

Supporting Information for

**Methane emissions from the upstream and downstream rivers and their  
intermediate reservoir in Eastern China**

Yang Le, Li Hepeng, Yue Chunlei, Wang Jun

Zhejiang Academy of Forestry, Hangzhou, 310023, China

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Average flux in CH<sub>4</sub> emissions ( $F_a$ ; mg CH<sub>4</sub> m<sup>-2</sup> h<sup>-1</sup>) from the transects was calculated as (Eq. S1):

$$F_a = \frac{\sum_{n=1}^{n=13} \left[ \frac{\sum_{m=1}^{m=5} \left( \frac{\sum_{i=1}^{i=3} F_m}{i} \right)}{m} \right]}{n} \quad (\text{S1})$$

where,  $i$  is numbers of chambers;  $m$  is the number of sampling points within a transect;  $n$  is the number of times CH<sub>4</sub> emissions were measured during a given period (Table S.1, S.3-6); and,  $F_m$  is CH<sub>4</sub> emission flux measured by the floating chambers.

Since static floating chambers collect diffusive and bubble CH<sub>4</sub> emissions, pulses in CH<sub>4</sub> concentrations were driven by bubbles: therefore, average flux in CH<sub>4</sub> emissions were calculated as the sum of the frequency of diffusive and ebullitive CH<sub>4</sub> emissions ( $F_a$ ) (Eq. S2):

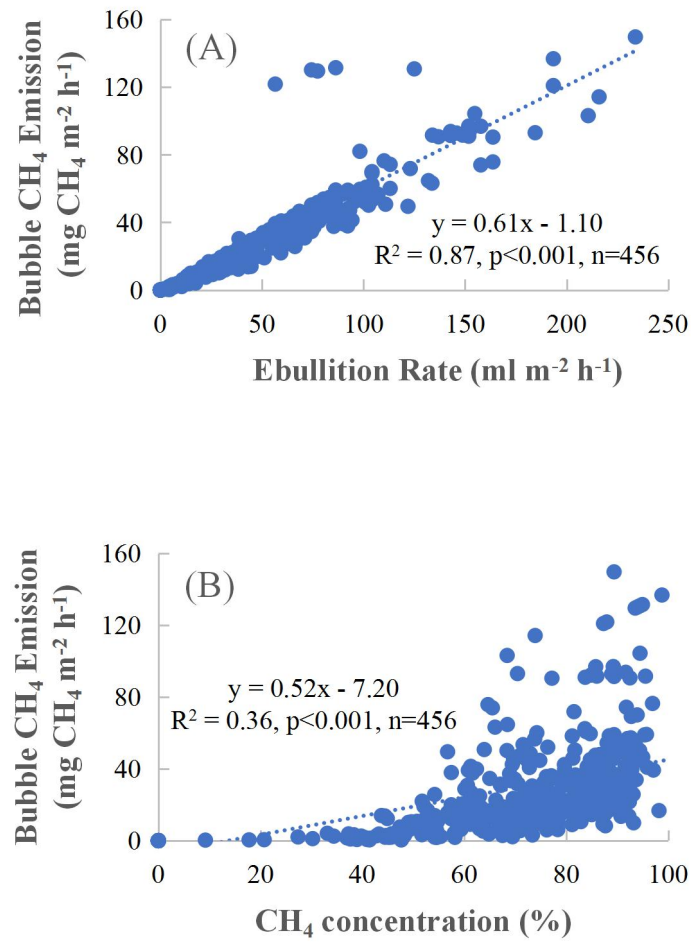
$$F_a = f \times F_{ebullition} + (1 - f) \times F_{diffusion} \quad (\text{S2})$$

where,  $f$  is frequency of bubble occurrence;  $F_{ebullition}$  is geometri mean of CH<sub>4</sub> fluxes in chambers with bubbles; and  $F_{diffusion}$  is the geometric mean of CH<sub>4</sub> fluxes in bubble free chambers.

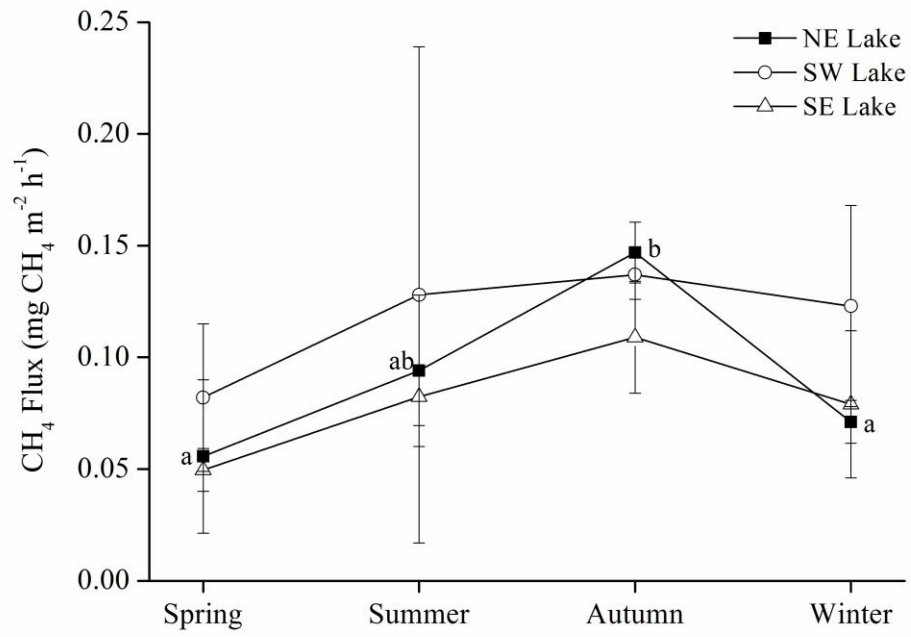
Ebullition rate ( $ER$ ; mL m<sup>-2</sup> h<sup>-1</sup>), which reflected the volume rate of released of accumulated bubbles was calculated as (Eq. S3).

$$ER = \frac{V}{A_f \times t} \quad (\text{S3})$$

where parameters of  $V$ ,  $A_f$ , and  $t$  are as given in Eq. (2).

