63	-0.65	0.27	0.63	0.41	0.65	0.54	0.41	0.65	0.38	0.55	0.64	-0.59	1.00	0.65	-0.41	0.57	0.65	0.75	0.61	0.79	1.00	0.61	0.62	0.00	0.32	-0.29	0.67	0.66	0.24	-0.49	-0.61	0.40	-0.63	0.81	0.68	0.02	-0.21	0.63	0.53	0.29	0.55	-0.09	0.75	-0.67	0.51	0.03	-0.10
var20	0.61	-0.69	0.24	0.55	0.33	0.71	-0.74	0.15	0.73	0.41	0.69	0.65	0.51	0.70	0.36	0.61	0.68	-0.60	0.65	1.00	-0.81	0.42	1.00	0.53	0.98	0.74	0.63	0.96	0.99	-0.02	0.15	-0.34	0.69	0.67	0.24	-0.49	-0.73	0.24	-0.90	0.93	0.68	0.04	-0.17	0.55	0.53	0.00	0.56	-0.13	0.78	-0.74	0.55	0.03	-0.08
var21	-0.50	0.79	0.05	-0.54	-0.17	-0.62	0.70	-0.05	-0.62	-0.27	-0.58	-0.58	-0.52	-0.59	-0.23	-0.50	-0.57	0.52	-0.41	-0.81	1.00	-0.38	-0.83	-0.43	-0.80	-0.64	-0.40	-0.80	-0.79	-0.12	-0.19	0.42	-0.83	-0.54	-0.08	0.53	0.82	-0.36	0.86	-0.76	-0.59	-0.09	0.12	-0.42	-0.31	0.11	-0.50	0.17	-0.82	0.67	-0.44	-0.03	0.07
var22	0.43	-0.39	0.23	0.25	0.21	0.46	-0.48	0.13	0.47	0.29	0.47	0.40	0.31	0.47	0.27	0.37	0.47	-0.55	0.57	0.42	-0.38	1.00	0.43	0.81	0.43	0.35	0.57	0.44	0.41	0.28	0.33	-0.22	0.59	0.48	0.16	-0.50	-0.48	0.45	-0.42	0.46	0.52	0.03	-0.16	0.45	0.34	0.17	0.42	-0.11	0.59	-0.50	0.36	0.04	-0.08
var23	0.63	-0.71	0.23	0.56	0.34	0.73	-0.76	0.15	0.74	0.42	0.71	0.66	0.52	0.71	0.38	0.63	0.70	-0.62	0.65	1.00	-0.83	0.43	1.00	0.54	0.98	0.75	0.64	0.97	0.98	-0.01	0.14	-0.36	0.71	0.69	0.25	-0.51	-0.75	0.25	-0.91	0.94	0.70	0.05	-0.17	0.57	0.53	-0.02	0.59	-0.14	0.79	-0.76	0.57	0.03	-0.08
var24	0.49	-0.44	0.32	0.28	0.21	0.52	-0.56	0.19	0.53	0.31	0.54	0.45	0.35	0.54	0.27	0.42	0.53	-0.58	0.75	0.53	-0.43	0.81	0.54	1.00	0.50	0.55	0.74	0.49	0.51	0.15	0.40	-0.25	0.69	0.55	0.15	-0.53	-0.56	0.46	-0.53	0.60	0.58	0.03	-0.19	0.51	0.41	0.26	0.45	-0.12	0.70	-0.58	0.40	0.04	-0.09
var25	0.61	-0.68	0.22	0.54	0.35	0.70	-0.72	0.10	0.72	0.41	0.68	0.64	0.50	0.68	0.38	0.61	0.67	-0.59	0.61	0.98	-0.80	0.43	0.98	0.50	1.00	0.69	0.59	0.99	0.99	0.03	0.11	-0.33	0.66	0.66	0.26	-0.48	-0.70	0.22	-0.87	0.90	0.67	0.04	-0.16	0.55	0.51	-0.05	0.56	-0.14	0.75	-0.72	0.56	0.03	-0.07
