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Corrigendum to

"Climate change between the mid and late Holocene in northern high latitudes – Part 1: Survey of temperature and precipitation proxy data" published in Clim. Past, 6, 591–608, 2010

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In the manuscript "Climate change between the mid and late Holocene in northern high latitudes – Part 1: Survey of temperature and precipitation proxy data" by H. S. Sundqvist et al., an error has occurred in the calculation of the climate change from the records with uncalibrated radiocarbon ages (Andreev and Klimanov, 2000; Andreev et al., 2001, 2003; Kerwin et al., 2004; Sawada et al., 1999). This affects some of the results in Table 1, the estimated change in regional temperature for Siberia, the estimated change in temperature and precipitation for the northern high latitudes and the estimated change in temperature for the pollen records in sections "3.2.1 Temperature", "3.2.2 Precipitation", "3.3 ΔT in different proxy records" and "4 Conclusions". Moreover, the 500-year time windows 600 BP ± 250 yrs were incorrectly labeled as if they were 1000 years long in both the abstract and on page 605. A new version of Table 1 and the correction of the text are found below.

The correct text should be:

Abstract

6th sentence

The available reconstructions indicate that the northern high latitudes were warmer in both summer, winter and the annual mean temperature at the mid-Holocene (6000 BP ± 250 yrs) compared to the pre-industrial period (AD 1500 ± 250 yrs).

3.2.1 Temperature, pages 600–601

1st paragraph, 1st and 2nd sentence

A large majority of the temperature reconstructions (85/104, i.e. 82%) indicates that temperatures were on average higher (neglecting the quantified uncertainty) at the mid-Holocene than during the pre-industrial period (Fig. 3). Summer is the only season for which the proxy records are sufficiently numerous to allow some comparison of temperature differences in different regions. A cooling by ∼2 °C is seen for Northern Siberia, by ∼1 °C for Fennoscandia and by ∼0.5 °C for North America and Iceland.

Last paragraph, 1st sentence

According to an unweighted average of ΔT across all seasonally separated proxy series, the climate of the northern high latitudes at 6 ka was 1.0 °C warmer in summer, 1.7 °C in winter, and 2.0 °C in the annual mean, in comparison to 0.5 ka.

3.2.2 Precipitation, page 601

1st paragraph, 2nd sentence

The average difference in annual total precipitation between 6 ka and 0.5 ka amounts to a decrease by ∼60 mm.

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3.3 ΔT in different proxies, page 601

1st paragraph, 2nd sentence

On average, chironomids indicate a cooling between 0.6 ka and 0.5 ka by ∼0.6 °C, while diatoms and pollen show cooling by ∼1 °C and ∼1.2°C respectively.

4 Conclusions, page 605

5th paragraph

A large majority of the here investigated temperature reconstructions indicate that temperatures were warmer at the mid-Holocene (6000 BP ± 250 yrs) compared to the preindustrial period (1500 AD ± 250 yrs), both in summer, winter and the annual mean. By taking simple arithmetic averages over the available data, the reconstructions indicate that the northern high latitudes were 1.0 °C warmer in summer, 1.7 °C in winter and 2.0 °C warmer in the annual mean temperature at the mid-Holocene (6 ka) compared to the recent pre-industrial.

Table 1a. Temperature reconstructions from proxy data discussed in this paper.