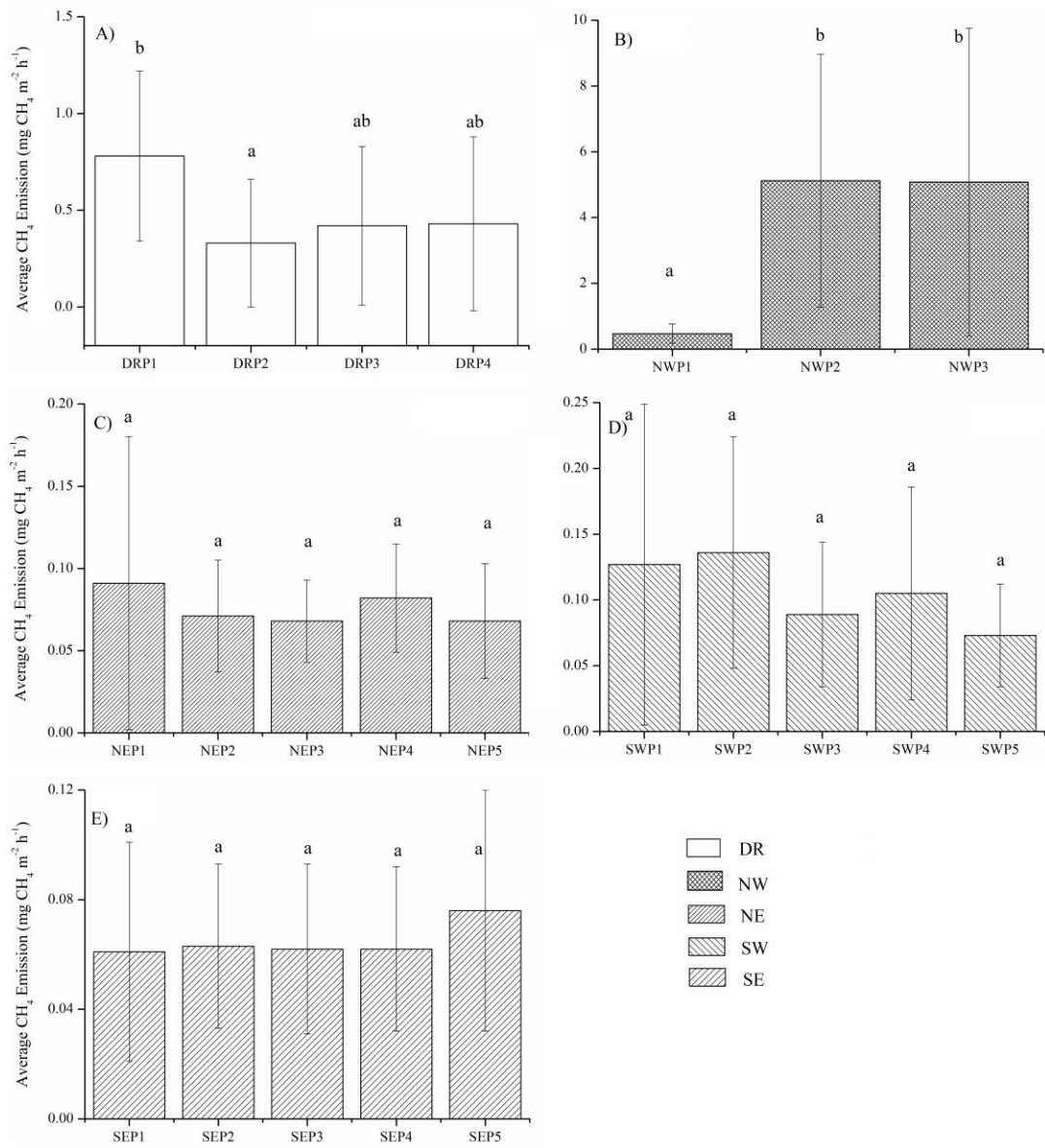


**Figure S1.** Positive relationships between the ebullitive CH<sub>4</sub> emission and (a) ebullition rates, (b) bubble CH<sub>4</sub> concentrations in the NW transect

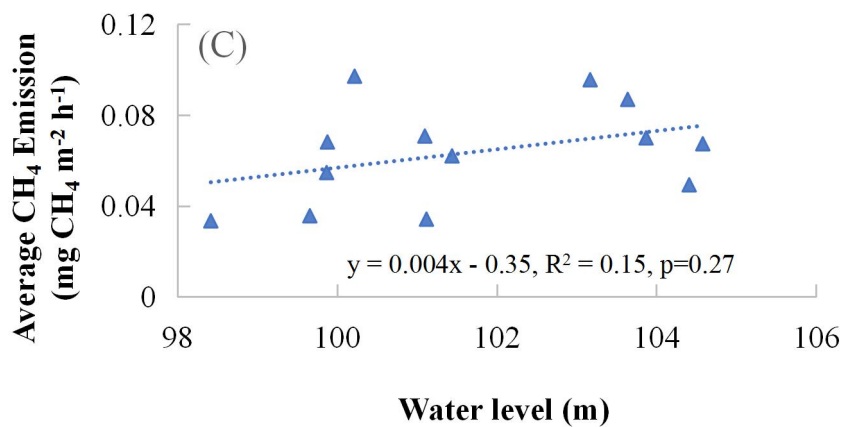
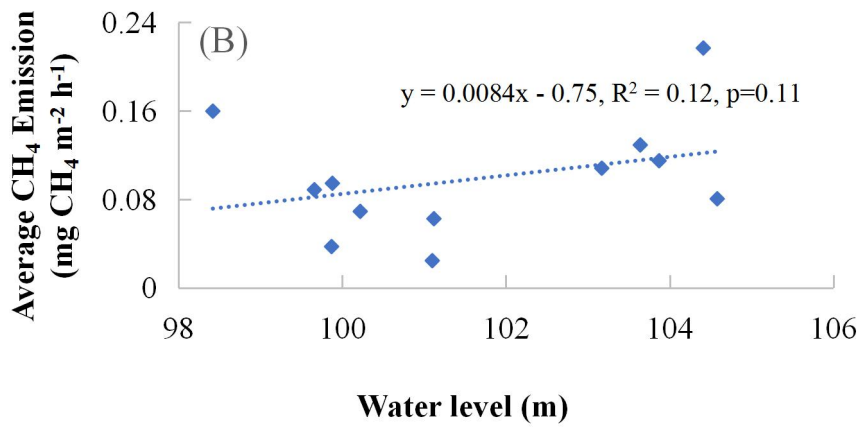
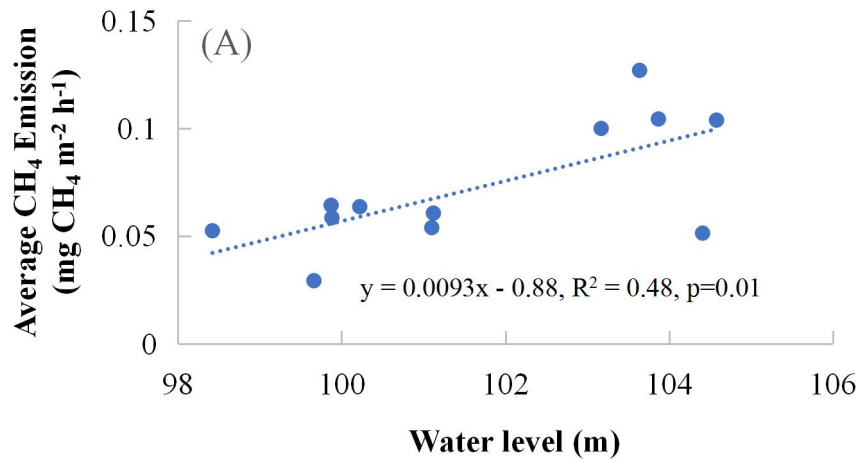


