Supplementary information for

Carbon isotopes and lipid biomarker investigation of sources, transport and degradation of terrestrial organic matter in the Buor-Khaya Bay – the primary recipient of input from Lena River and coastal erosion in the Laptev Sea

E.S. Karlsson[1], A. Charkin[2], O Dudarev[2], I Semiletov[2,3],
J.E.Vonk[1,4], L. Sánchez-García[1], A. Andersson[1] and O Gustafsson[1]

[1]Department of Applied Environmental Science (ITM) and the Bert Bolin Centre for Climate Research, Stockholm University, Sweden.

[2]Pacific Oceanological Institute, Russian Academy of Sciences, Vladivostok, Russia

[3]International Arctic Research Center, University Alaska Fairbanks, Fairbanks, AK, USA

[4] Now at ETH Zürich, Geological Institute, Zürich, Switzerland

<u>This file includes:</u>

Supplementary information text

- Comparison of normal and log-normal representations of the end-member values

Figure S1 (Probability density functions illustrating the variability in the calculated fractions of plankton, surface soil and yedoma/mineral soil contributions to organic carbon at station 14.)

Figure S2 (Representation of Monte Carlo simulation – fractions contributing to POC and SOC, plotted versus distance to Muostakh Island)

Figure S3 (Representation of Monte Carlo simulation – fractions contributing to POC and SOC, plotted versus distance to Lena River Mouth)

Table S1 (lipid biomarker concentrations of individual *n*-alkanes in POC)

Table S2 (lipid biomarker concentrations of individual *n*-alkanes in SOC)

Table S3 (lipid biomarker concentrations of individual *n*-alkanoic acids in POC)

Table S4 (lipid biomarker concentrations of individual *n*-alkanoic acids in SOC)

Comparison of normal and log-normal representations of the end-member values

For the present MC strategy the ($\Delta^{14}C$ and $\delta^{13}C$) end-member values were represented using normal distributions. The argument for using normal distributions is that this is the least biased representation if an unknown distribution. However, for many environmental and geosciences applications another common distribution is the log-normal distribution. The log-normal distribution represents the distribution of the product, rather than the sum, of several independent random variables.

To compare the effects of using a normal vs. log-normal distributions, the MC calculations were repeated using log-normal representations of the end-member values. The results from using log-normal distribution display systematic differences compared to the normal distribution values, Fig S1. In general, the fractional influence my (μ) from plankton OC sources increases by ~8% (R^2=0.9956), whereas the yedoma/mineral soil OC contribution decreases by ~ 2% (R^2=0.9998) when log-normal distributions are used instead of normal. Interestingly, the change in surface soil OC contributions is ~ 0% (R^2=0.9999), reflecting the similarity of fit for the normal and log-normal distributions to the end-member data. However, it should be noted that these differences lies well within the uncertainty range of both distributions. Thus, for the current data set the choice between normal and log-normal distributions does not have a big influence on the biogeochemical interpretations.

Figure S1 Results of three end-member mixing model (Monte Carlo simulation) analysis of relative contributions from marine plankton ($f_{plankton}$; blue circles), surface soil ($f_{surfsoil}$; green triangles) and old yedoma/mineral soil ($f_{yedoma/mineral\ soil}$;black squares) to to **A:** surface water particulate organic carbon (POC) and **B:** surface sediment organic carbon (SOC) in Buor-Khaya Bay in August 2008. Fractions plotted versus distance to northernmost point of coastal erosion site Muostakh Island.

