

Supplementary information

Includes supplementary table, figures, and reference list

Supplementary Table. List of records identified as relevant for the database (see Section 3 in the main text), and their classification in terms of confidence level (high, medium, low). The identification of the sources of uncertainty (according to the criteria discussed in the main text) is made explicit. Uncertainties are labeled as either substantial (x) or critical (xx).

Supplementary Figures. Comparison of simulated dust deposition ($\text{g/m}^2/\text{a}$) for the 6 ka BP case, compared to observational estimates of the fine ($< 10 \mu\text{m}$) eolian Mass Accumulation Rate for the corresponding periods, based on a 2 ka pace. (a) Observations; (b) model; (c) model versus observations scatterplot. Horizontal bars represent the variability of observational data averaged within the corresponding 2 ka time lapse (1 sigma). Locations of observational sites are clustered in the scatterplots based on their geographical location, as indicated by the color-coding. In the bottom scatterplot, squares indicate high confidence level, diamonds represent medium confidence level; (d) spatial distribution of the dominant sources for dust deposition. Figure S1: 2 ka BP. Figure S2: 4 ka BP. Figure S3: 6 ka BP. Figure S4: 8 ka BP. Figure S5: 10 ka BP.

Supplementary Table

Site / area	Archive	Confidence level	Age model / SBMAR	Determination of EC	Separation of remote vs local	Sources of uncertainty	Reference	Additional references
EDC	ice core	high					Delmonte et al., 2004	
Vostok-BH7	ice core	high					Delmonte et al., 2004	
GISP2	ice core	medium		x		calcium proxy	Mayewski et al., 1997	Ruth et al., 2002, 2008
EN06601-0038PG	marine core	high					Francois et al., 1990	
EN06601-0021PG	marine core	high					Francois et al., 1990	
EN06601-0029PG	marine core	high					Francois et al., 1990	
OC437-07-GC27	marine core	medium		x		possible unaccounted for, non-eolian inputs	McGee et al., 2013	
OC437-07-GC37	marine core	high					McGee et al., 2013	
OC437-07-GC49	marine core	high					McGee et al., 2013	
OC437-07-GC66	marine core	medium		x		possible unaccounted for, non-eolian inputs	McGee et al., 2013	
OC437-07-GC68	marine core	high					McGee et al., 2013	
RC24-12	marine core	high					Bradtmitter et al., 2006	
RC24-07	marine core	high					Bradtmitter et al., 2006	
RC24-01	marine core	high					Bradtmitter et al., 2006	
V22-182	marine core	high					Bradtmitter et al., 2006	
V30-40	marine core	high					Bradtmitter et al., 2006	
PS2498-1	marine core	medium		x		possible non-local / non-eolian inputs	Anderson et al., 2014	Kohfeld and Harrison, 2001
RC27-42	marine core	high					Pourmand et al., 2007	
93KL	marine core	medium		x		possible non-eolian inputs	Pourmand et al., 2004	
ODP138-848B-1H-1	marine core	medium	x			stratigraphic correlation age model	McGee et al., 2007	
ODP138-849A-1H-1	marine core	medium	x			stratigraphic correlation age model	McGee et al., 2007	
ODP138-850A-1H-1	marine core	medium	x			stratigraphic correlation age model	McGee et al., 2007	
ODP138-851E-1H-1	marine core	medium	x			stratigraphic correlation age model	McGee et al., 2007	
ODP138-852A-1H-1	marine core	medium	x			stratigraphic correlation age model	McGee et al., 2007	
ODP138-853B-1H-1	marine core	medium	x			stratigraphic correlation age model	McGee et al., 2007	
TT013-PC72	marine core	high					Anderson et al., 2006	
TT013-MC27	marine core	high					Anderson et al., 2006	
TT013-MC69	marine core	high					Anderson et al., 2006	
TT013-MC97	marine core	high					Anderson et al., 2006	
TT013-MC19	marine core	high					Anderson et al., 2006	
V28-203	marine core	high					Bradtmitter et al., 2007	
V21-146	marine core	medium	x			age model	Hovan et al., 1991	
SO-14-08-05	marine core	medium	x			age model	Hesse and McTainsh, 2003; Fitzsimmons et al., 2013	
E26.1	marine core	medium	x			age model	Hesse, 1994; Fitzsimmons et al., 2013	
Zagoskin_Lake	lake	medium	x			age model	Muhs et al., 2003b	
Chitina	loess / paleosol	medium	x			age model	Muhs et al., 2013	
Luochuan, China	loess / paleosol	medium	x			Age model	Lu et al., 2013	
Jiuzhoutai	loess / paleosol	medium	x			age model	Kohfeld and Harrison, 2003	

