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*Supplement of*

## **Wet–dry status change in global closed basins between the mid-Holocene and the Last Glacial Maximum and its implication for future projection**

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**Table S1.** Wet/dry status change from new compilation of proxy records. “+”/ “-” indicates wetter/drier climate from lake records or more/less effective precipitation from multi-models during the MH than that during the LGM.

Lake name	Country	Lon (°E)	Lat (°N)	Elev (m)	Records	Models	References
Surprise	USA	-120.1	41.5	1370	-	-	(Ibarra et al., 2014)
Lahontan	USA	-119.5	40	1180	-	-	(Benson et al., 2013)
Owens	USA	-119	38	1080	-	-	(Bacon et al., 2003)
Mojave	USA	-116.8	36	-60	-	-	(Wells et al., 2003)
Franklin	USA	-115.3	40.3	1820	-	-	(Munroe & Laabs, 2013)
Clover	USA	-114.6	40.9	1700	-	-	(Munroe & Laabs, 2013)
Bonneville	USA	-113	40.5	1280	-	-	(Oviatt, 2015)
Estancia	USA	-105.6	34.6	1860	-	-	(Allen & Anderson, 2000)
Santiaguillo	Mexico	-104.8	24.8	1960	-	-	(Chávez-Lara et al., 2015)
Pátzcuaro	Mexico	-101.6	19.6	2040	-	+	(Bradbury, 2000)
Huelmo	Chile	-73	-41.5	10	-	-	(Massaferro et al., 2009)
Tagua Tagua	Chile	-71.2	-34.5	200	-	-	(Valero-Garcés et al., 2005)
Potrok Aike	Argentina	-70.4	-52	110	-	-	(Kliem et al., 2013)
Cari Laufquen	Argentina	-69.6	-41.4	790	-	+	(Cartwright et al., 2011)
Titicaca	Peru/Bolivia	-69.4	-16	3800	-	+	(Rowe et al., 2002)
Uyuni	Bolivia	-67.5	-20.2	3650	-	-	(Baker et al., 2001)
Pozuelos	Argentina	-66	-22.4	3660	-	+	(McGlue et al., 2013)
Bosumtwi	Ghana	-1.4	6.5	150	+	+	(Shanahan et al., 2006)
Chad	Chad et al.	14	13	280	+	-	(Armitage et al., 2015)
Ngami	Botswana	22.7	-20.5	920	-	-	(Burrough et al., 2007)
Tanganyika	Burundi	29.8	-6.7	773	+	+	(Felton et al., 2007)
Albert	Congo/Uganda	31	1.5	615	+	+	(Talbot et al., 2000)
Rukwa	Tanzania	32	-8	800	+	+	(Thevenon et al., 2002)
Victoria	Tanzania et al.	33	-1	1135	+	-	(Talbot & Lærdal, 2000)
Tuz	Turkey	33.4	38.7	905	-	-	(Doğan, 2010)
Masoko	Tanzania	33.8	-9.3	840	+	+	(Garcin et al., 2006)
Malawi	Malawi et al.	34.23	-10	468	+	-	(Johnson et al., 2002)
Lisan	Israel et al.	35.5	31.5	-430	-	-	(Bartov et al., 2002)
Turkana	Kenya/Ethiopia	36.1	3.6	360	+	+	(Morrissey et al., 2014)
Challa	Kenya/Tanzania	37.7	-3.3	880	+	-	(Moernaut et al., 2010)
Abiyata	Ethiopia	38.7	7.7	1573	+	+	(Chalié & Gasse, 2002)
Van	Turkey	43	38.5	1640	+	-	(Çağatay et al., 2014)
Urmia	Iran	45.5	37.5	1267	-	+	(Stevens et al., 2012)
Zeribar	Iran	46	35.5	1285	-	-	(Stevens et al., 2001)
Caspian Sea	Azerbaijan et al.	50.7	41.7	-28	+	-	(Yanina et al., 2014)
Aral Sea	Kazakhstan/Uzbekistan	60	45	42	+	-	(Boomer et al., 2000)
Karakul	Tajikistan	73.5	39	3915	+	-	(Heinecke et al., 2017)