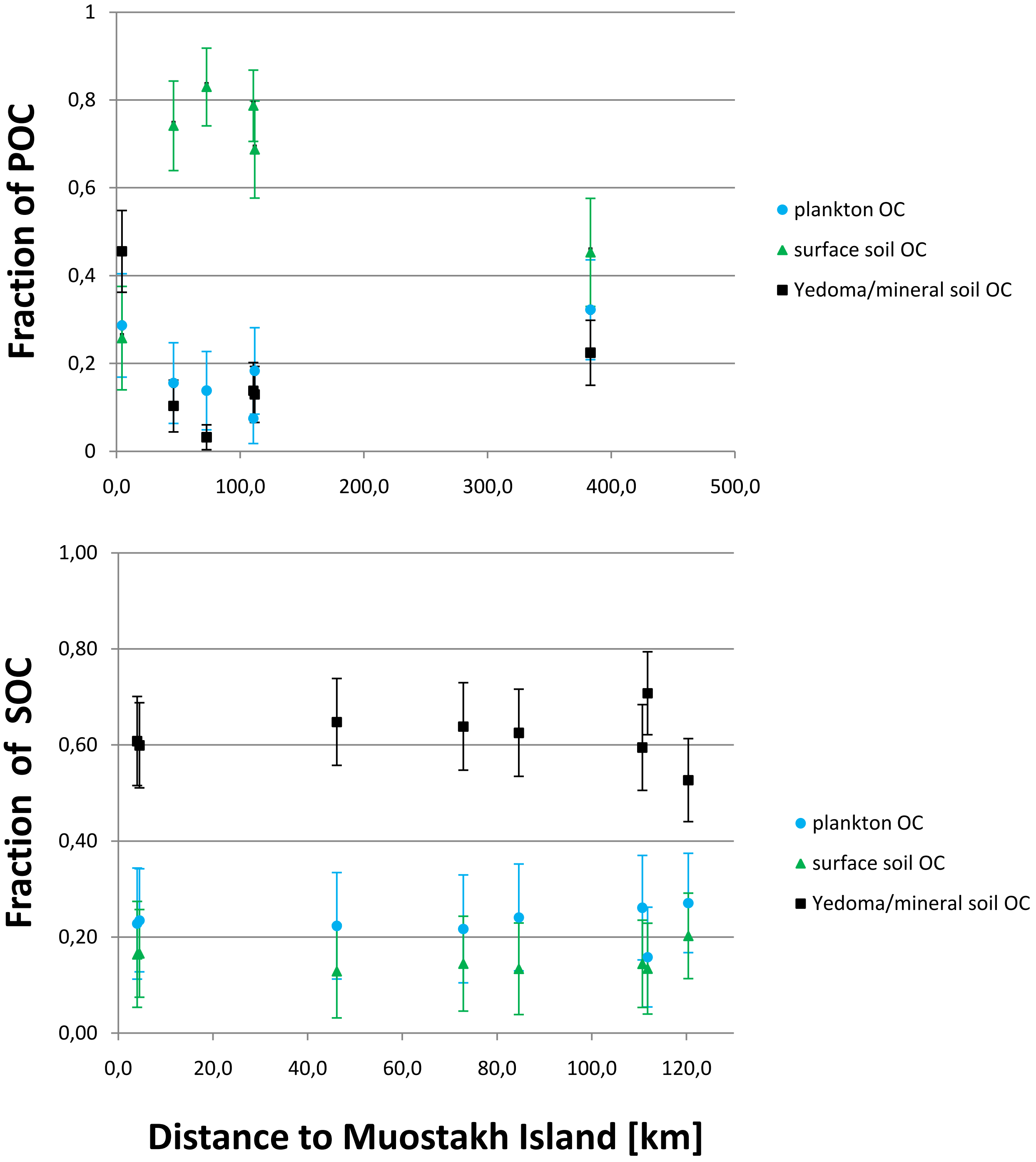

Figure S2. Results of three end-member mixing model (Monte Carlo simulation) analysis of relative contributions from marine plankton ($f_{plankton}$; blue circles), surface soil ($f_{surfsoil}$; green triangles) and old yedoma/mineral soil ($f_{yedoma/mineral\ soil}$;black squares) to to **A:** surface water particulate organic carbon (POC) and **B:** surface sediment organic carbon (SOC) in Buor-Khaya Bay in August 2008. Fractions plotted versus distance to River Mouth, in the Lena prodelta near the Sardakhskaya delta river channel outlet (Fig. 1).

