Locating and quantifying CH4 sources within a wastewater treatment plant based on mobile measurements

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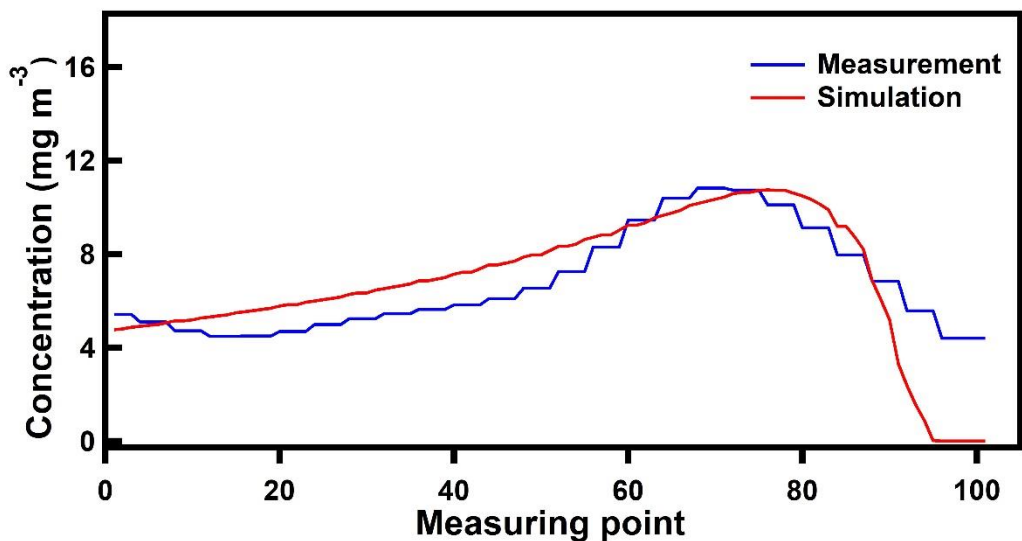
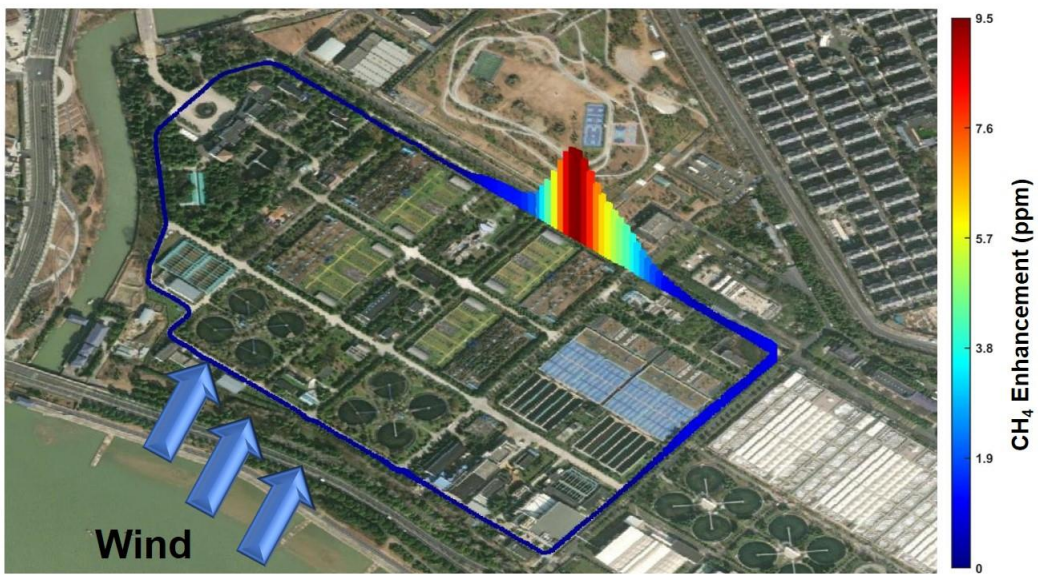

Figures

Figure S1. Comparison of CH_4 measurement and line source model simulation on a road between the Screen ① and the Primary Clarifier ①.

Figure S2. The CH_4 concentration map for the external roads of the WWTP on 1st June. Map data are from ESRI.