var26	0.47	-0.53	0.29	0.43	0.15	0.55	-0.62	0.14	0.55	0.25	0.55	0.50	0.41	0.55	0.21	0.44	0.54	-0.50	0.79	0.74	-0.64	0.35	0.75	0.55	0.69	1.00	0.78	0.68	0.70	-0.13	0.27	-0.29	0.74	0.55	0.07	-0.45	-0.68	0.30	-0.73	0.87	0.58	0.04	-0.13	0.46	0.41	0.09	0.46	-0.18	0.81	-0.63	0.39	0.02	-0.10
var27	0.59	-0.48	0.43	0.31	0.30	0.62	-0.65	0.28	0.63	0.41	0.65	0.54	0.40	0.64	0.37	0.54	0.63	-0.59	1.00	0.63	-0.40	0.57	0.64	0.74	0.59	0.78	1.00	0.59	0.59	0.00	0.31	-0.29	0.67	0.66	0.24	-0.49	-0.61	0.40	-0.62	0.80	0.68	0.02	-0.21	0.63	0.53	0.29	0.55	-0.09	0.74	-0.67	0.51	0.03	-0.10
var28	0.62	-0.69	0.21	0.55	0.37	0.71	-0.73	0.10	0.74	0.43	0.69	0.66	0.52	0.69	0.40	0.63	0.68	-0.61	0.61	0.96	-0.80	0.44	0.97	0.49	0.99	0.68	0.59	1.00	0.96	0.05	0.07	-0.35	0.66	0.67	0.29	-0.49	-0.70	0.23	-0.85	0.90	0.69	0.05	-0.16	0.56	0.50	-0.09	0.59	-0.14	0.75	-0.72	0.58	0.03	-0.07
var29	0.59	-0.66	0.23	0.53	0.32	0.68	-0.71	0.11	0.70	0.39	0.66	0.62	0.49	0.67	0.35	0.58	0.65	-0.58	0.62	0.99	-0.79	0.41	0.98	0.51	0.99	0.70	0.59	0.96	1.00	0.00	0.16	-0.32	0.66	0.64	0.23	-0.47	-0.69	0.22	-0.88	0.90	0.64	0.04	-0.17	0.52	0.51	0.00	0.52	-0.13	0.75	-0.71	0.53	0.03	-0.07
var30	0.13	-0.11	0.00	0.07	0.09	0.12	-0.11	0.05	0.14	0.11	0.13	0.13	0.11	0.12	0.11	0.09	0.13	-0.17	0.00	-0.02	-0.12	0.28	-0.01	0.15	0.03	-0.13	0.00	0.05	0.00	1.00	0.18	-0.17	0.22	0.13	0.09	-0.22	-0.12	0.37	-0.02	-0.08	0.17	0.02	-0.12	0.15	0.06	0.06	0.16	0.09	0.12	-0.11	0.11	0.01	-0.01
var31	0.13	-0.23	0.01	0.07	-0.09	0.16	-0.23	0.09	0.15	0.01	0.17	0.08	0.00	0.16	-0.02	0.05	0.15	-0.13	0.32	0.15	-0.19	0.33	0.14	0.40	0.11	0.27	0.31	0.07	0.16	0.18	1.00	0.13	0.37	0.16	-0.13	-0.15	-0.30	0.27	-0.24	0.17	0.19	0.06	-0.14	0.10	0.08	0.40	0.03	0.03	0.33	-0.22	0.02	0.01	-0.05
var32	-0.53	0.43	-0.26	-0.41	-0.41	-0.54	0.51	-0.35	-0.53	-0.44	-0.53	-0.60	-0.52	-0.53	-0.43	-0.54	-0.53	0.32	-0.29	-0.34	0.42	-0.22	-0.36	-0.25	-0.33	-0.29	-0.29	-0.35	-0.32	-0.17	0.13	1.00	-0.33	-0.52	-0.38	0.25	0.42	-0.22	0.34	-0.35	-0.54	0.02	0.22	-0.56	-0.43	-0.10	-0.53	-0.09	-0.30	0.50	-0.54	0.00	0.00
