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Supplement of

Benthic phosphorus cycling in the Peruvian oxygen minimum zone

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Table S1: TPP, PIP, POP and POC concentrations of water column particles [$\mu\text{mol L}^{-1}$] and sediments [$\mu\text{mol mg}^{-1}$]. The standard deviation for TPP (RSD = 10%), PIP (RSD = 7%) and POP (RSD = 10%) of the water column particles was calculated from the duplicate measurements of the stations I, IV and V. The standard deviation for sedimentary TPP (RDS = 4%) and PIP (RSD = 6%) concentrations was derived from repeated measurements of the sediment standards MESS-3 and SDO-1. The POC measurements have a standard deviation of 2%. The POC/xP (where xP = TPP, PIP or POP) ratios were calculated from these concentrations.

Station	Water depth (m) / sediment depth (cm)	TPP	PIP	POP	POC	POC/TPP	POC/PIP	POC/POP	
		[$\mu\text{mol L}^{-1}$] / [$\mu\text{mol mg}^{-1}$]	[$\mu\text{mol L}^{-1}$] / [$\mu\text{mol mg}^{-1}$]	[$\mu\text{mol L}^{-1}$] / [$\mu\text{mol mg}^{-1}$]	[$\mu\text{mol L}^{-1}$] / [$\mu\text{mol mg}^{-1}$]				
Water column									
I	98CTD26	10	0.146	0.097	0.049	12.88	89	133	277
		20	0.127	0.071	0.056	10.37	82	147	185
		50	0.134	0.058	0.075	10.40	78	178	141
		65	0.152	0.077	0.074	14.55	96	189	195
		70	0.202	0.078	0.123	15.31	76	197	126
Sediment									
I	220MUC39	0.25	0.063	0.036	0.027	5.056	81	140	191
		0.75	0.065	0.039	0.026	4.970	77	128	194
		1.25	0.044	0.031	0.013	3.111	71	100	245
		2.25	0.041	0.030	0.011	2.773	68	91	264
		3.25	0.040	0.027	0.013	2.908	73	109	226
		4.25	0.042	0.033	0.010	2.826	67	86	291
		5.5	0.052	0.041	0.011	2.590	50	63	246

Water column

III	269CTD70	20	0.105	0.054	0.051	8.94	85	165	174
		50	0.070	0.037	0.033	7.43	107	202	227
		125	0.118	0.064	0.054	8.03	68	125	149

Sediment

III	248MUC46	0.25	0.082	0.077	0.005	5.650	69	73	-
		0.75	0.046	0.024	0.022	5.745	124	235	262
		1.25	0.049	0.030	0.019	6.664	137	225	351
		1.75	0.052	0.031	0.021	7.012	136	229	335
		2.25	0.051	0.030	0.021	6.997	137	231	336
		3.25	0.052	0.031	0.021	5.883	114	188	287
		4.25	0.052	0.031	0.021	6.863	132	221	328
		4.75	0.050	0.029	0.021	6.940	139	237	337

Water column

IV	111CTD29	10	0.171	0.088	0.083	17.59	103	200	220
		20	0.069	0.038	0.031	6.31	93	165	219
		50	0.061	0.028	0.033	7.66	125	274	234
		100	0.090	0.038	0.052	7.39	82	199	143
		141	0.075	0.025	0.050	7.09	94	291	142

Sediment									
IV	36MUC10	0.25	0.080	0.048	0.032	6.455	81	134	205
		0.75	0.065	0.038	0.027	7.749	119	204	283
		1.25	0.065	0.042	0.023	7.919	122	189	343
		2.75	0.051	0.031	0.020	7.182	142	232	364
		3.25	0.053	0.032	0.020	7.391	140	228	361
		4.25	0.060	0.040	0.020	7.592	127	192	376
		5.5	0.062	0.044	0.019	7.972	128	183	430
Water column									
V	279CTD81	50	0.058	0.013	0.045	6.93	119	548	174
		100	0.069	0.017	0.053	7.08	106	451	138
		190	0.072	0.023	0.049	8.90	132	385	213
Sediment									
V	247MUC45	0.25	0.092	0.038	0.054	12.881	140	340	238
		0.75	0.076	0.034	0.042	9.286	122	270	222
		1.25	0.068	0.027	0.040	11.027	163	405	273
		1.75	0.075	0.056	0.019	13.730	182	245	-
		2.25	0.078	0.036	0.042	11.188	143	314	264
		3.25	0.079	0.035	0.044	10.890	138	314	245
		4.25	0.072	0.032	0.040	10.009	140	314	252
5.5	0.071	0.033	0.038	11.080	156	341	289		

Water column

VI	92CTD24	10	0.986	0.579	0.407	89.09	91	155	234
		50	0.045	0.020	0.025	3.98	88	197	158
		100	0.028	0.015	0.013	5.05	179	335	384
		150	0.049	0.025	0.025	4.65	95	189	190
		200	0.041	0.017	0.024	5.44	133	326	225
		240		0.020	0.051	4.45	62	217	87

Sediment

VI	198MUC34	0.25	0.102	0.059	0.043	8.666	85	146	201
		0.75	0.086	0.041	0.045	10.164	118	250	225
		1.25	0.091	0.047	0.044	12.334	136	263	282
		1.75	0.093	0.046	0.047	12.072	130	263	258
		2.25	0.091	0.051	0.040	11.360	125	225	282
		3.25	0.084	0.040	0.044	12.342	147	309	280
		3.75	0.093	0.059	0.034	13.184	141	222	388
		5.5	0.093	0.047	0.046	13.439	144	288	289

Water column

VIII	66CTD16	30	0.135	0.096	0.039	16.16	120	169	414
		50	0.043	0.024	0.019	5.96	138	244	318
		150	0.030	0.012	0.018	2.98	99	258	161
		250	0.021	0.006	0.014	2.23	108	363	155
		350	0.020	0.007	0.013	2.83	143	420	217
		407	0.037	0.017	0.020	3.55	96	209	178

Sediment

VIII	107MUC23	0.25	0.730	0.712	0.019	5.504	8	8	296
		0.75	1.346	1.321	0.025	5.062	4	4	201
		1.25	1.580	1.551	0.029	4.114	3	3	141
		2.25	2.372	2.327	0.045	3.676	2	2	81
		3.5	1.027	1.017	0.010	6.219	6	6	653
		4.5	0.622	0.611	0.011	7.251	12	12	653
		5.5	0.480	0.470	0.010	7.788	16	17	791

Figure S1: Phosphate (PO_4^{3-}) concentrations of the benthic lander chambers BIGO I (red) and BIGO II (blue). The yellow dots show the PO_4^{3-} concentration of the ambient bottom water. At stations IV, V and VII concentrations were only measured in one chamber.

