

Supplemental Materials

1.Detailed characteristics of the 234 sample cities.

Table S1. Characteristics of the selected cities.

City	Type of urban centers	Number of urban centers	Spatial structure	Total population in 2019 (Million)	Urban population in 2019 (Million)	Urbanization degree	Geographic location
Anshan	axis	1	Linear	339.80	181.80	53.50%	Northeastern China
Changchun	Point	1	Monocentric	753.80	445.10	59.05%	Northeastern China
Chaoyang	Point	1	Monocentric	334.90	81.20	24.25%	Northeastern China
Dalian	Point	4	Polycentric	598.70	404.67	67.59%	Northeastern China
Dandong	Axis	1	Linear	232.90	106.80	45.86%	Northeastern China
Daqing	Point	1	Monocentric	274.70	144.10	52.46%	Northeastern China
Harbin	Point	1	Monocentric	951.30	467.50	49.14%	Northeastern China
Huludao	Axis	1	Linear	275.80	96.60	35.03%	Northeastern China
Jiamusi	Axis	1	Monocentric	232.00	121.10	52.20%	Northeastern China
Jilin	Axis	1	Linear	411.60	218.10	52.99%	Northeastern China
Jinzhou	Point	2	Polycentric	293.40	124.40	42.40%	Northeastern China
Mudanjiang	Point	1	Monocentric	250.40	152.30	60.82%	Northeastern China
Qiqihar	Point	1	Monocentric	526.70	205.70	39.05%	Northeastern China
Shenyang	Point	1	Monocentric	755.40	673.60	89.17%	Northeastern China
Songyuan	Point	1	Monocentric	274.55	128.49	46.80%	Northeastern China
Suihua	Point	1	Monocentric	521.70	132.30	25.36%	Northeastern China
Tieling	Point	3	Polycentric	298.20	125.00	41.92%	Northeastern China
Yingkou	Axis	1	Linear	230.80	121.90	52.82%	Northeastern China
Anqing	Point	1	Monocentric	472.30	173.62	36.76%	Eastern China
Bengbu	Point	2	Polycentric	341.20	143.14	41.95%	Eastern China
Binzhou	Point	2	Polycentric	392.30	228.45	58.23%	Eastern China
Bozhou	Point	1	Monocentric	526.30	132.97	25.27%	Eastern China
Changzhou	Axis	2	Linear	473.60	347.01	73.27%	Eastern China
Chuzhou	Point	1	Monocentric	414.70	156.84	37.82%	Eastern China
Dezhou	Point	1	Monocentric	574.85	304.84	53.03%	Eastern China
Dongying	Point	3	Polycentric	217.97	150.93	69.24%	Eastern China
Fuyang	Point	1	Monocentric	825.90	263.88	31.95%	Eastern China
Fuzhou	Point	2	Polycentric	406.03	208.50	51.35%	Eastern China
Fuzhoushi	Point	2	Polycentric	780.00	549.90	70.50%	Eastern China
Ganzhou	Point	1	Monocentric	870.80	451.51	51.85%	Eastern China
Hangzhou	Point	4	Polycentric	1036.00	813.26	78.50%	Eastern China
Hefei	Point	1	Monocentric	818.90	404.99	49.46%	Eastern China
Heze	Point	1	Monocentric	818.17	444.62	54.34%	Eastern China
Huaian	Point	2	Polycentric	493.26	313.22	63.50%	Eastern China

Huainan	Axis	1	Linear	349.00	178.29	51.09%	Eastern China
Huzhou	Point	3	Polycentric	306.00	197.37	64.50%	Eastern China
Jian	Point	2	Polycentric	495.97	260.48	52.52%	Eastern China
Jiaxing	Point	1	Monocentric	480.00	323.52	67.40%	Eastern China
Jinan	Point	2	Polycentric	890.87	634.39	71.21%	Eastern China
Jinhua	Point	1	Monocentric	562.40	386.37	68.70%	Eastern China
Jining	Point	1	Monocentric	835.60	498.78	59.69%	Eastern China
Jiujiang	Point	2	Polycentric	492.03	279.37	56.78%	Eastern China
Lianyungang	Point	3	Polycentric	451.10	286.90	63.60%	Eastern China
Liaocheng	Point	1	Monocentric	609.83	321.50	52.72%	Eastern China
Linyi	Point	1	Monocentric	1066.71	562.69	52.75%	Eastern China
Lishui	Point	1	Monocentric	221.30	139.42	63.00%	Eastern China
Longyan	Point	1	Monocentric	264.00	153.12	58.00%	Eastern China
Luan	Point	1	Monocentric	487.30	137.88	28.29%	Eastern China
Maanshan	Point	4	Polycentric	236.10	119.16	50.47%	Eastern China
Nanchang	Point	3	Polycentric	560.06	420.93	75.16%	Eastern China
Nanjing	Point	4	Polycentric	850.00	707.20	83.20%	Eastern China
Nanping	Point	2	Polycentric	269.00	154.68	57.50%	Eastern China
Nantong	Point	4	Polycentric	731.80	498.36	68.10%	Eastern China
Ningbo	Point	3	Polycentric	854.20	622.71	72.90%	Eastern China
Ningde	Point	2	Polycentric	291.00	167.62	57.60%	Eastern China
Putian	Point	3	Polycentric	291.00	179.55	61.70%	Eastern China
Qingdao	Point	4	Polycentric	949.98	704.13	74.12%	Eastern China
Quanzhou	Point	4	Polycentric	874.00	587.33	67.20%	Eastern China
Quzhou	Point	2	Polycentric	221.80	133.08	60.00%	Eastern China
Rizhao	Point	2	Polycentric	294.90	179.89	61.00%	Eastern China
Sanming	Axis	1	Linear	259.00	157.80	60.93%	Eastern China
Shanghai	Point	1	Monocentric	2428.14	2213.50	91.16%	Eastern China
Shangrao	Point	2	Polycentric	683.30	365.36	53.47%	Eastern China
Shaoxing	Point	3	Polycentric	505.70	345.90	68.40%	Eastern China
Suqian	Point	2	Polycentric	493.79	301.71	61.10%	Eastern China
Suzhou	Point	1	Monocentric	570.00	160.01	28.07%	Eastern China
Suzhoushi	Point	1	Monocentric	1074.99	827.74	77.00%	Eastern China
Taian	Point	1	Monocentric	563.50	394.44	70.00%	Eastern China
Taizhou	Point	3	Polycentric	463.61	309.69	66.80%	Eastern China
Taizhoushi	Point	4	Polycentric	615.00	391.76	63.70%	Eastern China
Weifang	Point	1	Monocentric	935.15	581.48	62.18%	Eastern China
Weihai	Axis	2	Linear	283.60	194.89	68.72%	Eastern China
Wenzhou	Axis	1	Linear	930.00	655.65	70.50%	Eastern China
Wuhu	Axis	1	Linear	377.80	204.57	54.15%	Eastern China
Wuxi	Point	1	Monocentric	659.15	508.20	77.10%	Eastern China
Xiamen	Point	4	Polycentric	429.00	382.67	89.20%	Eastern China
Xuancheng	Point	1	Monocentric	266.10	82.47	30.99%	Eastern China
Xuzhou	Point	2	Polycentric	882.56	588.84	66.72%	Eastern China

Yancheng	Point	1	Monocentric	720.89	467.86	64.90%	Eastern China
Yangzhou	Point	2	Polycentric	454.90	310.24	68.20%	Eastern China
Yantai	Point	3	Polycentric	713.80	466.97	65.42%	Eastern China
Yichun	Point	1	Monocentric	558.26	285.94	51.22%	Eastern China
Zaozhuang	Point	3	Polycentric	393.30	232.83	59.20%	Eastern China
Zhangzhou	Point	4	Polycentric	516.00	309.60	60.00%	Eastern China
Zhenjiang	Axis	1	Linear	320.35	231.23	72.18%	Eastern China
Zibo	Point	4	Polycentric	469.68	338.36	72.04%	Eastern China
Anyang	Point	1	Monocentric	519.00	276.00	53.18%	Central China
Changde	Point	1	Monocentric	577.15	314.24	54.45%	Central China
Changsha	Point	1	Monocentric	839.45	667.83	79.56%	Central China
Chenzhou	Point	2	Polycentric	475.46	266.47	56.04%	Central China
Hengyang	Point	1	Monocentric	730.06	400.99	54.93%	Central China
Huaihua	Point	1	Monocentric	498.33	244.35	49.03%	Central China
Huanggang	Axis	1	Linear	633.30	156.58	24.72%	Central China
Huangshi	Point	3	Polycentric	247.17	158.19	64.00%	Central China
Jiaozuo	Point	1	Monocentric	360.00	219.00	60.83%	Central China
Jingmen	Point	2	Polycentric	289.75	174.14	60.10%	Central China
Jingzhou	Point	1	Monocentric	557.01	314.23	56.41%	Central China
Kaifeng	Point	1	Monocentric	457.00	230.00	50.33%	Central China
Loudi	Point	1	Monocentric	394.13	194.11	49.25%	Central China
Luohe	Point	1	Monocentric	267.00	144.00	53.93%	Central China
Luoyang	Axis	1	Linear	692.00	409.00	59.10%	Central China
Nanyang	Point	1	Monocentric	1003.00	479.00	47.76%	Central China
Pingdingshan	Axis	1	Linear	503.00	279.00	55.47%	Central China
Puyang	Point	2	Polycentric	361.00	169.00	46.81%	Central China
Sanmenxia	Point	2	Polycentric	228.00	131.00	57.46%	Central China
Shangqiu	Point	2	Polycentric	733.00	329.00	44.88%	Central China
Shaoyang	Point	1	Monocentric	730.24	356.20	48.78%	Central China
Shiyan	Point	1	Monocentric	339.80	192.02	56.51%	Central China
Suizhou	Point	1	Monocentric	222.10	117.05	52.70%	Central China
Wuhan	Point	3	Polycentric	1121.20	817.11	72.88%	Central China
Xiangtan	Point	2	Polycentric	288.15	183.88	63.81%	Central China
Xiangyang	Point	3	Polycentric	568.00	282.74	49.78%	Central China
Xianning	Point	2	Polycentric	254.84	138.63	54.40%	Central China
Xiaogan	Point	1	Monocentric	492.10	286.89	58.30%	Central China
Xinxiang	Point	3	Polycentric	581.00	319.00	54.91%	Central China
Xinyang	Point	2	Polycentric	646.00	317.00	49.07%	Central China
Xuchang	Point	1	Monocentric	446.00	242.00	54.26%	Central China
Yichang	Point	3	Polycentric	413.79	255.70	61.79%	Central China
Yiyang	Point	1	Monocentric	442.07	233.98	52.93%	Central China
Yongzhou	Point	1	Monocentric	544.61	277.21	50.90%	Central China
Yueyang	Point	1	Monocentric	577.13	341.66	59.20%	Central China
Zhengzhou	Point	1	Monocentric	1035.00	772.00	74.59%	Central China

Zhoukou	Point	2	Polycentric	866.00	384.00	44.34%	Central China
Zhumadian	Point	1	Monocentric	705.00	314.00	44.54%	Central China
Zhuzhou	Point	1	Monocentric	402.85	273.59	67.91%	Central China
Baoding	Point	1	Monocentric	1063.00	581.28	54.68%	Northern China
Baotou	Point	2	Polycentric	289.69	243.11	83.92%	Northern China
Beijing	Point	1	Monocentric	2153.60	1865.00	86.60%	Northern China
Cangzhou	Point	1	Monocentric	754.43	414.26	54.91%	Northern China
Changzhi	Point	1	Monocentric	347.81	190.88	54.88%	Northern China
Chengde	Point	2	Polycentric	258.27	190.81	73.88%	Northern China
Chifeng	Point	1	Monocentric	433.09	221.35	51.11%	Northern China
Datong	Point	2	Polycentric	346.30	227.23	65.62%	Northern China
Handan	Point	2	Polycentric	954.97	555.32	58.15%	Northern China
Hengshui	Point	1	Monocentric	448.57	238.73	53.22%	Northern China
Hohhot	Point	1	Monocentric	313.68	220.99	70.45%	Northern China
Hulunbeir	Point	3	Polycentric	253.41	185.14	73.06%	Northern China
Jincheng	Point	1	Monocentric	235.30	143.05	60.79%	Northern China
Jinzhong	Point	2	Polycentric	338.94	192.67	56.84%	Northern China
Langfang	Point	2	Polycentric	492.05	301.58	61.29%	Northern China
Linfen	Point	1	Monocentric	450.84	241.47	53.56%	Northern China
Lvliang	Point	1	Monocentric	389.09	201.22	51.72%	Northern China
Ordos	Point	1	Monocentric	208.76	156.74	75.08%	Northern China
Qinhuangdao	Point	2	Polycentric	314.63	191.04	60.72%	Northern China
Shijiazhuang	Point	1	Monocentric	1103.12	710.55	64.41%	Northern China
Taiyuan	Axis	2	Linear	446.19	380.35	85.25%	Northern China
Tangshan	Axis	2	Linear	796.42	512.26	64.32%	Northern China
Tianjin	Point	2	Polycentric	1561.83	1303.82	83.48%	Northern China
Tongliao	Point	1	Monocentric	313.88	157.41	50.15%	Northern China
Xingtai	Point	3	Polycentric	739.52	410.04	55.45%	Northern China
Xinzhou	Point	1	Monocentric	317.29	167.50	52.79%	Northern China
Yuncheng	Point	2	Polycentric	537.26	275.27	51.24%	Northern China
Zhangjiakou	Point	3	Polycentric	442.33	258.23	58.38%	Northern China
Baise	Point	1	Monocentric	368.74	138.34	37.52%	Southern China
Chaozhou	Point	2	Polycentric	265.98	175.01	65.80%	Southern China
Chongzuo	Point	1	Monocentric	211.03	84.41	40.00%	Southern China
Dongguan	Point	3	Polycentric	846.45	779.58	92.10%	Southern China
Foshan	Point	4	Polycentric	815.86	775.07	95.00%	Southern China
Guangzhou	Point	3	Polycentric	1530.59	1323.35	86.46%	Southern China
Guigang	Point	1	Monocentric	443.08	225.77	50.95%	Southern China
Guilin	Point	2	Polycentric	511.23	260.20	50.90%	Southern China
Haikou	Point	1	Monocentric	232.79	183.39	78.78%	Southern China
Hechi	Point	1	Monocentric	356.36	138.09	38.75%	Southern China
Heyuan	Point	1	Monocentric	310.56	144.41	46.50%	Southern China
Hezhou	Point	1	Monocentric	208.53	97.7	46.85%	Southern China
Huizhou	Point	3	Polycentric	488.00	351.95	72.12%	Southern China