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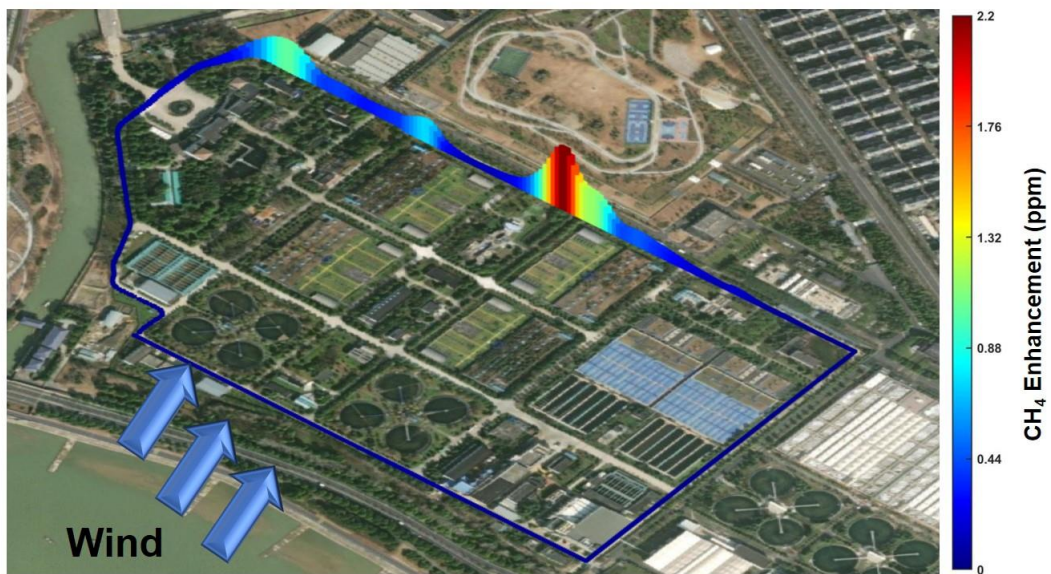
30 **Figure S3.** The CH$_4$ concentration map for the external roads of the WWTP on 11th July. Map data

31 are from ESRI.

32

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34 **Figure S4.** The CH$_4$ concentration map for the external roads of the WWTP on 14th December. Map

35 data are from ESRI.

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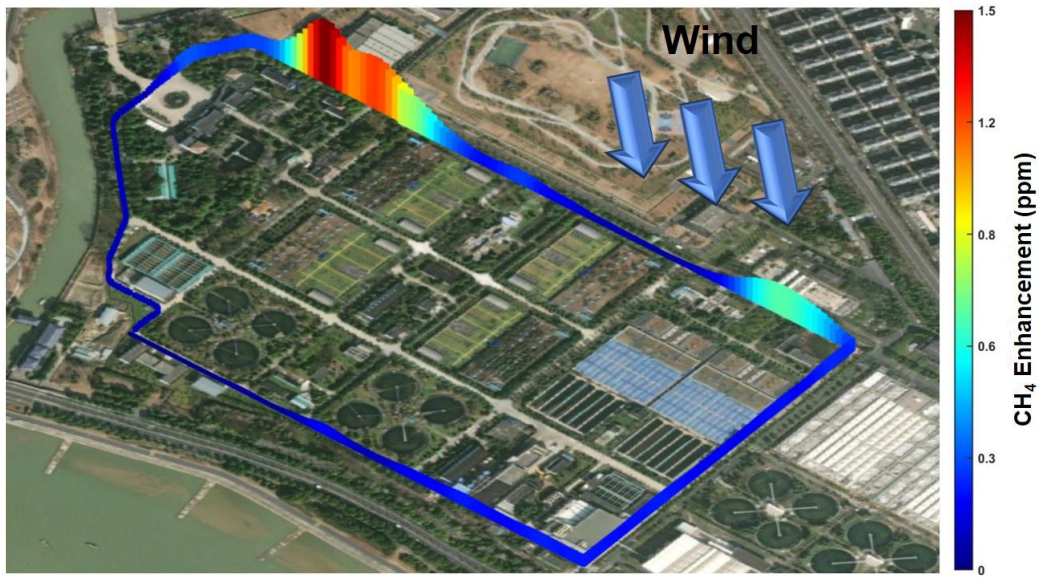
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39 **Figure S5.** The CH$_4$ concentration map for the external roads of the WWTP on 20th December. Map

40 data are from ESRI.

