

Supplement of Biogeosciences, 16, 3929–3939, 2019  
<https://doi.org/10.5194/bg-16-3929-2019-supplement>  
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*Supplement of*

## **Spatial changes in soil stable isotopic composition in response to carrion decomposition**

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## Supporting Information

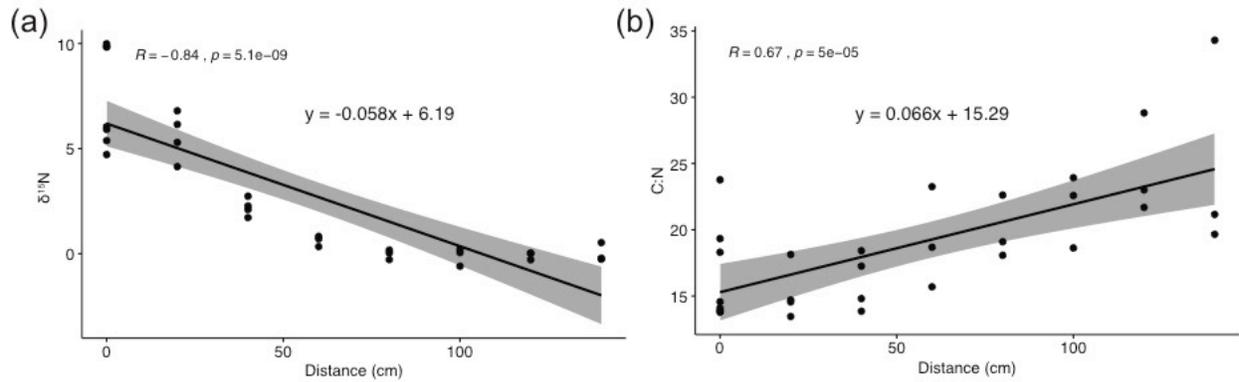


Figure S1: Linear correlation analysis of  $\delta^{15}\text{N}$  and C:N as a function of distance from the hotspot center (0 cm). (a) There is a roughly linear decrease in  $\delta^{15}\text{N}$  composition of soil with increasing distance from the hotspot resulting in a 0.06‰ decrease per cm. (b) C:N ratios exhibit an overall increase with increasing distance from the hotspot center, roughly 0.07 per cm.

Table S1: Soil biogeochemical data from carrion hotspots. Data from sampling dates 29 July 2016 to 9 December 2016 were previously published in Keenan et al. (2018).

<b>Sample</b>	<b>Sampling Date</b>	<b>Individual</b>	<b>Decay stage</b>	<b>Dissolved Oxygen (%)</b>	$\delta^{15}\text{N}$	$\delta^{13}\text{C}$	<b>Total nitrogen (%)</b>	<b>Total carbon (%)</b>	<b>C:N</b>	<b>Soil Gravimetric Moisture</b>
EAG1_R1	29-Jul-16	0	Initial	98.7	1.54	-27.78	0.2998	5.132	17.118	0.301
EAG1_R2	29-Jul-16	0	Initial	98.7	1.24	-27.89	0.301	5.2	17.276	0.286
EAG1_R3	29-Jul-16	0	Initial	98.7	1.68	-27.93	0.284	5.001	17.609	0.311
EAG1_0108_B1	1-Aug-16	1	Early	N.M.	1.27	-28.15	0.32	4.876	15.238	0.274
EAG1_0108_B2	1-Aug-16	2	Early	N.M.	4.96	-27.34	0.164	2.323	14.165	0.186
EAG1_0108_B3	1-Aug-16	3	Early	N.M.	0.82	-28.16	0.266	4.287	16.117	0.211
EAG1_0108_B4	1-Aug-16	4	Early	N.M.	3.14	-27.66	0.255	4.779	18.741	0.206
EAG1_0108_B5	1-Aug-16	5	Early	N.M.	3.06	-27.31	0.219	3.372	15.397	0.202
EAG1_0108_control	1-Aug-16	0	Control	N.M.	1.76	-27.56	0.247	4.196	16.988	0.219
EAG1_0308_B1	3-Aug-16	1	Active	20.7	6.16	-27.94	0.4	4.755	11.888	0.276
EAG1_0308_B2	3-Aug-16	2	Active	1.6	7.22	-27.68	0.233	2.834	12.163	0.193
EAG1_0308_B3	3-Aug-16	3	Active	2	5.14	-28.01	0.447	4.83	10.807	0.295
EAG1_0308_B4	3-Aug-16	4	Active	9.7	9.16	-27.38	0.303	4.167	13.752	0.245
EAG1_0308_B5	3-Aug-16	5	Active	11.8	5.67	-27.36	0.254	3.512	13.827	0.161
EAG1_0308_control	3-Aug-16	0	Control	98.6	1.48	-27.68	0.267	4.159	15.577	0.160
EAG1_0908_B1	9-Aug-16	1	Advanced	1.8	7.24	-27.74	0.251	3.356	13.371	0.269
EAG1_0908_B2	9-Aug-16	2	Advanced	16.7	7.12	-27.89	0.316	4.101	12.978	0.297
EAG1_0908_B3	9-Aug-16	3	Advanced	1.4	8.53	-27.54	0.237	2.952	12.456	0.240
EAG1_0908_B4	9-Aug-16	4	Advanced	3	12.26	-27.65	0.4364	6.1946	14.195	0.418
EAG1_0908_B5	9-Aug-16	5	Advanced	74.1	8.44	-27.35	0.275	3.401	12.367	0.205
EAG1_0908_control	9-Aug-16	0	Control	98	1.26	-27.77	0.281	5.008	17.822	0.223