Jiangmen	Point	2	Polycentric	463.03	308.89	66.71%	Southern China
Jieyang	Point	1	Monocentric	610.50	312.76	51.23%	Southern China
Laibin	Point	1	Monocentric	224.43	102.60	45.72%	Southern China
Liuzhou	Point	1	Monocentric	407.80	266.80	65.42%	Southern China
Maoming	Point	3	Polycentric	641.15	287.30	44.81%	Southern China
Meizhou	Point	1	Monocentric	438.30	225.68	51.49%	Southern China
NanNing	Point	2	Polycentric	734.48	467.88	63.70%	Southern China
Qingyuan	Point	1	Monocentric	388.58	207.89	53.50%	Southern China
Qinzhou	Point	1	Monocentric	332.41	136.41	41.04%	Southern China
Shantou	Point	2	Polycentric	566.48	399.03	70.44%	Southern China
Shanwei	Point	1	Monocentric	301.50	166.43	55.20%	Southern China
Shaoguan	Point	2	Polycentric	303.04	173.91	57.39%	Southern China
Shenzhen	Point	3	Polycentric	1343.88	1337.43	99.52%	Southern China
Wuzhou	Point	1	Monocentric	307.70	163.02	52.98%	Southern China
Yangjiang	Point	1	Monocentric	257.09	137.83	53.61%	Southern China
Yulin	Point	1	Monocentric	587.78	294.47	50.10%	Southern China
Yunfu	Point	1	Monocentric	254.52	109.24	42.92%	Southern China
Zhanjiang	Axis	3	Linear	736.00	323.55	43.96%	Southern China
Zhaoqing	Point	2	Polycentric	418.71	203.62	48.63%	Southern China
Zhongshan	Point	3	Polycentric	338.00	298.79	88.40%	Southern China
Zhuhai	Point	2	Polycentric	202.37	183.59	90.72%	Southern China
Ankang	Point	1	Monocentric	267.49	134.95	50.45%	Northwestern China
Baoji	Axis	1	Linear	376.10	204.07	54.26%	Northwestern China
Dingxi	Point	1	Monocentric	282.58	102.79	36.38%	Northwestern China
Hanzhong	Point	1	Monocentric	343.70	178.59	51.96%	Northwestern China
LanZhou	Axis	1	Linear	379.09	307.21	81.04%	Northwestern China
Longnan	Point	1	Monocentric	264.31	92.03	34.82%	Northwestern China
Qingyang	Point	1	Monocentric	227.88	90.98	39.92%	Northwestern China
Shangluo	Point	1	Monocentric	237.91	117.46	49.37%	Northwestern China
Tianshui	Point	2	Polycentric	336.89	142.46	42.29%	Northwestern China
Urumqi	Axis	1	Linear	355.20	200.37	56.41%	Northwestern China
Weinan	Point	1	Monocentric	527.81	265.96	50.39%	Northwestern China
Xian	Point	1	Monocentric	1020.35	761.28	74.61%	Northwestern China
Xianyang	Axis	2	Linear	435.62	227.13	52.14%	Northwestern China
Yanan	Point	1	Monocentric	225.57	144.52	64.07%	Northwestern China
Yinchuan	Point	2	Polycentric	229.31	181.28	79.05%	Northwestern China
Yulinshi	Point	1	Monocentric	342.42	203.88	59.54%	Northwestern China
Anshun	Point	2	Polycentric	246.55	126.80	51.43%	Southwestern China
Baoshan	Point	2	Polycentric	262.70	101.30	38.56%	Southwestern China
Bazhong	Point	1	Monocentric	331.90	143.88	43.35%	Southwestern China
Bijie	Point	1	Monocentric	671.43	242.39	36.10%	Southwestern China
Chengdu	Point	1	Monocentric	1658.10	1233.79	74.41%	Southwestern China
Chongqing	Axis	1	Linear	3124.32	2086.99	66.80%	Southwestern China
Dazhou	Point	3	Polycentric	574.10	270.63	47.14%	Southwestern China

Deyang	Point	1	Monocentric	356.10	191.90	53.89%	Southwestern China
Guangan	Point	1	Monocentric	325.10	140.64	43.26%	Southwestern China
Guangyuan	Point	1	Monocentric	267.50	126.26	47.20%	Southwestern China
Guiyang	Point	4	Polycentric	497.14	378.47	76.13%	Southwestern China
Kunming	Point	2	Polycentric	695.00	511.52	73.60%	Southwestern China
Leshan	Point	1	Monocentric	327.10	174.54	53.36%	Southwestern China
Lincang	Point	1	Monocentric	253.82	109.40	43.10%	Southwestern China
Liupanshui	Point	1	Monocentric	295.05	290.69	98.52%	Southwestern China
Luzhou	Point	1	Monocentric	432.90	225.11	52.00%	Southwestern China
Meishan	Point	2	Polycentric	299.50	143.25	47.83%	Southwestern China
Mianyang	Point	1	Monocentric	487.70	263.99	54.13%	Southwestern China
Nanchong	Point	3	Polycentric	643.50	319.95	49.72%	Southwestern China
Neijiang	Point	1	Monocentric	370.00	187.15	50.58%	Southwestern China
Puer	Point	1	Monocentric	263.70	118.30	44.86%	Southwestern China
Qujing	Point	1	Monocentric	617.77	306.66	49.64%	Southwestern China
Suining	Point	1	Monocentric	318.90	164.30	51.52%	Southwestern China
Tongren	Point	1	Monocentric	318.85	114.98	36.06%	Southwestern China
Xining	Axis	2	Linear	238.71	173.90	72.85%	Southwestern China
Yibin	Point	3	Polycentric	457.30	234.09	51.19%	Southwestern China
Yuxi	Point	2	Polycentric	225.90	126.60	56.04%	Southwestern China
Zhaotong	Point	1	Monocentric	564.57	199.30	35.30%	Southwestern China
Zigong	Point	1	Monocentric	292.20	158.05	54.09%	Southwestern China
Ziyang	Point	1	Monocentric	250.30	110.51	44.15%	Southwestern China
Zunyi	Axis	2	Linear	630.20	344.28	54.63%	Southwestern China

2. Landscape types and locations of the selected cities.

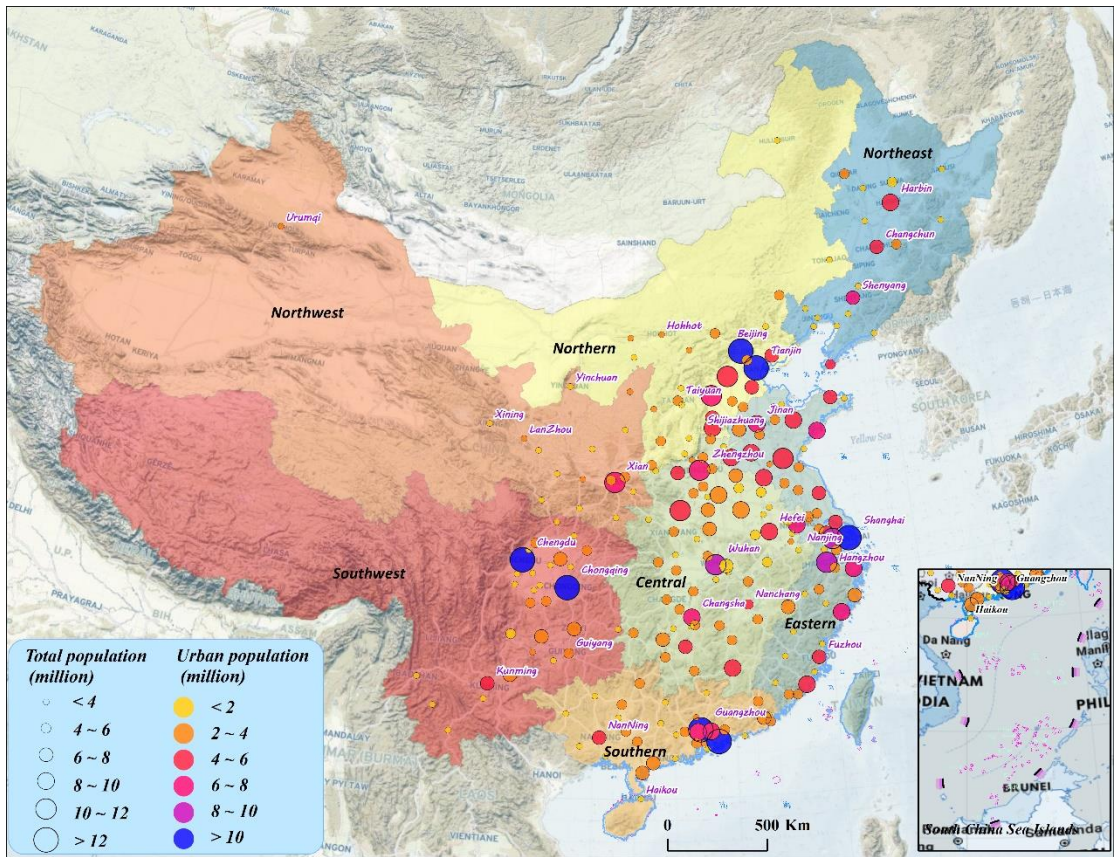


Figure S1. landscape types and locations of the selected cities

3. Spatiotemporal pattern of NTL in 8 representative cities.

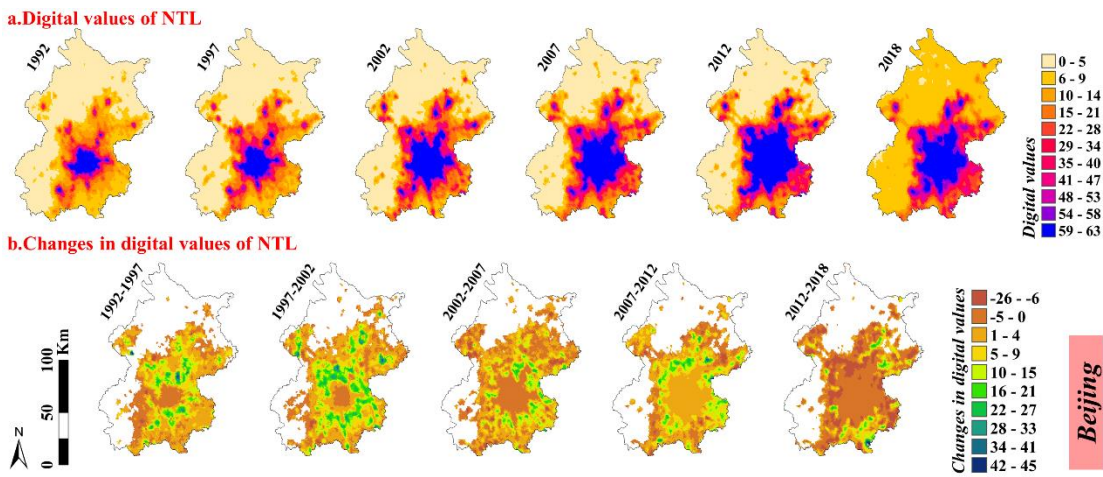
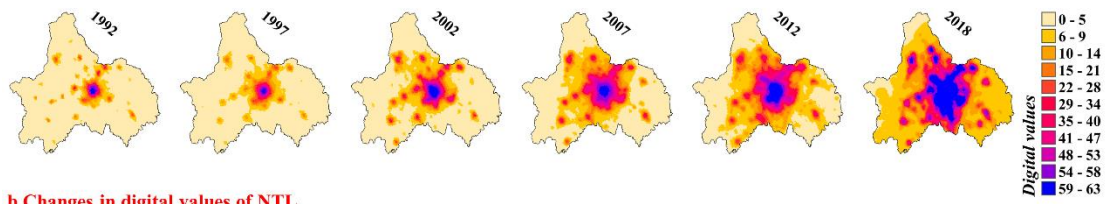


Figure S2. Spatiotemporal pattern of NTL in Beijing.

