

Table S1: Standard analysis methods for nutrient based on the Hach procedures manual

Parameters	Name and number of EPA Method	Concentration range (mg/l)	Accuracy Check	Preservation
Nitrate	Cadmium Reduction (8117)	0.1 to 10.0	10mg/l Nitrate Nitrogen standard solution	Filter immediately cool 4° C for 48 hours
Nitrite	Diazotization method (8517)	0.002 to 0.300	0.30mg/l nitrite standard	
Ammonia	Salicylate (8155)	0.01-0.5	0.4 mg/l ammonia nitrogen standard solution	
Ammonium	Phenol Hypochlorite	-----	-----	
Orthophosphate	Ascorbic Acid (8048)	0.02 to 2.5	2.0 mg/l phosphate standard solution	Cool 4° C for 7 days
Silica	Silicomolybdate (8185)	1.0-100	50.0 silica standard solution	
Suspended Solid	Photometric (8006)	0-750 mg/l	-----	

Table S2: Coefficients in the linear combinations of variables making up PC's in Klang Strait Coastal water

Variables	PC1	PC2	PC3
DIN	0.345	0.227	-0.013
PO_4^{-3}	0.374	0.089	0.065
Sio_4^{-4}	0.304	-0.218	-0.201
TRIX	0.337	0.186	-0.068
EI	0.249	0.335	0.034
Chl-a	0.039	0.496	0.089
Sewage Discharges	0.206	-0.241	0.306
Agriculture	0.078	-0.031	0.295
Industrial Discharges	0.366	-0.141	-0.188
Natural Interaction	-0.134	0.366	0.207
Eutrophication	-0.129	0.395	0.210
River Discharge	0.269	0.313	-0.078
Harbor Discharges	0.405	-0.169	-0.153
Tourism Activities	0.045	0.062	0.503
Variation (%)	30.4	28.8	10.4

Table S3: Average values of physicochemical parameters at each station over different season and their description and significance variability in temporal and spatial scales

