

Supplement of *Clim. Past*, 20, 2663–2684, 2024
<https://doi.org/10.5194/cp-20-2663-2024-supplement>
© Author(s) 2024. CC BY 4.0 License.



Supplement of

A global Data Assimilation of Moisture Patterns from 21 000–0 BP (DAMP-21ka) using lake level proxy records

Christopher L. Hancock et al.

Correspondence to: Christopher L. Hancock (clh624@nau.edu)

The copyright of individual parts of the supplement might differ from the article licence.

S1 Explanation of data assimilation parameters and equation

The following two equations describe the data assimilation methodology at each timestep:

$$x_a = x_b + K[y - y_e], \quad (\text{S1})$$

$$5 \quad K = \frac{w_{loc} * cov(y_e, x_b)}{cov(y_e, y_e) + R}, \quad (\text{S2})$$

In equation S1, the matrices x_b and x_a describe vectors of the prior and posterior respectively. Each matrix includes an ensemble of values for each climate variable and geographic location. The innovation ($y - y_e$) is the difference between the proxy observations and the prior estimate of the proxy value as calculated by the proxy system model. The innovation is spread to each location and variable according to the Kalman gain matrix (K) which is a square root ensemble Kalman filter
10 (Whitaker & Hamill, 2002).

As quantified by equation S2, K is a function of the covariance between the prior estimate (y_e) with each climate variable at every grid cell (x_b). This is the invaluable step of DA which updates the target climate variables according to the information contained by proxy observations to create a uniform gridded dataset. Two additional factors are also included in K: a localization radius matrix (w_{loc}) and positive diagonal error covariance matrix (R).

15 As the geographic coordinates in the x_b matrix become more distant from the proxy observations, w_{loc} can decrease from 1 to 0 according to a predefined localization radius and is unitless. For the DAMP-21ka reanalysis, the w_{loc} matrix weights the innovation according to a fifth-order polynomial so that the K is reduced with distance from a given proxy sites and locations further than the cut-off radius are not updated (Gaspari & Cohn, 1999; Tardif et al., 2019). R represents the uncertainty of the proxy observation in the squared units of y_e . Specifically, a radius of 8,000 km and R of 30^2 (900) was selected based on
20 validation experiments to test the sensitivity of these two parameters (Table S3). Overall, reconstruct skill is relatively insensitive to these parameter choices, but lake status reconstruction skill is generally highest with small localization radius and R values due to coherent trends among nearby lakes and differing proxy and model covariances between distant regions. However, skill metrics calculated using the withheld pollen data suggest that larger values may be more appropriate. We selected the chosen parameters based on their high skill as measured by correlation with calibrated precipitation records both
25 globally and in North America which is the one region with high densities of both lake status and pollen proxy records.

30 **Table S1: List of lake status proxy records used in the data assimilation. The TSid is a unique identifier for the appropriate time**
series in the LiPD file. Duration represents the difference between the maximum and minimum age of the record. Any records
spanning more than 21,000 years were assigned a duration of 21 kyr. Source indicates the data compilation from which the data
was sourced. OLSDB ('89) refers to the Oxford Lake Status DataBank (Street-Perrott et al., 1989), ELSDB ('95) refers to the
35 **America Lake level DataBase (Yu and Harrison, 1995), FSUDB ('98) refers to the Former Soviet Union lake status DataBase**
(Tarasov et al., 1996), CLSDB ('01) refers to the Chinese Lake Status DataBase (Yu, 2001), NALDB ('20) refers to the North
America Lake level DataBase (Liefert and Shuman, 2020), ESADB ('21) refers to the Eastern and Southern Africa lake status
DataBase (De Cort et al., 2021), and ALSDB ('23) refers to the Australian Lake Status DataBase (Clerke, 2023). The publication
column references the original data generators as identified by the data compilations. * indicates sources for which the full citation
was not provided by the data compilation.

Site (name)	TSid (unique identification in LiPD)	Lat (°)	Lon (°)	Elevation (m)	Duration (kyr)	Source (compilation)	Publication (original)
Achit Nur	glsdb_RtkfrU5Q83NdXulHJ	49.5	90.6	1435	15.4	FSUDB ('98)	Dorofeyuk (1988)
Adley Lake (Parker's Prairie)	pdRrmkVD3TsBOeoXn7g	46	-95	440	12.2	NALDB ('20)	Digerfeldt et al. (1992)
Afrera	OLS_R7luETutJOR	13.42	40.83	-82	11.8	OLSDB ('89)	Bannert et al. (1970)
Agadem	OLS_RF7pv7UUDFW	16.83	13.33	350	10.3	OLSDB ('89)	Commelin (1980)
Aiding Lake	glsdb_RbCJW18gQQ5mDFgHH	42.67	89.27	155	21	CLSDB ('01)	Li et al. (1988)
Alexandersfontein	OLS_RrOZmMhgLUP	-28.83	24.8	1119	21	OLSDB ('89)	Butzer (1973)
Almora Lake (Parker's Prairie)	pdRdEGWYw7cNROLp8sM	46.21	-95.3	440	13	NALDB ('20)	Digerfeldt et al. (1992)
Alsacia	OLS_RhL9KDPT14X	3.9	-73.85	3100	20.9	OLSDB ('89)	Melief (1982)
Ard El Akhdar	OLS_R5sFsSYnjHw	23.18	26.03	950	11.8	OLSDB ('89)	Kropelin (1987)
Asal	OLS_ResQaXkZnvE	11.6	42.5	-155	14.2	OLSDB ('89)	Eldridge et al. (1975)
Baijian Lake	glsdb_RjEVHNyZxfywU2jic	39.15	104.17	1282	21	CLSDB ('01)	Pachur et al., (1995); Zhang & Wunnemann, (1995)
Baisuhai	glsdb_RaatZB8xeEnBB8tTF	42.59	115.93	2000	15.4	CLSDB ('01)	Cui & Kong (1992); Cui et al. (1993)
Balikon Lake	glsdb_RDmSvA8AF99lryMXS	43.7	92.8	1575	21	CLSDB ('01)	Han & Dong (1990); Han (1991); Han & Yuan (1990)
Bancannia	OLS_RXfu7xAGzWB	-30.82	141.93	107	18.3	OLSDB ('89)	Dury (1973)
Bangge Lake	glsdb_R3LT1FqtZDBMsNjfg	31.75	89.57	4520	21	CLSDB ('01)	Zheng et al. (1989)
Bangongcuo	glsdb_R3g0c69M7SCu50zoJ	33.7	79.42	4241	21	CLSDB ('01)	Huang et al. (1989); Li et al. (1991); Juang et al. (1996)
Beaver Lake	pdRMMxRg4ypwnub7vhk	42.45	-100.65	910	12.9	NALDB ('20)	Schmieder et al. (2011, 2013);
Bebedero	OLS_R4idEFGEIHM	-33.33	-66.75	380	21	OLSDB ('89)	Gonzalez (1983)
Bebrukas	glsdb_RIEzYYPs4e8GiKQhu	54.12	24.55	160	13.2	FSUDB ('98)	*Kabailiene (1965)
Beilikekule Lake	glsdb_Rm3SK0WhnT8vFyYbK	36.72	89.05	4680	15.4	CLSDB ('01)	Li & Zhang (1991); Li (1992); Huang et al. (1996)
BeloeChernoe	glsdb_R1CJxh2D87oB84p5l	55.72	37.35	145	13.7	FSUDB ('98)	*Uspenskaya (1979)
Beysehvir	OLS_RaIxdqb5VXZ	37.75	31.5	1120	21	OLSDB ('89)	Roberts (1980)
Bilma	OLS_RPARZQXyu1l	18.75	13	310	21	OLSDB ('89)	Delibrias et al. (1974)
Bogoria	OLS_RtPtAFW735C	0.3	36.1	990	18.3	OLSDB ('89)	Young et al. (1979)
Boguda	glsdb_RE05qs4g8aUVyOPGk	63.67	123.25	117	10.6	FSUDB ('98)	Andreev & Klimanov (1989)
Bolshoi Kisegach	glsdb_RVcm86dQvT0y4jry6	55.04	60.38	317	12.8	FSUDB ('98)	Andreeva (1973)
Bonneville	OLS_RLueiGtvS3m	40.5	-113	1280	21	OLSDB ('89)	Bright (1966)
Borovoe	glsdb_Rua3xYFKdL77ZvIUq	53.08	70.27	321	16.1	FSUDB ('98)	*Berdovskaya (1989)

Bosumptwi	WEB25059875	6.5	1.42	76	21	Original Pub	Shanahan (2006)
Bougdouma	OLS_RgJGZeaw0md	13.3	11.7	320	14.2	OLSDB ('89)	Gasse (1987)
Breadalbane	OLS_RnZixdO7vMV	-34.78	149.48	697	11.8	OLSDB ('89)	Dodson (1986)
Bromfield	OLS_RwqOkY17CbA	-17.38	145.55	755	11.8	OLSDB ('89)	Kershaw (1975)
Bufflehead Pond	pdRtg8eM5mtBLKQ8gkF	44.98	-93.53	300	14	NALDB ('20)	Shuman et al. (2009)
Buir Nur	glsdb_RYVsHCIS6xkVNNbFZ	47.75	117.7	583	11.4	FSUDB ('98)	Dorofeyuk (1992)
Cahaba	OLS_RhSooYiv8NM	33.5	-86.53	210	14.2	OLSDB ('89)	Delcourt et al. (1983)
Carp	OLS_Rn9jxxYJDzK	45.92	-122.88	714	21	OLSDB ('89)	Barnosky (1985)
Carson Sink	pdR3iBvTlj5zwy8bjTI	39.83	-118.61	1180	15.5	NALDB ('20)	*Adams et al. (2009)
Cayuga Lake	pdRHn2Pz80FEgrQMUn0	43	-75.25	125	13	NALDB ('20)	*Mullins (1998)
Cepkeliu	glsdb_RsYW3Wp9Ydq6M6dWT	54.02	24.52	130	12.8	FSUDB ('98)	*Tamosaitis & Grigelyte (1977)
Chabada	glsdb_RtV73pXSxBTcbPdIn	61.98	129.37	245	13.2	FSUDB ('98)	Andreev & Klimanov (1989); Andreev et al. (1989)
Chad	OLS_Raj0ajWk8Z1	13	14	282	21	OLSDB ('89)	Buckley et al. (1970)
Chaerhan Salt Lake	glsdb_RtBqZresz13ZcXDiP	36.93	94.99	2675	21	CLSDB ('01)	Zheng et al. (1989); Huang et al. (1980; 1990)
Chagannur	glsdb_RA6UOowbiRKHGx162	43.27	112.9	920	21	CLSDB ('01)	Zheng et al. (1982); Xu (1993)
Chaiwopu Lake	glsdb_RPI4dkuJGNyHshPoW	43.5	87.9	1092	21	CLSDB ('01)	Gu et al. (1990); Huang, (1990); Li et al. (1990)
Chany	glsdb_Rrakh9DbdtwzVOHjE	54.82	77.5	106	18.2	FSUDB ('98)	*Orlova & Panychev (1985, 1986)
Chemchane Aderg	OLS_RajLAejX7H1	21	-12.12	260	21	OLSDB ('89)	Chamard (1973)
Chenghai	WEB2b92ddec	26.5	100.66	1500	13.9	Original Pub	Xu et al. (2020)
Cheshi Mweru Wantipa	OLS_RIUAKxfcWiL	-8.87	29.68	928	21	OLSDB ('89)	Stager (1988)
Chiconahuapan	OLS_R2IDZP9z5wp	19.13	-99.67	2575	12.9	OLSDB ('89)	Metcalfe et al. (1991)
Chistoe	glsdb_R5HyGpw66PjeKOge7	55.78	38.32	160	13.7	FSUDB ('98)	Bolikhovskaya (1988); Khotinskii (1977); Tyuremnov (1 956)
Clovis	OLS_RGC5Y4gspKt	34.25	-103.33	1250	12.9	OLSDB ('89)	Damon et al. (1964)
Crooked Pond	pdRFvsGhWnaWLNcJZOB	41.89	-70.65	25	14.3	NALDB ('20)	*Shuman et al. (2001)
Cröse Mere	glsdb_R2xWevaYQeuZtf6QD	52.83	-2.83	87	16.8	ELSDB ('95)	Beales (1980)
Daba Nur	glsdb_Rp5772NNZ6Zwnk9bF	48.2	98.8	2465	13.2	FSUDB ('98)	Dorofeyuk (1988)
Dachaidan Xiaochaidan Salt Lakes	glsdb_RJDRcZ4HMXXqp7Uln	37.5	95.37	3110	21	CLSDB ('01)	Zheng et al. (1989); Huang et al. (1980)
Dali Lake	WEB40d3e7b3	43.43	116.71	1226	15.2	Original Pub	Goldsmith et al. (2017)
Didwana	OLS_R4YTIxp5Scl	27.33	74.58	350	17.2	OLSDB ('89)	Singh et al. (1972)
Diss Mere	glsdb_RsvGi6UQyUhPTbtTz	52.37	1.1	26	13.7	ELSDB ('95)	Fritz (1989); Peglar (1984); Peglar et al. (1989)
Dobi Hanle	OLS_RcDGJfqpBeC	11.5	42	120	21	OLSDB ('89)	Fontes (1973)
Dolgeo	glsdb_RFTNDMCiPjnyQpZC	56.07	37.32	200	10.6	FSUDB ('98)	Korde (1959); Kozlovskaya (1959)
Duck	OLS_RSzZCo2C7Xj	41.93	-70	3	14.2	OLSDB ('89)	Winkler (1985)
Duncan Lake	pdRiNPVIQECax9xVLKu	44.65	-107.45	2820	19.9	NALDB ('20)	Shuman et al. (2017)
El Gobernador	OLS_R91mklW7AkS	3.85	-74.35	3815	11.8	OLSDB ('89)	Melief (1983)
ElAbra	OLS_RFTxPMAWS1C	5	-74	2570	21	OLSDB ('89)	Schreve-Brinkman (1978)

Emerald Lake Leadville	pdRfvT1wuHIGXRlmUju	39.15	-106.41	3055	15.4	NALDB ('20)	Shuman et al. (2014)
Enneri Bardague	OLS_RphnQDokp38	21.5	17	1025	21	OLSDB ('89)	Bottcher (1972)
Erjichuoer	glsdb_RUCQtq2IEhHC8aceS	45.23	116.5	829	18.2	CLSDB ('01)	Zheng et al. (1992)
Etosha	dc_RrHZZSKXL7RJv7P7b	-18.81	16.3	1080	21	ESADB ('21)	Buch & Zoller (1992); Brook et al. (2007, 2011)
Fachi	OLS_RKoQn911SXJ	18.12	11.67	275	21	OLSDB ('89)	Delibrias et al. (1966)
FortRock	OLS_RHt0P2iCpt5	43.17	-120.75	1311	21	OLSDB ('89)	Gilman (1975)
Frome	OLS_RTxbwsdvMwm	-30.75	139.83	-2	21	OLSDB ('89)	Bowler et al. (1986)
Fuquene	OLS_Rbr7K7EZgsy	5.5	-73.75	2580	21	OLSDB ('89)	Van Geel (1973)
George	OLS_RfoenkHHXTE	-35.08	149.42	800	21	OLSDB ('89)	Bowler et al. (1976)
George	OLS_Ree2SxMXXUS	43.52	-73.65	96	14.2	OLSDB ('89)	Hutchinson et al. (1981)
Glubelka	glsdb_RUQINrjgvSwYMsSo	54.95	26.42	166	11.4	FSUDB ('98)	Yakushko & Makhnach (1973); Yakushko et al. (1992)
Gounongcuo	glsdb_Rp4c98y81S2ZJrj09	34.35	92.2	4670	21	CLSDB ('01)	Li et al. (1994,1995, 1996)
Hassi El Mejna	OLS_R2KxymoXwo	31.5	2.3	470	10.3	OLSDB ('89)	Delibrias (1971)
Hay	OLS_R9wwlYbD32V	34	-109.5	2780	21	OLSDB ('89)	Haynes (1983)
Hockham Mere	glsdb_Ra4xQK8OwTw1z75By	52.5	0.83	33	14.5	ELSDB ('95)	Bennett (1983); Sims (1973,1978); Godwin & Tallantire (1951)
Hook	OLS_RpZvDDmAq2c	42.95	-89.33	260	14.2	OLSDB ('89)	Winkler (1985)
Hoton Nur	glsdb_Rk0ITwl7BTIVEBC1s	48.67	88.3	2083	13.7	FSUDB ('98)	Dorofeyuk (1988)
Ilmen	glsdb_RkUikr8SQCFj8WrSA	58.3	31.23	18	12.8	FSUDB ('98)	Davydova et al. (1992); Khotinskii (1977)
Ioannina	glsdb_RjLOckWdc5jmOF6OK	39.66	20.88	469	21	ELSDB ('95)	Bottema (1967, 1974); Higgs & Vita-Finzi (1966)
Isle	OLS_RvAYM4Zh3Pk	52.62	-114.43	700	11.8	OLSDB ('89)	Heusser (1983)
Jacob	OLS_REuK7XDeRTY	34.42	-110.83	2285	21	OLSDB ('89)	Jacobs (1983)
Jilantai	glsdb_RdTvvra5HoZr3h3nJ	39.75	105.7	1023	20.4	CLSDB ('01)	Zheng et al. (1992); Geng & Cheng (1990)
Karase	glsdb_R0wYyScmVTALeUIL1	53.03	70.22	435	13.2	FSUDB ('98)	*Aleshinskaya & Tarasov (1993)
KathuPan	dc_RHCKG5EIJhrgaen4p	-27.66	23.01	1186	21	ESADB ('21)	Beaumont et al. (1984)
Kepa	glsdb_RQf8siYSAwqfszN5Q	49.4	22	320	12.8	ELSDB ('95)	Gerlach et al. (1972)
Kettle Hole	OLS_Ro4FH6vkuLB	43	-95	350	14.2	OLSDB ('89)	Collins (1968)
Khimaditis	glsdb_RdhIPUVAXFrR1iyNn	40.6	21.57	560	13.7	ELSDB ('95)	Bottema (1974)
Khomustakh	glsdb_RocWmUmkwyUkAuKj3	63.82	121.62	120	12.8	FSUDB ('98)	Andreev et al. (1989)
Kirchner	OLS_Rcoxn5kpPMY	44.83	-92.77	275	15.8	OLSDB ('89)	Brugam (1980)
Kirikumae	glsdb_RXKPCYPx94BPtRh1p	57.67	27.25	183	11.4	FSUDB ('98)	*Paap et al. (1975)
Kivu	OLS_R4Ijw8OPsjM	-2	29	1462	17.2	OLSDB ('89)	Haberyan et al. (1987)
Kotokol	glsdb_RjATa8iSp6CMXJ8jl	52.83	108.17	460	12.1	FSUDB ('98)	*Vipper & Smimov (1979)
Kow	OLS_RoBxNxe0ixb	-36.2	144.3	83	17.2	OLSDB ('89)	Macumber (1977)
Krasnokamsk	glsdb_RgGWXjBi1AS1JYMVa	58.05	55.7	NA	12.8	FSUDB ('98)	*Krylova (1986); Kokarovtsev (1992)
La Guitarra	OLS_RusPjLSBZcB	3.87	-74	3450	18.3	OLSDB ('89)	Melief (1984)
Lacha	glsdb_R7hkdOOGBJ3hKI7Sn	62.59	37.67	118	11.4	FSUDB ('98)	Davydova (1985); Khomutova (1978)

Lake Abhe	dc_RoPJLIYkv4IUFO57o	11.2	41.8	240	21	ESADB (21)	Gasse et al. (1977, 1978)
Lake Abiyata Ziway Shala	dc_RAAfVOzQ1RfZpXCiJ	7.6	38.6	1578	13	ESADB (21)	Gasse et al. (1978); Chalié et al. (2002) Gillespie et al. (1983);
Lake Ashenge	dc_RySXeliWSRaYp83Ai	12.58	39.5	2440	16.9	ESADB (21)	Marshall et al. (2009)
Lake Baringo	dc_RqEwgBBmdSliiGTDX	0.53	36.08	965	16.9	ESADB (21)	Williams & Johnson (1976); Tiercelin et al. (1987); Renaut et al. (2000)
Lake Bullenmerri	alsdb_RYICa3cQazrYcv5X8	-38.25	143.1	145	16.9	ALSDB (23)	De Deckker (1982); Dodson (1982); Barton et al. (1981)
Lake Challa	dc_RUrpWCAvBwIWEH3fP	-3.32	37.7	880	21	ESADB (21)	Payne (1970); Moernaut et al. (2010); Verschuren et al. (2009);
Lake Cochise	pdRNyQeqaj6PkSQYY4b	32.17	-109.87	1260	16.4	NALDB (20)	Waters (1989)
Lake Euramoo	alsdb_Ry6VXVL0QFeNWdwNz	-17.17	146.63	718	21	ALSDB (23)	Kershaw (1970); Haberle (1970); Tibby et al. (2007)
Lake Gnotuk	alsdb_R6zkcwN3HGg789qJZ	-38.21	142.88	102	12.2	ALSDB (23)	Wilkins et al. (2012); De Deckker (2012)
Lake Keilambete	alsdb_Rr5MbvKjYX3TKfPk4	-38.22	143.1	104	10.9	ALSDB (23)	Wilkins et al. (2012); De Deckker (2012)
Lake Malawi (Nyasa/Niassa)	dc_RH8bNW06sFmsdTL5	-12	34.5	468	21	ESADB (21)	Beadle (1981); Scholz & Rosendahl (1988); Specht & Rosendahl (1989)
Lake Masoko	dc_R3rschqd5bcegLVGp	-9.33	33.76	840	21	ESADB (21)	Williamson et al. (1999); Barker et al. (2000); Gibert et al. (2002)
Lake Masoko	dc_R3rschqd5bcegLVGp	-9.33	33.76	840	21	ESADB (21)	Williamson et al. (1999); Barker et al. (2000); Gibert et al. (2002)
Lake Naivasha	dc_RoV8HYeEOnZIZgucE	-0.76	36.35	1885	21	ESADB (21)	Richardson & Richardson (1972); Washbourn-Kamau (1975); Richardson et al. (1986)
Lake O' Pines	pdRn4uVv5xmEy3QbRZo	46.14	-89.25	520	13	NALDB (20)	Ewing (2000)
Lake of the Woods (Wyoming)	pdRPXtR2BTqSS5KCKTm	43.48	-109.89	2820	17.9	NALDB (20)	Pribyl et al. (2014); Pribyl and Shuman (2014)
Lake Rukwa (Likwa / Leopold)	dc_RWIDiCkaR8UFX6Fx7	-8.42	32.72	802	19	ESADB (21)	Clark et al. (1970); Haberyan (1987); Talbot et al. (1989)
Lake Tana	dc_RMdAeNBjait2JTtu0	12	37.25	1830	17.7	ESADB (21)	Lamb et al. (2007); Marshall et al. (2011); Costa et al. (2014)
Lake Tanganyika	dc_RhBiqnsOlyJ2R0fz8	-6	29.5	773	21	ESADB (21)	Livingstone (1965); Stoffers et al. (1978); Haberyan & Hecky (1987)
Lake Turkana (Rudolf)	dc_RenAoTAYNasxf26Ji	3.5	36	362	19.5	ESADB (21)	Butzer (1971); Butzer et al. (1972)
Lake Victoria	dc_ROZsNyyufSWArEMCn	-1	33	1135	18	ESADB (21)	Stuiver et al. (1960); Kendall (1969); Stager (1984)
Lake West Okoboji	pdR889sQHZA5FOKA7S	46.3	-95.2	430	14	NALDB (20)	Van Zant (1979)
Laksa	glsdb_RBIOJc9bH1Vf28A49	62.8	40.58	109	10.6	FSUDB (98)	*Krylova (1987)
Leconte	OLS_Rt3bq8OIkfc	33.33	-116	-71	15.8	OLSDB (89)	Crane et al. (1958)
Linton Loch	glsdb_RPAg7kaAQ6ze8ATy8N	55.87	-2.63	92	10.6	ELSDB (95)	Mannion (1978, 1981, 1982)
Lisan Dead Sea	OLS_Rz4NEhuh5D0	31.5	35.5	-395	21	OLSDB (89)	Bedwell (1973)

Little Llangothlin Lagoon	alsdb_Rms0UCCjsgi0Y5tYS	-34	141	1350	21	ALSDB ('23)	Woodward et al. (2014); Ellerton et al. (2014); Shulmeister et al. (2014)
Little Windy Hill Pond	pdRkoO11xxFGVWJel62	41.43	-106.34	3000	17.1	NALDB ('20)	Pribyl et al. (2014)
Lop Basin	glsdb_RbjxcQSIwOlswzL7N	40.29	90.8	790	21	CLSDB ('01)	Zheng et al. (1991); Wu (1994); Yan et al. (1983)
Lubanas	glsdb_RPQs9txdKyr32AeNy	56.77	26.92	91	12.8	FSUDB ('98)	*Eberhards (1981)
Lubbock	OLS_RF4kqHZt5Ej	33.63	-101.9	975	12.9	OLSDB ('89)	Holliday (1985)
Lukcze	glsdb_RgdJzQFcRiLjgQsyM	51.5	23	170	13.7	ELSDB ('95)	Balaga (1982)
Lunkaransar	OLS_REKcgVZxfzQ	28.5	73.75	200	12.9	OLSDB ('89)	Singh (1972)
Lynchs Crater	OLS_RFZ5ftnO2t2	-17.37	145.7	760	18.3	OLSDB ('89)	Kershaw (1974)
Mababe	dc_R9TKQMS5jsRqd7Zg4	-18.85	24.16	919	21	ESADB ('21)	Shaw (1985); Shaw et al. (1986); Shaw & Thomas (1988)
Magadi Natron	OLS_R11U1UXxAIf	-2.12	36.04	600	19.4	OLSDB ('89)	Butzer et al. (1972)
MaineSoroa	OLS_RPogGSF6ido	13.12	12	315	12.9	OLSDB ('89)	Durand (1984)
Makepeace Cedar Swamp	pdRXoXk6qKsU102x2C4	41.93	-70.77	35	13.7	NALDB ('20)	Newby et al. (2000); Shuman et al. (2004)
Malo Jezero	glsdb_RBENxFEJ0h920UJ1w	42.78	17.35	0	10.4	ELSDB ('95)	Beug (1961; 1962)
Manasi Lake	glsdb_ROvgCXsqYcCKOhtU0	45.45	86	251	21	CLSDB ('01)	Lin et al. (1996); Rhodes et al. (1996); Sun et al. (1994)
Manyara	OLS_Rrt4iAcWTK	-3.62	35.82	945	21	OLSDB ('89)	White et al. (1982)
Melekhovo	glsdb_R6rjJzNp3gs3fgaa9	56.83	38.5	150	12.8	FSUDB ('98)	Khotinskii (1977)
Melynllyn	glsdb_Ro03XZUZms80Hfgo4	53.12	-4.12	632	11.4	ELSDB ('95)	Walker (1978)
Mendota	OLS_Rxv9LmnnQsQ	43.1	-89.42	259	14.2	OLSDB ('89)	Steventon et al. (1986)
Mexico	OLS_RTsihKwmPMu	19.5	-99	2240	21	OLSDB ('89)	Bradbury (1971)
Mirror Lake	pdRmwkDfwe6u28KuWTK	43.95	-71.7	350	16.9	NALDB ('20)	*Davis & Ford (1982); *Davis et al., (1984)
Mobutu Sese Seko	OLS_R0IYyZ8sKNw	1.5	31	619	21	OLSDB ('89)	Harvey (1976)
Moore	OLS_RwLxfQP11eP	53	-110.5	500	14.2	OLSDB ('89)	Schweger (1983)
Nabta	OLS_Rrtm3chd7C5	23	31	250	21	OLSDB ('89)	Wendorf (1980)
Nakuru Elmenteita	dc_R30M68aIOeosMJsf	-0.4	36.17	1760	21	ESADB ('21)	Washbourn-Kamau (1971); Butzer et al. (1972); Vareschi (1982)
Naroch	glsdb_Ry5wjkrUFZtb3ZMeJ	54.85	26.85	120	16.1	FSUDB ('98)	Yakushko et al. (1992); Yakushko (1987)
Ngami	dc_RdLFWQodnN5i4bkII	-20.5	22.73	919	21	ESADB ('21)	Shaw (1985); Shaw et al. (2003); Huntsman-Mapila et al. (2006)
Okoboji	OLS_R4a8rMDILX2	43.33	-95.2	425	15.8	OLSDB ('89)	Van Zant (1979)
Osintsevo	glsdb_REw4m54skNbnw09Ru	57.37	57.63	148	12.1	FSUDB ('98)	*Kokarovtsev (1992)
Owasco Lake	pdR95vmKthSzyI9ntp3	42.75	-77.5	350	13.6	NALDB ('20)	*Dwyer et al. (1996)
Owens Lake	pdRKIOXqPCWJFftTUyC	36.45	-117.97	1085	21	NALDB ('20)	*Bacon et al. (2006)
Padul	glsdb_R1cWI4BhMrruhzwNN	37.03	-4.63	785	21	ELSDB ('95)	Florschütz et al. (1971); Vogel & Waterbolk (1972); Menéndez Amor & Florschütz (1962, 1963)
Paidre	glsdb_RefnHESLhtu4cgdZo	58.27	25.5	51	13.2	FSUDB ('98)	*M%onnill (1964)
Pashennoe	glsdb_RVKZDSEqoU6WsFRuX	49.37	75.4	871	13.7	FSUDB ('98)	*Tarasov (1992)