**Figure S2.** Seasonal variability in CH<sub>4</sub> emissions from the three reservoir areas

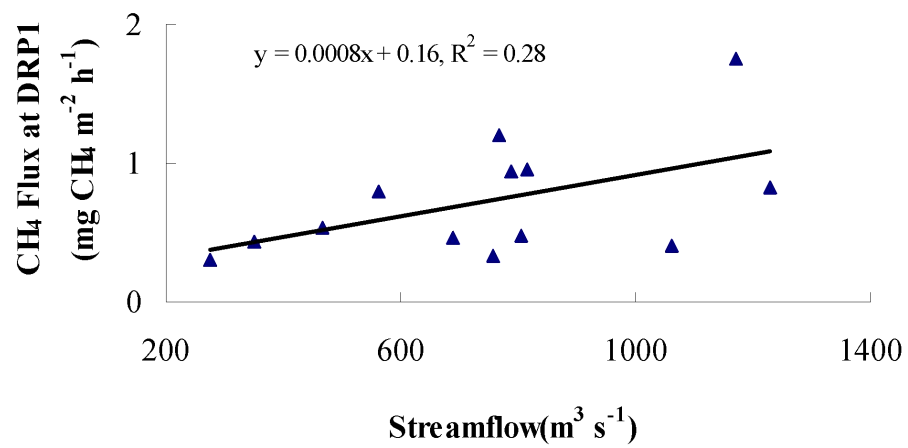
Note: The different letters marked in Fig. S2 indicated that the significant difference was found in the NE transects among the different seasons



**Figure S3.** Mean CH<sub>4</sub> emission flux at the each sampling point of different transects



**Figure S4.** Linear regressions between monthly mean water levels and monthly average CH<sub>4</sub> emissions in (a) NE, (b) SW, and (c) SE transects



**Figure S5.** Positive relationship between the CH<sub>4</sub> flux values at DRP1 and streamflow



**Table S1.** Complete dataset of the measured CH<sub>4</sub> emission fluxes by the floating chambers at the 3 sampling points of NW transect from Dec. 2014 to Jan. 2016.

Dates	Sampling points	Chamber 1	Chamber 2	Chamber 3
20141214	NWD1	0.78	0.95	0.76
20141214	NWD2	0.27	10.51*	0.17
20141214	NWD3	37.70*	0.47	0.33
20150109	NWD1	0.44	0.36	0.45
20150109	NWD2	0.53	35.07*	1.33*
20150109	NWD3	0.37	10.38*	30.47*
20150204	NWD1	0.23	0.27	0.57
20150204	NWD2	0.27	0.24	0.32
20150204	NWD3	0.42	1.94*	3.18*
20150312	NWD1	0.038	No data	No data
20150312	NWD2	0.018	No data	0.035
20150312	NWD3	0.24	No data	0.008
20150418	NWD1	0.37	0.28	0.50
20150418	NWD2	0.35	0.23	0.26
20150418	NWD3	0.48	0.78	1.15
20150520	NWD1	1.10	0.91	0.55
20150520	NWD2	1.15	0.79	7.15*
20150520	NWD3	2.81	3.01	3.07
20150624	NWD1	0.89	0.97	0.92
20150624	NWD2	0.97	0.75	0.99
20150624	NWD3	0.50	0.93	4.07*
20150725	NWD1	0.84	0.75	0.48
20150725	NWD2	7.70*	2.73	17.06*
20150725	NWD3	1.01	0.82	1.06
20150819	NWD1	0.98	0.43	0.49
20150819	NWD2	0.68	0.31	0.40
20150819	NWD3	0.94	0.88	0.81
20150921	NWD1	0.22	0.30	0.37
20150921	NWD2	5.88	33.62*	6.01

20150921	NWD3	4.81	5.31	7.45
20151015	NWD1	0.13	0.019	0.31
20151015	NWD2	3.91	3.74	2.15
20151015	NWD3	2.36	6.04	28.53*
20151127	NWD1	0.42	0.33	0.53
20151127	NWD2	18.06*	0.47	0.36
20151127	NWD3	0.31	0.15	0.24
20160109	NWD1	0.095	0.14	No data
20160109	NWD2	1.63	27.57*	0.998
20160109	NWD3	1.44	20.50*	8.18*

Note: The unit of CH<sub>4</sub> flux is mg CH<sub>4</sub> m<sup>-2</sup> h<sup>-1</sup>. NWP1, NWP2, and NWP3 are the 3 fixed sampling points in the NW transect. The sign of star (\*) means that the bubbles were trapped in a chamber during the gas collected periods (21 minutes), which was judged by whether the CH<sub>4</sub> concentrations increased abruptly in the floating chambers.

**Table S2.** Complete dataset of the measured ebullitive CH<sub>4</sub> fluxes, ebullition rates, and CH<sub>4</sub> concentrations by the inverted funnels in the 26 sampling stations of the NW transect during Aug. 2016 to Nov. 2017

Dates	Locations	Trapped gas volume (ml)	Deployment time (h)	F (mg CH <sub>4</sub> m <sup>-2</sup> h <sup>-1</sup> )	ER (ml m <sup>-2</sup> h <sup>-1</sup> )	C (%)
20160803	1	165	19.9	21.97	59.28	51.75
20160803	2	125	20	16.88	44.64	52.80
20160803	3	90	20.1	11.96	31.95	52.26
20160803	4	40	20.2	3.77	14.12	37.31
20160803	5	30	20.4	2.06	10.52	27.40
20160803	6	10	20.5	0.52	3.49	20.76
20160803	7	50	20.6	4.11	17.34	33.14
20160803	8	15	20.7	1.12	5.17	30.26
20160803	9	75	20.8	9.18	25.71	49.85
20160803	10	150	21	19.07	51.12	52.10
20160803	11	45	21.1	5.13	15.25	47.03
20160803	12	140	21.2	23.52	47.17	69.62
20160803	13	145	21.3	19.99	48.58	57.45
20160803	14	35	21.4	3.82	11.66	45.77
20160803	15	105	21.6	13.29	34.79	53.36
20160803	16	560	21.7	93.06	184.50	70.44
20160803	17	20	21.8	1.79	6.55	38.19
20160803	18	110	21.9	13.92	35.84	54.24
20160803	19	110	22	19.22	35.65	75.30
20160803	20	135	22.2	19.43	43.51	62.34
20160803	21	210	22.3	33.35	67.32	69.17
20160803	22	150	22.4	20.44	47.83	59.67
20160803	23	70	22.5	10.84	22.20	68.21
20160803	24	210	22.6	25.72	66.25	54.20
20160803	25	0	22.8	0	0	0
20160803	26	0	22.9	0	0	0
20160818	1	130	21.5	13.74	43.18	44.43

20160818	2	90	21.7	10.77	29.67	50.72
20160818	3	90	21.8	10.51	29.55	49.66
20160818	4	90	21.8	11.27	29.44	53.45
20160818	5	374	21.9	49.51	121.88	56.73
20160818	6	170	22.0	24.90	55.19	63.01
20160818	7	190	22.1	26.97	61.45	61.29
20160818	8	105	22.2	14.29	33.83	58.99
20160818	9	125	22.3	20.74	40.13	72.19
20160818	10	315	22.3	51.97	100.74	72.05
20160818	11	280	22.4	39.86	89.22	62.40
20160818	12	85	22.5	12.50	26.98	64.66
20160818	13	235	22.6	42.39	74.33	79.64
20160818	14	240	22.7	37.31	75.63	68.89
20160818	15	100	22.7	14.70	31.40	65.38
20160818	16	290	22.8	39.60	90.72	60.95
20160818	17	335	22.9	53.49	104.42	71.53
20160818	18	300	23.0	47.24	93.18	70.80
20160818	19	432	23.1	63.22	133.69	66.04
20160818	20	428	23.2	64.70	131.98	68.46
20160818	21	300	23.2	37.93	92.18	57.46
20160818	22	0	23.3	0	0	0
20160911	1	290	22	41.39	94.32	61.28
20160911	2	650	22	103.16	210.60	68.41
20160911	3	220	22.1	30.82	71.01	60.62
20160911	4	90	22.2	10.17	28.94	49.06
20160911	5	120	22.3	15.62	38.43	56.77
20160911	6	70	22.4	7.58	22.33	47.38
20160911	7	90	22.5	11.16	28.61	54.50
20160911	8	70	22.6	9.60	22.17	60.47
20160911	9	175	22.6	29.93	55.21	75.72
20160911	10	85	22.7	11.60	26.71	60.64
20160911	11	295	22.8	46.06	92.37	69.64