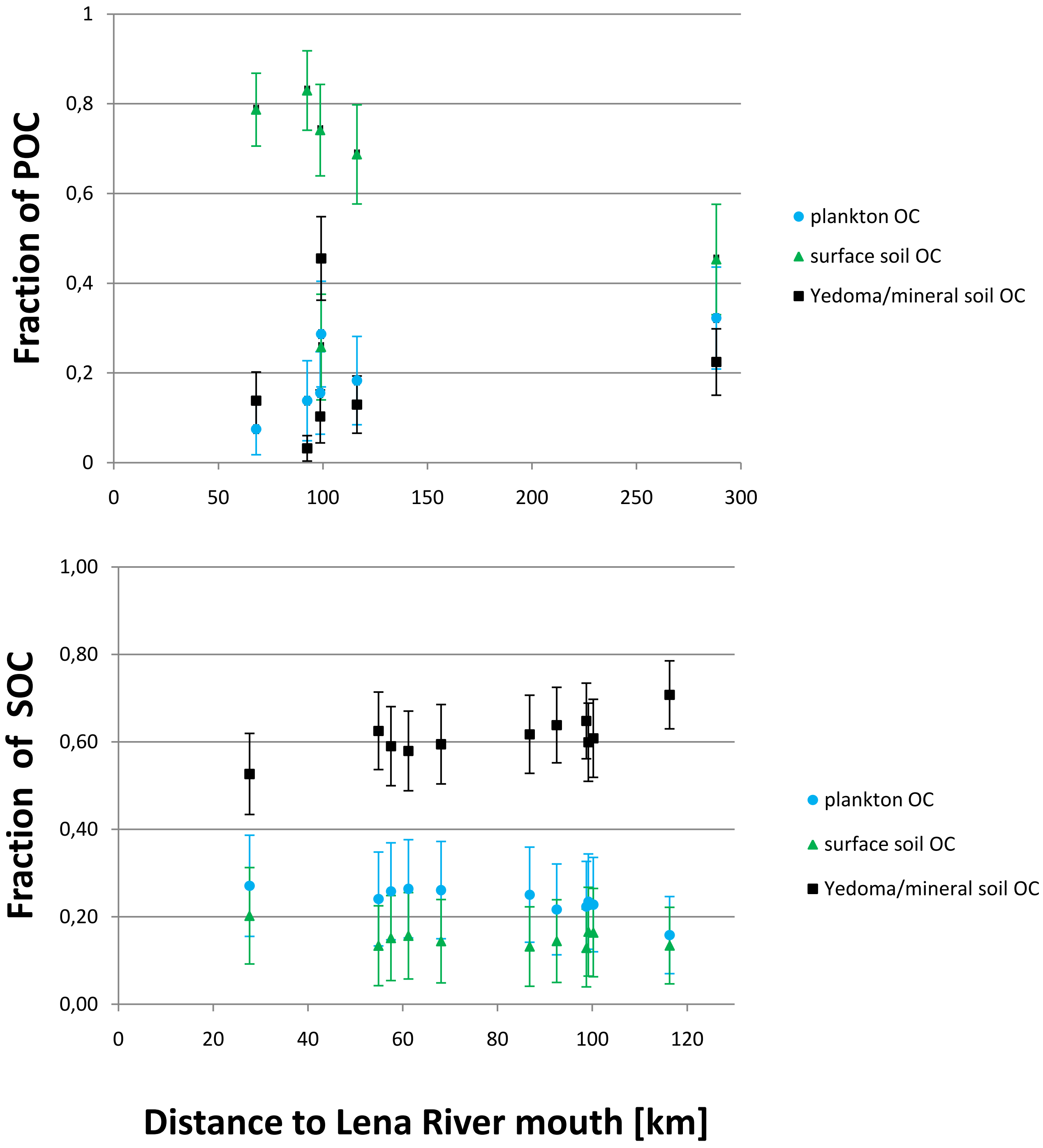

Figure S3. Probability density functions illustrating the variability in the calculated fractions of **A:** plankton, **B:** surface soil and **C:** yedoma/mineral soil contributions to organic carbon at station 14 (Fig. 1). Red curves represent normal distributions of the end-member data and blue curves represent log-normal distributions of the end-members.

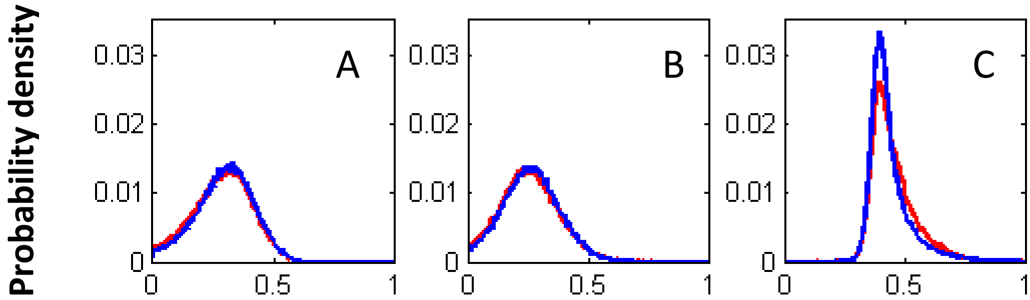

Table S1. Lipid biomarker concentrations of individual *n*-alkanes in POC [µg/g dw]. Internal standard used is a deuterated C-24 alkane (D-C24).