Site	Lat N	Lon E	Proxy[1]	Variable[2]	6 ka–0.5 ka	σ_c	σ_v	2 σ_{tot}	Reference
Fennoscandia									
Dalmutladdo	69.17	20.72	P	T_{Jul}	1.3	0.8	0.3	1.8	Bjune et al., 2004
Barheivatn	69.70	19.85	P	T_{Jul}	1.7	1.2	0.2	2.5	Bjune et al., 2004
Toskaljavri	69.20	21.47	P	T_{Jul}	0.4	0.7	0.1	1.4	Seppä and Birks, 2002
Toskaljavri	69.20	21.47	C	T_{Jul}	0.7	0.1	0.2	0.5	Seppä et al., 2002
KP-2	68.80	35.32	P	T_{Jul}	0.5	0.1	0.3	0.7	Seppä et al., 2008
Tsuolbmajavri	68.68	22.08	P	T_{Jul}	1.4	0.1	0.3	0.6	Seppä and Birks, 2001
Tsuolbmajavri	68.68	22.08	D	T_{Jul}	0.5	0.1	0.2	0.4	Korhola et al., 2000
Tsuolbmajavri	68.68	22.08	C (bummer)	T_{Jul}	−0.1	0.1	0.2	0.5	Korhola et al., 2002
Tsuolbmajavri	68.68	22.08	C (WA_PLS)	T_{Jul}	−0.1	0.1	0.3	0.7	Korhola et al., 2002
Torneträsk	68.50	19.00	T	T_{JJA}	−0.3	0.1	0.2	0.3	Grudd et al., 2002
Vuoskkujavri	68.33	19.10	P	T_{Jul}	1.0	0.8	0.3	2.3	Bigler et al., 2002
Vuoskkujavri	68.33	19.10	D	T_{Jul}	1.8	0.9	0.2	1.7	Bigler et al., 2002
Vuoskkujavri	68.33	19.10	C	T_{Jul}	0.4	1.61	0.2	1.9	Bigler et al., 2002
Vuoskkujavri	68.33	19.10	P	T_{Jan}	−0.4	2.3	0.5	4.7	Bigler et al., 2002
Lake 850	68.37	19.12	D	T_{Jul}	0.0	0.6	0.2	1.3	Larocque and Bigler, 2004
Lake 850	68.37	19.12	C	T_{Jul}	0.2	0.6	0.2	1.3	Bigler et al., 2003
Lake Njulla	68.37	18.70	D	T_{Jul}	0.9	0.9	0.4	1.9	Bigler et al., 2003
Lake Njulla	68.37	18.70	C	T_{Jul}	1.1	0.8	0.1	1.7	Bigler et al., 2003
Vuolep Njakajaure	68.33	18.78	D	T_{Jul}	1.1	0.9	0.4	1.9	Bigler et al., 2006
Lake Tibetanus	68.33	18.70	P	T_{Jul}	3.1	1.1	0.4	2.2	Hammarlund et al., 2002
Chuna Lake	67.95	32.48	P	T_{Jul}	1.0	1.1	0.4	2.4	Solovieva et al., 2005
Sjuodjijaure	67.37	18.07	P	T_{Jul}	0.9	1.0	0.3	2.1	Rosén et al., 2001
Sjuodjijaure	67.37	18.07	D	T_{Jul}	1.5	0.7	0.1	1.5	Rosén et al., 2001
Sjuodjijaure	67.37	18.07	C	T_{Jul}	1.0	0.8	0.2	1.7	Rosén et al., 2001
Jeknajaure	67.22	17.80	D	T_{Jul}	2.6	0.9	0.6	2.1	Rosén et al., 2003
Niak	67.50	18.07	D	T_{Jul}	1.1	0.8	0.2	1.7	Rosén et al., 2003