Table S1 (continued):

Sample	Soil pH	Conductivity	Nitrification potential rate (mg NO <sub>2</sub> /gdw/day)	Ammonium (mg NH <sub>4</sub> -N /gdw)	Microbial respiration rate (µg CO <sub>2</sub> -C released/gdw/day)	DOC (mg C/gdw)	Protein (mg/mL)	Nitrate (mg NO <sub>3</sub> <sup>-</sup> -N /gdw)	DON (mg N/gdw)
EAG1_R1	6.71	51.49	0.214	0.040	48.721	2.325	0.309	0.000	0.270
EAG1_R2	6.82	41.01	0.204	0.032	44.542	2.341	0.219	0.000	0.276
EAG1_R3	6.85	51	0.124	0.045	59.392	2.663	0.224	0.000	0.305
EAG1_0108_B1	7.33	127.2	0.530	0.203	69.420	4.323	0.206	0.001	1.251
EAG1_0108_B2	6.94	67.99	0.187	0.068	29.033	2.600	0.141	0.000	0.588
EAG1_0108_B3	6.89	54.84	0.143	0.072	56.833	4.075	0.201	0.001	0.528
EAG1_0108_B4	6.59	73.87	0.161	0.118	65.631	4.044	0.244	0.000	0.853
EAG1_0108_B5	6.57	43.74	0.162	0.043	35.835	2.161	0.210	0.000	0.368
EAG1_0108_control	6.82	36.78	0.167	0.011	35.200	2.346	0.159	0.000	0.242
EAG1_0308_B1	8.75	2757	0.425	3.152	270.062	92.596	0.241	0.000	-0.126
EAG1_0308_B2	8.76	1352	0.343	1.647	296.125	40.543	0.265	0.000	1.200
EAG1_0308_B3	8.72	3737	0.393	3.650	417.638	115.727	0.270	0.000	0.816
EAG1_0308_B4	8.79	2474	0.442	3.261	342.022	69.771	0.295	0.000	0.086
EAG1_0308_B5	8.17	432.4	0.226	0.732	173.912	14.076	0.231	0.000	3.352
EAG1_0308_control	6.68	31.65	0.163	0.010	27.807	2.516	0.225	0.000	0.205
EAG1_0908_B1	8.59	882.6	0.344	1.190	83.618	23.795	0.299	0.000	1.752
EAG1_0908_B2	8.88	1154	0.389	1.756	170.117	36.841	0.235	-0.001	1.583
EAG1_0908_B3	8.89	1313	0.365	1.728	93.571	34.684	0.228	0.000	1.447
EAG1_0908_B4	8.85	2033	0.705	5.482	350.271	94.937	0.398	0.000	0.106
EAG1_0908_B5	8.7	787	0.285	1.302	116.209	22.208	0.243	0.000	4.643
EAG1_0908_control	6.84	43.42	0.181	0.015	45.676	3.437	0.239	0.000	0.304

Table S1 (continued):