Patzcuaro	OLS_ROKPLG6ezuC	19.58	-101.58	2044	21	OLSDB ('89)	Pollard (1982)
Pickereel	OLS_RifcIdFjsr2	43.5	-97.33	395	11.8	OLSDB ('89)	Haworth (1972)
Pluvis	glsdb_R9kAqDKMgd7FrTkAX	45.63	5.63	215	11.4	ELSDB ('95)	Borel et al. (1987, 1990)
Poukawa	OLS_RE8t9IMfyob	-39.77	176.73	21	17.2	OLSDB ('89)	McGlone (1978)
Punso	glsdb_RSG3OjjpuRvnTxcPT	57.68	27.25	183	11.4	FSUDB ('98)	*Saare et al. (in press)
Pyramid Lake	pdRAD00oGMqGUoHfFHZ	40.06	-119.56	1155	21	NALDB ('20)	Benson et al. (2002); Briggs et al. (2005)
Quexil	OLS_RSQIFjVgiso	16.93	-90.12	110	12.9	OLSDB ('89)	Deevey (1978)
Raigastvere	glsdb_Rv3yiDEgizxQfMoh8	58.6	26.73	52	11.4	FSUDB ('98)	*Pirrus et al. (1987)
Rainbow Lake (Beartooths)	pdRsQ687U7RBI0qSdyE	44.94	-109.5	2960	17.9	NALDB ('20)	Shuman et al. (2017)
Rice Lake - Middle Basin	pdRQvUAgiTzsooiU2HT	44.21	-78.13	185	13	NALDB ('20)	Yu & McAndrews (1994)
Rice Lake - West Basin	pdRymRCmOiv8zpgLvf	44.11	-78.3	185	13	NALDB ('20)	Yu & McAndrews (1994)
Ruby	OLS_RXjJiwKiDO4	40.58	-115.33	1818	21	OLSDB ('89)	Thompson (1984)
Ruby Lake/Marshes (Franklin)	pdRUteHT9P1yZhdRamQ	40.12	-115.49	1820	21	NALDB ('20)	*Thompson et al. (1990; 1992)
Russell	OLS_R28mFojQksk	38.05	-118.77	1951	21	OLSDB ('89)	Fergusson et al. (1962)
Rutz	OLS_RAcSotekegB	44.87	-93.87	314	14.2	OLSDB ('89)	Waddington (1969)
Ryder Pond (Cape Cod, MA, USA)	pdRtkSoE1Q93x2JFV5i	41.97	-70.03	0	16.9	NALDB ('20)	Winkler et al. (1995)
Saham Mere	glsdb_RjM6nrEzITtio9hiD	52.57	0.8	38	11.9	ELSDB ('95)	Bennett, (1988)
Sambhar	OLS_RO2T7DUh8l2	27	75	360	12.9	OLSDB ('89)	Agrawal (1971)
Sanguijuelas	glsdb_Ro7NNJldIdo1eOpe5t	42.1	-6.73	1050	18.6	ELSDB ('95)	Menéndez Amor & Florschütz (1961, 1963)
Schwemm	glsdb_RGnYlUrRxTgl7iJA5	47.58	12.17	664	10.5	ELSDB ('95)	Oeggli (1988); Oeggli & Eicher (1989)
Searles	OLS_RfD6MNIONoM	35.6	-117.7	493	21	OLSDB ('89)	Flint et al. (1958)
Selima	OLS_R1vmDg2WuOy	21.32	29.34	200	11.8	OLSDB ('89)	Haynes et al. (1979)
Sevan	glsdb_RnpTnvzFRvJXRURM9	40.5	45.42	1898	14.5	FSUDB ('98)	*Aleshinskaya (1980)
Sevier Lake	pdRYwqALFxQB0DnOiiQ	39	-113	1500	14.6	NALDB ('20)	*Oviatt (1988)
Silver Lake (Mohave)	pdR0bHPwOODs54avzaw	35.34	-116.11	275	21	NALDB ('20)	Wells et al. (2003)
Somino	glsdb_Rdbe8liHHC4B9h4zR	56.6	38.8	134	11.4	FSUDB ('98)	*Neustadt et al. (1965)
Sporovskoe	glsdb_RXz420FakwN2Lo3jn	52.33	25.33	142	13.2	FSUDB ('98)	*Krutous (1986, 1987)
Sudoble	glsdb_RcEZctmeQoQfB4LhB	54.03	28.1	165	13.2	FSUDB ('98)	Bogdel et al. (1983); Elovicheva & Bogdel (1985)
Suguta	dc_RaXS2zgzVE8Jup4hM	2.05	36.5	275	13.9	ESADB ('21)	Truckle (1976); Garcin et al. (2009); Junginger et al. (2014)
Tagua Tagua	OLS_ROVfSZGskJH	-34.5	-71.17	890	21	OLSDB ('89)	Heusser (1983)
Tauca	OLS_R4P4Wwpe8Jd	-19.5	-68	3660	21	OLSDB ('89)	Servant (1978)
Termit Ouest Kandel Bouzou	OLS_RmpO87FXnN9	16.08	11.25	300	12.9	OLSDB ('89)	Faure (1963)
Tigalmamine	OLS_RTKjwB4I6IZ	32.9	-5.35	1626	18.5	OLSDB ('89)	Lamb (1989)
Tritrivakely	OLS_RM81PKgdBEz	-19.78	46.92	1800	12.9	OLSDB ('89)	Burney (1987)
Tuuljarv	glsdb_RzgK9phQ7j32u2HQ8	57.69	27.14	257	11.4	FSUDB ('98)	*Ilves & M%oemets (1987)
Tyrrell	OLS_RIAO1405W9b	-35.33	142.78	42	21	OLSDB ('89)	Bowler et al. (1986)
Upper Big Creek Lake	pdRopkg65IV11NRNtq6	40.91	-106.62	2750	12.7	NALDB ('20)	Shuman et al. (2015)

Urmia	OLS_RnQ2dbxrF5X	37.63	45.5	1284	15.8	OLSDB ('89)	Kelts et al. (1986)
Uvildy	glsdb_RX9BFmh1qNkFJyKqJ	55.53	62.37	273	14.5	FSUDB ('98)	Andreeva (1973); Khotinskii (1977)
Uyuni Basin	WEB-10716-8d22-462f-846c-895e0	-20	-68	3660	17.8	Original Pub	Placzek et al. (2006)
Valdaiskoe	glsdb_R1oC3wYqH5GVhkJoo	57.98	33.27	192	13.7	FSUDB ('98)	Arslanov et al. (1992); Khotinskii (1977)
Valencia	OLS_RVw6wiN8ACI	10.1	-67.75	402	15.8	OLSDB ('89)	Bradbury (1981)
Wabamun	OLS_RblGnR4xJrB	53.5	-114.25	732	10.3	OLSDB ('89)	Fritz (1973)
Walker	OLS_RzqaAnmlHbH	35.5	-111.67	2700	21	OLSDB ('89)	Long et al. (1981)
Wanum	OLS_Roe2Ri2GOD9	-6.63	146.78	35	11.8	OLSDB ('89)	Garrett-Jones (1979)
Washburn	OLS_RXKCFWVRanL	43.53	-89.65	248	11.8	OLSDB ('89)	Winkler (1985)
Weber	OLS_Rh1QgEylyEm	47.47	-91.65	559	12.9	OLSDB ('89)	Fries (1962)
Wedge	OLS_RtESqFQmPOU	50.87	-115.17	1500	11.8	OLSDB ('89)	MacDonald (1982)
West Twin Lake (Nebraska)	pdRfOJh6SjJ3emsFmsY	42.4	-101.44	1045	15	NALDB ('20)	Schmieder et al. (2011); Schmieder et al. (2013)
White	OLS_R4QPDsP0JVX	34.16	-80.76	90	21	OLSDB ('89)	Watts (1980)
Wielkie Gacno	glsdb_RnL0bU24wi4sFRD2H	53.73	17.2	130	13.7	ELSDB ('95)	Brodin (1985); Hjelmroos (1981, 1982) Hjelmroos- Ericsson (1981);
Wintergreen	OLS_RzEmio4JrEJ	42.4	-85.38	271	15.8	OLSDB ('89)	Manny et al. (1978)
Wulanwula Lake	glsdb_RPWOSpiG4JWwOZfE7	34.8	90.5	4854	21	CLSDB ('01)	Hu (1995); Li et al. (1995); Shan et al. (1996)
Xiaoshazi Lake	glsdb_RcpjnSVfRHxJ7RmJr	36.97	90.73	4106	15.4	CLSDB ('01)	Li & Zhang (1991); Li (1992); Huang et al. (1996)
Zabuye Lake	glsdb_R3FgE1qAAXCwTIEDY	31.35	84.07	4421	21	CLSDB ('01)	Zheng et al. (1989); Zheng et al. (1996); Qi & Zheng (1995)
Zeribar	OLS_R14ZgdIg3vP	35.53	46.12	1300	21	OLSDB ('89)	Hutchinson et al. (1963)
Zhacang Caka	glsdb_RytCIFIhIFGSboHSh	32.6	82.38	4328	21	CLSDB ('01)	Huang et al. (1980); Zheng et al. (1989)
Zhangzang Chaka	OLS_RAPLKNVwmJW	32.5	82.33	6000	19.4	OLSDB ('89)	Fu-Bao et al. (1987)

Table S2: List of pollen proxy records calibrated to mean annual precipitation. These data were used to independently validate data assimilation. The TSid is a unique identifier for the appropriate time series in the LiPD file. Duration represents the difference between the maximum and minimum age of the record. Any records spanning more than 21,000 years were assigned a duration of 21 kyr. Records are compiled by Hancock et al. (2023) for the Holocene Hydroclimate (HH) dataset. LC indicates those from the Legacy Climate dataset (Herzschuh et al., 2023).

Site (name)	TSid (unique identification in LiPD)	Lat (°)	Lon (°)	Duration (kyr)	Source (compilation)	Original (Publication)
Achit Nuur	lcRHktvc1HMQRItXv6E	51.58	104.85	20.6	LC	Sun (2013)
Aegelsee	lcRiO79S9Ix3TwY9hPY	46.65	7.54	13.7	LC	Lotter (1991)
Agerods Mosse	lcRxTTrPDKVUtCf7rs	55.93	13.43	10.2	LC	Nilsson (1964)
Albany River Bog	lcRzIW3oGuXnInc3Msu	51.44	-83.62	5.9	LC	Glaser et al. (2004)
Alp Lusga Belalp 1	lcR2SXIdl9wohfxxdbD	46.23	7.59	7.7	LC	van der Knaap (1997)
Alut Lake	lcRDoKSIIINMOKI1PqMf	60.14	152.31	21	LC	Anderson (2002)
Andy	PYTCPIAO06Y	64.65	-128.08	13.2	HH	Szeicz et al. (1995)
Avstjonna	lcR9GEASzqUKcowM16T	61.65	9.88	13	LC	Birks (2012)
Ayoo de Vidriales	lcRXz9wnyglFdmBJCJe	42.13	-6.07	16.7	LC	Morales-Molino (2014)
Baahar Nuur Lake	lcRDISFQ3FGujgZJ3LN	39.32	109.27	5.8	LC	Huang (2009)
Bakaly	lcRKi1dhBq6WuciB6US	41.87	71.96	6.9	LC	Beer (2008)
Battle Ground Lake	lcRM5YQeikjGgODpYRD	45.8	-122.49	21	LC	Barnosky (1983)
Bayanchagan Lake BY	lcRmLoUTd7IMmW7hE5	41.65	115.21	11.5	LC	Jiang (2006)
Beaverhouse Lake	lcROtmDEQsOa6CKzEBo	46.15	-85.49	6.2	LC	Ritchie (1976)
Beaver Lake	lcRhawpU8yMeacBLgK	44.92	-88.16	5.8	LC	Calcote (2003)
Bebrukas Lake	lcRuTlqjPrHd2xH329d	54.09	24.12	14.5	LC	Kabailiene (1986)
Bebrukas Lake	lcRYFM1oW2BMemcgWT	54.09	24.12	17.2	LC	Kabailiene (1986)
Bebrukas Lake	lcR7JrQa2JW0MEcIlwG	54.09	24.12	17.2	LC	Kabailiene (1986)
Begbie Lake	lcRfmVxd7PePxtBtxX	48.59	-123.68	14	LC	Brown et al. (2019)
Bell's Lake	lcRCIhUix5QOaVYiSJ3	65.02	-127.48	12.2	LC	Szeicz et al. (1995)
Benson Pond	lcRyuLsI0devWnXL9UK	42.38	-73.09	14.7	LC	Oswald et al. (2018)
Berry Pond	lcRmoUYX9CAfAdUW9Re	42.62	-71.09	14.9	LC	Whitehead (1979)
Berry Pond	lcRFk9bWYJHqyCtFNx8	42.5	-73.32	14.2	LC	Whitehead (1979)
Bibersee	lcRux6T4mIrY0kwQeJs	47.21	8.47	14.2	LC	van der Knaap (2001)
Bitsch-Naters	lcRoCXWdV0uxUvztLb	46.34	7.99	11.1	LC	van der Knaap (1997)
Biviere di Gela	lcRvxK7zhrGHqmmSr5	37.02	14.34	7.5	LC	Colombaroli (2009)
Black Gum Swamp	lcRLcJzCjoqgEKwHqBs	42.54	-72.18	14.5	LC	Foster et al. (1993)
Blood Pond	lcRFOyuRIeyddE3MuQ9	42.08	-71.96	15.2	LC	Oswald et al. (2018)
Boomerang Lake	WEB31e807ae	49.18	-124.16	11.8	HH	Brown et al. (2006)
Brede Bridge	lcRraSSIL4ehrOMpeyc	50.91	0.68	5.9	LC	Waller (1994)
Breitnau-Neuhof	lcRWWzCPyjezteZo74a	47.93	8.07	12.7	LC	Rosch (1989)
Bruckmisse	lcR4iehaNeTVyPOO2np	48.73	8.64	4.9	LC	Rosch (2009)
Bruckmisse	lcRseG41EyZPFn7vBuL	48.73	8.64	7.7	LC	Rosch (2009)
Brurskardtjorni	lcRLALDzbV8deV0FSpS	61.42	8.67	12.1	LC	Bjune (2005)

Buck Lake	lcRI0mh5hio8SI6zqLN	46.52	-86.35	7.7	LC	no pub on record
Bugristoe	lcRQoeD5swxv5zB9KeA	58.25	85.17	7	LC	Blyakharchuk (1989)
Bulgarian Black Sea	lcRUewusWi9G28ut2a	42.47	28.41	12.4	LC	Filipova-Marinova (2014)
Burden Lake	lcRi9rpgU3KNzoGhTeP	42.6	-73.56	9.7	LC	Gaudreau (1986)
Caddo Creek (Core 3)	lcRPzK3boIAUBI4YPWm	32.05	-95.51	7	LC	Albert (2011)
Cahaba Pond	lcRVRnI9YOspeS2qWJq	33.5	-86.53	14.1	LC	Delcourt et al. (1983)
Camp 11 Lake	lcRYUf2GzuKWajw7ClS	46.67	-88.02	11.7	LC	Brubaker (1975)
Cangumiao	lcRJ9bcRX8zajMu6bEY	38.97	118.6	5.3	LC	Xu (2004)
Canyon Lake	lcRPBnamW5NHR8VPMKn	46.83	-87.92	11.7	LC	Davis et al. (1991)
Cape Shpindler	lcRaeEm3p5q0v5R3dkJ	69.72	62.8	14.6	LC	Andreev (2001)
Capitola Lake	lcRH47ExCxsXc3fhZVO	45.52	-89.56	10	LC	Calcote (2003)
Carquefou	lcRI8sX3O0JpEYZLbI	47.31	-1.48	4.6	LC	Cyprien (2001)
Chadianpo	lcRxjdbi8n5mfOcteLV	36.1	114.4	4.2	LC	Zhang (2007)
Chantemerle	lcRKR2FoiqFt9fd0w2J	45.92	0.02	4.6	LC	Fauquette (1999)
Chaohu Lake CH1	lcRRQAEsiOSvKg2mTq7	31.56	117.39	11.3	LC	Wu (2008)
Charco da Candieira	lcRz2jkIJHwfxKMvv1z	40.34	-7.58	14.7	LC	Van der Knaap (1994)
Chesapeake Bay (MD99-2209)	lcR8NsSZHAIFlbVWP	38.89	-76.39	7.2	LC	Willard et al. (2005)
Chifeng-Qiguo Mt.	lcR03YZlwKcvi9NBBso	42.28	118.97	8.7	LC	Xu (2002)
Chuna Lake	PYTI39I3N0G	67.95	32.48	8.8	HH	Solovieva et al. (2005)
Cinq-Mars-la-Pile	lcReM30B315r999fKee	47.34	0.45	9.2	LC	Carcaud (2002)
Clear Lake	lcRm2HAyL9Ow8Vn9ldV	41.64	-86.54	16	LC	Baker et al. (1992)
Clear Lake	lcRKZoswtatqh9p86e	43.13	-93.43	13.8	LC	Baker et al. (1992)
Col des Lauzes	lcRScfMGWPopeFIEwve	44.77	6.54	13.9	LC	de Beaulieu (1977)
Compass Pond	lcRRxSlrTN8OVtHnbmp	50.03	-56.2	15.3	LC	Blake Jr (1986)
Cooley Lake	lcRUbe6c1j2j2brmI3y	49.49	-117.65	7.5	LC	Gavin et al. (2006)
Coppermine Saddleback	lcRE5QbPJ0FLNw7ktuv	67.83	-115.32	4.2	LC	no pub on record
Crater Lake	lcRQgznauTtY1MfGgdK	49.19	-120.1	12.7	LC	Heinrichs et al. (2002)
Crowfoot Lake	lcRlSbmXFmyXRKKhM7a	51.65	-116.42	13.6	LC	no pub on record
Csogle	lcRtQQC74Cocv8dlqiq	47.22	17.25	7.1	LC	Juhasz (2002)
Dags Mosse	lcRBfIzOEaoKY4OpCu0	58.32	14.71	8.8	LC	Goransson (1989)
Dailey Lake	lcRWXs1OS7FPp0sIIOC	45.26	-110.82	14.1	LC	Krause et al. (2015)
Dallican Water	lcRYN4y5FCQn0BuDu6s	60.39	-1.1	11.1	LC	Bennett (1992)
Darko	lcRPtpeHk3QmKrusMf8	49.64	15.87	14.2	LC	Rolecek (2020)
Deep Lake	NAm2kHydro215	41.62	-70.58	11	HH	Marsicek et al. (2013)
Deep-Falmouth Pond	lcRIZG93oUnsBEDKSaM	41.56	-70.64	15.6	LC	Oswald et al. (2018)
Deep-Taunton Pond	lcRgG0nqmKpMbG6TnGY	41.88	-71.01	16.1	LC	Oswald et al. (2018)
Delorme 2	lcRICjQTzvniz5Xlx4q	54.42	-69.93	7	LC	Richard et al. (1982)
Devil's Bath tub	lcRDYi20GIO0AonbO2J	43.02	-77.57	11.6	LC	Clark et al. (1996)
Divers Lake	lcRkBG2IjDkwtqKcx6y	43.04	-78.4	15.4	LC	Miller (2003)
Doel	lcRf6K3Ujfi8s5aGQ2k	51.32	4.25	6.3	LC	Deforce (2011)
Dolgee Lake	PYTISXSSSBC	71.87	127.07	14.1	HH	Wolfe et al. (2000)

Domsvatnet	lcRnIxDI1N0JmJywI9G	70.33	31.03	11	LC	Hyvarinen (1976)
Donggi Cona	WEBbf48ea2b	35.22	98.33	12.1	HH	Chen et al. (2020); (2014)
Donvold	lcRnH3jf8tH4CILnO43	68.13	13.58	8.9	LC	Nilssen (1983)
Dossaccio Bormio	lcR9AhAppvA2OXgJvAi	46.47	10.34	12.8	LC	van der Knaap (1997)
Dragonfly Lake	lcRZoZg8mFwmuOuhnO7	60.81	-135.34	10.8	LC	Edwards et al. (2015)
Dune Lake	lcRXeYkFhQZcl9FryEQ	64.42	-149.9	12.6	LC	Bigelow (1997)
Dvur Ansov	lcR1bQbrAuTWjAjkdSV	48.78	16.42	8.9	LC	no pub on record
Eggen ob Blatten	lcRouwX4QfecNxAemPx	46.37	7.99	8.3	LC	van der Knaap (1997)
El Maillio mire	lcRYHQZme5i2N0fBzz0	40.55	-6.21	10.7	LC	Morales-Molino (2013)
Embouchac	lcRhScBDOFwzXEnwp1A	43.57	3.92	8.1	LC	Puertas (1997)
Enos Lake	WEB10ea8a20	49.28	-124.15	10.5	HH	Brown et al. (2006)
Etang d'y Cor Montana	lcRR7x41VDYDCPUJV8T	46.31	7.48	15.5	LC	van der Knaap (1997)
Felchowsee	lcRRB14D2Fg9Zb4tvGP	53.06	14.13	5.4	LC	Jahns (2000)
Felchowsee	lcRpbhIeSqLqRxKnBNF	53.06	14.13	7.3	LC	Jahns (2000)
Found Lake	lcRSMVjIC246WXbuLnK	45.55	-78.64	12	LC	McAndrews (1981)
Frechencourt	lcRKKBJ6j334zCND9v4	49.95	2.43	4.7	LC	van Zeist (1980)
Gallanech Beg	lcRQz7vdye6CXMQO3SI	56.38	-5.5	14.5	LC	Davies (1997)
Gerry Lake	lcRg0FX7kDsVlxAdcdh	53.65	-121.51	11.1	LC	Gavin et al. (2009)
Gitanga (Gi-2)	WEB1392075b	-3.7	29.77	12.9	HH	Bonnefille (2000)
Gladkoye Bog	lcRTqdPXHTWaFMq3hMc	55	83.33	11	LC	Anderson (2002)
Goat Lake	lcRQ9mDBHfr9XBLQbUd	60.26	-149.91	9.2	LC	Anderson et al. (2017)
Gomishan	lcRfkhpLwl5zDhzsObe	37.15	54.06	10.8	LC	Leroy (2013)
Lake Gonghai	WEBbc36fb7b	38.54	112.14	14.7	HH	Ding et al. (2017)
Goose Bay Marsh	lcRlao41kuFDZ74153k	44.35	-75.87	8.2	LC	Rippke et al. (2010)
Gould Pond	lcRpmbA744mctx0iYnT	44.98	-69.32	15.8	LC	Jacobson Jr (1987)
Grachen See	lcRQNNj7W7IKng8MaOe	46.2	7.84	9.3	LC	Welten (1982)
Graham Lake	lcRCyUpvGwoKyOEvQkq	45.18	-77.35	13.9	LC	Fuller (1995)
Grande Briere	lcRmOmrZ1GmmbIFM6W3	47.37	-2.25	6.1	LC	Visset (1979)
Grant's Bog	lcR811cflc7gPTWct5	49.79	-125.13	14.1	LC	Lacourse et al. (2019)
Grasvatn	lcRaZI95pzisAqfMKRi	63.7	8.69	12.4	LC	Moe (1996)
Grays Lake	lcR89DqINtE3c8u2oBa	43.07	-111.44	21	LC	Beiswenger (1987)
Grey Islands	lcRquihWeSVoCRQXYyT	50.77	-55.52	11.4	LC	Evans (2002)
Grosser Krebssee	lcRCOiuJmrTNYijSm8z	52.85	14.1	6.9	LC	Jahns (1999)
Grosser Krebssee	lcRabb4phk9C2IJ0xj0	52.85	14.1	4.5	LC	Jahns (1999)
Gunnarsfjorden	WEB09437cc2	71.04	28.17	9.2	HH	Allen et al. (2007)
Gur	lcRGzeoFV49AbtHJxKb	53.03	51.84	21	LC	Mokhova (2009)
Gytgykai Lake	lcRy7IhuBaQ6uF11NxS	63.17	175	17.2	LC	Anderson (2002)
Hail Lake	lcRzxniarU5TTRDhKkh	60.03	-129.02	11.8	LC	Cwynar et al. (1995)
Haircut Lake	lcRjEweSTJryZAYGb1l	60.52	-133.21	7.4	LC	Edwards et al. (2015)
Halos I	lcR9Wrg5WflyKPDn0gq	39.16	22.84	7.8	LC	Bottema (1988)
Hams Lake	lcREzhF3Ls6YkH3b9dK	43.24	-80.41	12.9	LC	Bennett (1987)

Heal Lake	WEB7ec5f35f	48.54	-123.46	11.7	HH	Brown et al. (2006)
Heart Lake	lcRQfllOAnlXiGk0QCz	44.18	-73.97	12.5	LC	Whitehead (1990)
Hermit Lake	lcRXLkyFOBBg5jAZeV9	38.09	-105.63	13.8	LC	Anderson et al. (2021)
Lake Hidden	WEBe3940424	29.81	92.54	12.1	HH	Chen et al. (2020); (1999)
High Lake	lcRS0efHRT1BJR9ikbT	44.52	-76.6	12.1	LC	Fuller (1995)
Hopschensee	lcRP11grEDTPmBg8KEk	46.25	8.02	16	LC	van der Knaap (2000)
Hulun Lake	LPDc4757948	49.13	117.5	11	HH	Wen et al. (2010)
Humber Pond 3	lcR3bIWWhA552iIKLT1e	43.64	-79.48	4.4	LC	Weninger et al. (1989)
Hurecka slat	lcR1ZBXuVhPXDI89DZT	49.15	13.33	12.8	LC	Svobodova (2002)
Iffigsee	lcRNGsv0Rdc2JExg4ck	46.39	7.41	11.3	LC	Schworer (2015)
Irvin Lake	lcRu5pCMYC2GUPBBzdz	47.14	-93.64	14.7	LC	Alwin (1982)
Jaslo	lcRRsJBLTTrGwZpaako	49.78	21.47	10.4	LC	Harmata (1995)
Jaunay	lcR7lkJf5CzFuBWMZTH	46.66	-1.89	9.3	LC	Joly (2006)
Jay Lake	lcRJkBOXTs7gaPoBqC	46.23	-89.28	10.4	LC	Ewing (2000)
Jiji (Ji-2)	WEB1392075b-dup	-3.92	29.67	10.9	HH	Bonnefille (2000)
Jingbo Lake	lcRS3drKNxjECOBHubn	39.5	109.5	9.6	LC	Li (2011)
Jones Lake	lcRCHngCXxJyC7boD1V	49.45	-99.29	11.3	LC	Teed et al. (2009)
Karas'e Lake	lcREJxJv4v4Xe4w8NHU	49.37	75.4	6.3	LC	Tarasov (1995)
Karasye Lake	lcR8mj67gLS492AwE9G	53.03	70.22	6.2	LC	Tarasov (1994)
Kayaks koye Zaimitschye	lcRJSh0UMEWySvvTehJ	55	81	6.9	LC	Anderson (2002)
Kendegelukol Lake	lcRKnkmvI3WSopJhUG5	50	137.05	16.3	LC	Blyakharchuk (2004)
Kinnshaugen	lcRuxGl7M2jIBZRVX9	61.11	10.36	10.8	LC	Birks (2012)
Knob Hill Pond	lcR7PMjhhOCJBCqpWw	44.36	-72.37	14.1	LC	Oswald et al. (2018)
Komaritsa Peat Exposure	lcR2i3W5G42BwI55d4z	57.5	69	10.4	LC	Anderson (2002)
Kotyrkol' Peat Bog	lcR24ksEG9b6zeB53ZK	52.96	70.38	4.8	LC	Tarasov (1992)
Koycegiz Golu	lcRY9JluMsRhPsnGrPq	36.88	28.64	5.2	LC	van Zeist (1975)
KR02	PYT4D9VTHOK	71.34	-113.78	10.2	HH	Peros et al. (2008)
Kuruyange (Ku-1 and Ku-2)	WEBb6841ae1	-3.58	29.68	21	HH	Bonnefille (2000)
Kuruyange (Ku-1 and Ku-2)	WEB4fba7605	-3.58	29.68	12.8	HH	Bonnefille (2000)
Labsky dul	lcRiW7mrxVo28FuA6iC	50.76	15.55	21	LC	Engel (2010)
Lac a Leonard	lcRn8pfW2aOkGuGkhHo	49.21	-65.81	10.7	LC	Labelle et al. (1984)
Lac a Sam	lcRxEJJeCcL9BE7yhk	46.65	-72.98	11.2	LC	no pub on record
Lac aux Quenouilles	lcRqZ63xorXscRkaQkU	46.17	-74.4	13	LC	Savoie et al. (1979)
Lac Bastien	lcRZEIQ110W378d9TOj	46.4	-78.92	10.7	LC	Bennett (1987)
Lac Caribou	lcRdtS17jfYKWCM0SIH	48.2	-64.94	13.2	LC	Jette et al. (1992)
Lac Colin	lcR3VLvepAl8jPQ0Jap	46.72	-70.3	13.2	LC	Mott (1977)
Lac de Bretaye	lcRTAPYumbvCzcHXAOG	46.33	7.07	11.7	LC	Thole (2016)
Lac de Praver	lcRUGwWEexWpwOLUIISO	45.07	5.86	8.1	LC	Nakagawa (1998)
Lac des Grenouilles	lcRKS9CEIDrCS6N9y5	44.1	7.48	8.2	LC	Finsinger (2020)
Lac des Roches Moutonnees	lcRxypeAN6trKSWT7tq	56.77	-64.82	4.9	LC	McAndrews et al. (1977)
Lac du Lauzon	lcROpAQxk5Ao0bN7OYy	44.68	5.79	7.2	LC	Argant (2000)

Lac Faribault	lcRbxTYXmaHDE2ZQHZ	58.87	-71.72	6.6	LC	Richard (1981)
Lac Petel	lcR4Qzw6lCy4TeiU8MG	50.55	-66.27	8.7	LC	King (1986)
Lac Superieur de Fully	lcRb4cZaToq9bd0pTUO	46.18	7.09	11	LC	Finsinger (2007)
Lai Nair Schuls-Tarasp	lcRMHuDYr4ooGY4YFQN	46.78	10.28	15.7	LC	Welten (1982)
Lake 31	lcR8K3KbvN8GOh5iSkH	67.05	-50.47	5.2	LC	Eisner et al. (1995)
Lake Bayanchagan	lcRclYIyYQ8Kq5SvVWo	41.63	115.23	11.5	LC	Jiang (2010)
Lake BI2	lcRU9Wv8xbnApq52K5R	57.12	-76.38	8.1	LC	Gajewski et al. (1992)
Lake CH2	lcRvWx7hzKylZOr6Ue9	49.68	-74.58	8.7	LC	Garralla (1991)
Lake Grinnell	lcRTFzF9IdSdplxVIsK	41.1	-74.64	16.8	LC	Zhao et al. (2010)
Lake Jake	lcRq6t1IHrB7zTbN9av	63.67	-65.15	9.7	LC	Miller et al. (2005)
Lake LB1	lcRJebEqyeZJeTWr9gD	57.92	-75.62	7.4	LC	Gajewski et al. (1993)
Lake Solso	lcR6XGIZJJ6sUMOSpGg	56.13	8.61	11.2	LC	Odgaard (1988)
Lake Solso	lcRonkgxC2OuZ5KhxOO	56.13	8.61	6.8	LC	Odgaard (1988)
Lake Tianchi	lcRLUGwe6u9sNwCWBA0	25.87	99.28	18.5	LC	Jiang (2019)
Lake Varna	lcR1swPAuEHYu5rmwNE	43.2	27.83	8	LC	Bozilova (1994)
Lake Voukaria	lcR92SM1LEHTVnz3T6Q	38.87	20.83	10.2	LC	Jahns (2005)
Lake WA01	lcRBEvaydIFwOnSZuma	61.24	-136.93	10.5	LC	Ravindra (2009)
Larix laricina Site 5	lcRz3iMAf5YXkq554az	57.72	-75.81	4.4	LC	Peñalva et al. (1997)
Lavau	lcRQLFkYUzyqFavzbXI	47.34	-1.93	6.5	LC	Voeltzel (1987)
Le Fourneau	lcRO66Hhb9HOPSTtGWS	48.44	-0.19	21	LC	Barbier (2000)
Le Gesvres	lcRzquIL84pflJdywy3	47.27	-1.6	9.8	LC	Ouguerram (2002)
Lej da Champfer	lcRU88QgoMtobQ78a50	46.47	9.81	12.2	LC	Gobet (2005)
Le Marais de la Perge (South)	lcRiPXC1QOIC1ugFpbT	45.38	-1.11	6.9	LC	Diot (1995)
Lembolovskoye lake	lcRuBI86L2fbLUHGeuU	60.36	30.31	12.9	LC	Arslanov (2001)
Lille Kjelavatn	lcRyQRzcvKdCEM16Z9h	59.8	7.25	8.9	LC	Birks (2007)
Lily Lake	lcRPCIzys1FJAv11nWi	59.2	-135.4	12.6	LC	Cwynar (1990)
Lily Lake	lcRjUN7lrKnYMS1DSr3	47.91	-89.09	9.6	LC	Cwynar (1990)
Lily Lake	lcROBIER3oUzr1eINaV	41.98	-120.21	11.7	LC	Cwynar (1990)
Litvatnet	lcRukEb6BnbJCwvGQcS	68.53	14.93	12.6	LC	Bjune (2009)
Little Cheyne Court Walland marsh	lcRyc8tsEYpBLQv53H9	50.96	0.83	4.6	LC	Waller (1999)
Little Swift Lake	lcRUFhLpJJEIgfJy1fm	60.22	-159.77	12.8	LC	Axford et al. (2004)
Little Willey Pond	lcRMPkP0JPngepqKt5J	43.29	-71.18	13.2	LC	Oswald et al. (2018)
Loch a'Chroisg	lcR1zcvlTpHe7Gu2Ozc	57.57	-5.14	4.3	LC	Pennington (1973)
Loch Cleat	lcRJ5gQAZ1C6slQ2wzM	57.62	-6.28	12.1	LC	Birks (1983)
Logne	lcRsKj7HRaEa8Csoe9n	47.33	-1.5	4.8	LC	Barbier (1997)
Lone Fox Lake	lcRGoh2qGUcOrSpCnQ	56.72	-119.72	12.3	LC	MacDonald (1984)
Long Breach	lcR2gzCRTzbPXSErk7O	51.07	-3.69	6.6	LC	Fyfe (2003)
Long Lake	lcRZkWC1fAUMWFcopmS	41.5	-106.37	13.3	LC	Carter et al. (2017)
Longquan Lake LC2	lcRCl2bFYEi8iJDZ3pT	31.08	112.24	21	LC	Liu (1991)
Loon Pond	lcRtljGbgEMRexcyRwF	45.03	-68.2	14.7	LC	no pub on record
Lorraine Lake	lcRi9DLyVlptYxuLt	46.14	-86.48	9.8	LC	Calcote (2003)