Seukokjaure	67.77	17.52	P	T_{Jul}	0.7	1.7	0.3	3.4	Rosén et al., 2003
Seukokjaure	67.77	17.52	D	T_{Jul}	0.0	1.2	0.3	2.5	Rosén et al., 2003
Seukokjaure	67.77	17.52	C	T_{Jul}	0.0	1.4	0.2	2.9	Rosén et al., 2003
Svanåvatnet	66.42	14.05	P	T_{Jul}	2.1	0.8	0.2	1.7	Bjune and Birks, 2008
Svanåvatnet	66.42	14.05	P	T_{Jan}	1.1	1.9	0.8	4.2	Bjune and Birks, 2008
Søylegrotta	66.62	13.68	S	T_{Ann}	−0.50	0.2	0.8	1.6	Lauritzen and Lundberg, 1999
Lake Berkut	66.35	36.67	C	T_{Jul}	0.0	1.3	0.3	2.7	Illashuk et al., 2005
Lake Spåime	63.12	12.32	C	T_{Jul}	1.2	1.2	0.4	2.5	Hammarlund et al., 2004
Råtasjøen	62.27	9.83	C	T_{Jul}	0.7	0.8	0.4	1.9	Velle et al., 2005
Brurskardstjørni	61.42	8.67	C	T_{Jul}	1.4	0.7	0.2	1.6	Velle et al., 2005
Finse stationsdamm	60.60	7.50	C	T_{Jul}	2.1	1.2	0.7	2.9	Velle et al., 2005
Holebudalen	59.83	6.98	C	T_{Jul}	0.5	1.2	0.3	2.6	Velle et al., 2005
Vestre Øykjamyrttjørn	59.82	6.00	C	T_{Jul}	0.9	0.8	0.3	1.7	Velle et al., 2005
Vestre Øykjamyrttjørn	59.82	6.00	P	T_{Jul}	0.3	1.1	0.3	2.3	Bjune et al., 2005
Trettetjørn	60.72	7.00	P	T_{Jul}	2.5	0.8	0.6	2.0	Bjune et al., 2005
Klottjärnen	61.82	14.58	P	T_{Ann}	2.8	0.3	0.6	1.4	Seppä et al., 2009
Nautajärvi	61.80	24.70	P	T_{Ann}	1.8	0.3	0.4	0.9	Seppä et al., 2009
Laihalampi	61.48	26.07	P	T_{Ann}	1.4	0.3	0.5	1.2	Heikkilä and Seppä, 2003
Arapisto	60.58	24.08	P	T_{Ann}	2.8	0.3	0.8	1.7	Sarmaja-Korjonen and Seppä, 2007
Kuivajärvi	60.80	23.80	P	T_{Ann}	2.0	0.2	0.7	1.4	
Gilltjärnen	60.08	15.83	C	T_{Jul}	−0.8	0.8	0.2	1.0	Antonsson et al., 2006
Gilltjärnen	60.08	15.83	P	T_{Ann}	1.2	0.2	0.8	1.5	Antonsson et al., 2006
Trehörningen	58.55	11.60	P	T_{Ann}	1.6	0.4	1.1	2.3	Antonsson and Seppä, 2007
Lilla Gloppsjön	59.83	16.53	P	T_{Ann}	2.7	0.3	0.8	1.7	Seppä et al., 2009
Flarken	58.55	13.67	P	T_{Ann}	2.3	0.4	0.8	1.8	Seppä et al., 2005
Lake Raigastvere	58.58	26.65	P	T_{Ann}	2.5	0.2	0.9	1.8	Seppä and Poska, 2004
Lake Viitna	59.45	26.08	P	T_{Ann}	2.5	0.2	0.9	1.8	Seppä and Poska, 2004
Lake Ruila	59.17	24.43	P	T_{Ann}	4.0	0.3	0.9	1.9	Seppä and Poska, 2004