var33	0.39	-0.68	0.01	0.34	-0.03	0.51	-0.63	-0.07	0.50	0.10	0.49	0.46	0.47	0.49	0.06	0.35	0.47	-0.54	0.67	0.69	-0.83	0.59	0.71	0.69	0.66	0.74	0.67	0.66	0.66	0.22	0.37	-0.33	1.00	0.47	-0.12	-0.67	-0.84	0.59	-0.79	0.75	0.54	0.06	-0.15	0.35	0.21	-0.01	0.41	-0.20	0.97	-0.62	0.29	0.05	-0.11
var34	0.98	-0.72	0.52	0.54	0.73	0.98	-0.93	0.66	0.98	0.82	1.00	0.84	0.60	1.00	0.78	0.89	1.00	-0.59	0.66	0.67	-0.54	0.48	0.69	0.55	0.66	0.55	0.66	0.67	0.64	0.13	0.16	-0.52	0.47	1.00	0.66	-0.40	-0.70	0.23	-0.59	0.74	0.97	0.03	-0.38	0.97	0.87	0.37	0.86	0.10	0.50	-0.94	0.92	-0.02	-0.03
var35	0.78	-0.27	0.28	0.46	0.99	0.61	-0.39	0.85	0.65	0.95	0.65	0.57	0.25	0.64	0.97	0.80	0.67	-0.34	0.24	0.24	-0.08	0.16	0.25	0.15	0.26	0.07	0.24	0.29	0.23	0.09	-0.13	-0.38	-0.12	0.66	1.00	0.06	-0.03	-0.09	-0.06	0.24	0.60	0.03	-0.11	0.77	0.71	0.28	0.68	0.17	-0.11	-0.37	0.87	-0.04	0.07
var36	-0.31	0.44	-0.17	-0.16	-0.02	-0.41	0.50	0.07	-0.42	-0.08	-0.40	-0.33	-0.41	-0.41	-0.05	-0.24	-0.39	0.65	-0.49	-0.49	0.53	-0.50	-0.51	-0.53	-0.48	-0.45	-0.49	-0.49	-0.47	-0.22	-0.15	0.25	-0.67	-0.40	0.06	1.00	0.58	-0.40	0.54	-0.53	-0.44	-0.06	0.22	-0.32	-0.22	-0.03	-0.36	-0.01	-0.69	0.52	-0.23	-0.03	0.09
var37	-0.62	0.89	-0.11	-0.46	-0.13	-0.77	0.89	-0.13	-0.74	-0.30	-0.74	-0.67	-0.61	-0.74	-0.23	-0.53	-0.72	0.51	-0.61	-0.73	0.82	-0.48	-0.75	-0.56	-0.70	-0.68	-0.61	-0.70	-0.69	-0.12	-0.30	0.42	-0.84	-0.70	-0.03	0.58	1.00	-0.45	0.81	-0.80	-0.74	-0.03	0.32	-0.55	-0.40	-0.08	-0.56	0.03	-0.84	0.87	-0.50	-0.02	0.10
var38	0.20	-0.37	-0.04	0.10	-0.05	0.24	-0.32	-0.02	0.23	0.05	0.24	0.23	0.23	0.24	0.02	0.17	0.23	-0.25	0.40	0.24	-0.36	0.45	0.25	0.46	0.22	0.30	0.40	0.23	0.22	0.37	0.27	-0.22	0.59	0.23	-0.09	-0.40	-0.45	1.00	-0.37	0.30	0.28	0.03	-0.09	0.19	0.07	0.06	0.19	-0.06	0.54	-0.30	0.13	0.05	-0.06
var39	-0.53	0.75	-0.11	-0.46	-0.16	-0.65	0.74	-0.05	-0.64	-0.27	-0.62	-0.59	-0.52	-0.63	-0.22	-0.49	-0.61	0.55	-0.63	-0.90	0.86	-0.42	-0.91	-0.53	-0.87	-0.73	-0.62	-0.85	-0.88	-0.02	-0.24	0.34	-0.79	-0.59	-0.06	0.54	0.81	-0.37	1.00	-0.88	-0.60	-0.01	0.17	-0.45	-0.40	-0.02	-0.47	0.11	-0.85	0.72	-0.44	-0.03	0.09