Son Kul	Kyrgyzstan	75	41.8	3016	+	+	(Huang et al., 2014)
Issyk-Kul	Kyrgyzstan	77.3	42.4	1607	+	+	(Ricketts et al., 2001)
Zabuye	China	84	31.6	4421	-	+	(Wang et al., 2002)
Bosten	China	87	42	1048	+	-	(Huang et al., 2009)
Nam Co	China	90.5	30.7	4718	-	+	(Mügler et al., 2010)
Lop Nur	China	91	40.8	780	-	+	(Chao et al., 2009)
Hurleg	China	96.9	37.3	2817	+	-	(Zhao et al., 2007)
Chaka	China	99.1	36.7	3200	-	+	(Liu et al., 2008)
Genggahai	China	100	36.1	2860	-	+	(Qiang et al., 2013)
Qinghai	China	100	38	3260	+	+	(Jin et al., 2015)
Khubsugul	Mongolia	100.5	51	1645	+	+	(Fedotov et al., 2004)
Juyanze	China	101.5	41.8	900	-	-	(Hartmann et al., 2009)
Eyre	Australia	137.4	-28.4	-15	-	-	(Magee et al., 2004)
Frome	Australia	139.9	-30.6	1	-	-	(Deckker et al., 2011)
Callabonna	Australia	140	-29.7	1	-	-	(Cohen et al., 2012)

5 **Table S2.** Pearson correlation coefficients between AI and monthly NAO, SOI, PDO and TPI during 1979-2016. The bold numbers mean that correlation coefficients are statistically significant at 5% level. SAM-South America, NAM-North America, SAF-Southern Africa, EAF-Eastern Africa, NAF-Northern Africa and Arabian peninsula, CEA-Central Eurasia, AUS-Australia, ALL-Global closed basins.

		1	2	3	4	5	6	7	8	9	10	11	12
<b>NAO</b>	ALL	0.25	-0.03	0.15	-0.03	-0.02	-0.02	-0.09	0.10	-0.03	0.19	0.06	0.12
	SAM	-0.15	0.00	0.05	-0.02	0.11	0.00	0.02	-0.07	<b>-0.34</b>	0.08	0.14	0.10
	NAM	0.01	-0.08	-0.11	0.10	0.11	0.07	0.09	0.10	-0.17	0.18	0.18	0.45
	SAF	-0.09	-0.17	0.08	0.17	0.13	<b>-0.36</b>	-0.11	-0.25	0.01	-0.18	-0.06	-0.07
	EAF	0.19	0.12	<b>0.41</b>	-0.04	-0.10	-0.06	-0.07	0.11	0.30	0.29	-0.03	0.03
	NAF	0.06	-0.05	0.15	0.05	-0.04	-0.12	0.06	-0.08	0.18	-0.11	-0.02	0.04
	CEA	<b>0.37</b>	-0.05	-0.08	-0.16	-0.04	0.14	-0.04	0.18	-0.12	0.05	0.01	0.02
	AUS	-0.17	0.04	-0.06	0.26	-0.08	-0.20	-0.03	-0.08	-0.13	-0.03	0.09	0.13
<b>SOI</b>	ALL	<b>-0.35</b>	<b>-0.35</b>	<b>-0.42</b>	<b>-0.48</b>	-0.07	0.16	0.01	0.07	-0.03	0.21	0.12	-0.08
	SAM	-0.17	0.02	-0.10	-0.24	-0.32	-0.22	-0.27	-0.06	-0.16	-0.15	-0.05	-0.25
	NAM	-0.01	-0.09	-0.06	-0.03	-0.17	-0.19	-0.24	-0.13	-0.12	-0.15	-0.07	0.03
	SAF	-0.06	-0.01	-0.15	-0.01	-0.07	0.08	-0.01	-0.05	0.07	0.17	0.14	0.10
	EAF	-0.22	<b>-0.34</b>	<b>-0.35</b>	-0.15	0.16	0.21	0.14	0.03	0.01	0.22	-0.01	0.08
	NAF	-0.17	-0.13	0.07	-0.15	0.22	0.07	0.02	-0.02	0.18	0.15	0.05	0.09
	CEA	-0.26	-0.30	<b>-0.37</b>	<b>-0.53</b>	-0.23	0.01	-0.08	0.03	-0.14	-0.01	-0.01	-0.23
	AUS	0.19	<b>0.39</b>	0.27	0.13	0.07	-0.14	-0.08	0.01	0.09	0.11	0.21	0.04
<b>PDO</b>	ALL	-0.04	-0.20	-0.14	-0.09	-0.18	0.04	0.06	0.13	0.07	0.14	0.10	-0.05

