1. Data Sheet-Air quality data

The synthetic specific data under the three periods are shown in Tables 1-3.

Table 1: Air quality data for different areas in January 2023.

$\mathbf{P} \setminus \mathbf{A}$	$PM2.5$	$PM10$	SO_2	NO_2	CO	O_3
AKesu	[64, 111]	[132, 370]	[5, 19]	[16, 70]	[0.6, 3]	[42, 82]
Altai	[5, 18]	[7, 29]	[2, 6]	[11, 36]	[0.1, 0.7]	[57, 78]
Baoji	[27, 210]	[72, 225]	[6, 18]	[11, 64]	[0.3, 1.6]	[39, 90]
Baoding	[9, 108]	[26, 209]	[5, 18]	[6, 92]	[0.3, 1.3]	[6, 75]
Beijing	[3, 70]	[9, 127]	[2, 4]	[5, 62]	[0.1, 0.9]	[19, 78]
Chengdu	[30, 156]	[65, 188]	[2, 4]	[9, 66]	[0.3, 1.2]	[12, 103]
Ganzi	[6, 16]	[10, 38]	[6, 8]	[5, 16]	[0.2, 0.5]	[56, 82]
Guangzhou	[7, 45]	[10, 81]	[5, 7]	[6, 48]	[0.5, 0.9]	[16, 127]
Haikou	[6, 41]	[10, 72]	[4, 7]	[6, 19]	[0.6, 0.8]	[33, 128]
Handan	[13, 218]	[41, 272]	[5, 24]	[8, 84]	[0.3, 1.8]	[31, 95]
Hangzhou	[16, 69]	[9, 119]	[5, 8]	[7, 63]	[0.5, 0.8]	[37, 111]
Jiaozuo	[14, 268]	[41, 331]	[3, 32]	[5, 77]	[0.3, 2.6]	[25, 89]
Kashi	[80, 147]	[94, 427]	[3, 14]	[13, 80]	[0.5, 3.4]	[59, 101]
Linfen	[12, 226]	[27, 325]	[3, 30]	[8, 70]	[0.4, 3]	[33, 83]
Nanjing	[11, 77]	[18, 145]	[3, 9]	[6, 84]	[0.4, 1]	[23, 104]
Sanya	[5, 27]	[11, 56]	[2, 4]	[5, 12]	[0.4, 0.6]	[56, 117]
Shanghai	[11, 83]	[0, 133]	[5, 11]	[8, 87]	[0.5, 1.1]	[38, 110]
Shenzhen	[8, 40]	[14, 68]	[4, 7]	[6, 39]	[0.5, 0.8]	[28, 106]
Tianjin	[4, 110]	[13, 250]	[4, 24]	[7, 80]	[0.3, 1.5]	[6, 72]
Turpan	[46, 176]	[142, 364]	[4, 13]	[17, 77]	[0.8, 3.2]	[36, 75]
Wuhan	[13, 188]	[23, 209]	[6, 15]	[10, 82]	[0.5, 1.5]	[28, 127]
Xi'an	[23, 292]	[73, 339]	[6, 19]	[8, 91]	[0.4, 2.1]	[36, 92]
Xianyang	[26, 308]	[84, 365]	[4, 15]	[8, 87]	[0.3, 1.8]	[40, 104]
Xinxiang	[16, 288]	[41, 342]	[6, 30]	[5, 83]	[0.5, 2.6]	[23, 93]
Yili	[8, 287]	[27, 301]	[8, 18]	[21, 94]	[0.5, 5.7]	[25, 118]

Table 2: Air quality data for different areas in February 2023.

