Role of phosphorus concentration and the nitrogen to phosphate ratio in the synergistic stimulation of alkaline phosphatase activity in Laizhou Bay, China, coastal waters

1. Tables

Table S1 Initial nutrient status in enclosed culture experiments

Experimental condition	DIN ($\mu mol \cdot L^{-1}$)	PO$_4$-P ($\mu mol \cdot L^{-1}$)	DIN : PO$_4$-P
Control group (CG)	1.90	0.04	55
Treatment group (TG)	50.01	1.78	28

Table S2 Light, temperature and rainfall during culture experiment

Date	Culture time	Light intensity	Temperature	Weather	Precipitation
	d	$\times 10^3$ lux	℃		mm
2021.7.23	0	135		Cloudy to overcast	
2021.7.24	1	140		Cloudy to sunny	
2021.7.25	2	110	31.0	Overcast to clear	
2021.7.26	3	103	31.6	Cloudy to overcast	
2021.7.27	4	75	30.8	Cloudy to overcast	
2021.7.28	5	50	30.8	Cloudy	
2021.7.29	6	50	29.8	9:00~17:00 Heavy rainfall	15.41

2021.7.30	7	33	28.2	Cloudy to light rain	2.27
2021.7.31	8	137	29.6	Sunny to thundery shower	24.93
2021.8.2	10	130	28.8	Sunny	
2021.8.4	12	84	30.0	Cloudy	
2021.8.5	13	50		15:00~17:00 Heavy rainfall	21.78
2021.8.6	14	80	29.0	Sunny to cloudy	
2021.8.8	15	120	30.4	Sunny	
2021.8.11	16	134		Cloudy to overcast	
2021.8.14	19	79		Sunny	
2021.8.16	22	121		Sunny	
2021.8.18	26	138	29.8	Sunny to cloudy	
2021.8.21	29	135	28.6	Sunny	