Lough Mullaghlahan	lcRShwFkjy6CGJ3eBei	54.78	-8.47	14.6	LC	Fossitt (1994)
Luganskoe	lcRCHep7xkq0keh2M2L	43.72	40.7	6	LC	Efremov (1995)
Lukaschin Yar Peat Exposure	lcR6zfg40KfwrtKMP1E	61	78.5	11.7	LC	Anderson (2002)
Mallard Pond	lcRtxJO058HFi2LTuPf	51.29	-101.32	8.6	LC	Teed et al. (2009)
Mansell Pond	lcRsGKE1HtShd5fiLfc	45.04	-68.73	10	LC	Almquist-Jacobson et al. (1995)
Marais de Keswick	lcR05uuYvKoZnUNKOyb	44.2	-79.51	4.4	LC	Dinel et al. (1986)
Marais de Lisle	lcRws8UtuiI7583vk4v	47.43	-1.49	6.2	LC	Ouguerram (2002)
Marcella Lake	lcRTMSt7gELRNtYcNb3	60.07	-133.81	9.1	LC	Edwards et al. (2015)
Masatjornet	lcR8fc8B2pDMdMUjVUf	61.56	10.27	13	LC	Birks (2012)
Miancheng M1	lcRXvbC4hazRnHK1FGt	30.18	113.22	11.4	LC	Yang (1998)
Mica Lake	lcR51PFKIQqno4VsZWI	60.69	-148.14	10.2	LC	Anderson et al. (2017)
Mission Cross Bog	lcRrhd8mGjgTgCwlu9	41.78	-115.48	9.8	LC	Thompson (1984)
Mohawk Pond	lcRgMVsdDQMDFsI82dW	41.81	-73.29	18.7	LC	Gaudreau (1986)
Mono Lake	lcRf9gq05AeCrcXDAIG	38.01	-119.03	13.2	LC	Davis (1999)
Mont Carre Heremence	lcRII10DdZhuZLCfO81	46.15	7.37	8.2	LC	Welten (1982)
Moon Lake	lcR3ODiGvRodeMTGOjO	46.86	-98.16	13.8	LC	Laird (1996)
Morttjern	lcR9d3tUR71Zym2GxwZ	59.06	11.62	11.5	LC	Birks (2012)
Motta Naluns	lcRgDGHB8seTJysUnfr	46.81	10.26	11	LC	van der Knaap (1997)
Mrtvy luh	lcRQwutEsOeqKYYHxvG	48.87	13.88	6.4	LC	Svobodova (2001)
Mshinskoye raised bog	lcRURPnnXHhtNCJhPrL	59.01	29.98	11.6	LC	Arslanov (2001)
Myshetskoe-Dolgoe	lcR85IhuFYet9fVBJm1	56.07	37.33	14.8	LC	Kremenetski (2000)
Natla Bog	lcRQaFKDkPHIf6LdubV	63.02	-128.8	10.1	LC	MacDonald (1983)
Nelson Lake	lcR2ADpVvLUJQ0bZHQZ	46.23	-85.38	7.8	LC	Delcourt et al. (2002)
Newark Valley Pond	lcRFg61loqbAXRktuir	39.67	-115.77	21	LC	Mensing et al. (2008)
Nizhnevartovsk	lcRHrOMi2BPU2oeX6XI	62	76.67	12.4	LC	no pub on record
No Bottom Lake	GH8d2bed43	41.28	-70.11	11	HH	Marsicek et al. (2013); Dunwiddie (2013)
Northeast Shark River Slough	lcR6YXnNeDv2fjyHQ0H	25.75	-80.58	5.1	LC	Glaser et al. (2013)
Novoalex peatland	lcRM94MG6etHseLCjV6	55.12	41.04	8.1	LC	Novenko (2016)
Novo-Uspenka	lcRLulYb48KtEkGIREq	56.62	84.17	6	LC	Blyakharchuk (1989)
Nutt Lake	lcRD3uw2NlnVEYyVEDB	45.22	-79.45	11.1	LC	Bennett (1987)
Old Field	lcReP7TW9LscM4pX9SP	37.12	-89.83	5.6	LC	King (1981)
Ospitale	lcR3bsuKx5tY1eHYdiF	44.16	10.78	5.9	LC	Watson (1996)
Over Gunnarsfjorden	lcRPMFjnjsyrThm2wUI	71.04	28.17	13.2	LC	Allen (2007)
Oygardstjonn	lcRNCuYpM1BbEmsE2Jo	59.63	7.99	11.8	LC	Birks (2007)
Ozerki	lcR6LYfIRIUVSNa84H	50.42	80.47	14.3	LC	Tarasov (1994)
Padul Lake	WEB-c8f6e-2665-4cfa-846a-481f4	37.01	-3.6	21	HH	Camuera et al. (2022)
Padul Lake	WEB-9a7cd-c928-4876-9177-0f783	37.01	-3.6	21	HH	Camuera et al. (2022)
Padul Lake	WEB-a01b8-a050-4ceb-b3c1-e41a3	37.01	-3.6	21	HH	Camuera et al. (2022)
Paidre	lcRo2OfrT0Gm5uCDb8	58.28	25.5	7.3	LC	Saarse (1995)

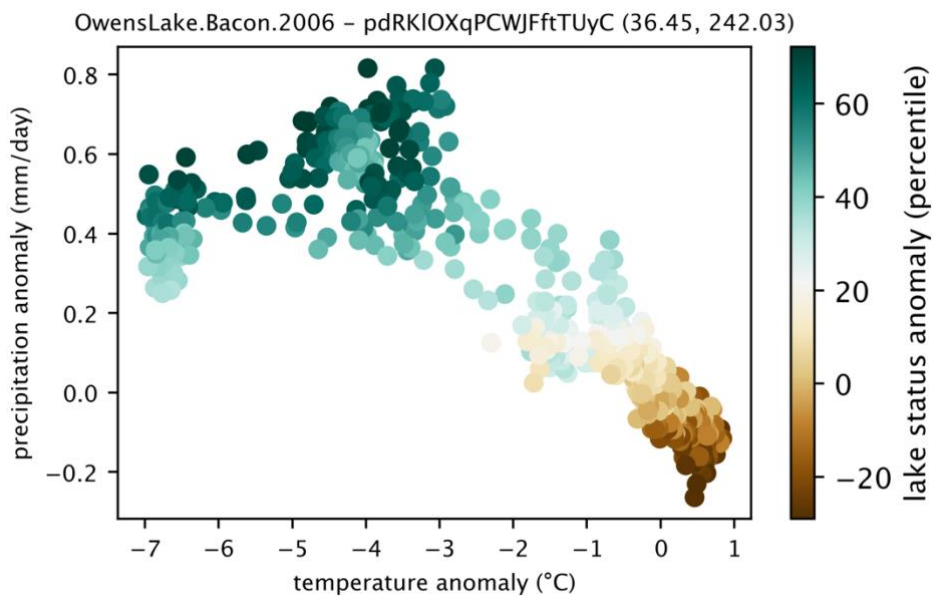
Pannel Bridge	lcRvvlSZxS9bXTLaFfY	50.91	0.68	11.4	LC	Waller (1987)
Pashennoe	lcR9TrdUideka9MU4fK	49.37	75.4	10.8	LC	Tarasov (1994)
Pavullo nel Frignano	lcRDPE8R2Ll9LGh8P0b	44.32	10.84	15.3	LC	Vescovi (2010)
Penegor Lake	lcRKSAUVxPgaePuZst2	46.62	-88.86	9.7	LC	Calcote (2003)
Perch Lake	lcRyOxxsKid1XcvzymT	51.65	-100.9	6.1	LC	no pub on record
Pillon Gsteig-Diablerets	lcRAwlfFkCrGR9UHhR0	46.36	7.2	11.8	LC	van der Knaap (1997)
Pixie Lake	WEB69d58fa4	48.6	-124.2	12	HH	Brown et al. (2006)
Point Escuminac	lcRLarbP2pT7p0Kh393	47.08	-64.8	12.8	LC	Warner et al. (1991)
Poland Spring Pond	lcRuSyi5hCNJTteCp9X	44.03	-70.35	15.1	LC	no pub on record
Pos'yet Bay	lcRSIAYzn1UZ8xPJ3S8	42.63	130.8	9.5	LC	Anderson (2002)
Pretty Lake	lcRPJLde7kvEsaM11zp	41.58	-85.25	15.3	LC	Williams (1974)
Pur-Taz Peatland	lcRhVCufS09bBzCcMnH	66.7	79.73	5.6	LC	Peteet (1998)
Pye Lake	lcR5p1vTbyYhjbhn154	44.98	-62.09	14.1	LC	Mott et al. (2009)
Qindeli	lcRidlzjKtSWUMIPMg0	47.88	133.67	13.6	LC	Xia (1988)
Qinghai Lake	WEB6d14587e	36.67	100.58	12.1	HH	Chen et al. (2020); (2002)
Qongjiamong Lake	WEBa860e0be	29.81	92.37	12.1	HH	Chen et al. (2020); (2003)
Ranger Lake	PYTCYF0YQTU	67.15	-153.65	21	HH	Brubaker et al. (1983)
Ratasjoen	lcRJaPYXhPFpzwSAIk6	62.27	9.83	11.5	LC	Velle (2005)
Redrock Lake	lcRqNrP3cF8Okd3KGC3	40.08	-105.54	11.4	LC	Maher Jr (1973)
Regetovka	lcRXldXWx5funOLzL9u	49.42	21.28	9.9	LC	Wacnik (1995)
Reidel Lake	lcR6BJfRZckOtBFbZP	46.21	-95.28	13.1	LC	Almquist-Jacobson et al. (1992)
Reiersdalvann	lcRlvs0Q0rvv2CWcbWs	58.33	7.79	10.9	LC	Birks (2007)
Rhamnus Lake	WEB4581c605	48.63	-123.72	11.1	HH	Brown et al. (2006)
Rice Lake	lcRSsAlzeDWcvyVipb6	48.01	-101.54	10.6	LC	no pub on record
Rice Lake	lcRaqtKYUpeVFmXJnVU	44.2	-78.14	5.7	LC	McAndrews (1969)
Ridge and Slough (02-05-21-5)	lcRtm2nqesiKFqeqhXe	25.83	-80.77	4.2	LC	Bernhardt et al. (2009)
Riviere-aux-Feuilles 2	lcRfnxvvcGEBTBvKcZk	58.22	-71.95	6.1	LC	no pub on record
Rogers Lake	GH6d568132	41.21	-72.17	11	HH	Marsicek et al. (2013)
Rogers Lake	lcRqQrMGXxoorseV4cP	41.35	-72.3	17.8	LC	Davis (1967)
Ruppert Lake	lcRLjFgm2COLZCD5g59	67.07	-154.23	15	LC	Brubaker et al. (1983)
Ruppert Lake	lcRITy31dNFpYMrrFH7	67.07	-154.24	14.2	LC	Brubaker et al. (1983)
Rusaka (Ru-1 and Ru-3)	WEBa1c23512	-3.43	29.62	9.2	HH	Bonnefille (2000)
Rusaka (Ru-1 and Ru-3)	WEB8ffcaee7	-3.43	29.62	21	HH	Bonnefille (2000)
Rutz Lake	lcRWHzMmVYYcDf6K32p	44.87	-93.86	13.1	LC	Stuiver (1975)
Ryerse Lake	lcRiq1prtqFDpKinLF2	46.13	-85.18	10	LC	no pub on record
Sa Curcurica	lcRoGFzRew9WTAeknaI	40.46	9.79	8.3	LC	Beffa (2016)
Saksunarvatn	lcREQ7puGij4dGVajz	62.24	-7.16	8.9	LC	Johansen (1982)
Salada Pequena	lcRNeTKafVV1Glibo2e	41.03	-0.22	4.8	LC	no pub on record
Salmo Lake	lcRti96IuQQTbmLrU3C	60.45	-133.56	11.5	LC	Edwards et al. (2015)
Sandvikvatn	lcRUiZGHArjNxAiW1nX	59.28	5.49	9.6	LC	Paus (1982)
San Joaquin Marsh	lcR3h58B1xMNHkPYwiY	33.66	-117.86	8.8	LC	Davis (1992)

Schoodic Peninsula Hollow	lcRKhWUhubcIA6KVzZ9	44.37	-68.07	8	LC	Schauffler (1998)
Secret Valley Marsh	lcRVjgMr8niCWzIOTrs	40.57	-120.27	11.1	LC	West (2002)
Selin Lake	WEBdd4fa361	31.65	89.14	12.1	HH	Chen et al. (1993); (2020)
Selitkan-1 Exposure	lcRKWdAzk5gaaCCDOMh	53.22	135.05	7.9	LC	Anderson (2002)
Seven Lakes	lcRIQnhC5noD5c3isF7	40.9	-106.68	4.2	LC	Calder (2016)
Sharkey Lake	lcR5SRLpHOGiAs4Q4SW	44.59	-93.41	11.4	LC	Camill et al. (2003)
Sihailongwan Maar	LPD6fdee25b	42.28	126.6	11.8	HH	Stebich et al. (2015)
Simplon/Gampisch-Alter Spittel	lcRnhx0TV2RqvrweSW7	46.23	8.01	11.6	LC	van der Knaap (1997)
South Rhody peatland	lcRwZudUZIMj01vQXF2	46.57	-86.08	10.5	LC	Booth et al. (2004)
Spicer Lake	lcRwnVuzjxKgcJQwS8I	41.76	-86.52	15.2	LC	Wang et al. (2016)
Spirit Lake	lcR1KT6GyUTH14Ybu8w	46.47	-86.96	14.1	LC	Woods et al. (1989)
Spruce Pond	lcRgKkHN0CyyYoGbYOA	41.24	-74.18	17.1	LC	Maenza-Gmelch (1997)
Stages Pond	lcRzbcPN2Y2gyo9iwZ9	39.67	-82.94	4.2	LC	Snyder (1991)
Staroselsky Moch	lcRaesu0dd88X29ftJX	56.29	32.03	13.5	LC	Novenko (2009)
Steeremoos	lcR6T9nRWTcVYluBUZX	47.81	8.2	8.9	LC	Rosch (2000)
Stewart Bog	lcR5PWLIIIWSTWJrKGG	35.83	-105.72	14.2	LC	Jimenez-Moreno et al. (2008)
Storsandvatnet	lcRsxQJCal75WkUpI5m	63.46	8.45	14.3	LC	Birks (2012)
Straldzha mire	lcR0aDYyLrxCMKEkXI7	42.63	26.78	21	LC	Tonkov (2009)
Straldzha mire	lcRyf5ECfdUuscy1RT4	42.63	26.78	4.5	LC	Tonkov (2009)
Styggjtjarnen	lcR4I0L8xuHdT39hQR	62.32	13.56	9.3	LC	Giesecke (2005)
Sudoble Lake	lcRYR1SVCS4MImdG6Hg	54.03	28.1	13.5	LC	Elovicheva (1985)
Svartvatnet	lcRKJqcToTVwvmD59ym	63.35	8.88	14	LC	Birks (2012)
Svatoborice-Mistrin	lcRyY8us0XnFvI0iGrN	48.94	17.07	8.3	LC	Svobodova (1989)
Svencele Bog	lcRaRjP3JKMmyWbjhW3	55.5	21.29	7.4	LC	no pub on record
Swampbuggy Lake	lcRRMCoTqUxIBPKGqtp	63.05	-147.42	8.2	LC	Rohr (2001)
Tangle Lakes	lcR4bKnn7hrqLKgZGr3	63.03	-146.06	5.4	LC	Ager et al. (1981)
Taul Zanogutii	lcRLTwUkmqSqLkVpHAA	45.33	22.8	15.4	LC	Farcas (1999)
Taylor Lake	lcRdS5DDFepoNkFmck3	46.1	-123.91	4.8	LC	Long et al. (2002)
Tianchi Lake	lcRdGds9oOLVuJWyouN	35.26	106.31	6	LC	Sun (2011)
Tiavatnet	lcR5yi0K8vaJ1pDMGjM	63.06	9.42	12.6	LC	Birks (2012)
Tioga Pass Pond	lcR87uwkt1JVspUAXqa	37.91	-119.26	10.5	LC	Anderson (1987)
Tlsta hora	lcRtqapfWIGeedhj31W	48.89	17.89	4.6	LC	Rybnickova (2005)
Tom' River Peat	lcRWjXOvOXsBSuCZKoz	56.17	84	10.2	LC	Anderson (2002)
Tourbiere Caribou	lcRK61Zqovd5AsakNEX	47.64	-71.24	4.3	LC	Richard (1977)
Tourbiere de la Lande	lcRZgqRfWdWqj1fNgxF	43.57	2.97	5.2	LC	Pulido (2006)
Tourbiere de Lanoraie COTEAU JAUNE	lcR1A1e4eCK8RCZbrM1	45.96	-73.34	8.2	LC	Comtois (1982)
Tourbiere de Lanoraie STJEAN	lcROauZ0E6EMlPlEs8f	46	-73.22	6	LC	Comtois (1979)
Tourbiere de Parçay-sur-Vienne	lcRcR80wTm1A4RAUIRb	47.09	0.48	12.3	LC	Cyprien (2006)
Tourbiere du Peschio	lcRw42ai03YAwd4En3b	44.45	3.6	5.8	LC	Pulido (2006)
Trettetjorn	lcR5MPWfK6sspyzNqi4	60.72	7	13.2	LC	Bjune (2005)

Troarn Saint-Samson	lcRu4yXp3wwLjp0Lsnb	49.18	-0.17	5	LC	Lespez (2010)
Troarn Saint-Samson	lcR7lnczhWShBzFx9	49.18	-0.17	4.2	LC	Lespez (2010)
Tschokljovo Marsh	lcRscdnEDYcOz51Mjsk	42.37	22.83	8	LC	Bozilova (1985)
TsoMoriri	GH2b8af51c	32.93	78.32	12	HH	Leipe et al. (2014)
Tsuolbmajavri	PYTJINRZ45D	68.41	22.05	9	HH	Korhola et al. (2002)
Uncle Seth's Pond	lcRNlfrkkQn5Ce0M7QR	41.43	-70.66	13.3	LC	Oswald et al. (2018)
Vallon de Provence	lcRwuWJUSPd5BtSkfF	44.39	6.4	8.9	LC	de Beaulieu (1977)
Vallon de Provence	lcRtoAUZCUcuHH7pJF4	44.39	6.4	9	LC	de Beaulieu (1977)
Vechernii River	lcR4HXbcw98F8bYyA5X	63.28	147.75	7.2	LC	Anderson (2002)
Velky Ded	lcR3Q9kRsZeRDvtgrkj	50.08	17.22	5.4	LC	Rybnicek (2004)
Vestre Oykjamyrjtjom	lcRr3el7cqYBPpIQz54	59.82	6	13.3	LC	Bjune (2005)
Vishnevskoe Lake	lcR8NnFIKKERYjVtdoJ	60.5	29.52	14.7	LC	Arslanov (1999)
Wallbach Lenk	lcRiJpSfk6qHogZUTSv	46.43	7.4	13.4	LC	van der Knaap (1997)
Wangjiadian profile	lcRpkRKA2Q4Uru9VFWq	36.16	114.67	15	LC	Cao (2010)
Waschhorn	lcRLZA5oyAihPeZFLb7	53.62	8.74	7.9	LC	Kuhl (1998)
Water Conservation Area 3B, Gumbo Limbo Far Tail	lcRCCeOBvoY6ibTb3Lr	25.77	-80.51	5	LC	Willard et al. (2001)
Watten	lcRgSd7F3XOo7P6g0F0	50.83	2.21	4.3	LC	Gandouin (2002)
Wenquan wetland	lcR13jshNz5dqXWSsRh	44.97	81.03	10.3	LC	Li (2020)
West Okoboji Lake	lcRbTXcl79CR4gJxaFC	43.33	-95.2	17.6	LC	Van Zant (1979)
West Olaf Lake	lcRDRHpPMtQHS2p3qME	46.6	-96.19	8.8	LC	Nelson et al. (2008)
West Side Pond	lcRT2tIa25Tm8EVwMwr	41.85	-73.26	13	LC	Lacourse et al. (2005)
Wiggenhall St. Germans	lcRbLUSpdmvr6eTifaD	52.69	0.34	5.2	LC	Waller (1994)
Windmill Lake	lcRw0soaBrKg4z1ACYN	63.66	-148.81	16.4	LC	Bigelow (1997)
Winneconnet Pond	lcRqcv7HT215BsuiBp5	41.97	-71.12	16.6	LC	Suter (1985)
Wolsfeld Lake	lcRopIDpnZtAWYZM2E4	45.01	-93.57	13.4	LC	Grimm (1981)
Woryty	lcR1N0S6oyvXMQEpB94	53.75	20.21	13.4	LC	Ciesla (1977)
Woryty	lcRgNEo7t886ISDFpMs	53.75	20.21	11.7	LC	Ciesla (1977)
Yabitsuyachi	lcRnpyqRGt7A1AQgJZI	40.62	140.9	8.2	LC	Morita (1987)
Yakumo	LPD72217804	42.28	140.26	5.5	HH	Leipe et al. (2013)
Zalozhtsy	lcRx8TPoWqgtzHDb9wM	49.75	25.45	9.7	LC	Artyushenko (1982)
Zaruckoe	lcRWLl959HwYAt7u0IE	63.9	36.25	9.4	LC	Elina (1981)
Zigetang Lake	WEB94c7839d	32	90.9	12.1	HH	Herzschuh et al. (2006); Chen et al. (2020)

Table S3: R and w_{loc} sensitivity experiments. Mean reconstruction correlation coefficients are listed for experiments which use a variety of combinations of the w_{loc} (localization) and R uncertainty parameters. Values are similar to the skill metrics shown in Fig. 5 and Fig. S4 which use an R of 10 and w_{loc} of 8,000. For this table, the assimilation was performed with only 5 iterations for computational efficiency.

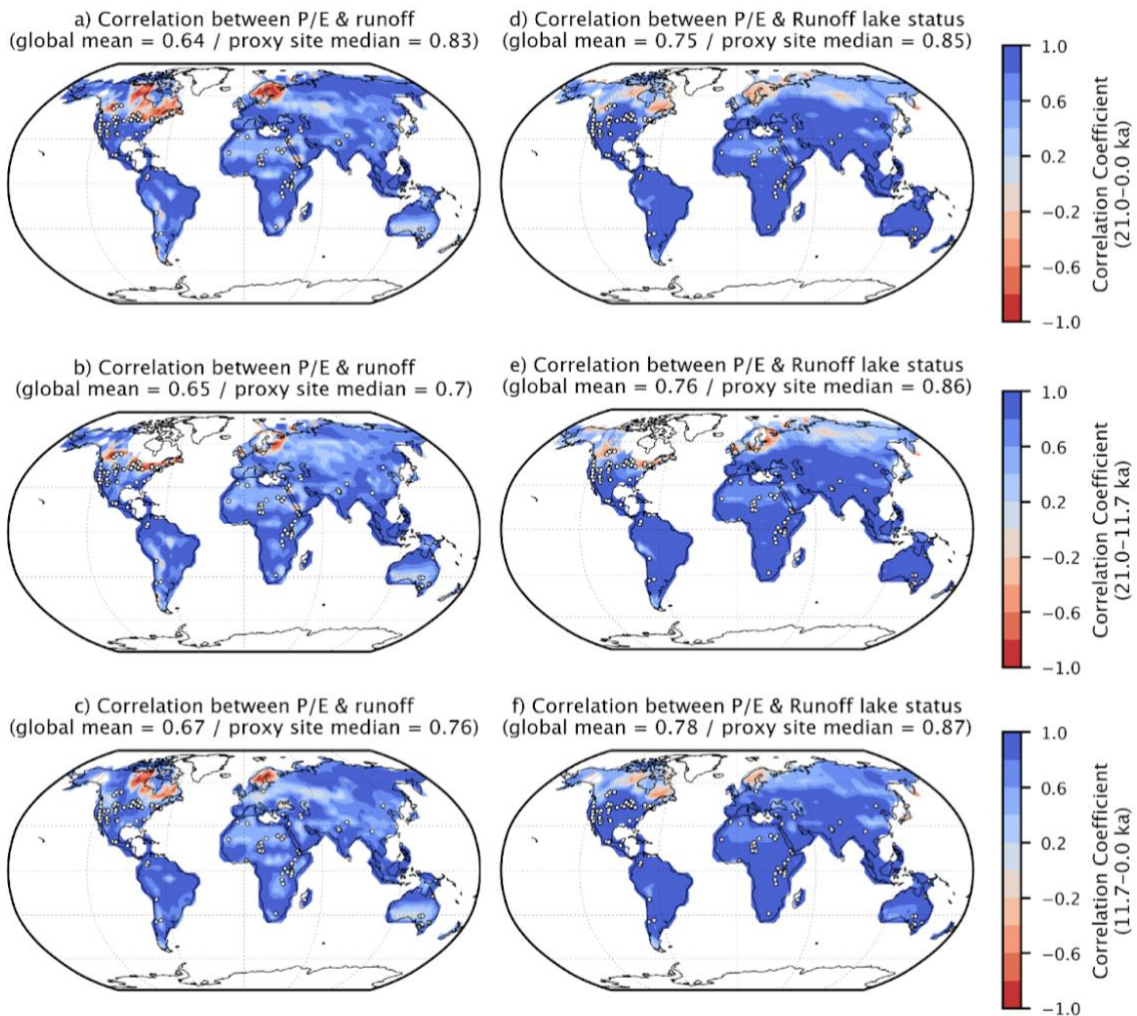
		lake status (global mean correlation coefficient)		
		assigned uncertainty (percentile)		
		10	30	50
localization	10,000	0.37	0.37	0.37
radius (km)	8,000	0.33	0.33	0.33
	6,000	0.26	0.26	0.26
		precipitation (global mean correlation coefficient)		
		assigned uncertainty (percentile)		
		10	30	50
localization	10,000	0.34	0.34	0.34
radius (km)	8,000	0.39	0.39	0.39
	6,000	0.41	0.41	0.41
		precipitation (North America mean correlation coefficient)		
		assigned uncertainty (percentile)		
		10	30	50
localization	10,000	0.42	0.42	0.42
radius (km)	8,000	0.47	0.47	0.47
	6,000	0.46	0.46	0.46



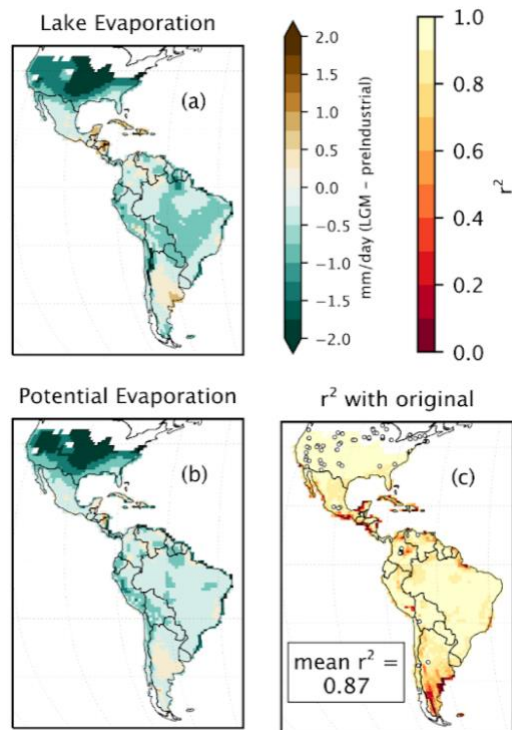
60

Figure S1: Representative relationship between temperature, precipitation, and lake status. Temperature (x axis) and precipitation (y axis) values are plotted from the model prior grid cell nearest to the Owens Lake proxy record located in the US Southwest. Colors indicate the calculated lake status value corresponding to each climate state. Dark green colors in the top left indicate high lake status values when temperature is colder and precipitation is higher. All values are plotted as anomalies relative to the 11.7–0 mean.

65



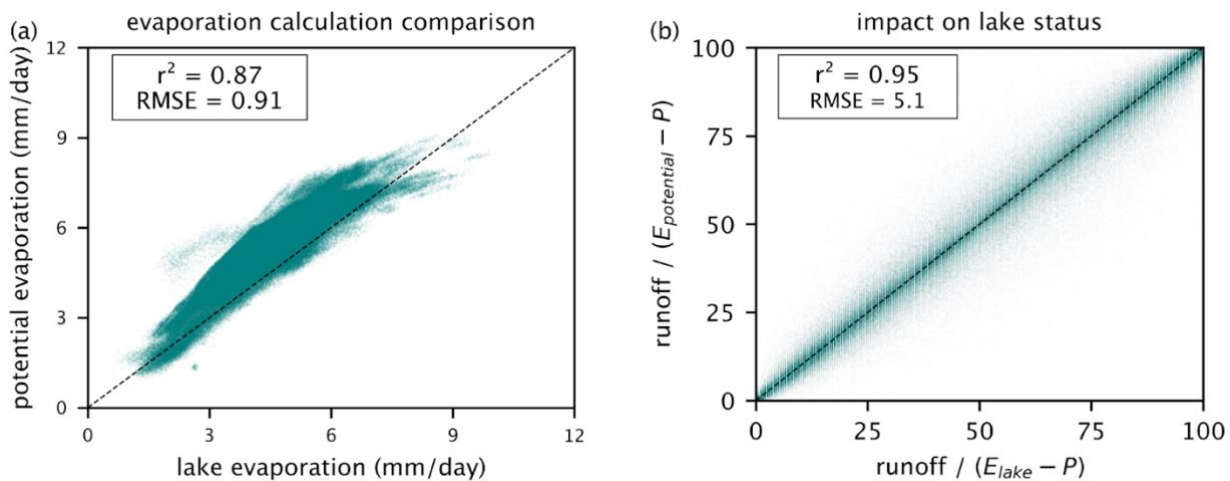
70 **Figure S2: Correlation between runoff and P/E values in TraCE. (a-c) Pearson's correlation coefficients between the two variables are plotted for each grid cell. (d-f) Lake status values were also calculated using P/E and runoff as the numerator of the lake status equation to evaluate the impact of this substitution on the PSM. Correlations were calculated for the entire time series (a,d; 0-21 ka) as well the deglacial (b,e; 21-11.7 ka) and Holocene (c,f; 11.7-0 ka).**



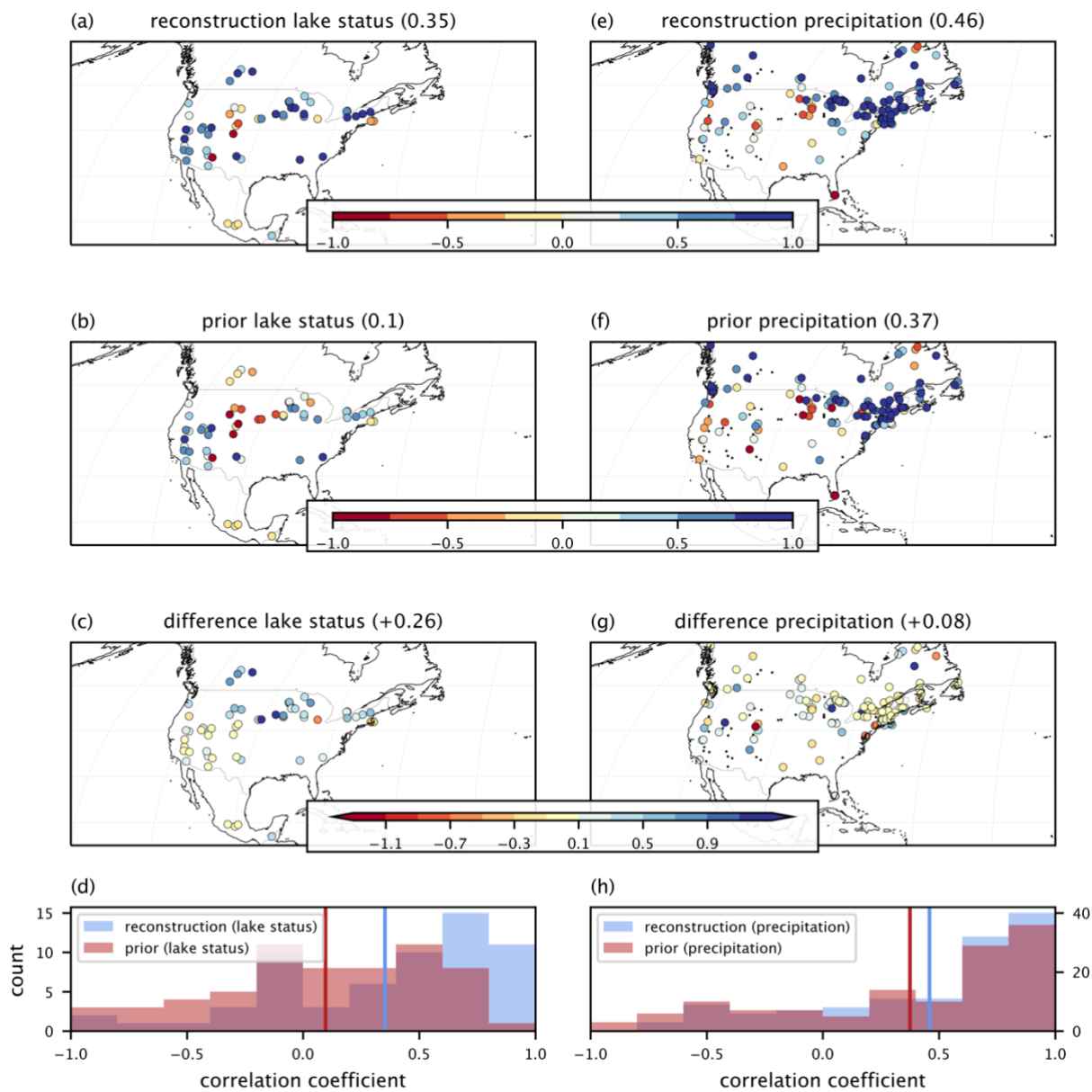
75

Figure S3: Comparison of lake evaporation methods. Similar to Fig. 4 except that a comparison between lake evaporation and potential evaporation is shown rather than lake status. (a) lake evaporation values calculated by Lowry and Morrill (2019). (b) is the potential evaporation values calculated for this study. Both panels a and b show the mean LGM value subtracted by the mean preindustrial value. (c) r^2 value for each grid cell using the combined 200 year time series.

