

A simplified urban-extent algorithm to characterize surface urban heat islands on a global scale and examine vegetation control on their spatiotemporal variability

1. Figures

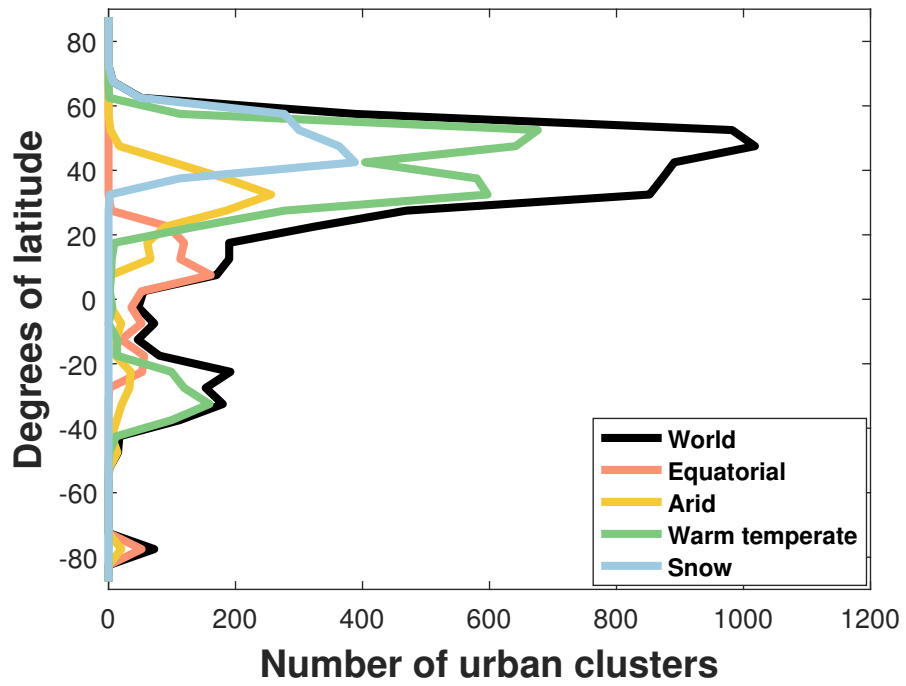
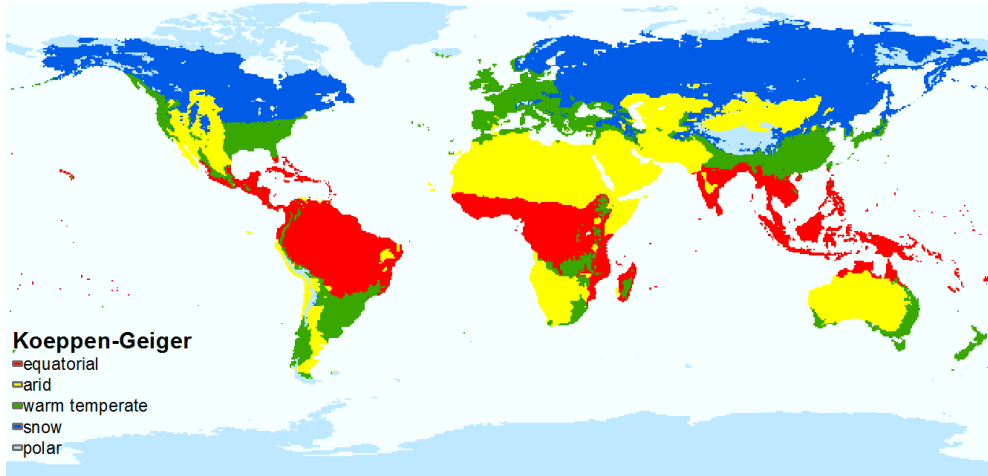
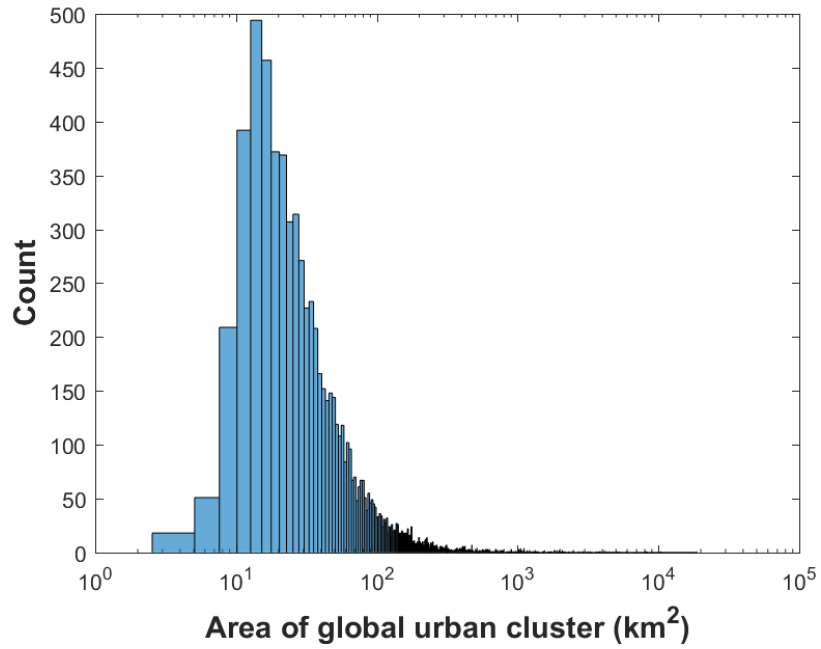
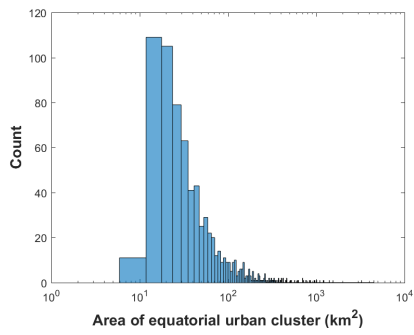