	SAM	0.09	0.00	0.13	0.09	-0.04	-0.05	-0.08	0.05	0.07	0.05	0.14	0.14
	NAM	0.22	<b>0.42</b>	<b>0.47</b>	<b>0.45</b>	<b>0.43</b>	<b>0.34</b>	<b>0.36</b>	0.28	0.28	0.27	<b>0.33</b>	<b>0.34</b>
	SAF	<b>-0.37</b>	<b>-0.45</b>	<b>-0.47</b>	<b>-0.46</b>	<b>-0.41</b>	<b>-0.33</b>	<b>-0.45</b>	<b>-0.33</b>	-0.30	-0.17	-0.19	-0.15
	EAF	-0.06	-0.18	-0.20	-0.14	-0.13	0.04	0.06	-0.05	0.02	0.07	0.08	-0.05
	NAF	0.11	0.11	-0.02	0.01	-0.02	-0.05	-0.09	-0.13	-0.20	0.00	-0.07	-0.20
	CEA	0.12	-0.04	0.00	0.03	-0.04	0.14	0.25	<b>0.34</b>	0.22	0.18	0.06	0.01
	AUS	-0.12	0.03	0.15	0.18	0.15	0.11	-0.01	-0.04	-0.09	-0.04	0.04	-0.02
<b>TPI</b>	ALL	-0.10	-0.06	-0.07	0.06	0.08	0.16	0.19	0.29	0.31	0.30	<b>0.33</b>	<b>0.34</b>
	SAM	-0.19	-0.17	-0.13	-0.12	-0.07	-0.04	0.01	0.12	0.15	0.15	0.14	0.06
	NAM	<b>0.51</b>	<b>0.57</b>	<b>0.56</b>	<b>0.48</b>	<b>0.39</b>	0.29	0.19	0.13	0.08	0.06	0.05	0.07
	SAF	<b>-0.60</b>	<b>-0.63</b>	<b>-0.61</b>	<b>-0.56</b>	<b>-0.49</b>	<b>-0.43</b>	<b>-0.33</b>	-0.22	-0.13	-0.07	0.00	0.03
	EAF	-0.09	-0.09	-0.11	-0.03	0.01	0.08	0.05	0.06	0.13	0.14	0.19	0.23
	NAF	0.15	0.10	0.07	0.11	0.05	0.00	-0.03	-0.02	0.02	0.07	0.13	0.10
	CEA	0.08	0.14	0.14	0.27	0.29	<b>0.37</b>	<b>0.42</b>	<b>0.48</b>	<b>0.41</b>	<b>0.37</b>	<b>0.34</b>	<b>0.37</b>
	AUS	0.06	0.09	0.08	0.00	-0.09	-0.19	-0.24	-0.26	-0.28	<b>-0.32</b>	<b>-0.34</b>	<b>-0.34</b>

## 10 References

- Allen, B. D., & Anderson, R. Y. (2000). A continuous, high-resolution record of late Pleistocene climate variability from the Estancia basin, New Mexico. *Geological Society of America Bulletin*, 112(9), 1444-1458.
- Armitage, S. J., Bristow, C. S., & Drake, N. A. (2015). West African monsoon dynamics inferred from abrupt fluctuations of Lake Mega-Chad. *Proceedings of the National Academy of Sciences*, 112(28), 8543-8548.
- 15 Bacon, S. N., Burke, R. M., Pezzopane, S. K., & Jayko, A. S. (2006). Last glacial maximum and Holocene lake levels of Owens Lake, eastern California, USA. *Quaternary Science Reviews*, 25(11-12), 1264-1282.
- Baker, P. A., Rigsby, C. A., Seltzer, G. O., Fritz, S. C., Lowenstein, T. K., Bacher, N. P., & Veliz, C. (2001). Tropical climate changes at millennial and orbital timescales on the Bolivian Altiplano. *Nature*, 409(6821), 698.
- Bartov, Y., Stein, M., Enzel, Y., Agnon, A., & Reches, Z. E. (2002). Lake levels and sequence stratigraphy of Lake Lisan, the late Pleistocene precursor of the Dead Sea. *Quaternary Research*, 57(1), 9-21.
- 20 Benson, L. V., Smoot, J. P., Lund, S. P., Mensing, S. A., Foit Jr, F. F., & Rye, R. O. (2013). Insights from a synthesis of old and new climate-proxy data from the Pyramid and Winnemucca lake basins for the period 48 to 11.5 cal ka. *Quaternary International*, 310, 62-82.
- Boomer, I., Aladin, N., Plotnikov, I., & Whatley, R. (2000). The palaeolimnology of the Aral Sea: a review. *Quaternary Science Reviews*, 19(13), 1259-1278.
- 25 Bradbury, J. P. (2000). Limnologic history of Lago de Patzcuaro, Michoacan, Mexico for the past 48,000 years: impacts of climate and man. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 163(1-2), 69-95.