a.Digital values of NTL



b.Changes in digital values of NTL

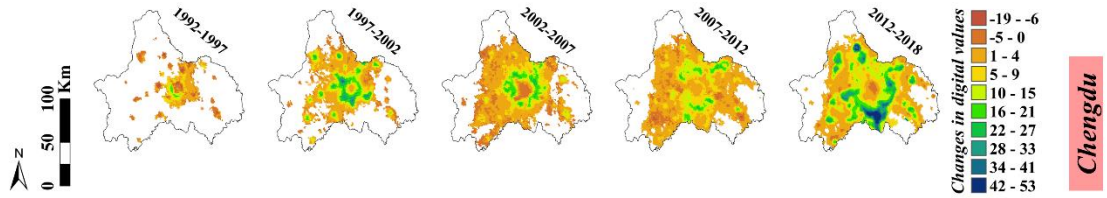
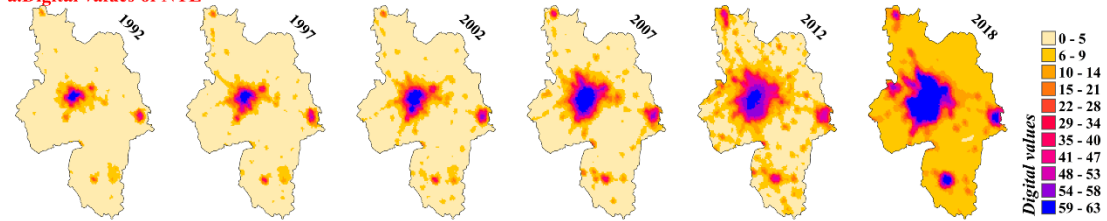


Figure S3. Spatiotemporal pattern of NTL in Chengdu.

a.Digital values of NTL



b.Changes in digital values of NTL

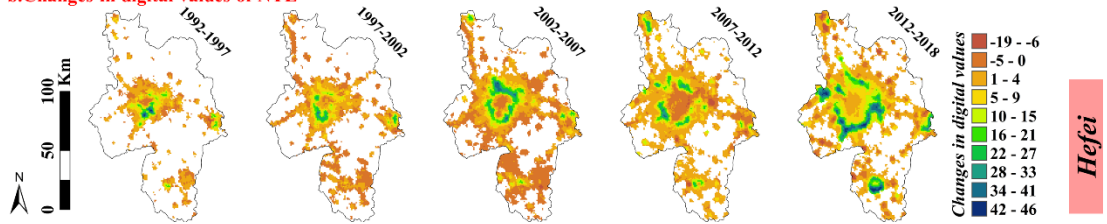
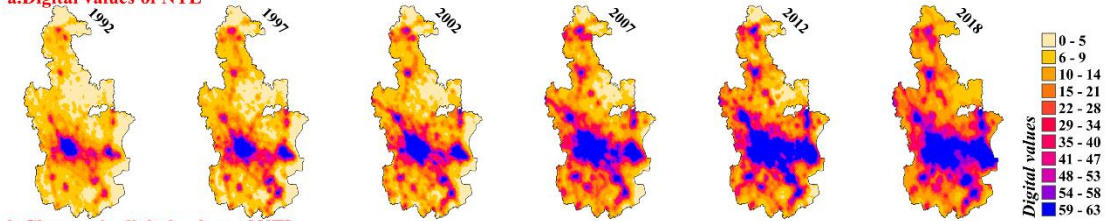


Figure S4. Spatiotemporal pattern of NTL in Hefei.

a.Digital values of NTL



b.Changes in digital values of NTL

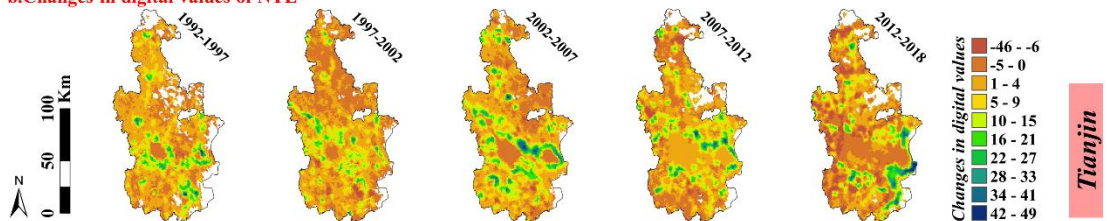


Figure S5. Spatiotemporal pattern of NTL in Tianjin.

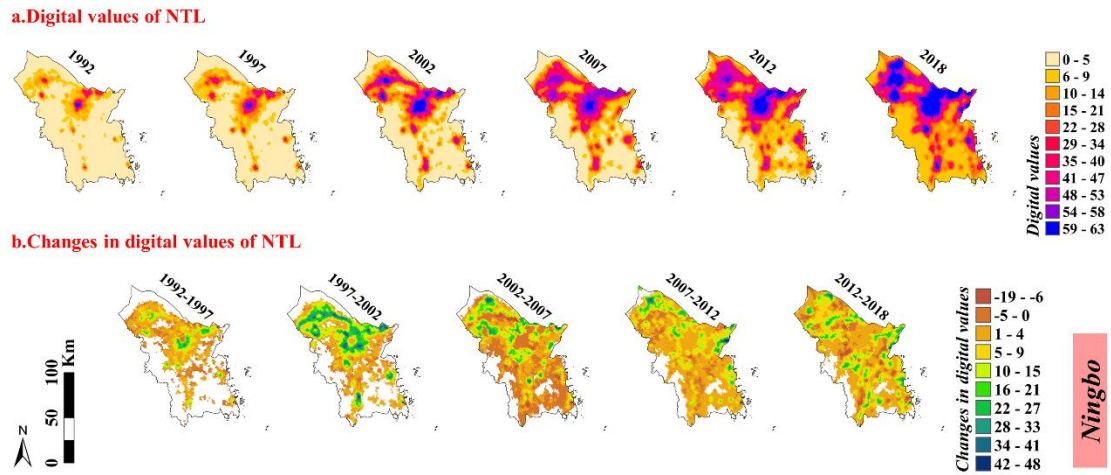


Figure S6. Spatiotemporal pattern of NTL in Ningbo.

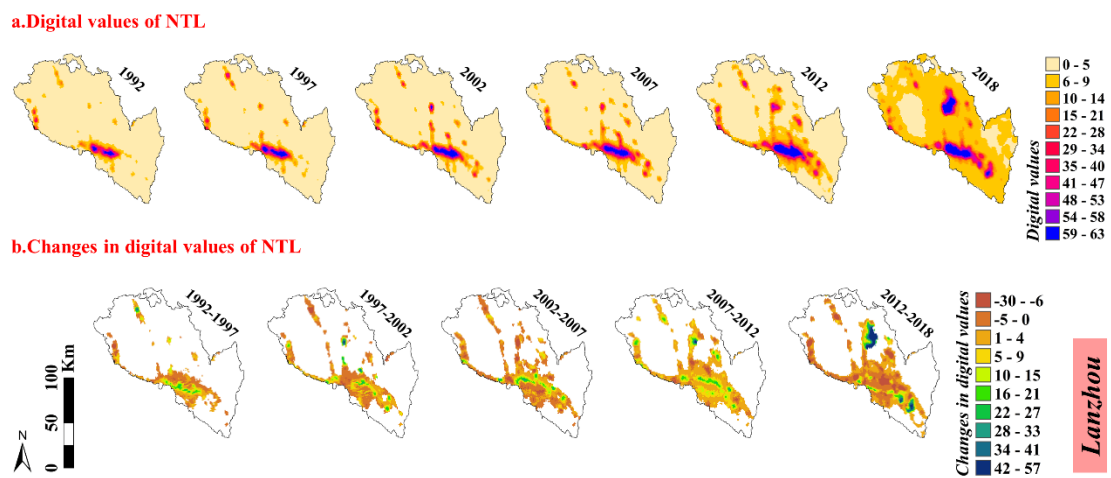


Figure S7. Spatiotemporal pattern of NTL in Lanzhou.

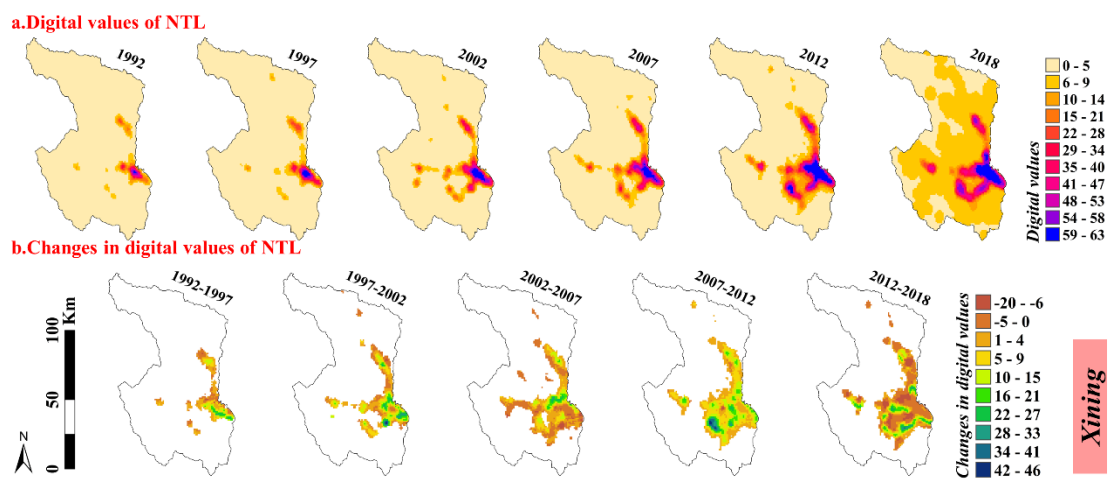


Figure S8. Spatiotemporal pattern of NTL in Xining.

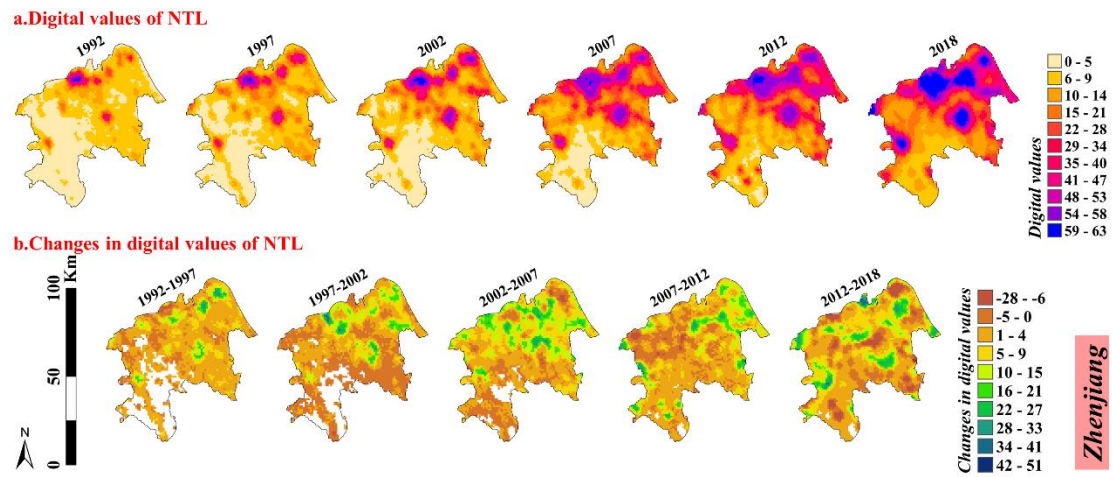


Figure S9. Spatiotemporal pattern of NTL in Zhenjiang.

4. Intensity of human activity within concentric rings of 8 representative cities when the lower limit of DN value to extract human activities is set to 1 and 30, and the interval of time is set to 5 years, i.e., $\Delta_t = 5$

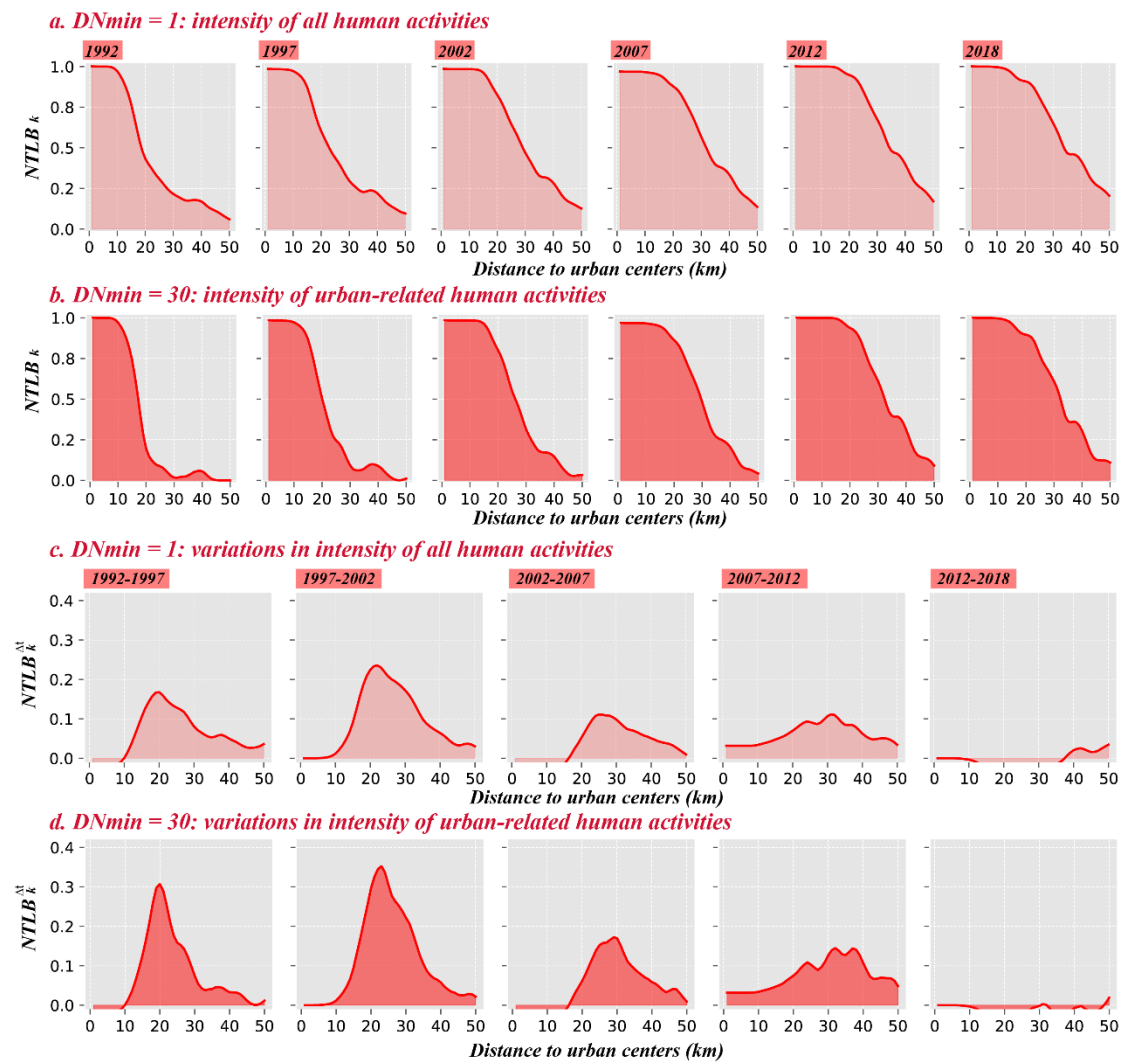


Figure S10. Intensity of human activity within concentric rings of Beijing.