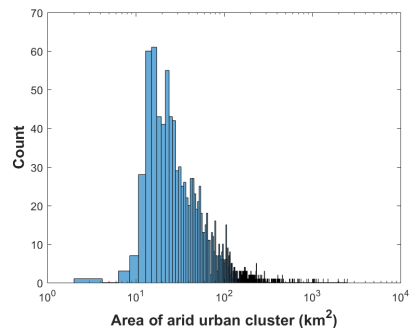
Figure S1: The major 5 climate zones as defined by the Koeppen-Geiger climate classification and the latitudinal variation of the urban clusters for the world and each climate zone



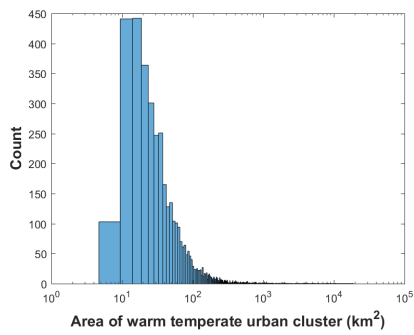
(a) World



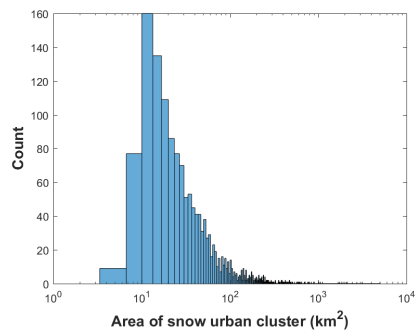
(b) Equatorial climate zone



(c) Arid climate zone



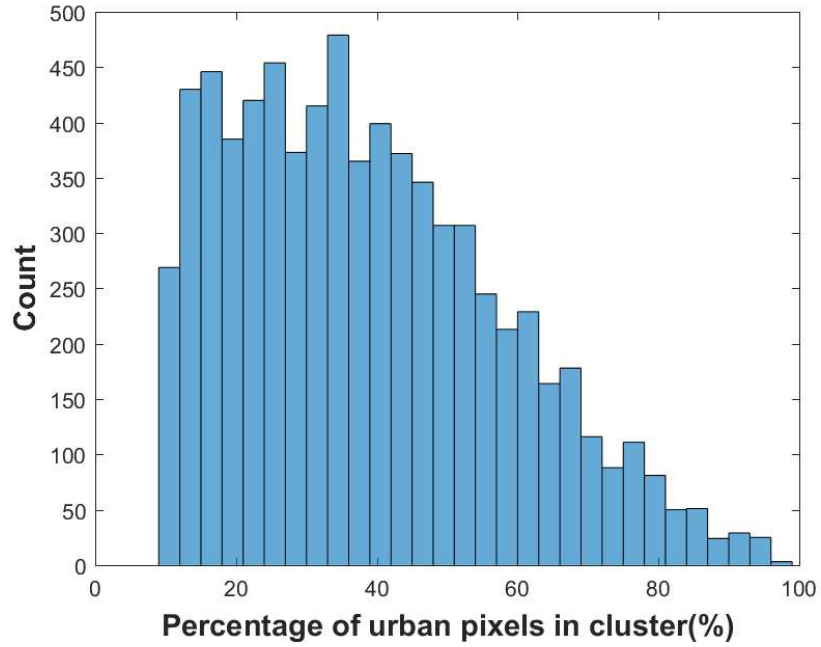
(d) Warm temperate climate zone



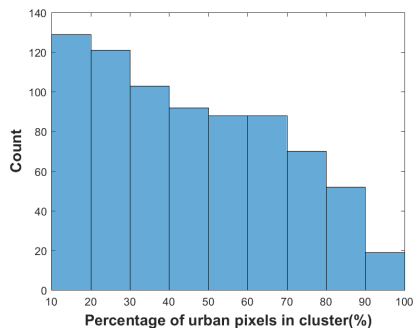
(e) Snow climate zone

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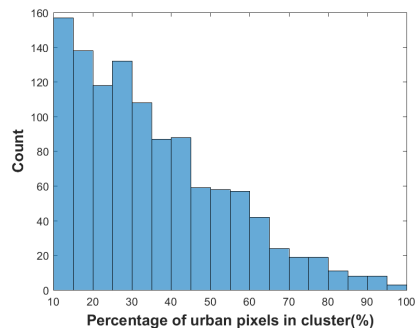