var40	0.67	-0.72	0.31	0.52	0.34	0.76	-0.81	0.21	0.77	0.44	0.75	0.68	0.55	0.76	0.39	0.65	0.74	-0.63	0.81	0.93	-0.76	0.46	0.94	0.60	0.90	0.87	0.80	0.90	0.90	-0.08	0.17	-0.35	0.75	0.74	0.24	-0.53	-0.80	0.30	-0.88	1.00	0.75	0.04	-0.20	0.63	0.56	0.04	0.62	-0.15	0.84	-0.81	0.60	0.03	-0.09
var41	0.93	-0.72	0.48	0.57	0.66	0.95	-0.92	0.58	0.96	0.76	0.96	0.84	0.63	0.96	0.72	0.85	0.96	-0.62	0.68	0.68	-0.59	0.52	0.70	0.58	0.67	0.58	0.68	0.69	0.64	0.17	0.19	-0.54	0.54	0.97	0.60	-0.44	-0.74	0.28	-0.60	0.75	1.00	0.02	-0.35	0.94	0.78	0.27	0.87	0.08	0.56	-0.93	0.88	0.00	-0.06
var42	0.04	-0.03	0.00	0.02	0.04	0.03	-0.03	0.03	0.04	0.03	0.03	-0.07	-0.14	0.03	0.03	0.08	0.03	-0.04	0.02	0.04	-0.09	0.03	0.05	0.03	0.04	0.04	0.02	0.05	0.04	0.02	0.06	0.02	0.06	0.03	0.03	-0.06	-0.03	0.03	-0.01	0.04	0.02	1.00	0.06	0.04	0.04	0.05	0.03	-0.11	0.06	-0.03	0.03	0.01	-0.01
var43	-0.34	0.28	-0.27	-0.03	-0.15	-0.39	0.42	-0.20	-0.36	-0.22	-0.38	-0.34	-0.36	-0.39	-0.19	-0.20	-0.38	0.13	-0.21	-0.17	0.12	-0.16	-0.17	-0.19	-0.16	-0.13	-0.21	-0.16	-0.17	-0.12	-0.14	0.22	-0.15	-0.38	-0.11	0.22	0.32	-0.09	0.17	-0.20	-0.35	0.06	1.00	-0.36	-0.32	-0.26	-0.27	-0.16	-0.16	0.42	-0.28	0.02	0.02
var44	0.97	-0.58	0.57	0.52	0.82	0.93	-0.83	0.74	0.94	0.88	0.95	0.81	0.55	0.95	0.86	0.90	0.96	-0.56	0.63	0.55	-0.42	0.45	0.57	0.51	0.55	0.46	0.63	0.56	0.52	0.15	0.10	-0.56	0.35	0.97	0.77	-0.32	-0.55	0.19	-0.45	0.63	0.94	0.04	-0.36	1.00	0.89	0.40	0.88	0.12	0.37	-0.84	0.94	-0.02	-0.01
var45	0.88	-0.46	0.59	0.41	0.79	0.82	-0.72	0.72	0.83	0.82	0.85	0.66	0.40	0.85	0.78	0.79	0.86	-0.43	0.53	0.53	-0.31	0.34	0.53	0.41	0.51	0.41	0.53	0.50	0.51	0.06	0.08	-0.43	0.21	0.87	0.71	-0.22	-0.40	0.07	-0.40	0.56	0.78	0.04	-0.32	0.89	1.00	0.47	0.72	0.08	0.26	-0.74	0.84	-0.03	0.01
var46	0.37	-0.10	0.36	-0.04	0.31	0.32	-0.28	0.53	0.31	0.36	0.35	0.14	-0.01	0.34	0.33	0.26	0.35	-0.09	0.29	0.00	0.11	0.17	-0.02	0.26	-0.05	0.09	0.29	-0.09	0.00	0.06	0.40	-0.10	-0.01	0.37	0.28	-0.03	-0.08	0.06	-0.02	0.04	0.27	0.05	-0.26	0.40	0.47	1.00	0.19	0.18	-0.01	-0.29	0.30	-0.02	0.03