20160911	12	210	22.9	31.45	65.51	67.04
20160911	13	275	23.0	42.49	85.47	69.42
20160911	14	225	23.1	39.74	69.67	79.67
20160911	15	700	23.2	114.27	215.95	73.90
20160911	16	135	23.2	21.89	41.49	73.66
20160911	17	280	23.3	44.48	85.75	72.43
20160911	18	295	23.4	39.19	90.01	60.80
20160911	19	330	23.5	58.32	100.33	81.18
20160911	20	366	23.6	50.75	110.87	63.92
20160911	21	135	23.7	18.47	40.75	63.31
20160911	22	0	23.75	0	0	0
20160912	1	85	18	14.75	33.73	61.08
20160912	2	215	18	37.64	85.32	61.62
20160912	3	20	18	3.68	7.94	64.83
20160912	4	240	18	52.08	95.24	76.37
20161010	1	380	22.1	71.84	123.01	81.52
20161010	2	195	22.1	35.62	62.94	79.01
20161010	3	245	22.2	45.92	78.85	81.30
20161010	4	260	22.3	44.71	83.43	74.81
20161010	5	290	22.3	48.48	92.79	72.94
20161010	6	245	22.4	40.74	78.16	72.77
20161010	7	70	22.5	10.81	22.27	67.76
20161010	8	140	22.5	24.28	44.40	76.33
20161010	9	110	22.6	18.88	34.79	75.75
20161010	10	70	22.7	11.86	22.08	74.99
20161010	11	155	22.7	28.57	48.74	81.83
20161010	12	110	22.8	20.67	34.49	83.67
20161010	13	120	22.8	22.76	37.52	84.66
20161010	14	750	22.9	149.72	233.83	89.38
20161010	15	155	23	30.50	48.19	88.35
20161010	16	250	23	47.59	77.50	85.72
20161010	17	205	23.1	38.19	63.38	84.11

20161010	18	110	23.2	17.69	33.91	72.82
20161010	19	90	23.2	12.00	27.67	60.53
20161010	20	0	23.3	0	0	0
20161206	1	112	20.9	12.33	38.34	44.90
20161206	2	300	20.9	50.19	102.50	68.38
20161206	3	76	20.9	11.93	25.92	64.30
20161206	4	72	21	12.27	24.51	69.92
20161206	5	40	21	6.23	13.59	63.98
20161206	6	20	21.1	2.33	6.78	48.05
20161206	7	30	21.1	2.50	10.14	34.41
20161206	8	0	21.2	0	0	0
20161206	9	140	21.2	24.07	47.14	71.32
20161206	10	0	21.3	0	0	0
20161206	11	73	21.3	12.53	24.49	71.44
20161206	12	0	21.3	0	0	0
20161206	13	20	21.4	2.26	6.69	47.24
20161206	14	15	21.4	1.39	5.01	38.69
20161206	15	0	21.4	0	0	0
20161206	16	40	21.5	6.34	13.30	66.57
20161206	17	35	21.5	5.30	11.62	63.70
20161206	18	55	21.6	7.66	18.22	58.66
20161206	19	35	21.6	3.93	11.58	47.44
20161206	20	30	21.6	4.12	9.90	58.03
20161206	21	100	21.7	15.66	32.96	66.36
20161206	22	55	21.7	8.22	18.09	63.40
20161206	23	0	21.7	0	0	0
20170325	1	0	20.8	0	0	0
20170325	2	0	20.9	0	0	0
20170325	3	0	20.9	0	0	0
20170325	4	0	20.9	0	0	0
20170325	5	10	21	0.92	3.40	37.69
20170325	6	0	21	0	0	0

20170325	7	0	21.1	0	0	0
20170325	8	0	21.1	0	0	0
20170325	9	15	21.1	1.97	5.07	54.19
20170325	10	0	21.2	0	0	0
20170325	11	0	21.2	0	0	0
20170325	12	0	21.3	0	0	0
20170325	13	0	21.3	0	0	0
20170325	14	0	21.3	0	0	0
20170325	15	0	21.4	0	0	0
20170325	16	0	21.4	0	0	0
20170325	17	0	21.4	0	0	0
20170325	18	45	21.5	5.85	14.96	54.56
20170325	19	0	21.5	0	0	0
20170325	20	0	21.6	0	0	0
20170412	1	0	20.8	0	0	0
20170412	2	20	31.5	0.30	4.54	9.23
20170412	3	0	31.5	0	0	0
20170412	4	0	31.5	0	0	0
20170412	5	0	31.5	0	0	0
20170412	6	0	31.5	0	0	0
20170412	7	20	31.5	1.77	4.54	54.57
20170412	8	0	31.5	0	0	0
20170412	9	0	31.5	0	0	0
20170412	10	15	31.5	0.43	3.40	17.80
20170412	11	0	31.5	0	0	0
20170412	12	0	31.5	0	0	0
20170412	13	5	31.5	0.39	1.13	47.65
20170412	14	20	31.5	1.35	4.54	41.54
20170412	15	10	31.5	0.63	2.27	38.94
20170412	16	0	31.5	0	0	0
20170427	1	0	20.8	0	0	0
20170427	2	0	32.5	0	0	0

20170427	3	10	32.5	0.64	2.20	40.93
20170427	4	20	32.5	1.83	4.40	58.16
20170427	5	0	32.5	0	0	0
20170427	6	50	32.5	5.58	10.99	70.97
20170427	7	50	32.5	5.99	10.99	76.19
20170427	8	0	32.5	0	0	0
20170427	9	0	32.5	0	0	0
20170427	10	20	32.5	2.19	4.40	69.46
20170427	11	60	32.5	8.28	13.19	87.69
20170427	12	50	32.5	6.16	10.99	78.33
20170427	13	110	32.5	14.70	24.18	84.91
20170427	14	150	32.5	20.72	32.97	87.79
20170427	15	70	32.5	8.94	15.38	81.15
20170427	16	60	32.5	7.30	13.19	77.26
20170512	1	0	24	0	0	0
20170512	2	30	24	3.72	8.93	58.15
20170512	3	10	24	1.02	2.98	47.74
20170512	4	0	24	0	0	0
20170512	5	0	24	0	0	0
20170512	6	5	24	0.44	1.49	41.42
20170512	7	50	24	7.81	14.88	73.25
20170512	8	0	24	0	0	0
20170512	9	0	24	0	0	0
20170512	10	0	24	0	0	0
20170512	11	0	24	0	0	0
20170512	12	170	24	31.47	50.60	86.86
20170512	13	50	24	9.30	14.88	87.21
20170512	14	80	24	14.94	23.81	87.63
20170512	15	170	24	31.00	50.60	85.56
20170512	16	60	24	9.49	17.86	74.19
20170512	17	20	24	2.88	5.95	67.50
20170527	1	225	24	28.83	66.96	60.12