Sample	Sampling Date	Individual	Decay stage	Dissolved Oxygen (%)	$\delta^{15}\text{N}$	$\delta^{13}\text{C}$	Total nitrogen (%)	Total carbon (%)	C:N	Soil Gravimetric Moisture	Sample
EAG1_0609_B1	6-Sep-16	1	Early skeletal	98.8	7.23	-27.77	0.294	3.711	12.622	0.220	EAG1_0609_B1
EAG1_0609_B2	6-Sep-16	2	Early skeletal	97.1	8.77	-28.16	0.347	4.09	11.787	0.266	EAG1_0609_B2
EAG1_0609_B3	6-Sep-16	3	Early skeletal	96.6	9.49	-27.68	0.241	2.772	11.502	0.196	EAG1_0609_B3
EAG1_0609_B4	6-Sep-16	4	Early skeletal	97.1	11.50	-27.79	0.3515	4.6976	13.364	0.353	EAG1_0609_B4
EAG1_0609_B5	6-Sep-16	5	Early skeletal	97.6	9.33	-27.31	0.229	2.779	12.135	0.178	EAG1_0609_B5
EAG1_0609_control	6-Sep-16	0	Control	98.3	1.78	-27.64	0.259	4.023	15.533	0.121	EAG1_0609_co
EAG1_0912_B1	9-Dec-16	1	Late skeletal	100	8.38	-27.71	0.2618	3.17	12.108	0.293	EAG1_0912_B1
EAG1_0912_B2	9-Dec-16	2	Late skeletal	100	7.70	-27.35	0.2215	2.7662	12.488	0.277	EAG1_0912_B2
EAG1_0912_B3	9-Dec-16	3	Late skeletal	100	8.97	-27.63	0.1975	2.3564	11.931	0.277	EAG1_0912_B3
EAG1_0912_B4	9-Dec-16	4	Late skeletal	100	10.35	-27.23	0.2011	2.7432	13.641	0.238	EAG1_0912_B4
EAG1_0912_B5	9-Dec-16	5	Late skeletal	100	10.86	-27.15	0.1866	2.3065	12.361	0.268	EAG1_0912_B5
EAG1_0912_control	9-Dec-16	0	Control	100	1.79	-27.30	0.1358	2.0874	15.371	0.246	EAG1_0912_co
EAG_1008_17_B1	8-Aug-17	1	1 yr post decay	N.M.	6.64	-27.89	0.336	4.608	13.730	0.425	EAG_1008_17_
EAG_1008_17_B2	8-Aug-17	2	1 yr post decay	N.M.	7.28	-27.48	0.33	4.08	-6.73	0.367	EAG_1008_17_
EAG_1008_17_B2	8-Aug-17	2	1 yr post decay	N.M.	6.93	-27.59	0.21	4.03	-6.85	0.367	EAG_1008_17_
EAG_1008_17_B3	8-Aug-17	3	1 yr post decay	N.M.	8.61	-27.99	0.285	3.402	11.936	0.374	EAG_1008_17_
EAG_1008_17_B4	8-Aug-17	4	1 yr post decay	N.M.	9.85	-27.55	0.236	3.284	13.896	0.408	EAG_1008_17_
EAG_1008_17_B5	8-Aug-17	5	1 yr post decay	N.M.	9.98	-27.37	0.388	7.108	18.306	0.425	EAG_1008_17_
EAG_1008_17_B5	8-Aug-17	5	1 yr post decay	N.M.	9.83	-27.43	0.199	4.727	23.772	0.425	EAG_1008_17_
EAG_1008_17_control	8-Aug-17	0	Control	N.M.	0.05	-27.74	0.255	4.358	17.083	0.462	EAG_1008_17_

Table S1 (continued):

Sample	Soil pH	Conductivity	Nitrification potential rate (mg NO <sub>2</sub> /gdw/day)	Ammonium (mg NH <sub>4</sub> -N /gdw)	Microbial respiration rate (µg CO <sub>2</sub> -C released/gdw/day)	DOC (mg C/gdw)	Protein (mg/mL)	Nitrate (mg NO <sub>3</sub> <sup>-</sup> -N /gdw)	DON (mg N/gdw)
EAG1_0609_B1	7.25	693.8	10.859	0.545	52.499	9.960	0.188	0.191	4.776
EAG1_0609_B2	7.84	1107	0.974	0.874	146.121	12.483	0.235	0.567	7.451
EAG1_0609_B3	7.48	1146	9.005	0.739	45.885	14.282	0.205	0.328	6.053
EAG1_0609_B4	7.19	1121	11.875	0.913	87.189	18.769	0.314	0.333	7.217
EAG1_0609_B5	8.14	801.3	10.150	0.806	53.040	16.101	0.248	0.127	4.947
EAG1_0609_control	6.84	35.08	0.130	0.006	20.816	2.889	0.193	0.000	0.185
EAG1_0912_B1	6.61	144.6	-0.139	0.177	59.093	5.607	0.255	0.014	1.504
EAG1_0912_B2	7.13	122	-0.228	0.209	42.560	5.134	0.246	0.013	1.556
EAG1_0912_B3	7.26	274.3	0.075	0.292	38.318	6.927	0.251	0.028	2.124
EAG1_0912_B4	6.55	301.3	0.143	0.221	101.803	24.986	0.268	0.021	2.294
EAG1_0912_B5	7.12	283.8	0.238	0.330	44.228	8.211	0.231	0.018	2.168
EAG1_0912_control	6.73	29.13	0.039	0.012	46.453	3.121	0.195	0.001	0.309
EAG_1008_17_B1	6.46	23.98	0.005	0.008	65.516	3.424	0.205	0.000	0.094
EAG_1008_17_B2	6.23	21.20	0.006	0.006	56.631	2.957	0.240	0.000	0.087
EAG_1008_17_B2									
EAG_1008_17_B3	5.86	28.47	0.006	0.006	56.187	2.007	0.242	0.000	0.082
EAG_1008_17_B4	5.74	40.00	0.006	0.007	68.760	3.151	0.261	0.001	0.120
EAG_1008_17_B5	6.21	33.70	0.005	0.014	73.221	2.529	0.246	0.001	0.091
EAG_1008_17_B5									
EAG_1008_17_control	6.29	23.07	0.006	0.007	59.451	2.429	0.195	0.000	0.093

