Supplementary Material

Influence of the external N and P inputs on nutrients in the coastal area of Xiamen, China

Siying Dai^{A,B}, Jiehua Hu^C, Shanshan Wang^{A,B}, Siming Huang^D, Rong Tian^{A,B}, Shuhui Zhao^E, Yang Luo^{A,B}, Xiaoke Zhang^{A,B}, Xia Sun^{A,B} and Jinpei Yan^{A,B,C,*}

^AAThird Institute of Oceanography, Ministry of Natural Resources, Daxue Road 178, Xiamen, Fujian Province, 361005, PR China

^BKey Laboratory of Global Change and Marine Atmospheric Chemistry, Daxue Road 178, Xiamen, Fujian Province, 361005, PR China

^CSchool of Marine Biology, Xiamen Ocean Vocational College, Applied Technology Engineering Center of Fujian Provincial Higher Education for Marine Resource Protection and Ecological Governance, Xiamen Key Laboratory of Intelligent Fishery, 4566 Hongzhong Avenue, Xiang'an District, Xiamen, Fujian Province, 361100, PR China

Email: pthjh1027@163.com

^DCollege of Ocean and Earth Sciences, Xiamen University, Xiamen, 361005, PR China Email: hsming@stu.xmu.edu.cn

^ESchool of Tourism, Taishan University, Tai'an, 271000, PR China.

Email: shzhao@tsu.edu.cn

*Correspondence to: Email: jpyan@tio.org.cn

Table S1. Information about all the stations in coastal Xiamen during period of 2013–2018.

		01	
Stations	Longitude	Latitude	The number of samples
XM01	118.0150	24.5458	22
XM02	118.0750	24.5525	22
KM03	118.0717	24.5233	24
XM04	118.0583	24.4767	22
XM05	118.0739	24.4394	22
XM06	118.0081	24.4219	24 ^A
XM07	118.0917	24.4133	24 ^A
XM08	118.1481	24.4119	24 ^A
XM09	118.1875	24.4408	22 ^A
XM10	118.2167	24.5000	22 ^A
XM11	118.1975	24.5439	24
XM12	118.1333	24.5650	24
XM13	118.1639	24.6067	22
XM14	118.2808	24.5036	24
XM15	118.3492	24.5192	22
XM16	118.3850	24.5450	23 ^B
XM17	118.0494	24.4483	19 ^C
XM18	118.5500	24.4000	4
XM19	118.4719	24.3639	4
XM20	118.3817	24.2750	4 ^D
XM21	118.2469	24.2167	4 ^D
XM22	118.2225	24.2822	4
XM23	118.1942	24.3431	4

^AThe number 24 represented the data in four seasons of every year were all collected, whereas 22 represented the data for January 2013 and 2014 were missing.

^BCollection beginning in May 2013.

^cCollection beginning in May 2014.

^DThese stations were collected only in 2018.

Table S2. The average	ge concentrations of nut	ients and other bi	iochemistry parame	eters in the coastal Xiamen.
-----------------------	--------------------------	--------------------	--------------------	------------------------------

Year	Items	DIN	PO ₄ -P	Chl-a	pН	Salinity	DO
		$(mg L^{-1})$	$(mg L^{-1})$	$(\mu g L^{-1})$			$(mg L^{-1})$
2013	Mean	0.799	0.046	4.636	8.06	27.90	7.56
2014	Mean	0.722	0.049	2.041	7.98	28.9	7.11
2015	Mean	0.775	0.048	1.264	8.00	28.5	7.54
2016	Mean	1.032	0.041	2.676	8.00	25.6	7.18
2017	Mean	0.671	0.039	2.777	8.06	27.9	7.40
2018	Mean	0.500	0.027	1.889	8.02	30.3	7.77

Table S3. Annual total nitrogen from Jiulong river and atmospheric deposition (Mg)

Year	Total nitrogen from Jiulong river	Dry deposition N	Estimated wet deposition N	Ratio of atmospheric deposition to riverine inputs
2013	4.77×10 ⁴	3.03×10 ³	1.59×10^{4}	0.40
2014	5.13×10 ⁴	2.95×10 ³	1.55×10^{4}	0.36
2015	4.94×10^{4}	2.76×10^{3}	1.45×10^{4}	0.35
2016	7.41×10^{4}	2.49×10^{3}	1.30×10^{4}	0.21
2017	3.83×10 ⁴	2.35×10 ³	1.24×10^{4}	0.39
2018	-	2.12×10 ³	1.11×10^{4}	-



Fig. S1. Seasonal variations of Chl-a and PO₄-P in coastal Xiamen.

pН	pН	0	*	•	*	•			۲	۲	۲	
Salinity	-0.14	Salinity	۲				*		*	•		*
DO	0.46	-0.17	DO			•						۲
COD		0.35		COD				•				
PO ₄ -p	-0.44	-0.16	-0.36	-0.40	PO ₄ -p	*	•		*	*		*
NO ₂ -N	-0.29		-0.24	-0.28	0.46	NO ₂ -N						
NO ₃ -N		-0.73	0.36	-0.28	0.28		NO ₃ -N		*	۲	۲	*
NH ₄ -N	-0.27	-0.39	-0.29	-0.25	0.41		0.36	NH ₄ -N	*		۲	
DIN	-0.16	-0.73		-0.37	0.47		0.88	0.73	DIN	۲	•	*
Chl-a		-0.24			-0.48		-0.17		-0.18	Chl-a		
TSP	0.17	0.31	0.35				-0.21	-0.22	-0.27	-0.35	TSP	
SiO3.	-0.40	-0.68	-0.18	-0.37	0.61	0.40	0.71	0.39	0.76	-0.084	-0.36	SiO ₃ -
	рН * р<=	Salinity =0.05	DO	COD	PO ₄ -p	NO ₂ -N	NO ₃ -N	NH ₄ -N	DIN	Chl-a	TSP	SiO ₃ -

Fig. S2. Correlation analysis of nutrients and environmental factors in coastal Xiamen during 2013–2018.



Fig. S3. Proportion of DIN components in coastal Xiamen during period of 2013–2018.



Fig. S4. Dry deposition flux in the coastal Xiamen from 2013 to 2018.