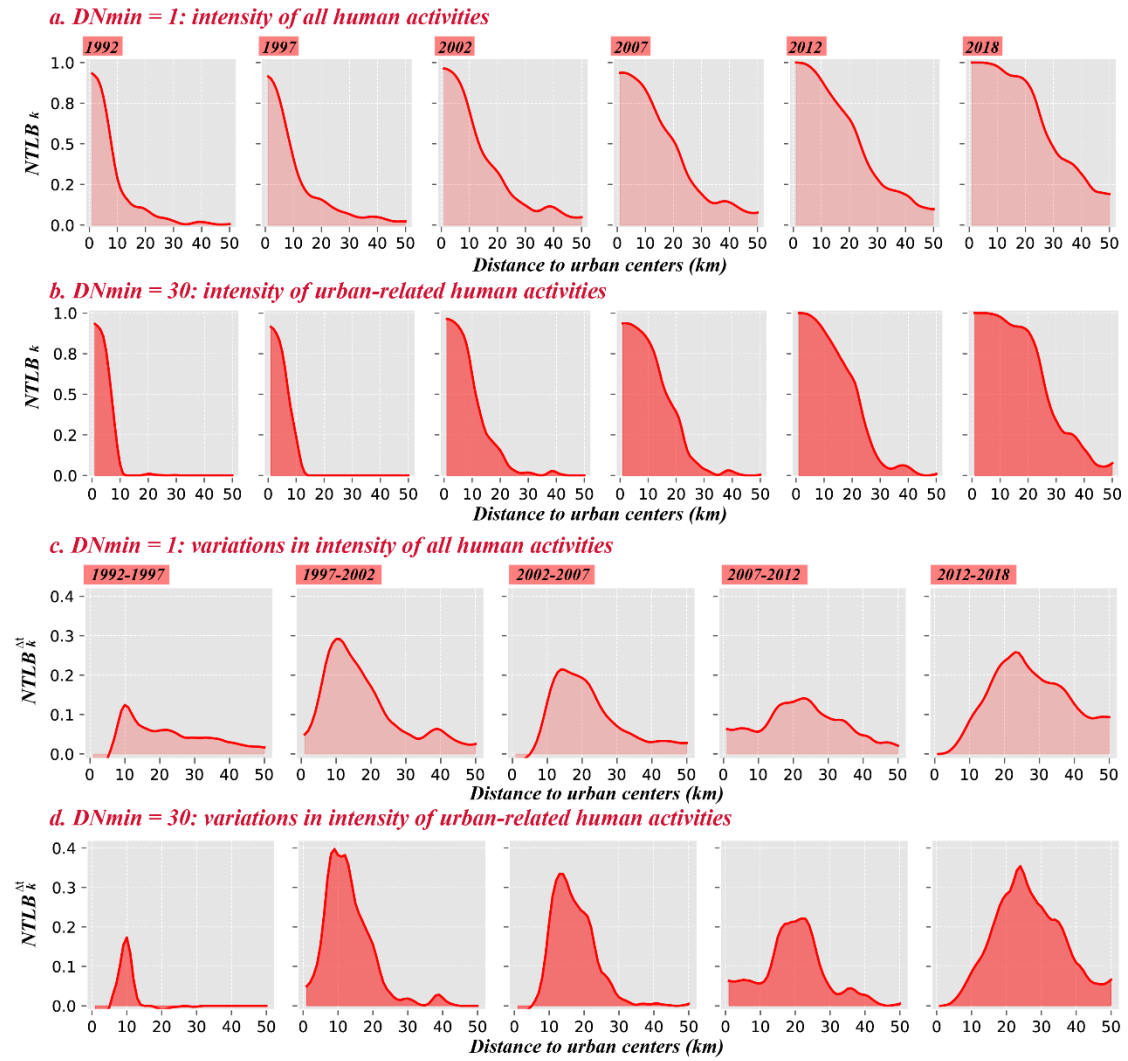


Figure S11. Intensity of human activity within concentric rings of Chengdu.

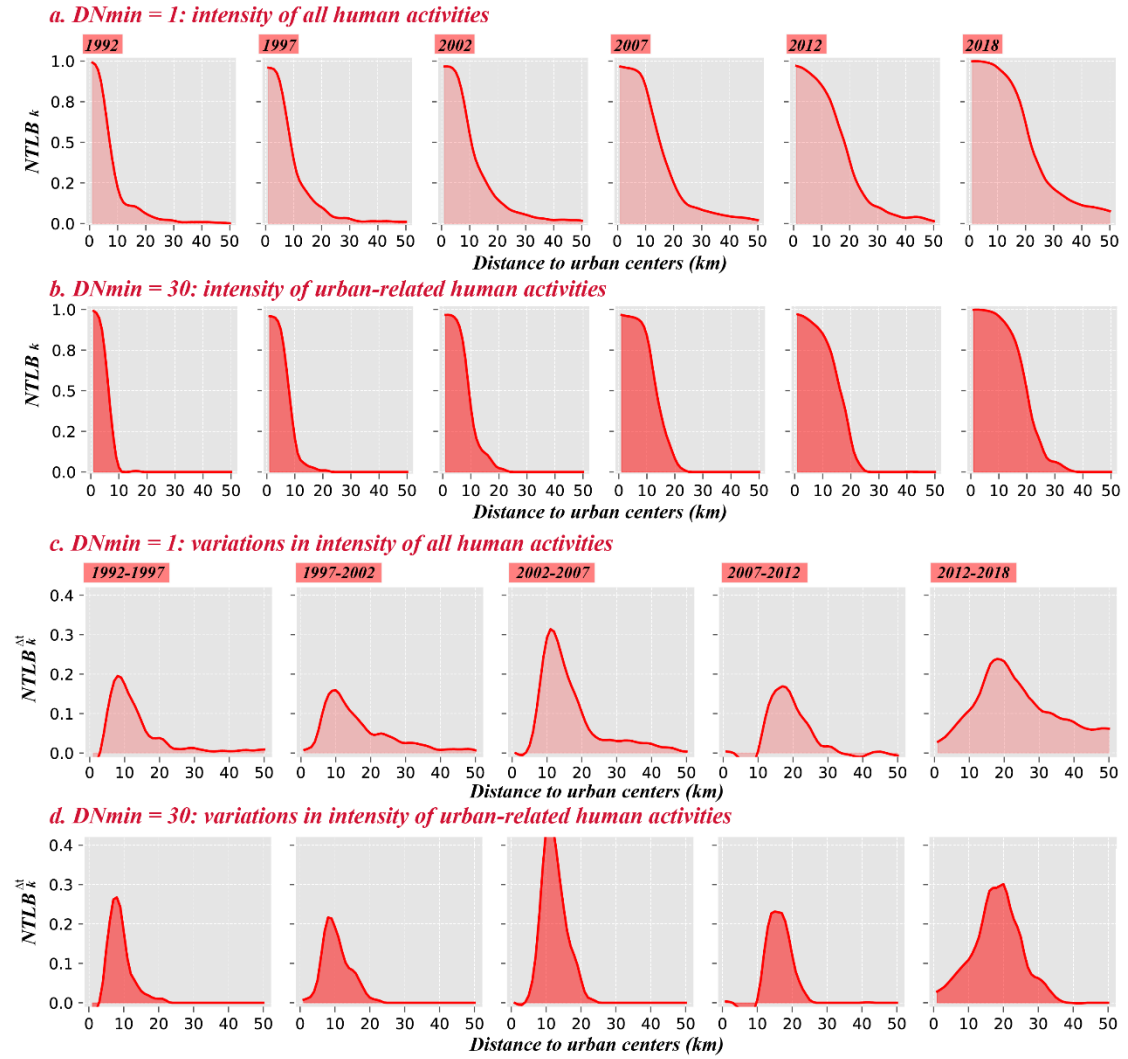


Figure S12. Intensity of human activity within concentric rings of Hefei.

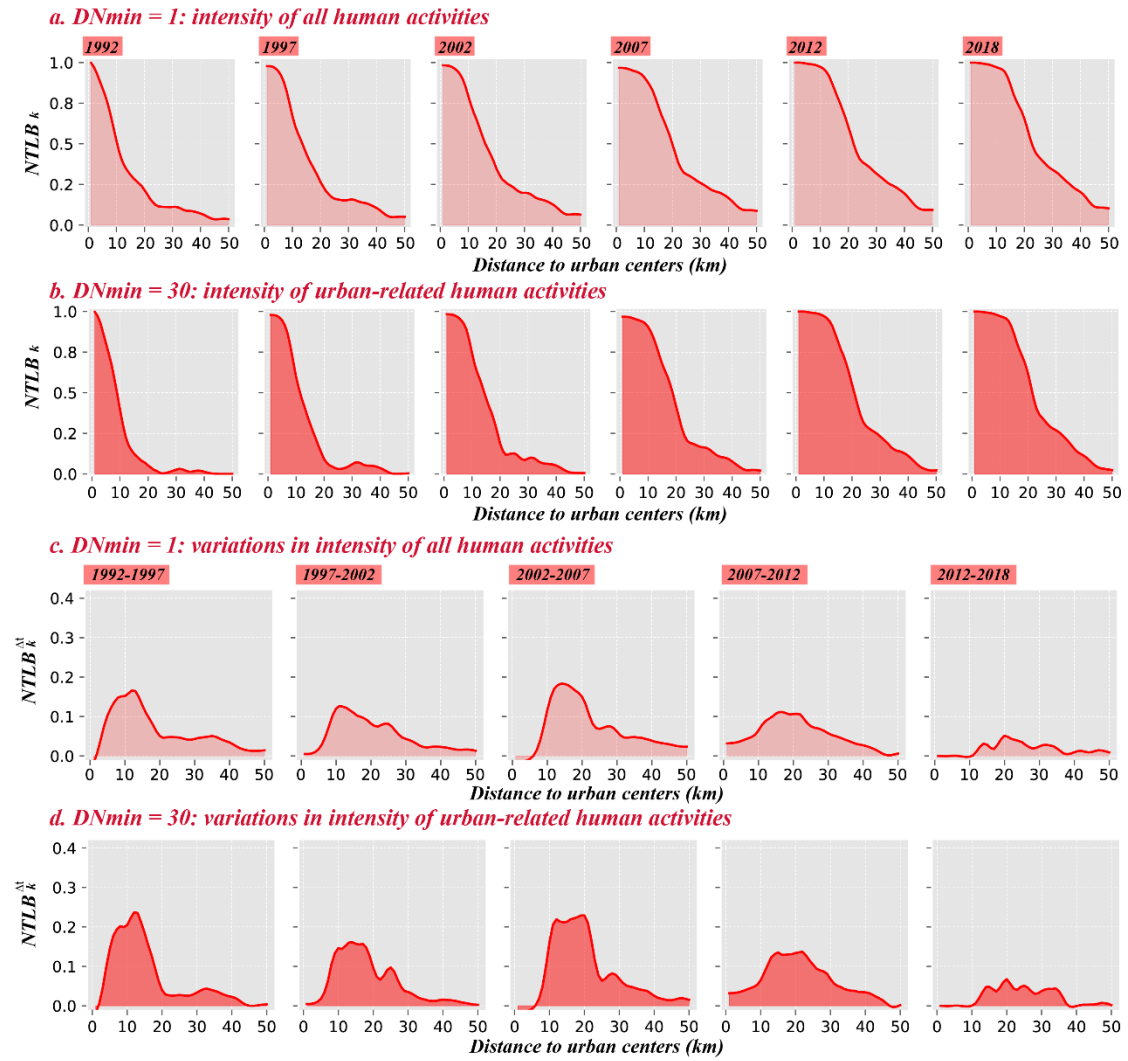


Figure S13. Intensity of human activity within concentric rings of Tianjin.