Table 1a. Continued.

Site	Lat N	Lon E	Proxy[1]	Variable[2]	6 ka–0.5 ka	σ_c	σ_v	2 σ_{tot}	Reference
Iceland									
Torfaldsvatn	66.06	−20.38	C	T_{Jul}	0.4	2.2	0.4	4.4	Axford et al., 2007
St Vidarvatn	66.23	−15.84	C	T_{Jul}	0.6	2.2	0.5	4.5	Axford et al., 2007
Greenland									
GISP2	75.60	−38.50	ice $\delta^{18}O$	T_{Ann}	1.4	?	0.5	?	Alley et al., 2000
Dye 3	65.20	−43.80	Bt	T_{Ann}	2.2	0.3	0.8	1.8	Dahl-Jensen et al., 1998
GRIP	72.60	−37.60	Bt	T_{Ann}	2.6	0.2	0.5	1.0	Dahl-Jensen et al., 1998
N. America									
KR02	71.34	−113.78	P (PLS)	T_{Jul}	0.5	0.6	0.1	1.3	Peros and Gajewski, 2008
KR02	71.34	−113.78	P (WAPLS)	T_{Jul}	0.6	0.6	0.0	1.3	Peros and Gajewski, 2008
KR02	71.34	−113.78	P (MAT)	T_{Jul}	0.0	0.6	0.2	1.3	Peros and Gajewski, 2008
Dyer Lower	66.62	−61.65	P (RESP)	T_{Jul}	0.5	0.3	0.2	0.7	Kerwin et al., 2004
Dyer Lower	66.62	−61.65	P (MAT)	T_{Jul}	0.5	0.3	0.2	0.7	Kerwin et al., 2004
Zagoskin Lake	63.44	−161.90	C	T_{Jul}	0.2	2.8	1.6	6.4	Kurek et al., 2009a
Iglutalk Lake	66.14	−66.08	P (RESP)	T_{Jul}	0.2	0.3	0.1	0.6	Kerwin et al., 2004
Iglutalk Lake	66.14	−66.08	P (MAT)	T_{Jul}	0.3	0.3	0.1	0.6	Kerwin et al., 2004
Burial Lake	68.44	−158.83	C	T_{Jul}	0.1	1.9	0.1	3.9	Kurek et al., 2009a
Lake Vhc1	60.78	−69.83	P (RESP)	T_{Jul}	0.1	0.2	0.9	1.8	Kerwin et al., 2004
Lake Vhc1	60.78	−69.83	P (MAT)	T_{Jul}	−0.3	0.2	0.2	0.6	Kerwin et al., 2004
Lake LRI	58.58	−75.25	P	T_{Jul}	0.2	1.7	0.2	3.4	Sawada et al., 1999
U. Fly Lake	61.07	−138.09	P	T_{Jul}	1.0	1.3	0.4	2.8	Bunbury and Gajewski, 2009
U. Fly Lake	61.07	−138.09	C (MAT)	T_{Jul}	2.5	1.8	0.9	4.1	Bunbury and Gajewski, 2009
U. Fly Lake	61.07	−138.09	C (WAPLS)	T_{Jul}	1.5	1.5	0.4	3.2	Bunbury and Gajewski, 2009
Lake JR01	69.90	−95.07	P	T_{Jul}	1.3	1.1	0.5	2.5	Zabenskie and Gajewski, 2007
Lake CF3	70.53	−68.37	C	T_{Jul}	0.4	2.2	0.1	4.5	Briner et al., 2007
Lake CF8	70.56	−68.95	C	T_{Jul}	0.4	2.2	0.1	4.5	Axford et al., 2009
Hanging Lake	62.35	−138.35	C	T_{Jul}	0.7	1.4	0.4	3.0	Kurek et al., 2009b
BC01	75.18	−111.92	P	T_{Jul}	0.5	1.4	0.1	2.8	Peros et al., 2010
Siberia									
Lyadhej-To	68.25	65.75	C	T_{Jul}	0.8	1.1	0.3	2.3	Andreev et al., 2005
Lyadhej-To	68.25	65.75	P	T_{Jul}	2.2	3.0	0.9	6.2	Andreev et al., 2005
Khaipudurskaya	68.00	60.00	P	T_{Jul}	2.2	1.2	1.0	3.1	Andreev and Klimanov, 2000
Khaipudurskaya	68.00	60.00	P	T_{Jan}	2.0	1.4	1.0	3.2	Andreev and Klimanov, 2000
Khaipudurskaya	68.00	60.00	P	T_{Ann}	3.2	1.2	1.2	3.4	Andreev and Klimanov, 2000
Taymyr	70.77	99.13	P	T_{Jul}	3.9	1.2	0.8	2.9	Andreev and Klimanov, 2000
Taymyr	70.77	99.13	P	T_{Jan}	2.5	1.4	1.0	3.5	Andreev and Klimanov, 2000
Taymyr	70.77	99.13	P	T_{Ann}	2.2	1.2	0.8	2.9	Andreev and Klimanov, 2000
Kazaché	70.77	136.25	P	T_{Jul}	1.8	1.2	0.5	2.6	Andreev et al., 2001
Kazaché	70.77	136.25	P	T_{Jan}	2.7	1.4	0.7	3.2	Andreev et al., 2001
Kazaché	70.77	136.25	P	T_{Ann}	2.8	1.2	0.6	2.7	Andreev et al., 2001
Levison-Lessing	74.47	98.63	P	T_{Jul}	2.8	1.1	0.7	2.5	Andreev et al., 2003
Levison-Lessing	74.47	98.63	P	T_{Jan}	2.9	1.4	0.8	3.2	Andreev et al., 2003
Levison-Lessing	74.47	98.63	P	T_{Ann}	2.4	0.8	0.7	2.2	Andreev et al., 2003
Lama Lake	69.53	90.20	P (PFT)	T_{Jul}	2.3	0.9	0.9	2.4	Andreev et al., 2004
Lama Lake	69.53	90.20	P (IS)	T_{Jul}	3.0	0.9	0.9	2.4	Andreev et al., 2004
Lama Lake	69.53	90.20	D	T_{Jul}	−0.1	1.0	0.2	2.0	Kumke et al., 2004
Marine									
CR 948/2011	66.97	7.64	D	SST_{Aug}	3.0	0.9	0.4	1.2	Birks and Koç, 2002, Andersen et al., 2004
JR51-GC35	67.00	17.96	A	SST_{Ann}	−0.6	0.6	0.8	2.0	Bendle and Rosell-Melé, 2007

Table 1a. Continued.