Duowa	loess / paleosol	medium	x			age model	Roberts et al., 2001	
Beiguoyuan	loess / paleosol	medium	x			age model	Stevens and Lu, 2009	
Xifeng	loess / paleosol	medium	x			age model	Stevens and Lu, 2009	
Jingyuan	loess / paleosol	medium	x			age model	Sun et al., 2012	
Weinan	loess / paleosol	medium	x			age model	Kang et al., 2013	
OWR	loess / paleosol	medium	x			age model	Miao et al., 2007	
LRC	loess / paleosol	medium	x			age model	Miao et al., 2007	
Dome B	ice core	low	xx			age model	Delmonte et al., 2004	Jouzel et al., 1995
TALDICE	ice core	low			xx	local sources	Albani et al., 2012	Delmonte et al., 2010; Delmonte et al., 2013
Siple Dome	ice core	low		x	x	calcium proxy, possible local sources	Mayewski et al., 2013	Ruth et al., 2002, 2008; Delmonte et al., 2013; Bory et al., 2010
Taylor Dome	ice core	low		x	x	calcium proxy, possible local sources	Mayewski et al., 2013	Ruth et al., 2002, 2008; Delmonte et al., 2013; Bory et al., 2010
Byrd	ice core	low		x	x	old particle counter data, possible local sources	Thompson et al., 1975, 1977	Delmonte et al., 2013; Bory et al., 2010
EDML	ice core	low		x	x	calcium proxy, possible local sources	Fischer et al., 2007	Ruth et al., 2002, 2008; Delmonte et al., 2013; Bory et al., 2010
Dome Fuji	ice core	low		xx		uncalibrated laser counter	Kawamura et al., 2003; Fujii et al., 2003	
Camp Century	ice core	low		x	x	old particle counter data, possible local sources	Thompson et al., 1975, 1977	Hansson, 1994; Bullard, 2013
Penny Ice Cap	ice core	low	xx		x	age model, local sources	Zdanowicz et al., 2000	C. Zdanowicz, personal comm.
Dunde	ice core	low	xx			age model	Thompson et al., 1997	L. G. Thompson, personal comm.
Guliya	ice core	low	xx			age model	Wu et al., 2004	L. G. Thompson, personal comm.
Puruogangri	ice core	low	xx			age model	Thompson et al., 2006	L. G. Thompson, personal comm.
Huascarán	ice core	low	xx		x	age model, local sources	Thompson et al., 1995	L. G. Thompson, personal comm.
Sajama	ice core	low	xx			age model	Thompson et al., 1998	L. G. Thompson, personal comm.
Kilimajaro	ice core	low	xx	x	x	age model, local sources, volcanic input	Thompson et al., 2002	Gabrielli et al., 2014; L. G. Thompson, personal comm.
Nevado Illimani	ice core	low	xx			age model	Ramirez et al., 2003	J.-R. Petit, personal comm.
ODP108-658C	marine core	low		xx		unaccounted for, non-eolian inputs	Adkins et al., 2006	McGee et al., 2013
SU81-18 (Iberian Margin)	marine core	low		xx		non-eolian inputs	Gherardi et al., 2005	
OCE326-GGC5 (North Atlantic)	marine core	low		xx		non-eolian inputs	McManus et al., 2004	Kohfeld and Harrison, 2001
KNR110-82GGC (Ceara Rise)	marine core	low		xx		possible riverine inputs from the Amazon	Francois et al., 1990	Ruddiman, 1997
KNR110-58GGC (Ceara Rise)	marine core	low		xx		possible riverine inputs from the Amazon	Francois et al., 1990	Ruddiman, 1997
KNR110-55GGC (Ceara Rise)	marine core	low		xx		possible riverine inputs from the Amazon	Francois et al., 1990	Ruddiman, 1997
RC13-189 (W Equatorial Atlantic)	marine core	low		xx		possible riverine inputs from the Amazon	Bradtiller et al., 2006	Francois et al., 1990; Ruddiman, 1997
RC16-66 (W Equatorial Atlantic)	marine core	low		xx		possible riverine inputs from the Amazon	Bradtiller et al., 2006	Francois et al., 1990; Ruddiman, 1997
V22-177 (Equatorial Atlantic)	marine core	low	xx			unconstrained sediment redistribution	Ruddiman, 1997	Bradtiller et al. (2006); Francois et al., 1990
V29-144 (Equatorial Atlantic)	marine core	low	xx	xx		unconstrained sediment redistribution; possible riverine inputs from Congo river	Ruddiman, 1997	Bradtiller et al. (2006); Francois et al., 1990
V30-41K (Equatorial Atlantic)	marine core	low	xx			unconstrained sediment redistribution	Ruddiman, 1997	Bradtiller et al. (2006); Francois et al., 1990
9501 (E Mediterranean)	marine core	low		xx		separation of riverine/eolian, no size	Box et al., 2011	
9509 (E Mediterranean)	marine core	low		xx		separation of riverine/eolian, no size	Box et al., 2011	
RC27-61 (Arabian Sea)	marine core	low	xx			age model	Clemens and Prell, 1990	
ODP117-722B (Arabian Sea)	marine core	low	xx			age model	Clemens and Prell, 1990	