Figure S2: Distribution of the area of the urban clusters for the world and each climate zone.



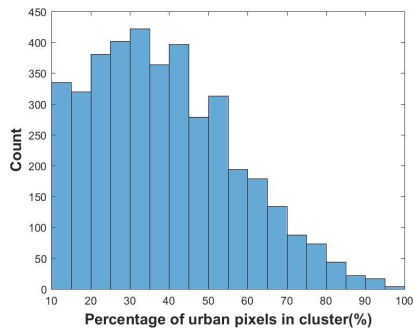
(a) World



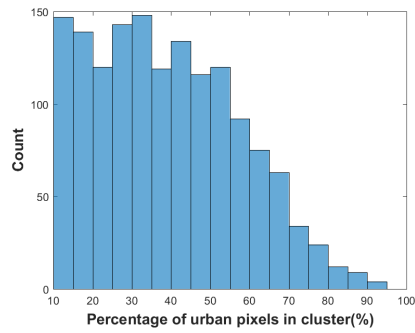
(b) Equatorial climate zone



(c) Arid climate zone



(d) Warm temperate climate zone



(e) Snow climate zone

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Figure S3: Distribution of the percentage of urban area in each cluster for the world and each climate zone.

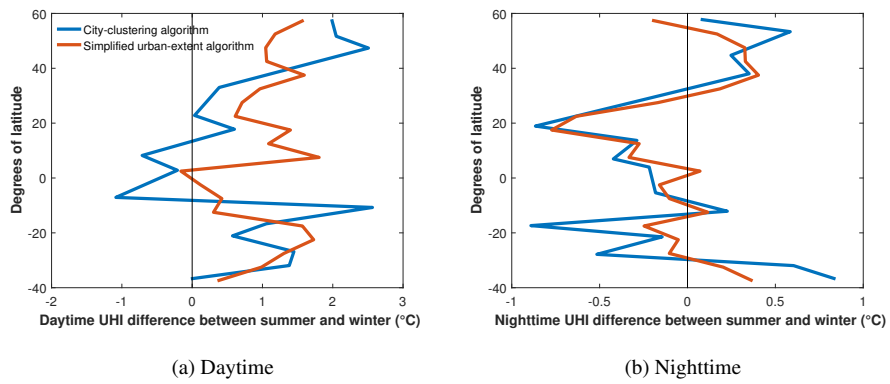
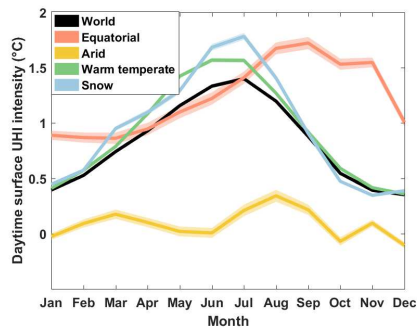
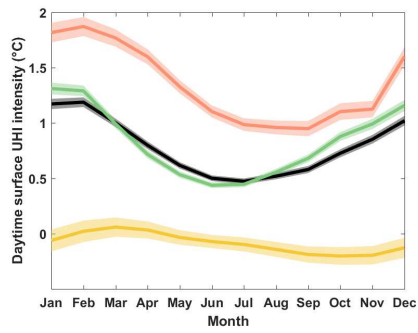


