Supplement of Hydrol. Earth Syst. Sci., 20, 1197–1210, 2016
http://www.hydrol-earth-syst-sci.net/20/1197/2016/
doi:10.5194/hess-20-1197-2016-supplement

Hydrology and Earth System Sciences
Open Access
EGU

Supplement of

Stable oxygen isotope variability in two contrasting glacier river catchments in Greenland

Jacob C. Yde et al.

Correspondence to: Jacob C. Yde (jacob.yde@hisf.no)

Supplement

Table S1. $\delta^{18}O$ values (‰) in water samples collected from 2003 to 2009 in Mittivakkat Gletscher River, Southeast Greenland. Sampling time refers to Greenland summer time.

Sampling time	$\delta^{18}O$	Sampling time	$\delta^{18}O$	Sampling time	$\delta^{18}O$
2003		**2005**		**2006**	
11-08 10:40	-14.65	30-05 09:20	-15.16	11-08 09:00	-15.42
11-08 16:50	-14.34	30-05 16:35	-14.95	11-08 14:55	-14.81
13-08 09:45	-14.39	31-05 08:35	-15.01	12-08 15:25	-15.09
13-08 14:00	-14.30	31-05 16:55	-14.79	12-08 15:55	-15.04
		01-06 09:30	-14.95	13-08 09:30	-15.27
2004		01-06 16:30	-14.72	13-08 16:00	-14.26
08-08 15:30	-14.61	02-06 09:10	-14.78	14-08 09:45	-15.11
08-08 16:00	-14.59	02-06 17:05	-14.71	15-08 14:45	-14.69
08-08 20:00	-14.55	03-06 09:05	-14.84	16-08 13:00	-14.49
09-08 00:00	-14.64	03-06 16:50	-14.78	16-08 13:50	-14.70
09-08 04:00	-14.70	04-06 09:10	-14.85	16-08 16:00	-14.46
09-08 08:00	-14.87	04-06 15:35	-14.80		
09-08 10:00	-14.86	05-06 09:15	-14.83	**2007**	
09-08 11:00	-14.91	05-06 16:30	-14.74	02-08 10:00	-15.11
09-08 12:00	-14.88	06-06 09:25	-14.82	02-08 17:00	-14.79
09-08 13:00	-14.74	06-06 16:25	-14.59	03-08 10:00	-15.00
09-08 14:00	-14.67	07-06 09:10	-14.73	03-08 17:00	-14.72
09-08 15:00	-14.65	07-06 16:20	-14.61	04-08 10:00	-14.95
09-08 16:00	-14.57	08-06 08:45	-14.76	04-08 17:00	-14.61
09-08 17:00	-14.62	08-06 16:35	-14.55	05-08 10:00	-14.89
09-08 18:00	-14.58	09-06 09:15	-14.74	05-08 17:00	-14.51
09-08 19:00	-14.52	09-06 16:15	-14.58	06-08 10:00	-14.79
09-08 20:00	-14.51	10-06 09:20	-14.64	06-08 17:00	-14.63
09-08 21:00	-14.56	10-06 12:20	-14.48	07-08 10:00	-14.68
09-08 22:00	-14.55	10-06 17:05	-14.38	07-08 17:00	-14.40
09-08 23:00	-14.60	11-06 09:30	-14.55	08-08 10:00	-14.68
10-08 00:00	-14.67	11-06 16:20	-14.35	08-08 17:00	-14.53
10-08 04:00	-14.71	12-06 10:00	-14.53	09-08 10:00	-14.73
10-08 08:00	-14.82	12-06 16:10	-14.41	09-08 17:00	-14.07
10-08 12:00	-14.79	23-07 00:00	-13.74	10-08 10:00	-14.62
10-08 16:00	-14.50	23-07 04:00	-13.82		
10-08 20:00	-14.43	23-07 08:00	-13.92	**2008**	
11-08 00:00	-14.59	23-07 12:00	-14.07	29-05 08:50	-17.13
11-08 04:00	-14.65	23-07 16:00	-14.04	29-05 15:45	-16.98
11-08 08:00	-14.65	23-07 20:00	-14.09	30-05 09:15	-15.92
11-08 12:00	-14.59	24-07 00:00	-14.01	30-05 16:30	-16.65
11-08 16:00	-14.55	24-07 04:00	-14.14	31-05 09:15	-17.01
11-08 20:00	-14.56	24-07 08:00	-14.12	31-05 16:00	-17.16
12-08 00:00	-14.56	24-07 12:00	-14.19	01-06 08:10	-17.35
12-08 04:00	-14.47	24-07 16:00	-14.15	01-06 16:15	-16.98
12-08 08:00	-14.49	24-07 20:00	-14.10	02-06 09:00	-17.10
12-08 12:00	-14.43	25-07 00:00	-14.18	02-06 15:45	-17.00
12-08 16:00	-14.26	25-07 04:00	-14.22	03-06 08:30	-16.94
12-08 20:00	-14.30	25-07 08:00	-14.41	03-06 16:00	-16.92
13-08 00:00	-14.37	25-07 12:00	-14.25	04-06 08:45	-16.95
13-08 04:00	-14.47	25-07 16:00	-14.21	04-06 15:40	-17.06
13-08 08:00	-14.49	25-07 20:00	-14.11	05-06 08:45	-16.98
13-08 12:00	-14.60	26-07 00:00	-14.18	05-06 16:05	-16.92
13-08 16:00	-14.37	11-08 11:30	-14.47	06-06 08:50	-17.12
13-08 20:00	-14.19	11-08 15:00	-14.38	06-06 16:05	-17.17
14-08 00:00	-14.34	11-08 21:00	-14.25	07-06 08:50	-17.04
14-08 04:00	-14.27	12-08 00:00	-14.36	07-06 16:30	-16.96
14-08 08:00	-14.39	12-08 03:00	-14.34	08-06 08:35	-16.99
14-08 12:00	-14.38	12-08 09:00	-14.55	08-06 16:10	-16.99
14-08 17:10	-14.39	12-08 15:00	-14.30	09-06 08:45	-16.78
14-08 20:00	-14.42	12-08 21:00	-14.25	09-06 16:00	-16.69
15-08 00:00	-14.46	13-08 03:00	-14.33	10-06 08:40	-16.82
15-08 04:00	-14.52	13-08 09:00	-14.49	10-06 15:15	-16.75
15-08 08:00	-14.54	13-08 15:00	-14.13	11-06 08:45	-16.75
15-08 10:00	-14.57	13-08 21:00	-14.42	11-06 15:45	-16.57
15-08 12:00	-14.59	14-08 03:00	-14.55	10-08 08:00	-15.20
15-08 14:00	-14.56	14-08 09:00	-15.25	10-08 20:00	-14.82
15-08 16:00	-14.47	14-08 15:00	-16.43	11-08 08:00	-15.13
15-08 18:00	-14.48	14-08 21:00	-15.91	11-08 20:00	-14.75
15-08 20:00	-14.44	15-08 03:00	-15.44	12-08 08:00	-15.01