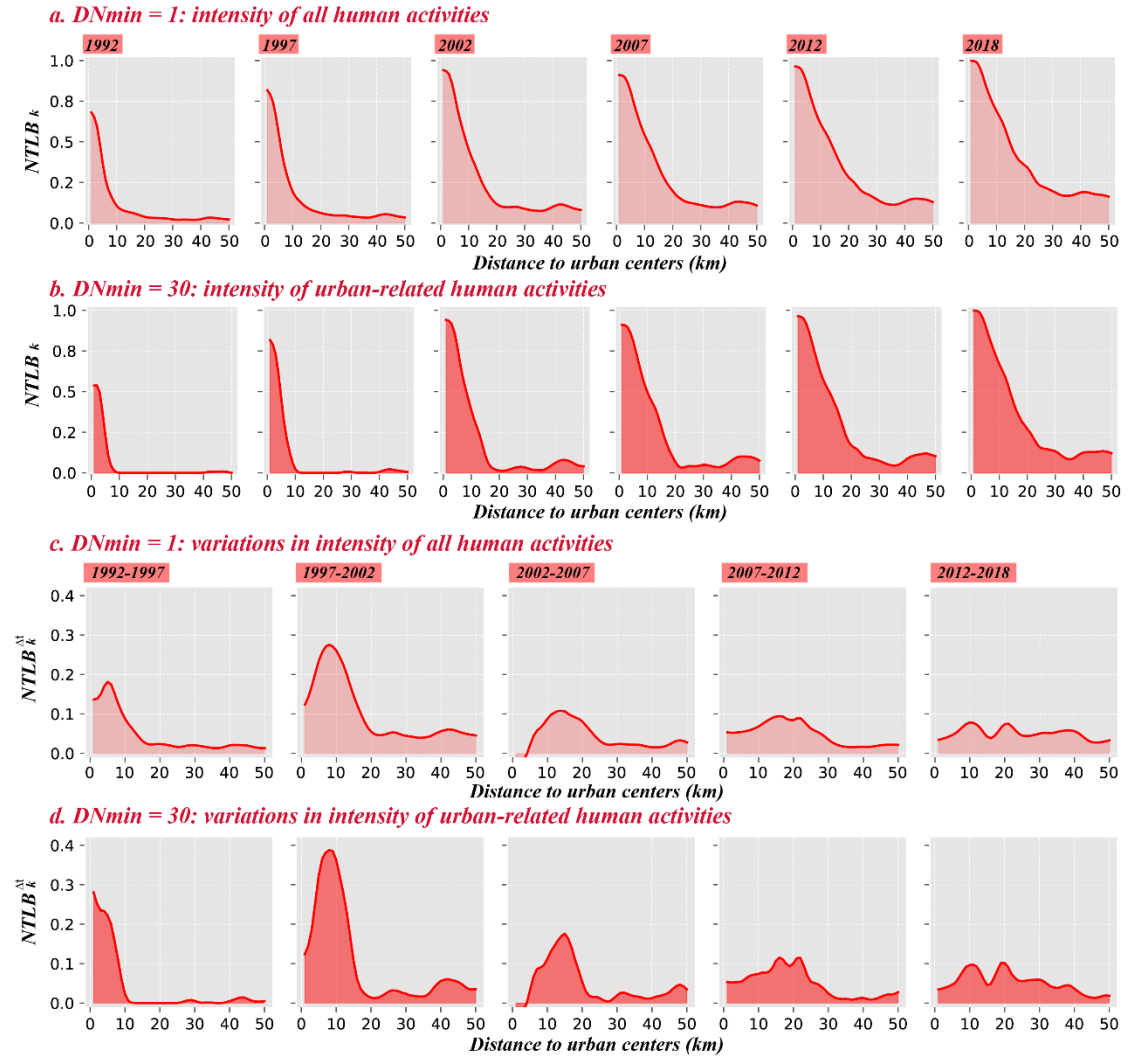


Figure S14. Intensity of human activity within concentric rings of Ningbo.

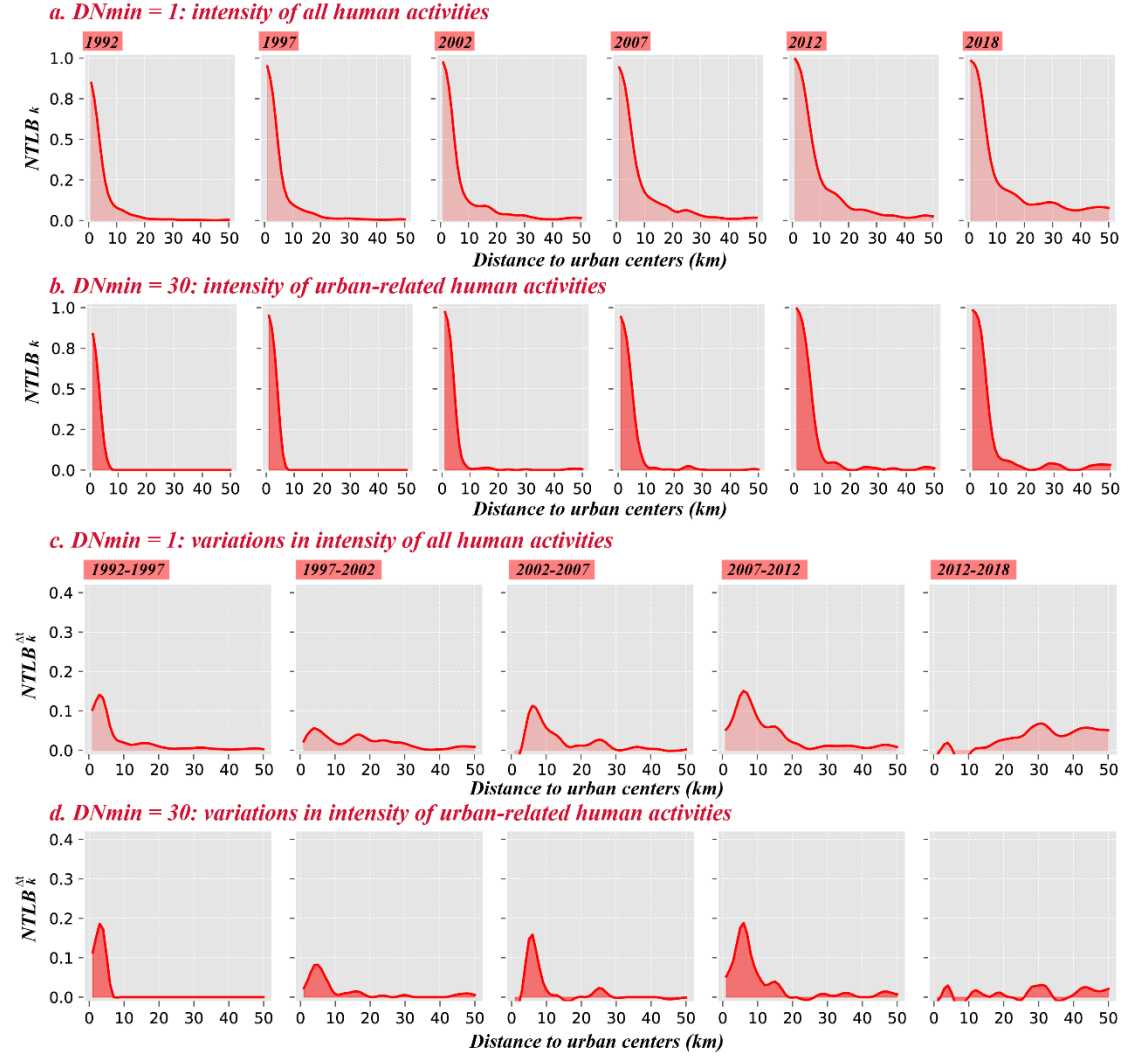


Figure S15. Intensity of human activity within concentric rings of Lanzhou.

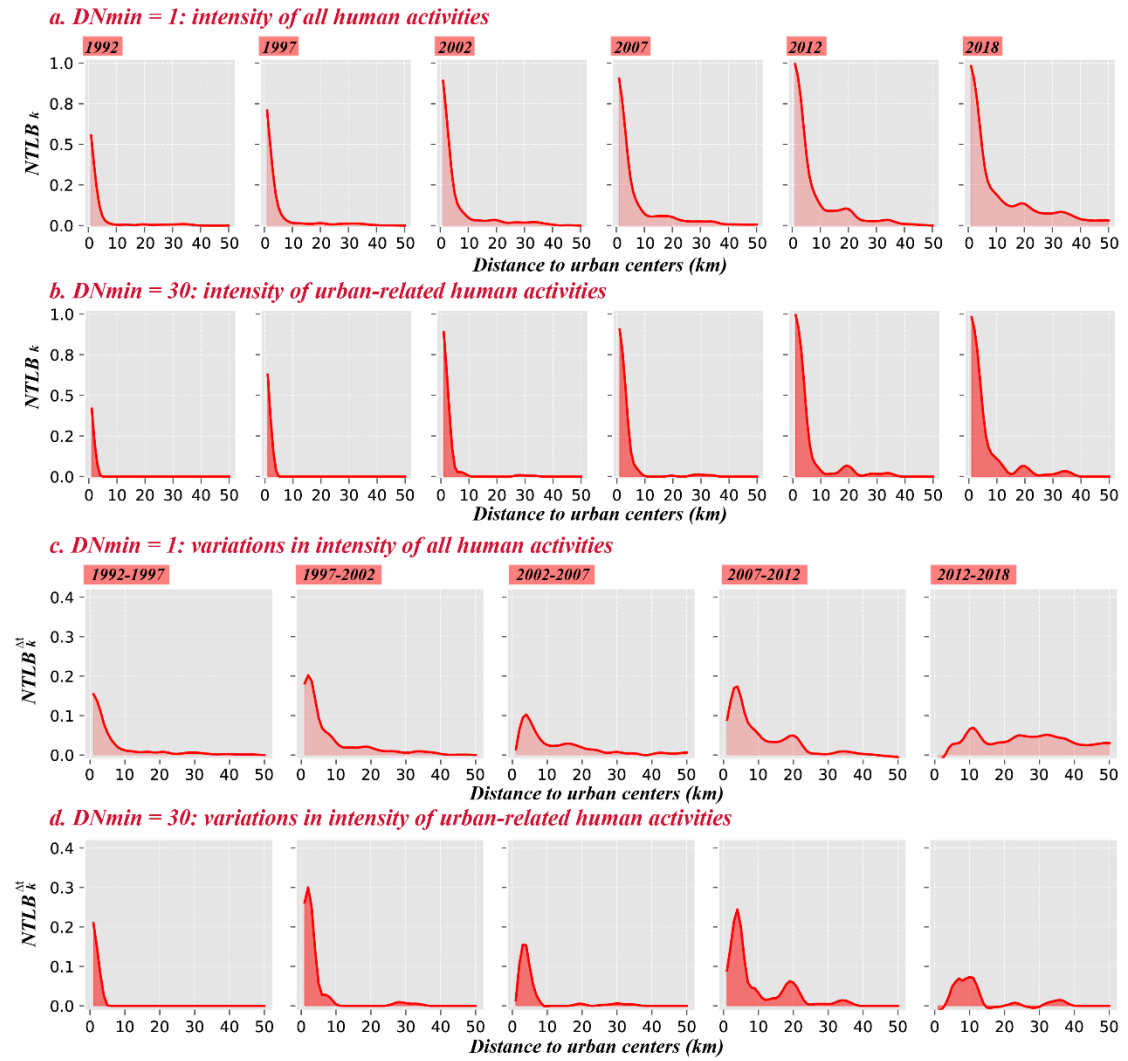


Figure S16. Intensity of human activity within concentric rings of Xining.