20170527	2	185	24	28.74	55.06	72.90
20170527	3	145	24	22.08	43.15	71.45
20170527	4	50	24	6.32	14.88	59.35
20170527	5	130	24	18.76	38.69	67.71
20170527	6	330	24	59.57	98.21	84.70
20170527	7	120	24	15.83	35.71	61.89
20170527	8	40	24	4.60	11.90	53.91
20170527	9	70	24	9.12	20.83	61.15
20170527	10	90	24	13.00	26.79	67.75
20170527	11	80	24	13.08	23.81	76.75
20170527	12	70	24	10.81	20.83	72.48
20170527	13	100	24	15.91	29.76	74.65
20170527	14	90	24	14.97	26.79	78.04
20170527	15	340	24	60.77	101.19	83.86
20170527	16	290	24	50.48	86.31	81.68
20170527	17	130	24	21.18	38.69	77.52
20170527	18	90	24	15.18	26.79	79.12
20170527	19	110	24	18.17	32.74	77.51
20170527	20	0	24	0	0	0
20170603	1	215	24	30.77	63.99	67.15
20170603	2	195	24	30.47	58.04	73.31
20170603	3	160	24	25.13	47.62	73.70
20170603	4	80	24	12.42	23.81	72.83
20170603	5	150	24	24.16	44.64	75.57
20170603	6	90	24	13.23	26.79	68.95
20170603	7	90	24	10.50	26.79	54.72
20170603	8	120	24	16.57	35.71	64.78
20170603	9	20	24	1.90	5.95	44.48
20170603	10	30	24	3.09	8.93	48.31
20170603	11	550	24	90.48	163.69	77.19
20170603	12	20	24	1.94	5.95	45.70
20170603	13	20	24	3.13	5.95	73.36

20170603	14	50	24	7.58	14.88	71.13
20170603	15	170	24	32.38	50.60	89.37
20170603	16	270	24	53.09	80.36	92.27
20170603	17	490	24	92.86	145.83	88.92
20170603	18	160	24	30.51	47.62	89.47
20170603	19	130	24	19.94	38.69	71.98
20170603	20	150	24	28.56	44.64	89.34
20170603	21	230	24	42.90	68.45	87.53
20170603	22	120	24	17.91	35.71	70.02
20170603	23	510	24	92.21	151.79	84.84
20170603	24	160	24	28.44	47.62	83.41
20170603	25	0	24	0	0	0
20170712	1	40	24	3.27	11.70	38.36
20170712	2	30	24	2.54	8.93	39.80
20170712	3	530	24	73.99	157.74	65.51
20170712	4	0	24	0	0	0
20170712	5	0	24	0	0	0
20170712	6	0	24	0	0	0
20170712	7	0	24	0	0	0
20170712	8	20	24	2.36	5.95	55.36
20170712	9	0	24	0	0	0
20170712	10	0	24	0	0	0
20170712	11	30	24	3.30	8.93	51.68
20170712	12	20	24	1.93	5.95	45.11
20170712	13	30	24	2.85	8.92	44.63
20170712	14	60	24	6.73	17.86	52.67
20170712	15	20	24	1.93	5.95	45.25
20170712	16	0	24	0	0	0
20170712	17	0	24	0	0	0
20170712	18	20	24	1.73	5.95	40.49
20170712	19	0	24	0	0	0
20170712	20	60	24	6.31	17.86	49.35

20170712	21	40	24	3.69	11.90	43.27
20170712	22	0	24	0	0	0
20170712	23	30	24	2.74	8.93	42.81
20170712	24	0	24	0	0	0
20170712	25	20	24	1.58	5.95	36.99
20170712	26	0	24	0	0	0
20170725	1	150	24	13.98	44.64	43.75
20170725	2	550	24	75.78	163.69	64.65
20170725	3	70	24	8.79	20.83	58.92
20170725	4	90	24	11.54	26.79	60.15
20170725	5	90	24	11.26	26.79	58.69
20170725	6	50	24	6.71	14.88	62.96
20170725	7	50	24	9.93	14.88	93.20
20170725	8	40	24	4.99	11.90	58.56
20170725	9	160	24	22.57	47.62	66.20
20170725	10	170	24	29.72	50.60	82.04
20170725	11	50	24	7.71	14.88	72.35
20170725	12	60	24	9.59	17.86	75.00
20170725	13	220	24	40.13	65.48	85.59
20170725	14	120	24	21.27	35.71	83.18
20170725	15	80	24	13.27	23.81	77.84
20170725	16	240	24	44.11	71.43	86.23
20170725	17	60	24	10.60	17.86	82.88
20170725	18	210	24	35.91	62.50	80.24
20170725	19	230	24	41.23	68.45	84.11
20170725	20	170	24	29.82	50.60	82.31
20170725	21	180	24	30.82	53.57	80.35
20170725	22	120	24	19.92	35.71	77.88
20170725	23	70	24	11.27	20.83	75.52
20170725	24	60	24	8.75	17.86	68.46
20170725	25	0	24	0	0	0
20170803	1	310	24	46.81	92.26	70.86

20170803	2	150	24	19.71	44.64	61.64
20170803	3	210	24	31.58	62.50	70.55
20170803	4	90	24	12.21	26.79	63.66
20170803	5	90	24	12.94	26.79	67.46
20170803	6	80	24	11.87	23.81	69.64
20170803	7	130	24	20.73	38.69	74.83
20170803	8	100	24	15.55	29.76	72.94
20170803	9	140	24	24.32	41.67	81.52
20170803	10	140	24	23.48	41.67	78.70
20170803	11	250	24	47.01	74.40	88.24
20170803	12	110	24	19.29	32.74	82.30
20170803	13	110	24	19.89	32.74	84.85
20170803	14	240	24	45.28	71.43	88.53
20170803	15	250	24	47.44	74.40	89.04
20170803	16	80	24	14.87	23.81	87.23
20170803	17	650	24	120.95	193.45	87.31
20170803	18	170	24	30.31	50.60	83.67
20170803	19	100	24	17.46	29.76	81.94
20170803	20	330	24	82.05	98.21	116.67
20170803	21	220	24	35.68	65.48	76.10
20170803	22	210	24	34.91	62.50	78.00
20170803	23	200	24	34.28	59.52	80.42
20170803	24	120	24	18.41	35.71	71.98
20170803	25	60	24	8.68	17.86	67.85
20170803	26	0	24	0	0	0
20170816	1	140	24	18.71	41.67	62.72
20170816	2	120	24	17.53	35.71	68.55
20170816	3	200	24	32.52	59.52	76.31
20170816	4	90	24	13.81	26.79	72.00
20170816	5	70	24	10.15	20.83	68.03
20170816	6	100	24	16.79	29.76	78.77
20170816	7	100	24	17.82	29.76	83.60