15-08 22:00	-14.60	15-08 09:00	-15.39	12-08 20:00	-14.79
16-08 00:00	-14.42	15-08 12:00	-15.26	13-08 08:00	-15.01
16-08 02:00	-14.57	15-08 15:00	-15.03	13-08 12:00	-14.88
16-08 04:00	-14.59	15-08 18:00	-15.01	13-08 16:00	-14.78
16-08 06:00	-14.68	15-08 21:00	-14.85	13-08 20:00	-14.50
16-08 08:00	-14.79	16-08 03:00	-14.89	14-08 08:00	-14.85
16-08 10:00	-14.87	16-08 09:00	-14.94	14-08 20:00	-14.47
16-08 12:00	-14.70	16-08 15:00	-14.75	15-08 08:00	-14.84
16-08 14:00	-14.66	16-08 18:00	-14.64	15-08 20:00	-14.60
16-08 16:00	-14.57	16-08 21:00	-14.62	16-08 08:00	-14.97
16-08 18:00	-14.48	17-08 03:00	-14.69		
16-08 20:00	-14.49	17-08 09:00	-14.78	**2009**	
16-08 22:00	-14.42	17-08 12:00	-14.86	08-08 08:00	-15.13
17-08 00:00	-14.38	17-08 15:00	-14.69	08-08 20:00	-14.73
17-08 04:00	-14.43	17-08 18:00	-14.51	09-08 08:00	-14.97
17-08 08:00	-14.61	17-08 21:00	-14.49	09-08 20:00	-14.79
17-08 12:00	-14.72	18-08 03:00	-14.63	10-08 08:00	-15.04
17-08 16:00	-14.52	18-08 09:00	-14.54	10-08 20:00	-14.56
17-08 20:00	-14.42	18-08 15:00	-14.70	11-08 08:00	-15.02
18-08 00:00	-14.41	18-08 18:00	-14.29	11-08 20:00	-14.71
18-08 04:00	-14.48	18-08 21:00	-14.35	12-08 08:00	-15.03
18-08 08:00	-14.57	19-08 03:00	-14.37	12-08 20:00	-14.83
18-08 12:00	-14.64	19-08 09:00	-14.51	13-08 08:00	-15.00
18-08 16:00	-14.53	19-08 12:00	-14.47	13-08 20:00	-14.92
18-08 20:00	-14.46	19-08 15:00	-14.63	14-08 08:00	-15.02
19-08 00:00	-14.46	19-08 18:00	-15.22	14-08 20:00	-14.66
19-08 04:00	-14.45	19-08 21:00	-15.00	15-08 08:00	-15.00
19-08 08:00	-14.57			15-08 20:00	-14.74
19-08 12:00	-14.57			16-08 08:00	-14.84
19-08 16:00	-14.56				
19-08 20:00	-14.55				
20-08 00:00	-14.57				
20-08 04:00	-14.56				
20-08 08:00	-14.51				
20-08 12:00	-14.66				
20-08 16:00	-14.60				
20-08 20:00	-14.48				
21-08 00:00	-14.40				
21-08 04:00	-14.48				
21-08 08:00	-14.46				
21-08 12:00	-14.63				
21-08 16:00	-14.53				
21-08 20:00	-14.72				
22-08 00:00	-14.48				