Stations	Salinity (‰)	DO (mg/l)	TS (mg/l)	O2 sat (%)	T (cm)	Current (Knot)	NO_3^- (mg/l)	NO_2^- (mg/l)	NH_3^- (mg/l)	NH_4^+ (mg/l)	DIN (mg/l)	PO_4^{3-} (mg/l)	SiO_4^{4-} (mg/l)	Chl-a (µg/l)	DIN/P O ₄	DIN/Sio ₄
1	30.2	6.2	69.3	97.6	64.5	13.6	0.8	0.015	0.05	0.55	1.365	0.11	4.46	0.9	12.41	0.31
2	30.8	6.3	68.8	99.1	74.5	13.5	0.5	0.009	0.04	0.47	0.979	0.1	3.93	0.58	9.79	0.25
3	31.2	5.09	72.3	84.0	48.1	13.0	0.8	0.014	0.07	0.62	1.434	0.12	3.45	0.86	11.95	0.42
4	30.8	5.2	65.3	85.9	62.1	13.1	0.9	0.016	0.06	0.62	1.536	0.14	8.8	0.88	10.97	0.17
5	31.0	6.28	64.2	98.8	72.1	13.3	0.5	0.009	0.05	0.50	1.009	0.1	5.99	0.57	10.09	0.17
6	31.4	5.03	71.1	83.3	46.7	13.4	0.8	0.016	0.06	0.63	1.446	0.12	5.29	0.88	12.05	0.27
7	30.9	5.2	65.9	86.1	61.8	13.5	0.7	0.009	0.07	0.57	1.279	0.11	8.89	0.88	11.63	0.14
8	31.0	5.32	63.7	88.9	72.0	13.5	0.5	0.012	0.05	0.44	0.952	0.09	8.29	0.54	10.58	0.11
9	30.9	5.91	71.3	88.6	46.9	13.2	0.7	0.011	0.06	0.59	1.301	0.12	7.34	0.89	10.84	0.18
10	30.4	6.13	63.6	99.3	66.8	13.6	0.9	0.012	0.06	0.65	1.562	0.11	9.18	0.54	14.20	0.17
11	30.6	6.3	63.9	100.4	68.7	13.5	0.6	0.013	0.05	0.47	1.083	0.09	7.12	0.58	12.03	0.15
12	30.7	5.05	70.3	86.1	57.8	13.4	0.9	0.012	0.06	0.68	1.592	0.12	8.61	0.82	13.27	0.18
13	30.5	6.3	75.9	101.0	63.3	13.2	1.0	0.014	0.03	0.77	1.784	0.11	8.8	0.88	16.22	0.20
14	30.6	6.38	74.2	103.5	65.3	13.3	0.6	0.010	0.04	0.54	1.15	0.09	8.33	0.88	12.78	0.14
15	30.8	5.21	95.6	90.8	57.3	12.3	1.1	0.015	0.05	0.75	1.865	0.12	8.67	0.87	15.54	0.22
16	24.4	3.2	135.0	43.2	27.7	13.2	1.4	0.018	0.12	0.92	2.338	0.17	2.11	2.25	13.75	1.11
17	25.1	3.32	117.7	47.7	25.4	13.2	1.1	0.016	0.11	0.83	1.946	0.15	1.9	2.28	12.97	1.02
18	30.1	5.02	109.0	90.9	49.5	13.4	0.7	0.015	0.06	0.61	1.325	0.11	5.72	0.98	12.05	0.23
19	29.4	4.83	117.6	67.7	39.4	13.1	0.9	0.015	0.09	0.72	1.635	0.15	2.57	1.79	10.90	0.64
20	29.5	4.78	118.6	63.1	42.0	13.1	0.9	0.014	0.08	0.71	1.624	0.12	2.17	1.67	13.53	0.75
21	30.5	6.19	67.0	100.0	52.7	13.5	0.6	0.013	0.05	0.55	1.163	0.11	6.79	0.93	10.57	0.17
Average value for 21 stations	30.2	5.39	81.9	86.0	55.4	13.3	0.8	0.013	0.06	0.12	1.45	0.12	6.11	1.02	12.29	0.33
Standard Division	2.0	0.91	23.3	16.63	13.6	0.28	0.4	0.002	0.02	0.02	0.351	0.021	2.59	0.51	1.710	0.292
Control Zone	33.9	7.22	46.2	118.7	159	13.4	0.4	0.007	0.03	0.63	1.1	0.05	1.02	0.44	22	1.1
Asymp Sig for stations (KW)	0.0	0.03	0.0	0.0	0.0	0.04	0.0	0.0	0.0	0.0	0	0	0	0.01	0.02	0.01
Asymp Sig for season (KW)	0.0	0.01	0.0	0.01	0.0	0.03	0.02	0.01	0.0	0.0	0.01	0.01	0.02	0	0.03	0.02

Statistical analyses for the significant variation in the experiment are indicated by abbreviations: KW: Kruskal-Wallis test; **Asymp Sig**: asymptotic significant at $p < 0.05$, TS: Total Solid; O2 sat: Oxygen saturation; T: Transparency; DO: Dissolved Oxygen.

Table S4: Coefficients in the linear combinations of variables making up PC's in North Port Coastal water

variables	PC1	PC2	PC3
DIN	0.368	0.12	-0.013
PO_4^{-3}	0.438	-0.00	-0.028
Sio_4^{-4}	0.327	-0.12	-0.066
Total solid	-0.098	0.38	0.167
Salinity	-0.089	-0.14	-0.142
SD	0.020	-0.39	0.060
DO	0.151	0.22	0.317
O ₂ sat	0.158	0.18	0.350
TRIX	0.365	0.17	0.082
EI	0.154	0.36	-0.114
Chl-a	-0.127	0.44	-0.117
DIN/P	0.027	0.32	-0.080
DIN/Si	-0.210	0.33	0.026
Sewage	0.211	-0.01	-0.164
Agricultur	0.147	-0.11	0.075
Industry	0.446	-0.00	-0.162
Natural	-0.173	0.42	-0.227
Eutrophication	-0.027	0.16	-0.241
River discharge	0.201	-0.01	-0.164
Harbor	0.409	-0.10	0.100
Tourism	0.066	0.14	-0.210
Variation(%)	35.8	31.8	9