var47	0.86	-0.59	0.42	0.52	0.72	0.84	-0.77	0.63	0.87	0.77	0.86	0.77	0.56	0.86	0.76	0.81	0.86	-0.58	0.55	0.56	-0.50	0.42	0.59	0.45	0.56	0.46	0.55	0.59	0.52	0.16	0.03	-0.53	0.41	0.86	0.68	-0.36	-0.56	0.19	-0.47	0.62	0.87	0.03	-0.27	0.88	0.72	0.19	1.00	0.09	0.42	-0.76	0.85	-0.01	-0.02
var48	0.12	-0.04	0.04	0.07	0.16	0.11	-0.08	0.21	0.10	0.16	0.11	0.10	0.04	0.11	0.16	0.08	0.11	-0.07	-0.09	-0.13	0.17	-0.11	-0.14	-0.12	-0.14	-0.18	-0.09	-0.14	-0.13	0.09	0.03	-0.09	-0.20	0.10	0.17	-0.01	0.03	-0.06	0.11	-0.15	0.08	-0.11	-0.16	0.12	0.08	0.18	0.09	1.00	-0.23	-0.06	0.13	0.01	0.05
var49	0.41	-0.69	0.08	0.35	-0.01	0.54	-0.66	-0.08	0.54	0.12	0.52	0.49	0.48	0.53	0.07	0.37	0.50	-0.59	0.75	0.78	-0.82	0.59	0.79	0.70	0.75	0.81	0.74	0.75	0.75	0.12	0.33	-0.30	0.97	0.50	-0.11	-0.69	-0.84	0.54	-0.85	0.84	0.56	0.06	-0.16	0.37	0.26	-0.01	0.42	-0.23	1.00	-0.66	0.31	0.05	-0.12
var50	-0.86	0.80	-0.48	-0.49	-0.47	-0.95	0.99	-0.42	-0.94	-0.59	-0.94	-0.80	-0.64	-0.95	-0.53	-0.75	-0.93	0.59	-0.67	-0.74	0.67	-0.50	-0.76	-0.58	-0.72	-0.63	-0.67	-0.72	-0.71	-0.11	-0.22	0.50	-0.62	-0.94	-0.37	0.52	0.87	-0.30	0.72	-0.81	-0.93	-0.03	0.42	-0.84	-0.74	-0.29	-0.76	-0.06	-0.66	1.00	-0.75	0.01	0.07
var51	0.97	-0.65	0.34	0.59	0.91	0.91	-0.77	0.80	0.92	0.96	0.92	0.83	0.54	0.92	0.95	0.94	0.93	-0.51	0.51	0.55	-0.44	0.36	0.57	0.40	0.56	0.39	0.51	0.58	0.53	0.11	0.02	-0.54	0.29	0.92	0.87	-0.23	-0.50	0.13	-0.44	0.60	0.88	0.03	-0.28	0.94	0.84	0.30	0.85	0.13	0.31	-0.75	1.00	-0.02	0.02
var52	-0.02	0.00	-0.02	0.01	-0.03	-0.02	0.01	-0.05	-0.01	-0.03	-0.02	0.00	0.00	-0.02	-0.03	-0.01	-0.02	-0.02	0.03	0.03	-0.03	0.04	0.03	0.04	0.03	0.02	0.03	0.03	0.03	0.01	0.01	0.00	0.05	-0.02	-0.04	-0.03	-0.02	0.05	-0.03	0.03	0.00	0.01	0.02	-0.02	-0.03	-0.02	-0.01	0.01	0.05	0.01	-0.02	1.00	0.04
var53	-0.01	0.06	-0.03	-0.01	0.06	-0.04	0.07	0.06	-0.03	0.04	-0.03	-0.02	-0.04	-0.04	0.05	0.01	-0.03	0.07	-0.10	-0.08	0.07	-0.08	-0.08	-0.09	-0.07	-0.10	-0.10	-0.07	-0.07	-0.01	-0.05	0.00	-0.11	-0.03	0.07	0.09	0.10	-0.06	0.09	-0.09	-0.06	-0.01	0.02	-0.01	0.01	0.03	-0.02	0.05	-0.12	0.07	0.02	0.04	1.00

Figure S1. Pearson correlation matrix for 53 variables listed Table S1. Colored cells have a correlation coefficient > 0.95.

