

Supplementary Information for “Statistical and Microbial Analysis of Bio-electrochemical Sensors Used for Carbon Monitoring at Water Resource Recovery Facilities”

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Table S1. Fourier power spectrum for minute sampling and daily sampling of MET data

MET Minute Sampling	
Cycle Length (minutes)	Frequency (1/minutes)
5044	1.98E-04
9104	1.10E-04
10088	9.91E-05
16966	5.89E-05
20736	4.82E-05

MET Daily Sampling	
Cycle Length (days)	Frequency (1/days)
3.51	0.28515
4.57	0.21875
7.11	0.14063
11.1	0.08984
12.8	0.07813

DO Hourly Sampling	
Cycle Length (minutes)	Frequency (1/hours)
24.03	0.0416
94.7	0.0106
156.3	0.0064
168.9	0.0059
260.4	0.0038

DO Daily Sampling	
Cycle Length (days)	Frequency (1/days)
4	0.25
6.56	0.1523
6.92	0.1445
11.1	0.0898
15.1	0.0664

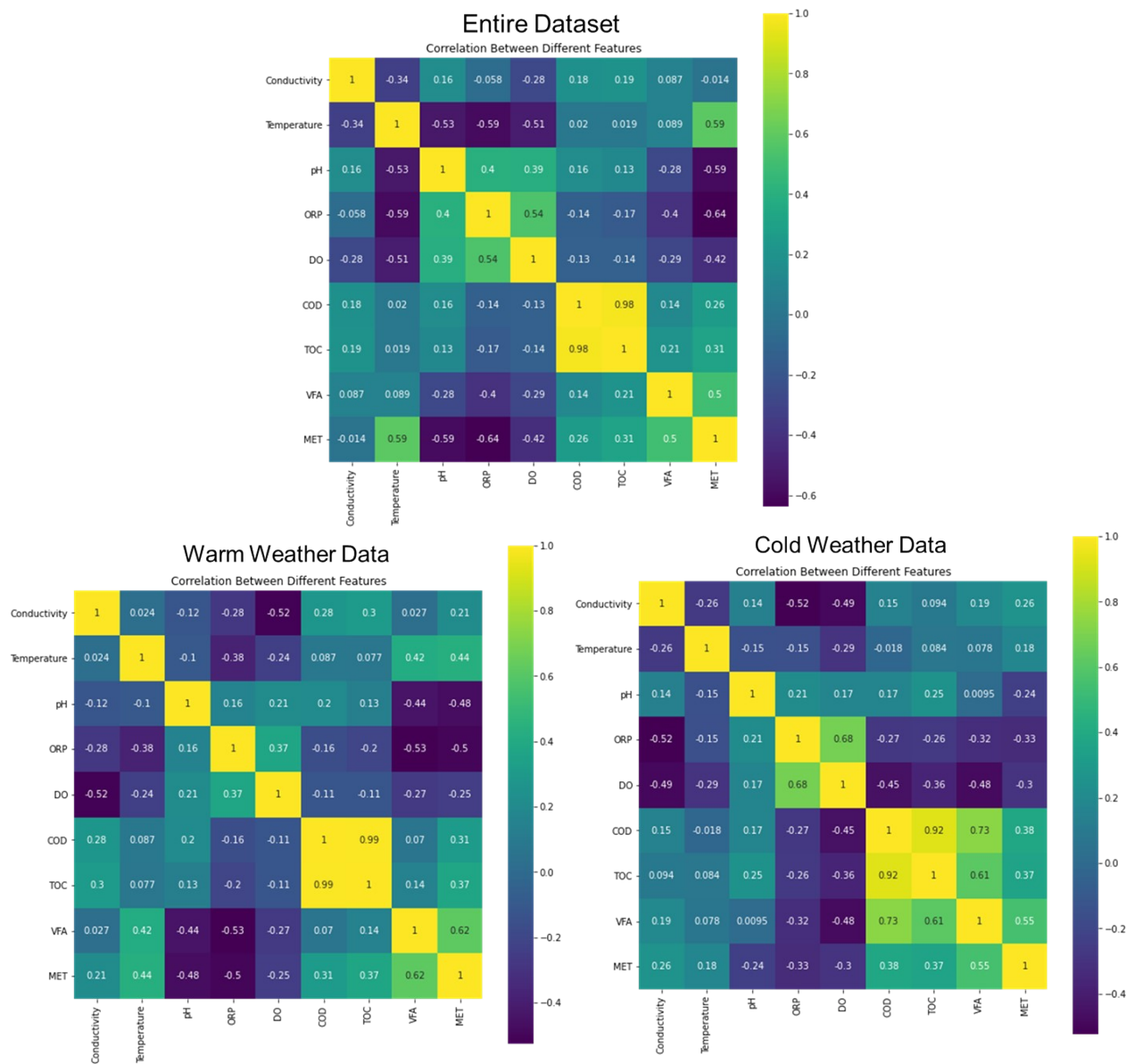
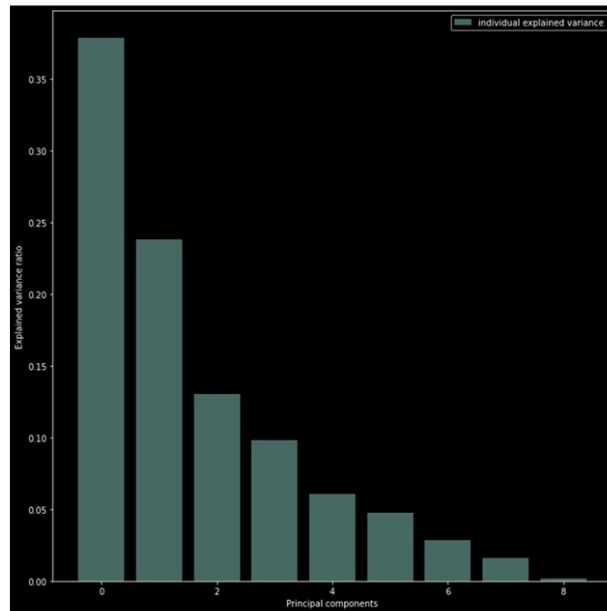
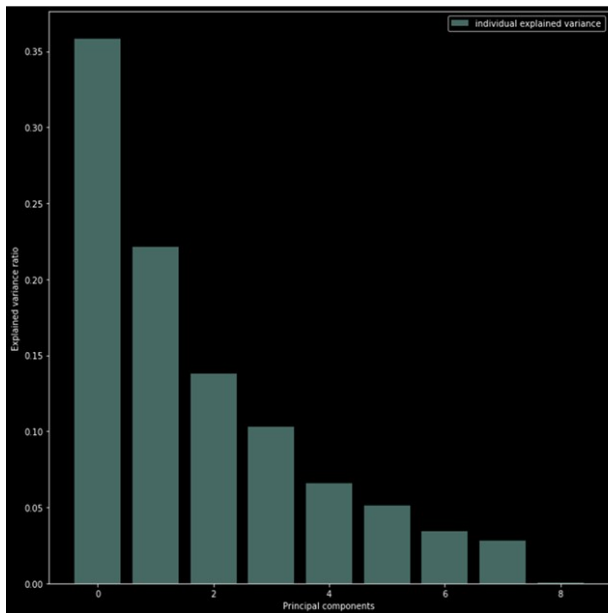


