

Table S1: Extreme events of daily runoff identified during the daily runoff of the study period of 2019-2020.

No.	Year	Date	Runoff(m ³ /s)
1	2019	19-Sep	125.
2		21-Sep	96.9
3		22-Sep	132
4		7-Oct	109
5		8-Oct	88.3
6		10-Oct	87.1
7		18-Oct	148
8		19-Oct	120
9		20-Oct	92.8
10		8-Aug	84.0
11	2020	9-Aug	96.0
12		10-Aug	233
13		11-Aug	178
14		12-Aug	155
15		13-Aug	112
16		14-Aug	106
17		15-Aug	95
18		19-Aug	213
19		20-Aug	352
20		21-Aug	403
21		22-Aug	283
22		23-Aug	168
23		24-Aug	146
24		25-Aug	143

4	25	26-Aug	137
5	26	27-Aug	140
6	27	28-Aug	141
7	28	29-Aug	117
8	29	30-Aug	99
9	30	31-Aug	90.0
10	31	2-Sep	119
11	32	3-Sep	120
12	33	6-Sep	84.0
13	34	14-Nov	94.0
14	35	15-Nov	109
15	36	16-Nov	98.0
16	37	17-Nov	83.0

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Table S2: .Mean Relative Error (MRE) (%) of the estimated annual nutrient loads at different sampling frequencies and calculation methods for the Yiluo River

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Type	Method	Year	3day	7day	14day	21day	30day	45day	60day	Range
TN	M_1	2019	-3.50	-3.09	-2.97	-5.12	-4.49	-4.98	-3.79	27.67
		2020	21.62	21.5	21.6	22.4	22.6	21.4	21.0	
	M_2	2019	-0.478	0.048	0.105	-2.33	-1.54	-1.58	-1.42	3.15
		2020	0.336	0.235	0.392	0.534	0.828	0.370	0.191	
	M_3	2019	0.495	1.96	1.30	0.181	0.500	0.666	1.11	4.56
		2020	0.387	1.01	1.41	0.876	1.71	-0.374	-2.60	
	M_4	2019	-3.50	-3.09	-2.97	-5.12	-4.49	-4.98	-3.79	27.67
		2020	21.6	21.5	21.6	22.4	22.6	21.4	21.0	
	M_5	2019	-0.478	0.048	0.105	-2.33	-1.54	-1.58	-1.42	3.15
		2020	0.336	0.235	0.392	0.534	0.828	0.370	0.191	
	M_6	2019	-3.40	-4.23	-10.9	-20.7	-24.9	-32.6	-43.5	42.0
		2020	-1.03	-3.00	-4.83	-5.91	-9.07	-12.2	-11.9	

20		2019	-0.492	0.023	0.078	-2.34	-1.48	-1.22	-1.15	
21	M_7	2020	-0.161	-0.867	-1.60	-2.27	-2.77	-3.83	-4.71	4.79
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23	M_8	2019	0.000	-18.7	-25.8	-28.4	-29.7	-30.8	-31.3	32.8
24		2020	0.000	-19.7	-27.1	-29.7	-31.1	-32.2	-32.8	
25	M_9	2019	0.000	-15.6	-21.5	-23.7	-24.8	-25.7	-26.1	26.1
26		2020	0.000	-13.8	-19.0	-20.8	-21.8	-22.6	-23.0	
27	M_1	2019	3.745	3.80	4.02	4.72	4.15	4.06	4.72	19.6
28		2020	-14.8	-14.8	-14.5	-14.3	-13.9	-13.7	-13.4	
29	M_2	2019	0.213	0.170	0.409	1.13	0.373	0.130	0.797	0.996
30		2020	0.323	0.220	0.441	0.754	1.11	0.264	0.269	
31	M_3	2019	-1.47	-1.97	-2.46	-0.973	-2.17	-2.14	-2.22	7.88
32		2020	-1.80	-4.62	-5.98	-6.42	-7.51	-8.15	-8.85	
33	M_4	2019	3.75	3.80	4.02	4.72	4.15	4.06	4.72	19.6
34		2020	-14.8	-14.8	-14.0	-14.3	-13.9	-13.7	-13.4	
	TP	M_5	2019	0.213	0.170	0.409	1.13	0.373	0.130	0.797
			2020	0.323	0.220	0.441	0.754	1.11	0.264	0.269
	M_6	2019	-1.84	-1.11	-3.07	-6.06	-8.19	-9.96	-15.3	23.4
		2020	-1.39	-0.693	-7.46	-0.107	-12.2	-10.5	-23.5	
	M_7	2019	0.193	0.121	0.305	0.942	0.098	-0.321	0.202	4.46
		2020	0.843	1.34	2.33	3.20	4.14	3.30	3.58	
	M_8	2019	0.000	-18.7	-25.7	-28.1	-29.5	-30.6	-31.1	31.1
		2020	0.000	-18.0	-24.7	-27.0	-28.3	-29.4	-29.9	
	M_9	2019	0.000	-17.5	-24.1	-26.4	-27.7	-28.7	-29.2	29.2
		2020	0.000	-17.2	-23.7	-25.9	-27.2	-28.2	-28.7	