20170816	8	120	24	21.76	35.71	85.09
20170816	9	190	24	37.16	56.55	91.76
20170816	10	260	24	50.82	77.38	91.71
20170816	11	170	24	33.95	50.60	93.70
20170816	12	370	24	76.42	110.12	96.92
20170816	13	450	24	91.62	133.93	95.54
20170816	14	190	24	39.31	56.55	97.09
20170816	15	200	24	40.87	59.52	95.88
20170816	16	230	24	46.56	68.45	94.99
20170816	17	280	24	136.82	193.45	98.77
20170816	18	70	24	13.76	20.83	92.26
20170816	19	130	24	25.00	38.69	90.24
20170816	20	230	24	45.62	68.45	93.08
20170816	21	150	24	29.38	44.64	91.89
20170816	22	140	24	26.38	41.67	88.42
20170816	23	220	24	43.19	65.48	92.11
20170816	24	200	24	39.22	59.52	92.01
20170816	25	60	24	10.03	17.86	78.40
20170816	26	0	24	0	0	0
20170901	1	250	24	34.64	74.40	65.01
20170901	2	130	24	19.44	38.69	70.19
20170901	3	360	24	56.63	107.14	73.81
20170901	4	110	24	17.52	32.74	74.74
20170901	5	160	24	26.74	47.62	78.41
20170901	6	200	24	34.25	59.52	80.35
20170901	7	140	24	25.81	41.67	86.51
20170901	8	130	24	22.22	38.69	80.20
20170901	9	170	24	32.83	50.60	90.61
20170901	10	310	24	59.05	92.26	89.38
20170901	11	200	24	39.58	59.52	92.85
20170901	12	110	24	21.66	32.74	92.38
20170901	13	290	24	58.94	86.31	95.37

20170901	14	130	24	25.53	38.69	92.15
20170901	15	290	24	59.16	86.31	95.73
20170901	16	290	24	56.87	86.31	92.01
20170901	17	290	24	131.51	86.31	94.94
20170901	18	220	24	43.75	65.48	93.32
20170901	19	270	24	53.82	80.36	93.54
20170901	20	280	24	54.83	83.33	91.88
20170901	21	350	24	70.04	104.17	93.91
20170901	22	200	24	37.36	59.52	87.66
20170901	23	200	24	37.88	59.52	88.87
20170901	24	280	24	53.22	83.33	89.19
20170901	25	160	24	28.41	47.62	83.32
20170901	26	60	24	8.72	17.86	68.18
20170917	1	0	24	0	0	0
20170917	2	380	24	60.11	113.10	74.23
20170917	3	130	24	23.92	38.69	86.34
20170917	4	120	24	22.09	35.71	86.36
20170917	5	140	24	26.67	41.67	89.40
20170917	6	140	24	25.78	41.67	86.40
20170917	7	150	24	26.80	44.64	83.82
20170917	8	210	24	38.62	62.50	86.30
20170917	9	160	24	25.26	47.62	74.07
20170917	10	310	24	58.43	92.26	88.44
20170917	11	300	24	56.58	89.29	88.50
20170917	12	210	24	38.68	62.50	86.43
20170917	13	80	24	14.49	23.81	84.98
20170917	14	150	24	28.51	44.64	89.19
20170917	15	270	24	53.06	80.36	92.22
20170917	16	150	24	26.45	44.64	82.73
20170917	17	250	24	130.23	74.40	94.01
20170917	18	180	24	33.91	53.57	88.39
20170917	19	140	24	25.43	41.67	85.22

20170917	20	140	24	26.07	41.67	87.38
20170917	21	220	24	36.14	65.48	77.07
20170917	22	130	24	21.21	38.69	76.57
20170917	23	90	24	12.78	26.79	66.63
20170917	24	60	24	8.87	17.86	69.39
20170917	25	0	24	0	0	0
20171001	1	230	24	34.25	68.45	69.87
20171001	2	480	24	91.44	142.86	89.38
20171001	3	260	24	47.95	77.38	86.54
20171001	4	170	24	31.94	50.60	88.17
20171001	5	350	24	62.39	104.17	83.65
20171001	6	160	24	30.61	47.17	89.76
20171001	7	210	24	40.96	62.50	91.53
20171001	8	380	24	74.33	113.10	91.78
20171001	9	240	24	45.66	71.43	89.28
20171001	10	250	24	48.82	74.40	91.63
20171001	11	200	24	32.20	59.52	75.54
20171001	12	530	24	96.89	157.74	85.78
20171001	13	170	24	31.49	50.60	86.92
20171001	14	290	24	57.26	86.31	92.66
20171001	15	180	24	34.88	53.57	90.93
20171001	16	190	24	121.82	56.55	87.94
20171001	17	260	24	51.77	77.38	93.44
20171001	18	120	24	22.32	35.71	87.27
20171001	19	190	24	34.01	56.55	83.99
20171001	20	250	24	46.61	74.40	87.48
20171001	21	150	24	26.69	44.64	83.48
20171001	22	500	24	91.63	148.81	85.99
20171001	23	140	24	23.13	41.67	77.53
20171001	24	100	24	12.75	29.76	59.81
20171017	1	100	24	12.24	29.76	57.41
20171017	2	210	24	36.61	62.50	81.79

20171017	3	250	24	45.14	74.40	84.72
20171017	4	130	24	23.76	38.69	85.77
20171017	5	100	24	18.21	29.76	85.43
20171017	6	90	24	16.07	26.79	83.76
20171017	7	90	24	15.54	26.79	81.03
20171017	8	140	24	24.56	41.67	82.31
20171017	9	200	24	33.56	59.52	78.74
20171017	10	80	24	16.74	23.81	98.19
20171017	11	130	24	24.84	38.69	89.66
20171017	12	130	24	25.80	38.69	93.11
20171017	13	70	24	13.54	20.83	90.74
20171017	14	100	24	18.81	29.76	88.24
20171017	15	420	24	130.83	125.00	94.44
20171017	16	100	24	19.32	29.76	90.67
20171017	17	140	24	27.22	41.67	91.23
20171017	18	150	24	27.70	44.64	86.66
20171017	19	190	24	34.94	56.55	86.28
20171017	20	200	24	36.79	59.52	86.32
20171017	21	90	24	16.95	26.79	88.36
20171017	22	130	24	23.78	38.69	85.84
20171017	23	160	24	29.63	47.62	86.89
20171105	1	0	24	0	0	0
20171105	2	280	24	43.43	83.33	72.78
20171105	3	290	24	54.39	86.31	88.01
20171105	4	260	24	49.56	77.38	89.44
20171105	5	180	24	35.64	53.57	92.90
20171105	6	130	24	24.41	38.69	88.11
20171105	7	140	24	26.91	41.67	90.19
20171105	8	160	24	30.60	47.62	89.73
20171105	9	350	24	69.19	104.17	92.76
20171105	10	510	24	90.99	151.79	83.71
20171105	11	110	24	20.08	32.74	85.67



20171105	12	250	24	50.29	74.40	94.39
20171105	13	130	24	30.36	38.69	109.58
20171105	14	520	24	104.39	154.76	94.47
20171105	15	460	24	90.67	136.90	92.49
20171105	16	260	24	129.55	77.38	93.52
20171105	17	140	24	27.62	41.67	92.57
20171105	18	280	24	53.70	83.33	89.99
20171105	19	480	24	93.78	142.86	91.67
20171105	20	200	24	39.31	59.52	92.22
20171105	21	510	24	96.97	151.79	89.22
20171105	22	110	24	20.34	32.74	86.75
20171105	23	220	24	39.40	65.48	84.04
20171105	24	190	24	32.63	56.55	80.59

**Note:** The sampling locations were numbered from the north bank to the south bank of the NW transect.

**Table S3.** The measured CH<sub>4</sub> emission fluxes by the floating chambers at the 5 sampling points of NE transect in 2015

