

Influence of Urban Scale and Urban Expansion on the Urban Heat Island Effect in Metropolitan Areas: Case Study of Beijing–Tianjin–Hebei Urban Agglomeration

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Table S1. Classification system of land use from RESDC, CAS.

First classification	Secondary classification	Number
farmland	paddy land	11
	dry land	12
forest	forest land	21
	bush	22
	open forest land	23
	other woodland	24
grassland	high coverage grass	31
	medium coverage grass	32
	low coverage grass	33
water	graff	41
	lakes	42
	reservoir pits	43
	tidal flats	44
	beaches	45
	bottomland	46
built-up land	urban land use	51
	rural residential areas	52
	other construction land	53
unused land	sand	61
	saline-alkali land	62
	marsh	63
	wetland	64
	bare land	65
	bare rock	66
	others	67
ocean	ocean	99

Table S2. Temperature difference of each part based on Equation (2).

Region	2000	2005	2010	2015
Northern	−15.3–5.2 °C	−14.8–4.6 °C	−13.8–4.5 °C	−15.4–5.4 °C
Central	−10.8–5.7 °C	−10.5–4.7 °C	−10.2–4.7 °C	−12.0–8.9 °C
Southern	−10.7–5.2 °C	−11.0–4.8 °C	−11.6–4.6 °C	−12.2–5.2 °C

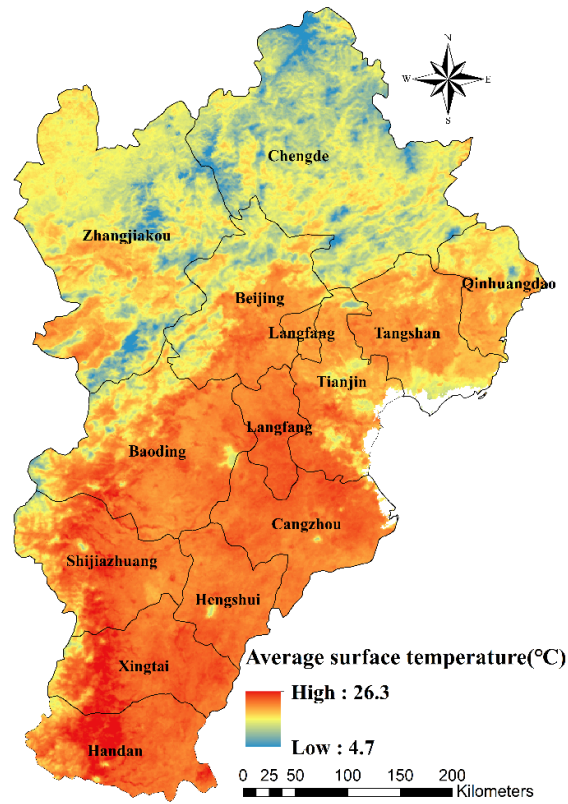


Figure S1. Average surface temperature during the period 2000–2015 of Beijing-Tianjin-Hebei region. The highest temperature is 26.3 °C, and the lowest temperature is 4.7 °C. The temperature in southeastern part with mainly plain is higher than in northwestern part with mainly mountains.