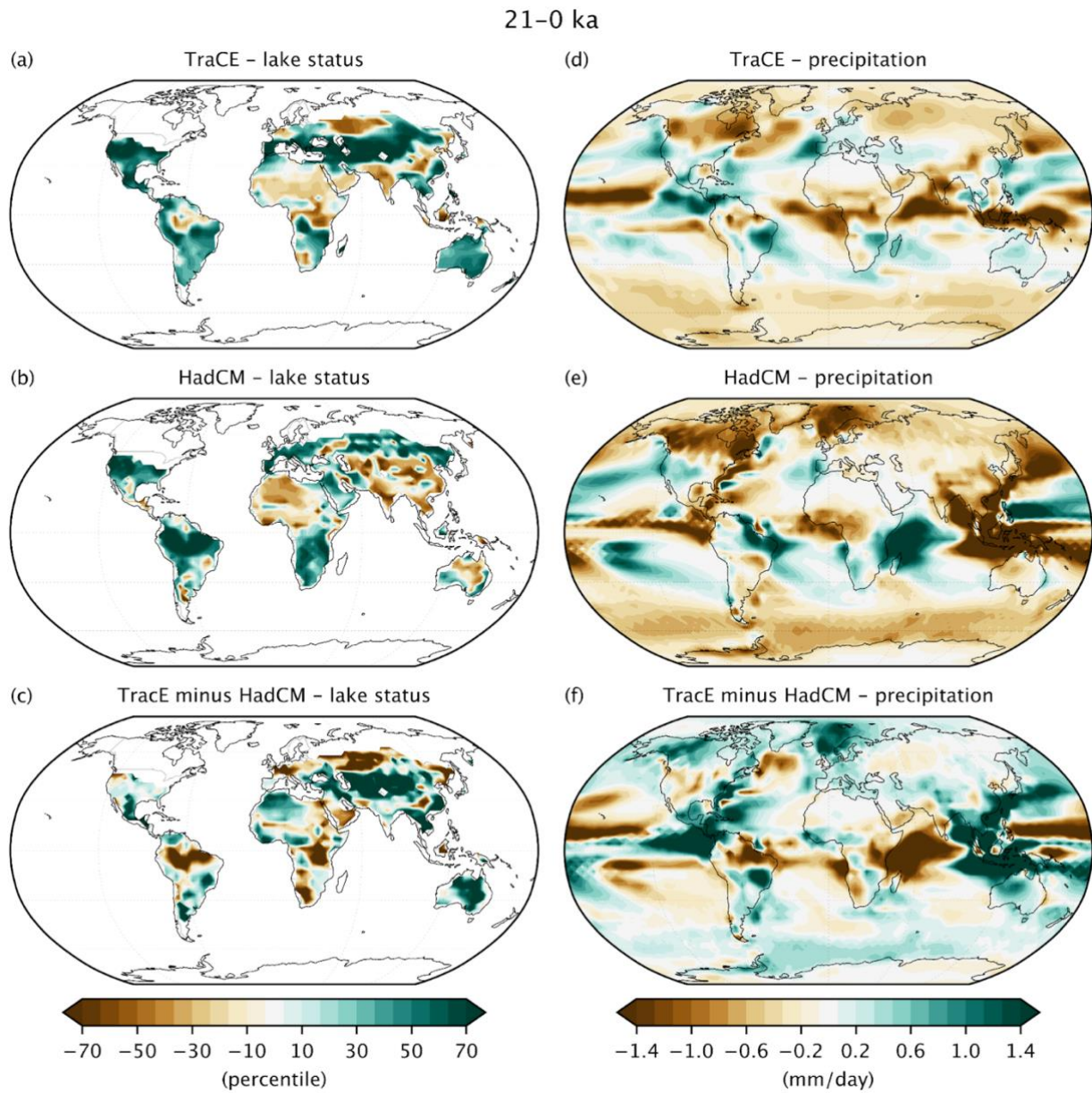
80



85 **Figure S4: Scatter plot comparing the similarity of lake status PSM calculations. (a) Evaporation values used to create Fig. S3c. (b) impact of modifications to the lake status equation (y axis) relative to the use of runoff and lake evaporation calculated by Lowry and Morrill (2019; x axis). These values are also plotted spatially in Fig. 4. The dashed 1:1 line indicates hypothetical perfect agreement for comparison.**



90 **Figure S5: Validation statistics for North America. Similar to Fig. 5 but only Pearson's correlation coefficients for the North America region are shown. This is the one region with numerous proxy records for both lake status and calibrated precipitation.**



95 **Figure S6: Simulated Last Glacial Maximum anomalies. Same as Fig. 6 except that the values of TraCE (a,d), and HadCM (c,f) and their differences (b,e) are shown rather than the model prior and DAMP-21ka reconstruction.**

21-0 ka

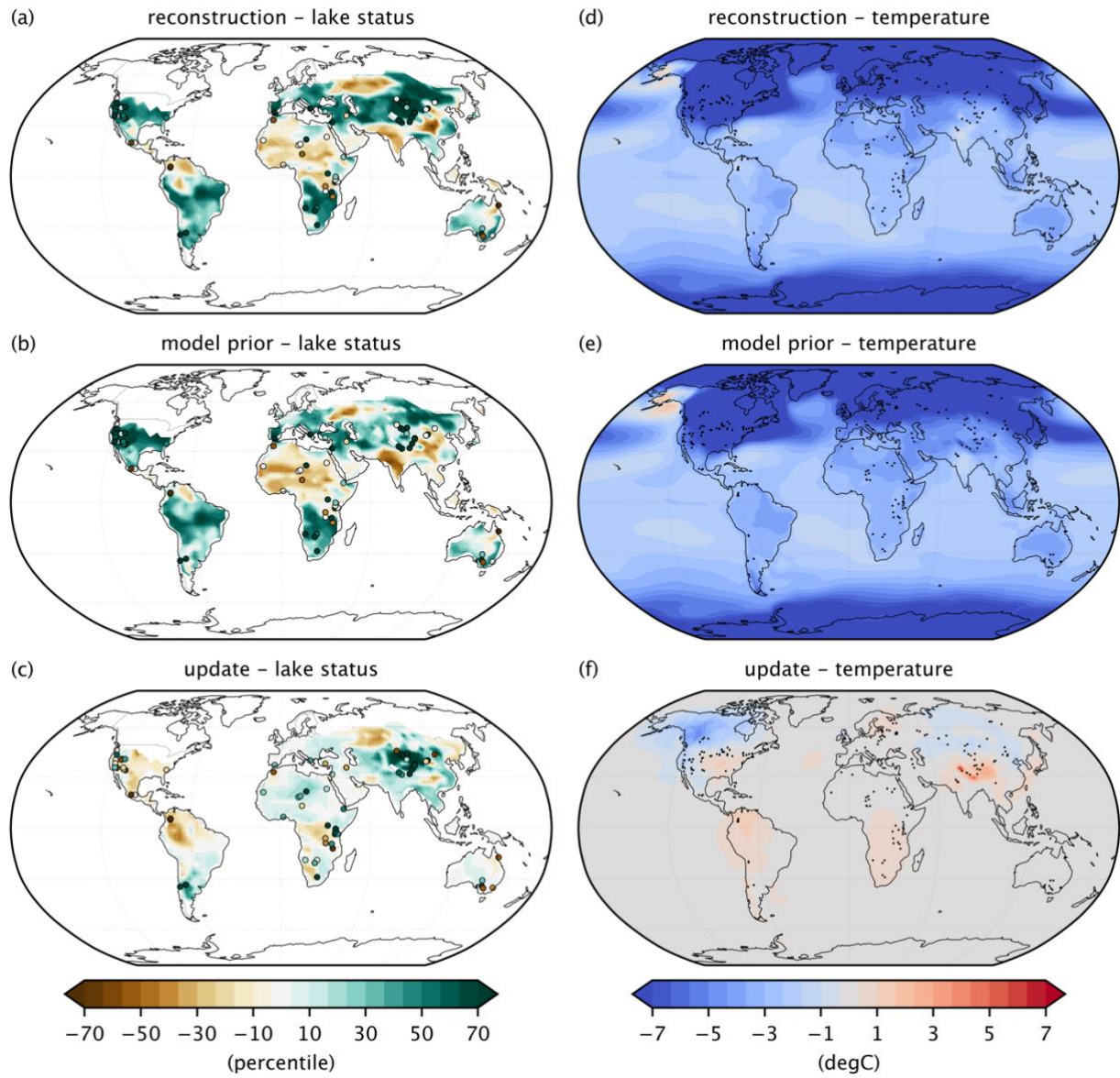
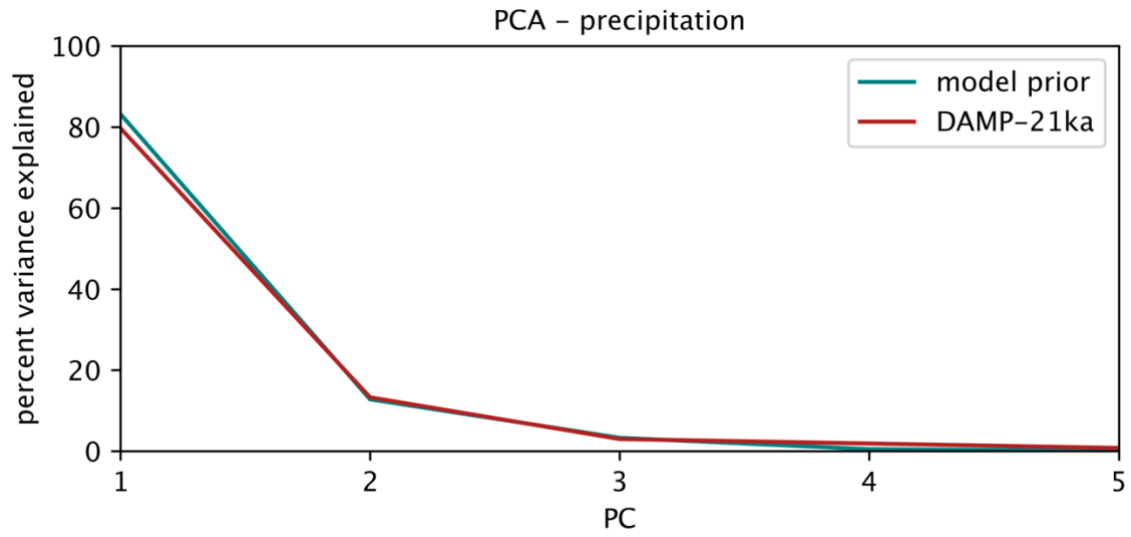
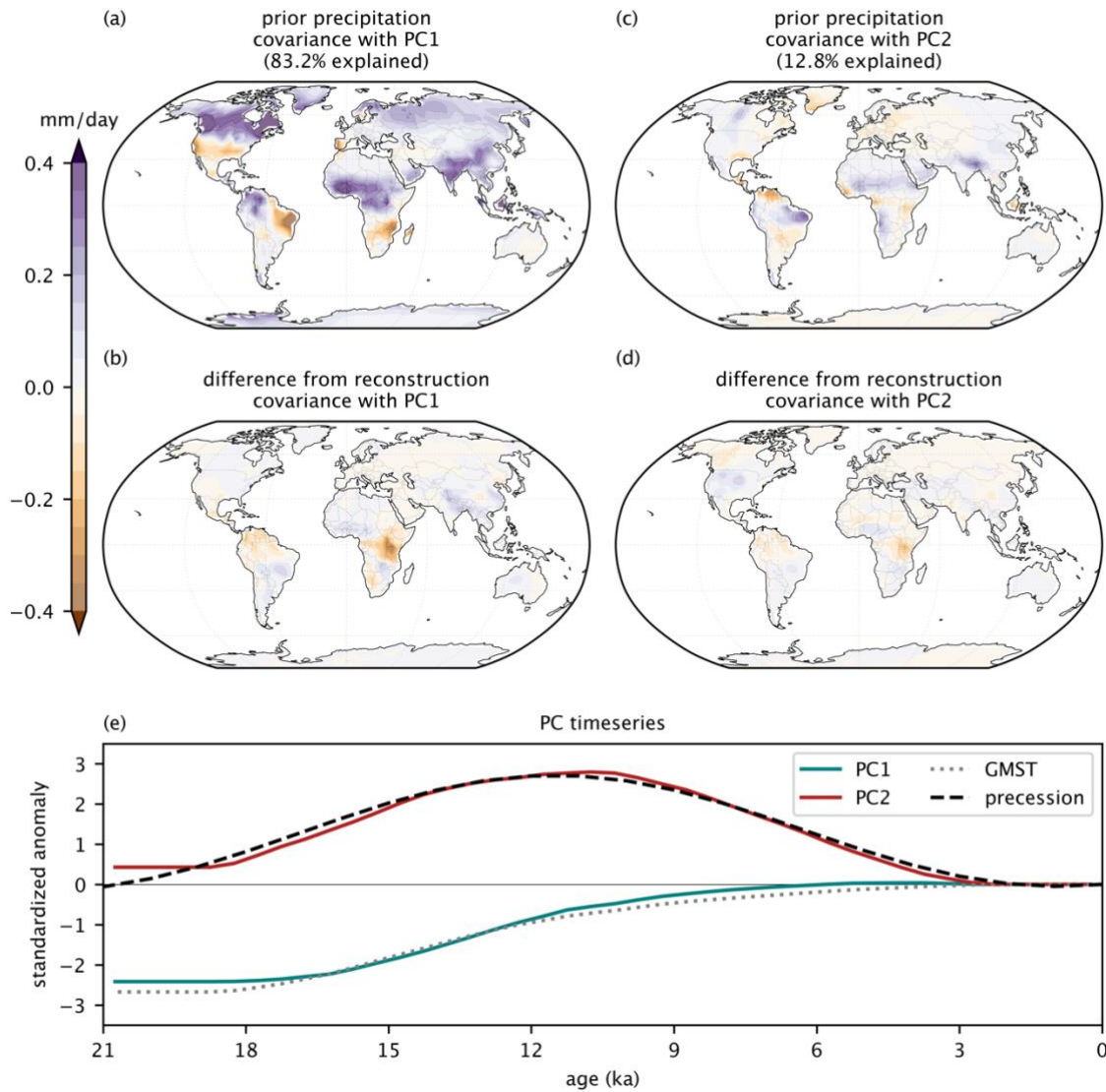


Figure S7: Last Glacial Maximum lake status and temperature anomalies. Similar to figure 6 except that temperature anomalies are shown in the right-hand column (d-f).

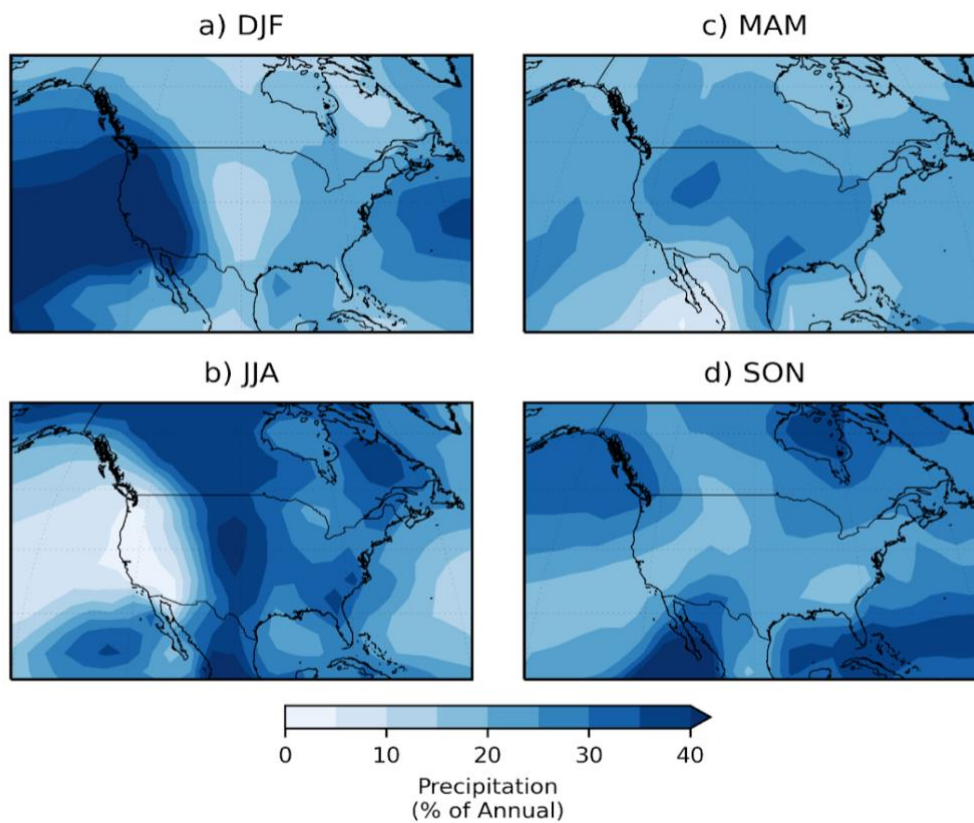


105 **Figure S8: Scree plot for mean annual precipitation PCA. The percent variance explained for the first 4 PCs for the model prior (green) and the DAMP-21ka reanalysis (red). PC1 and PC2 explain most of the variance for both datasets and are shown in Fig. 9 (reconstruction) and Fig. S9 (prior).**



110 **Figure S9: PCA of terrestrial annual precipitation using the model prior (21–0 ka).** (a,c) The covariance between each grid cell and PC1 and PC2 is shown for the prior. (b,d) The difference between panels a and c compared to the covariance calculated from the reconstruction (Fig. 9). (e) The PC time series are plotted (solid lines) along with the global mean surface temperature (GMST) of the reconstruction (black) and the precessional forcing (grey; Berger and Loutre, 1991). The time series values are standardized (z-scores) to allow for plotting on a common y axis.

115



120 **Figure S10: Percentage of annual precipitation by season. Values represent the mean seasonal percentage during decades within the last millennium (1 to 0 ka) for the mean of TraCE and HadCM.**

References

- Berger, A. and Loutre, M. F.: Insolation values for the climate of the last 10 million years, *Quaternary Science Reviews*, 10(4), 297–317, [https://doi.org/10.1016/0277-3791\(91\)90033-Q](https://doi.org/10.1016/0277-3791(91)90033-Q), 1991.
- 125 Liefert, D. T. and Shuman, B. N.: Pervasive desiccation of North American lakes during the Late Quaternary, *Geophys. Res. Lett.*, 47, e2019GL086412, <https://doi.org/10.1029/2019GL086412>, 2020.
- Lowry, D. P. and Morrill, C.: Is the Last Glacial Maximum a reverse analog for future hydroclimate changes in the Americas?, *Climate Dynamics*, 52(7), 4407–4427, <https://doi.org/10.1007/s00382-018-4385-y>, 2019.
- Gaspari, G. and Cohn, S. E.: Construction of correlation functions in two and three dimensions. *Quarterly Journal of the Royal Meteorological Society*, 125(554), 723–757, <https://doi.org/10.1002/qj.49712555417>, 1999.
- 130 Hancock, C. L., McKay, N. P., Erb, M. P., Kaufman, D. S., Routson, C. R., Ivanovic, R. F., Gregoire, L. J., and Valdes, P.: Global Synthesis of Regional Holocene Hydroclimate Variability Using Proxy and Model Data, *Paleoceanogr. Paleoclimatology*, 38, e2022PA004597, <https://doi.org/10.1029/2022PA004597>, 2023.
- Herzschuh, U., Böhmer, T., Li, C., Chevalier, M., Hébert, R., Dallmeyer, A., Cao, X., Bigelow, N. H., Nazarova, L., Novenko, E. Y., Park, J., Peyron, O., Rudaya, N. A., Schlütz, F., Shumilovskikh, L. S., Tarasov, P. E., Wang, Y., Wen, 135 R., Xu, Q., and Zheng, Z.: LegacyClimate 1.0: a dataset of pollen-based climate reconstructions from 2594 Northern Hemisphere sites covering the last 30 kyr and beyond, *Earth Syst. Sci. Data*, 15, 2235–2258, <https://doi.org/10.5194/essd-15-2235-2023>, 2023.
- Street-Perrott, F. A., Marchand, D. S., Roberts, N., and Harrison, S. P.: Global lake-level variations from 18,000 to 0 years ago: A palaeoclimate analysis, Oxford Univ. (UK). Geography School, <https://doi.org/10.2172/5609291>, 1989.
- 140 Tardif, R., Hakim, G. J., Perkins, W. A., Horlick, K. A., Erb, M. P., Emile-Geay, J., Anderson, D. M., Steig, E. J., and Noone, D.: Last Millennium Reanalysis with an expanded proxy database and seasonal proxy modeling, *Clim. Past*, 15, 1251–1273, <https://doi.org/10.5194/cp-15-1251-2019>, 2019.
- Whitaker, J. S. and Hamill, T. M.: Ensemble data assimilation without perturbed observations, *Monthly Weather Review*, 130(7), 1913–1924, [https://doi.org/10.1175/1520-0493\(2002\)130<1913:EDAWPO>2.0.CO;2](https://doi.org/10.1175/1520-0493(2002)130<1913:EDAWPO>2.0.CO;2), 2002.

145

References (lake level proxies from Table S1).

- Agrawal, D.P., Gupta S.K., and Kusumgar, S.: Tata Institute radiocarbon date list VIII, Radiocarbon, 13, 84-93, 1971.
- Andreev, A.A., Klimanov, V.A.: Vegetation and climate history of central Yakutia during Holocene and late Pleistocene, In: Formirovanie rel'efa, korrelyatnykh otlozhenii irossypei severo-vostoka SSSR (Formation of deposits and placerson north-east of theUSSR), Magadan, pp.26-51, 1989.
- 150 Andreev,A.A., Klimanov,V.A., Sulerzhitskii,L.D., Khotinskii,N.A: Chronology of environmental changes in Central Yakutia during Holocene. In: Paleoklimaty golotsena ipozdnelednikov'ya (Paleoclimates of Holocene and late Glacial), Moscow, Nauka, pp.115-121, 1989.
- Andreeva, M.A.: Oзера SrednegoI Yuzhnogo Urala (Lakes of Middle and Southern Ural), Cheliabinsk, 270p., 1973.
- 155 Arslanov, Kh., Davydova, N., Khomutova, V., Krasnov, I., Malakhovsky, D., Saarnisto, M., Saksa, A. and Subetto, D.: Deglaciation of Karelian Isthmus; the Vuoksi system and its role in Lake Ladoga evolution In: Ecological problems of Lake Ladoga, Abstracts IInternational Symposium, St. Petersburg, p.43., 1993.
- Balaga, K.: Vegetational history of the Lake Lukcze environment (Lublin Polesie, E. Poland) during the Late-Glacial and Holocene, Acta Palaeobotanica, 22, 7-22, 1982.
- 160 Bannert, D., Brinckmann, J., Käding, K., Knetsch, G., Ürsten, M., and Mayrhofer H.: Zur Geologie Der Danakil-Senke, Geologische Rundschau, 59(2), 409–43, <https://doi.org/10.1007/bf01823804>, 1970.
- Barker, P., Telford, R., Merdaci, O., Williamson, D., Taieb, M., Vincens, A., and Gibert, E.: The sensitivity of a Tanzanian crater lake to catastrophic tephra input and four millennia of climate change, The Holocene, 10, 303–310, <https://doi.org/10.1191/095968300672848582>, 2000.
- 165 Barnosky, C. W.: Late Quaternary vegetation in the southwestern Columbia Basin, Washington, Quaternary Research, 23(1), 109–22, [https://doi.org/10.1016/0033-5894\(85\)90075-4](https://doi.org/10.1016/0033-5894(85)90075-4), 1985.
- Barton, C. E. and McElhinny, M. W.: A 10,000 year geomagnetic secular variation record from three Australian maars, Geophysics Journal of the Royal Astronomical Society, 67, 465-485, 1981.
- Beadle, L.: The inland waters of tropical Africa. An introduction to tropical limnology, Longman, London, 1981.
- 170 Beales, P.W.: The late Devensian and Flandrian vegetational history of Crose Mere, Shropshire.New Phytologist, 85, 133-161, 1980.
- Beaumont, P.B., Van Zinderen Bakker Sr, E.M., Vogel, J.C.: Environmental changes since 32 000 BP at Kathu Pan, northern Cape. Late Cainozoic palaeoclimates of the Southern Hemisphere. Proc. SASQUA symposium, Swaziland, 1983, pp. 329-338, 1984.
- 175 Bedwell, S. F: Prehistory and Environment, University of Oregon Press, Eugene, 1973.
- Bennett, K.D.: Devensian Late-glacial and Flandrian vegetational history at Hockham Mere,England, New Phytologist, 95, 457-487, 1983.

- Bennett, K.D.: Holocene pollen stratigraphy of central East Anglia, England, and comparison of pollen zones across the British Isles, *New Phytologist*, 109, 237-253, 1988.
- 180 Benson, L., Kashgarian, M., Rye, R., Lund, S., Paillet, F., Smoot, J., Kester, C., Mensing, S., Meko, D., and Lindström, S.: Holocene multidecadal and multicentennial droughts affecting Northern California and Nevada, *Quaternary Science Reviews*, 21(4-6), 659–82, [https://doi.org/10.1016/s0277-3791\(01\)00048-8](https://doi.org/10.1016/s0277-3791(01)00048-8), 2002.
- Beug, H -J.: Beiträge zur postglazialen Floren- und Vegetationsgeschichte in Süddalmatien: Der See "Malo Jezero" auf Mljet. Teil II: Häufigkeit und Pollenmorphologie der nachgewiesenen Pflanzensippen, *Flora* 150, 632-655, 1961.
- 185 Beug, H -J.: Über die ersten anthropogenen Vegetationsveränderungen i Süddalmatien an Hand eines neuen Pollendiagrammesvom "MaloJezero" auf Mljet. Sonderdruckausden Veröffentlichungendes Geobotanischen Institutesder Eidg. Techn. Hochschule, Stiftung Rübel (Zürich), 37, 9-15, 1962.
- Bradbury, J. P.: Paleolimnology of Lake Texcoco, Mexico. Evidence from diatoms, *Limnology and Oceanography*, 16(2), 180–200, <https://doi.org/10.4319/lo.1971.16.2.0180>, 1971.
- 190 Bradbury, J. P., Leyden, B., Salgado-Labouriau, M., Lewis, W. M., Schubert, C., Binford, M. W., Frey, D. G., Whitehead, D. R., and Weibezahn, F. H.: Late Quaternary environmental history of Lake Valencia, Venezuela, *Science*, 214, 1299-1305, 1981.
- Briggs, R. W., Wesnousky, S. G., and Adams K. D.: Late Pleistocene and Late Holocene lake highstands in the Pyramid Lake subbasin of Lake Lahontan, Nevada, USA, *Quaternary Research*, 64(2), 257–63, <https://doi.org/10.1016/j.yqres.2005.02.011>, 2005.
- 195 Bright, R.C.: Pollen and seed stratigraphy of Swan Lake, southeastern Idaho: its relationship to regional vegetational history and to Lake Bonneville history, Tebiwa, *Journal of the Idaho State University Museum*, 9, 1-47, 1966.
- Bolikhovskaya, N.S.: About the near Moscow Meshchera vegetation and climate history in Holocene. In: *Paleoklimaty golotsena evropeiskoi territorii SSSR (Holocene palaeoclimates of the European part of the USSR)*, Khotinskii, N.A. and Klimanov, V.A. (Eds.), Moscow, pp.76-94, 1988.
- 200 Bogdel', I.I., Vlasov, BP, Ilves, E.O., V.A. Klimanov: Sudoble section: a strato type of the reconstruction the Holocene environments in central Byelorussia. In: *Istoriyaozerv SSSR (History of lakes in the USSR)*, Abstracts VIAll-UnionSymposium, vol.1., Tallinn, pp.30-33, 1983.
- Borel, J.L., Damblon, F., Montjuvent, G., Mouthon, J., Yates, G.: Le lacde Pluvis (Bas-Bugey): paléoécologie et variations de niveau durant l'Holocène d'après le sondage 4. *Travaux et Documents de Géographie tropicale* 59: 25. (Résumés des communications, Xe Symposium, Associations des Palynologues de Langue Française, Bordeaux-Talence.) Centre d'Etudes de Géographie tropicale, C.R.N.S., 1987.
- 205 Borel, J.L., Bravard, J-P., Monjuvent, G. (Eds): Pluvis, lac disparu: du retrait glaciaire a l'emenagement hydroelectrique. *Revue de Paléobiologie*, 4, 1-101, 1990.
- 210 Bottcher, U, Jaeckel S. H., Ergenzinger, P-J., and Kaiser, K.: Quartare seebildungen und ihre mollusken inhalteim tibesti-gebirge, *Zeitschrift Fur Geomorphologie*, 16, 182–234. , 1972.