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Type	Method	Year	3day	7day	14day	21day	30day	45day	60day	Average
TN	M_1	2019	4.50	5.90	9.70	12.7	15.4	18.4	24.8	20.0
		2020	21.9	22.9	26.0	29.6	33.5	40.6	45.6	
	M_2	2019	2.60	4.60	8.60	12.4	15.2	18.6	25.2	9.95
		2020	2.10	4.90	7.90	10.9	13.6	18.0	23.2	
	M_3	2019	2.60	5.30	9.40	13.3	17.1	21.8	31.5	10.8
		2020	2.10	5.20	8.50	11.3	14.1	18.6	21.0	
	M_4	2019	4.50	5.90	9.70	12.7	15.4	18.4	24.8	20.1
		2020	21.9	22.9	26.0	29.6	33.5	40.6	45.6	
	M_5	2019	2.60	4.60	8.60	12.4	15.2	18.6	25.2	9.95
		2020	2.10	4.90	7.90	10.9	13.6	18.0	23.2	
	M_6	2019	4.20	6.90	13.6	23.3	28.5	37.5	48.0	15.3
		2020	2.60	5.80	9.50	13.1	16.8	22.1	29.4	
	M_7	2019	2.60	4.60	8.60	12.5	15.4	19.0	25.8	9.88
		2020	2.00	4.80	7.70	10.7	13.1	17.6	22.8	
	M_8	2019	1.00	18.7	25.90	28.4	29.7	30.8	31.4	22.9
		2020	0.801	19.70	27.1	29.7	31.1	32.3	32.8	
	M_9	2019	0.798	15.6	21.5	23.7	24.8	25.7	26.1	17.6
		2020	0.598	13.8	19.0	20.8	21.8	22.6	23.0	
TP	M_1	2019	5.10	7.30	11.7	14.7	18.0	23.0	27.0	17.6
		2020	15.00	16.1	18.8	22.2	24.7	34.0	37.0	
	M_2	2019	4.00	7.00	11.9	15.1	18.5	23.4	27.1	20.4
		2020	3.60	12.4	23.4	32.6	38.4	54.4	61.3	
	M_3	2019	4.00	6.60	11.2	14.4	17.9	22.8	26.0	17.6
		2020	4.20	11.2	19.8	26.6	29.2	43.2	46.4	