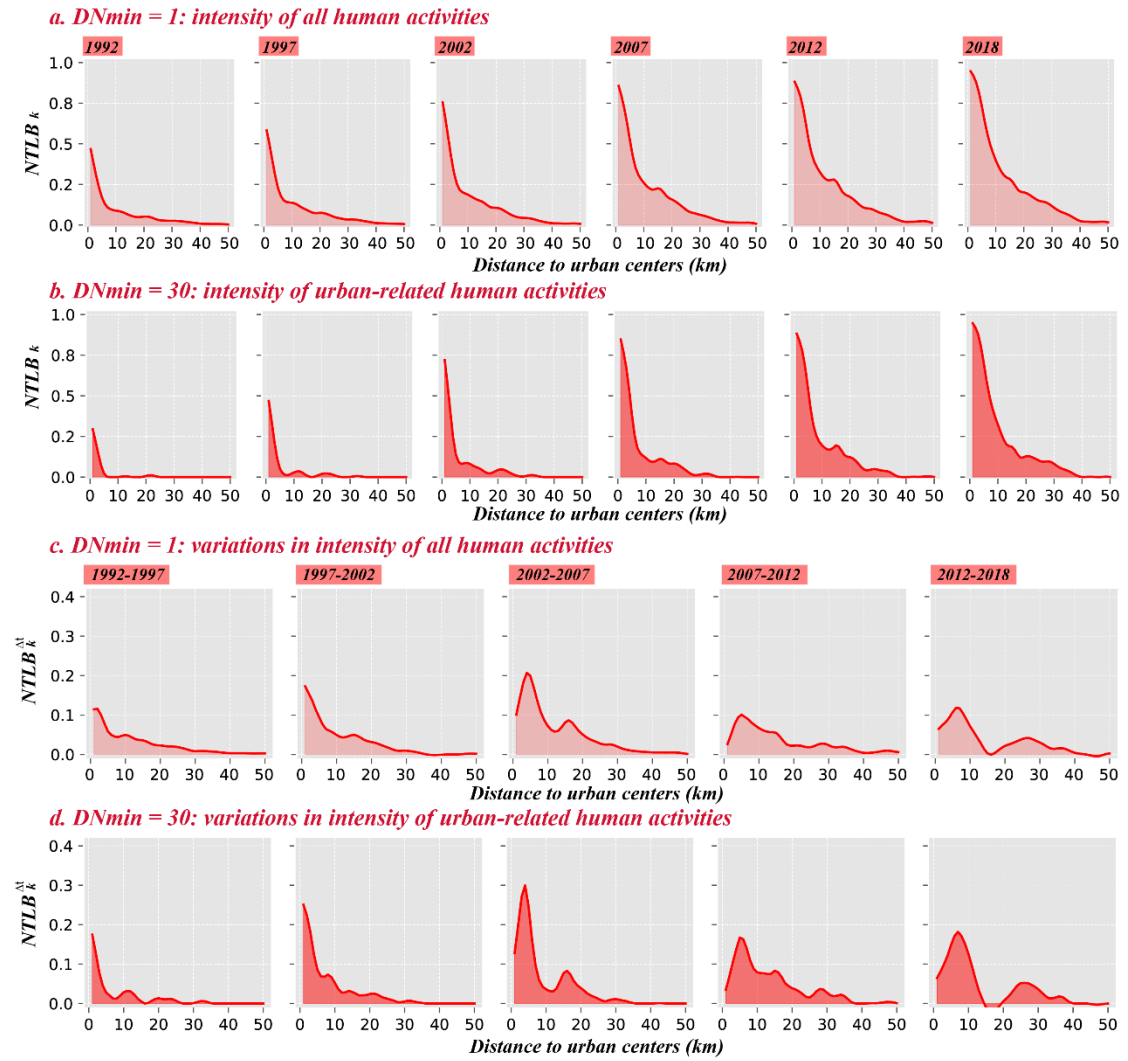


Figure S17. Intensity of human activity within concentric rings of Zhenjiang.

5. Wave of spatiotemporal variations in different levels of human activities in 8 typical cities from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50 (the lower and upper limit of the y axis in subplots is 0 and 1, respectively).

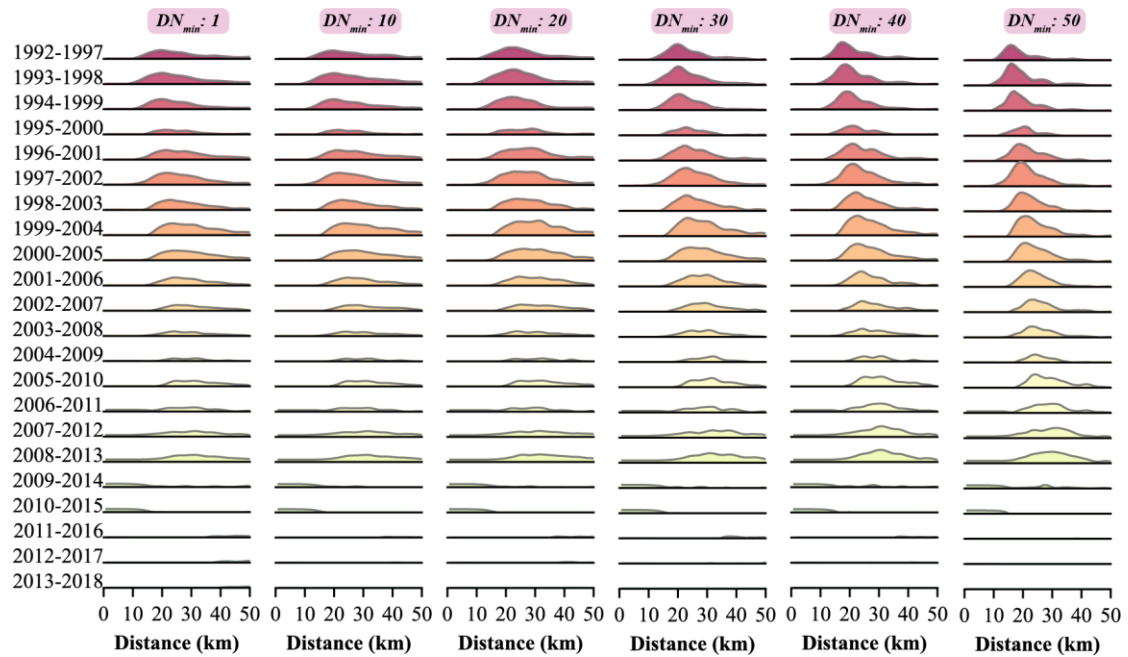


Figure S18. Wave of spatiotemporal variations in different levels of human activities in Beijing from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50.

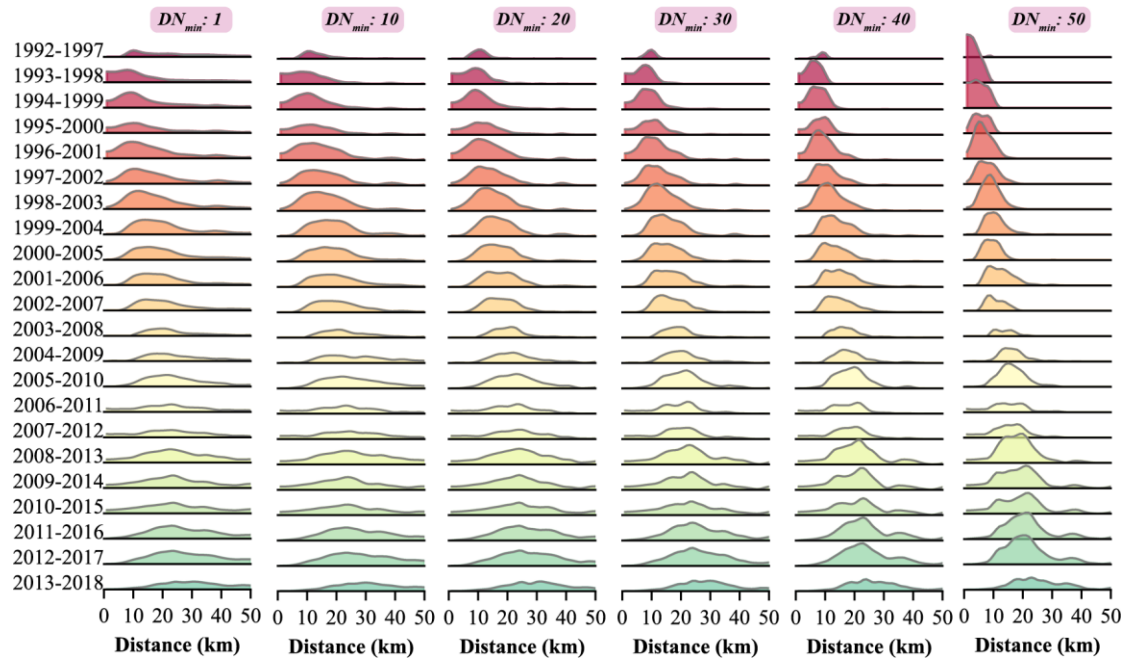


Figure S19. Wave of spatiotemporal variations in different levels of human activities in Chengdu from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50.

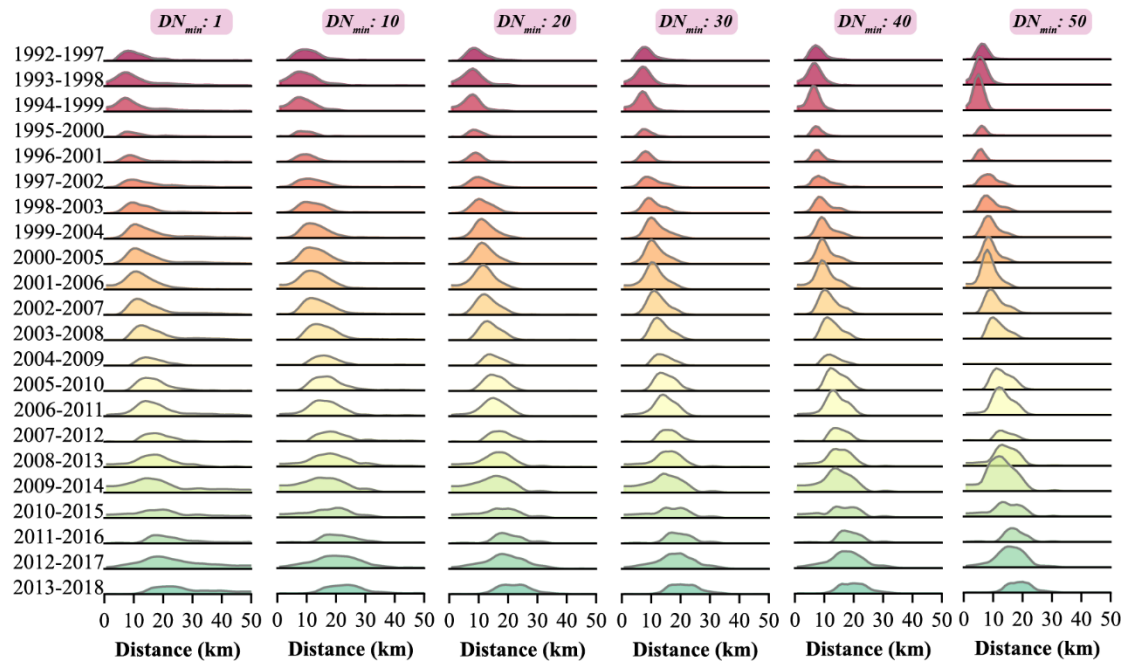


Figure S20. Wave of spatiotemporal variations in different levels of human activities in Hefei from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50.

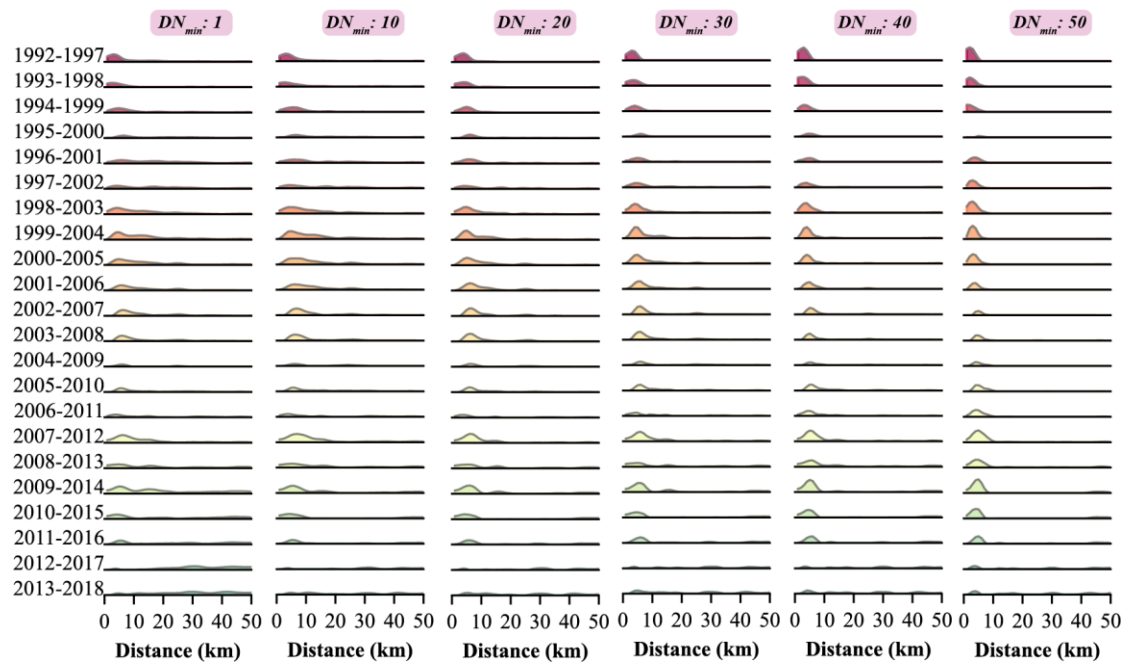


Figure S21. Wave of spatiotemporal variations in different levels of human activities in Tianjin from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50.