Table S2. $\delta^{18}O$ values (‰) in water samples collected from 2000 to 2005 in Kuannersuit Glacier River, West Greenland. Sampling time refers to Greenland summer time.

Sampling time	**$\delta^{18}O$**	**Sampling time**	**$\delta^{18}O$**	**Sampling time**	**$\delta^{18}O$**
2000		**2001**		**2002**	
24-07 17:00	-19.47	14-07 09:10	-19.33	14-07 09:30	-19.36
26-07 09:00	-19.86	14-07 12:10	-19.14	14-07 10:30	-19.31
26-07 10:00	-19.81	14-07 17:30	-19.17	14-07 11:30	-19.30
26-07 11:00	-19.80	15-07 00:00	-19.20	14-07 12:30	-19.20
26-07 12:00	-19.83	15-07 07:30	-19.21	14-07 13:30	-19.17
26-07 13:00	-19.77	15-07 10:45	-19.24	14-07 14:30	-19.39
26-07 15:00	-19.90	15-07 14:45	-19.39	14-07 15:30	-19.25
26-07 16:00	-19.70	15-07 18:45	-19.37	14-07 16:30	-19.17
26-07 17:00	-19.94	15-07 23:00	-19.15	14-07 17:30	-18.90
26-07 18:00	-19.78	16-07 03:00	-19.17	14-07 18:30	-18.93
26-07 19:00	-19.73	16-07 07:10	-19.20	14-07 19:30	-18.97
26-07 20:00	-19.82	16-07 10:30	-19.44	14-07 20:30	-18.76
26-07 21:00	-19.83	16-07 13:30	-19.29	14-07 21:30	-18.80
26-07 22:00	-19.97	16-07 16:30	-19.38	14-07 22:30	-18.75
26-07 23:00	-19.69	16-07 20:00	-19.35	14-07 23:30	-18.78
27-07 00:00	-19.91	16-07 23:30	-19.35	15-07 00:30	-18.75
27-07 03:00	-19.76	17-07 03:00	-19.35	15-07 01:30	-18.75
27-07 06:00	-19.83	17-07 08:00	-19.23	15-07 03:00	-18.83
27-07 07:00	-19.77	17-07 11:30	-19.32	15-07 04:15	-18.85
27-07 08:00	-19.82	17-07 13:00	-19.31	15-07 08:20	-19.05
27-07 09:00	-19.83	17-07 18:45	-19.24	15-07 09:00	-19.04
		17-07 22:30	-19.17		