2. Figures

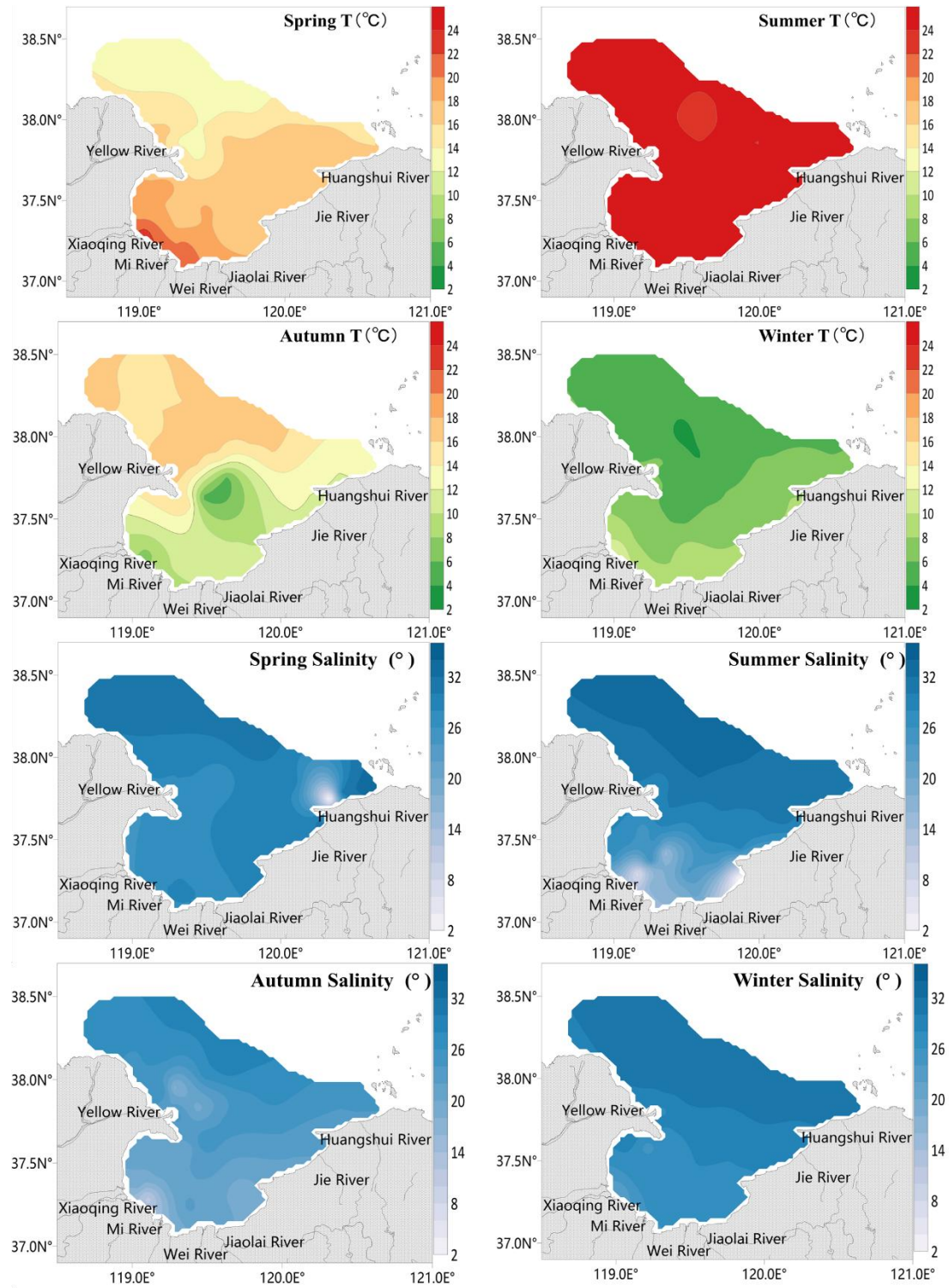



Figure S1 Seasonal changes of surface seawater temperature and salinity in Laizhou Bay.

