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Quantifying the human cost of global warming

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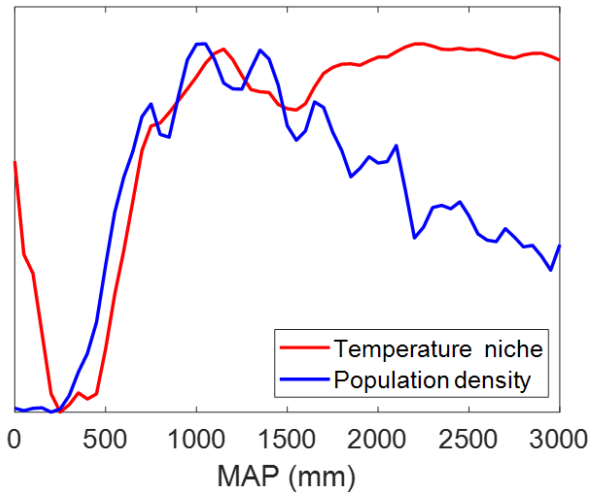
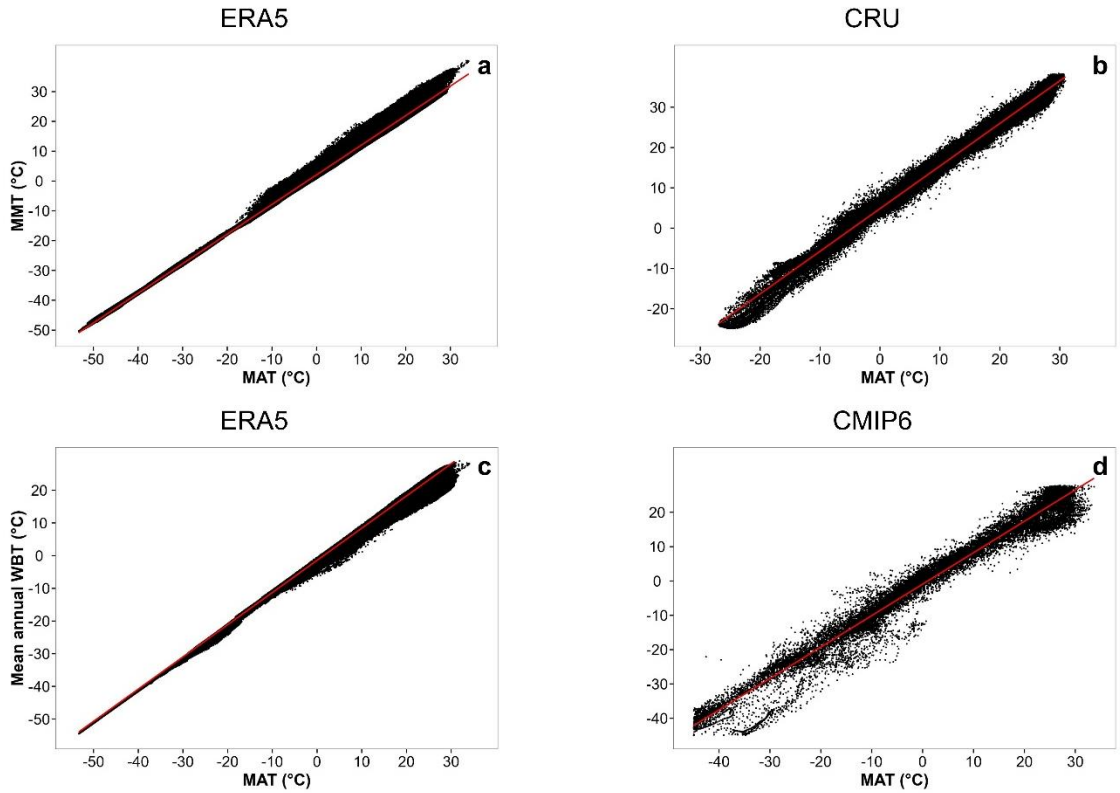


Supplementary Figure 1. Running means of temperature niche and population density against mean annual precipitation (MAP). The WorldClim v1.4 data of MAT and MAP for 1960-1990 and population density in 1980 are used for the calculation of the temperature niche and running means (with a bin width of 100 mm and step of 50 mm MAP). Minimum-maximum normalisation is applied to the curves for comparison.



Supplementary Figure 2. Correlations between mean annual temperature (MAT) and annual mean maximum temperature (MMT) or mean annual wet-bulb temperature (WBT) for 2000-2020. We performed a linear regression for each dataset with *p* values obtained based on a two-sided test for the estimated slopes. **a.** MAT-MMT correlation in ERA5 hourly reanalysis data (~10 km spatial resolution, slope=0.993, r^2=0.991, *n*=1036800, $p<2.2e^{-16}$). **b.** MAT-MMT correlation in CRU TS v.4.06 data (0.5° spatial resolution, slope=1.06, r^2=0.989, *n*=67420, $p<2.2e^{-16}$). **c.** MAT-mean annual WBT correlation in ERA5 hourly reanalysis data (~10 km spatial resolution, slope=0.985, r^2=0.997, *n*=1036800, $p<2.2e^{-16}$). **d.** MAT-mean annual WBT correlation in an ensemble of six bias-corrected CMIP6 models (2.8° spatial resolution, slope=0.916, r^2=0.969, *n*=21199, $p<2.2e^{-16}$). Note that one model (MIROC-ES2L), has systematically lower WBT at MAT <0°C than the other five.

Supplementary Table 1. Downscaled CMIP6 climate model runs used in this study for different time intervals and SSP ('S') scenarios. The model data were downloaded from the WorldClim v2.0 database (https://www.worldclim.org/).

GCM	2020-2040				2040-2060				2060-2080				2080-2100			
	S1	S2	S3	S5	S1	S2	S3	S5	S1	S2	S3	S5	S1	S2	S3	S5
BCC-CSM2-MR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CNRM-CM6-1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CNRM-ESM2-1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CanESM5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GFDL-ESM4	✓		✓		✓		✓		✓		✓		✓		✓	
IPSL-CM6A-LR	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MIROC-ES2L	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MRI-ESM2-0	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