18-07 10:00	-19.26	**2003**	
18-07 13:15	-19.20	18-07 20:00	-19.95
18-07 16:10	-19.33	18-07 23:00	-19.94
18-07 18:50	-19.37	19-07 09:20	-20.00
18-07 23:00	-19.32	23-07 09:00	-19.66
19-07 02:00	-19.36	23-07 16:45	-19.60
19-07 07:00	-19.35	25-07 08:00	-20.06
19-07 10:00	-19.19	25-07 09:00	-20.03
19-07 12:30	-19.42	25-07 10:00	-20.68
19-07 14:20	-19.36	25-07 11:00	-19.89
19-07 17:15	-19.41	25-07 12:00	-21.88
19-07 19:50	-19.21	25-07 13:00	-20.54
19-07 22:35	-19.28	25-07 14:00	-19.96
20-07 02:35	-19.22	25-07 15:00	-19.88
20-07 07:15	-19.27	25-07 16:00	-21.17
20-07 10:05	-19.11	25-07 17:00	-21.32
20-07 13:05	-19.25	25-07 18:00	-21.00
20-07 16:10	-19.33	25-07 19:00	-20.34
20-07 19:05	-19.26	25-07 20:00	-19.42
20-07 22:05	-19.21	25-07 21:00	-19.03
21-07 00:30	-19.30	25-07 22:00	-20.18
21-07 02:50	-19.32	25-07 23:00	-19.77
21-07 07:20	-19.35	26-07 00:00	-19.74
21-07 10:45	-19.35	26-07 01:00	-20.95
21-07 13:45	-19.40	26-07 03:00	-20.56
21-07 16:45	-19.39	26-07 03:45	-20.93
21-07 20:30	-19.47	26-07 06:15	-21.19
22-07 00:00	-17.82	26-07 08:00	-20.48
22-07 07:15	-19.39		
22-07 10:00	-18.97	**2005**	
22-07 13:10	-19.36	19-07 15:00	-19.32
22-07 15:50	-19.30	24-07 11:30	-19.51
22-07 19:10	-19.11		
22-07 22:05	-19.20		
23-07 00:40	-19.26		
23-07 04:00	-19.16		
23-07 07:00	-19.35		
23-07 10:00	-19.37		
23-07 13:05	-19.26		
23-07 16:15	-19.28		
23-07 19:15	-19.26		
23-07 22:00	-19.19		
24-07 00:25	-19.36		
24-07 03:55	-19.30		
24-07 07:10	-19.25		
24-07 10:10	-19.29		
24-07 13:10	-19.31		
24-07 15:25	-19.27		
24-07 18:25	-19.18		
25-07 13:40	-19.19		
25-07 20:45	-19.22		
25-07 22:00	-19.21		
26-07 08:10	-19.41		
26-07 13:00	-19.20		
26-07 17:00	-19.24		
26-07 21:00	-19.23		
27-07 09:30	-19.30		
27-07 12:15	-19.20		
27-07 14:55	-19.27		
27-07 17:05	-19.39		
27-07 19:10	-19.20		
27-07 19:55	-19.27		
27-07 23:00	-19.33		
28-07 09:10	-19.55		
28-07 19:30	-19.19		
29-07 09:25	-19.33		
29-07 13:00	-19.15		
29-07 17:00	-19.29		
29-07 17:30	-19.27		
29-07 18:00	-19.29		
29-07 18:30	-19.21		
29-07 19:00	-18.91		
29-07 19:30	-19.03		
29-07 20:00	-19.18		
29-07 20:30	-19.23		