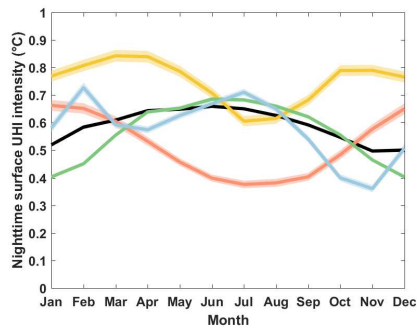
Figure S4: Comparison of latitudinal variation in difference between summer and winter surface UHI intensity from the city-clustering algorithm-based definition and the SUE algorithm for (a) daytime and (b) nighttime. The black vertical line represents the zero value.



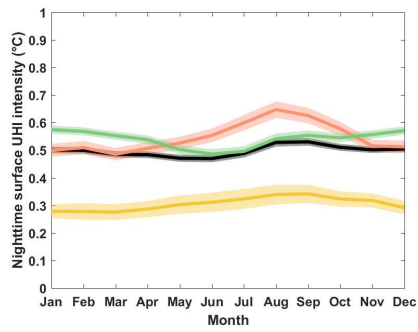
(a) Northern Hemisphere



(b) Southern Hemisphere



(c) Northern Hemisphere



(d) Southern Hemisphere

Figure S5: Seasonal variation in daytime and nighttime surface UHI magnitudes for each climate zone from consolidated TERRA and AQUA measurements for the Northern and Southern Hemispheres. The solid lines represent the mean value, while the shaded areas represent the standard errors.

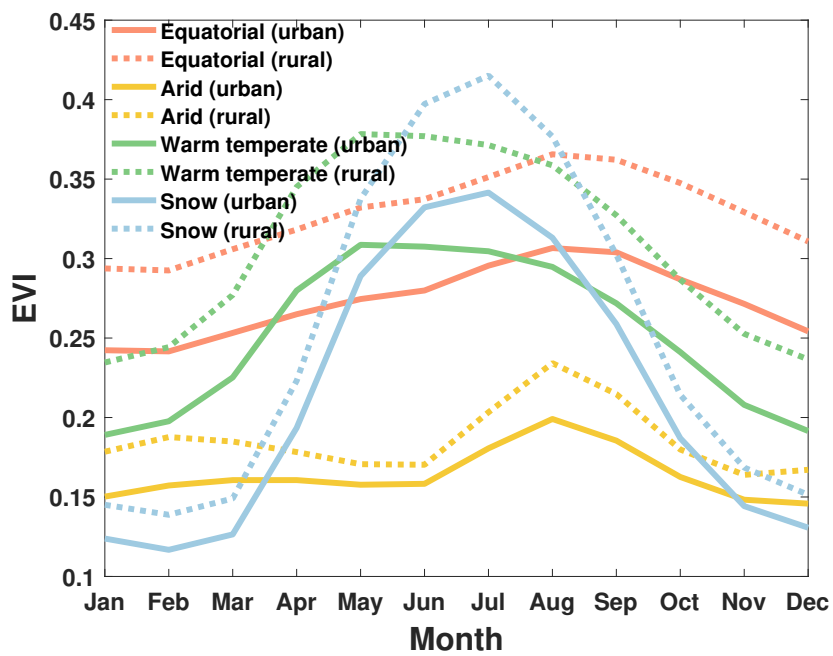


Figure S6: Seasonal variation in urban and rural EVI for the world and each climate zone from 16-day AQUA measurements.