µg/g dw	15	19	20	22	24	26	28	35	40	44	47
C14	0.591	2.65	0.613	0.576	14.6	-	0.353	0.368	0.283	-	1.59
C15	0.429	7.26	4.93	1.28	23.3	4.82	0.741	7.32	3.99	0.954	1.14
C16	5.13	67.7	26.8	13.0	69.7	28.3	10.7	34.0	6.36	17.4	9.57
C17	4.21	513	184	39.8	232	131	61.8	17.5	24.0	14.2	12.8
C18	47.7	368	281	26.8	56.9	216	85.9	125	40.6	109	78.5
C19	11.3	258	90.5	30.7	74.1	99.9	24.6	-	13.3	59.2	30.8
C20	103	207	95.0	53.7	145	85.0	29.4	292	153	495	144
C21	27.9	99.0	42.1	22.8	47.2	25.7	9.79	31.2	20.8	56.5	34.3
C22	132	107	75.4	64.2	103	37.9	23.1	208	160	442	309
C23	35.3	55.9	67.0	27.4	50.2	20.0	13.5	33.4	31.0	50.9	43.0
D-C24	2420	1080	449	547	1060	462	326	3400	1390	4080	2370
C24	210	105	81.1	44.9	52.0	28.0	16.3	253	126	159	204
C25	34.1	87.8	58.0	23.5	3.4	15.4	10.5	51.1	12.4	27.9	18.3
C26	87.1	117	44.4	32.5	37.2	16.4	13.1	150	93.1	229	106
C27	51.7	98.1	35.3	24.3	29.9	14.4	12.5	44.0	39.9	99.9	54.3
C28	77.1	106	41.2	28.4	28.1	13.8	11.1	202	89.7	207	107
C29	145	115	42.2	30.2	32.3	14.5	11.9	60.1	45.5	121	76.6
C30	66.4	105	46.1	31.5	19.0	15.3	10.0	78.0	17.4	140	65.5
C31	65.9	130	70.1	40.2	33.2	19.8	11.4	94.8	38.5	151	69.9
C32	57.0	99.9	67.8	32.0	16.5	17.2	5.70	79.2	11.8	129	65.4
C33	43.8	97.7	27.0	25.7	21.7	24.2	6.79	19.3	4.22	0.0	19.8
C34	23.2	109	-	20.8	4.01	33.3	4.67	-	-	19.1	27.9
C35	-	79.9	60.2	29.3	12.3	19.8	5.52	-	-	-	7.56
C36	-	59.4	-	12.7	2.19	9.51	4.02	-	2.11	13.6	-

Table S2. Lipid biomarker concentrations of individual *n*-alkanes in SOC [µg/g dw]. Internal standard used is a deuterated C-24 alkane (D-C24).

µg/g dw	**15**	**17**	**18**	**20**	**22**	**23**	**24**	**25**	**26**
C14	-	-	-	-	-	-	-	-	0.184
C15	-	0.00537	0.00467	-	0.00776	-	0.0541	0.0395	0.193
C16	0.0215	0.0270	0.00682	-	0.0471	-	0.137	0.162	0.188
C17	0.0302	0.0252	0.0198	0.0511	0.0223	0.0234	0.000	0.0738	0.359
C18	0.0760	0.134	0.0445	0.321	0.0787	0.0428	0.236	0.256	0.196
C19	0.00731	0.187	0.0562	0.164	0.0501	0.0276	0.180	0.158	0.213
C20	0.0620	0.235	0.0909	0.331	0.0921	0.0462	0.346	0.321	0.207
C21	0.0248	0.445	0.185	0.614	0.0968	0.0375	0.870	0.568	0.221
C22	0.0435	0.428	0.184	0.600	0.165	0.0810	0.966	0.664	0.223
C23	0.0305	1.01	0.463	1.47	0.263	0.0928	2.10	1.93	0.246
D-C24	0.466	0.520	0.417	0.497	0.451	0.472	0.491	0.472	0.202
C24	0.0372	0.428	0.196	0.737	0.208	0.0968	0.858	0.780	-
C25	0.0389	1.18	0.560	1.69	0.372	0.160	2.61	2.36	0.212
C26	0.0225	0.415	0.179	0.672	0.212	0.127	0.850	0.847	0.0617
C27	0.0625	2.00	0.933	2.30	0.480	0.213	3.91	3.68	-
C28	0.0232	0.323	0.157	0.550	0.147	0.119	0.816	0.698	-
C29	0.0727	1.94	0.906	2.79	0.398	0.288	5.05	4.21	-
C30	0.0181	0.177	0.0889	0.425	0.0789	0.132	0.413	0.438	-
C31	0.0561	1.95	0.970	-	-	-	-	-	-
C32	0.0207	0.0792	0.0397	0.195	-	0.0472	-	-	2.09
C33	0.0160	0.597	0.299	0.942	-	0.0822	1.06	-	-
C34	-	0.0357	0.0406	-	-	-	-	-	20.9
C35	0.00492	0.0652	0.0229	-	-	-	-	-	-
C36	-	-	0.0106	-	-	-	-	-	-