Table S5: Coefficients in the linear combinations of variables making up PC's in West Port Coastal water

variable	PC1	PC2	PC3
DIN	0.336	-0.142	0.006
PO_4^{-3}	0.368	-0.141	0.076
Sio_4^{-4}	0.409	0.002	0.034
TotalSolid	-0.008	-0.022	-0.430
Salinity	-0.197	0.196	0.408
SD	0.055	0.119	0.334
DO	0.167	0.014	-0.372
O ₂ sat	0.170	0.040	-0.335
TRIX	0.362	-0.044	-0.206
EI	0.315	0.015	-0.201
Chl-a	-0.130	0.44	-0.213
DIN/P	-0.009	0.50	-0.084
DIN/Si	-0.255	0.19	-0.064
Sewage	0.211	0.13	0.060
Industery	0.424	0.056	0.097
Natural	-0.125	0.422	-0.092
Eutrophication	-0.205	0.191	-0.108
Harbor	0.424	0.074	0.074
Tourism	-0.044	-0.005	0.228

Variation(%)	36	28.2	8.2
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Table S6: Coefficients in the linear combinations of variables making up PC's in South Port Coastal water

Variable	PC1	PC2	PC3
DIN	0.331	0.142	-0.216
PO_4^{-3}	0.328	0.121	-0.109
Sio_4^{-4}	-0.261	-0.127	-0.036
Total Solid	0.199	0.023	-0.190
Salinity	-0.282	0.144	0.052
SD	-0.171	0.084	0.125
DO	-0.169	0.034	-0.498
O ₂ sat	-0.206	0.068	-0.436
TRIX	0.302	-0.228	0.271
EI	0.350	-0.183	-0.142
Chl-a	0.341	-0.076	-0.235
DIN/P	0.090	0.026	-0.081
DIN/S	0.361	0.104	-0.167
Sewage	0.265	-0.225	0.065
Agriculture	-0.125	-0.208	-0.176
Industry	-0.002	0.46	0.016
Natural	-0.223	-0.243	-0.292
Eutrophication	0.304	-0.015	-0.030
River discharge	0.586	-0.110	-0.085
Harbor	-0.002	0.467	0.016
Tourism	-0.001	0.461	0.018
Variation (%)	45	20	10

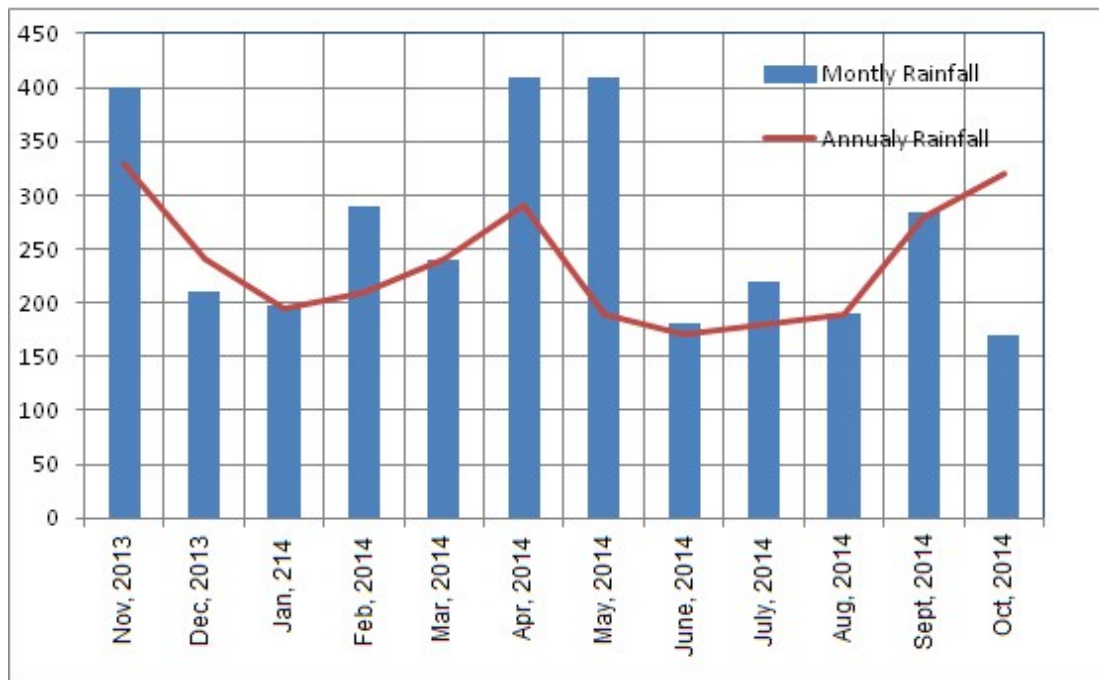


Figure S1. Monthly mean rainfalls (mm) from November 2013 until November 2014 in Klang Strait