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Table 1: Results of ion composition analyses of the water samples (mg/L) from (a) October 2011, (b) June 2012 and (c) October 2017

(a)

No.	Code	pH	Ca	Cl	NO_3	SO_4	PO_4	HCO_3	Mg	Na	K
1	A1w	6.43	3.14	2.93	0.07	1.18	0.00	42.70	0.98	4.98	0.89
2	A2w	5.60	0.46	1.04	0.53	0.60	0.00	6.10	0.26	1.09	0.55
3	A1a	5.63	0.76	1.93	0.49	0.29	0.00	9.76	0.31	3.23	0.76
4	A1b	5.46	1.02	1.60	0.18	0.46	0.04	10.37	0.31	1.86	0.86
5	A2a	5.61	1.02	2.39	0.16	1.01	0.00	13.42	0.36	3.56	0.95
6	A2b	5.38	0.70	2.11	1.12	0.47	0.13	6.71	0.37	2.42	1.01
7	A3w	5.18	1.13	0.79	0.05	0.27	0.00	12.20	0.46	1.03	0.65
8	A3a	5.57	0.68	3.15	0.57	8.61	0.00	15.25	1.23	3.66	3.60
9	A4w	5.33	1.12	0.95	0.05	0.26	0.00	10.92	0.77	1.56	0.62
10	A5w	5.81	1.22	0.54	0.15	0.26	0.00	18.30	0.94	3.25	0.76
11	B2w	4.96	1.10	0.54	0.19	0.21	0.00	12.20	0.42	1.84	0.88
12	B3a	5.52	1.33	1.69	0.49	0.60	0.00	9.76	0.30	1.85	0.61
13	B3w	5.37	0.41	0.86	0.34	0.29	0.00	7.32	0.09	2.77	0.08
14	B3b	5.13	1.11	1.33	0.19	0.46	0.00	8.54	0.34	1.37	0.56
15	B4w	5.58	0.74	0.70	0.05	0.28	0.00	6.71	0.37	1.20	0.56
16	B4a	5.50	0.72	0.70	0.51	0.32	0.00	5.49	0.23	2.08	0.51
17	B4b	6.48	2.40	1.25	0.00	0.26	0.00	43.92	1.12	4.33	1.57
18	B5w	5.48	0.49	1.11	1.12	0.30	1.01	9.76	0.35	3.21	0.60
19	B5b	5.87	2.16	1.01	1.26	1.13	0.00	15.86	0.62	2.75	0.82
20	B6a	6.34	6.42	0.49	0.04	0.51	0.03	110.41	2.93	6.08	0.80
21	B6a	6.62	5.63	3.58	0.03	2.56	0.00	52.46	1.95	5.70	1.41
22	B6w	5.66	2.51	0.74	0.26	0.53	0.01	15.86	1.03	2.07	0.51
23	C2w	6.10	2.01	0.68	0.07	0.38	0.09	25.62	0.48	2.17	0.75
24	C2b	6.05	2.37	6.61	0.17	1.80	0.27	39.65	1.17	5.84	6.07
25	C3w	6.62	2.92	1.36	0.20	0.56	0.05	103.70	1.30	4.93	1.78
26	C3a	5.80	2.92	1.12	0.05	0.68	0.06	28.06	1.24	3.28	1.13
27	C3b	6.01	2.94	0.92	0.02	0.31	0.00	29.28	1.49	3.57	1.27
28	C4a	5.58	3.72	1.17	0.03	0.46	0.00	23.18	1.58	2.28	0.86
29	C4b	5.75	2.89	1.32	0.73	0.69	0.81	26.84	1.15	2.36	1.09
30	C5b	6.14	10.35	0.73	0.09	0.61	0.00	103.70	5.86	9.85	0.81
31	C5w	6.25	1.74	0.76	0.17	0.36	0.00	109.80	0.46	3.88	0.78
32	C6w	6.44	6.25	2.35	0.19	1.51	0.34	56.12	3.11	5.20	0.94
33	D3w	5.73	1.64	1.39	0.25	0.94	0.03	10.98	0.77	1.88	0.90
34	D3a	6.12	1.69	2.10	3.21	1.83	0.00	19.52	0.47	5.33	2.04
35	D3b	6.17	4.75	1.11	2.16	0.83	0.00	27.45	0.97	4.46	1.34
36	D4w	6.16	3.40	0.88	0.11	0.38	0.00	37.82	1.33	3.10	0.91
37	D4a	5.73	2.55	1.58	1.12	0.34	0.00	26.23	0.70	4.49	0.92
38	D4b	6.65	1.78	2.16	0.18	0.84	0.00	87.84	0.68	7.88	1.98
39	D5w	6.21	3.73	2.21	0.04	1.01	0.00	31.72	0.89	6.20	1.08
40	D5a	5.56	1.27	3.02	0.31	4.52	0.10	17.69	0.57	5.27	1.82
41	D5b	5.67	2.21	2.29	0.72	1.02	0.06	26.23	1.15	5.78	1.30
42	D6w	6.48	5.87	0.33	0.06	0.70	0.02	90.28	2.95	4.97	0.73