39	M_4	2019	5.10	7.30	11.7	14.70	18.0	23.0	27.0	17.6
40		2020	15.0	16.1	18.8	22.2	24.7	34.0	37.5	
41	M_5	2019	4.00	7.00	11.9	15.1	18.5	23.4	25.1	18.6
42		2020	3.60	12.4	23.4	32.6	34.4	36.4	38.3	
43	M_6	2019	4.10	8.00	12.8	16.9	20.5	25.8	33.1	22.9
44		2020	4.20	15.8	22.5	42.6	34.6	66.6	53.7	
45	M_7	2019	4.00	7.10	12.0	15.2	18.7	23.6	27.4	21.8
46		2020	3.80	13.2	25.5	36.0	43.0	59.9	67.7	
47	M_8	2019	1.20	18.7	25.7	28.1	29.5	30.6	31.1	21.9
48		2020	1.10	18.0	24.7	27.0	28.3	29.4	29.9	
49	M_9	2019	1.10	17.6	24.1	26.4	27.7	28.7	29.2	20.8
50		2020	1.10	17.3	23.7	25.9	27.2	28.2	28.7	
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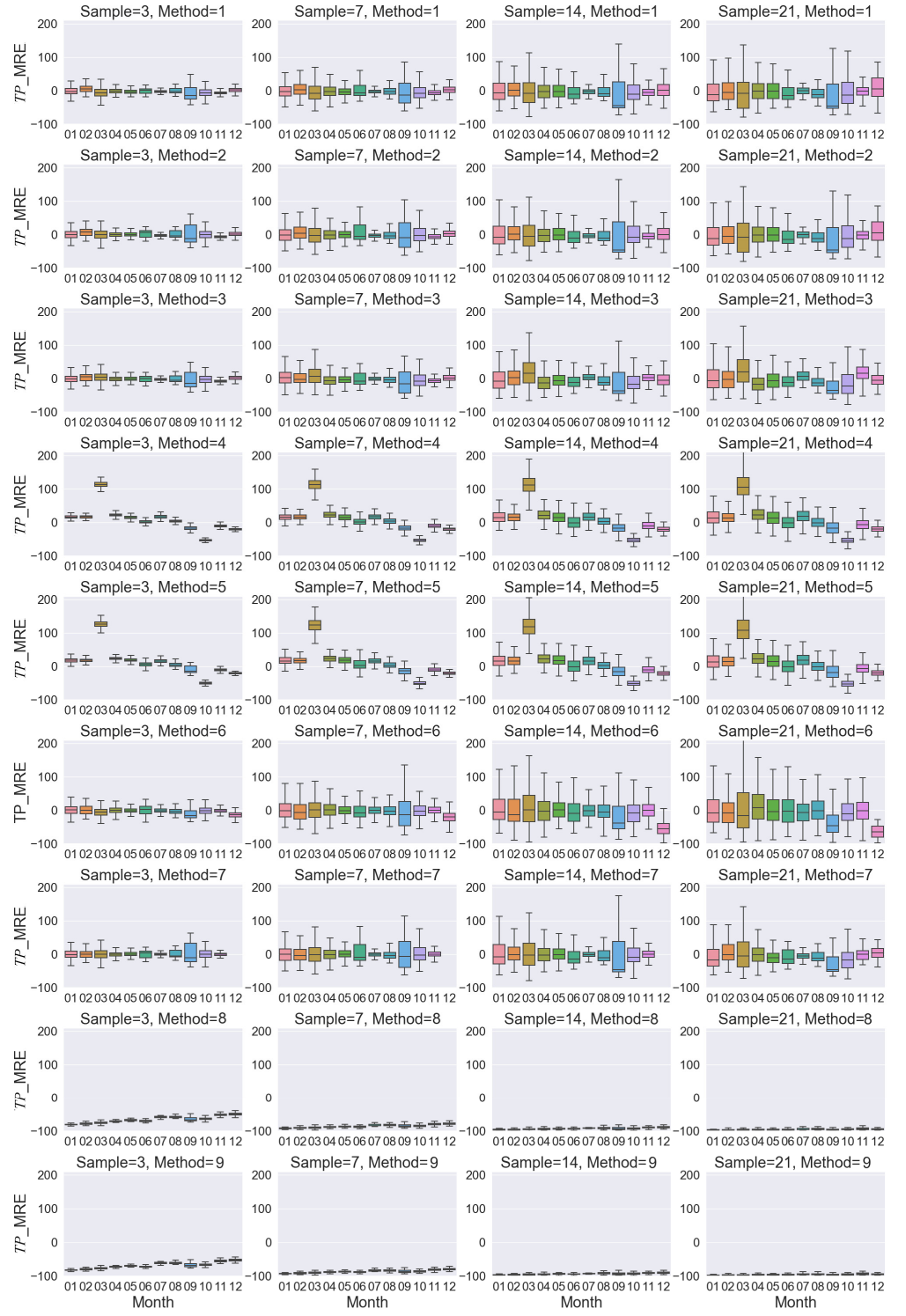


Figure S1: Monthly changes of *TP* flux MRE estimated by different sample frequencies and different algorithm for 2019.