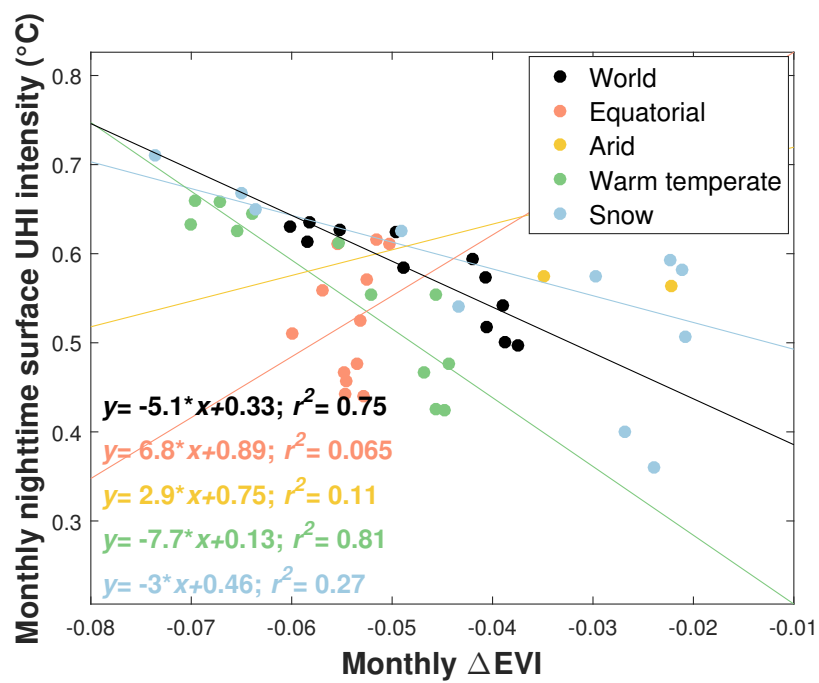
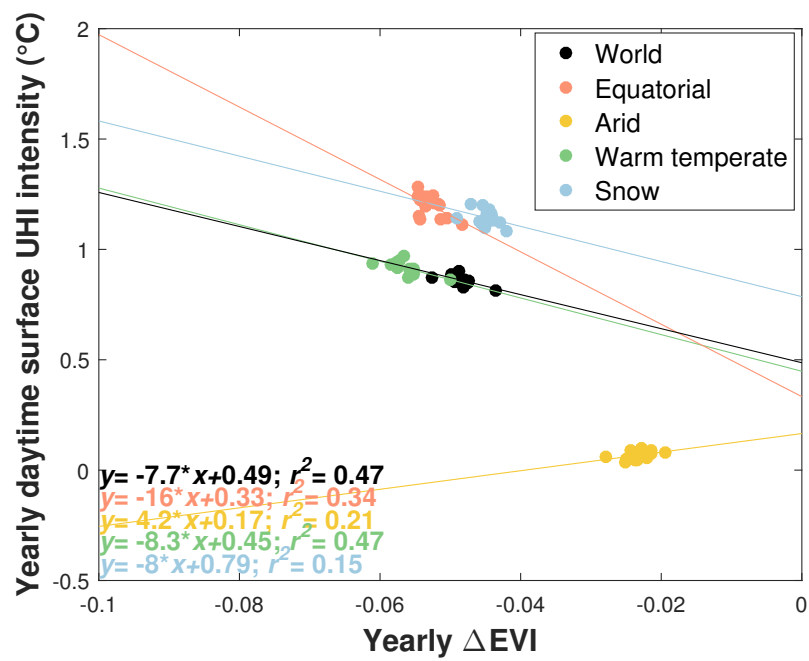
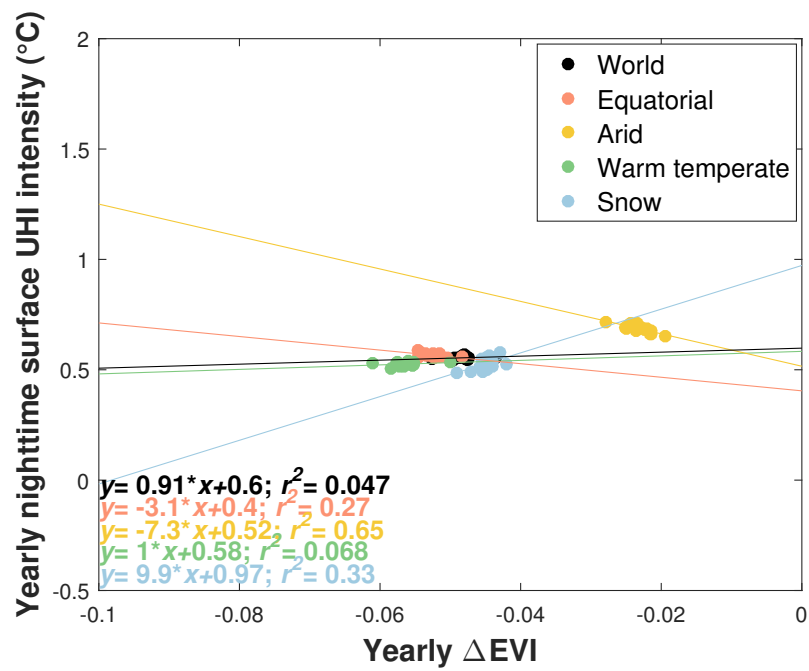


