

## Supplementary materials

**Table S1** Information on 44 environmental indicators

Indicators (Abbreviation)	Indicator group	Units	Resolution	Sources <sup>#</sup>
Annual Mean Temperature (Bio1)	Bioclimatic variables	°C	30s	WorldClim2.1
Mean Diurnal Range (Bio2)				
Isothermality (BIO2/BIO7) (×100) (Bio3)				
Temperature Seasonality topographic (Bio4)				
Max Temperature of Warmest Month (Bio5)				
Min Temperature of Coldest Month (Bio6)				
Temperature Annual Range (BIO5- BIO6) (Bio7)				
Mean Temperature of Wettest Quarter (Bio8)				
Mean Temperature of Driest Quarter (Bio9)				
Mean Temperature of Warmest Quarter (Bio10)				
Mean Temperature of Coldest Quarter (Bio11)				
Annual Precipitation (Bio12)		mm		
Precipitation of Wettest Month (Bio13)				
Precipitation of Driest Month (Bio14)				
Precipitation Seasonality (Bio15)				
Precipitation of Wettest Quarter (Bio16)				
Precipitation of Driest Quarter (Bio17)				
Precipitation of Warmest Quarter (Bio18)				
Precipitation of Coldest Quarter (Bio19)				
Solar radiation (Srad)	Atmosphere	$\text{kJ m}^{-2} \text{ day}^{-1}$		
Wind speed (Wind)		$\text{m s}^{-1}$		
Water vapor pressure (Vapr)		kPa		
Longitude (Lon)	Geography	°	1km	ArcGIS 10.6
Latitude (Lat)				
Elevation (DEM)		m		SRTM3 V4.1

Slope		°		ArcGIS 10.6
Aspecta				
Soil bulk density (SBD)	Soil	cg cm <sup>-3</sup>	250m	SoilGrids 2.0
Cation exchange capacity at pH7 (CEC)		mmol(c) kg <sup>-1</sup>		
Soil coarse fragments (SCF)		cm <sup>3</sup> dm <sup>-3</sup>		
Soil clay content (SCC)		g kg <sup>-1</sup>		
Soil total nitrogen (STN)		cg kg <sup>-1</sup>		
Soil organic carbon density (SOCD)		g dm <sup>-3</sup>		
Soil organic carbon stock (SOCS)		t ha <sup>-1</sup>		
pH in H <sub>2</sub> O (pH)		-		
Soil Sand content (SSAC)		g kg <sup>-1</sup>		
Soil Silt content (SSC)		g kg <sup>-1</sup>		
Soil organic carbon (SOC)		dg kg <sup>-1</sup>		
Enhanced Vegetation Index (EVI)	Vegetation	-	1km	MOD13A1 v006
Normalized Difference Vegetation Index (NDVI)		-		
Net Primary Production (NPP)		kg C m <sup>-2</sup>		MOD17A3HGF v006
Start of the growing season (SOS)		day		Matlab
Length of the growing season (LOS)		day		
End of the growing season (EOS)		day		

# Data source information is as follows:

WorldClim2.1, the Historical monthly weather data (<https://www.worldclim.org/>)

SRTM3 V4.1, the Shuttle Radar Topography Mission (<https://cgiarcsi.community/data/srtm-90m-digital-elevation-database-v4-1/>)

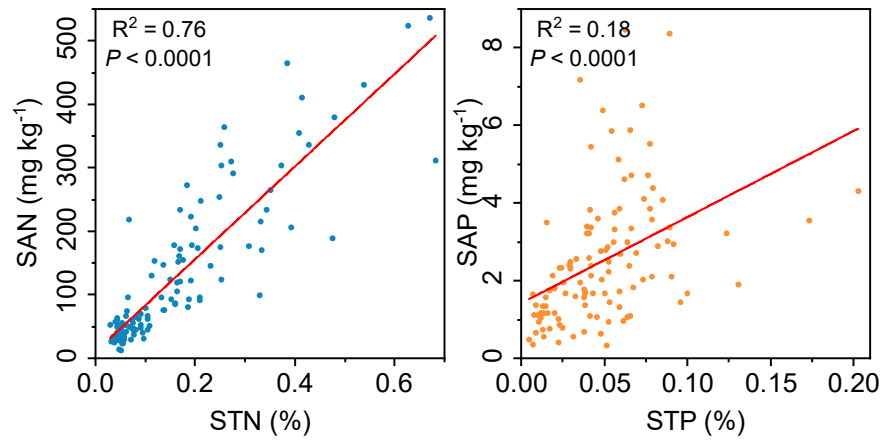
SoilGrids 2.0: the Global gridded soil information (<https://soilgrids.org/>)

MOD13A1 v006, the Terra Vegetation Indices 16-Day L3 Global 500 m SIN Grid (<https://lpdaac.usgs.gov/products/mod13a1v006/>)

MOD17A3HGF v006, the Terra Net Primary Production Gap-Filled Yearly L4 Global 500 m SIN Grid (<https://lpdaac.usgs.gov/products/mod17a3hgfv006/>)

GEE, the Google Earth Engine (<https://code.earthengine.google.com/>)

### Supplementary Material Figure



**Figure S1.** Relationship between SAN and STN (a), SAP and STP (b). SAN, soil available nitrogen; STN, soil total nitrogen; SAP, soil available phosphorus; STP, soil total phosphorus.