Dates	Sampling points	Chamber 1	Chamber 2	Chamber 3
20150108	NEP1	0.082	0.073	0.055
20150108	NEP2	0.065	0.077	0.046
20150108	NEP3	0.058	0.074	0.068
20150108	NEP4	0.089	0.075	0.053
20150108	NEP5	0.027	0.022	0.032
20150123	NEP1	No data	0.058	No data
20150123	NEP2	0.049	0.031	0.063
20150123	NEP3	0.030	No data	0.022
20150123	NEP4	No data	0.053	No data
20150123	NEP5	0.099	0.077	0.083
20150205	NEP1	0.086	0.072	No data
20150205	NEP3	0.063	0.082	0.025
20150205	NEP4	0.048	0.047	No data
20150205	NEP5	0.046	0.030	0.025
20150313	NEP1	0.0071	0.0057	No data
20150313	NEP2	0.041	0.011	0.013
20150313	NEP4	No data	0.015	No data
20150313	NEP5	0.012	0.014	0.009
20150416	NEP1	0.0011	0.0079	0.0041
20150416	NEP2	0.023	0.027	0.055
20150416	NEP3	0.033	0.068	0.037
20150416	NEP4	0.084	0.096	0.106
20150416	NEP5	0.136	0.125	0.106
20150521	NEP1	0.038	0.027	0.039
20150521	NEP2	0.066	0.057	0.039
20150521	NEP3	0.069	0.024	0.062
20150521	NEP4	0.094	0.040	0.075
20150521	NEP5	0.149	0.057	0.128
20150629	NEP1	No data	0.057	0.039

20150629	NEP2	0.140	0.083	No data
20150629	NEP3	0.040	0.105	0.057
20150629	NEP4	0.016	0.027	0.024
20150629	NEP5	0.016	0.048	0.048
20150727	NEP1	0.044	0.07	0.044
20150727	NEP2	0.049	0.052	0.034
20150727	NEP3	0.082	0.051	0.065
20150727	NEP4	0.048	0.059	0.040
20150727	NEP5	0.032	0.040	0.060
20150820	NEP1	0.121	0.143	0.103
20150820	NEP2	0.101	0.097	0.108
20150820	NEP3	0.120	0.99	0.100
20150820	NEP4	0.093	0.110	0.081
20150820	NEP5	0.100	0.110	0.070
20150922	NEP1	0.100	0.120	0.096
20150922	NEP2	0.120	0.100	0.160
20150922	NEP3	0.084	0.109	0.110
20150922	NEP4	0.087	0.140	0.091
20150922	NEP5	0.062	0.090	0.095
20151026	NEP1	0.342	No data	0.096
20151026	NEP2	0.055	0.043	0.075
20151026	NEP3	0.039	0.052	0.074
20151026	NEP4	0.090	0.144	0.095
20151026	NEP5	0.067	0.130	0.097
20151204	NEP1	0.390	0.243	No data
20151204	NEP2	0.085	0.120	0.110
20151204	NEP3	0.120	0.116	0.065
20151204	NEP4	0.100	0.120	0.080
20151204	NEP5	0.060	0.080	0.087
20151226	NEP1		0.030	0.094
20151226	NEP2	0.069	0.052	0.077
20151226	NEP3	0.060	0.065	0.072

20151226	NEP4	0.046	0.084	0.070
20151226	NEP5	0.047	0.054	0.070

Note: The unit of CH<sub>4</sub> flux is mg CH<sub>4</sub> m<sup>-2</sup> h<sup>-1</sup>. The sampling points from NEP1 to NEP5 distributed from the margin to pelagic zones.

**Table S4.** Complete dataset of the measured CH<sub>4</sub> emission fluxes by the floating chambers at the 5 sampling points of SW transect from Dec. 2014 to Dec. 2015

Dates	Sampling points	Chamber 1	Chamber 2	Chamber 3
20141206	SWP1	0.290	0.200	0.260
20141206	SWP2	0.200	0.170	0.190
20141206	SWP3	0.220	0.170	0.260
20141206	SWP4	0.240	0.300	0.250
20141206	SWP5	0.140	0.100	0.110
20150104	SWP1	0.049	0.029	0.048
20150104	SWP2	0.120	0.100	0.100
20150104	SWP4	0.063	0.049	0.052
20150104	SWP5	0.016	0.026	0.016
20150120	SWP1	0.038	0.140	No data
20150120	SWP2	No data	0.140	0.083
20150120	SWP3	0.100	0.03	0.077
20150120	SWP4	0.210	0.170	0.360
20150120	SWP5	0.120	0.130	No data
20150208	SWP2	0.280	0.240	0.180
20150208	SWP4	0.220	0.230	0.140
20150208	SWP5	0.043	0.053	0.050
20150326	SWP1	0.110	0.082	0.071
20150326	SWP3	0.110	0.100	No data
20150326	SWP4	0.048	0.089	0.100
20150326	SWP5	No data	0.066	0.110
20150417	SWP1	0.056	0.043	0.048
20150417	SWP2	0.100	No data	0.036
20150417	SWP3	0.046	0.083	0.057
20150417	SWP5	No data	0.070	0.085
20150602	SWP1	0.130	0.034	0.047
20150602	SWP2	0.025	0.015	0.032
20150602	SWP3	0.036	0.028	0.041
20150602	SWP4	0.023	0.031	0.029

20150602	SWP5	0.030	No data	0.020
20150625	SWP1	0.031	0.039	0.028
20150625	SWP2	0.043	0.019	0.040
20150625	SWP3	0.027	0.016	0.021
20150625	SWP4	0.015	0.014	0.017
20150625	SWP5	0.031	0.012	0.014
20150801	SWP1	0.520	0.550	0.350
20150801	SWP2	0.300	0.290	0.400
20150801	SWP3	0.110	0.087	0.099
20150801	SWP4	0.100	0.130	0.083
20150801	SWP5	0.082	0.078	0.072
20150901	SWP1	0.100	0.089	0.072
20150901	SWP2	0.140	0.110	0.083
20150901	SWP3	0.083	0.050	0.022
20150901	SWP4	0.088	0.110	0.066
20150901	SWP5	0.062	0.040	0.091
20151003	SWP1	0.130	0.300	0.230
20151003	SWP2	0.170	0.150	0.120
20151003	SWP3	0.230	0.040	0.050
20151003	SWP4	0.030	0.041	0.045
20151003	SWP5	0.078	0.045	0.063
20151105	SWP1	0.055	0.040	0.069
20151105	SWP2	0.076	0.150	0.078
20151105	SWP3	0.144	0.160	0.140
20151105	SWP4	0.110	0.120	0.069
20151105	SWP5	0.120	0.160	0.130
20151128	SWP1	0.071	0.099	No data
20151128	SWP2	0.240	0.270	0.200
20151128	SWP3	0.11	0.099	0.085
20151128	SWP4	0.086	0.100	0.086
20151128	SWP5	0.073	0.230	0.058
20151227	SWP1	0.100	0.140	0.079

20151227	SWP2	0.100	0.095	0.054
20151227	SWP3	0.050	0.073	0.040
20151227	SWP4	0.067	0.078	0.039
20151227	SWP5	0.039	0.054	0.027

Note: The unit of CH<sub>4</sub> emission flux is mg CH<sub>4</sub> m<sup>-2</sup> h<sup>-1</sup>. The sampling points from SWP1 to SWP5 distributed from the margin to pelagic zones.