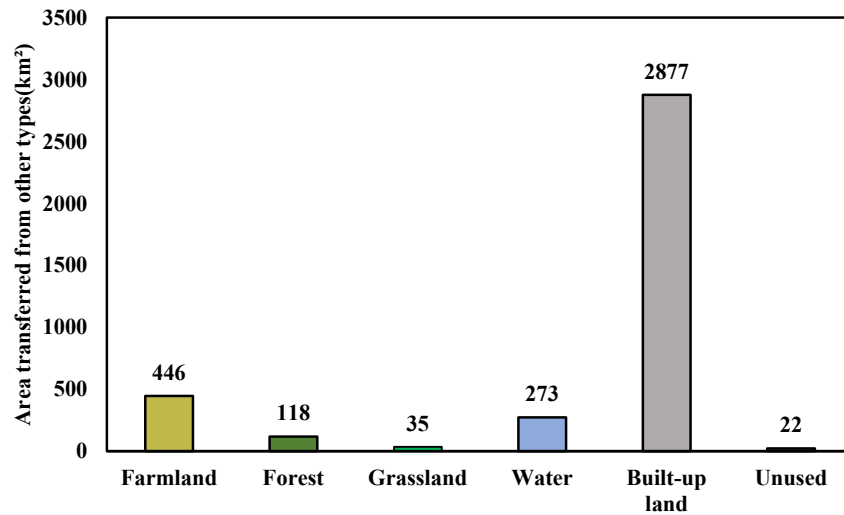


Figure S2. Areas of lands that transferred to farmland, forest, grassland, water, built-up land and unused land. The area that transferred to built-up land is far more than other land use types, indicating the rapid expansion of urban land occurred during 2000–2015 in Beijing-Tianjin-Hebei region .