- Bottema, S.: A late Quaternary pollen diagram from Ioannina, north-western Greece. The climate, environment and industries of Stone Age Greece: part III. Proceedings of the Prehistoric Society 33, 26-29, 1967.
- 215 Bottema, S.: Late Quaternary vegetation history of Northwestern Greece. Proefschrift, University of Groningen, 190 pp, 1974.
- Bowler, J. M., Hope, G. S., Jennings, J. N., Singh, G., and Walker D.: Late Quaternary climates of Australia and New Guinea, *Quaternary Research*, 6(3), 359–94, [https://doi.org/10.1016/0033-5894\(67\)90003-8](https://doi.org/10.1016/0033-5894(67)90003-8), 1976.
- 220 Bowler, J. M., Qi, H., Kezao, C., Head, M. J., and Baoyin, Y.: “Radiocarbon dating of playa-lake hydrologic changes: examples from Northwestern China and Central Australia, *Palaeogeography, Palaeoclimatology, Palaeoecology*, 54 (1-4), 241–60, [https://doi.org/10.1016/0031-0182\(86\)90127-6](https://doi.org/10.1016/0031-0182(86)90127-6), 1986.
- Brodin, Y-W., The Holocene development of Lake Wielke Gacno, Northern Poland , interpreted from remains of aquatic insects, Manuscript, from thesis, 34pp, 1985.
- 225 Brook, G. A., Marais, E., Srivastava, P., and Jordan, T.: Timing of lake-level changes in Etosha Pan, Namibia, since the middle Holocene from OSL ages of relict shorelines in the Okondeka region, *Quaternary International*, 175, 29–40, <https://doi.org/10.1016/j.quaint.2007.05.020>, 2007.
- Brook, G. A., Railsback, L. B., and Marais, E.: Reassessment of carbonate ages by dating both carbonate and organic material from an Etosha Pan (Namibia) stromatolite: Evidence of humid phases during the last 20ka, *Quaternary International*, 229, 24–37, <https://doi.org/10.1016/j.quaint.2010.05.009>, 2011.
- Brugam, R. B.: Postglacial diatom stratigraphy of Kirchner Marsh, Minnesota, *Quaternary Research*, 13, 133-146, 1980.
- 230 Buckley, J. D. and Willis E. H.: Isotopes’ radiocarbon measurements VIII, *Radiocarbon* 12(1), 87–129, <https://doi.org/10.1017/s0033822200036225>, 1970.
- Burney, D. A.: Pre-settlement vegetation changes at Lake Tritrivakely, Madagascar, *Palaeoecology of Africa A.*, 18, 357-381, 1987.
- 235 Buch, M.W., Zöller, L.: Pedostratigraphy and thermoluminescence-chronology of the western margin- (lunette-) dunes of Etosha Pan/Northern Namibia. *Würzburger Geographische Arbeiten* 84, 361-384, 1992.
- Butzer, K. W., Fock, G. J., Stuckenrath R., and Zilch A..Palaeohydrology of late pleistocene Lake Alexandersfontein, Kimberley, South Africa, *Nature*, 243, 328-330, 1973.
- Butzer, K. W., Isaac, G. L., Richardson, J. L., and Washbourn-Kamau, C.: Radiocarbon dating of East African lake levels, *Science* 175(4026), 1069–76, <https://doi.org/10.1126/science.175.4026.1069>, 1972.
- 240 Butzer, K.W.: Recent history of an Ethiopian delta: the Omo River and the level of Lake Rudolf. University of Chicago, Dept. of Geography, Chicago, 1971.
- Chalié, F. and Gasse, F.: Late Glacial–Holocene diatom record of water chemistry and lake level change from the tropical East African Rift Lake Abiyata (Ethiopia), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 187, 259–283, [https://doi.org/10.1016/s0031-0182\(02\)00480-7](https://doi.org/10.1016/s0031-0182(02)00480-7), 2002.

- 245 Chamard, Ph. C.: Monographie d'une sebkha continentale du sud-ouest saharien: la sebkha de chemchane (adras de Mauritanie), Bulletin de l'institut Francaisd'afrique Noire, Senegal 35A, 207-243, 1973.
- Clark, J.D., Haynes, C.V., Mawby, J.E., Gautier, A.: Interim report on palaeoanthropological investigations in the Malawi Rift. Quaternaria 13, 305-354, 1970.
- Collins, G. B.: Implications of diatom succession in post-glacial sediments from two sites in northern Iowa, Ph.d. Thesis, 250 Iowa State University, Ames, 197pp, 1968.
- Commelin, D., Petit-Maire N., and Casanova, J.: Chronologie isotopique saharienne des derniers 10,000 ans, Bulletin du Musee d'Anthropologie prehistorique de Monaco, 23, 37-88, 1980.
- Costa, K., Russell, J., Konecky, B., and Lamb, H.: Isotopic reconstruction of the African Humid Period and Congo Air Boundary migration at Lake Tana, Ethiopia, Quaternary Science Reviews, 83, 58-67, 255 <https://doi.org/10.1016/j.quascirev.2013.10.031>, 2014.
- Crane, H. R. and Griffin J. B.: University of Michigan radiocarbon dates III, Science 128(3332), 1117-23. <https://doi.org/10.1126/science.128.3332.1117>, 1958.
- Cui H.A.T., Kong Z.C.: Preliminary results on the climatic change in Holocene hypsithermal period of eastern-central Inner Mongolia, In: Shi YF, Kong ZC (eds.) Climate and Environment of Holocene Megathermal in China. Ocean Press, 260 Beijing, China, pp. 72-79, 1992.
- Cui H.T., Wu W.L., Song C.Q., Wu H.L.: Reconstruction the the Holocene environment in the Daqingshan region of inner Mongolia, In: Zhang LS (ed.) Study on the History of the Living Environment in China. Ocean Press, Beijing, China, pp. 285-295, 1993.
- Damon, P. E., Haynes, C. V., and Long A.: Arizona radiocarbon dates V, Radiocarbon, 6,91-107, 265 <https://doi.org/10.1017/s0033822200010560>, 1964.
- Davydova, N.N.: Diatom ovyevodorosli-indicatoryprirodnikh uslovii vodoemovv golotsene (The diatoms as indicator of basin environmental conditions in Holocene), Leningrad, 240p., 1985.
- Davydova, N.N.: Diatomic algae in lake sediments. In: Istoria ozer Sevan, Isyk'Kul', Balkhash, Zaisan I Aral (The history of Sevan, Issyk-Kul, Balkhash, Zaisan and Aral Lakes), Leningrad, Nauka, pp.103-107, 1991.
- 270 De Deckker, P.: Holocene ostracodes, other invertebrates and fish remains from cores of four maar lakes in Southeastern Australia. Proceedings of the Royal Society of Victoria. Vol. 94, no. 4, pp. 183-220, 1982.
- De Deckker, P., Moros, M., Perner, K. et al.: Influence of the tropics and southern westerlies on glacial interhemispheric asymmetry. Nature Geosci 5, 266-269, <https://doi.org/10.1038/ngeo1431>, 2012.
- Deevey, E. S., Holocene forests and Maya disturbance near Quexil Lake, Peten, Guatemala, Polskie Archiwum 275 Hydrobiologii, 25:117-129, 1978.
- Delcourt, H. R., Delcourt, P. A., and E. C. Spiker, A 12000-year record of forest history form Cahaba Pond, St. Clair County, Alabama, Ecology 64(4), 874-87, <https://doi.org/10.2307/1937210>, 1983.

- Delibrias, G., Guillier, M. T., and Labeyrie J.: Gif natural radiocarbon measurements II, *Radiocarbon*, 8, 74–95, <https://doi.org/10.1017/s0033822200000060>, 1966a.
- 280 Delibrias, G, Guillier, M. T., and Labeyrie J., Gif natural radiocarbon measurements VIII, *Radiocarbon* 16(1), 15–94, <https://doi.org/10.1017/s0033822200001417>, 1974.
- Delibrias, G, Guillier, M. T., and Labeyrie J., Gif natural radiocarbon measurements VI, *Radiocarbon* 13, 223, 1971.
- Digerfeldt, G., James E. A., and Björck, S.: Reconstruction of past lake levels and their relation to groundwater hydrology in the parkers prairie sandplain, west-central Minnesota, *Palaeogeography, Palaeoclimatology, Palaeoecology*, 94(1-4), 99–
- 285 118, [https://doi.org/10.1016/0031-0182\(92\)90115-1](https://doi.org/10.1016/0031-0182(92)90115-1), 1992.
- Dodson, J.R.: Late Pleistocene vegetation and environments near Lake Bullenmerri, Western Victoria. *Australian Journal of Ecology*, 4, 419-427, 1979.
- Dodson, J. R.: Holocene vegetation and environments near Goulburn, New South Wales, *Australian Journal of Botany* 34(3), 231, <https://doi.org/10.1071/bt9860231>, 1986.
- 290 Dorofeyuk, N.I.: Holocene palaeogeography of MPR by diatom record from lake bottom sediments. In: *Prirodnye usloviya, rastitelnyi pokrov i zhivotnyi mir Mongolii* (Nature conditions, vegetation cover and animals of Mongolia), Pushchino, pp.61-82, 1988.
- Durand, A., Fontes J. Ch., Gasse, F., Icole, M., and Lang, J.: Le nord-ouest du lac Tchad au Quaternaire: Etude de paleoenvironnements alluviaux, eoliens, palustres et lacustres, *Palaeoecology of Africa*, 16, 215-243, 1984.
- 295 Dury, G. H.: Paleohydrologic implications of some pluvial lakes in northwestern New South Wales, Australia, *Geological Society of America Bulletin*, 84(11), 3663, [https://doi.org/10.1130/0016-7606\(1973\)84<3663:piospl>2.0.co;2](https://doi.org/10.1130/0016-7606(1973)84<3663:piospl>2.0.co;2), 1973.
- Eldridge, K. L., Stipp, J. J., and Cohen S. J.: "University of Miami Radiocarbon Dates III." *Radiocarbon* 17 (2): 239–46. <https://doi.org/10.1017/s0033822200002083>. 1975.
- Elovicheva, Ya.K., Bogdel', I.I.: New Holocene sections of Byelarusia. In: *Geologicheskoe stroenie osadochnoi tolshchi Belorussii* (Geological composition of sedimentary sequence of Byelorussia), Minsk, Nauka i Tekhnika, pp.141-169, 300 1985.
- Ewing, H. A.: Ecosystem development and response to climatic change: a comparative study of forest-lake ecosystems on different substrates, Doctoral Dissertation, University of Minnesota, 2000.
- Faure, H., Manguin, E., and Nydal, R.: Formations lacustres du Quaternaire superieur du Niger oriental: diatomites Et ages 305 absolus. *bulletin Du Bureau de Recherches Geologiques Et minières*, Paris, 3, 41-63, 1963
- Fergusson, G. J., and Libby, W. F.: UCLA Radiocarbon Dates i, *Radiocarbon*, 4: 109–14, <https://doi.org/10.1017/s0033822200036572>, 1962.
- Flint, R. F. and Gale, W. A.: Stratigraphy and radiocarbon dates at Searles Lake, California, *American Journal of Science*, 256(10), 689–714, <https://doi.org/10.2475/ajs.256.10.689>, 1958.
- 310 Florschütz, F., Menéndez Amor, J., Wijmstra, T.A.: Palynology of a thick Quaternary succession in southern Spain, *Palaeogeography, Palaeoclimatology, Palaeoecology*, 10, 233-264, 1971.

- Fontes, J. C., Pouchan, P., Moussie, C., and Weidmann. M.: phases humides au pleistocene superieur et al'holocene dans le sud de l'afar (t.f.a.i.), comptes Rendus Hebdomadaires de l'academie desSciences, Paris 277, 1973.
- 315 Fries, M.: Pollen profiles of late Pleistocene and recent sediments from Weber Lake, northeastern Minnesota, *Ecology*, 43(2), 295, <https://doi.org/10.2307/1931985>, 1962.
- Fritz, S.C.: Lake development and limnological response to prehistoric and historic land-use in Diss, Norfolk, U.K., *Journal of Ecology*, 77, 182-202, 1989.
- Fritz, P. and Krouse H. R.: Wabamun Lake past and present, an isotopic study of the water budget. In : "Proceedings of the Symposium on the Lakes of Western Canada." (E.R. Reinelt, A.H. Laycock and W.M. Schultz, Eds.),pp. 244-259.
- 320 University of Alberta Water Resources Centre, University of Alberta, Edmonton, Alberta, Canada, 1973
- Fu-Bao, W. and Fan, C. Y.: Climatic changes in the Qinghai-Xizang (Tibetan) region of China during the Holocene, *Quaternary Research*, 28(1), 50–60, [https://doi.org/10.1016/0033-5894\(87\)90032-9](https://doi.org/10.1016/0033-5894(87)90032-9), 1987.
- Ellerton, D., Shulmeister, J., Woodward, C., Moss, P: Last Glacial Maximum and Last Glacial-Interglacial Transition pollen record from northern NSW, Australia: evidence for a humid late Last Glacial Maximum and dry deglaciation in parts of eastern Australia. *Journal of Quaternary Science*. Vol. 32, no. 6, pp. 717-728, 2017.
- 325 Garcin, Y., Junginger, A., Melnick, D., Olago, D. O., Strecker, M. R., and Trauth, M. H.: Late Pleistocene–Holocene rise and collapse of Lake Suguta, northern Kenya Rift, *Quaternary Science Reviews*, 28, 911–925, <https://doi.org/10.1016/j.quascirev.2008.12.006>, 2009.
- Garrett-Jones, S.: Holocene vegetation and lake sedimentation in the Markham Valley, PNG, Ph.d. Thesis, Australian National University, Canberra, 1979.
- 330 Gasse, F.: Diatoms for reconstructing palaeoenvironments and paleohydrology in tropical semi-arid zones, *Hydrobiologia*, 154(1), 127–63, <https://doi.org/10.1007/bf00026837>, 1987.
- Gasse, F.: Evolution of Lake Abhé (Ethiopia and TFAI), from 70,000 b.p., *Nature*, 265, 42–45, <https://doi.org/10.1038/265042a0>, 1977.
- 335 Gasse, E. and Street, F. A.: Late Quaternary Lake-level fluctuations and environments of the northern Rift valley and Afar region (Ethiopia and Djibouti), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 24, 279–325, [https://doi.org/10.1016/0031-0182\(78\)90011-1](https://doi.org/10.1016/0031-0182(78)90011-1), 1978.
- Geng K, Cheng YF (1990) Formation, development and evolution of Jilantai salt-lake, inner Mongolia. *Acta Geographica Sinica* 45(3): 341-349 (in Chinese).
- 340 Gerlach, T., Koszarski, L., Koperowa, W., Kosta, E.: Sédiments lacustres postglaciaires dans la dépressionde Jaslo-Sanok. *Studia Geomorphologia Carpatho-Balcanica*, 6, 37-61, 1972.
- Geze, F.: New dates on ancient Galla Lake levels (Ethiopian Rift Valley), *Bulletin of the Geophysical Observatory, Addis Ababa*, 15, 119-124, 1975.

- 345 Gibert, E., Bergonzini, L., Massault, M., and Williamson, D.: AMS-14C chronology of 40.0 cal ka BP continuous deposits from a crater lake (Lake Massoko, Tanzania), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 187, 307–322, [https://doi.org/10.1016/s0031-0182\(02\)00483-2](https://doi.org/10.1016/s0031-0182(02)00483-2), 2002.
- Gillespie, R., Street-Perrott, F. A., and Switsur, R.: Post-glacial arid episodes in Ethiopia have implications for climate prediction, *Nature*, 306, 680–683, <https://doi.org/10.1038/306680a0>, 1983.
- 350 Gilman, A.: Stephen f. Bedwell: Fort Rock Basin, prehistory and environment, *Antiquity*, 49(193): 77–78. <https://doi.org/10.1017/s0003598x00063420>, 1975.
- Godwin, H., Tallantire, P. A.: Studies in the post-glacial history of Britain vegetation, *Journal of Ecology*, 39, 285–307, 1951.
- Goldsmith, Y. W., S. Broecker, H. Xu, P. J. Polissar, P. B. deMenocal, N. Porat, J. H. Lan, Peng Cheng, W. J. Zhou, and Z. S. An: Northward extent of East Asian Monsoon covaries with intensity on orbital and millennial timescales, *Proceedings of the National Academy of Sciences*, 114(8), 1817–21, <https://doi.org/10.1073/pnas.1616708114>, 2017.
- 355 Gonzalez, M. A.: Pleistocene and Holocene lake levels in the actual Salina Del Bebedero, Argentina. 14C dates relations with the latest Pleistocene glaciation, Abstract, Hamburg Symposium on Desert Encroachment, Fast Tropical Erosion, Coastal Subsidence and Submergence, Unpaginated, 1983.
- Gu S.G., Liang Z.C., Zhang Z.G., Chen H.Q., Zhang H.W.: Quaternary chronological stratigraphy in Chaiwopu Basin. In: Shi YF, Wen QZ, Qu YG (eds) *Changes in Quaternary climate-environments and geohydrological conditions in Chaiwopu Basin, Xinjiang*. Ocean Press, Beijing, pp. 38–45 (in Chinese), 1990.
- 360 Haberyan, K. A. and Hecky. R. E.: The Late Pleistocene and Holocene Stratigraphy and Paleolimnology of lakes Kivu and Tanganyika, *Palaeogeography, Palaeoclimatology, Palaeoecology* 61, 169–97. [https://doi.org/10.1016/0031-0182\(87\)90048-4](https://doi.org/10.1016/0031-0182(87)90048-4), 1987.
- Haberyan, K. A.: Fossil diatoms and the paleolimnology of Lake Rukwa, Tanzania, *Freshwater Biology*, 17, 429–436, <https://doi.org/10.1111/j.1365-2427.1987.tb01064.x>, 1987.
- 365 Haberle, S.G.: A 23,000-yr pollen record from Lake Euramoo, Wet Tropics of NE Queensland, Australia. *Quaternary Research*. Vol. 64, pp. 343–3, 2005.
- Han S.T.: Change sequences of Holocene environments in the Balikun Lake, Xinjiang. In: Department of Geography (ed.) *Late Quaternary environmental changes in arid inlands of northern Xinjiang*. Unpublished Report, Department of Geography, Xinjiang University. p24–44, 1991.
- 370 Han S.T., Dong G.R.: Preliminary study of Holocene environmental evolution in the Balikun Lake. *Marine Geology and Quaternary Geology* 10:91–98. (in Chinese), 1990.
- Han S.T., Yuan YJ.: Changes in climatic sequence during the last 35,000 yr BP in Balikun Lake, Xinjiang Province. *Acta Geographica Sinica* 45:350–362. (in Chinese), 1990.
- 375 Harvey, T.J.: The Paleolimnology of Lake Mobutu Sese Seko, Uganda-Zaire: the Last 28,000 Years, Ph.D. thesis, Duke University, Durham, North Carolina, 113pp, 1976.

- Haworth, E. Y.: Diatom succession in a core from Pickerel Lake, northeastern South Dakota, Geological Society of America Bulletin, 83(1), 157, [https://doi.org/10.1130/0016-7606\(1972\)83\[157:dsiacf\]2.0.co;2](https://doi.org/10.1130/0016-7606(1972)83[157:dsiacf]2.0.co;2), 1972.
- Haynes, C. V., Mehringer, P. J., and Zaghoul E. S. A.: Pluvial lakes of north-western Sudan, The Geographical Journal, 145(3), 437, <https://doi.org/10.2307/633212>, 1979.
- Haynes, C.V.: Lacustrine chronology and geomorphology of Selima Oasis, northern Sudan. Abstracts with Programs, Geological Society of America, 95th Annual Meeting, October 1982. p.511, 1982.
- Haynes, C.V., Jr., J.C. Ritchie and C.H. Eyles,: Past Vegetation and Climate of the Mogollon Rim Area, Arizona. Ph.D. thesis, University of Arizona, Tucson, 166pp., 1983.
- 385 Heusser, C. J.: Quaternary pollen record from Laguna de Tagua Tagua, Chile, Science 219(4591), 1429–32, <https://doi.org/10.1126/science.219.4591.1429>, 1983.
- Heusser, C.J.: Personal communication., 1983.
- Higgs, E.S., Vita-Finzi,C.: The climate, environment and industries of Stone Age Greece: partII, Proceedings of the Prehistoric Society, 32, 1-29, 1966.
- 390 Hjelmroos, M.: The Post-Glacial development of Lake Wielke Gacno, NW-Poland. The human impact on the natural vegetation-recorded by means of pollen analysis and 14C dating, Acta, Palaeobotanica, 21, 129-144, 1981.
- Hjelmroos,M.: The Holocene development of Lake Wielke Gacno, NW Poland, Acta Palaeobotanica, 22, 23-46, 1982.
- Hjelmroos-Ericsson, M.: Holocene development of Lake Wielke gacno area, northwestern Poland, Ph.d. Thesis, University of Lund, 1982.
- 395 Holliday, V. T.: Morphology of late Holocene soils at the Lubbock Lake archaeological site, Texas, Soil Science Society of America, 49(4), 938–46, <https://doi.org/10.2136/sssaj1985.03615995004900040030x>, 1985.
- Hu D.S. The lake evolution in the Kekexili Region. Arid Land Geography 18 (1): 60-67 (in Chinese), 1995.
- Huang Q., Cai B.Q., Yu J.Q.: Chorology of saline lakes-Radiocarbon dates and sedimentary cycles in saline lakes on the Qinghai-Xizang (Tibet) plateau. Chinese Science Bulletin 21: 990-994 (in Chinese), 1980.
- 400 Huang C.X., Zhang Q.S., Liu F.T.: A preliminary study of paleovegetation and paleoclimate in the later period of late Pleistocene in Bangongcuo Lake region of Xizang. Journal of Natural Researches 4(3): 247-253 (in Chinese), 1989.
- Huang B.R.: Quaternary ostracode analysis in Chaiwopu Basin. In: Shi YF, Wen QZ, Qu YG (eds) Changes in Quaternary climate-environments and geohydrological conditions in Chaiwopu Basin, Xinjiang. Ocean Press, Beijing, pp. 75-84 (in Chinese), 1990.
- 405 Huang Q., Chen K.Z.: Paleoclimate changes during the last 730,000 yr B.P. from Chaerhan Salt Lake in Chadamu Basin. Quaternary Sciences 3: 205-211, 1990.
- Hutchinson, G. E. and Cowgill, U. M.: Chemical examination of a core from Lake Zeribar, Iran, Science, 140(3562), 67–69, <https://doi.org/10.1126/science.140.3562.67>, 1963

- 410 Hutchinson, D. R., Ferrebee, W. M., Knebel, H. J., Wold, R. J., and Isachsen, Y. W.: The sedimentary framework of the southern basin of Lake George, New York, *Quaternary Research* 15(1), 44–61, [https://doi.org/10.1016/0033-5894\(81\)90113-7](https://doi.org/10.1016/0033-5894(81)90113-7), 1981.
- Huntsman-Mapila, P., Ringrose, S., Mackay, A. W., Downey, W. S., Modisi, M., Coetzee, S. H., Tiercelin, J.-J., Kampunzu, A. B., and Vanderpost, C.: Use of the geochemical and biological sedimentary record in establishing palaeoenvironments and climate change in the Lake Ngami basin, NW Botswana, *Quaternary International*, 148, 51–64, 415 <https://doi.org/10.1016/j.quaint.2005.11.029>, 2006.
- Jacobs, B.F.: Past Vegetation and Climate of the Mogollon Rim Area, Arizona, Ph.D. thesis, University of Arizona, Tucson, 166pp, 1983.
- Junginger, A., Roller, S., Olaka, L. A., and Trauth, M. H.: The effects of solar irradiation changes on the migration of the Congo Air Boundary and water levels of paleo-Lake Suguta, Northern Kenya Rift, during the African Humid Period 420 (15–5ka BP), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 396, 1–16, <https://doi.org/10.1016/j.palaeo.2013.12.007>, 2014.
- Kelts, K. and Shahrabi, M.: Holocene sedimentology of hypersaline Lake Urmia, northwestern Iran, *Palaeogeography, Palaeoclimatology, Palaeoecology* 54(1-4), 105–30, [https://doi.org/10.1016/0031-0182\(86\)90120-3](https://doi.org/10.1016/0031-0182(86)90120-3), 1986.
- Kendall, R. L.: An ecological history of the Lake Victoria basin, *Ecological Monographs*, 39, 121–176, 425 <https://doi.org/10.2307/1950740>, 1969.
- Kershaw, A. P.: “A pollen diagram from lake euramoo, north-east Queensland, Australia, *New Phytologist*, 69(3), 785–805, <https://doi.org/10.1111/j.1469-8137.1970.tb02463.x>, 1970.
- Khomutova, V.I.: Pollen and spores in the bottom deposits of Vozheand Lacha Lakes, In: *Gidrobiologiyaozer Vozhe iLacha (Hidrobiology of Vozheand Lachalakes)*, Leningrad, Nauka, pp.236-246, 1978.
- 430 Khotinskii, N.A.: *Golotsen Severnoi Evrazii (Holocene of the Northern Eurasia)*, Moscow, Nauka, 200p, 1977.
- Korde, N.V., Ulomskii, S.N.: Short characteristic of hidrological regime and microorganisms of Galichskoe Lake Trudy Laboratorii sapropelevykh otlozhenii (Inst. Lesa Akad.Nauk SSSR), no.7, pp.68-88, 1959.
- Kozlovskaya, L.S.: To the question about genesis of the lakes in the central region of the European part of the USSR, In: *Trudy Laboratoriisapropelevykh otlozhenii (Inst. Lesa Akad. Nauk SSSR)*, no.7, pp.43-57, 1959.
- 435 Kershaw, A. P.: A long continuous pollen sequence from north-eastern Australia, *Nature*, 251, 222–223, <https://doi.org/10.1038/251222a0>, 1974.
- Kershaw, A.P.: Stratigraphy and pollen analysis of bromfield swamp, north eastern Queensland, Australia. *New Phytologist*, 75, 173-191, <https://doi.org/10.1111/j.1469-8137.1975.tb01385.x>, 1975.
- Kropelin, S.: Palaeoclimatic evidence from early to mid-Holocene playas in the Gilf Kebir (South-west Egypt), 440 *Palaeoecology of Africa*, 18, 189-208, 1987.
- Lamb, H. F., Eicher, U., and Switsur, V. R.: An 18,000-year record of vegetation, lake-level and climatic change from Tigalmamine, Middle Atlas, Morocco, *Journal of Biogeography* 16(1), 65, <https://doi.org/10.2307/2845311>, 1989.

- Lamb, H. F., Bates, C. R., Coombes, P. V., Marshall, M. H., Umer, M., Davies, S. J., and Dejen, E.: Late Pleistocene desiccation of Lake Tana, source of the Blue Nile, *Quaternary Science Reviews*, 26, 287–299, 445 <https://doi.org/10.1016/j.quascirev.2006.11.020>, 2007.
- Li S.K., Zhang Q.S. Lake level fluctuations during last 170,000 years in the middle regions of Kunlun Mts. *Geographical Research* 10(2): 27-37 (in Chinese), 1991.
- Li B.X., Cai B.Q., Liang Q.S. Sedimentary characteristics of Aiding Lake, Tulufan Basin. *Chinese Science Bulletin* 1998(8): 10-13 (in Chinese), 1989.
- 450 Li H.M., Li H.A.T., Yu C.L.: Quaternary magnetic stratigraphy in Chaiwopu Basin. In: Shi YF, Wen QZ, Qu YG (eds) *Changes in Quaternary climate- environments and geohydrological conditions in Chaiwopu Basin, Xinjiang*. Ocean Press, Beijing, pp. 25-37 (in Chinese), 1990.
- Li Y.F., Zhang Q.S., Li B.Y., Liu F.T.: The ostracode of late Late-Pleistocene in Bangongcuo area of Tibetan and its palaeogeographical significance. *Acta Micropalaeontologica Sinica* 8(1): 57-64 (in Chinese), 1991.
- 455 Li B.Y., Li Y.F., Kong Z.C., Shan S.F., Zhu L.P., Li S.K.: Environmental changes during last 20ka in the Gounongcuo Region, Kekexili, Tibet. *Chinese Science Bulletin*, 39 (18): 1727-1728 (in Chinese), 1994.
- Li Y.F., Zhang Q.S., Li B.Y.: Ostracode and its environmental evolution during late Pleistocene in the west Tibet. In: Committee of Tibet Research of China (ed) *Collections paper for meeting of Tibetan Plateau and global changes*. Meteorology Press, Beijing, 52-69 (in Chinese), 1995.
- 460 Li Y.F.: Lake records for climate and environments during last 20ka: Ostracode fossil and paleoenvironments. In: Li BY (ed), *Natural environments in the Kekexili Regions, Qinghai Province*. Science Press, Beijing, pp. 206-211 (in Chinese), 1996.
- Lin RF, Wei KQ, Cheng ZY, Wang ZX, Gasse F, Fontes JC, Gibert E, Tuchoka P, A palaeoclimatic study on lacustrine cores from Manas Lake, Xinjiang, western China. *Geochimica* 25(1): 63-71 (in Chinese), 1996.
- 465 Livingstone, D.A.: Sedimentation and the history of water level change in Lake Tanganyika. *Limnol. Oceanogr.* 10, 607–610, 1965.
- Long, A. and Muller, A. B.: Arizona Radiocarbon Dates X, *Radiocarbon* 23(2), 191–217 <https://doi.org/10.1017/s0033822200037590>, 1981.
- Manny, B.A., Wetzel R. G., and Bailey, R. E.: Paleolimnological sedimentation of organic carbon, nitrogen, phosphorus, fossil 470 pigments, pollen, and diatoms in a hypereutrophic hardwater lake: A case history of eutrophication. *Polskie Archiwum, Hydrobiologii*, 25, 243-267, 1978.
- MacDonald, G. M.: Late Quaternary palaeoenvironments of the Morley Flats and Kananaskis Valley of southwest Alberta, *Canadian Journal of Earth Sciences*, 19, 23-35, 1982.
- Macumber, P.G.: The geology and paleohydrology of the Row Swamp, *Journal of the Geological Society of Australia*, 25, 475 307-320, 1977.

- Mannion, A.M.: Late Quaternary deposits from Linton Loch, southeast Scotland. II. The diatom assemblage of a marl core, *Journal of Biogeography* 5, 301-318, 1978.
- Mannion, A.M.: Chemical analyses of a marl core from S.E. Scotland, *Chemosphere*, 10, 495-504, 1981.
- Mannion, A.M.: Palynological evidence for lake-level changes during the Flandrian in Scotland, 1982.
- 480 Marshall, M. H., Lamb, H. F., Davies, S. J., Leng, M. J., Kubsza, Z., Umer, M., and Bryant, C.: Climatic change in northern Ethiopia during the past 17,000 years: A diatom and stable isotope record from Lake Ashenge, *Palaeogeography, Palaeoclimatology, Palaeoecology*, 279, 114–127, <https://doi.org/10.1016/j.palaeo.2009.05.003>, 2009.
- Marshall, M. H., Lamb, H. F., Huws, D., Davies, S. J., Bates, R., Bloemendal, J., Boyle, J., Leng, M. J., Umer, M., and Bryant, C.: Late Pleistocene and Holocene drought events at Lake Tana, the source of the Blue Nile, *Global and Planetary Change*, 78, 147–161, <https://doi.org/10.1016/j.gloplacha.2011.06.004>, 2011.
- 485 McGlone, M. S.: Forest destruction by early Polynesians, Lake Poukawa, Hawkes Bay, New Zealand. *Journal of the Royal Society of New Zealand* 8, 275-281, 1978.
- Melief, A. B. M., and van de Wijngaard, M. A.: The palynology of peat and lake deposits in the cordillera central: Laguna Verde de la Sietecabezas. in: "late quaternary paleoecology of the Parque Nacional Natural Los Nevados (Cordill), 1983.
- 490 Melief, A. B. M.: Late Quaternary paleoecology of the Parque Nacional Natural los Nevados (Cordillera Central), and Sumapaz (Cordillera Oriental) areas, Colombia in: the Quaternary of Colombia., volume 12, (T. van der Hammen, Ed.), 162pp, 1985.
- Melief, A.B.M. and M.A. van de Wijngaard: The palynology of peat and lake deposits in the Cordillera Central: Laguna verde de la SieteCabezas. In: "Late Quaternary paleoecology of the Parque Nacional Natural los Nevados (Cordill , 1982.
- 495 Menéndez Amor, J., Florschütz, F.: Contribución al conocimiento de la historia de la vegetación en España durante el Cuaternario, *Estudios Geológicos*, XVII, 83-99, 1961.
- Menéndez Amor, J., Florschütz, F.: Un aspect de la vegetation en Espagne meridional edurantla dernière glaciation et l'Holocène, *Geologieen Mijnbouw*, 41, 131-134, 1962.
- 500 Menéndez Amor, J., Florschütz, F.: Sur les éléments steppiques dans la végétation quaternaire de l'Espagne, *Boletín de la Real Sociedad Española de Historia Natural (Sección Geológica)*, 61, 121-133, 1963.
- Metcalf, S. E., Street-Perrott, F. A., Perrott, R. A., and Harkness, D. D.: Palaeolimnology of the Upper Lerma Basin, Central Mexico: a record of climatic change and anthropogenic disturbance since 11600 yr BP, *Journal of Paleolimnology*, 5(3), <https://doi.org/10.1007/bf00200345>, 1991.
- 505 Moernaut, J., Verschuren, D., Charlet, F., Kristen, I., Fagot, M., and De Batist, M.: The seismic-stratigraphic record of lake-level fluctuations in Lake Challa: Hydrological stability and change in equatorial East Africa over the last 140 kyr, *Earth and Planetary Science Letters*, 290, 214–223, <https://doi.org/10.1016/j.epsl.2009.12.023>, 2010.