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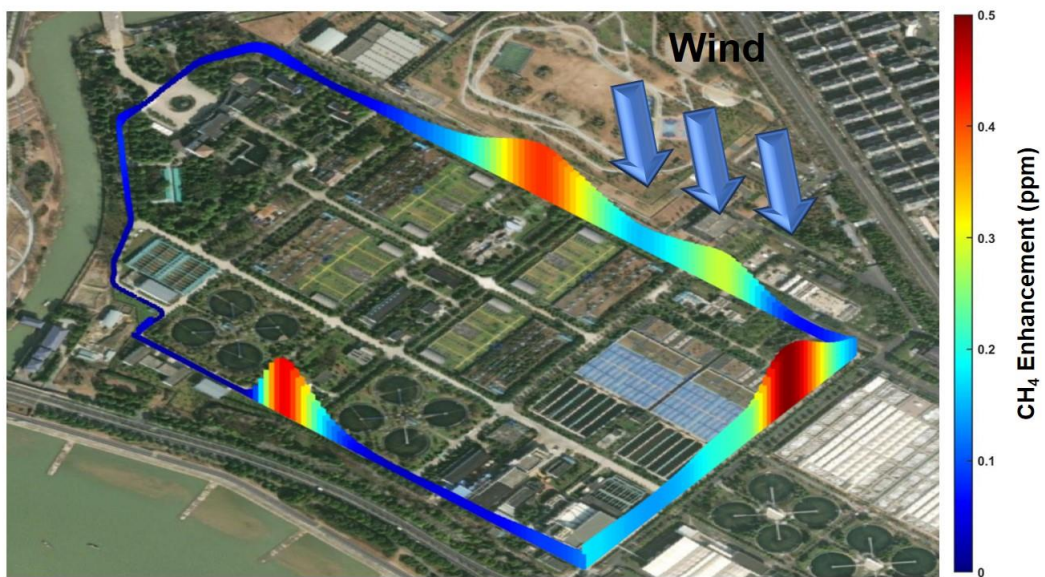
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43 **Figure S6.** The CH$_4$ concentration map for the external roads of the WWTP on 21th December. Map

44 data are from ESRI.

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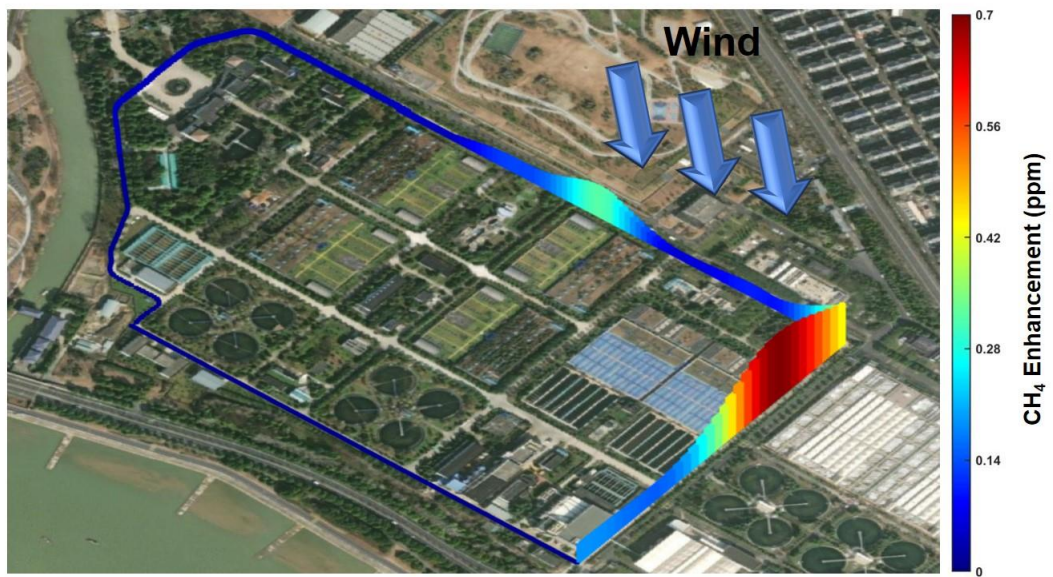
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47 **Figure S7.** The CH_4 concentration map for the external roads of the WWTP on 22th December. Map

48 data are from ESRI.