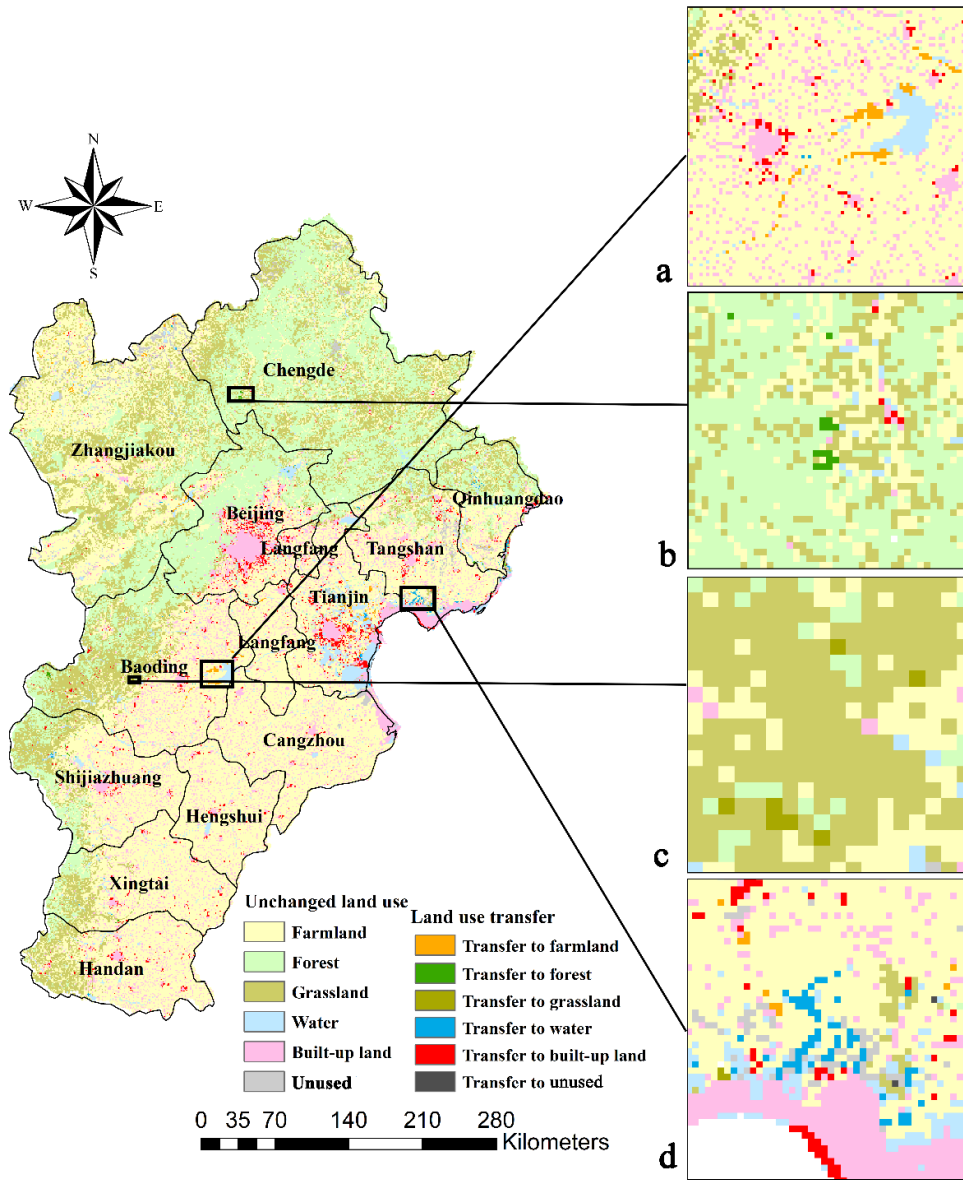
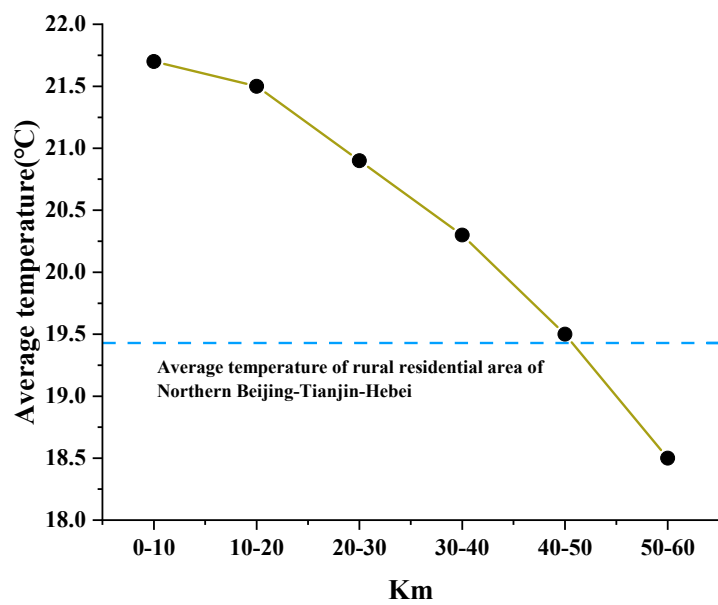
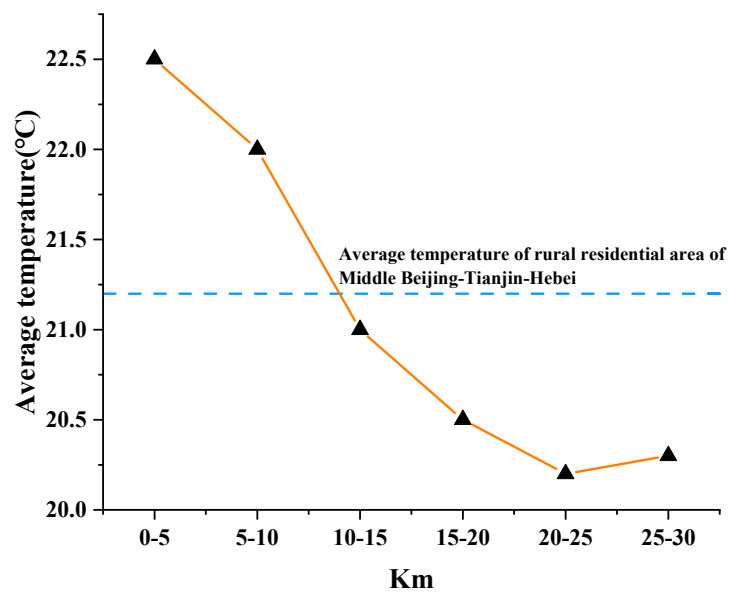


Figure S3. Spatial distribution of lands that transferred to farmland, forest, grassland, water, built-up land, and unused land. According to Figure S2, the area that transferred to land use types except built-up land is relatively small. The lands that transferred to farmland, forest, grassland, water, and unused land compared with built-up land is scattered.