- Newby, P. E., Killoran, P., Waldorf, M. R., Shuman, B. N., Webb, R. S., and Webb, T.: 14,000 years of sediment, vegetation, and water-level changes at the Makepeace Cedar Swamp, southeastern Massachusetts, *Quaternary Research*, 53(3), 352–68, <https://doi.org/10.1006/qres.1999.2120>, 2000.
- 510 Oeggl, K.: Beiträge zur Vegetations geschichte Tirols VII: Das Hochmoor Schwemm, *Berichte des naturwissenschaftlich-medizinischen Vereins Innsbruck*, 75, 37-60, 1988.
- Oeggl, K., Eicher, U.: Pollen- and oxygen-isotope analyses of late- and postglacial sediments from the Schwemm raised bog near Walchsee in Tirol, Austria, *Boreas*, 18, 245-253, 1989.
- 515 Pachur H.J., Wunnemann B., Zhang H.C.: Lake evolution in the Tengger Desert, Northwestern China, during the last 40000 years. *Quaternary Research* 44:171- 180, 1995.
- Payne, B. R.: Water balance of Lake Chala and its relation to groundwater from tritium and stable isotope data, *Journal of Hydrology*, 11, 47–58, [https://doi.org/10.1016/0022-1694\(70\)90114-9](https://doi.org/10.1016/0022-1694(70)90114-9), 1970.
- Peglar, S., Fritz, S.C., Alapieti, T., Saarnisto, M., Birks, H.J.B.: The composition and formation of laminated sediments in 520 Diss Mere, Norfolk, England, *Boreas*, 13, 13-28, 1984.
- Peglar, S., Fritz, S.C., Birks, H.J.: *Vegetation and land-use history at Diss, Norfolk, U.K.*, 1989.
- Placzek, C., Quade, J., and Patchett, P. J.: Geochronology and stratigraphy of late Pleistocene lake cycles on the southern Bolivian Altiplano: Implications for causes of tropical climate change, *Geological Society of America Bulletin*, 118, 515–532, <https://doi.org/10.1130/b25770.1>, 2006.
- 525 Pollard, P. H.: Water and politics: paleoecology and the centralization of the Tarascan State, Abstract, 44th International Congress of Americanists, Manchester, Pp.121-122, 1982.
- Pribyl, P. and Shuman, B. N.: A computational approach to Quaternary lake-level reconstruction applied in the central Rocky Mountains, Wyoming, USA, *Quaternary Research*, 82, 249–259, <https://doi.org/10.1016/j.yqres.2014.01.012>, 2014.
- 530 Pribyl, P. and Shuman, B. N.: A computational approach to quaternary lake-level reconstruction applied in the Central Rocky Mountains, Wyoming, USA, *Quaternary Research*, 82(1), 249–59, <https://doi.org/10.1016/j.yqres.2014.01.012>, 2017.
- Qi W., Zheng J.P.: Sedimentology of core ZK91-2 from Zabuye Lake in Tibet and the climate and environmental evolution. *Journal of Lake Sciences* 7:133-140 (in Chinese), 1995.
- 535 Renaut, R.W., Owen, R.B.: Lake Baringo, Kenya Rift Valley, and its Pleistocene Precursors. In: Gierlowski-Kordesch, E.H., Kelts, K.R. (Eds.), *Lake Basins through Space and Time: AAPG Studies in Geology*, 2000.
- Rhodes T.E., Gasse F., Lin R.F., Fontes J-C., Wei K., Berrand P., Gibert E., Melieres F., Tucholka P., Wang Z., Cheng Z.Y.: A Late Pleistocene-Holocene lacustrine record from Lake Manas, Zunggar (northern Xinjiang, western China). *Palaeogeography, Palaeoclimatology, Palaeoecology* 120: 105-121, 1996.
- 540 Roberts N.: *Late Quaternary geomorphology and palaeoecology of the Konya Basin, Turkey*, PhD thesis, London University, UK, 1980.

- Richardson, J. L., Richardson, A. E.: History of an African Rift Lake and Its Climatic Implications. *Ecol. Monogr.* 42, 499–534, 1972.
- Richardson, J. L. and Dussinger, R. A.: Paleolimnology of mid-elevation lakes in the Kenya Rift Valley, *Hydrobiologia*, 143, 167–174, <https://doi.org/10.1007/bf00026659>, 1986.
- Scholz, C.A., Rosendahl, B.R.: Low lake stands in Lake Malawi and Tanganyika East Africa, delineated with multifold seismic data. *Science*, 240, 1645–1648, 1988.
- Schmieder, J., Fritz, S. C., Grimm, E. C., Jacobs, K. C., Brown, K. J., Swinehart, J. B., and Porter, S. C.: Holocene variability in hydrology, vegetation, fire, and eolian activity in the Nebraska Sand Hills, USA, *The Holocene*, 23(4), 515–27, <https://doi.org/10.1177/0959683612463100>, 2012.
- Schmieder, J., Fritz, S. C., Swinehart, J. B., Shinneman, A. L. C., Wolfe, A. P., Miller, G., Daniels, N., Jacobs, K. C., and Grimm, E. C.: A regional-scale climate reconstruction of the last 4000 years from lakes in the Nebraska Sand Hills, USA, *Quaternary Science Reviews*, 30(13-14), 1797–1812, <https://doi.org/10.1016/j.quascirev.2011.04.011>, 2011.
- Schreve-Brinkman, E. J.: A palynological study of the upper quaternary sequence in the El Abra corridor and rock shelters (Colombia), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 25(1-2), 1-109, [https://doi.org/10.1016/0031-0182\(78\)90074-3](https://doi.org/10.1016/0031-0182(78)90074-3), 1978.
- Schweger, C, Habgood, T., and Hickman M.: Late Glacial-Holocene climatic changes of Alberta: the record from lake sediment studies. in: "the impacts of climatic fluctuations on Alberta's resources and environment", Pp 47-60, 1983.
- Servant, M. and Fontes, J. C.: Les lacs quaternaires des hauts plateaux des Andes boliviennes, *Premieres interpretations paleoclimatiques, Cahiers d'orstom serie geologique*, 10, 9-23, 1978.
- Shan S.F., Kong Z.C., Du N.Q.: Lake records for climate and environments during last 20ka: Paleovegetation and changes in environments. In: Li BY (ed) *Physical environments in the Kekexili Regions, Qinghai Province*. Science Press, Beijing, pp. 197-206 (in Chinese), 1996.
- Shanahan, T. M., Overpeck, J. T., Wheeler, C. W., Beck, J. W., Pigati, J. S., Talbot, M. R., Scholz, C. A., Peck, J., and King, J. W.: Paleoclimatic variations in West Africa from a record of late Pleistocene and Holocene lake level stands of Lake Bosumtwi, Ghana, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 242, 287–302, <https://doi.org/10.1016/j.palaeo.2006.06.007>, 2006.
- Shaw, P.A.: Late quaternary landforms and environmental change in northwest Botswana: The evidence of Lake Ngami and the Mababe Depression. *Trans. Inst. Br. Geogr.*, 1985.
- Shaw, P. A. and Cooke, H. J.: Geomorphic evidence for the late Quaternary palaeoclimates of the middle Kalahari of northern Botswana, *CATENA*, 13, 349–359, [https://doi.org/10.1016/0341-8162\(86\)90009-3](https://doi.org/10.1016/0341-8162(86)90009-3), 1986.
- Shaw, P., Thomas, D.S.G.: Lake Caprivi: a late Quaternary link between the Zambezi and middle Kalahari drainage systems. *Zeitschrift fur Geomorphologie* 32, 329-337, 1988.

- Shaw, P. A., Bateman, M. D., Thomas, D. S. G., and Davies, F.: Holocene fluctuations of Lake Ngami, Middle Kalahari: chronology and responses to climatic change, *Quaternary International*, 111, 23–35, [https://doi.org/10.1016/s1040-6182\(03\)00012-0](https://doi.org/10.1016/s1040-6182(03)00012-0), 2003.
- Shulmeister, J., Kemp, J., Fitzsimmons, K.E., Gontz, A.: Constant wind regimes during the Last Glacial Maximum and early Holocene: evidence from Little Llangothlin Lagoon, New England Tablelands, eastern Australia. *Climate of the Past*. Vol. 12, pp. 1435-1444, 2016.
- Shuman, B., Newby, P., Huang, Y. S., and Webb. T.: Evidence for the close climatic control of New England vegetation history, *Ecology* 85(5), 1297–1310, <https://doi.org/10.1890/02-0286>, 2004.
- Shuman, B., Henderson, A. K., Colman, S. M., Stone, J. R., Fritz, S. C., Stevens, L. R., Power, M. J., and Whitlock C.: Holocene Lake-Level Trends in the Rocky Mountains, U.S.A., *Quaternary Science Reviews*, 28(19-20), 1861–79, <https://doi.org/10.1016/j.quascirev.2009.03.003>, 2009.
- Shuman, B. N., Carter, G. E., Hougardy D. D., Powers, K., and Shinker, J. J.: A north-south moisture dipole at multi-century scales in the central and southern Rocky Mountains, U.S.A., during the Late Holocene, *Rocky Mountain Geology*, 49(1): 33–49, <https://doi.org/10.2113/gsrocky.49.1.33>, 2014.
- Shuman, B. N., Pribyl, P., and Buettner J.: Hydrologic changes in Colorado during the Mid-Holocene and Younger Dryas, *Quaternary Research* 84(2), 187–99, <https://doi.org/10.1016/j.yqres.2015.07.004>, 2015.
- Shuman, B. N. and Serravezza. M.: Patterns of hydroclimatic change in the Rocky Mountains and surrounding regions since the Last Glacial Maximum, *Quaternary Science Reviews* 173, 58–77, <https://doi.org/10.1016/j.quascirev.2017.08.012>, 2017.
- Sims, R.E.: The anthropogenic factor in East Anglia vegetational history: an approach using APF techniques In: Birks, H.J.B. and West, R.G. (eds), *Quaternary Plant Ecology*, Blackwell Science, 1973.
- Singh, G., Joshi, R. D., Singh, A. B.: Stratigraphic and radiocarbon evidence for the age and development of three salt lake deposits in Rajasthan, India, *Quaternary Research*, 2(4), 496–505, [https://doi.org/10.1016/0033-5894\(72\)90088-9](https://doi.org/10.1016/0033-5894(72)90088-9), 1972.
- Specht, T., Rosendahl, B.: Architecture of the Lake Malawi Rift, East Africa. *J. African Earth Sci.* 8, 355–382, 1989.
- Stager, J.C. The diatom record of Lake Victoria (East Africa): The last 17,000 years. In: Mann (ed.) *Proceedings of the Seventh International Diatom Symposium*, Philadelphia, Strauss & Cramer, pp. 455-476, 1984.
- Stager, J. C.: Environmental changes at Lake Cheshi, Zambia since 40,000 years B.P., *Quaternary Research*, 29(1), 54-65, [https://doi.org/10.1016/0033-5894\(88\)90071-3](https://doi.org/10.1016/0033-5894(88)90071-3), 1988.
- Stevenson, R. L. and Kutzbach J. E.: University of Wisconsin radiocarbon dates XXIII, *Radiocarbon*, 28(3), 1206–23, <https://doi.org/10.1017/s003382220002021x>, 1986.
- Stoffers, P. and Hecky, R. E.: Late Pleistocene–Holocene Evolution of the Kivu–Tanganyika Basin, Modern and Ancient Lake Sediments, 43–55, <https://doi.org/10.1002/9781444303698.ch3>, 1978.
- Stuiver, M., Devey, E. S., and Gjalenski, L. J.: Yale Natural Radiocarbon Measurements V, *American Journal of Science. Radiocarbon Supplement*, 2, 49–61, <https://doi.org/10.1017/s1061592x00020597>, 1960.

- Sun X.J., Du N.Q., Wong C.Y., Lin R.F., Wei K.Q.: Paleovegetation and paleoenvironment of Manasi Lake, Xinjiang, N.W. China during the last 14000 years. *Quaternary Science* 3: 239-248 (in Chinese), 1994.
- 610 Talbot, M. R. and Livingstone, D. A.: Hydrogen index and carbon isotopes of lacustrine organic matter as lake level indicators, *Palaeogeography, Palaeoclimatology, Palaeoecology*, 70, 121–137, [https://doi.org/10.1016/0031-0182\(89\)90084-9](https://doi.org/10.1016/0031-0182(89)90084-9), 1989.
- Thompson, R. S.: Late Pleistocene and Holocene environments in the Great Basin, Doctoral Dissertation, University of Arizona, 1984.
- 615 Tibby, J. and Haberle, S. G.: A late glacial to present diatom record from Lake Euramoo, wet tropics of Queensland, Australia, *Palaeogeography, Palaeoclimatology, Palaeoecology*, 251, 46–56, <https://doi.org/10.1016/j.palaeo.2007.02.017>, 2007.
- Tiercelin, J.J., Vincens, A. (eds.): Le demi-graben de Baringo–Bogoria, Rift Gregory, Kenya: 30,000 ans d’histoire hydrologique et sedimentaire. *Bull. Centres Rech. Explor.Prod. Elf-Aquitaine*, 11, 249–540, 1987.
- 620 Truckle, P. H.: Geology and late Cainozoic lake sediments of the Suguta Trough, Kenya, *Nature*, 263, 380–383, <https://doi.org/10.1038/263380a0>, 1976.
- Tyuremnov, S.N.: The age of sapropel deposits in the mid-European part of the USSR In: *Trudy Laboratorii sapropelevykh otlozhenii* (Inst. Lesa Akad Nauk SSSR), no.6, pp.40-54, 1956.
- Van Geel, B. and Van der Hammen T.: Upper Quaternary vegetation and climatic sequence of the Fuquene area (Eastern Cordillera, Colombia), *Palaeogeography, Palaeoclimatology, Palaeoecology*, 14, 9-92, 1973.
- 625 Van Zant, K.: Late glacial and post-glacial pollen and plant macro-fossils from Lake West Okoboji, northwestern Iowa, *Quaternary Research*, 12, 358-380, 1979.
- Vareschi, E.: The ecology of Lake Nakuru (Kenya), *Oecologia*, 55, 81–101, <https://doi.org/10.1007/bf00386722>, 1982.
- Verschuren, D., Sinninghe Damsté, J. S., Moernaut, J., Kristen, I., Blaauw, M., Fagot, M., and Haug, G. H.: Half-precessional dynamics of monsoon rainfall near the East African Equator, *Nature*, 462, 637–641, <https://doi.org/10.1038/nature08520>, 2009.
- 630 Vogel, J.C., Waterbolk, H.T: Groningen radiocarbon dates X, *Radiocarbon*, 14, 6-110, 1972.
- Waddington, J, C. B.: A stratigraphic record of the pollen influx to a lake in the big woods of Minnesota in *Geological Society of America Special Papers*, Geological Society of America, 263–82, <https://doi.org/10.1130/spe123-p263>, 1969.
- 635 Walker, R.: Diatom and pollen studies of a sediment profile from Melynlyn, a mountain tarn in Snowdonia, North Wales, *New Phytologist*, 81, 791-804, 1978.
- Washbourn-Kamau, C.K.: Late Quaternary Lakes in the Nakuru-Elmenteita Basin , Kenya 137, 522–535, 1971.
- Washbourn-Kamau, C. K.: Late Quaternary Shorelines of Lake Naivasha, Kenya, *Azania: Archaeological Research in Africa*, 10, 77–92, <https://doi.org/10.1080/00672707509511614>, 1975.
- 640 Waters, M. R.: “Late quaternary lacustrine history and paleoclimatic significance of pluvial Lake Cochise, southeastern Arizona, *Quaternary Research*, 32(1), 1–11, [https://doi.org/10.1016/0033-5894\(89\)90027-6](https://doi.org/10.1016/0033-5894(89)90027-6), 1989.

- Watts, W. A.: Late-Quaternary vegetation history at white pond on the inner coastal plain of South Carolina, *Quaternary Research*, 13(2), 187–99, [https://doi.org/10.1016/0033-5894\(80\)90028-9](https://doi.org/10.1016/0033-5894(80)90028-9), 1980.
- 645 Wells, S. G., Brown W. J., Enzel, Y., Anderson, R. Y., and McFadden, L. D.: late quaternary geology and paleohydrology of pluvial lake Mojave, southern California, In *Paleoenvironments and Paleohydrology of the Mojave and Southern Great Basin Deserts*, Geological Society of America, <https://doi.org/10.1130/0-8137-2368-x.79>, 2003.
- Wendorf, F., and Schild. R.: *Prehistory of the Eastern Sahara*, Academic Press, New York, 404pp., 1980.
- White, J. M. and Mathews, R. W.: Holocene vegetation and climatic change in the Peace River District, Canada, *Canadian Journal of Earth Sciences*, 19 (3), 555–70, <https://doi.org/10.1139/e82-045>, 1982.
- 650 Wilkins, D., De Deckker, P., Fifield, L.K., Gouramanis, C., Olley, J.: Comparative optical and radiocarbon dating of laminated Holocene sediments in two maar lakes: Lake Keilambete and Lake Gnotuk, south-western Victoria, Australia, *Quaternary Geochronology*, 9, 3-15, 2012.
- Williams, R.E.G., Johnson, A.S.: Birmingham University Radiocarbon Dates X. *Radiocarbon* 18, 249–267, 1976.
- Williamson, D., Jackson, M. J., Banerjee, S. K., Marvin, J., Merdaci, O., Thouveny, N., Decobert, M., Gibert-Massault, E.,
655 Massault, M., Mazaudier, D., and Taieb, M.: Magnetic signatures of hydrological change in a tropical maar-lake (Lake Massoko, Tanzania): Preliminary results, *Physics and Chemistry of the Earth, Part A: Solid Earth and Geodesy*, 24, 799–803, [https://doi.org/10.1016/s1464-1895\(99\)00117-9](https://doi.org/10.1016/s1464-1895(99)00117-9), 1999.
- Winkler, M. G: Late-Glacial and Holocene environmental history of South-Central Wisconsin: a study of upland and wetland ecosystems, Ph.d. Thesis, University of Wisconsin-Madison, Madison, 1985.
- 660 Woodward, C., Shulmeister, J., Bell, D., Haworth, R., Jacobsen, G., Zawadzki, A.: A Holocene record of climate and hydrological changes from Little Llangothlin Lagoon, south eastern Australia. *The Holocene*. Vol. 24, no. 12, 2014.
- Wu Y.S.: The spore-pollen assemblage and its significance of pit F4 from Lop Nur area in Xinjiang. *Arid Land Geography* 17(1): 24-28 (in Chinese), 1994.
- Xu, Hai, Goldsmith Y., Lan J., Tan, L. C., Wang, X. L., Zhou, X. Y., Cheng, J., Lang, Y. C., and Liu, C. Q.: Juxtaposition of
665 western pacific subtropical high on Asian summer monsoon shapes subtropical East Asian precipitation, *Geophysical Research Letters* 47(3). <https://doi.org/10.1029/2019gl084705>, 2020.
- Xu C. (ed): *Clay Mineral Research of Chinese Saline Lake*. Science Press, Beijing, 1-280 (in Chinese), 1993.
- Yan F.H., Ye Y.Y., Mai X.S.: Spore-pollen assemblage in the Luo 4 drilling of Lop lake in Uygur Autonomus Region of Xinjiang and its significance. *Seismology and Geology* 5(4): 75-80 (in Chinese), 1983.
- 670 Yakushko, O.F., Rachevskii, A.N., Zhukhovitskaya, A.L., Elovicheva, Ya.K., Bogdel', I.I., Vlasov, B.P.: History of the Byelorussian lakes. In: *Istoriya ozer Vostochno-Evropetskoi ravniny (Lake history of East- European Plain)*, St. Petersburg, Nauka, pp.144-167, 1992.
- Yakushko, O.F., Zhukhovitsakaya, A.L., Elovicheva, Ya.,K., Vlasov, B.P., Kurzo,B.V., Koval'ukh, N.N.: The Poles'e lacustrine zone of the East-European Plain In: *Istoriya ozer Vostochno-Evropetskoi ravniny (Lake history of East-
675 European Plain)*, St. Petersburg, Nauka, pp.183-194, 1992.

- Yakushko, O.F.: Palaeolimnological changes on the Byelorussian territory during the late-glacial and Holocene In:
Palaeohydrology of the temperate zone II, Lakes, Raukas, A. and Saarse, L.(Eds.), Tallinn, Valgus, pp.185- 200, 1987.
- 680 Yakushko O.F., Makhnach, N.A.: Principal stages of the Late Glacial and Holocene in the Byelorussi In:
Problemy paleogeografi i antropogena Belorussii (Problems of Palaeogeography of Byelorussian Antropogene), Minsk,
Nauka i Tekhnika, pp.76-94, 1973
- Young, J. A. T. and Renaut, R. W.: A radiocarbon date from Lake Bogoria, Kenya Rift Valley, *Nature*, 278(5701), 243–45,
<https://doi.org/10.1038/278243a0>, 1979.
- Yu, Z. and J. H. McAndrews: Holocene water levels at Rice Lake, Ontario, Canada: sediment, pollen and plant-macrofossil
evidence, *The Holocene*, 4(2), <https://doi.org/10.1177/095968369400400204>, 1994.
- 685 Zernitskaya, V.P.: The sedimentation features and spore-pollen assemblages of Vysoko-Makhnovichskii peat-section In:
Sovremennyye rel'efoobrazuyushchie protsessy (Recent geomorphologic processes), Minsk, Nauka i Tekhnika, pp.49-54,
1986.
- Zhang H.C., Wunnemann B.: Preliminary study on the chronology of lacustrine deposits and determination of high palaeo-
lake level in Tengger Desert since Late Pleistocene. *Journal of Lanzhou University (Natural Sciences)* 33(2): 87- 91 (in
690 Chinese), 1995.
- Zheng M.P., Xiang J., Wei X.J., Zheng Y.: Saline Lakes on the Qinghai-Xizang (Tibet) Plateau, 192-270. Beijing Scientific
and Technical Publishing House, Beijing (in Chinese), 1989.
- Zheng M.P., Qi W., Wu Y.S., Liu J.Y.: Sedimentary environment and potash prospect of Lop salt lake since late Pleistocene.
Science Bulletin 23: 1810-1813 (in Chinese), 1991.
- 695 Zheng X.Y., Zhang M.G., Dong J.H., Gao Z.H., Xu C., Han Z.M., Zhang B.Z., Sun D.P., Wang K.J.: Salt Lakes in Inner
Mongolia. Science Press, Beijing, pp. 1-296 (in Chinese), 1992.
- Zheng M.P., Liu J.Y., Qi W.: Palaeoclimatic evolution of Qinghai-Tibet plateau since 40ka B.P.-Evidences from saline lake
deposits. In: Zheng MP (ed) Saline lake resources, environment and global changes, 6-19. Geological Publishing House,
Beijing, p 183 (in Chinese), 1996.

700

References (pollen proxies from Table S2).

- Ager, Thomas A., and John D. Sims. 1981. "Holocene Pollen and Sediment Record from the Tangle Lakes Area, Central Alaska." *Palynology* 5 (1): 85–98. <https://doi.org/10.1080/01916122.1981.9989220>.
- 705 Albert, Bruce M. 2011. "Acidification and Pine Expansion in East Texas According to Pollen Evidence from Dual Cores in Alluvium." *Castanea* 76 (2): 164–77. <https://doi.org/10.2179/09-034.1>.
- Allen, Judy R. M., Antony J. Long, Chris J. Ottley, D. Graham Pearson, and Brian Huntley. 2007. "Holocene Climate Variability in Northernmost Europe." *Quaternary Science Reviews* 26 (9-10): 1432–53. <https://doi.org/10.1016/j.quascirev.2007.02.009>.
- 710 Almquist-Jacobson, Heather, James E. Almendinger, and Sarah Hobbie. 1992. "Influence of Terrestrial Vegetation on Sediment-Forming Processes in Kettle Lakes of West-Central Minnesota." *Quaternary Research* 38 (1): 103–16. [https://doi.org/10.1016/0033-5894\(92\)90033-f](https://doi.org/10.1016/0033-5894(92)90033-f).
- Almquist-Jacobson, Heather, and David Sanger. 1995. "Holocene Climate and Vegetation in the Milford Drainage Basin, Maine, u.s.a., and Their Implications for Human History." *Vegetation History and Archaeobotany* 4 (4). <https://doi.org/10.1007/bf00235752>.
- 715 Alwin, B. C. 1982. "Vegetation History of the Sugar Hills Area, Itasca Co., Minnesota." Unknown.
- Anderson, P. M., and A. V. Lozhkin. 2002. "Late Quaternary Vegetation and Climate of Siberia and the Russian Far East (Palynological and Radiocarbon Database)." North East Science Center.
- Anderson, R Scott, Darrell S Kaufman, Edward Berg, Caleb Schiff, and Thomas Daigle. 2016. "Holocene Biogeography of *tsuga Mertensiana* and Other Conifers in the Kenai Mountains and Prince William Sound, South-Central Alaska." *The Holocene* 27 (4): 485–95. <https://doi.org/10.1177/0959683616670217>.
- 720 Anderson, R. S. 1987. "Late-Quaternary Environments of the Sierra Nevada, California." Doctoral Dissertation. University of Arizona.
- Anderson, R. Scott, Hanna R. Soltow, and Gonzalo Jim'enez-Moreno. 2021. "Postglacial Environmental Change of a High-Elevation Forest, Sangre de Cristo Mountains of South-Central Colorado." In *From Saline to Freshwater: The Diversity of Western Lakes in Space and Time*, 221–39. Geological Society of America. [https://doi.org/10.1130/2018.2536\(13\)](https://doi.org/10.1130/2018.2536(13)).
- 725 Andreev, Andrei A, William F Manley, 'Olafur Ing'olfsson, and Steve L Forman. 2001. "Environmental Changes on Yugorski Peninsula, Kara Sea, Russia, During the Last 12,800 Radiocarbon Years." *Global and Planetary Change* 31 (1-4): 255–64. [https://doi.org/10.1016/s0921-8181\(01\)00123-0](https://doi.org/10.1016/s0921-8181(01)00123-0).
- 730 Argant, J., and A. Argant. 2000. "Mise En Evidence de l'occupation Ancienne d'un Site d'altitude: Analyse Pollinique Du Lac Du Lauzon (Drome)." *Geologie Alpine*.
- Arslanov, Kh A, L A Savelieva, V A Klimanov, S B Chernov, F E Maksimov, T V Tertychnaya, and D A Subetto. 2001. "New Data on Chronology of Landscape-Paleoclimatic Stages in Northwestern Russia During the Late Glacial and Holocene." *Radiocarbon* 43 (2B): 581–94. <https://doi.org/10.1017/s0033822200041230>.

- 735 Arslanov, Kh A, L A Saveljeva, N A Gey, V A Klimanov, S B Chernov, G M Chernova, G F Kuzmin, T V Tertychnaya, D A Subetto, and V P Denisenkov. 1999. "Chronology of Vegetation and Paleoclimatic Stages of Northwestern Russia During the Late Glacial and Holocene." *Radiocarbon* 41 (1): 25–45. <https://doi.org/10.1017/s0033822200019317>.
- Artyushenko, A. T, R. Y. Arap, and L. G. Bezusko. 1982. "Istoriya Rastitelnosti Zapadnyih Oblastey Ukrainyi v Chetvertichnom Periode." [History of Vegetation of Western Areas of Ukraine in Quaternary Period]. *Naukova Dumka*.
- 740 Axford, Yarrow, and Darrell S. Kaufman. 2004. "Late Glacial and Holocene Glacier and Vegetation Fluctuations at Little Swift Lake, Southwestern Alaska, u.s.a." *Arctic, Antarctic, and Alpine Research* 36 (2): 139–46. [https://doi.org/10.1657/1523-0430\(2004\)036\[0139:lgahga\]2.0.co;2](https://doi.org/10.1657/1523-0430(2004)036[0139:lgahga]2.0.co;2).
- Baker, Richard G., Louis J. Maher, Craig A. Chumbley, and Kent L. Van Zant. 1992. "Patterns of Holocene Environmental Change in the Midwestern United States." *Quaternary Research* 37 (3): 379–89. [https://doi.org/10.1016/0033-5894\(92\)90074-s](https://doi.org/10.1016/0033-5894(92)90074-s).
- 745 Barbier, Delphine, and Lionel Visset. 2000. "Les Spécificités dun Tardiglaciaire Armoricaïn : étude Pollinique Synthétique à Partir de Trois Tourbières Du Nord-Est Mayennais (France) [Specificities of an Armoricaïn Late Glacial Period : Synthetic Pollen Analysis of Three Peat Bogs in Northeast Mayenne (France)]." *Quaternaire* 11 (2): 99–106. <https://doi.org/10.3406/quate.2000.1659>.
- 750 Barbier, D., and L. Visset. 1997. "Logne, a Peat Bog of European Ecological Interest in the Massif Armoricaïn, Western France: Bog Development, Vegetation and Land-Use History." *Vegetation History and Archaeobotany*.
- Barnosky, C. W. 1983. "Late-Quaternary Vegetational and Climatic History of Southwestern Washington." Doctoral Dissertation. University of Washington.
- Beer, Ruth, Franziska Kaiser, Kaspar Schmidt, Brigitta Ammann, Gabriele Carraro, Ennio Grisa, and Willy Tinner. 2008. "Vegetation History of the Walnut Forests in Kyrgyzstan (Central Asia): Natural or Anthropogenic Origin?" *Quaternary Science Reviews* 27 (5-6): 621–32. <https://doi.org/10.1016/j.quascirev.2007.11.012>.
- 755 Beffa, Giorgia, Tiziana Pedrotta, Daniele Colombaroli, Paul D. Henne, Jacqueline F. N. van Leeuwen, Pascal Süssstrunk, Petra Kaltenrieder, et al. 2015. "Vegetation and Fire History of Coastal North-Eastern Sardinia (Italy) Under Changing Holocene Climates and Land Use." *Vegetation History and Archaeobotany* 25 (3): 271–89. <https://doi.org/10.1007/s00334-015-0548-5>.
- 760 Beiswenger, J. M. 1987. "Late Quaternary Vegetational History of Grays Lake, Idaho and the Ice Slough, Wyoming." Doctoral Dissertation. University of Wyoming.
- Bennett, K. D. 1987. "Holocene History of Forest Trees in Southern Ontario." *Canadian Journal of Botany* 65 (9): 1792–1801. <https://doi.org/10.1139/b87-248>.
- 765 Bennett, K. D., S. Boreham, M. J. Sharp, and V. R. Switsur. 1992. "Holocene History of Environment, Vegetation and Human Settlement on Catta Ness, Lunnasting, Shetland." *The Journal of Ecology* 80 (2): 241. <https://doi.org/10.2307/2261010>.

