Article

A dual source of phosphorus to lake sediments indicated by distribution, content and speciation: Inle Lake (Southern Shan State, Myanmar)

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Table S1 Water, Organic Matter, TP and relative forms extracted from grab and core sediments from Inle lake

Sample type	Name	Water content (%)	O. M. content (%)	TP_{SMT} (mg/kg)	IP (mg/kg)	OP (mg/kg)	Fe-P (mg/kg)	Ca-P (mg/kg)	IP/TP_{SMT} %	OP/TP_{SMT} %	$Fe\text{-}P/TP_{SMT}$ %	$Ca\text{-}P/TP_{SMT}$ %
Grab sediments (0-10 cm)	SW 1	2	8	714	363	181	84	275	51	25	12	39
	SW 2	2	10	562	235	238	75	194	42	42	13	35
	SW 3/1	4	26	469	236	157	23	208	50	34	5	44
	SW 3/2	1	9	152	53	47	24	40	35	31	16	27
	SW 3/3	2	11	203	98	83	28	64	48	41	14	32
	SW 4/1	4	34	1980	1452	368	189	1072	73	19	10	54
	SW 4/2	6	60	1489	922	570	158	811	62	38	11	54
	SW 4/3	7	56	1777	955	541	153	731	54	30	9	41
	SW 4/4	1	13	253	122	96	19	64	48	38	8	25
	SW 5	2	9	331	169	103	36	113	51	31	11	34
	SW 6	2	15	292	107	119	19	82	37	41	6	28
	SW 7	3	14	502	277	150	46	166	55	30	9	33
	SW 8	2	13	307	153	110	25	122	50	36	8	40
	SW 9	2	17	682	419	170	83	220	61	25	12	32
	SW 10	2	22	376	179	140	28	94	48	37	7	25
	SW 11	1	13	152	71	59	20	38	47	38	13	25
Core 2	0-5 cm	2	10	500	205	164	113	75	41	33	23	15
	5-10 cm	3	9	504	199	170	97	72	40	34	19	14
	10-15 cm	3	9	505	222	149	72	83	44	30	14	16
	15-20 cm	3	11	586	273	165	112	101	47	28	19	17
	20-25 cm	2	10	579	225	168	57	120	39	29	10	21
	25-30 cm	3	10	585	246	169	72	91	42	29	12	16
	30-35 cm	3	10	456	221	200	86	69	49	44	19	15
	35-40 cm	3	10	484	263	139	127	81	54	29	26	17
	40-45 cm	3	9	396	212	130	69	90	54	33	17	23
	45-50 cm	2	9	394	200	118	58	91	51	30	15	23
	50-55 cm	2	9	342	153	85	41	76	45	25	12	22
	55-60 cm	3	10	493	257	139	69	109	52	28	14	22
	60-65 cm	3	10	552	320	202	81	146	58	37	15	26
	65-70 cm	3	10	551	313	175	77	146	57	32	14	26
	70-75 cm	3	11	670	357	150	52	202	53	22	8	30
	75-80 cm	3	11	447	274	135	33	163	61	30	7	36
Core 3/1	0-5 cm	4	27	466	198	79	11	135	42	17	2	29
	5-10 cm	4	31	414	178	120	15	133	43	29	4	32
	10-15 cm	6	39	438	132	173	15	119	30	40	3	27
	15-20 cm	5	36	427	158	153	15	119	37	36	3	28
	20-25 cm	4	27	324	119	120	29	125	37	37	9	39
	25-30 cm	5	42	497	175	165	7	206	35	33	1	41
	30-35 cm	2	13	174	92	51	7	71	53	29	4	41
	35-40 cm	1	8	86	61	25	7	55	71	29	8	64
	40-45 cm	1	11	76	40	30	7	28	53	40	9	38
	45-50 cm	1	8	56	28	30	9	19	51	53	16	34
	50-55 cm	0	5	42	35	10	3	28	83	24	7	67
Core 4/2	0-5 cm	7	45	1461	972	416	173	669	67	28	12	46
	5-10 cm	6	46	1765	1139	510	221	681	65	29	13	39
	10-15 cm	6	44	1311	786	416	137	554	60	32	10	42
	15-20 cm	6	49	1226	891	330	191	578	73	27	16	47
	20-25 cm	3	31	2540	2381	201	109	2082	94	8	4	82
	25-30 cm	1	9	1050	1007	168	64	968	96	16	6	92
Core 4/3	0-5 cm	9	56	1609	945	464	161	613	59	29	10	38
	5-10 cm	8	51	1638	978	441	151	649	60	27	9	40
	10-15 cm	7	49	1389	944	378	76	632	68	27	5	45
	15-20 cm	5	37	903	557	267	70	382	62	30	8	42
	20-25 cm	1	10	202	162	55	25	96	80	27	12	48
	Minimum	0	5	42	28	10	3	19	30	8	1	14
	Maximum	9	60	2540	2381	570	221	2082	96	53	26	92

