

# **Perturbations of heterotrophs and autotrophs in tidally dynamic coastal sediments: development of a scalable model**

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## **1 Microbial ATP samplings**

Since all the previous empirical data can not directly show the two-dimensional characteristics of microbial distribution, we arrived at Chongming Dongtan wetland on June 16, 2021, and collected intertidal sediments of 0 ~ 130 cm depth. Our in-situ survey aimed to obtain the sectional microbial distribution and verify the existence of microbial aggregation in intertidal sediments. ATP concentration of samples in our survey was measured to represent the microbial biomass by a commercial ATP assay, indicated by relative light units (RLU), as detailed in the main text and Table S1.

**Table S1.** Microbial ATP samplings in the Chongming Dongtan wetland (121.8950° longitude, 31.4488° latitude).

Distance (m)	Depth (m)	Test1 (RLU)	Test2 (RLU)	Test3 (RLU)	Test4 (RLU)	Average(RLU)
7.5	0	504	379	380	376	409.75
7.5	0.01	180	427	2828	128	890.75
7.5	0.02	113	120	134	88	113.75
7.5	0.04	28	62	33	37	40.00
7.5	0.07	241	23	19	102	96.25
7.5	0.10	54	27	22	18	30.25
7.5	0.15	106	15	25	92	59.50
7.5	0.22	131	240	155	45	142.75
7.5	0.30	13	32	22	29	24.00
7.5	0.40	8	23	7	38	19.00
7.5	0.60	29	6	17	42	23.50
7.5	1.00	8	9	15	20	13.00
7.5	1.30	10	14	0	7	7.75
5.0	0	688	392	182	248	377.50
5.0	0.01	220	138	191	458	251.75
5.0	0.02	218	246	46	154	166.00
5.0	0.05	59	196	176	122	138.25
5.0	0.12	25	24	32	18	24.75
5.0	0.20	27	10	22	45	26.00
5.0	0.60	3	11	9	23	11.50
5.0	1.00	11	19	10	13	13.25
5.0	1.30	0	3	10	6	4.75
2.5	0	65	44	99	2908	779.00
2.5	0.01	122	95	156	769	285.50
2.5	0.02	81	81	83	85	82.50
2.5	0.08	73	53	86	32	61.00
2.5	0.12	54	34	17	24	32.25
2.5	0.20	53	36	34	12	33.75
2.5	0.50	50	75	32	33	47.50
2.5	1.00	17	14	0	16	11.75
2.5	1.30	16	22	15	13	16.50
0	0	117	113	236	234	175.00
0	0.02	41	163	234	228	166.50
0	0.05	150	124	88	100	115.50
0	0.08	102	206	161	121	147.50
0	0.15	93	107	30	224	113.50
0	0.20	35	42	55	33	41.25
0	0.50	40	37	43	45	41.25
0	1.00	47	30	32	27	34.00
0	1.30	23	22	8	10	15.75