No.	Code	pH	Ca	Cl	NO_3	SO_4	PO_4	HCO_3	Mg	Na	K
43	W1w	4.92	0.34	1.14	0.30	0.35	0.22	8.54	0.00	3.36	0.75
44	W1a	5.77	0.09	0.06	0.01	0.02	0.00	0.30	0.03	0.08	0.02
45	W2w	5.94	1.29	0.39	0.04	0.22	0.00	28.06	0.77	3.01	0.92
46	W2a	5.93	0.90	0.51	0.62	0.50	0.00	7.32	0.26	1.19	0.73
47	W2b	6.81	8.62	1.92	0.47	3.87	0.00	206.18	5.94	6.97	1.92
48	W3w	5.28	1.12	0.54	0.08	0.53	0.00	23.79	1.02	3.15	1.27
49	W3a	5.36	2.20	0.73	0.11	0.65	0.05	20.74	1.88	2.77	0.84
50	W4w	6.18	6.28	1.99	0.22	7.39	0.00	82.96	1.94	7.39	2.33
51	W4a	5.96	3.62	3.69	0.26	7.85	0.00	48.80	1.61	7.65	4.25
52	W4b	5.31	1.23	1.01	0.15	0.32	0.00	12.20	0.96	2.37	1.04
53	W5w	6.49	5.81	0.93	0.18	0.22	0.00	40.26	2.01	5.05	0.90
54	W5b	6.59	3.83	1.19	1.00	0.48	0.00	34.16	1.93	5.93	0.98

(b)