**Table S5.** Complete dataset of the measured CH<sub>4</sub> emission fluxes by the floating chambers at the 5 sampling points of SE transect from Jan. 2015 to Jan. 2016.

Dates	Sampling points	Chamber 1	Chamber 2	Chamber 3
20141123	SEP1	0.048	0.028	0.030
20141123	SEP2	0.038	0.120	0.160
20141123	SEP3	0.054	0.053	0.059
20141123	SEP4	0.049	0.061	0.045
20150105	SEP1	0.046	0.026	0.053
20150105	SEP2	0.063	0.044	0.047
20150105	SEP3	0.089	0.049	0.056
20150105	SEP4	0.098	0.064	0.068
20150121	SEP1	0.053	0.053	0.049
20150121	SEP2	0.046	No data	No data
20150121	SEP3	0.030	0.040	0.043
20150121	SEP4	0.150	0.100	0.130
20150121	SEP5	0.170	No data	No data
20150207	SEP1	0.057	0.043	0.054
20150207	SEP2	0.059	0.043	0.043
20150207	SEP3	0.010	0.024	0.013
20150207	SEP4	0.023	0.020	0.019
20150207	SEP5	0.034	0.029	0.030
20150319	SEP1	0.015	0.027	0.015
20150319	SEP2	0.063	0.073	0.052
20150319	SEP3	0.037	0.028	0.048
20150319	SEP4	No data	0.019	0.015
20150415	SEP1	0.036	0.068	0.031
20150415	SEP2	0.028	No data	0.007
20150415	SEP3	0.035	No data	0.030
20150415	SEP4	0.027	0.050	0.038
20150415	SEP5	0.044	0.021	0.029
20150601	SEP1	0.074	0.075	0.086
20150601	SEP2	0.046	0.033	0.044



20150601	SEP3	0.096	0.061	0.063
20150601	SEP4	0.047	0.035	0.045
20150601	SEP5	0.030	0.030	0.055
20150630	SEP1	0.048	0.029	0.053
20150630	SEP2	0.049	0.060	0.054
20150630	SEP3	0.077	0.056	0.053
20150630	SEP4	0.083	0.046	0.074
20150630	SEP5	0.110	0.099	0.170
20150726	SEP1	0.067	0.016	0.036
20150726	SEP2	0.024	0.042	0.019
20150726	SEP3	0.033	0.033	0.047
20150726	SEP4	0.081	0.090	0.048
20150726	SEP5	0.091	0.064	0.048
20150902	SEP1	0.088	0.049	0.039
20150902	SEP2	0.120	0.043	0.074
20150902	SEP3	0.070	0.077	0.098
20150902	SEP4	0.039	0.036	0.031
20150902	SEP5	0.088	0.059	0.099
20151009	SEP1	0.088	0.031	0.083
20151009	SEP2	0.054	0.059	0.074
20151009	SEP3	0.072	0.076	0.081
20151009	SEP4	0.071	0.075	0.100
20151009	SEP5	0.056	0.081	0.048
20151106	SEP1	0.310	0.120	0.100
20151106	SEP2	0.098	0.120	0.067
20151106	SEP3	0.053	0.076	0.072
20151106	SEP4	0.056	0.096	No data
20151106	SEP5	0.058	0.058	0.053
20151203	SEP1	0.053	0.084	0.120
20151203	SEP2	0.060	0.063	0.250
20151203	SEP3	0.085	0.100	No data
20151203	SEP4	0.059	0.078	0.078

20151203	SEP5	0.058	0.057	0.071
20160108	SEP1	0.057	0.081	0.087
20160108	SEP2	0.110	0.052	0.064
20160108	SEP3	0.170	0.120	0.130
20160108	SEP4	0.075	0.110	0.085
20160108	SEP5	0.130	0.095	0.090

Note: The unit of CH<sub>4</sub> emission flux is mg CH<sub>4</sub> m<sup>-2</sup> h<sup>-1</sup>. The sampling points from SEP1 to SEP5 distributed from the margin to pelagic zones.

**Table S6.** Complete dataset of the measured CH<sub>4</sub> emission fluxes by the floating chambers at the 4 sampling points of downstream river from Dec. 2014 to Dec. 2015

Dates	Sampling points	Chamber 1	Chamber 2	Chamber 3
20141207	DRP1	2.67	1.56	1.04
20141207	DRP2	1.68	1.09	0.93
20141207	DRP3	2.00	1.29	0.82
20141207	DRP4	1.97	1.37	0.96
20150107	DRP1	1.72	1.04	1.42
20150107	DRP2	0.53	0.43	0.58
20150107	DRP3	0.91	1.12	0.98
20150107	DRP4	1.47	0.35	0.97
20150122	DRP1	1.31	0.99	1.33
20150122	DRP2	1.04	0.50	0.82
20150122	DRP3	1.46	0.54	No data
20150122	DRP4	1.50	1.22	0.75
20150206	DRP1	0.46	0.24	0.25
20150206	DRP2	0.20	0.19	0.17
20150206	DRP3	0.11	0.07	0.16
20150206	DRP4	0.064	0.095	0.078
20150325	DRP1	0.27	0.38	0.36
20150325	DRP2	0.43	0.42	0.30
20150325	DRP3	0.31	0.28	0.35
20150325	DRP4	0.076	0.077	0.10
20150414	DRP1	0.90	0.86	1.13
20150414	DRP2	0.23	0.19	0.22
20150414	DRP3	0.40	0.68	0.45
20150414	DRP4	0.073	0.12	0.091
20150522	DRP1	0.56	1.43	0.48
20150522	DRP2	0.13	0.11	0.11
20150522	DRP3	0.31	0.59	0.31
20150522	DRP4	0.043	0.037	0.056
20150703	DRP1	0.63	0.29	0.36

20150703	DRP2	0.088	0.079	0.16
20150703	DRP3	0.085	0.080	0.084
20150703	DRP4	0.26	0.27	0.25
20150731	DRP1	0.33	0.49	No data
20150731	DRP2	0.17	0.10	0.11
20150731	DRP3	0.20	0.07	0.21
20150731	DRP4	0.13	0.16	0.058
20150825	DRP1	0.77	0.29	0.39
20150825	DRP2	0.074	0.13	0.081
20150825	DRP3	0.14	0.063	0.093
20150825	DRP4	0.22	0.19	0.20
20150918	DRP1	0.27	0.67	0.68
20150918	DRP2	0.12	0.11	0.071
20150918	DRP3	0.16	0.14	0.19
20150918	DRP4	0.13	0.15	0.33
20151016	DRP1	0.77	0.58	1.03
20151016	DRP2	0.15	0.12	0.14
20151016	DRP3	0.12	0.11	0.11
20151016	DRP4	0.31	0.27	0.32
20151126	DRP1	0.53	0.91	1.39
20151126	DRP2	0.18	0.12	0.14
20151126	DRP3	0.21	0.42	0.90
20151126	DRP4	0.50	0.23	0.74
20151228	DRP1	0.32	0.72	0.38
20151228	DRP2	1.03	0.085	0.078
20151228	DRP3	0.085	0.15	0.13
20151228	DRP4	0.12	0.19	1.57

Note: The unit of CH<sub>4</sub> emission flux is mg CH<sub>4</sub> m<sup>-2</sup> h<sup>-1</sup>. The sampling points (DRP1-DRP4) have distance of 0.35, 1, 4, and 7 km away from the Xin'anjiang Dam.