Figure S1. Pearson's correlation analysis of the entire dataset and warm/cold weather data.

Entire Dataset



Warm Weather Data



Cold Weather Data

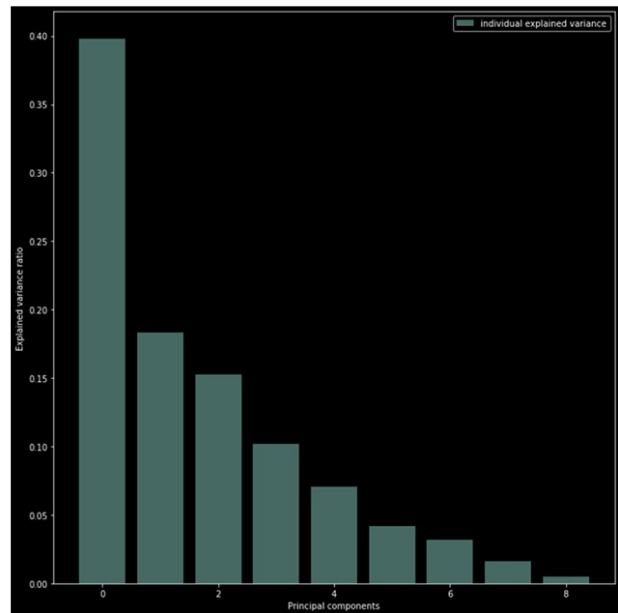


Figure S2. Percentage of the total variance explained by each principal component in the entire dataset and warm/cold weather data.