No.	code	pH	Ca	Cl	NO3	SO4	PO4	HCO3	Mg	Na	K
1	A2a	5.54	0.8	4.13	0.43	0.19	0.00	6.1	0.52	3.20	0.94
2	A2b	5.75	0.8	3.17	0.26	0.30	0.00	4.9	0.64	3.20	0.43
3	A3w	5.55	0.5	4.34	0.28	0.48	0.00	6.1	0.74	3.87	1.79
4	A3a	5.37	0.0	0.59	0.11	0.24	0.00	4.9	0.53	1.66	0.59
5	A4w	5.59	0.9	3.25	0.24	0.74	0.00	8.5	0.24	4.04	0.45
6	A5w	5.18	1.1	1.32	0.47	0.67	0.00	4.9	0.31	1.57	0.99
7	B2a	5.23	0.2	1.09	0.29	0.41	0.00	4.9	0.40	1.60	1.84
8	B2w	6.07	5.8	0.80	0.78	0.13	0.00	31.7	0.71	4.44	1.00
9	B3a	5.68	1.8	1.34	0.41	0.34	0.00	14.6	0.46	1.87	0.26
10	B3a	6.15	2.2	3.59	0.24	0.39	0.00	14.0	0.57	2.13	0.53
11	B3b	6.15	1.7	2.45	0.28	0.26	0.00	9.2	0.66	1.70	0.31
12	B4w	6.15	4.6	1.28	0.20	0.23	0.00	27.5	0.96	5.49	0.67
13	B4a	6.27	6.1	1.82	0.27	0.62	0.00	38.4	2.65	3.42	1.33
14	B4b	6.10	3.8	3.22	0.19	0.31	0.00	20.1	2.35	2.55	0.38
15	B5w	6.32	13.4	3.09	0.48	0.70	0.00	94.6	2.37	8.11	2.84
16	B5b	6.72	18.4	0.97	0.25	0.24	0.00	103.7	2.31	6.95	0.79
17	B6a	6.75	9.1	1.72	0.27	0.73	0.00	54.9	2.52	5.05	1.32
18	B6b	6.74	2.7	2.24	0.12	0.44	0.00	20.7	1.31	5.01	0.95
19	B6w	6.09	1.1	0.98	0.24	0.47	0.00	15.3	0.64	2.07	0.71
20	C2w	5.83	0.0	1.32	0.14	0.58	0.00	1.8	0.00	0.00	0.88
21	C2b	6.42	0.0	1.03	0.00	0.41	0.00	6.1	0.00	0.00	1.10
22	C3w	6.07	0.0	1.31	0.18	0.09	0.00	46.4	0.00	0.00	0.62
23	C3a	6.34	9.1	1.64	0.00	0.01	0.00	98.8	1.09	0.00	0.51
24	C3b	5.93	8.7	1.30	0.23	0.25	0.00	62.2	1.95	6.35	1.19
25	C4a	5.89	9.4	1.63	0.00	0.16	0.00	81.7	2.11	6.97	1.61
26	C4b	6.45	12.3	1.66	0.00	0.16	0.00	128.7	3.09	8.35	0.67
27	C5a	6.49	14.4	0.49	0.22	0.31	0.00	119.6	6.37	12.30	1.36
28	C5b	6.40	2.5	1.14	0.00	0.33	0.00	36.6	0.75	3.98	0.36
29	C5w	6.38	5.4	2.81	0.24	0.60	0.00	81.7	2.78	10.27	2.12
30	C6w	5.90	2.0	1.66	0.00	0.11	0.00	30.5	0.59	5.40	0.22
31	D3w	6.37	8.8	1.36	0.10	0.24	0.00	64.1	1.31	7.50	0.85
32	D3a	6.41	23.1	1.67	0.00	0.18	0.00	101.3	1.57	7.26	0.51
33	D3b	5.93	3.1	1.84	0.18	0.61	0.00	41.5	0.97	5.52	0.42
34	D4w	6.38	2.6	0.69	0.16	0.13	0.00	14.0	0.74	1.38	0.29
35	D4a	6.52	3.7	1.64	0.00	0.23	0.00	28.1	1.06	8.43	0.84
36	D4b	5.84	0.6	1.83	0.42	0.64	0.00	7.9	0.21	2.45	0.24
37	D5w	6.02	2.4	1.15	0.31	0.52	0.00	42.1	0.70	6.45	0.60
38	D5a	6.24	3.9	0.72	0.11	0.18	0.00	40.9	1.76	4.61	0.47
39	D5b	6.20	2.2	1.65	0.00	0.38	0.00	21.4	1.10	4.25	0.33
40	D6w	5.15	0.2	0.71	0.19	0.33	0.00	9.8	0.71	1.38	3.55
41	W1w	5.95	3.2	2.42	0.22	0.34	0.00	20.1	0.67	3.64	3.00

No.	code	pH	Ca	Cl	NO3	SO4	PO4	HCO3	Mg	Na	K
42	W1a	5.74	1.0	0.32	0.28	0.54	0.00	26.2	1.42	3.36	0.33
43	W2w	5.36	0.2	0.30	0.00	0.20	0.00	6.1	0.28	1.49	0.55
44	W2a	5.87	1.1	1.83	0.00	0.60	1.09	17.1	1.41	1.83	4.68
45	W2b	5.92	2.5	0.47	0.34	0.55	0.00	17.1	1.75	1.99	1.84
46	W3w	6.16	2.1	0.67	1.75	2.87	0.00	25.6	1.36	3.65	2.94
47	W3a	6.85	3.7	1.75	0.40	2.16	0.00	34.2	3.58	2.83	3.42
48	W3b	5.91	0.9	1.22	0.00	0.28	0.00	29.9	3.79	2.76	4.02
49	W4w	6.26	3.6	4.96	0.42	1.82	7.82	21.4	1.20	5.37	5.19
50	W4a	5.31	1.8	0.91	0.62	1.03	0.00	77.5	5.10	3.19	20.7
51	W4b	6.33	5.2	0.49	0.00	0.17	0.00	41.5	2.41	5.88	0.30
52	W5w	6.47	5.0	1.13	0.84	0.76	0.00	44.5	2.36	5.87	0.90
53	W5a	6.32	5.3	0.94	0.34	0.42	0.00	42.7	2.44	5.77	0.44
54	W5b	6.16	0.7	0.16	0.00	0.21	0.00	12.2	0.64	2.34	0.02

