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Supplementary 1

The spatio-temporal distribution of elements in the bottom sediments of Lake Onego and small lakes located on the catchment area of Onego Ice Lake

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Table 1. Average contents of major elements, Sr and Ba in stratified horizons of bottom sediments of different areas of Lake Onego and small lakes located within the territory of the OIL

Area	Na	Mg	Al	K	Ca	Si	Fe	Mn	Sr	Ba
	%								mg/kg	
Varved clays (arithmetic mean ± standard deviation)										
Bays	2.1±0.4	2.2±0.7	9.0±3.2	3.2±0.9	1.7±0.3	39±9	5.1±2.1	0.11±0.02	200±99	821±212
Petrozavodsk	1.9±0.5	1.5±0.2	6.9±1.8	2.2±0.6	1.4±0.2	36±7	3.7±0.9	0.07±0.02	159±85	524±156
Small Onego	1.8±0.4	1.0±0.1	7.0±3.8	3.0±1.1	1.8±0.6	38±9	4.2±1.1	0.08±0.03	173±91	750±302
Big Onego	1.8±0.3	1.1±0.1	7.0±2.8	3.0±0.5	1.8±0.5	37±5	4.0±2.1	0.08±0.02	168±79	790±317
Central Onego	1.9±0.5	2.2±0.3	9.5±3.9	2.9±1.0	1.5±0.3	38±7	5.5±2.1	0.09±0.03	193±98	655±112
South Onego	1.6±0.3	1.8±0.2	8.4±2.7	2.7±0.7	1.5±0.3	37±6	5.1±1.9	0.08±0.02	180±85	700±234
Small lakes	***1.8±0.4***	***1.4±0.6***	***7.3±1.5***	***2.2±0.5***	***1.5±0.4***	***37±9***	***4.3±0.5***	***0.05±0.02***	***241±87***	***615±156***
Homogeneous silts (arithmetic mean ± standard deviation)										
Bays	2.0±1.2	1.5±0.7	7.6±1.9	2.0±0.3	1.3±0.3	28±5	5.0±1.5	0.15±0.06	185±59	700±247
Petrozavodsk	1.8±0.5	1.2±0.5	8.0±1.8	3.5±0.9	1.2±0.6	27±3	5.6±0.9	0.37±0.05	179±65	620±256
Small Onego	1.6±0.3	1.0±0.3	5.9±1.8	1.8±0.2	1.2±0.1	28±4	4.4±1.1	0.12±0.03	176±51	600±112
Big Onego	1.0±0.3	1.2±0.4	5.9±0.5	1.8±0.3	0.8±0.1	28±5	6.4±1.1	0.26±0.04	102±49	582±102
Central Onego	1.2±0.3	1.3±0.3	7.3±1.2	1.9±0.2	0.9±0.2	29±7	7.1±1.6	0.26±0.03	115±58	766±312
South Onego	2.2±0.6	0.8±0.2	6.0±1.2	1.9±0.2	1.5±0.4	27±6	4.6±1.2	0.15±0.02	124±66	578±340
Small lakes	***1.7±0.8***	***0.8±0.6***	***4.3±0.5***	***1.6±0.2***	***1.4±0.3***	***27±9***	***3.7±0.5***	***0.05±0.01***	***294±87***	***475±156***
Oxidized silts + Fe-Mn nodules (arithmetic mean ± standard deviation) **of the 1st core type**										
Bays	1.3±0.8	1.0±0.2	5.2±2.1	1.3±0.5	1.2±0.2	25±7	11.7±4.5	2.5±0.6	136±39	1042±511
Petrozavodsk	1.4±0.7	0.7±0.5	4.5±0.8	1.3±0.5	1.2±0.4	23±6	8.2±6.9	4.6±1.9	164±59	2267±556
Small Onego	1.8±0.5	1.2±0.5	6.4±1.9	1.9±0.3	1.3±0.3	24±6	5.7±4.1	0.7±0.1	180±47	763±324
Big Onego	0.8±0.4	0.8±0.4	4.6±1.9	1.3±0.3	0.9±0.2	25±5	16.1±9	2.4±0.6	115±41	1058±436
Central Onego	0.9±0.3	0.8±0.4	5.1±1.4	1.4±0.3	1.1±0.3	26±6	11.4±6	1.6±0.3	106±28	670±259
South Onego	0.9±0.2	0.6±0.2	4.6±1.1	1.7±0.3	0.7±0.3	25±7	4.1±1.8	1.1±0.5	106±31	833±254
Rocks of the catchment area of Lake Onego										
Shungites **	1.4±0.8	0.4	0.2	1.2±0.4	0.2	29±11	2.3±1.5	0.8	60	364
Sedimentary rocks of the Russian Plate*	0.6	1.8	8.1	3.2	4.0	20	4.5	0.07	236	415
Crystalline rocks of the Baltic Shield*	2.2	1.5	7.9	2.4	2.4	31	4.3	0.10	346	426