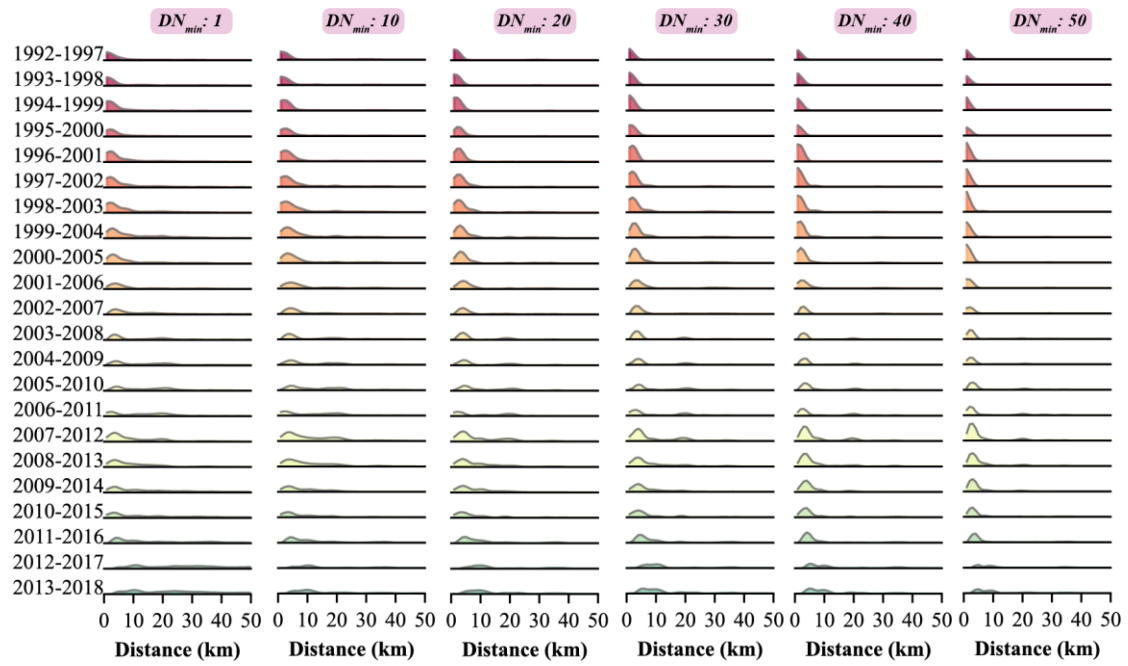


Figure S22. Wave of spatiotemporal variations in different levels of human activities in Ningbo from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50.

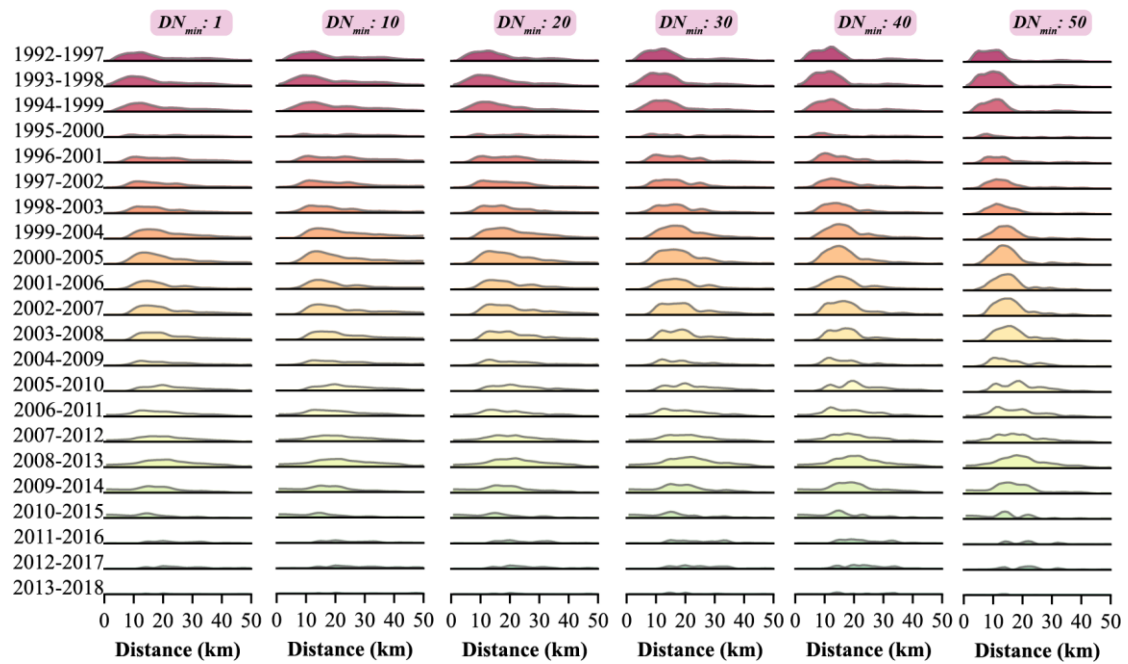


Figure S23. Wave of spatiotemporal variations in different levels of human activities in Lanzhou from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50.

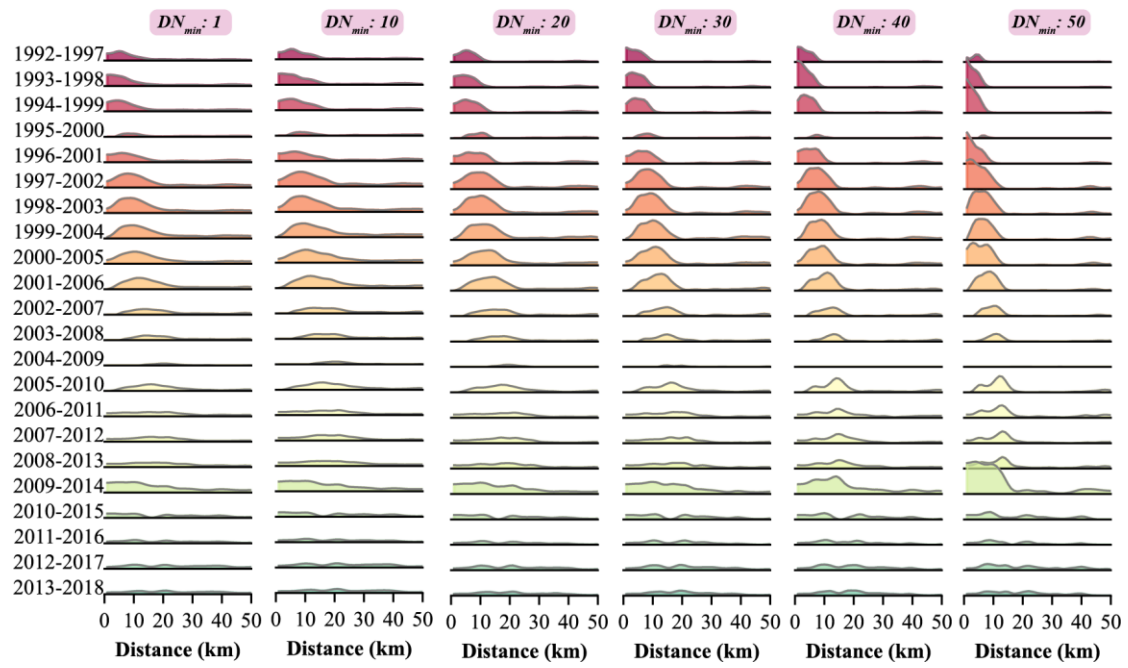


Figure S24. Wave of spatiotemporal variations in different levels of human activities in Xining from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50.

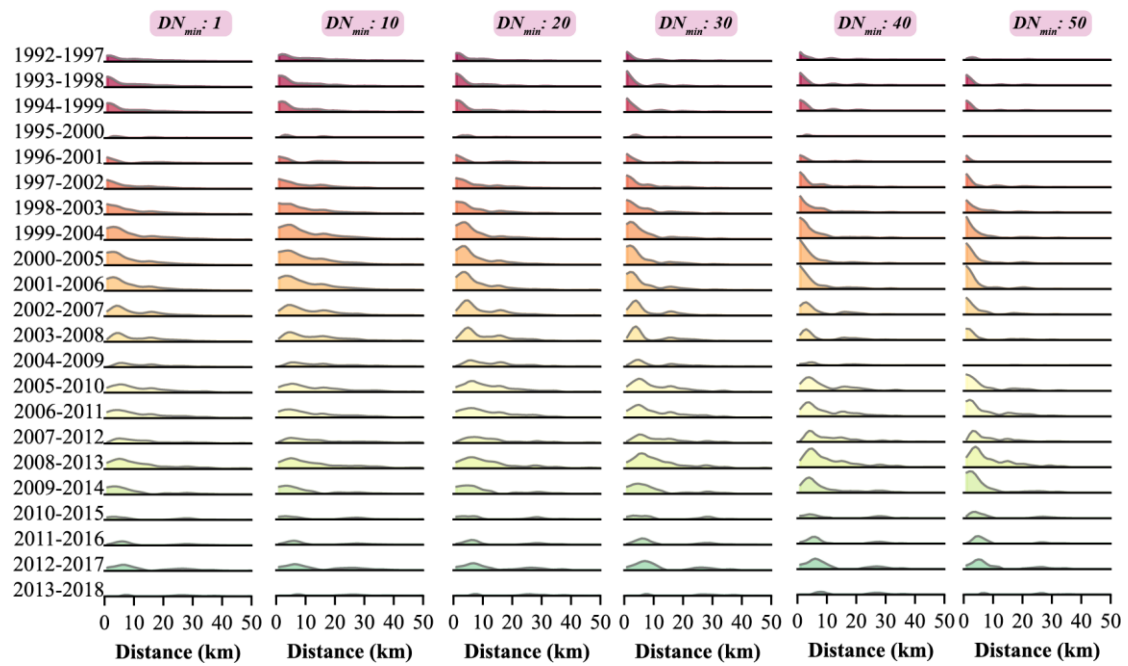


Figure S25. Wave of spatiotemporal variations in different levels of human activities in Zhenjiang from 1992 to 2018 when and the time interval is fixed as 5 years and the DN_{min} parameter vary from 1 to 50.

6. Wave of spatiotemporal variations in intensity of human activities in 8 typical cities from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.

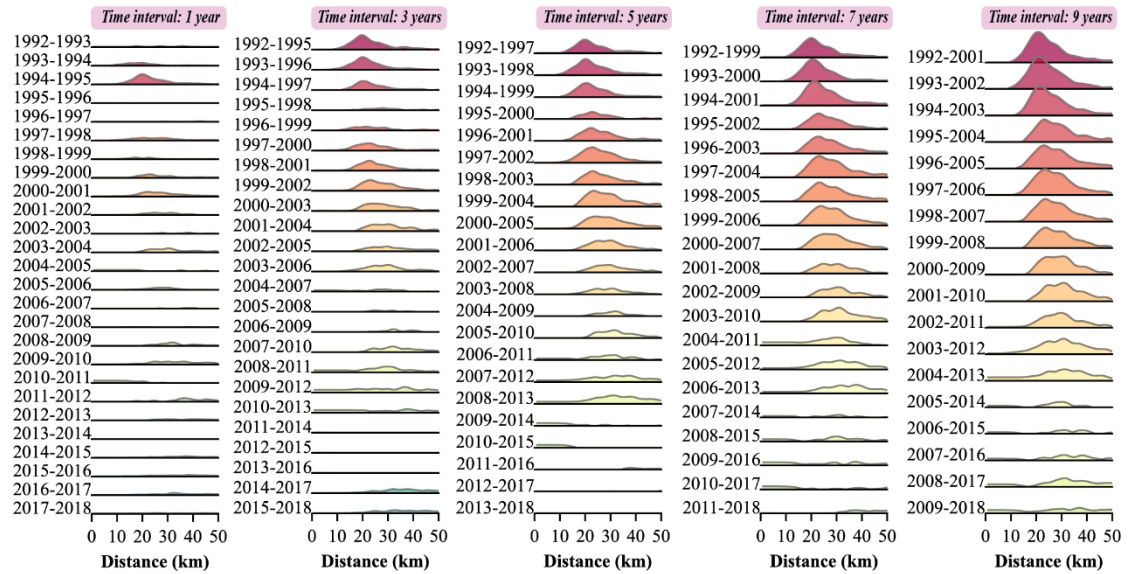


Figure S26. Wave of spatiotemporal variations in different levels of human activities in Beijing from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.

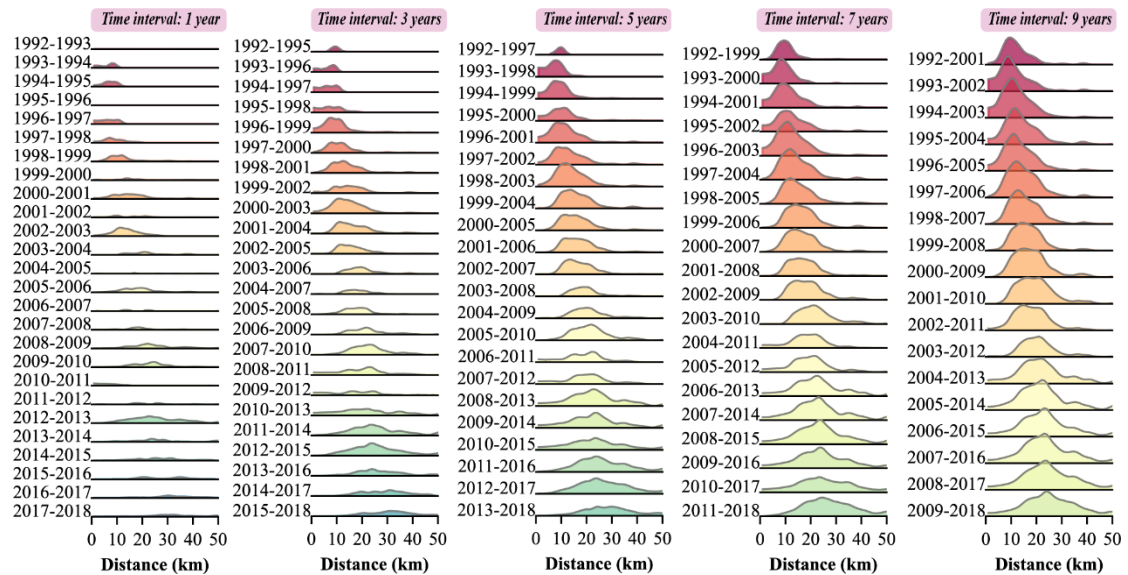


Figure S26. Wave of spatiotemporal variations in different levels of human activities in Chengdu from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.