- Burrough, S. L., Thomas, D. S. G., Shaw, P. A., & Bailey, R. M. (2007). Multiphase quaternary highstands at lake ngami, kalahari, northern botswana. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 253(3-4), 280-299.
- 30 Çağatay, M. N., Öğretmen, N., Damcl, E., Stockhecke, M., Sancar, Ü., Eriş, K. K., & Özeren, S. (2014). Lake level and climate records of the last 90 ka from the Northern Basin of Lake Van, eastern Turkey. *Quaternary Science Reviews*, 104, 97-116.
- Cartwright, A., Quade, J., Stine, S., Adams, K. D., Broecker, W., & Cheng, H. (2011). Chronostratigraphy and lake-level changes of Laguna Cari-Laufquén, Río Negro, Argentina. *Quaternary Research*, 76(3), 430-440.
- Chalié, F., & Gasse, F. (2002). Late Glacial–Holocene diatom record of water chemistry and lake level change from the tropical  
35 East African Rift Lake Abiyata (Ethiopia). *Palaeogeography, Palaeoclimatology, Palaeoecology*, 187(3-4), 259-283.
- Chao, L., Zicheng, P., Dong, Y., Weiguo, L., Zhaofeng, Z., Jianfeng, H., & Chenlin, C. (2009). A lacustrine record from Lop Nur, Xinjiang, China: Implications for paleoclimate change during Late Pleistocene. *Journal of Asian Earth Sciences*, 34(1), 38-45.
- Chávez-Lara, C. M., Roy, P. D., Pérez, L., Sankar, G. M., & Neri, V. H. L. (2015). Ostracode and C/N based paleoecological  
40 record from Santiaguillo basin of subtropical Mexico over last 27 cal kyr BP. *Revista Mexicana de Ciencias Geológicas*, 32(1), 1-10.
- Cohen, T. J., Nanson, G. C., Jansen, J. D., Jones, B. G., Jacobs, Z., Larsen, J. R., May, J. H., Treble, P., Price, D. M., & Smith, A. M. (2012). Late Quaternary mega-lakes fed by the northern and southern river systems of central Australia: varying moisture sources and increased continental aridity. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 356, 89-108.
- 45 Deckker, P. D. , Magee, J. W. , & Shelley, J. M. G. . (2011). Late quaternary palaeohydrological changes in the large playa lake frome in central australia, recorded from the mg/ca and sr/ca in ostracod valves and biotic remains. *Journal of Arid Environments*, 75(1), 38-50.
- Doğan, U. (2010). Fluvial response to climate change during and after the Last Glacial Maximum in Central Anatolia, Turkey. *Quaternary International*, 222(1-2), 221-229.
- 50 Fedotov, A. P., Chebykin, E. P., Semenov, M. Y., Vorobyova, S. S., Osipov, E. Y., Golobokova, L. P., Pogodaeva, T. V., Zheleznyakova, T. O., Grachev, M. A., Tomurhuu, D., Oyunchimeg, T., Narantsetseg, T., Tomurtogoo, O., Dolgikh, P. T., Arsenyuk, M. I., & Batist, M. D. (2004). Changes in the volume and salinity of Lake Khubsugul (Mongolia) in response to global climate changes in the upper Pleistocene and the Holocene. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 209(1-4), 245-257.
- 55 Felton, A. A., Russell, J. M., Cohen, A. S., Baker, M. E., Chesley, J. T., Lezzar, K. E., McGlue, M. M., Pigati, J. S., Quade, J., Stager, J. C., & Tiercelin, J. J. (2007). Paleolimnological evidence for the onset and termination of glacial aridity from Lake Tanganyika, Tropical East Africa. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 252(3-4), 405-423.
- Garcin, Y. , Vincens, A. , Williamson, D. , Guiot, J. , & Buchet, G. . (2006). Wet phases in tropical southern africa during the last glacial period. *Geophysical Research Letters*, 33(7), L07703.
- 60 Hartmann, K., & Wünnemann, B. (2009). Hydrological changes and Holocene climate variations in NW China, inferred from lake sediments of Juyanze palaeolake by factor analyses. *Quaternary International*, 194(1-2), 28-44.