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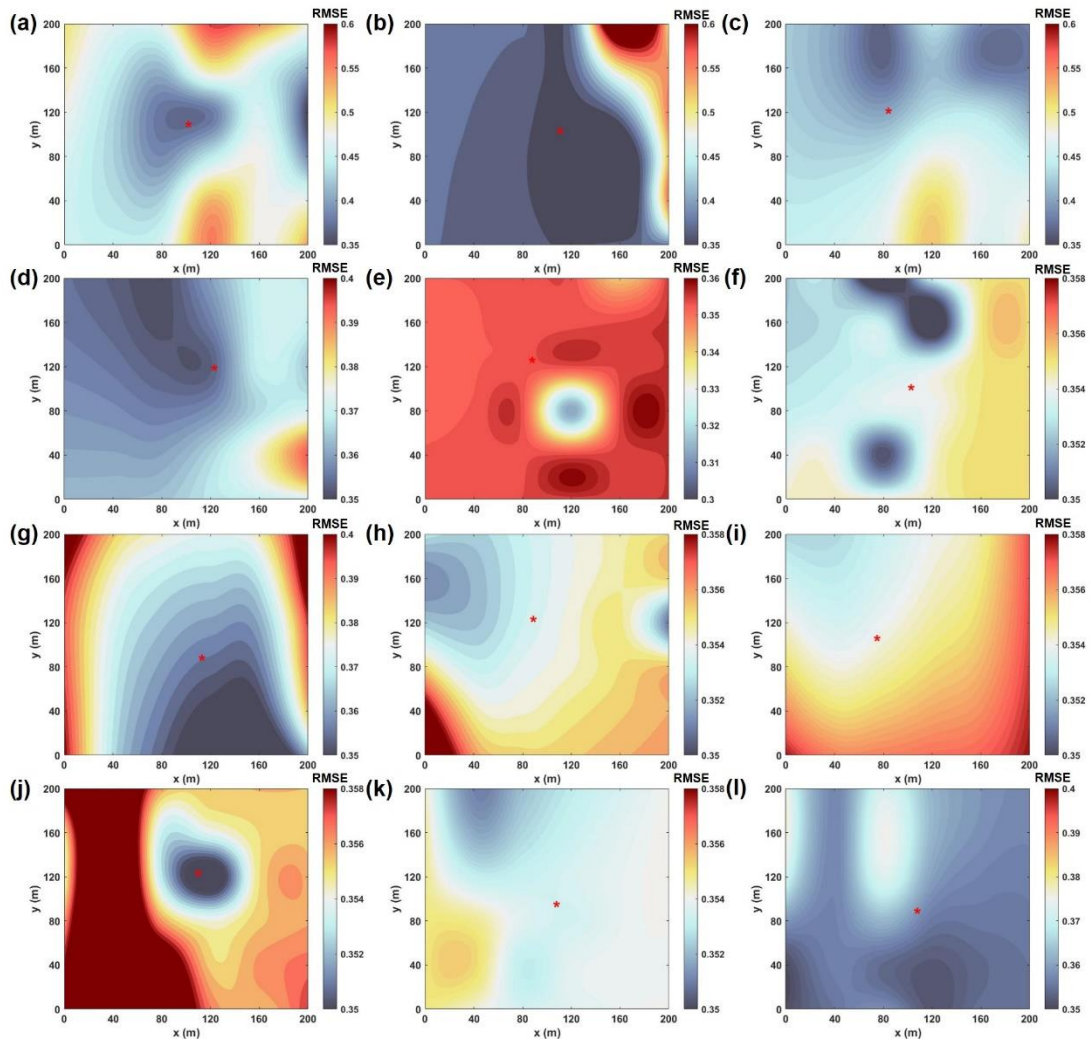


Figure S8. RMSE of monitoring simulated concentration changes with the location of WWTP

source on 1st June.