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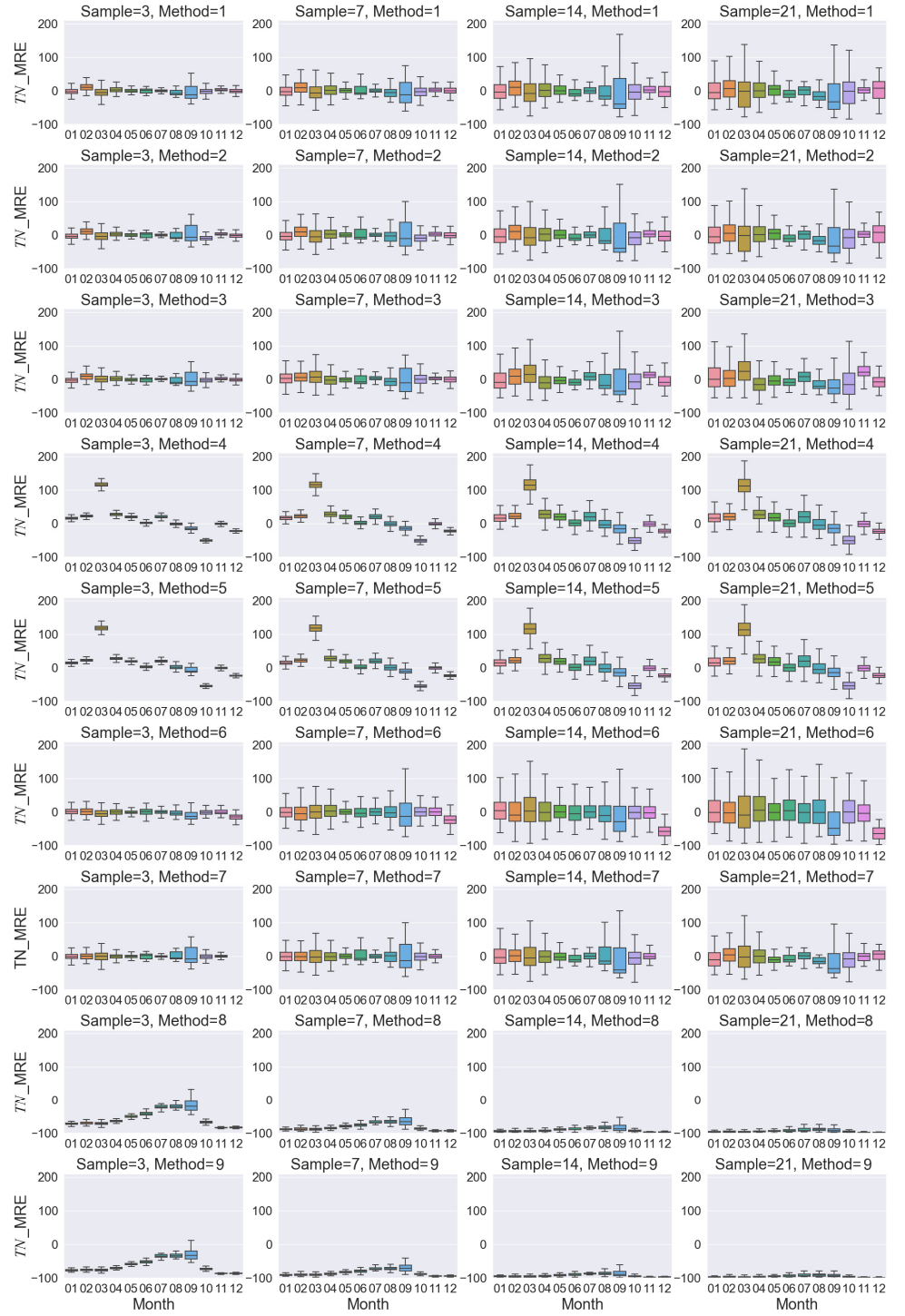


Figure S2: Monthly changes of TN flux MRE estimated by different sample frequencies and different algorithm for 2019.