Beijing.



Tianjin

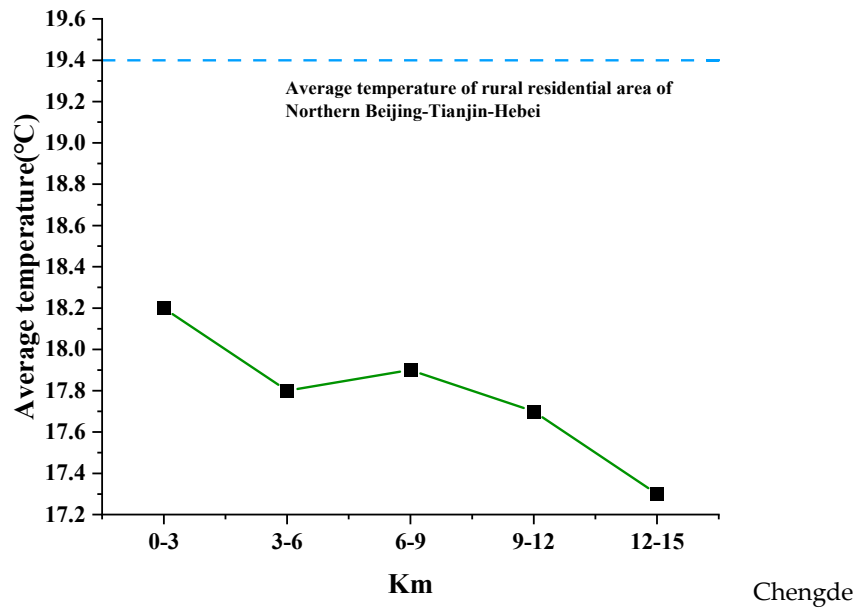
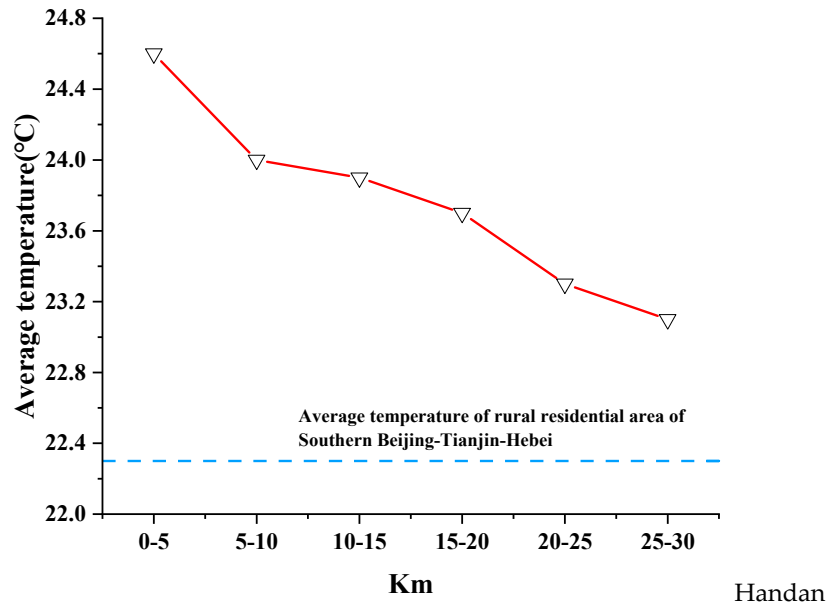


Figure S4. Average temperature of different circle and the comparison of that with rural residential areas. The y-axis is the average surface temperature of each city during 2000–2015, and the x-axis is the distance from the city center. Full line and dotted line are the average surface temperature value and the rural comparison value, respectively. The part below the dotted line of full line referring the area without heat island.