$\mathbf{P} \setminus \mathbf{A}$	$PM2.5$	$PM10$	SO_2	NO_2	CO	O_3
AKesu	[31, 80]	[76, 272]	[5, 12]	[20, 56]	[0.6, 1.4]	[64, 98]
Altai	[4, 17]	[8, 41]	[2, 6]	[5, 33]	[0.3, 0.5]	[69, 102]
Baoji	[34, 225]	[0, 237]	[5, 16]	[22, 58]	[0.6, 1.5]	[22, 104]
Baoding	[12, 157]	[42, 191]	[6, 19]	[21, 79]	[0.4, 1.4]	[24, 95]
Beijing	[5, 140]	[8, 187]	[2, 4]	[7, 66]	[0.2, 1]	[27, 85]
Chengdu	[18, 121]	[27, 163]	[2, 5]	[23, 63]	[0.4, 1.2]	[9, 120]
Ganzi	[5, 16]	[6, 44]	[8, 9]	[7, 21]	[0.2, 0.7]	[45, 106]
Guangzhou	[8, 54]	[18, 92]	[5, 9]	[17, 63]	[0.6, 0.9]	[16, 180]
Haikou	[8, 29]	[20, 61]	[4, 6]	[7, 14]	[0.5, 0.9]	[48, 145]
Handan	[23, 172]	[44, 213]	[4, 16]	[18, 52]	[0.4, 1.5]	[31, 110]
Hangzhou	[13, 58]	[18, 94]	[5, 8]	[21, 54]	[0.4, 0.9]	[20, 96]
Jiaozuo	[19, 198]	[44, 230]	[3, 18]	[17, 46]	[0.4, 1.5]	[36, 109]
Kashi	[32, 102]	[114, 279]	[6, 12]	[17, 63]	[0.6, 2.6]	[32, 95]
Linfen	[27, 168]	[56, 239]	[4, 24]	[24, 57]	[0.7, 1.7]	[26, 106]
Nanjing	[11, 80]	[15, 124]	[4, 9]	[14, 49]	[0.3, 0.8]	[30, 117]
Sanya	[7, 29]	[14, 55]	[2, 4]	[3, 10]	[0.3, 0.5]	[42, 136]
Shanghai	[11, 43]	[18, 68]	[5, 8]	[18, 46]	[0.5, 0.8]	[57, 110]
Shenzhen	[7, 41]	[16, 68]	[5, 7]	[13, 29]	[0.5, 0.8]	[48, 148]

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P \ A	PM2.5	PM10	SO_2	NO_2	CO	O_3
Tianjin	[10, 153]	[18, 216]	[5, 17]	[15, 79]	[0.3, 1.2]	[38, 104]
Turpan	[30, 110]	[94, 336]	[7, 10]	[26, 56]	[0.6, 2.2]	[64, 112]
Wuhan	[13, 120]	[16, 142]	[6, 13]	[22, 63]	[0.6, 1.3]	[25, 116]
Xi'an	[30, 226]	[39, 196]	[6, 19]	[25, 85]	[0.6, 1.9]	[26, 93]
Xianyang	[36, 192]	[42, 196]	[4, 15]	[25, 80]	[0.5, 1.8]	[24, 100]
Xinxiang	[22, 182]	[47, 242]	[5, 16]	[20, 54]	[0.5, 1.6]	[46, 112]
Yili	[15, 147]	[24, 175]	[4, 14]	[19, 73]	[0.7, 3]	[80, 113]

Table 3: Air quality data for different areas in March 2023.