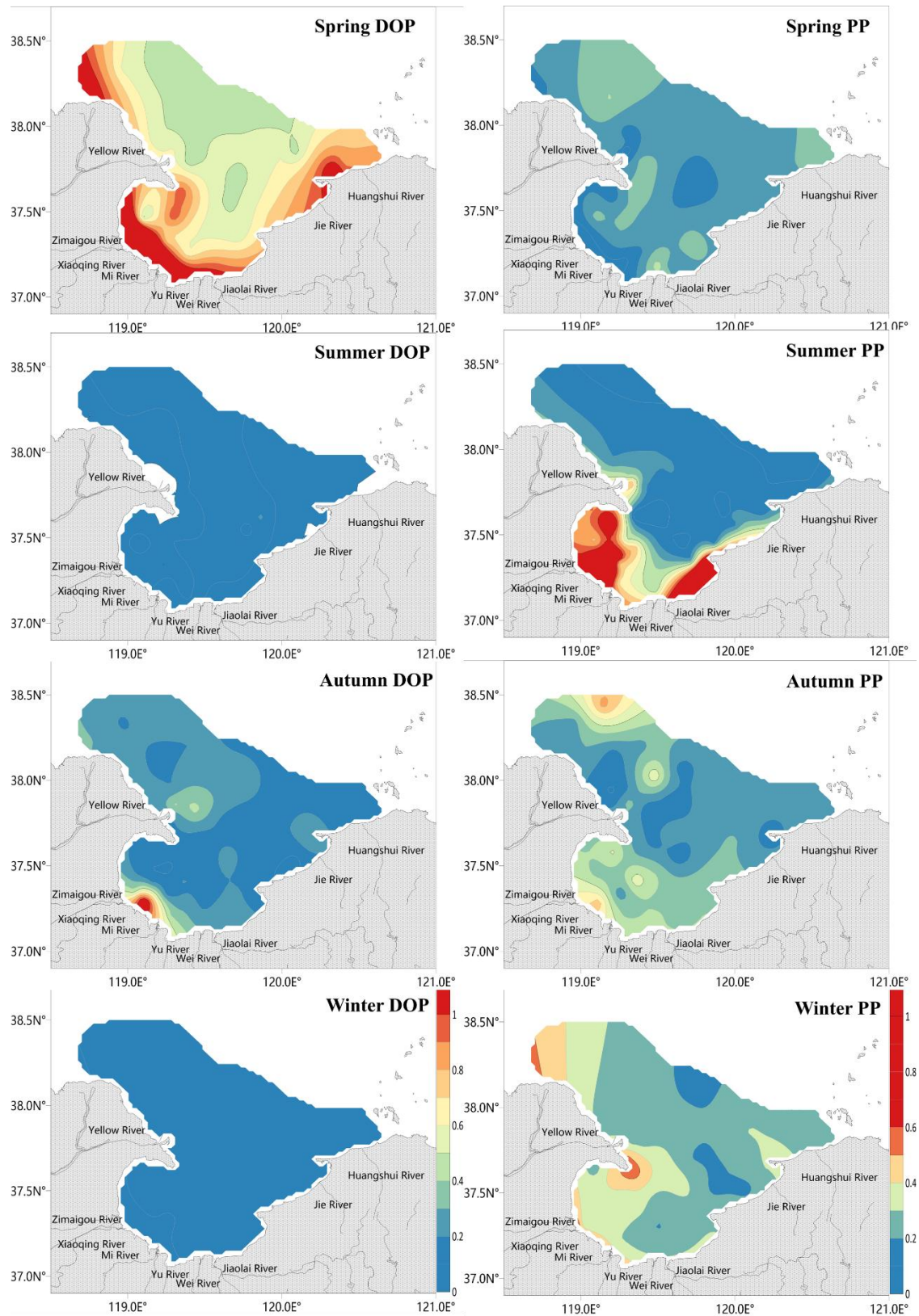



Figure S2 Seasonal changes of surface seawater dissolved inorganic nitrogen in Laizhou Bay.

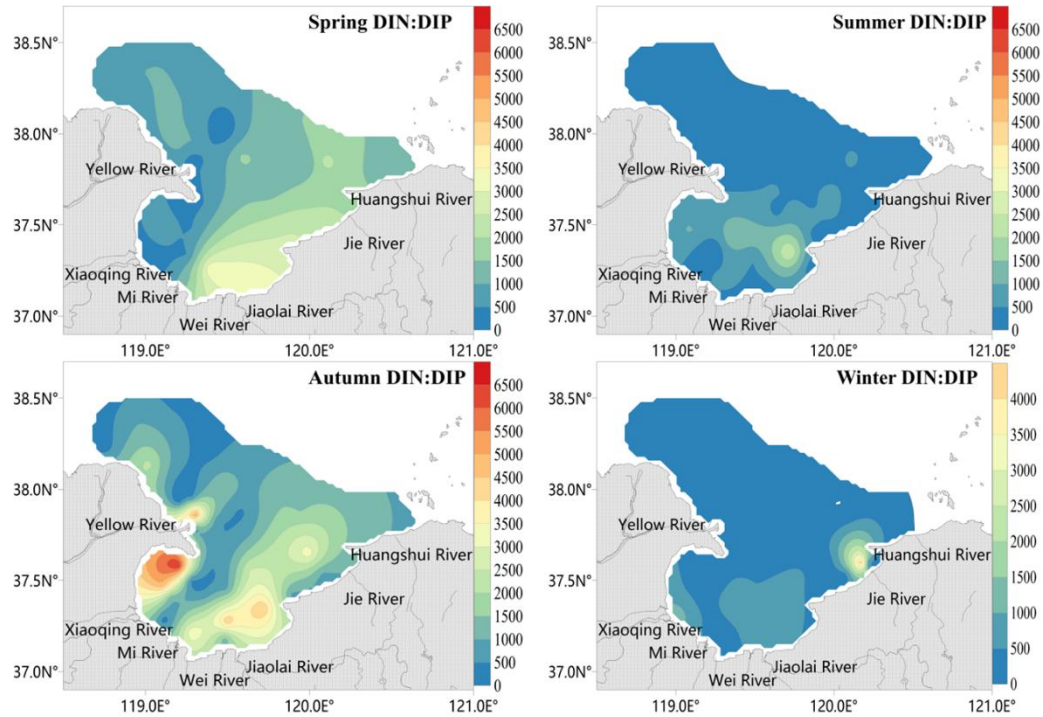



Figure S3 Seasonal changes of surface seawater dissolved inorganic nitrogen and phosphorus in

Laizhou Bay.