Environmental characteristics of each zone

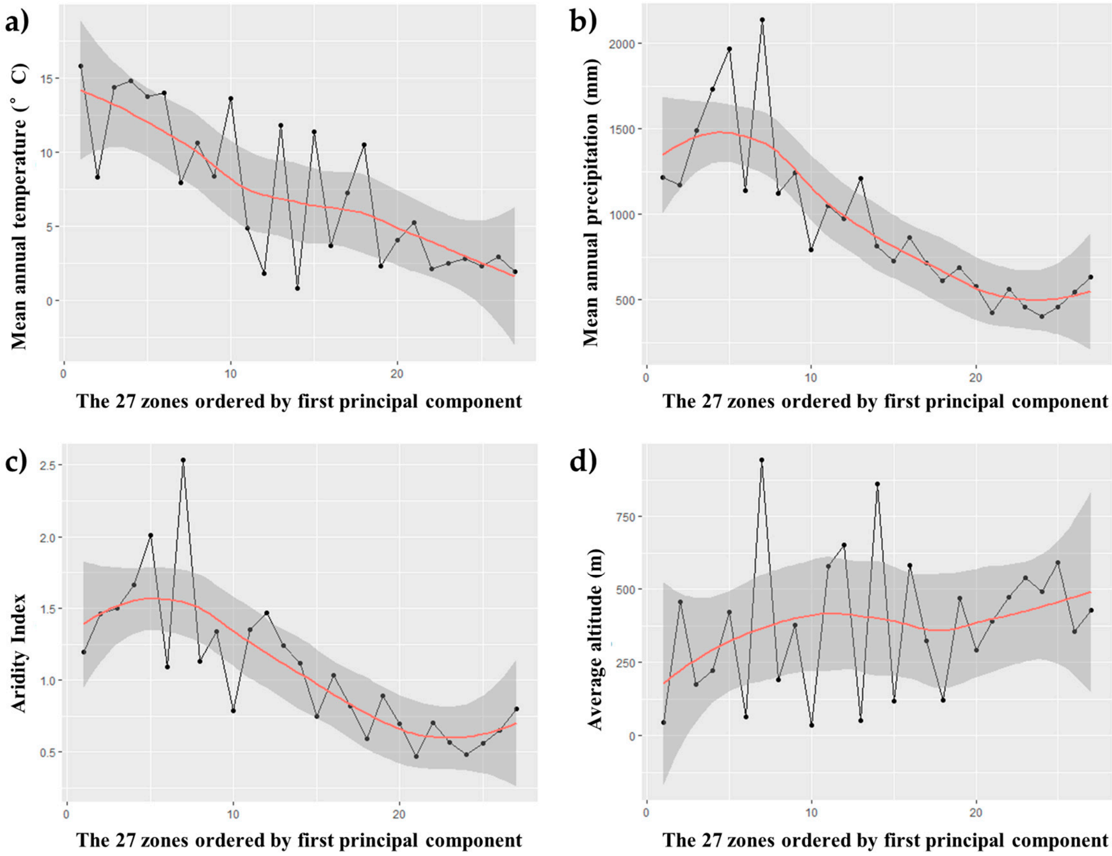

Figure S2. Environmental characteristics with a smoothing line showing the trend as the number of zones increases. The zones are ordered by the mean value of the first principal component a) Mean annual temperature; b) Mean annual precipitation; c) Aridity index; d) Average altitude of each zone.

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