P \ A	PM2.5	PM10	SO_2	NO_2	CO	O_3
AKesu	[39, 216]	[96, 890]	[5, 8]	[24, 54]	[0.2, 1.2]	[90, 122]
Altai	[4, 7]	[8, 30]	[2, 2]	[5, 17]	[0.1, 0.7]	[71, 104]
Baoji	[20, 69]	[30, 212]	[5, 17]	[19, 52]	[0.4, 0.7]	[45, 131]
Baoding	[10, 177]	[69, 287]	[6, 15]	[13, 77]	[0.2, 0.7]	[62, 170]
Beijing	[5, 168]	[17, 225]	[2, 4]	[6, 56]	[0.1, 1.2]	[39, 136]
Chengdu	[12, 69]	[25, 104]	[2, 5]	[16, 55]	[0.3, 0.8]	[46, 134]
Ganzi	[4, 11]	[6, 32]	[7, 10]	[8, 25]	[0.3, 0.6]	[62, 88]
Guangzhou	[6, 59]	[9, 121]	[4, 9]	[22, 59]	[0.6, 1]	[10, 209]
Haikou	[7, 33]	[20, 57]	[5, 7]	[7, 15]	[0.4, 0.7]	[46, 161]
Handan	[21, 82]	[40, 216]	[5, 18]	[12, 50]	[0.4, 1.5]	[58, 174]
Hangzhou	[14, 71]	[32, 142]	[5, 8]	[22, 64]	[0.5, 0.8]	[9, 154]
Jiaozuo	[23, 92]	[60, 246]	[3, 13]	[17, 37]	[0.3, 0.9]	[52, 164]
Kashi	[22, 158]	[104, 674]	[4, 7]	[18, 43]	[0.3, 1.1]	[86, 107]
Linfen	[19, 84]	[57, 286]	[5, 13]	[17, 54]	[0.6, 1.2]	[58, 159]
Nanjing	[9, 73]	[21, 176]	[4, 13]	[14, 53]	[0.3, 0.9]	[28, 156]
Sanya	[7, 31]	[17, 51]	[2, 4]	[4, 10]	[0.3, 0.6]	[46, 170]
Shanghai	[9, 52]	[20, 108]	[6, 9]	[17, 59]	[0.5, 0.8]	[24, 162]
Shenzhen	[8, 41]	[13, 83]	[5, 7]	[13, 39]	[0.5, 0.8]	[25, 209]
Tianjin	[10, 184]	[56, 314]	[4, 15]	[17, 74]	[0.3, 0.9]	[42, 133]
Turpan	[20, 66]	[86, 318]	[5, 10]	[12, 44]	[0.4, 1]	[92, 126]
Wuhan	[14, 93]	[16, 155]	[6, 15]	[16, 100]	[0.4, 1.4]	[17, 139]
Xi'an	[24, 90]	[40, 224]	[6, 12]	[18, 88]	[0.4, 0.9]	[43, 131]
Xianyang	[25, 100]	[38, 228]	[4, 11]	[19, 82]	[0.5, 0.8]	[40, 136]
Xinxiang	[24, 102]	[45, 250]	[5, 15]	[14, 65]	[0.4, 1.2]	[56, 176]
Yili	[9, 64]	[16, 101]	[4, 9]	[11, 43]	[0.4, 1.5]	[71, 127]

2. Data Sheet-Surface water data

Table 4: Surface water data for different areas in January 2024.

P \ A	pH	Dissolved Oxygen	Permanganate index	Ammonia nitrogen	Total phosphate
Baishatan	[7.05,7.42]	[9.88,10.77]	[2.97,4.40]	[0.102,0.158]	[0.054,0.063]
Beipaishuihe	[8.33,8.54]	[14.44,18.52]	[5.68,7.58]	[0.052,0.208]	[0.051, 0.076]
Caozhuangzi	[8.21,8.29]	[13.05 13.70]	[1.49,1.69]	[0.025,0.064]	[0.005,0.005]
Chaimiheqiao	[7.93,8.51]	[9.18,14.75]	[3.6,6]	[0.426,1.564]	[0.097,0.199]
Dagang	[6.99,8.31]	[10.66,12.41]	[1.89,2.61]	[0.025,0.094]	[0.014,0.02]
Denghua	[7.6,7.75]	[10.04,12.36]	[2.45,3.51]	[1.799,3.193]	[0.106,0.26]
Gujiapo	[8.02,8.25]	[8.64,9.72]	[2.49,4.55]	[0.295,0.608]	[0.072,0.133]