(c)

No	code	pH	Ca	Cl	NO_3	SO_4	PO4	HCO_3	Mg	Na	K	Fe	SiO_2
1	A2a	5.12	3.71	3.86	0.03	0.60	0.75	4.88	1.27	5.66	1.10	0.21	10.2
2	A2b	6.16	5.14	2.39	0.34	1.18	0.55	12.81	1.48	9.56	1.23	0.70	11.4
3	B2	6.17	6.64	1.02	0.02	0.66	0.02	12.20	0.83	12.00	1.48	13.50	16.4
4	B3w	6.46	12.10	2.79	0.01	0.84	5.74	32.33	1.24	8.51	2.18	1.25	16.2
5	B3a	5.81	9.64	2.00	<0.01	1.19	4.33	50.63	1.91	11.80	2.70	6.04	16.6
6	B3b	6.00	6.40	3.73	0.05	0.16	1.50	32.94	2.09	9.16	2.99	2.06	13.8
7	B4w	5.81	3.16	2.50	0.03	0.84	0.56	9.15	1.04	8.61	1.33	1.62	18
8	B4a	6.17	5.91	2.08	0.14	0.69	0.27	15.86	1.50	12.20	1.32	<0.01	17.8
9	B4b	7.00	6.19	2.30	0.01	0.50	0.50	28.06	2.39	8.68	2.21	0.33	23.4
10	B5w	6.43	8.05	2.21	0.10	0.86	0.39	19.52	2.44	15.20	1.79	5.60	23.4
11	B5a	6.19	6.00	1.21	0.05	8.70	0.46	16.47	1.64	6.86	1.30	7.23	19.6
12	B5b	6.55	5.74	2.89	0.15	1.38	0.51	25.01	1.73	12.50	2.51	0.09	31
13	B6	6.60	3.66	0.97	0.02	0.98	0.53	13.42	1.27	9.85	1.07	4.43	12.7
14	D2a	7.00	10.20	2.11	0.03	2.27	11.25	73.20	4.11	13.70	2.49	1.12	17
15	D2b	7.57	20.10	8.61	0.11	8.75	29.91	269.01	5.27	15.50	5.65	0.31	16.3
16	D3a	5.76	4.29	1.73	0.02	0.81	0.59	7.32	1.15	7.02	0.95	1.11	13.4
17	D3b	6.73	4.54	1.31	0.41	0.98	0.32	19.52	1.68	8.47	0.95	<0.01	15.3
18	D4a	6.59	4.71	1.38	0.12	0.89	0.39	18.30	1.54	8.80	1.31	0.42	20.2
19	D4b	6.79	5.03	1.69	0.27	0.61	1.62	20.13	1.63	10.40	1.05	0.45	22.7
20	D5a	7.20	7.66	0.82	0.01	0.35	0.28	40.26	2.98	12.00	1.15	<0.01	3.34
21	D5b	6.99	9.73	2.46	0.10	0.68	0.95	46.36	3.49	11.90	1.36	<0.01	34.9
22	w5b	6.58	6.80	2.47	0.07	1.26	0.72	21.35	2.52	8.33	2.25	0.38	14.4
23	w5a	6.09	3.98	5.33	0.38	1.54	2.06	10.37	1.38	8.08	1.14	0.45	5.53
24	w4b	6.42	10.70	11.86	0.18	0.42	0.58	23.18	2.90	12.90	3.07	2.28	12.3
25	w4a	6.22	7.83	6.51	0.00	0.95	0.07	22.57	1.19	8.81	2.08	3.38	7.09
26	w2b	6.17	4.47	1.05	0.02	0.87	0.39	8.54	2.17	12.90	1.51	1.67	27.3
27	w2a	6.36	2.61	0.69	0.11	1.42	0.55	14.64	1.57	3.31	1.19	0.78	12.7
28	w1a	6.65	4.03	0.80	0.02	1.00	0.41	15.86	1.56	7.97	1.66	2.09	22.3
29	E1	6.71	3.66	2.46	0.13	2.87	0.15	14.03	1.77	19.60	1.95	1.02	30.6