Table S2 Results of the Factor Analysis performed on the chemical and mineralogical data from grab and core sediments from Inle lake

Analyte symbol	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Ca	-0.600	-0.190	0.050	**-0.745**	0.010	0.080
Mg	-0.099	-0.040	0.097	**-0.868**	0.194	0.074
Sr	-0.358	0.172	-0.008	**-0.855**	-0.106	-0.023
Ba	**0.829**	0.069	0.229	-0.385	0.185	-0.027
Be	**0.956**	-0.002	0.177	0.040	0.102	-0.021
Li	**0.956**	0.097	0.224	0.109	0.070	-0.005
Na	**0.903**	0.243	0.242	0.082	0.129	-0.010
K	**0.972**	0.018	0.129	0.150	0.089	0.008
Rb	**0.971**	0.048	0.143	0.131	0.081	0.002
Cs	**0.914**	0.087	0.318	0.065	0.087	0.028
Al	**0.975**	0.082	0.098	0.151	0.065	-0.006
Fe	**0.965**	0.145	0.121	0.120	0.077	0.000
Mn	**0.851**	0.306	0.200	-0.162	0.082	0.048
Cd	0.479	**0.701**	0.269	-0.061	-0.014	-0.022
Co	**0.963**	0.167	0.118	0.154	0.059	0.003
Cr	**0.939**	0.113	0.139	0.115	0.056	-0.008
Cu	**0.683**	0.575	-0.055	0.044	0.091	0.129
Ni	**0.965**	0.179	0.043	0.098	0.062	0.001
Pb	**0.942**	0.170	0.239	0.095	0.064	-0.032
Mo	-0.280	**0.722**	0.079	-0.188	-0.159	0.036
V	**0.848**	0.362	0.266	0.177	-0.012	0.003
Zn	**0.882**	0.378	0.112	0.211	0.047	-0.012
W	0.309	0.485	**0.730**	-0.193	-0.043	0.002
Tl	**0.929**	0.168	0.228	0.096	0.068	0.060
Bi	**0.911**	0.271	0.004	0.129	-0.016	-0.020
Sn	**0.713**	0.224	0.550	0.172	0.017	0.048
As	**0.865**	0.373	0.036	0.107	0.010	-0.004
Sb	0.403	**0.719**	0.485	-0.066	-0.090	-0.024
Ag	**0.699**	0.176	0.527	-0.098	0.110	0.106
Au	-0.088	-0.014	0.082	-0.043	0.033	**0.935**
P	0.237	**0.880**	0.020	0.140	-0.105	-0.077
S	0.201	-0.302	-0.369	-0.121	-0.224	**0.419**
Sc	**0.979**	0.023	0.012	0.156	0.071	-0.001
Ti	**0.888**	0.137	0.358	0.151	0.025	0.044
Y	**0.973**	0.113	0.119	0.128	0.058	0.000
Zr	**0.957**	0.020	0.235	0.088	0.056	0.017
Nb	0.598	0.164	**0.728**	0.044	0.020	0.086
La	**0.964**	0.180	0.081	0.118	0.044	-0.005
Ce	**0.966**	0.155	0.097	0.128	0.050	-0.002
Hf	**0.951**	-0.024	0.256	0.062	0.057	0.030
Ta	0.550	0.079	**0.791**	-0.070	0.050	0.014
U	0.218	**0.921**	0.040	0.110	-0.085	-0.058
Th	**0.963**	0.072	0.203	0.091	0.072	-0.010
Kaolinite	**0.900**	0.035	-0.198	0.267	0.074	-0.038
Mica/Illite	**0.954**	-0.090	-0.090	0.144	0.078	-0.035
Calcite	**-0.872**	-0.110	0.098	-0.334	0.180	0.031
Aragonite	-0.262	0.072	0.044	-0.031	**-0.918**	0.052
Dolomite	0.305	0.118	**-0.355**	0.216	0.134	0.046
Hematite	-0.134	0.419	-0.051	0.197	**-0.827**	-0.049
Quartz	**0.714**	0.145	-0.018	0.415	0.114	-0.022
Eigenvalue	33.137	4.742	3.404	1.652	1.405	1.022
% of Variance	60.079	10.285	7.747	6.477	3.864	2.272
Cumulative %	60.079	70.364	78.11	84.588	88.452	90.724