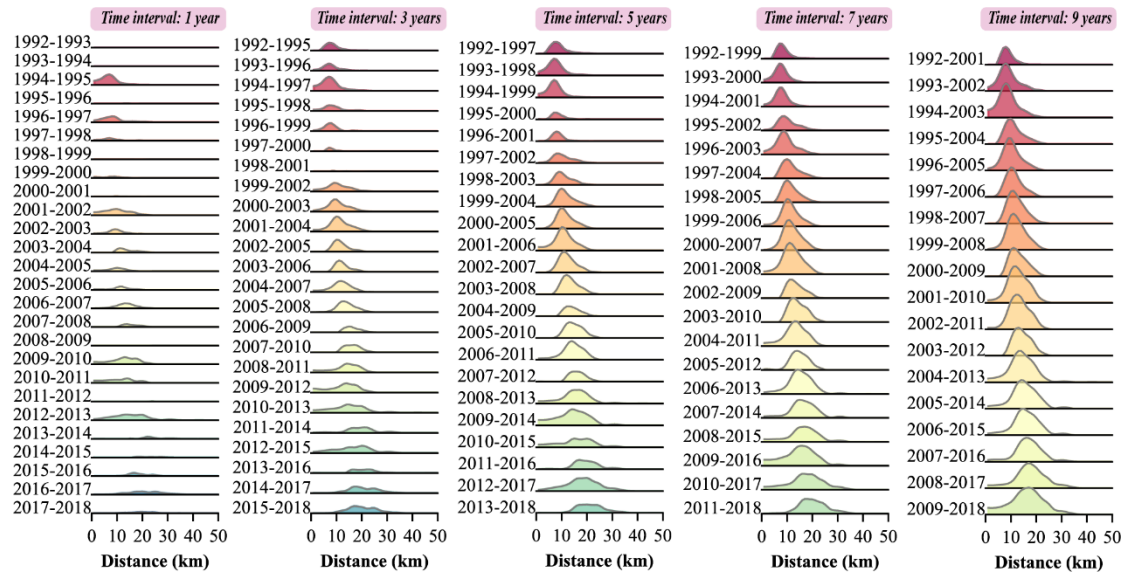


Figure S27. Wave of spatiotemporal variations in different levels of human activities in Hefei from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.

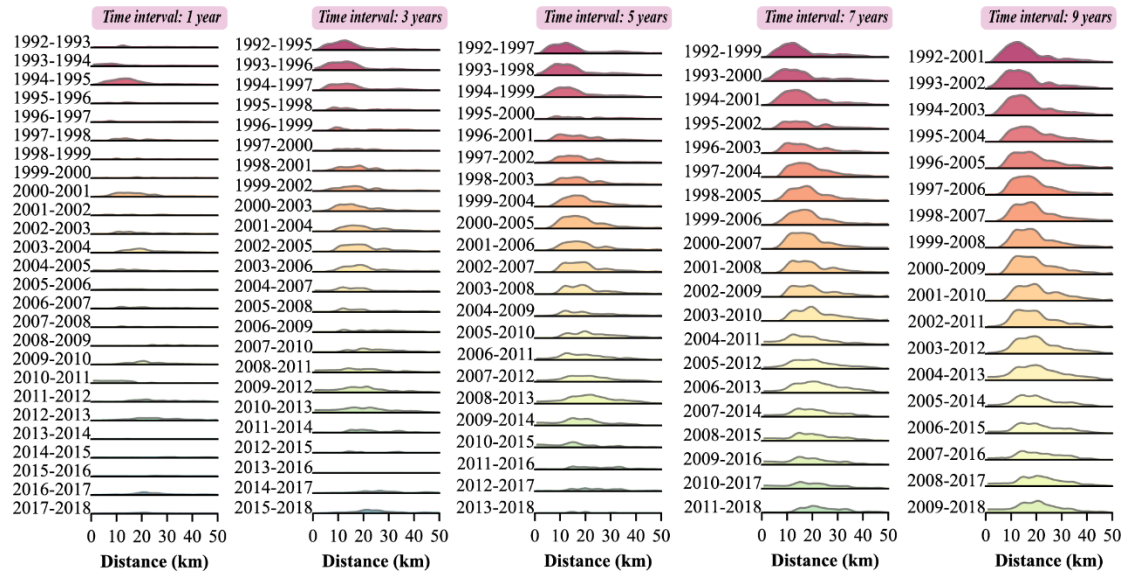


Figure S28. Wave of spatiotemporal variations in different levels of human activities in Tianjin from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.

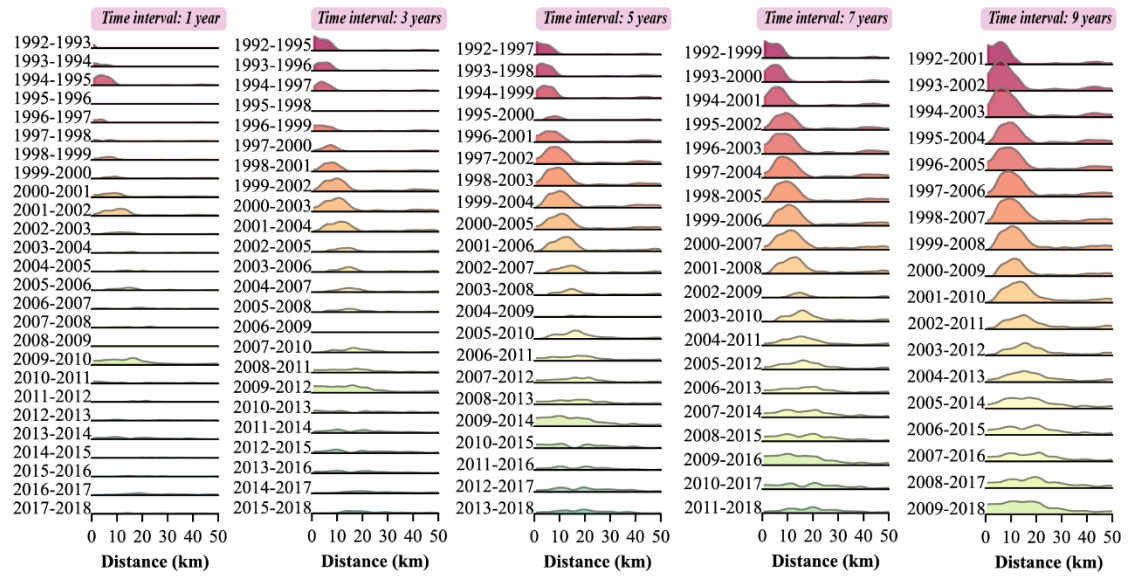


Figure S29. Wave of spatiotemporal variations in different levels of human activities in Ningbo from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.

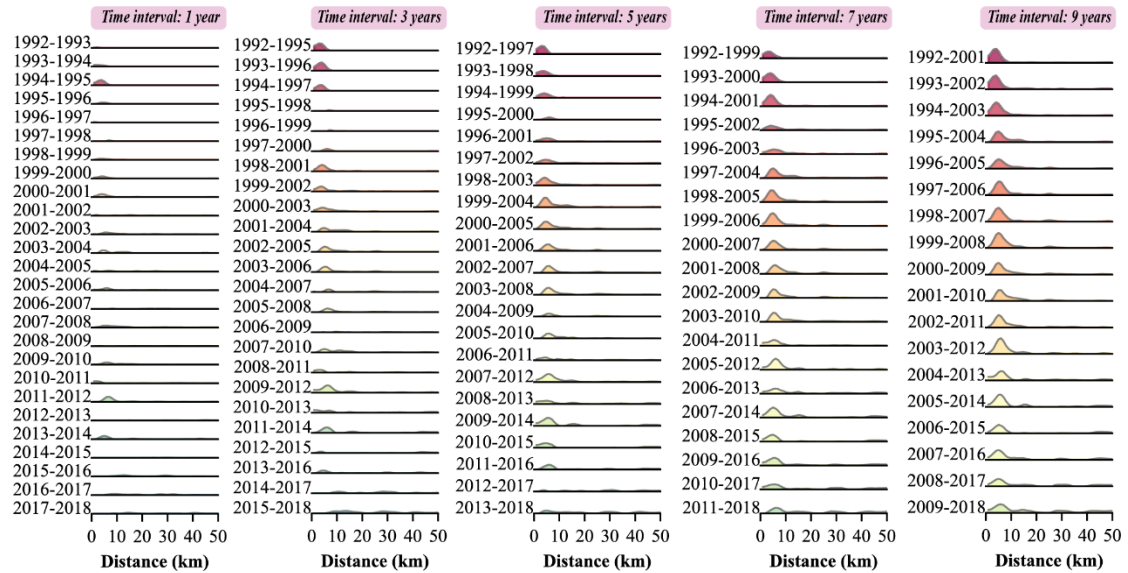


Figure S30. Wave of spatiotemporal variations in different levels of human activities in Lanzhou from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.

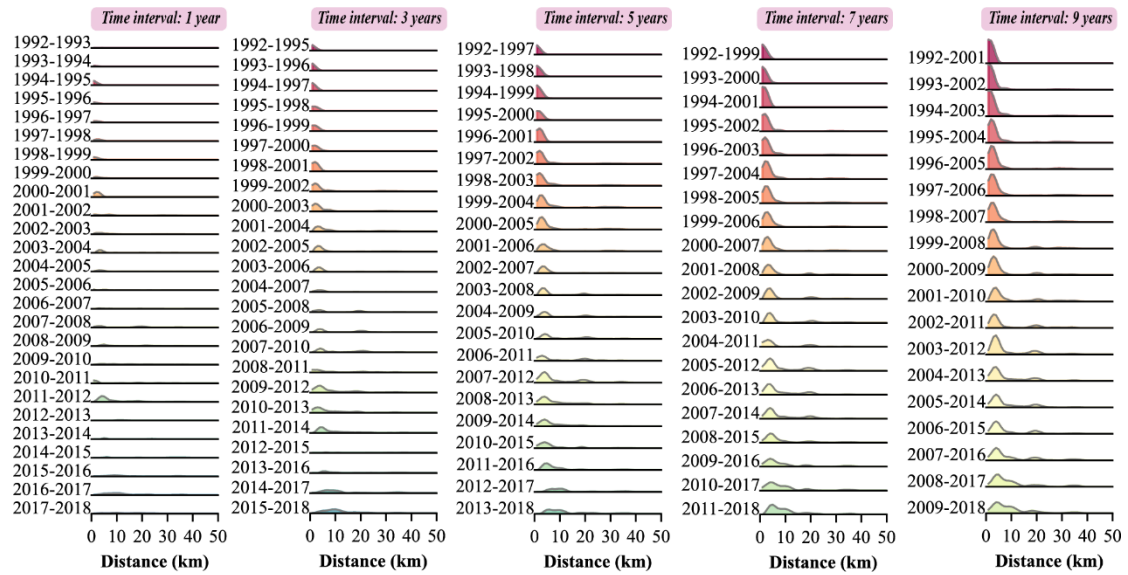


Figure S31. Wave of spatiotemporal variations in different levels of human activities in Xining from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.

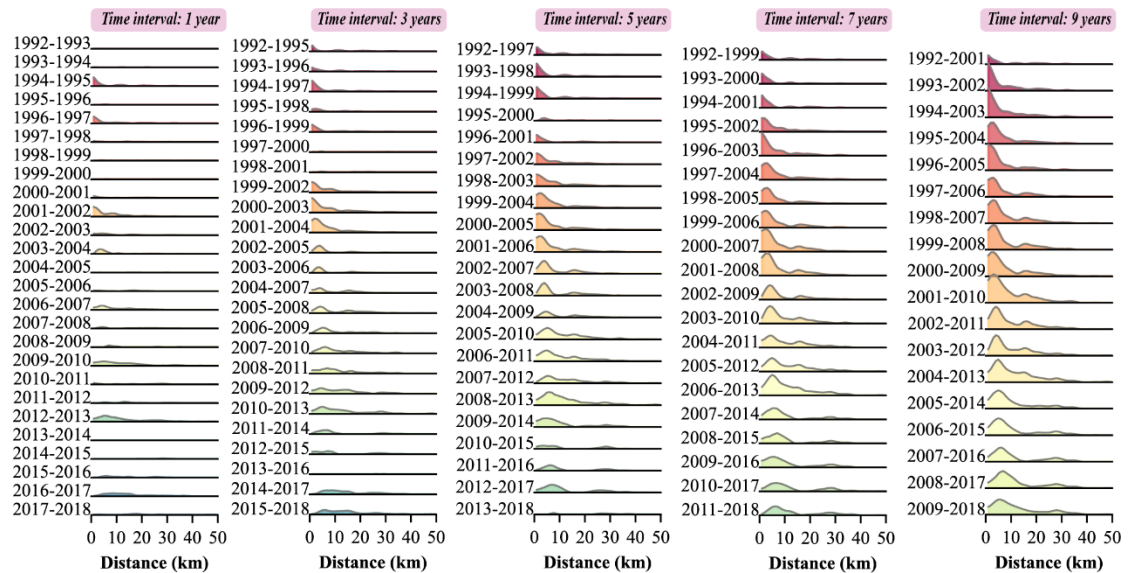


Figure S32. Wave of spatiotemporal variations in different levels of human activities in Zhenjiang from 1992 to 2018 when the $DN_{min} = 30$ and the time interval varies from 1 to 9 years with increment of 2 years.