- Heinecke, L., Mischke, S., Adler, K., Barth, A., Biskaborn, B. K., Plessen, B., Nitze, I., Kuhn, G., Rajabov, I., & Herzsuh, U. (2017). Climatic and limnological changes at Lake Karakul (Tajikistan) during the last~ 29 cal ka. *Journal of Paleolimnology*, 58(3), 317-334.
- 65 Huang, X. Z., Chen, F. H., Fan, Y. X., & Yang, M. L. (2009). Dry late-glacial and early Holocene climate in arid central Asia indicated by lithological and palynological evidence from Bosten Lake, China. *Quaternary International*, 194(1-2), 19-27.
- Huang, X., Oberhänsli, H., von Suchodoletz, H., Prasad, S., Sorrel, P., Plessen, B., Mathis, M., & Usabaliev, R. (2014). Hydrological changes in western Central Asia (Kyrgyzstan) during the Holocene as inferred from a palaeolimnological study in lake Son Kul. *Quaternary Science Reviews*, 103, 134-152.
- 70 Ibarra, D. E., Egger, A. E., Weaver, K. L., Harris, C. R., & Maher, K. (2014). Rise and fall of late Pleistocene pluvial lakes in response to reduced evaporation and precipitation: Evidence from Lake Surprise, California. *Bulletin*, 126(11-12), 1387-1415.
- Jin, Z., An, Z., Yu, J., Li, F., & Zhang, F. (2015). Lake Qinghai sediment geochemistry linked to hydroclimate variability since the last glacial. *Quaternary Science Reviews*, 122, 63-73.
- 75 Johnson, T. C., Brown, E. T., McManus, J., Barry, S., Barker, P., & Gasse, F. (2002). A high-resolution paleoclimate record spanning the past 25,000 years in southern East Africa. *Science*, 296(5565), 113-132.
- Kliem, P., Buylaert, J. P., Hahn, A., Mayr, C., Murray, A. S., Ohlendorf, C., Veres, D., Wastegård, S., Zolitschka, B., & the PASADO science team. (2013). Magnitude, geomorphologic response and climate links of lake level oscillations at Laguna Potrok Aike, Patagonian steppe (Argentina). *Quaternary Science Reviews*, 71, 131-146.
- 80 Liu, X., Dong, H., Rech, J. A., Matsumoto, R., Yang, B., & Wang, Y. (2008). Evolution of Chaka Salt Lake in NW China in response to climatic change during the Latest Pleistocene–Holocene. *Quaternary Science Reviews*, 27(7-8), 867-879.
- Magee, J. W., Miller, G. H., Spooner, N. A., & Questiaux, D. (2004). Continuous 150 ky monsoon record from Lake Eyre, Australia: insolation-forcing implications and unexpected Holocene failure. *Geology*, 32(10), 885-888.
- Massaferro, J. I., Moreno, P. I., Denton, G. H., Vandergoes, M., & Dieffenbacher-Krall, A. (2009). Chironomid and pollen  
85 evidence for climate fluctuations during the Last Glacial Termination in NW Patagonia. *Quaternary Science Reviews*, 28(5-6), 517-525.
- McGlue, M. M., Cohen, A. S., Ellis, G. S., & Kowler, A. L. (2013). Late Quaternary stratigraphy, sedimentology and geochemistry of an underfilled lake basin in the Puna plateau (northwest Argentina). *Basin Research*, 25(6), 638-658.
- Moernaut, J., Verschuren, D., Charlet, F., Kristen, I., Fagot, M., & DeBatist, M. (2010). The seismic-stratigraphic record of  
90 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(1-2), 214-223.
- Morrissey, A. , & Scholz, C. A. . (2014). Paleohydrology of lake turkana and its influence on the Nile river system. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 403, 88-100.