µg/g OC	**15**	**17**	**18**	**20**	**22**	**23**	**24**	**25**	**26**
C14	-	-	-	-	-	-	-	-	-
C15	-	-	0.000584	-	0.00194	-	0.00289	0.00210	-
C16	0.00538	0.00179	0.000853	-	0.0118	-	0.00732	0.00861	-
C17	0.00754	0.00167	0.00247	-	0.00557	0.00147	0.0000	0.00393	-
C18	0.0190	0.00887	0.00556	-	0.0197	0.00269	0.0126	0.0136	0.00770
C19	0.00183	0.0124	0.00703	-	0.0125	0.00174	0.0096	0.00842	0.00759
C20	0.0155	0.0155	0.0114	-	0.0230	0.00291	0.0185	0.0171	0.00881
C21	0.00619	0.0295	0.0231	-	0.0242	0.00236	0.0465	0.0302	0.00921
C22	0.0109	0.0283	0.0230	-	0.0413	0.00509	0.0517	0.0353	0.00901
C23	0.00762	0.067	0.0579	-	0.0657	0.00584	0.112	0.103	0.0172
D-C24	0.116	0.0344	0.0521	-	0.113	0.0297	0.0263	0.0251	0.00938
C24	0.00931	0.028	0.0245	-	0.0520	0.00609	0.0459	0.0415	0.0102
C25	0.0097	0.078	0.0700	-	0.0930	0.0100	0.1396	0.126	0.00990
C26	0.00563	0.0275	0.0224	-	0.0530	0.00797	0.0455	0.0451	0.0106
C27	0.0156	0.133	0.117	-	0.120	0.0134	0.209	0.196	0.0107
C28	0.00580	0.0214	0.0196	-	0.0367	0.00746	0.0436	0.0371	0.0118
C29	0.0182	0.128	0.113	-	0.0994	0.0181	0.270	0.224	0.00969
C30	0.00452	0.012	0.0111	-	0.0197	0.00829	0.0221	0.0233	-
C31	0.0140	0.129	0.121	-	-	-	-	-	0.0102
C32	0.00518	0.00524	0.00496	-	-	0.00297	-	-	0.00295
C33	0.00401	0.0395	0.0374	-	-	0.00517	0.0568	-	-
C34	-	0.00236	0.00507	-	-	-	-	-	-
C35	0.00123	0.00432	0.00287	-	-	-	-	-	-
C36	-	-	-	-	-	-	-	-	-

µg/g dw	**27**	**28**	**30**	**35**	**40**	**43**	**44**	**46**	**47**
C14	-	-	-	-	0.00919	0.0151	-	0.00724	0.00774
C15	0.0144	-	0.0183	-	0.0235	0.0106	0.000	0.0329	0.0187
C16	0.0648	-	0.0441	0.100	0.0409	0.0901	0.145	0.0808	0.0812
C17	0.140	0.023	0.106	0.210	0.0840	0.0729	0.237	0.226	0.287
C18	0.109	0.000	0.108	0.205	0.222	0.127	0.265	0.229	0.285
C19	0.156	0.128	0.135	0.211	0.180	0.112	0.236	0.271	0.327
C20	0.171	0.147	0.195	0.279	0.218	0.183	0.298	0.332	0.444
C21	0.473	1.02	0.423	0.694	0.357	0.410	0.700	0.706	0.942
C22	0.436	0.564	0.336	0.600	0.346	0.391	0.656	0.554	0.658
C23	1.15	1.80	0.951	1.60	0.883	0.968	1.63	1.43	1.72
D-C24	0.463	0.465	0.458	0.513	0.688	0.481	0.513	0.481	0.488
C24	0.402	0.553	0.343	0.608	0.318	0.410	0.610	0.474	0.579
C25	1.42	2.62	1.25	1.73	1.07	1.21	1.82	1.54	1.94
C26	0.379	0.538	0.339	0.537	0.313	0.385	0.548	0.362	0.501
C27	2.94	6.44	2.92	3.39	2.19	2.21	3.37	2.66	3.79
C28	0.352	0.522	0.295	0.488	0.289	0.336	0.444	0.271	0.457
C29	2.44	5.01	2.32	2.93	3.01	2.07	2.91	1.57	2.86
C30	0.205	0.236	0.149	0.238	0.132	0.189	0.226	0.117	0.199
C31	2.12	0.000	2.06	2.66	1.67	1.87	2.44	1.10	2.49
C32	0.0831	0.389	0.021	0.121	0.0746	0.109	0.0972	0.0699	0.0790
C33	0.719	3.56	0.690	0.879	0.538	0.718	0.797	0.251	0.703
C34	-	-	0.036	-	0.109	-	-	0.0883	0.0786
C35	-	-	-	0.0660	0.0509	0.0602	0.0391	0.0484	0.0399
C36	-	-	-	-	-	-	-	-	-