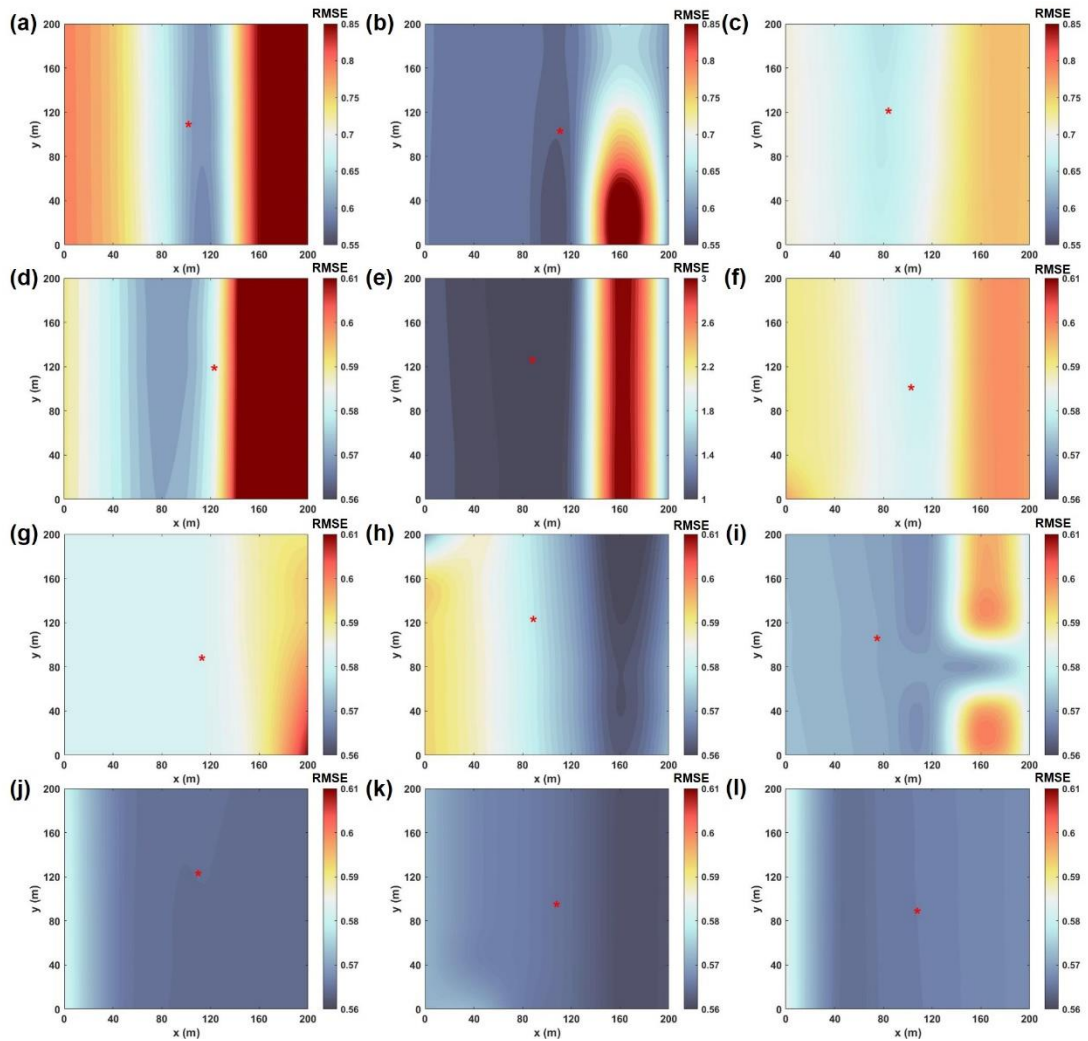
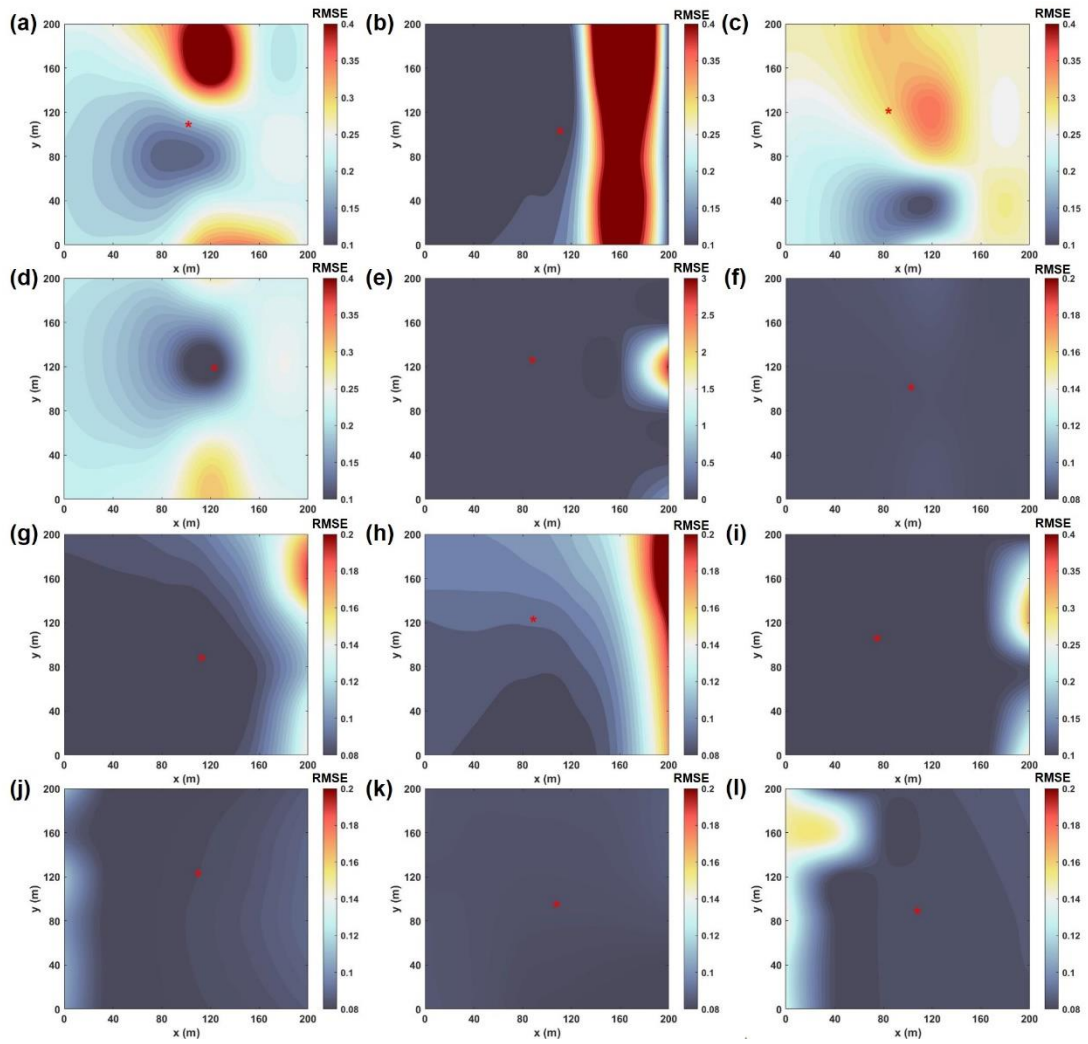



Figure S9. RMSE of monitoring simulated concentration changes with the location of WWTP source on 11th July.