P \ A	pH	Dissolved Oxygen	Permanganate index	Ammonia nitrogen	Total phosphate
Huandongzhakou	[7.55,8.18]	[9.34,13.82]	[2.53,5.89]	[0.368,0.627]	[0.1,0.169]
Liujiantan	[7.99,8.49]	[9.11,12.3]	[2.71,5.4]	[0.025,0.226]	[0.047,0.093]
Mingshan	[6.69,6.78]	[7.78,7.98]	[7.73,8.95]	[0.029,0.063]	[0.016,0.018]
Qianqiao	[7.72,8.2]	[10.52,12.14]	[3.41,3.88]	[0.21,0.474]	[0.016,0.039]
Runzeqiao	[8.63,8.95]	[9.36,10.24]	[1.28,3.53]	[0.062,0.312]	[0.028,0.048]
Shangban	[6.92,7.14]	[3.87,7.38]	[1.93,3.03]	[0.078,0.135]	[0.064,0.124]
Shaojia	[7.77,8.05]	[12.07,17.43]	[8.06,10.41]	[0.519,2.454]	[0.078,0.137]
Shuanlvquan	[7.98,8.24]	[10.29,12.41]	[0.81,1.57]	[0.025,0.028]	[0.012,0.022]
Taipingdu	[8,8.32]	[8.7,10.87]	[1.25,2.31]	[0.025,0.214]	[0.053,0.114]
Weijiabao	[8.08,8.35]	[10,15.1]	[2.75,4.33]	[0.336,1.528]	[0.1,0.18]
Xiangshanhu	[8.29,8.44]	[10.02,11.93]	[1.34,1.72]	[0.025,0.025]	[0.005,0.005]
Xiaotunqiao	[8.11,9.35]	[7.82,22.18]	[3.8,4.4]	[0.379,1.251]	[0.08,0.184]
Xinzhuangqiao	[8.07,8.26]	[11.47,14.86]	[0.7,1.18]	[0.025,0.025]	[0.005,0.005]
Yangchenghuxin	[7.97,8.38]	[8.93,10.93]	[2.13,2.78]	[0.025,0.086]	[0.039,0.051]
Yonghongqiao	[8.5,9.08]	[12.83,16.28]	[5.8,7.62]	[0.025,0.058]	[0.044,0.079]

Table 5: Surface water data for different areas in February 2024.

P \ A	pH	Dissolved Oxygen	Permanganate index	Ammonia nitrogen	Total phosphate
Baishatang	[7.11,7.87]	[11.09,12.26]	[3.26,6.27]	[0.084,0.145]	[0.049,0.06]
Beipaishuihe	[8.49,9.09]	[17.16,29.26]	[4.44,6.33]	[0.066,0.22]	[0.034,0.06]
Caozhuangzi	[8.23,8.29]	[12.44,13.61]	[1.54,1.69]	[0.025,0.059]	[0.005,0.005]
Chaimiheqiao	[7.84,8.28]	[8.61,14.19]	[3.65,6.33]	[0.351,1.643]	[0.098,0.261]
Dagang	[6.65,8.23]	[10.78,12.67]	[2.29,8.01]	[0.056,0.32]	[0.005,0.115]
Denghua	[7.29,7.85]	[9.73,12.37]	[2.69,5.09]	[0.417,3.212]	[0.081,0.268]
Gujiapo	[8.13,8.43]	[7.2,10.26]	[2.75,6.03]	[0.252,5.444]	[0.088,0.626]
Huandongzhakou	[7.43,7.92]	[7.23,10.94]	[3,6.73]	[0.638,1.375]	[0.117,0.388]
Liujiantan	[7.6,9.04]	[8.32,15.61]	[2.3,5.94]	[0.025,0.228]	[0.042,0.098]
Mingshan	[6.53,6.75]	[7.42,7.86]	[7.41,9.1]	[0.027,0.047]	[0.015,0.02]
Qianqiao	[7.51,8.09]	[9.37,11.17]	[3.43,4.17]	[0.142,0.277]	[0.016,0.048]
Runzeqiao	[8.5,9.02]	[8.76,10.23]	[0.86,2.47]	[0.036,0.326]	[0.021,0.047]
Shangban	[6.9,7.45]	[3.85,11.45]	[2.04,3.52]	[0.096,0.153]	[0.101,0.143]
Shaojia	[7.82,8.27]	[11.67,15.82]	[6.87,9.82]	[0.484,1.704]	[0.073,0.145]
Shuanlvquan	[7.95,8.33]	[9.35,12.79]	[0.83,1.51]	[0.025,0.113]	[0.017,0.028]
Taipingdu	[7.99,8.33]	[8.19,10.51]	[1.13,2.56]	[0.049,0.268]	[0.051,0.143]
Weijiabao	[7.97,8.68]	[8.14,16.85]	[3.06,4.88]	[0.074,1.909]	[0.068,0.162]
Xiangshanhu	[8.24,8.45]	[7.12,14.25]	[1.34,2.41]	[0.025,0.025]	[0.005,0.005]
Xiaotunqiao	[7.98,9.57]	[7.02,27.9]	[3.37,4.4]	[0.025,0.709]	[0.052,0.152]
Xinzhuangqiao	[8.01,8.28]	[10.17,14.98]	[0.7,1.19]	[0.025,0.025]	[0.005,0.005]
Yangchenghuxin	[7.94,8.22]	[8.2,10.4]	[2.47,3.15]	[0.025,0.205]	[0.036,0.053]
Yonghongqiao	[8.34,8.9]	[10.03,14.82]	[4.41,6.06]	[0.025,0.126]	[0.044,0.072]