µg/g OC	**27**	**28**	**30**	**35**	**40**	**43**	**44**	**46**	**47**
C14	-	-	-	-	0.000612	0.000967	-	-	-
C15	0.00361	-	0.000897	-	0.00156	0.000680	-	0.00127	-
C16	0.0162	0.000	0.00216	0.00434	0.00273	0.00577	0.00694	0.00313	0.00213
C17	0.0351	0.00105	0.00519	0.00914	0.00560	0.00468	0.0113	0.00876	0.00753
C18	0.0274	0.000	0.00528	0.00893	0.0148	0.00815	0.0127	0.00888	0.00748
C19	0.0389	0.00595	0.00664	0.00916	0.0120	0.00719	0.0113	0.0105	0.00858
C20	0.0427	0.00686	0.00956	0.0121	0.0145	0.0118	0.0143	0.0129	0.0116
C21	0.118	0.0476	0.0207	0.0302	0.0238	0.0263	0.0335	0.0274	0.0247
C22	0.109	0.0262	0.0165	0.0261	0.0231	0.0251	0.0314	0.0215	0.0173
C23	0.287	0.0836	0.0466	0.0698	0.0589	0.0621	0.0780	0.0553	0.0452
D-C24	0.116	0.0216	0.0225	0.0223	0.0458	0.0309	0.0245	0.0186	0.0128
C24	0.101	0.0257	0.0168	0.0264	0.0212	0.0263	0.0292	0.0184	0.0152
C25	0.356	0.122	0.0615	0.0750	0.0714	0.0774	0.0873	0.0597	0.0510
C26	0.0947	0.0250	0.0166	0.0233	0.0209	0.0247	0.0262	0.0140	0.0131
C27	0.734	0.300	0.143	0.148	0.146	0.141	0.161	0.103	0.100
C28	0.0881	0.0243	0.0145	0.0212	0.0193	0.0215	0.0212	0.0105	0.0120
C29	0.611	0.233	0.114	0.127	0.201	0.133	0.139	0.0609	0.0751
C30	0.0512	0.0110	0.00732	0.0103	0.009	0.0121	0.0108	0.00455	0.00521
C31	0.531	0.000	0.101	0.116	0.112	0.120	0.117	0.0425	0.0654
C32	0.0208	0.0181	0.00103	0.00527	0.00497	0.00700	0.00465	0.00271	0.00207
C33	0.180	0.166	0.0338	0.0382	0.0359	0.0460	0.0381	0.00974	0.0185
C34	-	-	0.00176	0.000	0.00726	-	-	0.00342	0.00206
C35	-	-	-	0.00287	0.00340	0.00386	0.00187	0.00188	0.00105
C36	-	-	-	-		-	-	-	-

µg/g dw	**50**	**53**	**54**	**59**
C14	-	0.0173	0.200	-
C15	-	0.0812	0.209	-
C16	0.0239	0.207	0.463	0.0596
C17	0.0565	0.660	0.485	0.108
C18	0.0693	0.620	0.196	0.106
C19	0.0942	0.680	0.588	0.181
C20	0.156	0.709	1.21	0.182
C21	0.381	1.69	0.183	0.491
C22	0.349	1.28	1.11	0.412
C23	0.930	3.60	0.100	1.07
D-C24	0.484	0.554	0.944	0.475
C24	0.367	1.09	0.0396	0.386
C25	1.13	3.95	0.239	1.36
C26	0.363	0.996	0.0169	0.374
C27	2.23	7.91	0.0166	2.99
C28	0.312	0.951	-	0.353
C29	1.96	5.88	-	2.54
C30	0.164	0.333	-	0.195
C31	1.79	4.64	-	2.17
C32	0.554	0.159	0.880	0.0862
C33	0.603	1.36	-	0.640
C34	0.0201	0.186	8.80	0.0465
C35	0.00657	0.0894	-	-
C36	-	-	-	-

µg/g OC	**50**	**53**	**54**	**59**
C14	-	-	-	-
C15	-	0.000846	-	-
C16	0.00131	0.00215	0.00417	0.00319
C17	0.00310	0.00687	0.00512	0.00580
C18	0.00381	0.00646	0.00744	0.00567
C19	0.00518	0.00708	0.00820	0.00969
C20	0.00860	0.00739	0.0106	0.00973
C21	0.0209	0.0176	0.0227	0.0262
C22	0.0192	0.0133	0.0238	0.0220
C23	0.0511	0.0375	0.0526	0.0570
D-C24	0.0266	0.00577	0.0552	0.0254
C24	0.0202	0.0114	0.0223	0.0207
C25	0.0622	0.0411	0.0668	0.0727
C26	0.0200	0.0104	0.137	0.0200
C27	0.122	0.0824	0.0208	0.160
C28	0.0171	0.00990	0.126	0.0189
C29	0.108	0.0613	0.0113	0.136
C30	0.00903	0.00347	0.107	0.0104
C31	0.0985	0.0483	0.00450	0.116
C32	0.0304	0.00166	0.0272	0.00461
C33	0.0331	0.0142	0.00192	0.0342
C34	0.00110	0.00194	0.00189	0.00249
C35	-	0.000931	-	-
C36	-	-	-	-

Table S3. Lipid biomarker concentrations of individual *n*-alkanoic acids in POC [µg/g dw]. Internal standard used is a deuterated C-20 alkanoic acid (D-C20).

