Table S2 Information of 70 environmental variables.

Environmental index	Subcategories	Code	Description	Selection for modelling
Climate variables	Bioclimate	Bio1	Annual Mean Temperature (°C*10)	√
		Bio2	Mean Diurnal Range (Mean of monthly (max temp - min temp)) (°C*10)	
		Bio3	Isothermality (BIO2/BIO7) (*100)	
		Bio4	Temperature Seasonality (standard deviation *1000) (C of V)	
		Bio5	Max Temperature of Warmest Month (°C*10)	
		Bio6	Min Temperature of Coldest Month (°C*10)	
		Bio7	Temperature Annual Range (BIO5-BIO6) (°C*10)	
		Bio8	Mean Temperature of Wettest Quarte (°C*10)	
		Bio9	Mean Temperature of Driest Quarter (°C*10)	
		Bio10	Mean Temperature of Warmest Quarter (°C*10)	√
		Bio11	Mean Temperature of Coldest Quarter (°C*10)	
		Bio12	Annual Precipitation (mm)	√
		Bio13	Precipitation of Wettest Month (mm)	
		Bio14	Precipitation of Driest Month (mm)	
		Bio15	Precipitation Seasonality (C of V)	
		Bio16	Precipitation of Wettest Quarter (mm)	
		Bio17	Precipitation of Driest Quarter (mm)	√
		Bio18	Precipitation of Warmest Quarter (mm)	
		Bio19	Precipitation of Coldest Quarter (mm)	
	UV-B radiation	UVB1	Annual Mean UV-B (J/m^2/day)	√
		UVB2	UV-B Seasonality (J/m^2/day)	
		UVB3	Mean UV-B of Highest Month (J/m^2/day)	
		UVB4	Mean UV-B of Lowest Month (J/m^2/day)	

		UVB5	Sum of Monthly Mean UV-B during Highest Quarter ($J/m^2/day$)	
		UVB6	Sum of Monthly Mean UV-B during Lowest Quarter ($J/m^2/day$)	
Soil variables	0-20cm	CFRAG(0-20)	Gravel content greater than 2mm diameter (%, % by volume)	
		SDTO(0-20)	Sand content (% by mass)	√
		STPC(0-20)	Fines content (% by mass)	
		CLPC(0-20)	Clay content (% by mass)	√
		BULK(0-20)	Bulk weight (g/cm^3)	
		TAWC(0-20)	Effective soil water content (cm/m)	√
		CECs(0-20)	Soil cation exchange capacity (cmolc/kg)	√
		TEB(0-20)	Total soil exchangeable salt group (cmolc/kg)	
		BSAT(0-20)	Soil salinity saturation (%)	
		CECc(0-20)	Cation exchange capacity of soil clay particles (cmolc/kg)	
		ECEC(0-20)	Effective cation exchange capacity of soil (cmolc/kg)	√
		ESP(0-20)	Soil exchangeable sodium as a percentage of CEC (%)	
		ALSA(0-20)	Soil exchangeable aluminium (% of ECEC)	
		PHAQ(0-20)	Soil pH (water leaching)	
		TCEQ(0-20)	Soil inorganic carbon content (g C/kg)	
		GYPS(0-20)	Soil gypsum content (g C/kg)	
		ELCO(0-20)	Soil conductivity (dS/m)	
		ORGC(0-20)	Soil organic carbon content (g C/kg)	√
		TOTN(0-20)	Total soil nitrogen content (g/kg)	
		CNrt(0-20)	Soil carbon to nitrogen ratio(%)	
	20-40cm	CFRAG(20-40)	Gravel content greater than 2mm diameter (%, % by volume)	
		SDTO(20-40)	Sand content (% by mass)	
		STPC(20-40)	Fines content (% by mass)	√

		CLPC(20-40)	Clay content (% by mass)	
		BULK(20-40)	Bulk weight (g/cm^3)	
		TAWC(20-40)	Effective soil water content (cm/m)	
		CECs(20-40)	Soil cation exchange capacity (cmolc/kg)	
		TEB(20-40)	Total soil exchangeable salt group (cmolc/kg)	
		BSAT(20-40)	Soil salinity saturation (%)	
		CECc(20-40)	Cation exchange capacity of soil clay particles (cmolc/kg)	
		ECEC(20-40)	Effective cation exchange capacity of soil (cmolc/kg)	
		ESP(20-40)	Soil exchangeable sodium as a percentage of CEC (%)	
		ALSA(20-40)	Soil exchangeable aluminium (% of ECEC)	
		PHAQ(20-40)	Soil pH (water leaching)	√
		TCEQ(20-40)	Soil inorganic carbon content (g C/kg)	
		GYPS(20-40)	Soil gypsum content (g C/kg)	√
		ELCO(20-40)	Soil conductivity (dS/m)	
		ORGC(20-40)	Soil organic carbon content (g C/kg)	
		TOTN(20-40)	Total soil nitrogen content (g/kg)	
		CNrt(20-40)	Soil carbon to nitrogen ratio(%)	
Landscape variables	Topography	ELE	Elevation(m)	√
		SLOP	Slope (°)	√
		ASPE	Aspect (°)	√
	Vegetation	VT	Vegetation type variables*	√
	Land-use	LU	Landuse type variables**	√

*Vegetation type in this research: 1. Cold temperate and temperate montane needleleaf forests; 3. Subtropical needleleaf forest; 10. Subtropical deciduous broadleave forest; 11. Subtropical mixed evergreen and deciduous broadleave forests; 12. Subtropical broadleave evergreen forest; 15. Tropical rain forest; 16. Subtropical and tropical bamboo forests; 18. Subtropical, tropical broadleave evergreen, deciduous broadleave thickets; 36. Subtropical, tropical grasses; 41. Cold temperate, temperate swamps; 52. Biannual food crop fields and evergreen and deciduous fruit tree orchards and economic forests; 53. Biannual or ternary food crop fields and evergreen fruit tree orchards, subtropical economic forests; 54. Tri-annual food crop fields and evergreen fruit orchards and economic forests.

**Landuse type variables in this research: 1.Evergreen Needleleaf Forest; 2. Evergreen Broadleaf Forests; 4.Deciduous Broadleaf Forests; 5. Mixed Forests; 6. Closed Shrublands; 7. Open Shrublands; 8. Woody Savannas; 9. Savannas; 10. Grasslands; 11. Permanent Wetlands; 12. Croplands; 13. Urban and Built-Up Lands; 14. Cropland / Natural Vegetation Mosaics; 17. Water Bodies.