

Supplementary Materials

Table S1. Built up area of Jiangsu Province, Southern Jiangsu, Central Jiangsu, Northern Jiangsu and 13 prefecture level cities (km²)

Region	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jiangsu	1939.22	2119.52	2252.85	2378.6	2583	2713.92	2904.32	3046.37	3271.09
Nanjing	438.63	446.79	484.27	512.60	574.94	577.44	592.07	598.14	618.64
Suzhou	295.39	329.83	420.84	432.82	497.23	523.89	623.39	641.76	680.4
Wuxi	255.76	264.45	278.98	288.88	294.3	314.16	319.67	330.9	348.5
Changzhou	112.26	114.97	124.86	134.83	142.78	149.5	162.53	176.93	197.45
Zhenjiang	116.32	141.35	129.63	132.2	142.24	136.29	141.45	154.56	162.96
Southern Jiangsu	1218.36	1297.39	1438.58	1501.33	1651.49	1701.28	1839.11	1902.29	2007.95
Yangzhou	111.95	121.09	139.08	154.15	149.8	156.26	161.95	167.5	173.4
Taizhou	103.56	115.93	125.54	137.38	137.48	145.02	151.13	155.18	162.58
Nantong	124.34	146.43	109.42	107.73	111.53	114.03	122.9	143.68	178.35
Central Jiangsu	339.85	383.45	374.04	399.26	398.81	415.31	435.98	466.36	514.33
Xuzhou	149.86	134.25	146.56	172.6	200.63	242.9	253.9	276.07	311.05
Lianyungang	61.1	62.59	69.65	77.69	85.5	90	95	100	120
Suqian	30	30	32.03	33.8	47.6	50.2	58.4	63.42	65
Huai'an	64	115.16	80	85	89	95	100	110	120
Yancheng	76.05	96.68	111.99	108.92	109.97	119.23	121.93	128.23	132.76
Northern Jiangsu	381.01	438.68	440.23	478.01	532.7	597.33	629.23	677.72	748.81
Region	2011	2012	2013	2014	2015	2016	2017	2018	2019
Jiangsu	3493.78	3655.05	3809.6	4019.83	4189.17	4299.26	4426.51	4558.41	4648.33
Nanjing	637.71	653.31	713.29	734.34	755.27	773.79	796.35	817.39	822.97
Suzhou	698.9	719.94	727.16	735.15	747.84	733.39	751.23	756.2	760.05
Wuxi	409.9	441	455.51	522.42	532.43	537.88	546.16	552.09	557.19
Changzhou	218.26	229.69	234.23	253.86	278.79	290.17	295.59	300	305.95
Zhenjiang	172.65	180.35	190.44	204.79	210.4	214.4	218.62	222.04	227.11
Southern Jiangsu	2137.42	2224.29	2320.63	2450.56	2524.73	2549.63	2607.95	2647.72	2673.27
Yangzhou	186.31	191.35	196.4	200.6	205.75	215.23	230.21	238.11	245.62
Taizhou	170.23	185.47	190.27	195.97	203.12	215.52	224.92	236.78	253.08
Nantong	200.59	224.86	249.5	274.16	295.65	312.46	326.25	369.53	380.38
Central Jiangsu	557.13	601.68	636.17	670.73	704.52	743.21	781.38	844.42	879.08

Xuzhou	323.05	328.18	330.52	335.74	336.05	343.57	349.14	357.71	370.32
Lianyungang	130	140	150	160	206	214	223	223	223
Suqian	68.08	70	74.78	78.53	84.7	86.04	89.8	94.26	100.16
Huai'an	130	136	140	150	155	178.5	185	190	198
Yancheng	148.1	154.9	157.5	174.27	178.17	184.31	190.24	201.3	204.5
Northern Jiangsu	799.23	829.08	852.8	898.54	959.92	1006.42	1037.18	1066.27	1095.98

Notes: The above data are from the China Urban Construction Statistical Yearbook (2002-2019).

Table S2. Cumulative carbon emissions of Jiangsu, Southern Jiangsu, Central Jiangsu, Northern Jiangsu and 13 prefecture level cities (10⁴t)