Table S2: Stable isotopic data for all vertical and lateral soil samples.

Sample Name	Date Collected	Beaver number	Depth (cm)	Distance from hotspot (cm)	$\delta^{15}\text{N}$	Total nitrogen (%)	$\delta^{13}\text{C}$	Total carbon (%)	C:N	Gravimetric moisture
EAG_1008_D10_B1	8-Aug-17	1	10	0	6.50	0.11	-26.39	1.54	14.49	0.250
EAG_1008_D10_B1	8-Aug-17	1	10	0	6.13	0.13	-26.63	1.62	12.73	0.250
EAG_1008_D10_B2	8-Aug-17	2	10	0	5.74	0.14	-26.97	1.95	14.14	0.265
EAG_1008_D10_B2	8-Aug-17	2	10	0	5.33	0.14	-26.84	1.82	13.25	0.265
<i>EAG_1008_D10_B3</i>	8-Aug-17	3	10	0	N.M.	N.M.	N.M.	N.M.	N.M.	0.244
EAG_1008_D10_control	8-Aug-17	0	10	0	3.29	0.11	-26.54	1.78	16.77	0.332
EAG_1008_D15_B1	8-Aug-17	1	15	0	8.33	0.07	-25.86	1.04	14.66	0.244
EAG_1008_D15_B2	8-Aug-17	2	15	0	6.57	0.11	-26.13	1.23	11.66	0.213
EAG_1008_D15_B3	8-Aug-17	3	15	0	7.70	0.07	-25.87	0.82	11.03	0.203
EAG_1008_D15_control	8-Aug-17	0	15	0	6.61	0.07	-25.29	0.88	13.09	0.263
EAG_1008_D20_B1	8-Aug-17	1	20	0	9.37	0.06	-25.87	0.75	12.31	0.235
EAG_1008_D20_B2	8-Aug-17	2	20	0	7.50	0.08	-25.87	1.05	13.82	0.205
EAG_1008_D20_B3	8-Aug-17	3	20	0	8.12	0.06	-25.34	0.72	12.13	0.199
EAG_1008_D20_control	8-Aug-17	0	20	0	7.76	0.05	-24.52	0.55	10.21	0.332
EAG_1008_D30_B1	8-Aug-17	1	30	0	8.17	0.06	-26.20	0.48	8.38	0.213
EAG_1008_D30_B2	8-Aug-17	2	30	0	8.05	0.07	-25.75	0.92	12.36	0.234
EAG_1008_D30_B3	8-Aug-17	3	30	0	8.80	0.03	-24.28	0.34	13.48	0.193
EAG_1008_D30_control	8-Aug-17	0	30	0	6.14	0.05	-25.44	0.60	11.34	0.232
EAG_1008_D40_B1	8-Aug-17	1	40	0	8.90	0.03	-23.06	0.11	3.28	0.202
EAG_1008_D40_B1	8-Aug-17	1	40	0	8.64	0.03	-23.30	0.17	5.13	0.202
<i>EAG_1008_D40_B2</i>	8-Aug-17	2	40	0	N.M.	N.M.	N.M.	N.M.	N.M.	0.204
EAG_1008_D40_B3	8-Aug-17	3	40	0	8.56	0.03	-24.67	0.24	8.43	0.184
EAG_1008_D40_control	8-Aug-17	0	40	0	8.54	0.04	-24.09	0.28	7.49	0.223
EAG_1008_D40_control	8-Aug-17	0	40	0	8.36	0.04	-23.41	0.29	7.56	0.223