µg/g dw	15	19	20	22	24	26	28	35	40	47
C14	3930	2890	1690	725	1760	2100	1470	2270	1400	11700
C15	-	-	-	-	-	-	-	-	-	-
C16	3720	6400	8840	5330	8180	4170	2370	15600	11500	129000
C17	-	-	-	4870	-	-	-	-	-	-
C18	40900	4220	5450	36.1	6090	2920	1940	15900	12000	164000
C19	-	136	63.7	96.5	79.3	48.4	31.6	137	125	527
D-C20	9400	3480	1550	2090	1850	1570	1040	12100	4370	7580
C20	-	471	180	96.5	196	141	79	318	204	1410
C21	-	73.5	24.1	19.7	30.2	27.6	14.5	27.1	21.5	-
C22	-	398	142	-	173	141	79.8	81.6	96.7	-
C23	-	109	37.9	3.50	33.1	23.8	16.0	0.00	9.07	-
C24	-	534	176	23.85	155	97.5	67.4	38.2	39.6	-
C25	-	98.3	37.0	-	22.5	15.6	9.81	-	-	-
C26	-	178	78.3	7.69	70.3	40.4	28.6	19.02	12.2	-
C27	-	20.9	6.32	4.37	4.15	5.21	4.02	-	-	-
C28	-	74.8	48.0	18.1	29.5	21.9	17.6	10.09	19.1	-
C29	-	23.4	7.64	7.67	4.57	3.37	3.66	-	-	-
C30	-	-	18.7	-	25.7	14.6	7.29	-	-	-

Table S4. Lipid biomarker concentrations of individual *n*-alkanoic acids in SOC. Internal standard used is a deuterated C-20 alkanoic acid (D-C20).

µg/g dw	**15**	**17**	**18**	**20**	**22**	**23**	**25**	**24**	**26**
C14	2.62	2.17	0.694	2.42	3.78	4.01	3.69	3.79	8.54
C15	0.202	0.535	0.166	1.01	1.16	1.67	1.94	2.29	2.97
C16	12.6	3.55	4.77	13.8	12.2	14.6	13.0	2.96	25.2
C17	0.363	0.370	0.210	-	-	-	-	-	1.07
C18	7.35	2.76	3.95	5.03	7.94	12.0	7.42	6.80	12.8
C19	0.0252	0.259	0.139	-	-	-	-	-	0.327
D-C20	1.08	0.88	0.832	1.19	1.08	1.20	1.08	1.16	1.05
C20	0.104	1.08	0.955	0.691	0.55	5.05	2.80	2.49	1.73
C21	0.0056	0.582	0.418	-	-	3.12	1.98	1.79	2.12
C22	-	2.51	3.24	2.06	0.959	9.14	9.99	9.09	3.08
C23	-	1.80	1.82	0.756	-	8.27	7.05	6.61	1.64
C24	0.0741	3.92	8.15	2.37	1.82	17.1	20.7	23.6	4.33
C25	-	1.47	1.79	0.436	-	6.85	6.19	5.61	0.664
C26	0.0131	3.81	6.26	1.22	1.32	24.2	17.5	15.1	2.24
C27	-	0.927	1.04	0.121	-	5.24	4.66	3.75	0.395
C28	0.0236	3.53	5.35	1.08	0.544	16.6	17.4	14.8	1.72
C29	-	0.398	1.98	-	-	3.69	2.50	2.50	
C30	0.0304	1.72	2.33	0.258	0.737	14.2	9.79	8.54	1.24

µg/g OC	**15**	**17**	**18**	**20**	**22**	**23**	**24**	**25**	**26**
C14	656	144	86.7	-	946	252	202	196	408
C15	50.6	35.4	20.7	-	290	105	122	103	142
C16	3160	235	597	-	3040	920	158	692	1210
C17	90.7	24.5	26.2	-	-	-	-	-	51.4
C18	1840	183	493	-	1980	752	364	395	611
C19	6.31	17.2	17.3	-	-	-	-	-	15.6
D-C20	269	58.2	104	-	269	75.3	62.2	57.4	50.0
C20	25.9	71.7	119	-	137	317	133	149	82.9
C21	1.40	38.6	52.2	-	-	196	96.0	105	101
C22	-	166	405	-	240	575	486	532	147
C23	-	119	228	-	-	520	354	375	78.6
C24	18.5	259	1020	-	454	1080	1260	1100	207
C25	-	97.5	223	-	-	431	300	329	31.8
C26	3.29	252	783	-	329	1530	808	928	107
C27	-	61.4	129	-	-	330	200	248	18.9
C28	5.89	234	669	-	136	1050	792	927	82.1
C29	0.880	26.4	247	-	-	232	134	133	-
C30	-	-	-	-	-	-	-	-	-