- Mügler, I., Gleixner, G., Günther, F., Mäusbacher, R., Daut, G., Schütt, B., Berking, J., Schwark, L., Xu, B., Yao, T., Zhu, L., & Yi, C. (2010). A multi-proxy approach to reconstruct hydrological changes and Holocene climate development of Nam Co, Central Tibet. *Journal of Paleolimnology*, 43(4), 625-648.
- Munroe, J. S., & Laabs, B. J. (2013). Temporal correspondence between pluvial lake highstands in the southwestern US and Heinrich Event 1. *Journal of Quaternary Science*, 28(1), 49-58.
- Oviatt, C. G. (2015). Chronology of Lake Bonneville, 30,000 to 10,000 yr BP. *Quaternary Science Reviews*, 110, 166-171.
- 100 Qiang, M., Song, L., Chen, F., Li, M., Liu, X., & Wang, Q. (2013). A 16-ka lake-level record inferred from macrofossils in a sediment core from Genggahai Lake, northeastern Qinghai–Tibetan Plateau (China). *Journal of Paleolimnology*, 49(4), 575-590.
- Ricketts, R. D., Johnson, T. C., Brown, E. T., Rasmussen, K. A., & Romanovsky, V. V. (2001). The Holocene paleolimnology of Lake Issyk-Kul, Kyrgyzstan: Trace element and stable isotope composition of ostracodes. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 176(1-4), 207-227.
- 105 Rowe, H. D., Dunbar, R. B., Mucciarone, D. A., Seltzer, G. O., Baker, P. A., & Fritz, S. (2002). Insolation, moisture balance and climate change on the South American Altiplano since the Last Glacial Maximum. *Climatic Change*, 52(1-2), 175-199.
- Shanahan, T. M., Overpeck, J. T., Wheeler, C. W., Beck, J. W., Pigati, J. S., Talbot, M. R., Scholz, C. A., Peck, J., & King, J. W. (2006). Paleoclimatic variations in West Africa from a record of late Pleistocene and Holocene lake level stands of Lake Bosumtwi, Ghana. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 242(3-4), 287-302.
- 110 Stevens, L. R., Djamali, M., Andrieu-Ponel, V., & deBeaulieu, J. L. (2012). Hydroclimatic variations over the last two glacial/interglacial cycles at Lake Urmia, Iran. *Journal of Paleolimnology*, 47(4), 645-660.
- Stevens, L. R., Wright Jr, H. E., & Ito, E. (2001). Proposed changes in seasonality of climate during the Lateglacial and Holocene at Lake Zeribar, Iran. *The Holocene*, 11(6), 747-755.
- 115 Talbot, M. R., & Lærdal, T. (2000). The Late Pleistocene-Holocene palaeolimnology of Lake Victoria, East Africa, based upon elemental and isotopic analyses of sedimentary organic matter. *Journal of Paleolimnology*, 23(2), 141-164.
- Talbot, M. R., Williams, M. A. J., & Adamson, D. A. (2000). Strontium isotope evidence for late Pleistocene reestablishment of an integrated Nile drainage network. *Geology*, 28(4), 343-346.
- Thevenon, F., Williamson, D., & Taieb, M. (2002). A 22 kyr BP sedimentological record of Lake Rukwa (8 S, SW Tanzania): environmental, chronostratigraphic and climatic implications. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 187(3-4), 285-294.
- 120 Valero-Garcés, B. L., Jenny, B., Rondanelli, M., Delgado-Huertas, A., Burns, S. J., Veit, H., & Moreno, A. (2005). Palaeohydrology of Laguna de Tagua Tagua (34° 30' S) and moisture fluctuations in Central Chile for the last 46 000 yr. *Journal of Quaternary Science: Published for the Quaternary Research Association*, 20(7-8), 625-641.
- 125 Wang, R. L., Scarpitta, S. C., Zhang, S. C., & Zheng, M. P. (2002). Later Pleistocene/Holocene climate conditions of Qinghai–Xizhang Plateau (Tibet) based on carbon and oxygen stable isotopes of Zabuye Lake sediments. *Earth and Planetary Science Letters*, 203(1), 461-477.

- Wells, S. G., Brown, W. J., Enzel, Y., Anderson, R. Y., McFadden, L. D., & Lancaster, N. (2003). Late Quaternary geology and paleohydrology of pluvial Lake Mojave, southern California. *Special Papers-Geological Society of America*, 79-114.
- 130 Yanina, T. A. (2014). The Ponto-Caspian region: environmental consequences of climate change during the Late Pleistocene. *Quaternary International*, 345, 88-99.
- Zhao, Y., Yu, Z., Chen, F., Ito, E., & Zhao, C. (2007). Holocene vegetation and climate history at Hurleg Lake in the Qaidam Basin, northwest China. *Review of Palaeobotany and Palynology*, 145(3-4), 275-288.