- Bernhardt, Christopher E., and Debra A. Willard. 2009. "Response of the Everglades Ridge and Slough Landscape to Climate Variability and 20th-Century Water Management." *Ecological Applications* 19 (7): 1723–38.
770 <https://doi.org/10.1890/08-0779.1>.
- Bigelow, N. H. 1997. "Late-Quaternary Vegetation and Climate in Central Alaska." Doctoral Dissertation. University of Alaska.
- Birks, H. H. A. E. Bjune H. J. B. Birks, and V. A. Felde. 2012. "XXXVI International Bog ('Moor') Excursion of the Institute of Plant Sciences, University of Bern, Southern and South-Eastern Norway, 8-13 September 2012, Excursion
775 Guide." University of Bergen.
- Birks, H. J. B. 2006. "Estimating the Amount of Compositional Change in Late-Quaternary Pollen-Stratigraphical Data." *Vegetation History and Archaeobotany* 16 (2-3): 197–202. <https://doi.org/10.1007/s00334-006-0079-1>.
- Birks, H. J. B., and W. Williams. 1983. "Late-Quaternary Vegetational History of the Inner Hebrides." *Proceedings of the Royal Society of Edinburgh. Section B. Biological Sciences* 83: 269–92. <https://doi.org/10.1017/s0269727000013452>.
- 780 Bjune, A. E., H. Seppä, and H. J. B. Birks. 2008a. "Quantitative Summer-Temperature Reconstructions for the Last 2000 Years Based on Pollen-Stratigraphical Data from Northern Fennoscandia." *Journal of Paleolimnology* 41 (1): 43–56. <https://doi.org/10.1007/s10933-008-9254-y>.
- Bjune, Anne Elisabeth. 2005a. "Holocene Vegetation History and Tree-Line Changes on a Northsouth Transect Crossing Major Climate Gradients in Southern Norwayevidence from Pollen and Plant Macrofossils in Lake Sediments." *Review
785 of Palaeobotany and Palynology* 133 (3-4): 249–75. <https://doi.org/10.1016/j.revpalbo.2004.10.005>.
- Blake Jr, W. 1986. "Geological Survey of Canada Radiocarbon Dates XXV." Geological Survey of Canada Paper.
- Blyakharchuk, T. A. 1989a. "Istorija Rastitel'nosti Yugovostoka Zapadnoi Sibiri v Golotsene Po Dannym Botanicheskogo i Sporovo-Pyl'tsevogo Analiza Torfa [the Holocene History of Vegetation of South-Eastern West Siberia by Botanical and Pollen Analyses of Peat Deposits]." Doctoral Dissertation. Tomsk State University.
- 790 Blyakharchuk, T. A, H. E Wright, P. S Borodavko, W. O van der Knaap, and B Ammann. 2004. "Late Glacial and Holocene Vegetational Changes on the Ulagan High-Mountain Plateau, Altai Mountains, Southern Siberia." *Palaeogeography, Palaeoclimatology, Palaeoecology* 209 (1-4): 259–79. <https://doi.org/10.1016/j.palaeo.2004.02.011>.
- Bonnefille, R. 2000. "Pollen-Inferred Precipitation Time-Series from Equatorial Mountains, Africa, the Last 40 Kyr BP." *Global and Planetary Change* 26 (1-3): 25–50. [https://doi.org/10.1016/s0921-8181\(00\)00032-1](https://doi.org/10.1016/s0921-8181(00)00032-1).
- 795 Booth, Robert K., Stephen T. Jackson, and Catherine E. D. Gray. 2004. "Paleoecology and High-Resolution Paleohydrology of a Kettle Peatland in Upper Michigan." *Quaternary Research* 61 (1): 1–13. <https://doi.org/10.1016/j.yqres.2003.07.013>.
- Bottema, S. 1988. "A Reconstruction of the Halos Environment on the Basis of Palynological Information." In: *New Halos: A Hellenistic Town in Thessalia*.
- 800 Bozilova, Elissaveta, and Hans-Jorgen Beug. 1994. "Studies on the Vegetation History of Lake Varna Region, Northern Black Sea Coastal Area of Bulgaria." *Vegetation History and Archaeobotany* 3 (3). <https://doi.org/10.1007/bf00202022>.

- Bozilova, Elissaveta, and Spassimir Tonkov. 1985a. "Vegetation Development in the Mountainous Areas of Southwestern Bulgaria. I. Palynological Investigations and Reconstruction of Past Vegetation." *Ecologia Mediterranea* 11 (1): 33–37. <https://doi.org/10.3406/ecmed.1985.1068>.
- 805 Brown, K. J., R. J. Fitton, G. Schoups, G. B. Allen, K. A. Wahl, and R. J. Hebda. 2006. "Holocene Precipitation in the Coastal Temperate Rainforest Complex of Southern British Columbia, Canada." *Quaternary Science Reviews* 25 (21-22): 2762–79. <https://doi.org/10.1016/j.quascirev.2006.02.020>.
- Brown, KJ, NJR Hebda, G Schoups, N Conder, KAP Smith, and JA Trofymow. 2019. "Long-Term Climate, Vegetation and Fire Regime Change in a Managed Municipal Water Supply Area, British Columbia, Canada." *The Holocene* 29 (9): 810 1411–24. <https://doi.org/10.1177/0959683619854523>.
- Brubaker, Linda B. 1975. "Postglacial Forest Patterns Associated with till and Outwash in Northcentral Upper Michigan." *Quaternary Research* 5 (4): 499–527. [https://doi.org/10.1016/0033-5894\(75\)90013-7](https://doi.org/10.1016/0033-5894(75)90013-7).
- Brubaker, Linda B., Harriet L. Garfinkel, and Mary E. Edwards. 1983. "A Late Wisconsin and Holocene Vegetation History from the Central Brooks Range: Implications for Alaskan Palaeoecology." *Quaternary Research* 20 (2): 194–214. 815 [https://doi.org/10.1016/0033-5894\(83\)90077-7](https://doi.org/10.1016/0033-5894(83)90077-7).
- Calcote, Randy. 2003. "Mid-Holocene Climate and the Hemlock Decline: The Range Limit of *Tsuga Canadensis* in the Western Great Lakes Region, USA." *The Holocene* 13 (2): 215–24. <https://doi.org/10.1191/0959683603hl608rp>.
- Calder, W. J. 2016. "Interactions Among Climate Change, Wildfire, and Vegetation Shaping Landscapes for the Last 2000 Years." Doctoral Dissertation. University of Wyoming.
- 820 Camill, Philip, Charles E. Umbanhowar, Rebecca Teed, Christoph E. Geiss, Jessica Aldinger, Leah Dvorak, Jon Kenning, Jacob Limmer, and Kristina Walkup. 2003. "Late-Glacial and Holocene Climatic Effects on Fire and Vegetation Dynamics at the Prairie-Forest Ecotone in South-Central Minnesota." *Journal of Ecology* 91 (5): 822–36. <https://doi.org/10.1046/j.1365-2745.2003.00812.x>.
- Camuera, Jon, Mar. Ramos-Rom'an, Gonzalo Jim'enez-Moreno, Antonio Garc-Alix, Liisa Ilvonen, Leena Ruha, Graciela 825 Gil-Romera, Pen'elope Gonz'alez-Samp'eriz, and Heikki Seppä. 2022. "Past 200 Kyr Hydroclimate Variability in the Western Mediterranean and Its Connection to the African Humid Periods." *Scientific Reports* 12 (1). <https://doi.org/10.1038/s41598-022-12047-1>.
- Cao, Xianyong, Qinghai Xu, Zhichun Jing, Jigen Tang, Yuecong Li, and Fang Tian. 2010. "Holocene Climate Change and Human Impacts Implied from the Pollen Records in Anyang, Central China." *Quaternary International* 227 (1): 3–9. 830 <https://doi.org/10.1016/j.quaint.2010.03.019>.
- Carcaud, N, M Garcin, L Visset, J. Musch, and J. Burnouf. 2002. "Nouvelle Lecture de l'évolution Des Paysages Fluviaux a l'holocene Dans Le Bassin de La Loire Moyenne." *Les Fleuves Ont Une Histoire*.
- Carter, Vachel A., Andrea Brunelle, Thomas A. Minckley, John D. Shaw, R. Justin DeRose, and Simon Brewer. 2017. "Climate Variability and Fire Effects on Quaking Aspen in the Central Rocky Mountains, USA." *Journal of* 835 *Biogeography* 44 (6): 1280–93. <https://doi.org/10.1111/jbi.12932>.

- Chen, Fa-Hu, Bo Cheng, Yan Zhao, Yan Zhu, and David B. Madsen. 2006. "Holocene Environmental Change Inferred from a High-Resolution Pollen Record, Lake Zhuyeze, Arid China." *The Holocene* 16 (5): 675–84.
<https://doi.org/10.1191/0959683606hl951rp>.
- 840 Chen, Fahu, Zicheng Yu, Meilin Yang, Emi Ito, Sumin Wang, David B. Madsen, Xiaozhong Huang, et al. 2008. "Holocene Moisture Evolution in Arid Central Asia and Its Out-of-Phase Relationship with Asian Monsoon History." *Quaternary Science Reviews* 27 (3-4): 351–64. <https://doi.org/10.1016/j.quascirev.2007.10.017>.
- Chen, Fahu, Jifeng Zhang, Jianbao Liu, Xianyong Cao, Juzhi Hou, Liping Zhu, Xiangke Xu, et al. 2020. "Climate Change, Vegetation History, and Landscape Responses on the Tibetan Plateau During the Holocene: A Comprehensive Review." *Quaternary Science Reviews* 243 (September): 106444. <https://doi.org/10.1016/j.quascirev.2020.106444>.
- 845 Chen, Sang, Sharon S. Hoffmann, David C. Lund, Kim M. Cobb, Julien Emile-Geay, and Jess F. Adkins. 2016. "A High-Resolution Speleothem Record of Western Equatorial Pacific Rainfall: Implications for Holocene ENSO Evolution." *Earth and Planetary Science Letters* 442 (May): 61–71. <https://doi.org/10.1016/j.epsl.2016.02.050>.
- Ciesla, A, M. Ralska-Jasiewiczowa, and E. Stupnicka. 1977. "Paleobotanical and Geochemical Investigations of the Lacustrine Deposits at Woryty Near Olsztyn (Northeastern Poland)." *Polskie Archiwum Hydrobiologii*.
- 850 Clark, James S., P. Daniel Royall, and Craig Chumbley. 1996. "The Role of Fire During Climate Change in an Eastern Deciduous Forest at Devils Bathtub, New York." *Ecology* 77 (7): 2148–66. <https://doi.org/10.2307/2265709>.
- Colombaroli, Daniele, Willy Tinner, Jacqueline van Leeuwen, Roland Noti, Elisa Vescovi, Boris Vanni'ere, Michel Magny, Roland Schmidt, and Harald Bugmann. 2009. "Response of Broadleaved Evergreen Mediterranean Forest Vegetation to Fire Disturbance During the Holocene: Insights from the Peri-Adriatic Region." *Journal of Biogeography* 36 (2): 314–
855 26. <https://doi.org/10.1111/j.1365-2699.2008.01987.x>.
- Comtois, Paul. 1982. "Histoire Holocène Du Climat Et de La végétation à Lanoraie (Québec)." *Canadian Journal of Earth Sciences* 19 (10): 1938–52. <https://doi.org/10.1139/e82-172>.
- Cwynar, Les C. 1990. "A Late Quaternary Vegetation History from Lily Lake, Chilkat Peninsula, Southeast Alaska." *Canadian Journal of Botany* 68 (5): 1106–12. <https://doi.org/10.1139/b90-139>.
- 860 Cyprien, A. L. 2001. "Chronologie de l'interaction de l'homme Et Du Milieu Dans l'espace Central Et Aval de La Loire (Ouest de La France)." Doctoral Dissertation. Université de Nantes.
- Cyprien, A. L., and L. Visset. 2006. "Etude Palynologique Du Sondage Parcay 1 (Vallée de La Vienne)." *Rapport Préliminaire*. 10.
- Davies, F. M. 1997. "Holocene Palaeoenvironmental Studies in the Oban Region, Western Scotland, Upon Tyne." Doctoral
865 Dissertation. Department of Geography.
- Davis, Margaret B. 1967. "Pollen Accumulation Rates at Rogers Lake, Connecticut, During Late- and Postglacial Time." *Review of Palaeobotany and Palynology* 2 (1-4): 219–30. [https://doi.org/10.1016/0034-6667\(67\)90150-9](https://doi.org/10.1016/0034-6667(67)90150-9).
- Davis, Margaret B., Mark W. Schwartz, and Kerry Woods. 1991. "Detecting a Species Limit from Pollen in Sediments." *Journal of Biogeography* 18 (6): 653. <https://doi.org/10.2307/2845547>.

- 870 Davis, Owen K. 1992. "Rapid Climatic Change in Coastal Southern California Inferred from Pollen Analysis of San Joaquin Marsh." *Quaternary Research* 37 (1): 89–100. [https://doi.org/10.1016/0033-5894\(92\)90008-7](https://doi.org/10.1016/0033-5894(92)90008-7).
- Davis, Owen K. 1999. "Pollen Analysis of a Late-Glacial and Holocene Sediment Core from Mono Lake, Mono County, California." *Quaternary Research* 52 (2): 243–49. <https://doi.org/10.1006/qres.1999.2063>.
- Davis, Owen K., John C. Sheppard, and Susan Robertson. 1986. "Contrasting Climatic Histories for the Snake River Plain, 875 Idaho, Resulting from Multiple Thermal Maxima." *Quaternary Research* 26 (3): 321–39. [https://doi.org/10.1016/0033-5894\(86\)90093-1](https://doi.org/10.1016/0033-5894(86)90093-1).
- de Beaulieu, J. L. 1977. "Contribution Pollenanalytique a l'histoire Tardiglaciaire Et Holocene de La Vegetation Des Alpes Meridionales Francaises." Doctoral Dissertation. Universite d'Aix-Marseille.
- Deforce, K. 2011. "Middle and Late Holocene Vegetation and Landscape Evolution of the Scheldt Estuary: A Palynological 880 Study of a Peat Deposit from Doel (Belgium)." *Geologica Belgica*.
- Dinel, H., P. J. H. Richard, P. E. M. Lev'esque, and A. Larouche. 1986. "Origine Et évolution Du Marais Tourbeux de Keswick, Ontario, Par l'analyse Pollinique Et Macrofossile." *Canadian Journal of Earth Sciences* 23 (8): 1145–55. <https://doi.org/10.1139/e86-113>.
- Ding, Wei, Qinghai Xu, and Pavel E. Tarasov. 2017. "Examining Bias in Pollen-Based Quantitative Climate Reconstructions 885 Induced by Human Impact on Vegetation in China." *Climate of the Past* 13 (9): 1285–1300. <https://doi.org/10.5194/cp-13-1285-2017>.
- Diot, Marie-Françoise, and Jean-Pierre Tastet. 1995. "Paléo-Environnements Holocènes Et Limites Chronoclimatiques Enregistrés Dans Un Marais Estuarien de La Gironde (France) [Holocene Paleo-Environments and Chrono-Climatic Limits Recorded in a Reclaimed Marsh of the Gironde Estuary (France).]" *Quaternaire* 6 (2): 63–75. 890 <https://doi.org/10.3406/quate.1995.2039>.
- Edwards, Mary, Leanne Franklin-Smith, Charlotte Clarke, Joanna Baker, Sian Hill, and Katherine Gallagher. 2014. "The Role of Fire in the Mid-Holocene Arrival and Expansion of Lodgepole Pine (*pinus Contorta latifolia* Engelm. Ex s. Watson) in Yukon, Canada." *The Holocene* 25 (1): 64–78. <https://doi.org/10.1177/0959683614556389>.
- Efremov, Y. V., and E. V. Kvavadze. 1995. "Caucasus." In: *The History of Lakes of Mountain Ranges in Northern Asia* 895 (Pp.190-206). Nauka.
- Eisner, Wendy R., Torbjörn E. Törnqvist, Eduard A. Koster, Ole Bennike, and Jacqueline F. N. van Leeuwen. 1995. "Paleoecological Studies of a Holocene Lacustrine Record from the Kangerlussuaq (søndre Strømfjord) Region of West Greenland." *Quaternary Research* 43 (1): 55–66. <https://doi.org/10.1006/qres.1995.1006>.
- Elina, G. A. 1981. "Printsipy i Metody Rekonstruktsii i Kartirovaniya Rastitelonosti Golotsena [Principles and Methods for 900 Reconstruction and Mapping of Holocene Vegetation]." Nauka.
- Elovicheva, Y. K., and I. I. Bogdel. 1985. "Novye Razrezy Golosena Belarusi [New Holocene Sections of Byelorussia]." In: *Geologicheskoe Stroenie Osadochnoi Tolshchi Belorussii [Geological Composition of Sedimentary Sequence of Byelorussia]*.

- Engel, Zbyněk, Daniel Nývlt, Marek Křiváček, Václav Treml, Vlasta Jankovská, and Lenka Lisá. 2010. “Sedimentary Evidence of Landscape and Climate History Since the End of MIS 3 in the Krkonoše Mountains, Czech Republic.” *Quaternary Science Reviews* 29 (7-8): 913–27. <https://doi.org/10.1016/j.quascirev.2009.12.008>.
- Evans, N. S. 2002. “An Investigation of the Holocene Pollen Record from the Grey Islands, Newfoundland.” Master’s Thesis. Memorial University of Newfoundland.
- Ewing, H. A. 2000. “Ecosystem Development and Response to Climatic Change: A Comparative Study of Forest-Lake Ecosystems on Different Substrates.” Doctoral Dissertation. University of Minnesota.
- Farcas, Sorina, Jacques-Louis de Beaulieu, Maurice Reille, George Coldea, Baluta Diaconeasa, Claude Goeury, Thomas Goslar, and Timothy Jull. 1999. “First 14C Datings of Late Glacial and Holocene Pollen Sequences from Romanian Carpathes.” *Comptes Rendus de l’Académie Des Sciences - Series III - Sciences de La Vie* 322 (9): 799–807. [https://doi.org/10.1016/s0764-4469\(00\)80039-6](https://doi.org/10.1016/s0764-4469(00)80039-6).
- Fauquette, S’everine, Joël Guiot, Marianne Menut, Jacques-Louis de Beaulieu, Maurice Reille, and Pascal Guenet. 1999. “Vegetation and Climate Since the Last Interglacial in the Vienne Area (France).” *Global and Planetary Change* 20 (1): 1–17. [https://doi.org/10.1016/s0921-8181\(98\)00054-x](https://doi.org/10.1016/s0921-8181(98)00054-x).
- Filipova-Marinova, Mariana, Danail Pavlov, Marco Coolen, Liviu Giosan, and Stoyan Vergiev. 2014. “Contributions to the European Pollen Database. 22. Vegetation Development in the Central Part of the Bulgarian Black Sea Coast During the Last 13 000 Years.” *Grana* 53 (3): 249–51. <https://doi.org/10.1080/00173134.2014.903294>.
- Finsinger, Walter, and Willy Tinner. 2007. “Pollen and Plant Macrofossils at Lac de Fully (2135 m a.s.l.): Holocene Forest Dynamics on a Highland Plateau in the Valais, Switzerland.” *The Holocene* 17 (8): 1119–27. <https://doi.org/10.1177/0959683607082552>.
- Finsinger, Walter, Quentin Vanel, Adriano Ribolini, and Willy Tinner. 2020. “Early to Late Holocene Vegetation and Fire Dynamics at the Treeline in the Maritime Alps.” *Vegetation History and Archaeobotany* 30 (4): 507–24. <https://doi.org/10.1007/s00334-020-00795-x>.
- Fossitt, J. A. 1994. “Late-Glacial and Holocene Vegetation History of Western Donegal, Ireland.” *Biology and Environment: Proceedings of the Royal Irish Academy*.
- Foster, D. R., and T. M. Zebryk. 1993. “Long-Term Vegetation Dynamics and Disturbance History of a Tsuga-Dominated Forest in New England.” *Ecology* 74 (4): 982–98. <https://doi.org/10.2307/1940468>.
- Fuller, J. L. 1995. “Holocene Forest Dynamics in Southern Ontario, Canada.” Doctoral Dissertation. University of Cambridge.
- Fyfe, R. M., A. G. Brown, and S. J. Rippon. 2003. “Mid- to Late-Holocene Vegetation History of Greater Exmoor, UK: Estimating the Spatial Extent of Human-Induced Vegetation Change.” *Vegetation History and Archaeobotany* 12 (4): 215–32. <https://doi.org/10.1007/s00334-003-0018-3>.
- Gajewski, K., and Silvina Garralla. 1992. “Holocene Vegetation Histories from Three Sites in the Tundra of Northwestern Quebec, Canada.” *Arctic and Alpine Research* 24 (4): 329. <https://doi.org/10.2307/1551288>.

- Gajewski, K., S. Payette, and J. C. Ritchie. 1993. "Holocene Vegetation History at the Boreal-Forest-Shrub-Tundra Transition in North-Western Quebec." *The Journal of Ecology* 81 (3): 433. <https://doi.org/10.2307/2261522>.
- 940 Gandouin, E. 2002. "Enregistrement Paleoclimatique de La Transgression Holocene: Signature Paleo-Environnementale Des Chironomidae (Dipteres) Du Bassin de Saint-Omer (France)." Doctoral Dissertation. Universite de Lille.
- Garralla, S. 1991. "L'analyse Pollinique Des Sediments d'un Lac de La Region de Chibougamau, Quebec." Master's Thesis. Universite Laval.
- Gaudreau, D. C. 1986. "Late-Quaternary Vegetational History of the Northeast: Paleoecological Implications of Topographic Patterns in Pollen Distributions." Doctoral Dissertation. Yale University.
- 945 Gavin, Daniel G., Feng Sheng Hu, Kenneth Lertzman, and Peter Corbett. 2006. "Weak climatic control of stand-scale fire history during the late Holocene." *Ecology* 87 (7): 1722–32. [https://doi.org/10.1890/0012-9658\(2006\)87\[1722:wccosf\]2.0.co;2](https://doi.org/10.1890/0012-9658(2006)87[1722:wccosf]2.0.co;2).
- Gavin, Daniel G., Feng Sheng Hu, Ian R. Walker, and Karlyn Westover. 2009. "The Northern Inland Temperate Rainforest of British Columbia: Old Forests with a Young History?" *Northwest Science* 83 (1): 70–78. <https://doi.org/10.3955/046.083.0107>.
- 950 Giesecke, Thomas. 2005. "Holocene Forest Development in the Central Scandes Mountains, Sweden." *Vegetation History and Archaeobotany* 14 (2): 133–47. <https://doi.org/10.1007/s00334-005-0070-2>.
- Glaser, Paul H., Barbara C. S. Hansen, Joe J. Donovan, Thomas J. Givnish, Craig A. Stricker, and John C. Volin. 2013. "Holocene Dynamics of the Florida Everglades with Respect to Climate, Dustfall, and Tropical Storms." *Proceedings of the National Academy of Sciences* 110 (43): 17211–16. <https://doi.org/10.1073/pnas.1222239110>.
- 955 GLASER, PAUL H., BARBARA C. S. HANSEN, DONALD I. SIEGEL, ANDREW S. REEVE, and PAUL J. MORIN. 2004. "Rates, Pathways and Drivers for Peatland Development in the Hudson Bay Lowlands, Northern Ontario, Canada." *Journal of Ecology* 92 (6): 1036–53. <https://doi.org/10.1111/j.0022-0477.2004.00931.x>.
- 960 Gobet, Erika, Willy Tinner, Christian Bigler, Peter A. Hochuli, and Brigitta Ammann. 2005. "Early-Holocene Afforestation Processes in the Lower Subalpine Belt of the Central Swiss Alps as Inferred from Macrofossil and Pollen Records." *The Holocene* 15 (5): 672–86. <https://doi.org/10.1191/0959683605h1843rp>.
- Goransson, H. 1989. "Dags Mosse: Ostergotlands Forhistoriska Kalender." *Svensk Botanisk Tidskrift*.
- Grimm, E. C. 1981. "An Ecological and Paleoecological Study of the Vegetation in the Big Woods Region of Minnesota." Doctoral Dissertation. University of Minnesota.
- 965 Harmata, K. 1995. "A Late Glacial and Early Holocene Profile from Jaslo and a Recapitulation of the Studies on the Vegetational History of the Jaslo-Sanok Depression in the Last 13 000 Years." *Acta Palaeobotanica*.
- Heinrichs, Markus L, Richard J Hebda, Ian R Walker, and Samantha L Palmer. 2002. "Postglacial Paleoecology and Inferred Paleoclimate in the Engelmann Sprucesubalpine Fir Forest of South-Central British Columbia, Canada." *Palaeogeography, Palaeoclimatology, Palaeoecology* 184 (3-4): 347–69. [https://doi.org/10.1016/s0031-0182\(02\)00274-2](https://doi.org/10.1016/s0031-0182(02)00274-2).
- 970

- Herzschuh, Ulrike, Katja Winter, Bernd Wünnemann, and Shijie Li. 2006. "A General Cooling Trend on the Central Tibetan Plateau Throughout the Holocene Recorded by the Lake Zigetang Pollen Spectra." *Quaternary International* 154-155 (October): 113–21. <https://doi.org/10.1016/j.quaint.2006.02.005>.
- 975 Huang, C. Q, Z. D Feng, Y. Z Ma, L. L. Guo, and W. Wang. 2009. "Holocene Palaeoenvironment Changes Recorded by Pollen of Baahar Nuur Lake." *Journal of Lanzhou University (Natural Sciences)*.
- Hyvärinen, Hannu. 2008a. "Flandrian Pollen Deposition Rates and Tree-Line History in Northern Fennoscandia." *Boreas* 5 (3): 163–75. <https://doi.org/10.1111/j.1502-3885.1976.tb00260.x>.
- Jahns, S. 1999. "Pollen Analysis Studies at the Grosser Krebssee, East Brandenburg." *Germania*.
- 980 Jahns, Susanne. 2000. "Late-Glacial and Holocene Woodland Dynamics and Land-Use History of the Lower Oder Valley, North-Eastern Germany, Based on Two, AMS14C-Dated, Pollen Profiles." *Vegetation History and Archaeobotany* 9 (2): 111–23. <https://doi.org/10.1007/bf01300061>.
- Jahns, Susanne. 2004. "The Holocene History of Vegetation and Settlement at the Coastal Site of Lake Voukaria in Acarnania, Western Greece." *Vegetation History and Archaeobotany* 14 (1): 55–66. [https://doi.org/10.1007/s00334-004-](https://doi.org/10.1007/s00334-004-0053-8)
985 0053-8.
- Jett'e, H'el'ene, and Pierre J. H. Richard. 2007. "Contribution à l'histoire Postglaciaire de La végétation En Gaspésie méridionale, Québec." *Géographie Physique Et Quaternaire* 46 (3): 273–84. <https://doi.org/10.7202/032914ar>.
- Jiang, Wenying, Zhengtang Guo, Xiangjun Sun, Haibin Wu, Guoqiang Chu, Baoyin Yuan, Chritine Hatt'e, and Jöel Guiot. 2006. "Reconstruction of Climate and Vegetation Changes of Lake Bayanchagan (Inner Mongolia): Holocene
990 Variability of the East Asian Monsoon." *Quaternary Research* 65 (3): 411–20. <https://doi.org/10.1016/j.yqres.2005.10.007>.
- Jiang, Wenying, Suzanne A. G. Leroy, Shiling Yang, Enlou Zhang, Luo Wang, Xiaoxiao Yang, and Patrick Rioual. 2019. "Synchronous Strengthening of the Indian and East Asian Monsoons in Response to Global Warming Since the Last Deglaciation." *Geophysical Research Letters* 46 (7): 3944–52. <https://doi.org/10.1029/2019gl082084>.
- 995 Jiang, XiuYang, YaoQi He, ChuanChou Shen, XingGong Kong, ZhiZhong Li, and YuWei Chang. 2011. "Stalagmite-Inferred Holocene Precipitation in Northern Guizhou Province, China, and Asynchronous Termination of the Climatic Optimum in the Asian Monsoon Territory." *Chinese Science Bulletin* 57 (7): 795–801. [https://doi.org/10.1007/s11434-](https://doi.org/10.1007/s11434-011-4848-6)
011-4848-6.
- Jim'enez-Moreno, Gonzalo, Peter J. Fawcett, and R. Scott Anderson. 2008. "Millennial- and Centennial-Scale Vegetation and Climate Changes During the Late Pleistocene and Holocene from Northern New Mexico (USA)." *Quaternary Science Reviews* 27 (13-14): 1442–52. <https://doi.org/10.1016/j.quascirev.2008.04.004>.
- 1000 Johansen, J. 1982. "Vegetational Development in the Faroes from 10 Kyr BP to the Present." *Danmarks Geologiske Undersogelser Arbog*.
- Joly, C. 2006. "Histoire de La Vegetation Dans l'espace Centre-Ouest Atlantique (France) : Relations Societes/Vegetation Et
1005 Evolution Du Trait de Cote Depuis Le Mesolithique Recent-Final." *Doctoral Dissertation*. Universite de Nantes.

- Juhasz, I. 2002. "Reconstitution Palynologique de La Vegetation Depuis Le Tardiglaciaire Dans La Region de Zala, Sud-Est de La Hongrie." [Palynological Reconstruction of the Lateglacial and Holocene Vegetation in South-West Hungary]. Doctoral Dissertation. University of Aix-Marseille III (Marseille).
- 1010 Kabailiene, M. K. 1986. "Methods of Pollen and Spores Analysis." In: *Istoriya Ozior v SSSR* (Pp.91-94). Tallin.
- King, G. A. 1986. "Deglaciation and Vegetation History of Western Labrador and Adjacent Quebec." Unknown.
- King, James E. 1981. "Late Quaternary Vegetational History of Illinois." *Ecological Monographs* 51 (1): 43–62.
<https://doi.org/10.2307/2937306>.
- 1015 KORHOLA, A, K VASKO, H TOIVONEN, and H OLANDER. 2002. "Holocene Temperature Changes in Northern Fennoscandia Reconstructed from Chironomids Using Bayesian Modelling." *Quaternary Science Reviews* 21 (16-17): 1841–60. [https://doi.org/10.1016/s0277-3791\(02\)00003-3](https://doi.org/10.1016/s0277-3791(02)00003-3).
- Krause, Teresa R., Yanbin Lu, Cathy Whitlock, Sherilyn C. Fritz, and Kenneth L. Pierce. 2015. "Patterns of Terrestrial and Limnologic Development in the Northern Greater Yellowstone Ecosystem (USA) During the Late-Glacial/Early-Holocene Transition." *Palaeogeography, Palaeoclimatology, Palaeoecology* 422 (March): 46–56.
<https://doi.org/10.1016/j.palaeo.2014.12.018>.
- 1020 Kremenetski, K. V, O. K. Borisova, and E. M. Zelikson. 2000. "The Late Glacial and Holocene History of Vegetation in the Moscow Region." *Palaeontological Journal*.
- Kuhl, N. 1998. "Pollenanalytische Untersuchungen Zur Vegetations- Und Siedlungsgeschichte in Einem Kesselmoor Bei Drangstedt, Ldkr." Cuxhaven. Probleme Der Küstenforschung Im Südlichen Nordseegebiet.
- 1025 Labelle, Claude, and Pierre J. H. Richard. 2007. "Histoire Postglaciaire de La végétation Dans La région de Mont-Saint-Pierre, Gaspésie, Québec." *Géographie Physique Et Quaternaire* 38 (3): 257–74. <https://doi.org/10.7202/032567ar>.
- Lacourse, Terri, Kyle W. Beer, Kira B. Craig, and Dante Canil. 2019. "Postglacial Wetland Succession, Carbon Accumulation, and Forest Dynamics on the East Coast of Vancouver Island, British Columbia, Canada." *Quaternary Research* 92 (1): 232–45. <https://doi.org/10.1017/qua.2018.146>.
- 1030 Lacourse, Terri, Rolf W. Mathewes, and Daryl W. Fedje. 2005. "Late-Glacial Vegetation Dynamics of the Queen Charlotte Islands and Adjacent Continental Shelf, British Columbia, Canada." *Palaeogeography, Palaeoclimatology, Palaeoecology* 226 (1-2): 36–57. <https://doi.org/10.1016/j.palaeo.2005.05.003>.
- Laird, K. R. 1996. "A High-Resolution Paleoclimatic Record of a Closed-Basin Lake in the Northern Great Plains." Doctoral Dissertation. University of Minnesota.
- 1035 Leipe, Christian, Dieter Demske, and Pavel E. Tarasov. 2014. "A Holocene Pollen Record from the Northwestern Himalayan Lake Tso Moriri: Implications for Palaeoclimatic and Archaeological Research." *Quaternary International* 348 (October): 93–112. <https://doi.org/10.1016/j.quaint.2013.05.005>.
- Leipe, Christian, Norio Kito, Yumi Sakaguchi, and Pavel E. Tarasov. 2013. "Vegetation and Climate History of Northern Japan Inferred from the 5500-Year Pollen Record from the Oshima Peninsula, SW Hokkaido." *Quaternary International* 290-291 (March): 151–63. <https://doi.org/10.1016/j.quaint.2012.07.014>.