Table S2. On-site grab sample measurements

	NO2+NO3_N	NH3_N	COD	TOC	Acetic Acid	Iso-Butyric Acid	N-Butyric Acid	Propionic Acid	VOL ACIDS
Date	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
6/20/2019	0.759	9.59	42	10	0.3	0	0	0	<5
6/25/2019	<0.250	16.38	90	29.8	29.3	0.6	0.6	4.6	35
6/27/2019	<0.250	11.98	75	19.4	2.3	0.3	0.3	0.8	<5
7/2/2019	<0.250	14.97	181	62.8	36.5	0.9	2.7	7.5	48
7/9/2019	<0.250	23.45	75	24.5	18.5	0.5	0.4	0.8	20
7/11/2019	<0.250	22.30	106	32.4	24.4	0.5	0.6	1.7	27
7/16/2019	2.372	15.18	162	48.7	45.3	1.3	1.8	7.4	56
7/18/2019	<0.250	2.697	30	7.5	0	0.6	0	0	<5
7/23/2019	<0.250	11.894	58	10.8	4.9	0.6	0	0	6
7/25/2019	<0.250	22.006	131	43	30.8	0.6	0.5	3.6	36
7/30/2019	<0.250	26.898	152	59.2	32.4	0.7	0.9	2.3	36
8/1/2019	<0.250	23.06	1667	413.9	5.3	1	2.4	6.8	16
8/6/2019	<0.250	10.484	301	96.9	36.2	1	1.8	1.8	41
8/8/2019	<0.250	17.388	200	50.3	58.7	1.1	3.1	9.9	73
8/13/2019	0.325	9.261	104	29.2	12.4	0.9	0.7	0.8	15
8/22/2019	<0.250	7.256	180	47.7	30.7	0.8	2	5.1	39
8/27/2019	0.287	10.106	65	16.9	12.1	0.8	0.7	1.5	15
8/29/2019	<0.250	12.364	86	26.1	15.5	0.9	1.3	4.2	22
9/3/2019	<0.250	13.676	131	43.4	14.9	0.6	0.8	1.8	18
9/5/2019	<0.250	11.525	105	33.1	26	0.7	1	2.3	30
9/10/2019	<0.250	17.538	253	98.6	78.6	1.2	1	7.4	88
9/12/2019	<0.250	12.089	129	37.7	27	0.4	0.6	3.3	31
9/17/2019	<0.250	13.164	118	33.8	25.4	0.9	0.2	3.7	30
9/24/2019	<0.250	8.981	84	25.7	13.7	0.2	0.6	1.3	16
9/26/2019	0.308	7.242	65	16.1	12.5	0.6	0.7	1	15
10/1/2019	1.086	5.183	55	12.6	4.6	0	0	0	5
10/3/2019	1.493	3.648	60	12.5	1.2	0	0.3	0.3	<5
10/8/2019	<0.250	7.427	71	30.1	13.3	0.3	0.9	2	17
10/10/2019	<0.250	14.149	109	29.5	19.8	0.4	0.6	2.6	23
10/15/2019	<0.250	6.201	256	85.7	8.1	0	1	1.7	11
10/17/2019	<0.250	19.042	243	96.3	13.8	0.4	0.7	0.7	16
10/22/2019	<0.250	11.698	160	50.3	-	-	-	-	-
10/24/2019	<0.250	18.796	333	109.5	45.2	0.8	3.1	6.8	56
10/29/2019	1.001	5.72	51	16	0.8	0.8	0	0	<5
10/31/2019	1.02	5.044	72	20.6	1.1	0	0.7	0	<5
11/5/2019	<0.250	6.432	91	27.6	6.2	0	1	2	9
11/7/2019	<0.250	7.311	110	34.1	8.9	0	1.2	2.7	13

11/12/2019	<0.250	10.1	93	26.2	13.1	0.8	1	2.3	17
11/14/2019	<0.250	11.061	171	-	-	-	-	-	-
11/19/2019	<0.250	19.081	168	49.4	20.1	0.9	1.2	7.9	30
11/21/2019	0.524	10.659	108	29.6	4.6	0	1	1.8	7
11/26/2019	0.437	13.397	183	67.2	29.9	0.7	1	10.1	42
12/3/2019	1.867	11.297	183	58.3	10.7	0	0.7	4.8	16
12/5/2019	0.416	16.658	157	45.2	23.7	0.4	1.4	9.2	35
12/10/2019	<0.250	16.983	286	97.8	24.9	0.5	2.4	5.7	34
12/17/2019	<0.250	18.82	138	45	17.2	0.6	1.1	3.6	23
1/7/2020	0.752	27.25	221	77.6	43.6	0.7	1.1	3.6	49
1/9/2020	1.034	23.978	305	98.1	32.2	0.6	0.6	1.8	35
1/14/2020	0.479	8.483	63	15.9	1.6	0.2	0.3	0.4	<5
1/16/2020	0.5	9.491	153	43.9	8.3	0.2	0.5	11	20
1/21/2020	0.715	21.518	305	104	19.6	0.6	0.9	19.8	41
1/23/2020	0.456	29.19	327	102.4	9.7	1.2	1	27.9	40
1/28/2020	1.388	13.105	205	65.5	27.6	0.4	0.7	12	41
1/30/2020	0.259	18.562	-	72.5	26.8	0.5	1	17.4	46
2/4/2020	1.092	14.271	145	8.7	14	0.7	1.1	5.6	21
2/6/2020	<0.250	14.563	146	40	15.9	0.5	0.3	3.1	20
2/11/2020	0.431	15.59	201	32.1	41.7	0.3	0.6	5.9	49
2/18/2020	<0.250	12.852	153	47	17.3	0.6	0.9	5.3	24
2/20/2020	0.622	21.72	213	81.1	14.6	0.6	1	2.5	19
2/25/2020	<0.250	14.77	174	51.1	-	-	-	-	-
2/27/2020	1.185	23.22	354	-	-	-	-	-	-

- Note: Measurement events with missing data points were not included in the final data analysis.