		29-07 21:00	-19.05		
		29-07 21:30	-19.21		
		29-07 22:00	-19.21		
		29-07 22:30	-19.13		
		29-07 23:00	-19.08		
		30-07 00:00	-19.12		
		30-07 04:00	-19.22		
		30-07 21:15	-19.16		
		31-07 06:00	-19.30		
		31-07 08:00	-19.27		
		31-07 10:00	-19.24		
		31-07 12:00	-19.48		

Table S3. $\delta^{18}O$ values (‰) in water samples collected almost simultaneously (within three minutes) as multi-sample tests in 2004 in Mittivakkat Gletscher River, Southeast Greenland. Sampling time refers to Greenland summer time.

Sampling time	**$\delta^{18}O$**	**Sampling time**	**$\delta^{18}O$**	**Sampling time**	**$\delta^{18}O$**
09-08 14:00	-14.68	**15-08 14:00**	-14.54	**21-08 14:00**	-14.64
	-14.66		-14.56		-14.65
	-14.76		-14.66		-14.54
	-14.64		-14.55		-14.59
	-14.87		-14.64		-14.56
	-14.62				-14.59
	-14.75				-14.61
	-14.64				-14.53
	-14.61				-14.58
	-14.75				-14.62
	-14.76				
	-14.70				
	-14.71				
	-14.74				
	-14.81				
	-14.74				
	-14.69				
	-14.73				
	-14.70				
	-14.61				
	-14.66				
	-14.99				
	-14.71				
	-14.71				
	-14.69				

Table S4. $\delta^{18}O$ values (‰) in water samples collected almost simultaneously (within three minutes) as multi-sample tests from 2001 to 2003 in Kuannersuit Glacier River, West Greenland. Sampling time refers to Greenland summer time.

Sampling time	**$\delta^{18}O$**	**Sampling time**	**$\delta^{18}O$**	**Sampling time**	**$\delta^{18}O$**
2001		**2002**		**2003**	
26-07 13:25	-19.30	**10-07 15:00**	-19.33	**25-07 13:30**	-19.91
	-19.27		-18.95		-18.82
	-19.24		-19.34		-19.94
	-19.48		-19.21		-19.69
	-19.03		-18.96		-19.22
			-19.18		-18.42
			-19.28		-19.83
			-19.32		-19.96
			-19.35		-19.72
			-19.35		-19.93
			-19.20		-19.41
			-19.29		-20.05
			-19.26		-19.88

		-19.18	-20.06
		-19.39	-19.26
		-19.20	-19.70
		-19.19	-19.84
			-19.18
			-19.86
			-19.19
			-19.90
			-19.96

Table S5. $\delta^{18}O$ values (‰) in surface ice samples collected along longitudinal and transverse transects (3250 m up-glacier) on Kuannersuit Glacier, West Greenland.

Distance from glacier front (m)	**$\delta^{18}O$**	**Distance from centreline (m)**	**$\delta^{18}O$**
Longitudial transect		**Transverse transect**	
1250	-20.51	-600 (west)	-18.55
1750	-19.91	-550	-18.69
2250	-21.05	-500	-19.42
2750	-20.70	-450	-19.76
3250	-20.34	-400	-19.52
3750	-22.18	-350	-19.37
4250	-21.20	-300	-19.18
4750	-21.56	-250	-20.13
5250	-20.64	-200	-19.92
5750	-21.08	-150	-20.89
6250	-22.15	-100	-20.79
6750	-19.35	-50	-20.88
7250	-20.35	0	-21.32
		50	-20.36
		100	-20.08
		150	-21.95
		200	-20.28
		250	-22.69
		300	-20.06
		350	-21.48
		400	-21.28
		450	-20.53
		500 (east)	-19.16

Table S6. $\delta^{18}O$ values (‰) in rainwater samples collected in front of Kuannersuit Glacier, West Greenland, in 2002. Sampling time refers to Greenland summer time.

Sampling time	**$\delta^{18}O$**
04-07 19:00	-18.78
10-07 14:10	-10.23
10-07 14:10	-10.32
10-07 20:00	-10.80
10-07 20:00	-7.99
11-07 12:00	-6.57
11-07 12:00	-16.77