Table 6: Surface water data for different areas in February 2024.

P \ A	pH	Dissolved Oxygen	Permanganate index	Ammonia nitrogen	Total phosphate
Baishatang	[7.24,7.85]	[10.89,12.44]	[2.49,5.29]	[0.074,0.193]	[0.047,0.056]
Beipaishuihe	[8.61,9.09]	[8.99,18.08]	[4.76,5.92]	[0.038,0.105]	[0.035,0.058]

P \ A	pH	Dissolved Oxygen	Permanganate index	Ammonia nitrogen	Total phosphate
Caozhuangzi	[7.94,8.11]	[11.82,12.76]	[1.58,1.74]	[0.025,0.034]	[0.005,0.005]
Chaimiheqiao	[7.77,8.13]	[8.93,13.23]	[3.8,5.46]	[0.325,1.37]	[0.099,0.181]
Dagang	[7.1,8.53]	[9.27,13.1]	[4.71,6.85]	[0.043,0.197]	[0.047,0.093]
Denghua	[7.38,7.77]	[8.95,11.18]	[2.72,5.22]	[0.438,1.19]	[0.086,0.14]
Gujiapo	[7.97,8.38]	[7.11,10.97]	[2.09,5.4]	[0.428,2.619]	[0.081,0.373]
Huandongzhakou	[7.34,7.63]	[6.12,9.26]	[3.4,6.76]	[0.984,1.372]	[0.172,0.332]
Liujiantan	[7.4,8.1]	[6.33,13.4]	[1.97,4.94]	[0.028,0.245]	[0.047,0.088]
Mingshan	[6.54,6.57]	[6.87,7.74]	[6.64,8.83]	[0.046,0.055]	[0.008,0.017]
Qianqiao	[7.65,7.81]	[8.16,9.7]	[3.45,4.48]	[0.126,0.241]	[0.025,0.09]
Runzeqiao	[8.52,8.96]	[8,10.21]	[0.91,3.32]	[0.046,0.529]	[0.021,0.092]
Shangban	[6.85,7.1]	[3.46,6.98]	[1.62,2.52]	[0.08,0.134]	[0.093,0.15]
Shaojia	[7.88,8.5]	[12.11,20]	[8.06,11.39]	[0.075,1.208]	[0.069,0.135]
Shuanlvquan	[8.05,8.41]	[9.46,13.25]	[0.81,1.67]	[0.025,0.025]	[0.019,0.025]
Taipingdu	[8.1,8.39]	[7.96,10.36]	[1.34,2.1]	[0.025,0.113]	[0.062,0.099]
Weijiabao	[7.95,8.74]	[8.6,15.22]	[2.62,4.49]	[0.052,1.113]	[0.044,0.137]
Xiangshanhu	[8.31,8.47]	[7.86,13.66]	[1.32,2.4]	[0.025,0.025]	[0.005,0.005]
Xiaotunqiao	[7.97,9.07]	[6.11,26.42]	[3.89,5.13]	[0.036,0.725]	[0.071,0.176]
Xinzhuangqiao	[8.11,8.3]	[10.78,16.15]	[0.7,1.19]	[0.025,0.025]	[0.005,0.005]
Yangchenghuxin	[8.02,8.4]	[10.53,12.85]	[2.54,3.51]	[0.025,0.025]	[0.035,0.046]
Yonghongqiao	[8.36,8.47]	[10.59,11.6]	[4.4,5.89]	[0.025,0.065]	[0.038,0.053]