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59 **Figure S10.** RMSE of monitoring simulated concentration changes with the location of WWTP

60 source on 14th December.

61
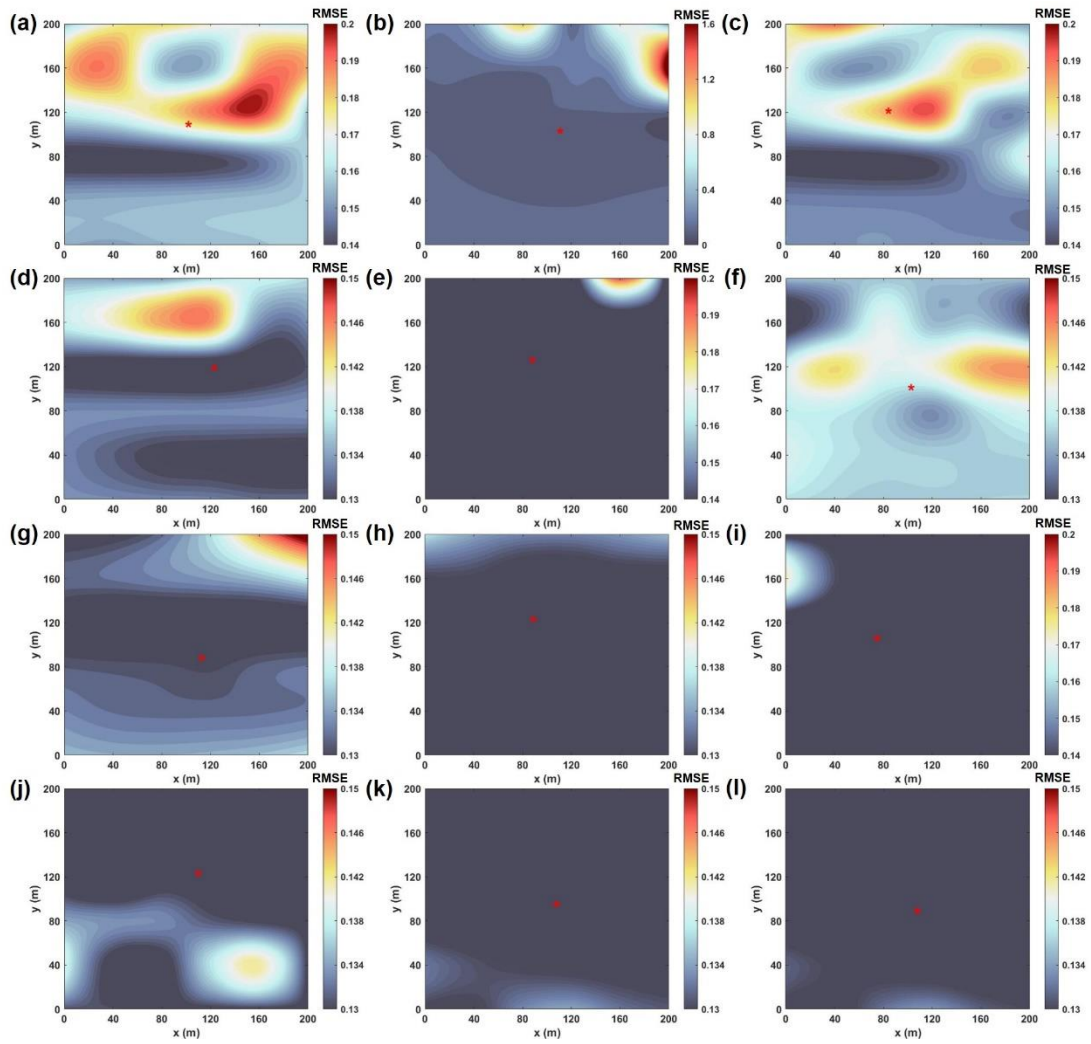
Figure S11. RMSE of monitoring simulated concentration changes with the location of WWTP source on 20th December.