µg/g dw	**27**	**28**	**30**	**35**	**40**	**43**	**44**	**46**
C14	3.59	4.86	2.42	1.68	0.974	3.11	7.68	2.92
C15	1.26	-	0.451	0.948	-	-	-	0.645
C16	12.7	18.9	10.2	9.22	6.38	9.43	20.4	14.0
C17	0.522	0.378	0.310	0.335	0.00	0.270	0.644	0.411
C18	3.99	7.98	4.29	4.99	4.94	2.51	5.66	6.48
C19	0.361	-	0.214	0.230		0.168	0.36	0.36
D-C20	1.01	1.08	0.89	0.976	1.40	1.07	1.20	0.977
C20	2.64	4.67	2.60	1.69	2.05	1.07	2.07	4.49
C21	1.39	5.35	1.23	0.928	1.28	0.620	1.15	2.42
C22	10.3	20.2	11.2	6.23	14.4	3.86	6.82	20.8
C23	5.27	10.0	5.45	2.96	7.56	2.28	3.67	11.4
C24	19.0	33.0	20.1	9.40	32.1	8.23	12.0	32.5
C25	3.73	5.45	3.78	1.60	4.96	1.76	2.52	6.63
C26	11.6	17.3	11.9	4.47	13.7	5.09	6.71	21.1
C27	1.69	1.73	2.15	0.764	2.13	0.922	1.07	2.54
C28	8.12	9.82	9.43	3.05	6.89	3.48	4.41	15.0
C29	1.05	0.643	1.14	0.300	1.18	0.486	0.638	1.10
C30	2.26	5.09	3.32	1.18	3.03	1.62	1.89	5.27

µg/g OC	**27**	**28**	**30**	**35**	**40**	**43**	**44**	**46**
C14	189	226	119	72.9	64.9	199	367	113
C15	66.5	-	22.1	41.2	-	-	-	25.0
C16	666	877	499	401	425	605	977	543
C17	27.5	17.6	15.2	14.6	-	17.3	30.8	15.9
C18	210	371	210	217	329	161	271	251
C19	19.0	-	10.5	10.0	-	10.8	17.0	14.1
D-C20	53.1	50.4	43.8	42.5	93.2	68.6	57.4	37.9
C20	139	217	127	73.6	136	68.3	98.9	174
C21	73.0	249	60.1	40.4	85.6	39.8	54.9	93.9
C22	540	942	547	271	962	247	326	807
C23	277	467	267	129	504	146	175	442
C24	1000	1530	986	409	2140	528	573	1260
C25	196	254	185	69.7	330	113	121	257
C26	611	806	581	194	911	326	321	818
C27	88.8	80.5	105	33.2	142	59.1	51.0	98.6
C28	428	457	462	133	460	223	211	581
C29	55.0	29.9	56.0	13.1	78.8	31.2	30.5	42.6
C30	-	-	-	-	-	-	-	-

µg/g dw	**47**	**50**	**53**	**54**	**59**
C14	7.16	2.39	9.46	2.83	3.24
C15	1.71	1.05	4.22	0.508	0.861
C16	11.0	9.92	16.3	11.0	9.93
C17	0.844	0.405	1.71	0.277	0.422
C18	6.91	4.82	9.69	3.08	3.49
C19	0.635	0.242	1.00	0.126	0.360
D-C20	0.988	1.03	1.24	1.07	1.06
C20	5.00	1.66	9.80	0.90	2.67
C21	2.30	1.09	4.80	0.476	1.59
C22	10.3	7.72	18.7	3.53	10.7
C23	6.45	4.37	13.48	1.92	5.70
C24	13.7	14.9	28.4	7.14	17.4
C25	3.59	3.00	9.73	1.41	3.84
C26	10.3	8.41	25.8	4.48	11.81
C27	1.36	1.37	4.00	0.739	2.23
C28	8.30	5.67	31.0	3.47	8.93
C29	0.614	0.796	3.56	0.415	1.61
C30	3.16	2.61	11.67	1.41	3.66

µg/g OC	**47**	**50**	**53**	**54**	**59**
C14	188	131	98.6	321	173
C15	44.9	57.5	44.0	57.7	46.0
C16	288	545	170	1256	531
C17	22.2	22.3	17.8	31.4	22.6
C18	181	265	101	350	187
C19	16.7	13.3	10.4	14.3	19.3
D-C20	25.9	56.5	12.9	122	56.9
C20	131	90.9	102	102	143
C21	60.5	59.6	50.0	54.1	84.9
C22	271	424	195	402	573
C23	169	240	140	218	305
C24	359	819	296	811	928
C25	94.1	165	101	161	205
C26	270	462	269	509	631
C27	35.7	75.5	41.6	83.9	119
C28	218	311	323	394	477
C29	16.1	43.7	37.1	47.1	86.2
C30	-	-	-	-	-