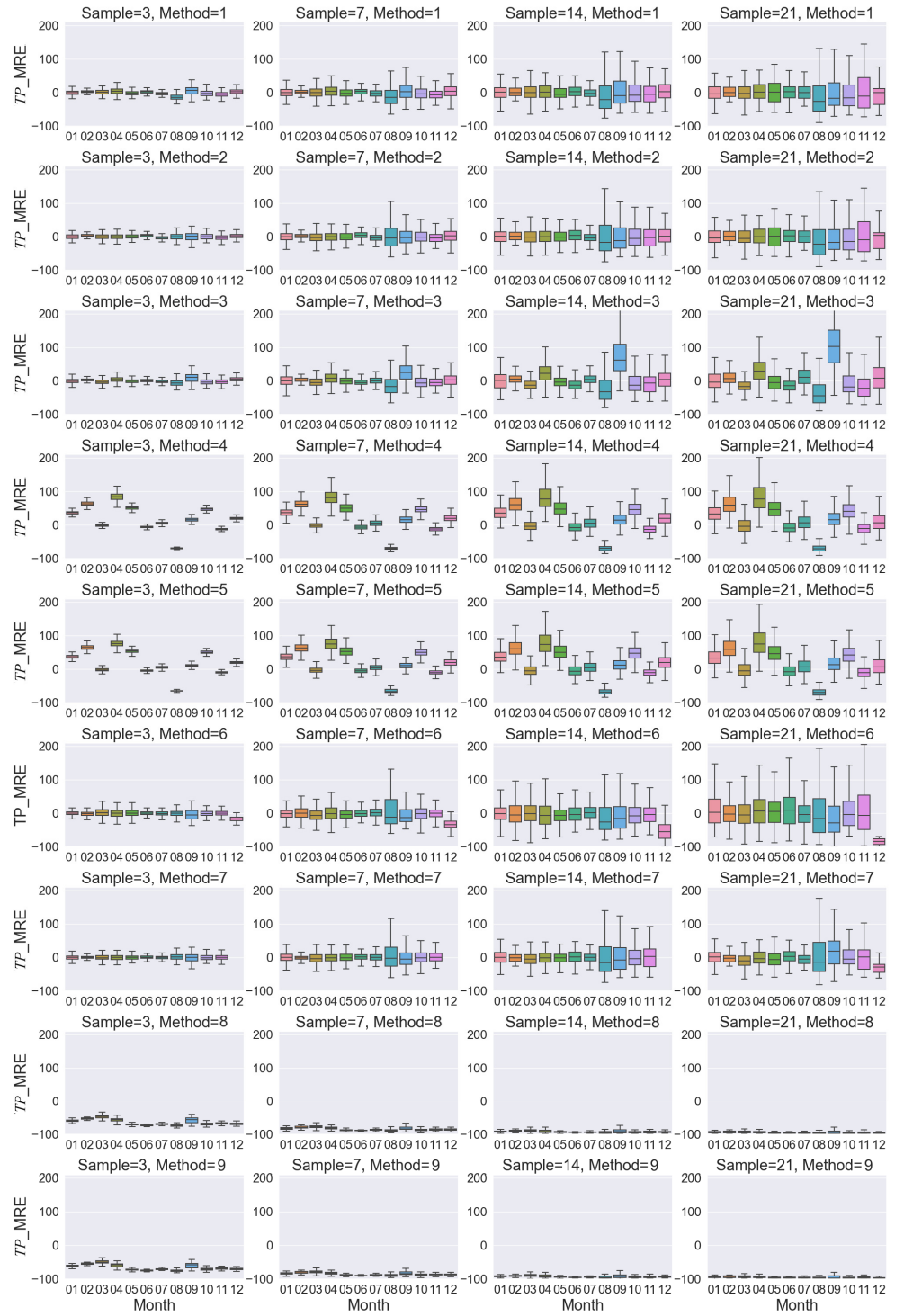


Figure S3: Monthly changes of *TP* flux MRE estimated by different sample frequencies and different algorithm for 2020.