Table S2 (continued):

Sample Name	Date Collected	Beaver number	Depth (cm)	Distance from hotspot (cm)	$\delta^{15}\text{N}$	Total nitrogen (%)	$\delta^{13}\text{C}$	Total carbon (%)	C:N	Gravimetric moisture
EAG_1008_D5_B1	8-Aug-17	1	5	0	5.38	0.18	-27.09	2.61	14.09	0.332
EAG_1008_D5_B2	8-Aug-17	2	5	0	6.05	0.23	-27.56	3.21	13.78	0.345
EAG_1008_D5_B2	8-Aug-17	2	5	0	5.91	0.18	-27.61	3.50	19.34	0.345
EAG_1008_D5_B3	8-Aug-17	3	5	0	4.71	0.15	-27.33	2.17	14.57	0.282
EAG_1008_17_B4	8-Aug-17	4	5	0	9.85	0.24	-27.55	3.28	13.90	0.412
EAG_1008_17_B5	8-Aug-17	5	5	0	9.98	0.39	-27.37	7.11	18.31	0.427
EAG_1008_17_B5	8-Aug-17	5	5	0	9.83	0.20	-27.43	4.73	23.77	0.427
EAG_1008_D5_control	8-Aug-17	0	5	0	2.70	0.13	-26.72	2.11	16.63	0.378
EAG_1508_S100_B1	15-Aug-17	1	0	100	0.20	0.27	-28.10	5.05	18.63	0.457
EAG_1508_S100_B2	15-Aug-17	2	0	100	0.05	0.22	-27.61	4.93	22.59	0.391
EAG_1508_S100_B3	15-Aug-17	3	0	100	-0.60	0.23	-27.71	5.48	23.93	0.452
EAG_1508_S120_B1	15-Aug-17	1	0	120	0.00	0.26	-27.93	5.54	21.69	0.434
EAG_1508_S120_B2	15-Aug-17	2	0	120	-0.29	0.23	-27.84	5.39	23.00	0.396
EAG_1508_S120_B3	15-Aug-17	3	0	120	0.04	0.21	-27.05	5.97	28.81	0.440
EAG_1508_S140_B1	15-Aug-17	1	0	140	0.53	0.25	-27.34	5.33	21.16	0.439
EAG_1508_S140_B2	15-Aug-17	2	0	140	-0.26	0.23	-27.76	4.55	19.66	0.430
EAG_1508_S140_B3	15-Aug-17	3	0	140	-0.22	0.23	-26.97	7.73	34.29	0.522
EAG_1508_S20_B1	15-Aug-17	1	0	20	5.30	0.31	-27.76	4.50	14.56	0.393
EAG_1508_S20_B2	15-Aug-17	2	0	20	6.80	0.33	-27.45	4.50	13.46	0.398
EAG_1508_S20_B2	15-Aug-17	2	0	20	6.15	0.23	-27.58	4.14	18.14	0.398
EAG_1508_S20_B3	15-Aug-17	3	0	20	4.14	0.23	-27.92	3.40	14.71	0.334
EAG_1508_S40_B1	15-Aug-17	1	0	40	2.73	0.31	-27.69	5.32	17.26	0.438
EAG_1508_S40_B2	15-Aug-17	2	0	40	1.72	0.22	-27.58	4.08	18.42	0.339
EAG_1508_S40_B3	15-Aug-17	3	0	40	2.27	0.19	-27.52	2.67	13.86	0.287
EAG_1508_S40_B3	15-Aug-17	3	0	40	2.10	0.17	-27.51	2.52	14.81	0.287
EAG_1508_S60_B1	15-Aug-17	1	0	60	0.71	0.28	-27.61	5.26	18.68	0.444
EAG_1508_S60_B2	15-Aug-17	2	0	60	0.34	0.21	-27.65	4.89	23.25	0.395
EAG_1508_S60_B3	15-Aug-17	3	0	60	0.82	0.21	-27.92	3.30	15.70	0.330
EAG_1508_S80_B1	15-Aug-17	1	0	80	0.17	0.29	-27.96	5.61	19.10	0.451
EAG_1508_S80_B2	15-Aug-17	2	0	80	0.04	0.22	-27.85	4.91	22.62	0.420
EAG_1508_S80_B3	15-Aug-17	3	0	80	-0.28	0.22	-27.71	4.05	18.08	0.354

**References**

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