Region	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jiangsu	70652.56	87863.81	103033.87	119520.45	151469.05	175700.29	216822.07	252409.75	317798.59
Nanjing	7446.57	16001.01	25519.23	37251.22	49111.47	61765.34	73893.41	86812.03	101185.02
Suzhou	2464.36	5521.97	9660.16	15725.02	23157.19	31850.49	40798.10	50476.00	60898.68
Wuxi	2148.57	4798.17	8203.95	11996.33	16215.53	20678.39	25119.54	29815.03	34920.21
Changzhou	944.93	2126.47	3678.37	5303.74	7248.96	9651.48	11986.28	14365.36	17060.04
Zhenjiang	1408.55	3004.74	4793.43	6749.62	8813.94	10823.02	12802.48	14936.12	17187.57
Southern Jiangsu	14412.98	31452.35	51855.14	77025.94	104547.09	134768.72	164599.81	196404.54	231251.51
Yangzhou	1000.01	2130.95	3421.92	4898.01	6493.05	8566.20	10652.47	13109.25	15630.28
Taizhou	882.51	2015.43	3269.77	4645.52	6584.34	8779.36	11294.06	14003.12	16887.95
Nantong	1057.33	2345.54	3806.12	5439.07	7189.68	9043.39	10936.99	12800.64	15517.79
Central Jiangsu	2939.85	6491.91	10701.91	15186.71	20471.18	26593.06	33087.63	40117.11	48240.12
Xuzhou	2420.73	5388.23	9006.09	13167.12	17502.83	22371.98	27681.32	33297.53	39654.49
Lianyungang	375.78	796.60	1280.71	1905.71	2605.02	3287.80	4039.86	5136.39	5695.07
Suqian	119.65	259.33	437.95	655.51	867.79	1059.59	1247.43	1443.12	1677.69
Huai'an	1160.03	2430.61	3811.74	5303.41	6913.95	8522.48	10247.51	12033.12	13935.69
Yancheng	705.40	1467.34	2285.82	3160.84	4092.40	5107.37	6095.46	7104.90	8122.20
Northern Jiangsu	4781.58	5521.97	9660.16	15725.02	23157.19	31850.49	40798.10	50476.00	60898.68
Region	2011	2012	2013	2014	2015	2016	2017	2018	2019
Jiangsu	393697.46	455171.48	518558.06	610209.30	686819.74	737071.27	794833.64	853578.72	892574.80
Nanjing	117027.57	132698.28	149870.88	167304.43	186036.40	205420.61	224337.71	244260.37	264371.07
Suzhou	72227.53	83818.65	95776.39	107629.40	119477.41	131842.27	144063.29	156719.47	170197.68
Wuxi	40359.53	45878.92	52088.91	58006.07	63670.10	69931.39	76489.25	83071.52	89751.78
Changzhou	20160.15	23107.28	26543.06	29941.32	33286.44	36836.36	40750.36	44582.42	48638.56
Zhenjiang	19839.89	22691.36	25690.79	29111.16	32229.70	35613.83	38860.25	41656.86	44887.30
Southern Jiangsu	269614.67	308194.50	349970.02	391992.38	434700.04	479644.45	524500.87	570290.65	617846.39
Yangzhou	18174.08	20589.39	23170.02	25681.67	28023.20	30629.52	33327.76	36033.86	38756.03
Taizhou	19891.53	22721.47	25659.68	28590.74	32053.06	36580.56	41175.94	45743.78	49909.40

Nantong	18444.58	21340.87	24276.02	27562.64	30785.92	34049.96	37286.33	40344.13	43336.64
Central Jiangsu	56714.29	64855.83	73309.83	82039.15	91066.29	101464.14	111994.14	122325.86	132206.17
Xuzhou	46864.94	54461.46	62333.05	69633.01	76361.32	83044.13	89180.77	94804.94	100487.07
Lianyungang	7648.30	9858.41	12310.72	15052.36	17952.43	21181.50	24446.09	27746.26	31369.91
Suqian	1908.54	2121.59	2474.04	2793.66	3128.71	3371.72	3609.66	3885.18	4493.93
Huai'an	16034.36	18139.70	20251.71	22334.32	24475.18	26654.14	31709.13	33264.13	35534.87
Yancheng	9052.68	10013.94	11651.55	13422.84	15176.36	16857.71	18455.20	20750.91	22999.21
Northern Jiangsu	72227.53	83818.65	95776.39	107629.40	119477.41	131842.27	144063.29	156719.47	170197.68

Notes: The above data are based on the energy consumption data of industrial enterprises above the scale in the statistical yearbooks of 13 prefecture-level cities in Jiangsu Province, calculated according to formula (1). Taizhou City, Nantong City, Xuzhou City, Suqian City, Huai'an City, Yancheng City, missing data for individual years by taking the average of the upper and lower two years.

Table S3. Coefficients of quadratic derivative equation of Logistic equation in Jiangsu, Southern Jiangsu, Central Jiangsu, Northern Jiangsu and 13 prefecture level cities.

Region	A	B	C
Jiangsu	537.1703	229.7518	-0.128
Nanjing	165.2918	27.882	-0.614
Suzhou	70550054405.1069	3520100.1882	-1.053
Wuxi	1146.7541	105.3195	-0.952
Changzhou	1783.3638	92.1115	-1.674
Zhenjiang	15967.4683	305.5154	-2.677
Southern Jiangsu	2950.9759	405.8566	-0.192
Yangzhou	229578.4425	3108.8244	-4.257
Taizhou	47450.0082	733.6265	-3.415
Nantong	322.9943	33.3814	-1.411
Central Jiangsu	1401.0259	151.1081	-0.8
Xuzhou	272387895.8975	41564.5292	-1.263
Lianyungang	1607.4806	79.4398	-2.279
Suqian	1276.1492	76.0203	-5.013
Huai'an	4189.8412	101.5955	-3.195
Yancheng	4448.8882	166.1681	-2.694
Northern Jiangsu	980.3357	132.8198	-0.502