Data Repository for "A new paleoprecipitation proxy based on soil magnetic properties: Implications for expanding paleoclimate reconstructions" by Hyland et al.

Table DR1. List of modern soil sites and climatic variables, including literature sources.

Sample[a]	Location[b]	G/H ratio	MAP (mm/yr)	MAT (˚C)	RMMP[c] (mm/yr)
1.01	Wongan Hills, WA (Austr.)	0.53	405	25.7	61
1.02	Narrogin, WA (Austr.)	0.35	475	22.4	74
1.03	Pickering, WA (Austr.)	1.00	950	22.5	184
1.04	Dawesville, WA (Austr.)	1.00	1120	23.1	117
1.05	Dudinin, WA (Austr.)	0.55	370	23.2	59
1.06	Boyup Brook, WA (Austr.)	0.74	690	22.8	104
1.07	Bridgetown, WA (Austr.)	0.18	425	22.4	131
1.08	Bannister, WA (Austr.)	0.40	440	23.7	114
1.09	Marradong, WA (Austr.)	0.58	645	23.7	128
1.10	Frankland River, WA (Austr.)	0.19	365	21.0	82
2.01	Montilla, COR (Spain)	0.56	600	16.5	84
2.02	Montilla, COR (Spain)	0.63	600	16.5	84
3.01	Albion, NE (USA)	0.53	710	9.1	92
4.01	Pulau Batam (Indonesia)	2.62	2600	28.1	233
4.02	Pulau Batam (Indonesia)	2.75	2900	26.5	233
4.03	Broadway, GLOU (U.K.)	1.33	975	10.6	43
4.04	Guiyang, GUIZ (China)	1.34	1295	15.2	193
5.01	Willowdale, WA (Austr.)	1.00	1180	23.6	212
5.02	Jarrahdale, WA (Austr.)	0.83	1170	22.5	214
6.01	Alegrete, RGS (Brazil)	1.83	1900	22.1	291
6.02	Santa Maria, RGS (Brazil)	2.70	2450	18.8	25
6.03	Porto Alegre, RGS (Brazil)	1.70	1750	20.6	54
6.04	Mineiros, GOIAS (Brazil)	2.33	2450	24.3	73
6.05	Itaberai, GOIAS (Brazil)	1.65	1700	22.5	314
7.01	Esla River, LEON (Spain)	0.56	450	12.0	35
7.02	Guadalquivir, COR (Spain)	0.75	650	18.2	100
8.01	Lake Danao, LEYTE (Phili.)	2.62	3300	27.2	170
8.02	Ipil, LEYTE (Phili.)	2.12	2500	27.2	170
8.03	Can Adieng, LEYTE (Phili.)	2.33	2450	27.2	170
8.04	Ormoc, LEYTE (Phili.)	2.00	2260	27.2	170
9.01	Minas Gerais, MG (Brazil)	1.35	1470	21.1	306
9.02	Serra de Moeda, MG (Brazil)	1.66	1620	20.5	290
10.01	Brasilia, FD (Brazil)	1.65	1565	21.2	240
10.02	Howard, TX (USA)	0.28	510	17.8	55
10.03	Goainia, GOIAS (Brazil)	1.15	1150	24.7	353
10.04	Gottingen, SAX (Germany)	1.00	750	8.6	36
11.01	Sedghiane, MED (Tunisia)	0.12	235	18.6	55
11.02	Sedghiane, MED (Tunisia)	0.06	190	18.6	55
12.01	Schefferville, QC (Canada)	0.71	820	-5.0	65
12.02	Schefferville, QC (Canada)	0.81	825	-5.0	65
13.01	Cecil, NC (USA)	1.17	1200	19.9	280
13.02	Orangeburg, SC (USA)	1.39	1260	17.3	57