- 1040 Leroy, Suzanne A. G., Ata A. Kakroodi, Salomon Kroonenberg, Hamid K. Lahijani, Habib Alimohammadian, and Aman Nigarov. 2013. "Holocene Vegetation History and Sea Level Changes in the SE Corner of the Caspian Sea: Relevance to SW Asia Climate." *Quaternary Science Reviews* 70 (June): 28–47. <https://doi.org/10.1016/j.quascirev.2013.03.004>.
- Lespez, Laurent, Martine Clet-Pellerin, Robert Davidson, Guillaume Hermier, Vincent Carpentier, and Jean-Michel Cadot. 2010. "Middle to Late Holocene Landscape Changes and Geoarchaeological Implications in the Marshes of the Dives Estuary (NW France)." *Quaternary International* 216 (1-2): 23–40. <https://doi.org/10.1016/j.quaint.2009.06.018>.
- 1045 Li, Jianyong, and Ninglian Wang. 2020. "Holocene Grassland Fire Dynamics and Forcing Factors in Continental Interior of China." *Geophysical Research Letters* 47 (13). <https://doi.org/10.1029/2020gl088049>.
- Li, Ting-Yong, Chuan-Chou Shen, Hong-Chun Li, Jun-Yun Li, Hong-Wei Chiang, Sheng-Rong Song, Dao-Xian Yuan, et al. 2011. "Oxygen and Carbon Isotopic Systematics of Aragonite Speleothems and Water in Furong Cave, Chongqing, China." *Geochimica Et Cosmochimica Acta* 75 (15): 4140–56. <https://doi.org/10.1016/j.gca.2011.04.003>.
- 1050 Li, TingYong, DaoXian Yuan, HongChun Li, Yan Yang, JianLi Wang, XinYa Wang, JunYun Li, JiaMing Qin, MeiLiang Zhang, and YuShi Lin. 2007. "High-Resolution Climate Variability of Southwest China During 5770 Ka Reflected in a Stalagmite δ 18O Record from Xinya Cave." *Science in China Series D: Earth Sciences* 50 (8): 1202–8. <https://doi.org/10.1007/s11430-007-0059-z>.
- 1055 Liu, G. X. 1991. "Late-Glacial and Postglacial Vegetation and Association Environment in Jiangnan Plain." *Acta Botanica Sinica*.
- Long, Colin J., and Cathy Whitlock. 2002. "Fire and Vegetation History from the Coastal Rain Forest of the Western Oregon Coast Range." *Quaternary Research* 58 (3): 215–25. <https://doi.org/10.1006/qres.2002.2378>.
- 1060 Lotter, A. F., and J. Fischer. 1991. "Vegetation Und Flora Im Gebiet Des Aegelsees (Berner Oberland) Im Wandel Der Zeit: Vergangenheit, Gegenwart Und Zukunft." *Mitteilungen Der Naturforschenden Gesellschaft Bern NF*.
- MacDonald, G. M. 1983. "Holocene Vegetation History of the Upper Natla River Area, Northwest Territories, Canada." *Arctic and Alpine Research* 15 (2): 169. <https://doi.org/10.2307/1550919>.
- MacDonald, G. M. 1984. "Postglacial Plant Migration and Vegetation Development in the Western Canadian Boreal Forest." 1065 Doctoral Dissertation. University of Toronto.
- Maenza-Gmelch, Terryanne E. 1997. "Holocene Vegetation, Climate, and Fire History of the Hudson Highlands, Southeastern New York, USA." *The Holocene* 7 (1): 25–37. <https://doi.org/10.1177/095968369700700103>.
- Maher Jr, L. J. 1973. "Pollen Evidence Suggests That Climatic Changes in the Colorado Rockies During the Last 5000 Years Were Out of Phase with Those in the Northeastern United States." In: Abstracts.
- 1070 Marsicek, Jeremiah P., Bryan Shuman, Simon Brewer, David R. Foster, and W. Wyatt Oswald. 2013. "Moisture and Temperature Changes Associated with the Mid-Holocene Tsuga Decline in the Northeastern United States." *Quaternary Science Reviews* 80 (November): 129–42. <https://doi.org/10.1016/j.quascirev.2013.09.001>.

- McAndrews, J. H. 1981. "Late Quaternary Climate of Ontario: Temperature Trends from the Fossil Pollen Record." In: Quaternary Paleoclimate Ed. By W.C. Mahaney (Pp.319-333). Geo Abstracts.
- 1075 McAndrews, John H. 1969. "Paleobotany of a Wild Rice Lake in Minnesota." *Canadian Journal of Botany* 47 (11): 1671–79. <https://doi.org/10.1139/b69-243>.
- Mensing, Scott, Jeremy Smith, Kelly Burkle Norman, and Marie Allan. 2008. "Extended Drought in the Great Basin of Western North America in the Last Two Millennia Reconstructed from Pollen Records." *Quaternary International* 188 (1): 79–89. <https://doi.org/10.1016/j.quaint.2007.06.009>.
- 1080 Miller, Gifford H., Alexander P. Wolfe, Jason P. Briner, Peter E. Sauer, and Atle Nesje. 2005. "Holocene Glaciation and Climate Evolution of Baffin Island, Arctic Canada." *Quaternary Science Reviews* 24 (14-15): 1703–21. <https://doi.org/10.1016/j.quascirev.2004.06.021>.
- Miller, N. G., and R. P. Futyma. 2003. "Extending the Paleobotanical Records at the Hiscock Site, New York: Correlations Among Stratigraphic Pollen Assemblages from Nearby Lake and Wetland Basins." Unknown.
- 1085 Moe, D, K. D Vorren, T Alm, S Fimreite, B Morkved, E Nilssen, A Paus, H Ramfjord, S. F. Selvik, and R. Sorensen. 1996. "Norway." In: *Palaeoecological Events During the Last 15000 Years: Regional Syntheses of Palaeoecological Studies of Lakes and Mires in Europe* Ed. By B.E. Berglund.
- Mokhova, Lyudmila, Pavel Tarasov, Valentina Bazarova, and Mikhail Klimin. 2009. "Quantitative Biome Reconstruction Using Modern and Late Quaternary Pollen Data from the Southern Part of the Russian Far East." *Quaternary Science Reviews* 28 (25-26): 2913–26. <https://doi.org/10.1016/j.quascirev.2009.07.018>.
- 1090 Morales-Molino, C'esar, and Mercedes Garc-Ant'on. 2014. "Vegetation and Fire History Since the Last Glacial Maximum in an Inland Area of the Western Mediterranean Basin (Northern Iberian Plateau, NW Spain)." *Quaternary Research* 81 (1): 63–77. <https://doi.org/10.1016/j.yqres.2013.10.010>.
- 1095 Morales-Molino, C'esar, Mercedes Garc-Ant'on, Jos'e M. Postigo-Mijarra, and Carlos Morla. 2013. "Holocene Vegetation, Fire and Climate Interactions on the Westernmost Fringe of the Mediterranean Basin." *Quaternary Science Reviews* 59 (January): 5–17. <https://doi.org/10.1016/j.quascirev.2012.10.027>.
- Morita, Y. 1987. "The Vegetational History of the Subalpine Zone in Northeast Japan: III." *The Hakkoda Mountains. Japanese Journal of Ecology*.
- Mott, R. J. 2010. "Late-Pleistocene and Holocene Palynology in Southeastern Québec." *Géographie Physique Et Quaternaire* 31 (1-2): 139–49. <https://doi.org/10.7202/1000060ar>.
- 1100 Mott, Robert J., Ian R. Walker, Samantha L. Palmer, and Martin Lavoie. 2009. "A Late-Glacial Holocene Palaeoecological Record from Pye Lake on the Eastern Shore of Nova Scotia, Canada Geological Survey of Canada Contribution 20080395." Edited by Joe Desloges. *Canadian Journal of Earth Sciences* 46 (9): 637–50. <https://doi.org/10.1139/e09-034>.

- 1105 Nakagawa, T. 1998. "Etudes Palynologiques Dans Les Alpes Francaises Centrales Et Meridionales: Histoire de La Vegetation Tardiglaciaire Et Holocene [Pollen Studies in the Central Meridional French Alps: Lateglacial and Holocene Vegetation History]." Doctoral Dissertation. Universite d'Aix-Marseille.
- Nelson, David M., and Feng Sheng Hu. 2008. "Patterns and Drivers of Holocene Vegetational Change Near the Prairieforest Ecotone in Minnesota: Revisiting McAndrews' Transect." *New Phytologist* 179 (2): 449–59.
1110 <https://doi.org/10.1111/j.1469-8137.2008.02482.x>.
- Nilssen, E. J. 1983. "Klima - Og Vegetasjonshistoriske Undersokelser i Lofoten." Master's Thesis. University of Tromso.
- Nilsson, T. 1964. "Standard Pollen Diagramme Und C14 Datering i Agerods Mosse i Mittleren Schonen." *Lunds Universitets Arsskrift N. F.*
- Novenko, Elena Yu., Andrey N. Tsyganov, Elena M. Volkova, Dmitrii A. Kupriyanov, Iya V. Mironenko, Kirill V.
1115 Babeshko, Alisa S. Utkina, Viktor Popov, and Yuri A. Mazei. 2016. "Mid- and Late Holocene Vegetation Dynamics and Fire History in the Boreal Forest of European Russia: A Case Study from Meshchera Lowlands." *Palaeogeography, Palaeoclimatology, Palaeoecology* 459 (October): 570–84. <https://doi.org/10.1016/j.palaeo.2016.08.004>.
- Novenko, E. Yu., E. M. Volkova, N. B. Nosova, and I. S. Zuzanova. 2009. "Late Glacial and Holocene Landscape Dynamics in the Southern Taiga Zone of East European Plain According to Pollen and Macrofossil Records from the Central
1120 Forest State Reserve (Valdai Hills, Russia)." *Quaternary International* 207 (1-2): 93–103.
<https://doi.org/10.1016/j.quaint.2008.12.006>.
- Odgaard, B. V. 1988. "Heathland History in Western Jutland, Denmark." In: *The Cultural Landscape - Past*.
- Oswald, W. Wyatt, David R. Foster, Bryan N. Shuman, Elaine D. Doughty, Edward K. Faison, Brian R. Hall, Barbara C. S.
1125 Hansen, Matts Lindbladh, Adriana Marroquin, and Sarah A. Truebe. 2018. "Subregional Variability in the Response of New England Vegetation to Postglacial Climate Change." *Journal of Biogeography* 45 (10): 2375–88.
<https://doi.org/10.1111/jbi.13407>.
- Ouguerram, A. 2002. "Histoire de La Vallee de l'erdre (Affluent de La Loire, Massif Armoricaire, France) de La Fin Du Tardiglaciaire Aux Epoques Actuelles." Doctoral Dissertation. Universite Moulay Ismail (Maroc) Et Universite de Nantes (France).
- 1130 Paus, A. 1982. "Vegetasjonshistoriske Undersokelser i Sandvikvatn, Karsto, Tysvaer i Rogaland." *Botanisk Institutt*.
- Peñalba, M. Cristina, and Serge Payette. 1997. "Late-Holocene Expansion of Eastern Larch (*Larix Laricina* [du Roi] k. Koch) in Northwestern Québec." *Quaternary Research* 48 (1): 114–21. <https://doi.org/10.1006/qres.1997.1906>.
- Pennington, W. 1973. "Absolute Pollen Frequencies in the Sediments of Lakes of Different Morphometry." In: *Quaternary Plant Ecology* Ed. By H.J.B. Birks and R.G. West (Pp.79-104). Blackwell Scientific Publications.
- 1135 Peros, Matthew C., and Konrad Gajewski. 2008. "Holocene Climate and Vegetation Change on Victoria Island, Western Canadian Arctic." *Quaternary Science Reviews* 27 (3-4): 235–49. <https://doi.org/10.1016/j.quascirev.2007.09.002>.

- PETEET, DOROTHY, ANDREI ANDREEV, WILLIAM BARDEEN, and FRANCESCA MISTRETTA. 2008. "Long-Term Arctic Peatland Dynamics, Vegetation and Climate History of the Pur-Taz Region, Western Siberia." *Boreas* 27 (2): 115–26. <https://doi.org/10.1111/j.1502-3885.1998.tb00872.x>.
- 1140 Puertas, O. 1997. "Evolution de La Vegetation Depuis Le Dryas Recent Dans La Plaine Littorale de Montpellier (Herault, France) a Partir de l'analyse Pollinique." *Dynamique Naturelle Et Anthropisation Du Milieu*. Doctoral Dissertation. Universite de Franche-Comte.
- Pulido, M. 2006. "Consequenses de l'anthropisation Sur La Dynamique Postglaciaire de La Vegetation Dans Le Sud Du Massif Central, France." [Anthropogenic Impact on the Postglacial Vegetation Dynamics in South Massif Central.
- 1145 Ravindra, R. 2009. "A High-Resolution Vegetation, Fire, and Climate History from the Aishihik Region, Yukon Territory, Canada." Master's Thesis. University of Ottawa.
- Richard, P. J. H. 1977. "Histoire Post-Wisconsinienne de La Vegetation Du Quebec Meridional Par l'analyse Pollinique." *Service de La Recherche*.
- Richard, P. J. H. 1981. "Paleophytogeographie Postglaciaire En Ungava Par l'analyse Pollinique." *Collection Paleo-Quebec*.
- 1150 Richard, Pierre J. H., Alayn Larouche, and Michel A. Bouchard. 2007. "Âge de La déglaciation Finale Et Histoire Postglaciaire de La végétation Dans La Partie Centrale Du Nouveau-Québec." *Géographie Physique Et Quatenaire* 36 (1-2): 63–90. <https://doi.org/10.7202/032470ar>.
- Rippke, Molly Beland, Matthew T. Distler, and John M. Farrell. 2010. "Holocene Vegetation Dynamics of an Upper St. Lawrence River Wetland: Paleoecological Evidence for a Recent Increase in Cattail (Typha)." *Wetlands* 30 (4): 805–16. <https://doi.org/10.1007/s13157-010-0068-0>.
- 1155 Ritchie, J. C. 1976. "The Late-Quaternary Vegetational History of the Western Interior of Canada." *Canadian Journal of Botany* 54 (15): 1793–1818. <https://doi.org/10.1139/b76-194>.
- Rohr, M. 2001. "Paleoenvironmental Changes at Treeline: A 6,500 Year Long Pollen and Stable Isotope Record." Master's Thesis. University of Alaska.
- 1160 Roleček, Jan, Helena Svitavsk'a Svobodov'a, Eva Jamrichov'a, Lydie Dudov'a, Petra H'ajkov'a, Günther Kletetschka, Petr Kuneš, and Vojtěch Abraham. 2020. "Conservation Targets from the Perspective of a Palaeoecological Reconstruction." *Preslia* 92 (2). <https://doi.org/10.23855/preslia.2020.087>.
- Rosch, M. 1989. "Breitnau-Neuhof Pollen Profile: On the Temporal Course of the Holocene Vegetation Development in the Southern Black Forest." *Carolinea*.
- 1165 Rösch, Manfred. 2009. "Botanical Evidence for Prehistoric and Medieval Land Use in the Black Forest." In *Ruralia*, 335–43. Brepols Publishers. <https://doi.org/10.1484/m.ruralia-eb.3.1181>.
- Rybnicek, K., and E. Rybnickova. 2004. "Pollen Analyses of Sediments from the Summit of the Praded Range in the Hruby Jeseník Mts (Eastern Sudetes)." *Preslia*.

- 1170 Rybnickova, E, P. Hajkova, and K. Rybnicek. 2005. "The Origin and Development of Spring Fen Vegetation and
Ecosystems - Palaeogeobotanical Results." In: Ecology and Palaeoecology of Spring Fens of the West Carpathians Ed.
By A. Poulickova.
- Saarse, L, S Veski, A Heinsalu, R. Rajamae, and T. Martma. 1995. "Litho- and Biostratigraphy of Lake Paidre, South
Estonia." Proceedings of the Estonian Academy of Sciences. Geology.
- 1175 Savoie, Louise, and Pierre Richard. 2010. "Paléophytogéographie de l'épisode de Saint-Narcisse Dans La région de Sainte-
Agathe, Québec." Géographie Physique Et Quaternaire 33 (2): 175–88. <https://doi.org/10.7202/1000067ar>.
- Schauffler, M. 1998. "Paleoecology of Coastal and Interior Picea (Spruce) Stands in Maine." Doctoral Dissertation.
University of Maine.
- Schwörer, Christoph, Daniele Colombaroli, Petra Kaltenrieder, Fabian Rey, and Willy Tinner. 2015a. "Early Human Impact
(5000-3000 BC) Affects Mountain Forest Dynamics in the Alps." Edited by Amy Austin. Journal of Ecology 103 (2):
1180 281–95. <https://doi.org/10.1111/1365-2745.12354>.
- Snyder, G. G, L. C. K. Shane, and R. O. Kapp. 1991. "Palynological Studies Associated with the Mound City Group
National Monument, Chillicothe, Ohio." Unknown.
- Solovieva, Nadia, Pavel E. Tarasov, and Glen MacDonald. 2005. "Quantitative Reconstruction of Holocene Climate from
the Chuna Lake Pollen Record, Kola Peninsula, Northwest Russia." The Holocene 15 (1): 141–48.
1185 <https://doi.org/10.1191/0959683605hl793rr>.
- Stebich, Martina, Kira Rehfeld, Frank Schlütz, Pavel E. Tarasov, Jiaqi Liu, and Jens Mingram. 2015. "Holocene Vegetation
and Climate Dynamics of NE China Based on the Pollen Record from Sihailongwan Maar Lake." Quaternary Science
Reviews 124 (September): 275–89. <https://doi.org/10.1016/j.quascirev.2015.07.021>.
- 1190 Stuiver, Minze. 1975. "Climate Versus Changes in 13c Content of the Organic Component of Lake Sediments During the
Late Quarternary." Quaternary Research 5 (2): 251–62. [https://doi.org/10.1016/0033-5894\(75\)90027-7](https://doi.org/10.1016/0033-5894(75)90027-7).
- Sun, Aizhi, Zhaodong Feng, Min Ran, and Chengjun Zhang. 2013. "Pollen-Recorded Bioclimatic Variations of the Last
22,600 Years Retrieved from Achit Nur Core in the Western Mongolian Plateau." Quaternary International 311 (October):
36–43. <https://doi.org/10.1016/j.quaint.2013.07.002>.
- 1195 Sun, Huiling, Aifeng Zhou, Xiaowei Zhang, and Fahu Chen. 2011. "Fir Trees Disappeared 500years Ago in the Liupan
Mountains on the Southwestern Loess Plateau, China." Review of Palaeobotany and Palynology 166 (1-2): 69–75.
<https://doi.org/10.1016/j.revpalbo.2011.05.003>.
- Suter, S. M. 1985. "Late-Glacial and Holocene Vegetation History in Southeastern Massachusetts: A 14,000 Year Pollen
Record." Current Research in the Pleistocene.
- 1200 Svobodov'a, Helena, Maurice Reille, and Claude Goeury. 2001. "Past Vegetation Dynamics of Vltavský Luh, Upper Vltava
River Valley in the Šumava Mountains. Czech Republic." Vegetation History and Archaeobotany 10 (4): 185–99.
<https://doi.org/10.1007/pl00006930>.

- Svobodov'a, Helena, Lenka Soukupov'a, and Maurice Reille. 2002. "Diversified Development of Mountain Mires, Bohemian Forest, Central Europe, in the Last 13,000 Years." *Quaternary International* 91 (1): 123–35. [https://doi.org/10.1016/s1040-6182\(01\)00106-9](https://doi.org/10.1016/s1040-6182(01)00106-9).
- 1205 Svobodova, H. 1989. "Rekonstrukce Prirodniho Prostredi a Osidleni v Okoli Mistrina." *Palynologiccka Studie Reconstitution de l'environnement Naturel Et Du Peuplement Dans Les Environs de Mistrin. Etude Palynologique. Pamatky Archeologicke*.
- 1210 Szeicz, Julian M., Glen M. MacDonald, and Alejandra Duk-Rodkin. 1995. "Late Quaternary Vegetation History of the Central Mackenzie Mountains, Northwest Territories, Canada." *Palaeogeography, Palaeoclimatology, Palaeoecology* 113 (2-4): 351–71. [https://doi.org/10.1016/0031-0182\(95\)00070-3](https://doi.org/10.1016/0031-0182(95)00070-3).
- Tarasov, P. E., S. P Harrison, L Saarse, M. Y Pushenko, A. A Andreev, Z. V Aleshinskaya, N. N Davydova, et al. 1994. "Lake Status Records from the Former Soviet Union and Mongolia: Data Base Documentation." *Paleoclimatology Publications Series 2*.
- 1215 Tarasov, P. E., and K. V. Kremenetskii. 1995. "Geochronology and Stratigraphy of the Holocene Lacustrine-Bog Deposits in Northern and Central Kazakhstan." *Stratigraphy and Geological Correlation*.
- Teed, Rebecca, Charles Umbanhower, and Philip Camill. 2009. "Multiproxy Lake Sediment Records at the Northern and Southern Boundaries of the Aspen Parkland Region of Manitoba, Canada." *The Holocene* 19 (6): 937–48. <https://doi.org/10.1177/0959683609336569>.
- 1220 Thöle, Lena, Christoph Schwörer, Daniele Colombaroli, Erika Gobet, Petra Kaltenrieder, Jacqueline van Leeuwen, and Willy Tinner. 2015. "Reconstruction of Holocene Vegetation Dynamics at Lac de Bretaye, a High-Mountain Lake in the Swiss Alps." *The Holocene* 26 (3): 380–96. <https://doi.org/10.1177/0959683615609746>.
- 1225 Thompson, R. S. 1984a. "Late Pleistocene and Holocene Environments in the Great Basin." Doctoral Dissertation. University of Arizona.
- Tonkov, Spassimir, Elissaveta Bozilova, and Högne Jungner. 2009. "7. Mire Straldza (Southeastern Bulgaria): Late Holocene Vegetation History." *Grana* 48 (3): 235–37. <https://doi.org/10.1080/00173130902965843>.
- van der Knaap, W. O., and B. Ammann. 1997. "Depth-Age Relationships of 25 Well-Dated Swiss Holocene Pollen Sequences Archived in the Alpine Palynological Data-Base." *Revue de Paleobiologie*.
- 1230 Van der Knaap, W. O., and J. van Leeuwen. 1994. "Holocene Vegetation, Human Impact, and Climatic Change in the Serra Da Estrela, Portugal." *Dissertationes Botanicae*.
- van der Knaap, W. O., and J. F. N. Van Leeuwen. 2001. "Vegetationsgeschichte Und Menschlicher Einfluss in Der Umgebung Des Bibersees Zwischen 2600 Und 50 v." *Chr. Cham-Oberwil*.
- 1235 van der Knaap, W. O, Jacqueline F. N van Leeuwen, Andreas Fankhauser, and Brigitta Ammann. 2000. "Palynostratigraphy of the Last Centuries in Switzerland Based on 23 Lake and Mire Deposits: Chronostratigraphic Pollen Markers,

Regional Patterns, and Local Histories.” *Review of Palaeobotany and Palynology* 108 (1-2): 85–142.

[https://doi.org/10.1016/s0034-6667\(99\)00035-4](https://doi.org/10.1016/s0034-6667(99)00035-4).

Van Zant, Kent. 1979. “Late Glacial and Postglacial Pollen and Plant Macrofossils from Lake West Okoboji, Northwestern Iowa.” *Quaternary Research* 12 (3): 358–80. [https://doi.org/10.1016/0033-5894\(79\)90034-6](https://doi.org/10.1016/0033-5894(79)90034-6).

1240 van Zeist, W., and M. R. van der Spoel-Walvius. 1980. “A Palynological Study of the Late-Glacial and the Postglacial in the Paris Basin.” *Palaeohistoria*.

van Zeist, W, H. Woldring, and D. Stapert. 1975. “Late Quaternary Vegetation and Climate of Southwestern Turkey.” *Palaeohistoria*.

1245 Velle, Gaute, Jorunn Larsen, Wenche Eide, Sylvia M. Peglar, and H. John. B. Birks. 2005a. “Holocene Environmental History and Climate of ratasjoen, a Low-Alpine Lake in South-Central Norway.” *Journal of Paleolimnology* 33 (2): 129–53. <https://doi.org/10.1007/s10933-004-2689-x>.

Vescovi, Elisa, Petra Kaltenrieder, and Willy Tinner. 2010. “Late-Glacial and Holocene Vegetation History of Pavullo Nel Frignano (Northern Apennines, Italy).” *Review of Palaeobotany and Palynology* 160 (1-2): 32–45. <https://doi.org/10.1016/j.revpalbo.2010.01.002>.

1250 Visset, L. 1979. “Recherches Palynologiques Sur La Vegetation Pleistocene Et Holocene de Quelques Sites Du District Phytogeographique de Basse-Loire.” Doctoral Dissertation. Universite d’Aix-Marseille.

Voeltzel, D. 1987. “Recherches Pollenanalytiques Sur La Vegetation Holocene de La Plaine Alluviale de l’estuaire de La Loire Et Des Coteaux Environnants.” Doctoral Dissertation. Universite d’Aix-Marseille.

1255 Wacnik, A. 1995. “The Vegetational History of Local Flora and Evidences of Human Activities Recorded in the Pollen Diagram from Side Regetovka, Northeast Slovakia.” *Acta Palaeobotanica*.

Waller, M. 1994. “The Fenland Project, Number 9: Flandrian Environmental Change in Fenland (No.” 70). Cambridgeshire Archaeological Committee.

Waller, M. P. 1987. “The Flandrian Vegetational History and Environmental Development of the Brede and Panel Valleys East Sussex.” Doctoral Dissertation. Polytechnic of North London.

1260 Waller, M. P. 1993. “Flandrian Vegetational History of Southeastern England. Pollen Data from Pannel Bridge, East Sussex.” *New Phytologist* 124 (2): 345–69. <https://doi.org/10.1111/j.1469-8137.1993.tb03825.x>.

Waller, M. P., A. J. Long, D. Long, and J. B. Innes. 1999. “Patterns and Processes in the Development of Coastal Mire Vegetation: Multi-Site Investigations from Walland Marsh, Southeast England.” *Quaternary Science Reviews* 18 (12): 1419–44. [https://doi.org/10.1016/s0277-3791\(98\)00072-9](https://doi.org/10.1016/s0277-3791(98)00072-9).

1265 Wang, Yue, Jacquelyn L. Gill, Jeremiah Marsicek, Anna Dierking, Bryan Shuman, and John W Williams. 2015. “Pronounced Variations in *fagus Grandifolia* Abundances in the Great Lakes Region During the Holocene.” *The Holocene* 26 (4): 578–91. <https://doi.org/10.1177/0959683615612586>.

- Warner, Barry G., Kimmo Tolonen, and Mirjami Tolonen. 1991. "A Postglacial History of Vegetation and Bog Formation at Point Escuminac, New Brunswick." *Canadian Journal of Earth Sciences* 28 (10): 1572–82. <https://doi.org/10.1139/e91-141>.
1270
- Watson, Clare S. 1996. "The Vegetational History of the Northern Apennines, Italy: Information from Three New Sequences and a Review of Regional Vegetational Change." *Journal of Biogeography* 23 (6): 805–41. <https://doi.org/10.1111/j.1365-2699.1996.tb00041.x>.
- Welten, M. 1982. "Pollenanalytische Untersuchungen Zur Vegetationsgeschichte Des Schweizerischen Nationalparks." *Ergebnisse Der Wissenschaftlichen Untersuchungen Im Schweizerischen Nationalpark*.
1275
- Welten, Max. 1982. *Vegetationsgeschichtliche Untersuchungen in Den Westlichen Schweizer Alpen: Bern-Wallis*. Birkhäuser Basel. <https://doi.org/10.1007/978-3-0348-5359-0>.
- WEN, RUILIN, JULE XIAO, ZHIGANG CHANG, DAYOU ZHAI, QINGHAI XU, YUECONG LI, and SHIGERU ITOH. 2010. "Holocene Precipitation and Temperature Variations in the East Asian Monsoonal Margin from Pollen Data from Hulun Lake in Northeastern Inner Mongolia, China." *Boreas* 39 (2): 262–72. <https://doi.org/10.1111/j.1502-3885.2009.00125.x>.
1280
- Weninger, J. M., and J. H. McAndrews. 1989. "Late Holocene Aggradation in the Lower Humber River Valley, Toronto, Ontario." *Canadian Journal of Earth Sciences* 26 (9): 1842–49. <https://doi.org/10.1139/e89-157>.
- West, G. J., and K. R. McGuire. 2002. "9,500 Years of Burning Recorded in a High Desert Marsh." Unknown.
- Whitehead, Donald R. 1979. "Late-Glacial and Postglacial Vegetational History of the Berkshires, Western Massachusetts." *Quaternary Research* 12 (3): 333–57. [https://doi.org/10.1016/0033-5894\(79\)90033-4](https://doi.org/10.1016/0033-5894(79)90033-4).
1285
- Whitehead, Donald R., and Stephen T. Jackson and. 1990. *The Regional Vegetational History of the High Peaks (Adirondack Mountains) New York*. University of the State of New York, State Education Dept., New York State Museum, Biological Survey. <https://doi.org/10.5962/bhl.title.135552>.
- Willard, D. A., L. M. Weimer, and W. L. Riegel. 2001. "Pollen Assemblages as Paleoenvironmental Proxies in the Florida Everglades." *Review of Palaeobotany and Palynology* 113 (4): 213–35. [https://doi.org/10.1016/s0034-6667\(00\)00042-7](https://doi.org/10.1016/s0034-6667(00)00042-7).
1290
- WILLARD, D, C BERNHARDT, D KOREJWO, and S MEYERS. 2005. "Impact of Millennial-Scale Holocene Climate Variability on Eastern North American Terrestrial Ecosystems: Pollen-Based Climatic Reconstruction." *Global and Planetary Change* 47 (1): 17–35. <https://doi.org/10.1016/j.gloplacha.2004.11.017>.
- Wolfe, Brent B., Thomas W. D. Edwards, Ramon Aravena, Steven L. Forman, Barry G. Warner, Andrei A. Velichko, and Glen M. MacDonald. 2000. "Holocene Paleohydrology and Paleoclimate at Treeline, North-Central Russia, Inferred from Oxygen Isotope Records in Lake Sediment Cellulose." *Quaternary Research* 53 (3): 319–29. <https://doi.org/10.1006/qres.2000.2124>.
1295
- Woods, Kerry D., and Margaret B. Davis. 1989. "Paleoecology of Range Limits: Beech in the Upper Peninsula of Michigan." *Ecology* 70 (3): 681–96. <https://doi.org/10.2307/1940219>.
1300

- Wu, L, X. Y Wang, G. S. Zhang, and X. Y. Xiao. 2008. "Vegetation Evolution and Climate Change Since the Holocene Recorded by Pollen-Charcoal Assemblages from Lacustrine Sediments of Chaohu Lake in Anhui Province." *Journal of Palaeogeography*.
- 1305 Xia, Y. M. 1988. "Preliminary Study on Vegetational Development and Climatic Changes in the Sanjiang Plain in the Last 12000 Years." *Scientia Geographica Sinica*.
- Xu, Q. H, X. L Yang, Z. J Yang, W. D. Liang, and L. M. Sun. 2004. "Reconstruction of Climatic Changes of Yanshan Mountain Area Since 5000 aB.p." Inferred from Pollen Data. *Scientia Geographica Sinica*.
- Xu, Q. H, Z. J Yang, Z. J Cui, X. L. Yang, and W. D. Liang. 2002. "A Study on Pollen Analysis of Qiguoshan Section and Ancestor Living Environment in Chifeng Area, Nei Mongol." *Scientia Geographica Sinica*.
- 1310 Yang, X. D, Y. X Zhu, X. Z Jiang, Y. H. Wu, and S. M. Wang. 1998. "Environmental Changes from Spore-Pollen Record of Mianyang Region over the Past 10000 Years." *Journal of Lake Sciences*.
- Zhang, Z. Q, Q. H Xu, Y. C Li, X. L Yang, Z. C. Jing, and J. G. Tang. 2007. "Environmental Change of the Yin Ruins Area Based on Pollen Analysis." *Quaternary Research*.
- 1315 Zhao, Cheng, Zicheng Yu, Emi Ito, and Yan Zhao. 2010. "Holocene Climate Trend, Variability, and Shift Documented by Lacustrine Stable-Isotope Record in the Northeastern United States." *Quaternary Science Reviews* 29 (15-16): 1831–43. <https://doi.org/10.1016/j.quascirev.2010.03.018>.