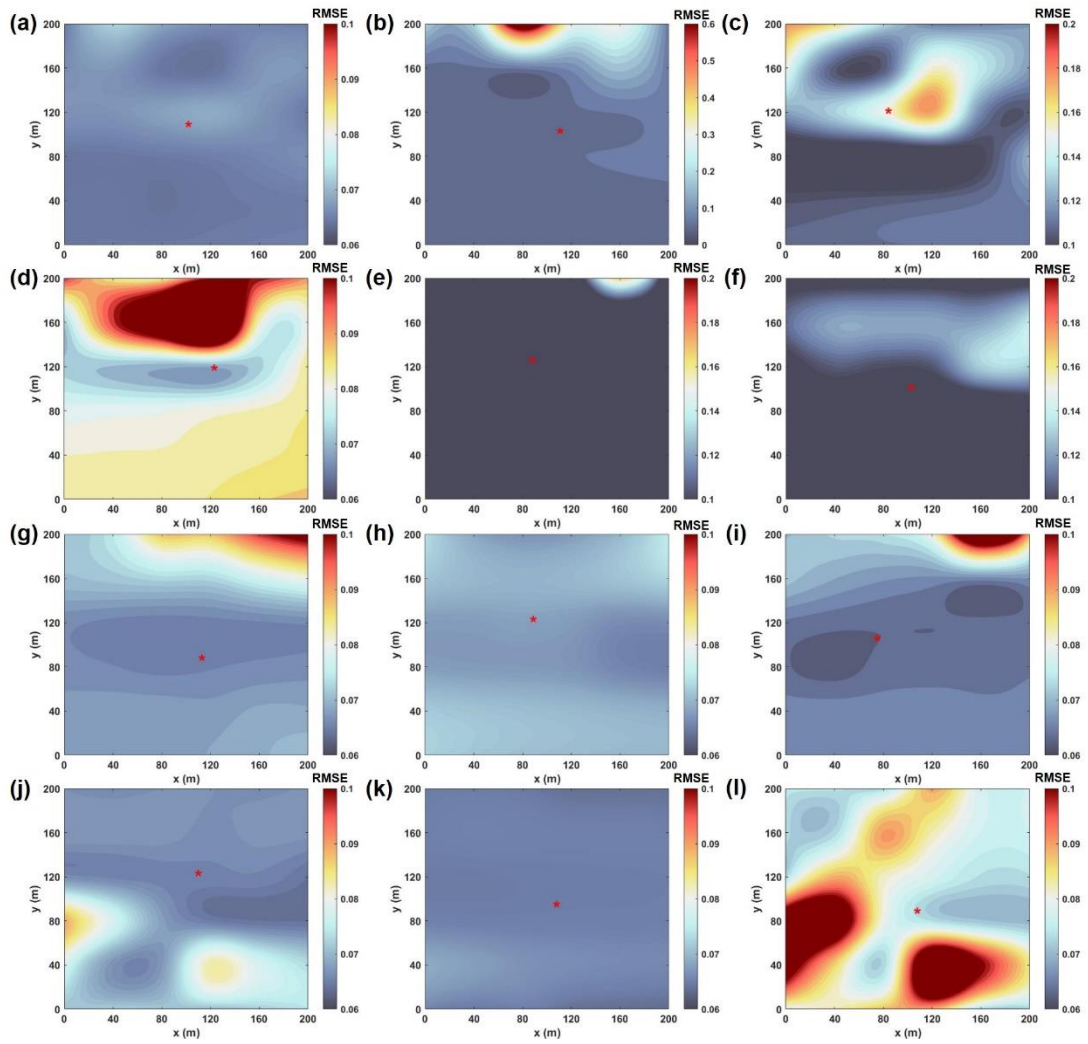
Figure S12. RMSE of monitoring simulated concentration changes with the location of WWTP source on 21th December.
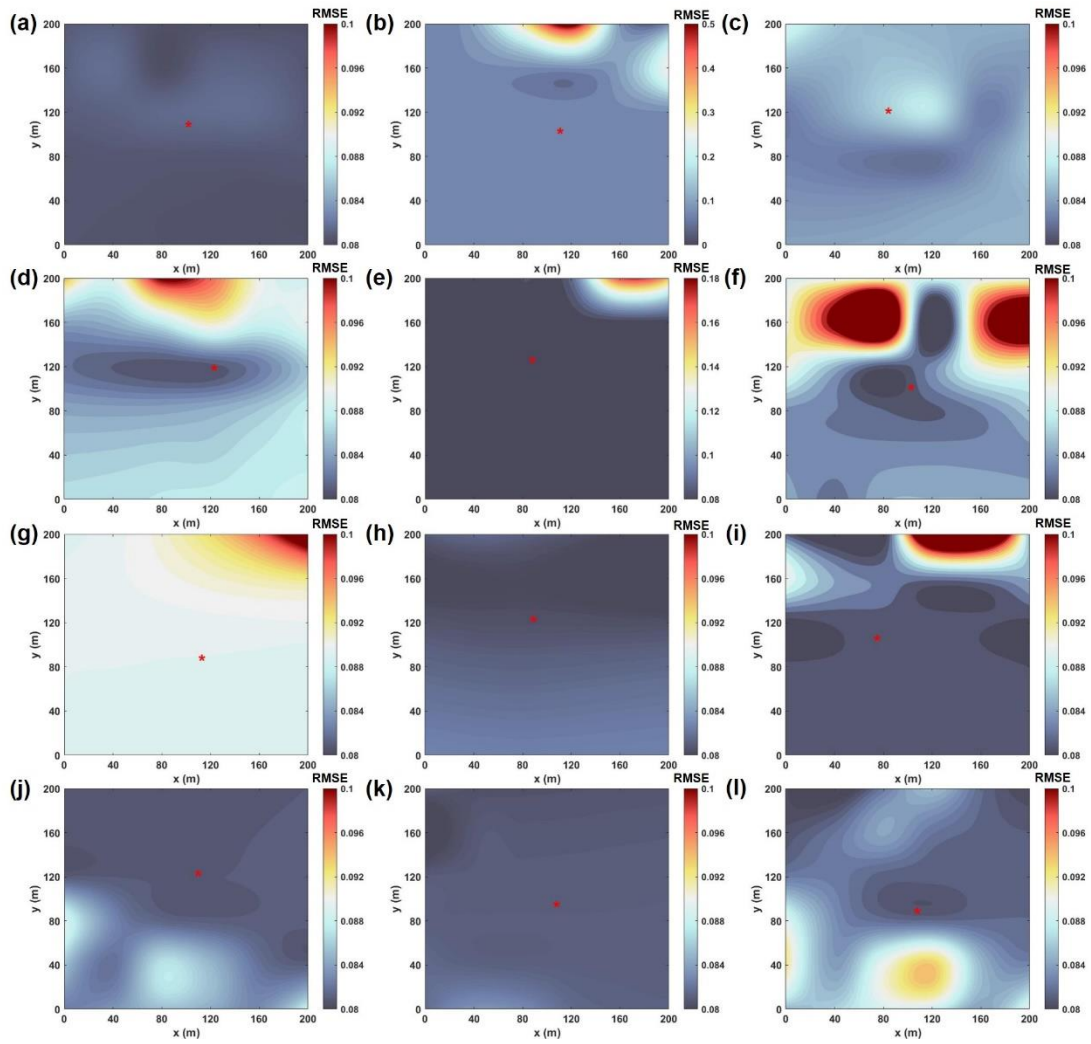
Figure S13. RMSE of monitoring simulated concentration changes with the location of WWTP source on 22th December.