Sample[a]	Location[b]	G/H ratio	MAP (mm/yr)	MAT (˚C)	RMMP[c] (mm/yr)
AC2	Williams, AZ (USA)	0.38	550	9.9	41
ALT	Davis Creek, CA (USA)	0.34	315	8.1	55
AME	Honey Lake, CA (USA)	0.05	140	10.3	84
BAL	Santa Paula, CA (USA)	0.27	455	15.7	69
BLAC	Coos Bay, OR (USA)	1.71	1780	11.3	70
BOU	Lucerne Valley, CA (USA)	0.17	100	16.7	31
CA2	Seligman, AZ (USA)	0.29	295	11.2	43
CAU	Moores Creek, NV (USA)	0.09	125	12.4	23
COH	Little Giant, CA (USA)	0.90	1320	16.0	157
DEJ	American House, CA (USA)	2.40	2110	5.3	232
GS2	Casa Grande, AZ (USA)	0.20	215	21.0	23
HODA	Rock Creek, CA (USA)	1.48	1540	6.7	328
ISHI	Humboldt, CA (USA)	1.82	1905	11.0	257
LAV	Adelanto, CA (USA)	0.26	205	16.7	31
LOR	Carr Lake, CA (USA)	1.68	1775	5.3	232
MAR	Brentwood, CA (USA)	0.25	305	16.3	61
MIL	Wasco, CA (USA)	0.14	180	17.3	99
MIN	French Gulch, CA (USA)	1.37	1525	12.1	170
MO	Ann Arbor, MI (USA)	0.85	930	9.7	10
MUR	Rosamond, CA (USA)	0.09	130	17.1	34
N95	Northfield, MN (USA)	0.81	860	6.3	97
NH	Manistee, MI (USA)	0.76	840	8.6	64
OS2	Dexter, MI (USA)	0.68	740	9.6	84
PAR	Boonville, CA (USA)	1.56	1520	11.8	399
PUTT	Emigrant Gap, CA (USA)	1.43	1525	5.3	232
STAG	Camel Peak, CA (USA)	1.95	1970	5.3	232
TIN	Soda Springs, CA (USA)	1.62	1650	5.3	232
USAL	Mendocino, CA (USA)	1.26	1270	10.6	368

1. Singh and Gilkes (1992)
2. Torrent et al. (2010)
3. Geiss et al. (2004)
4. France and Oldfield (2000)
5. Anand and Gilkes (1987)
6. Schwertmann and Kampf (1985)
7. Torrent et al. (1980)
8. Navarette et al. (2008)
9. Curi and Franzmeier (1987)
10. Schulze (1981)
11. Prudencio et al. (2011)
12. Wang et al. (1989)
13. Bigham et al. (1978)

[a] Sample numbers correspond to cited literature list, and named samples are from this study.
[b] Locations are either from the literature, or are the nearest climate monitoring center.
[c] RMMP (range of mean monthly precipitation) is the difference between mean wet-month precipitation and mean dry-month precipitation values.

Table DR2. List of mean annual precipitation estimates (MAP) for the Green River Basin region during the EECO based on G/H ratio, CIA-K, depth to Bk horizon (DBK), and MlnA proxies.

Sample	Age (Myr)	MAP (mm/yr)			
		G/H	CIA-K[a]	DBK[a]	MlnA[b]
Niland Tongue	52.6*				1000 (+434, -303)
1	51.95	330 (±157)		448 (±147)	
3	51.92	320 (±157)		392 (±147)	
4	51.90			363 (±147)	
15	51.81	401 (±157)		642 (±147)	
24	51.75		1013 (±181)	501 (±147)	
38	51.59		890 (±181)		
39	51.58		988 (±181)		
40	51.57		715 (±181)		
45	51.53	421 (±157)		363 (±147)	
46	51.52	651 (±157)		392 (±147)	
47	51.51	892 (±157)		620 (±147)	
50	51.48	973 (±157)		937 (±147)	
62	51.37	822 (±157)	842 (±181)	937 (±147)	
64	51.35	792 (±157)	1085 (±181)	914 (±147)	
65	51.34		1096 (±181)		
66	51.33		1023 (±181)		
70	51.30	591 (±157)	1104 (±181)	864 (±147)	
71	51.29		579 (±181)		
72	51.28	461 (±157)			
78	51.22			392 (±147)	
82	51.18	290 (±157)		501 (±147)	
87	51.14			475 (±147)	
91	51.10			721 (±147)	
93	51.08	240 (±157)	364 (±181)	526 (±147)	
94	51.05	350 (±157)		642 (±147)	
105	50.98		975 (±181)		
106	50.97	410 (±157)	624 (±181)		
107	50.96		952 (±181)		
112	50.90	360 (±157)		620 (±147)	
Little Mountain	49.5*				769 (+332, -232)

[a] Hyland and Sheldon (2013)
[b] Wilf (2000)
* Age estimates based on Smith et al. (2003)

Table DR3. G/H ratios from a lateral transect through an early Eocene paleosol (HB1, Wyoming)

Sample	Horizon	Distance from section (m)*	G/H ratio	MAP (mm yr^{-1})
Δ-a	A	60	0.21	-------
Δ-b	B	60	0.31	360.4
Δ-c	A	140	0.41	-------
Δ-d	B	140	0.32	370.4
Δ-e	A	340	0.38	-------
Δ-f	B	340	0.28	330.3
Δ-g	A	900	0.59	-------
Δ-h	B	900	0.32	370.4

* Distance from section is the horizontal distance between the sampling location and the stratigraphic section sampled for climate reconstructions in Table DR2 (same paleosol as sample HB-94).

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