Site	Lat N	Lon E	Proxy[1]	Variable[2]	6 ka–0.5 ka	σ_c	σ_v	$2\sigma_{tot}$	Reference
MD95-2011, JM97-948/2A BC	66.97	7.64	F	SST_{Sum}	−0.9	0.7	0.3	1.5	Andersson et al., 2003
T88-2, JM01-1199	71.99	14.36	F	SST_{Sum}	−0.3		0.8		Hald et al., 2007
MD99-2269	66.85	−20.85	D	SST_{Aug}	0.1	0.6	0.4	1.3	Justwan et al., 2008
CR 19/05	67.13	−30.90	F	SST_{Aug}	1.1	0.9	0.2	1.9	Andersen et al., 2003
B997-324	66.89	−18.98	F	SST_{Jul}	0.1	0.8	0.5	1.9	Smith et al., 2005
B997-321	66.53	−21.50	F	SST_{Jul}	−0.2	0.9	0.4	2.0	Smith et al., 2005
91-039	77.27	−74.33	Dc	SST_{Aug}	1.5	2.4	1.0	5.2	Levac et al., 2001
B997-347	63.93	−24.48	F	SST_{Jul}	−1.6	0.9	0.1	1.9	Smith et al., 2005
MD99-2304	77.62	9.95	F	SST_{Sum}	0.1		0.4	1.3	Hald et al., 2007
HM57-5	69.43	−13.12	D	SST_{Aug}	3.7		0.8		Koç et al., 1993
HM57-5	69.43	−13.12	D	SST_{Feb}	3.8		1.4		Koç et al., 1993

Table 1b. Precipitation reconstructions from proxy data discussed in this paper.

Site	Lat N	Lon E	Proxy[1]	Variable[2]	6 ka–0.5 ka	σ_c	σ_v	$2\sigma_{tot}$	Reference
Fennoscandia									
Dalmutladdo	69.17	20.72	P	P_{Ann}	−160	278	47	565	Bjune et al., 2004
Aspvatnet	69.73	19.98	Sd	P_{win}	−10				Bakke et al., 2005
Toskaljavri	69.20	21.47	P	P_{Ann}	248	170	131	430	Seppä and Birks, 2002
Tsuolbmajavri	68.68	22.08	P	P_{Ann}	−148	194	137	476	Seppä and Birks, 2001
Vuoskkujavri	68.33	19.10	P	P_{Ann}	67	381	70	774	Bigler et al., 2002
Lake Tibetanus	68.33	18.70	P	P_{Ann}	374	418	100	860	Hammarlund et al., 2002
Chuna Lake	67.95	32.48	P	P_{Ann}	−74	38	25	91	Solovieva et al., 2005
Svanåvatnet	66.42	14.05	P	P_{Ann}	440	279	138	622	Bjune and Birks, 2008
Vestre Øykjamyrttjørn	59.82	6.00	P/ELA	P_{win}	0				Bjune et al., 2005
Trettetjørn	60.72	7.00	P/ELA	P_{win}	0				Bjune et al., 2005
Hardangerjøkulen	60.5	7.71	P/ELA	P_{win}	−20				Bjune et al., 2005
Jostedalsbreen	61.58	7.50	P/ELA	P_{win}	−10				Bjune et al., 2005
N. Folgefonna	60.23	6.42	P/ELA	P_{win}	−10				Bjune et al., 2005
N. America									
KR02	71.34	−113.78	P (PLS)	P_{Ann}	0	24	2	42	Peros and Gajewski, 2008
KR02	71.34	−113.78	P (WAPLS)	P_{Ann}	5	22	2	40	Peros and Gajewski, 2008
KR02	71.34	−113.78	P (MAT)	P_{Ann}	0	20	3	33	Peros and Gajewski, 2008
U. Fly Lake	61.07	−138.09	P	P_{Ann}	−1	201	0	402	Bunbury and Gajewski, 2009
Siberia									
Lyadhej-To	68.25	65.75	P	P_{Ann}	118	86	0	172	Andreev et al., 2005
Khaipudurskava	68.00	60.00	P	P_{Ann}	54	35	29	91	Andreev and Klimanov, 2000
Taymyr	70.77	99.13	P	P_{Ann}	145	35	26	87	Andreev and Klimanov, 2000
Kazaché	70.77	136.25	P	P_{Ann}	−82	35	14	75	Andreev et al., 2001
Levison-Lessing	74.47	98.63	P	P_{Ann}	58	35	10	70	Andreev et al., 2003
Lama Lake	69.53	90.20	P (PFT)	P_{Ann}	−3	35	4	70	Andreev et al., 2004
Lama Lake	69.53	90.20	P (IS)	P_{Ann}	51	35	21	70	Andreev et al., 2004

[1] P, pollen; D, diatoms; Ch, chironomids; T, tree-ring with; ELA; S, speleothem $\delta^{18}O$; I, ice $\delta^{18}O$; Bt, Borehole temp Sd, sediment density; F, foraminifera; Dc, dinocysts
[2] $T_{Ann,}$, Annual mean temp (°C); T_{Jul}, July mean temp (°C); T_{Jan} January mean temp (°C)