Table S3 Correlation matrix of the sediment data (water content, O.M. content, TP, P forms, Tab. 2) and the mineralogical data extracted from Thin et al. [62~~-~~63]. Cc = Calcite; Qz = Quartz; M/I = Mica/Illite; Kaol = Kaolinite; Ar = Aragonite; Hem = Hematite; Dol = Dolomite. In red, correlations with p<0.01; in blue, correlations with p<0.01 and r≥0.8.

	Water	O.M.	TP	IP	OP	FeP	CaP	%IP	%OP	%FeP	%CaP	Cc	Qz	M/I	Kaol	Ar	Hem	Dol
Water	1																	
O.M.	0.910	1.000																
TP	0.686	0.722	1.000															
IP	0.524	0.604	0.964	1.000														
OP	0.838	0.827	0.845	0.696	1.000													
FeP	0.617	0.552	0.811	0.714	0.849	1.000												
CaP	0.443	0.568	0.916	0.980	0.612	0.595	1.000											
%IP	0.023	0.153	0.504	0.643	0.246	0.348	0.649	1.000										
%OP	-0.106	-0.114	-0.495	-0.567	-0.134	-0.280	-0.561	-0.562	1.000									
%FeP	-0.195	-0.364	-0.124	-0.150	-0.009	0.377	-0.245	-0.095	0.230	1.000								
%CaP	0.064	0.304	0.448	0.581	0.199	0.103	0.676	0.799	-0.458	-0.487	1.000							
Cc	0.013	0.288	-0.085	0.000	-0.154	-0.360	0.087	0.170	0.094	-0.516	0.453	1.000						
Qz	0.058	-0.172	0.069	-0.006	0.174	0.319	-0.072	-0.152	0.004	0.427	-0.333	-0.873	1.000					
M/I	-0.231	-0.493	-0.131	-0.185	-0.099	0.151	-0.247	-0.261	-0.015	0.556	-0.512	-0.873	0.662	1.000				
Kaol	-0.066	-0.333	0.003	-0.068	0.096	0.314	-0.156	-0.190	-0.005	0.572	-0.488	-0.904	0.727	0.900	1.000			
Ar	0.205	0.281	0.298	0.302	0.188	0.038	0.303	0.224	-0.276	-0.387	0.243	0.251	-0.419	-0.447	-0.467	1.000		
Hem	0.450	0.538	0.558	0.519	0.546	0.483	0.482	0.328	-0.320	-0.180	0.280	0.057	-0.152	-0.393	-0.231	0.725	1.000	
Dol	0.054	-0.046	0.084	0.033	0.120	0.207	-0.031	-0.119	-0.042	0.157	-0.235	-0.329	0.277	0.228	0.359	-0.209	0.001	1

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