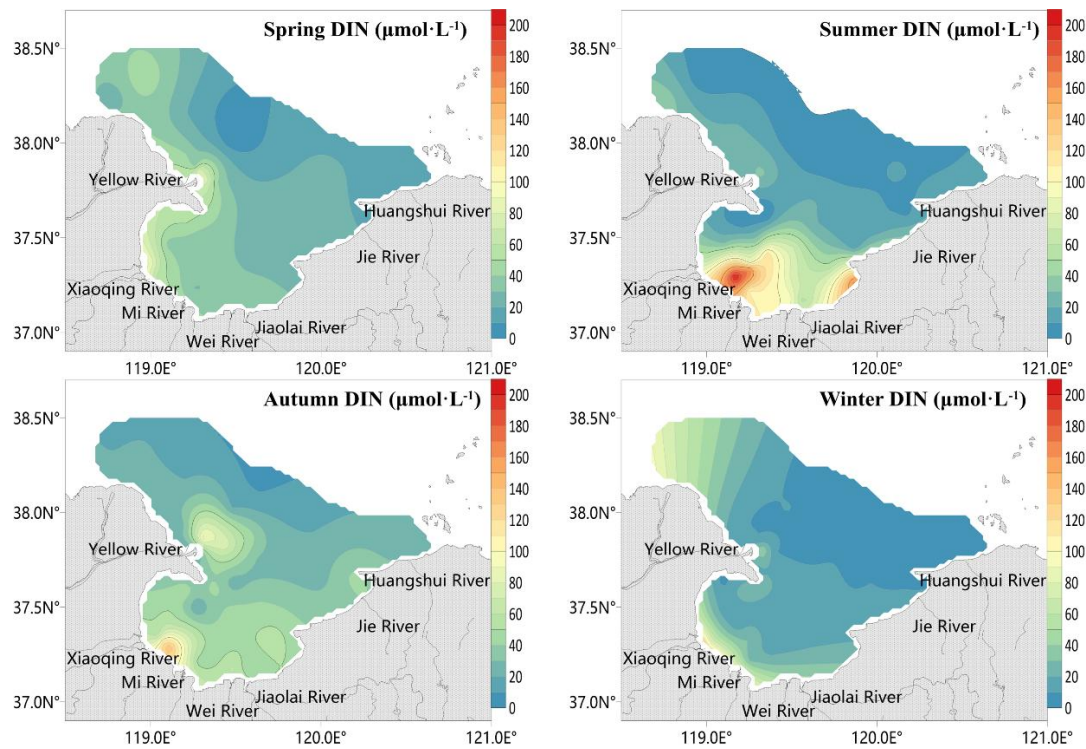



Figure S4 Seasonal changes of surface seawater dissolved inorganic nitrogen in Laizhou Bay.