Tables

Table S1. CH_4 emission fluxes of experimental emission sources in summer measurements. Serial number 1-12 corresponds to the types of point sources in Figure 3 (a) and 4(a) in the text, and serial number 13 is the line source.

Emission Sources	Emission Fluxes (t a^{-1})		
	0601	0629	0711
1-Aeration Tank ③	66.21	62.05	50.46
2-Primary Clarifier ③	17.93	16.65	17.09
3-Screen ①	39.03	160.19	26.73
4-Primary Clarifier ④	26.03	25.27	25.05
5-Aeration Tank ④	31.37	69.68	184.08
6- Primary Clarifier ⑤	28.16	12.31	12.61
7-Aeration Tank ②	37.64	16.69	17.17
8-Aeration Tank ①	26.76	25.40	26.83
9-Aeration Tank⑤	39.70	32.29	18.16
10-Secondary Clarifier ①	13.63	11.53	14.06
11-Secondary Clarifier ②	6.41	10.81	10.00
12- Sludge Treatment	17.16	16.00	17.41
13-Screen①-Primary Clarifier①	192.47	198.31	190.66
Total	542.50	657.18	610.31

84 **Table S2.** CH_4 emission fluxes of experimental emission sources in winter measurements.

Emission Sources	Emission Fluxes (t a^{-1})				
	1213	1214	1220	1221	1222
1-Aeration Tank ③	33.17	30.99	37.96	15.74	7.56
2-Primary Clarifier ③	28.5	16.33	35.39	23.56	18.04
3-Screen ①	31.29	24.67	34.48	34.19	31.73
4-Primary Clarifier ④	26.56	24.54	18.48	27.41	27.02
5-Aeration Tank ④	5.36	5.68	4.65	7.02	7.92
6- Primary Clarifier ⑤	21.33	1.62	20.51	26.35	39.47
7-Aeration Tank ②	11.41	13.97	27.51	27.15	26.45
8-Aeration Tank ①	24.32	27.74	25.11	28.75	26.77
9-Aeration Tank⑤	34.48	14.93	13.09	8.42	13.98
10-Secondary Clarifier ①	13.76	11.52	12.98	14.35	17.43
11-Secondary Clarifier ②	7.264	8.54	9.83	8.10	9.20
12-Sludge Treatment	18.56	18.01	27.66	17.82	20.36
13-Screen①-Primary Clarifier①	175.50	181.23	170.90	183.67	176.47
Total	431.50	379.77	438.55	422.53	422.40

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