Figure S7: Association between monthly nighttime surface UHI intensity and monthly Δ EVI for all urban clusters, and urban clusters in each climate zone.



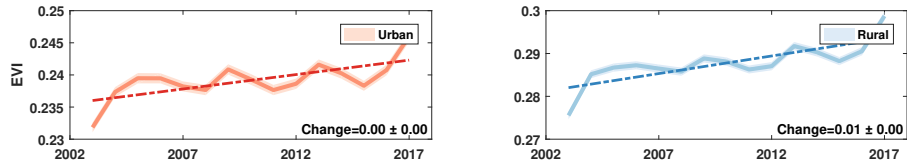
(a) Daytime

Figure S8: Association between yearly (2003-2017) surface UHI intensity and monthly Δ EVI for all urban clusters, and urban clusters in each climate zone.

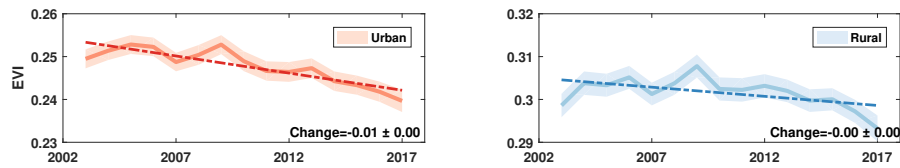


(a) Nighttime

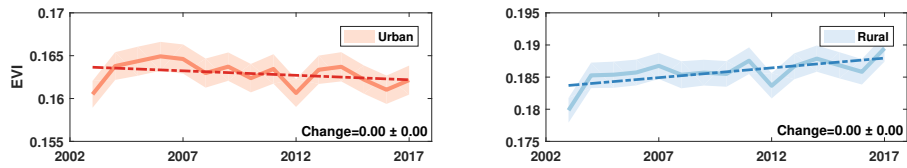
Figure S9: Association between yearly (2003-2017) surface UHI intensity and monthly Δ EVI for all urban clusters, and urban clusters in each climate zone.



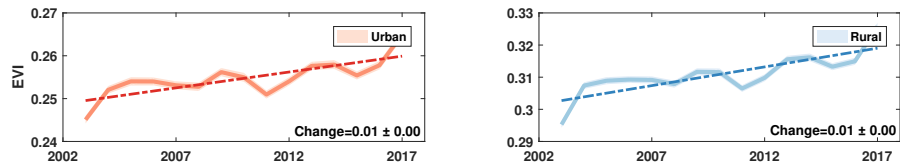
(a) World



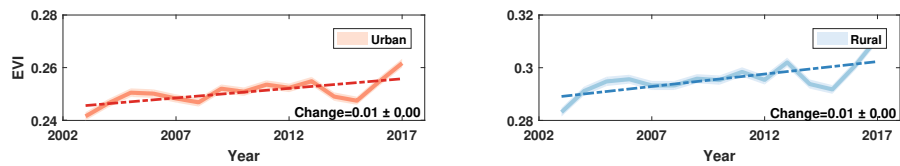
(b) Equatorial climate zone



(c) Arid climate zone



(d) Warm temperate climate zone



(e) Snow climate zone

Figure S10: Temporal variability in annual urban and rural EVI from 2003 to 2017. The solid lines represent the mean values, while the shaded areas represent the standard errors. The dashed line represents the trend for best linear fit and the change in EVI per decade (mean \pm 95% confidence interval) is mentioned on each plot.