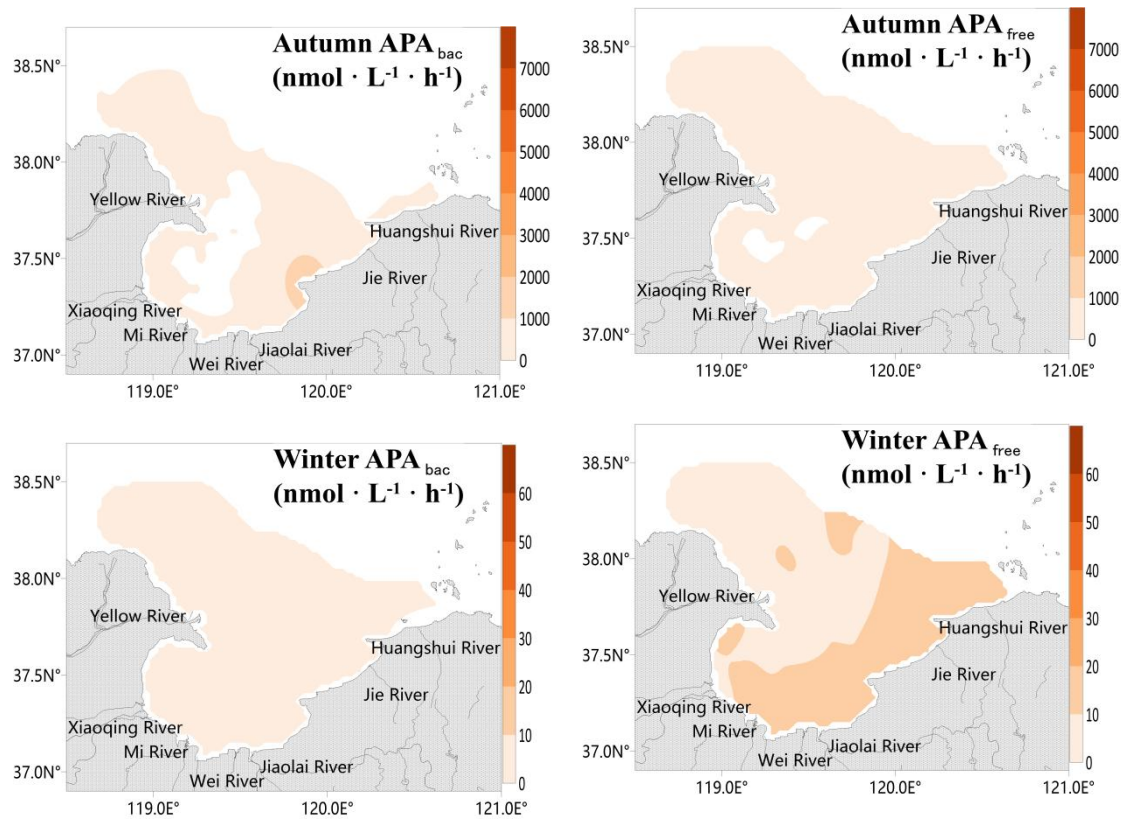



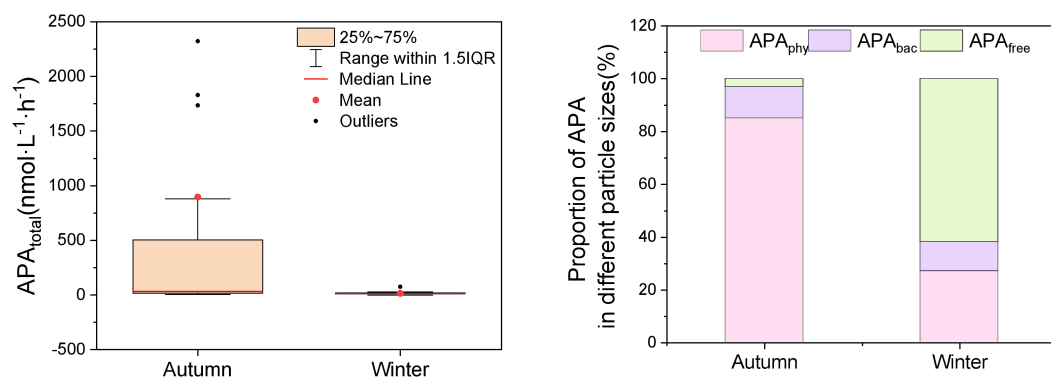
Figure S5 Changes of surface seawater APAbac and APAfree in Laizhou Bay in autumn and

winter 2021.

Figure S6 Proportion of different APA sizes in Laizhou Bay in autumn and winter 2021.

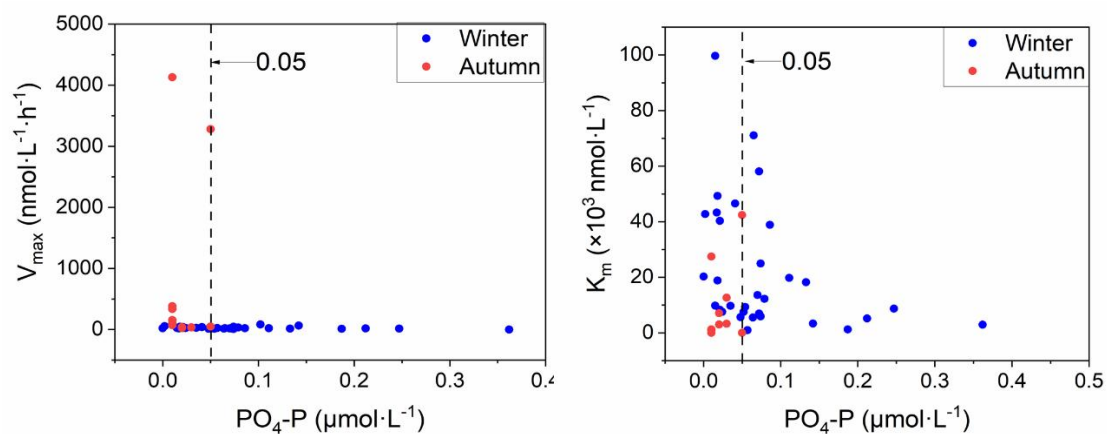



Figure S7 Proportion of different APA sizes in Laizhou Bay in autumn and winter 2021.

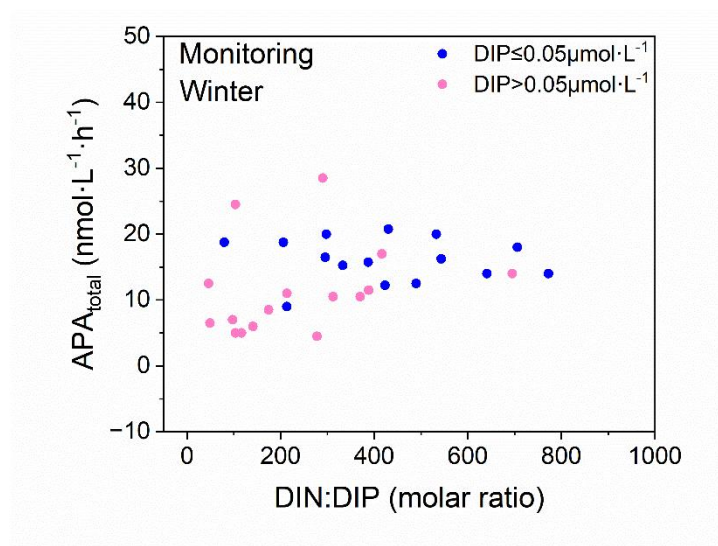



Figure S8 Correlation between alkaline phosphatase activity (APA) and DIN/DIP.