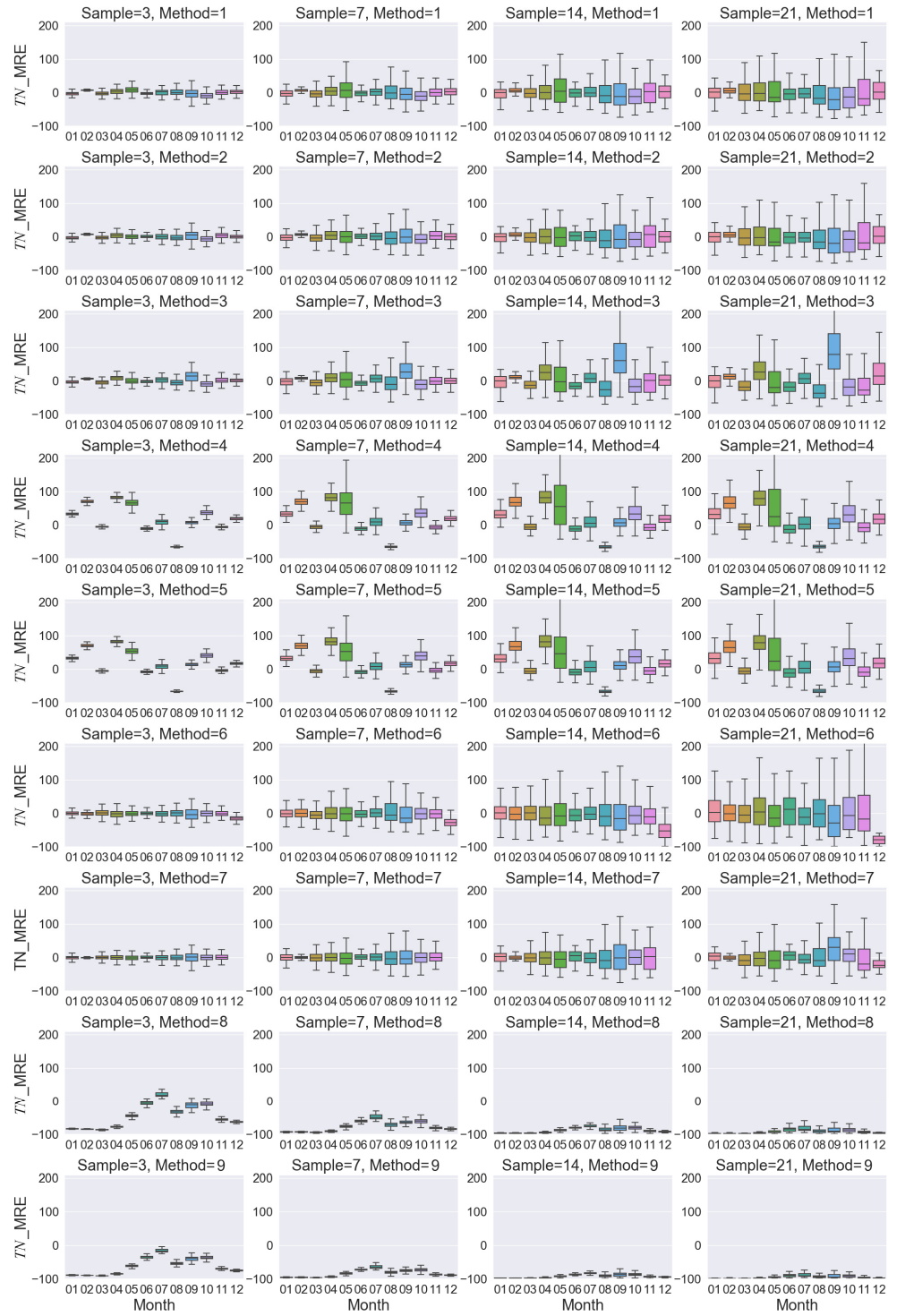


Figure S4: Monthly changes of *TN* flux MRE estimated by different sample frequencies and different algorithm for 2020.