Note: * - Ronov, Migdisov, 1996, ** - Romashkin et al., 2014; Filippov, 2002

Table 2. Average contents of trace elements in stratified horizons of bottom sediments of different areas of Lake Onego and small lakes located within the territory of the OIL

Area	Cd	Pb	Cu	Zn	V	Ni	U	Hg	Sb	Mo
	mg/kg									
Varved clays (arithmetic mean ± standard deviation)										
Bays	0.20±0.1	13±4	54±16	111±30	132±20	52±10	3.1±0.5	0.02±0.005	0.21±0.05	1.9±0.5
Petrozavodsk	0.11±0.1	11±2	41±14	76±20	112±27	43±4	2.0±0.6	0.03±0.003	0.27±0.06	1.0±0.1
Small Onego	0.17±0.05	13±2	56±19	100±35	125±28	59±6	2.5±1.0	0.05±0.009	0.40±0.04	1.2±0.2
Big Onego	0.17±0.06	14±2	47±11	86±24	110±41	38±7	2.3±0.4	0.03±0.004	0.38±0.03	0.8±0.08
Central Onego	0.09±0.02	14±2	57±16	116±35	144±36	60±10	4.3±1.9	0.03±0.004	0.16±0.04	0.8±0.09
South Onego	0.10±0.1	14±4	48±8	110±30	120±31	50±2	2.4±1.2	0.03±0.003	0.27±0.02	0.1±0.02
Small lakes	***0.17±0.09***	***14±4***	***38±10***	***85±32***	***104±23***	***45±12***	***2.1±1.1***	***0.03±0.07***	***0.38±0.5***	***0.8±1.1***
Homogeneous silts (arithmetic mean ± standard deviation)										
Bays	0.32±0.14	10±2	102±24	185±42	87±13	42±9	2.7±0.3	0.03±0.008	0.32±0.03	1.2±0.04
Petrozavodsk	0.34±0.15	9±1	112±18	176±51	80±18	37±19	2.3±0.6	0.04±0.009	0.34±0.05	1.1±0.02
Small Onego	0.29±0.09	9±2	82±12	176±38	72±25	27±7	2.6±0.7	0.04±0.007	0.29±0.04	3.4±0.4
Big Onego	0.41±0.14	12±1	122±16	102±26	86±27	40±7	2.7±0.4	0.06±0.01	0.41±0.05	3.0±0.8
Central Onego	0.19±0.08	12±1	118±18	115±21	87±25	40±14	2.7±0.9	0.05±0.005	0.19±0.04	2.5±0.2
South Onego	0.17±0.05	12±1	95±21	124±38	61±14	29±9	2.2±0.6	0.05±0.007	0.18±0.05	3.0±0.7
Small lakes	***0.56±0.07***	***21±5***	***24±12***	***98±25***	***88±33***	***26±11***	***1.3±1.1***	***0.07±0.01***	***0.36±0.3***	***0.95±0.2***
Oxidized silts + Fe-Mn nodules (arithmetic mean ± standard deviation) **of the 1st core type**										
Bays	0.74±0.26	21±9	40±13	138±41	102±39	49±18	2.6±0.8	0.074±0.031	0.61±0.21	15.2±4.1
Petrozavodsk	1.86±0.75	17±8	34±13	215±63	79±27	88±36	4.5±1.5	0.051±0.039	0.44±0.15	13.5±3.7
Small Onego	0.39±0.19	19±5	33±12	109±37	106±41	37±12	2.4±0.9	0.038±0.014	0.79±0.35	4.1±1.4
Big Onego	0.37±0.19	21±8	33±16	109±36	88±24	39±17	2.2±0.9	0.14±0.049	0.41±0.21	6.0±2.6
Central Onego	0.51±0.28	18±5	32±11	117±29	98±31	45±16	2.5±1.2	0.069±0.027	0.49±0.23	3.5±1.4
South Onego	0.59±0.21	20±6	22±8	80±33	69±27	45±19	2.4±0.9	0.078±0.031	0.28±0.11	3.5±1.6
Rocks of the catchment area of Lake Onego										
Shungites **	1.7	17	129	432	334	234	20	0.79	3.9	20
Sedimentary rocks of the Russian Plate*	0.09	18	30	74	95	44	3.8	---	1.1	1.4
Crystalline rocks of the Baltic Shield*	0.11	17	54	63	98	74	1.6	---	0.7	1.3

Note: * - Ronov, Migdisov, 1996, ** - Romashkin et al., 2014; Filippov, 2002

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