Table 2: Results of the stable isotope content in groundwater samples taken on (a) March 2015 and (b) October 2017

No.	Date	Sample code	Depth (m)	$\delta^{2}H$ (‰)	$\delta^{18}O$ (‰)
1	October 2017	A2a	1.05	-24.80	-4.98
2	October 2017	A2b	1.35	-25.55	-5.23
3	October 2017	B2	0.5	-21.26	-4.59
4	October 2017	B3a	0.5	-19.92	-4.39
5	October 2017	B3b	2.3	-23.17	-4.77
6	October 2017	B3well	0.1	-17.15	-3.85
7	October 2017	B4well	0.1	-14.72	-3.29
8	October 2017	B4a	1.5	-24.10	-4.81
9	October 2017	B4b	4.5	-20.93	-4.50
10	October 2017	B5w	0.5	-22.72	-4.71
11	October 2017	B5a	0.9	-22.97	-4.69
12	October 2017	B5b	1.8	-23.44	-4.76
13	October 2017	B6	1.25	-11.42	-2.96
14	October 2017	D2a	2.5	-21.22	-4.61
15	October 2017	D2b	3.2	-21.57	-4.78
16	October 2017	D3a	0.7	-19.22	-4.15
17	October 2017	D3b	1.7	-24.80	-4.98
18	October 2017	D4a	1	-24.02	-4.90
19	October 2017	D4b	1.65	-24.87	-4.93
20	October 2017	D5a	1.25	-28.56	-5.47
21	October 2017	D5b	2.5	-28.47	-5.54
22	October 2017	EastChannel2	0.2	-17.22	-3.87
23	October 2017	W5b	1.65	-19.04	-4.16
24	October 2017	W5a	0.8	-17.79	-3.96
25	October 2017	W4b	1.7	-23.13	-4.65
26	October 2017	W4b	1.7	-22.33	-4.54
27	October 2017	W2b	3	-27.08	-4.88
28	October 2017	w2a	0.7	-24.02	-4.37
29	October 2017	W1a	0.5	-22.75	-4.30
30	March 2015	W3	0	-12.46	-2.90
31	March 2015	W5a	0.8	-19.59	-3.74
32	March 2015	W4b	1.9	-10.03	-2.17
33	March 2015	W2b	3	-12.83	-3.33
34	March 2015	W1b	3.1	-10.10	-2.15
35	March 2015	W3	0	-16.06	-3.64
36	March 2015	W1	0	-12.55	-3.46
37	March 2015	B3	0	-15.66	-3.30
38	March 2015	B3well	0.1	-16.56	-3.39
39	March 2015	A2b	2	-15.45	-3.73
40	March 2015	A4	0	-16.62	-3.55
41	March 2015	B1a	0.5	-17.33	-4.14
42	March 2015	B2	0	-12.20	-3.34
43	March 2015	B3a	0.5	-15.94	-3.61
44	March 2015	B3b	2.3	-19.97	-3.81
45	March 2015	B4	0	-9.78	-2.85
46	March 2015	B5a	0.5	-13.49	-3.64
47	March 2015	B6	0	-13.11	-3.36
48	March 2015	C5	0	-13.33	-2.78
49	March 2015	ChannelEast1	0	-12.31	-3.40
50	March 2015	ChannelEast2	0	-12.84	-3.25
51	March 2015	ChannelEast3	0	-15.70	-3.40