JPC17 (Bering Sea)	marine core	low		xx		possible non-eolian/volcanic inputs	Kohfeld and Chase, 2011; Brunelle et al., 2007	Hovan and Rea, 1995; Serno et al., 2014; Kohfeld and Harrison, 2001
PC13 (Bering Sea)	marine core	low		xx		possible non-eolian/volcanic inputs	Kohfeld and Chase, 2011; Brunelle et al., 2010	Hovan and Rea, 1995; Serno et al., 2014; Kohfeld and Harrison, 2001
RAMA 44 PC (Bering Sea)	marine core	low		xx		possible non-eolian/volcanic inputs	Kohfeld and Chase, 2011; Crusius et al., 2004	Hovan and Rea, 1995; Serno et al., 2014; Kohfeld and Harrison, 2001
ODP Site 887B (Bering Sea)	marine core	low		xx		possible non-eolian/volcanic inputs	Kohfeld and Chase, 2011; Jaccard et al., 2009	Hovan and Rea, 1995; Serno et al., 2014; Kohfeld and Harrison, 2001
ME0005-24JC (Panama Basin)	marine core	low		xx		possible non-eolian/volcanic inputs	Kienast et al., 2007	Olivarez et al., 1991
Y69-71P (Panama Basin)	marine core	low		xx		possible non-eolian/volcanic inputs	Kienast et al., 2007	Olivarez et al., 1991
P7 (Panama Basin)	marine core	low		xx		possible non-eolian/volcanic inputs	Kienast et al., 2007	Olivarez et al., 1991
ME0005-27JC (Panama Basin)	marine core	low		xx		possible non-eolian/volcanic inputs	Kienast et al., 2007	Olivarez et al., 1991
TR163-31P (Panama Basin)	marine core	low		xx		possible non-eolian/volcanic inputs	Kienast et al., 2007	Olivarez et al., 1991
TR163-31B (E Eq. Pacific)	marine core	low		xx		possible non-eolian/volcanic inputs	Boven and Rea, 1998	Olivarez et al., 1991
MD01-2407 (Japan Sea)	marine core	low	x	x		possible sediment focusing, riverine inputs	Nagashima et al., 2007	
O3167 (Ontong-Java Plateau)	marine core	low		xx		possible non-eolian inputs	Kawahata, 1999	
C2188 (Ontong-Java Plateau)	marine core	low		xx		possible non-eolian inputs	Kawahata, 1999	
C4402 (Ontong-Java Plateau)	marine core	low		xx		possible non-eolian inputs	Kawahata, 1999	
MD97-2138 (Ontong-Java Plateau)	marine core	low		xx		possible non-eolian inputs	Bradtmitter et al., 2007	Kawahata, 1999
MW91-9 (Ontong-Java Plateau)	marine core	low		xx		possible non-eolian inputs	Bradtmitter et al., 2007	Kawahata, 1999
MD91-BC36 (Ontong-Java Plateau)	marine core	low		xx		possible non-eolian inputs	Bradtmitter et al., 2007	Kawahata, 1999
RC17-177	marine core	low		xx		possible non-eolian inputs	Bradtmitter et al., 2007	Kawahata, 1999
V20-122 (NW Pacific)	marine core	low	x	xx		age model, possible non-eolian inputs	Rea and Leinen, 1988	Hovan and Rea, 1995; Serno et al., 2014; D. Rea, personal comm.
V20-126 (NW Pacific)	marine core	low	x	xx		age model, possible non-eolian inputs	Rea and Leinen, 1988	Hovan and Rea, 1995; Serno et al., 2014; D. Rea, personal comm.
V20-129 (NW Pacific)	marine core	low	x	xx		age model, possible non-eolian inputs	Rea and Leinen, 1988	Hovan and Rea, 1995; Serno et al., 2014; D. Rea, personal comm.
RC14-105 (NW Pacific)	marine core	low	x	xx		age model, possible non-eolian inputs	Rea and Leinen, 1988	Hovan and Rea, 1995; Serno et al., 2014; D. Rea, personal comm.
NGC97 (Tasman Sea)	marine core	low	x	x		age model, aluminium proxy	Kawahata, 2000	
NGC99 (Tasman Sea)	marine core	low	x	x		age model, aluminium proxy	Kawahata, 2000	
E14-17 (Southern Ocean)	marine core	low		xx		possible non-eolian inputs (IRD)	Bradtmitter et al., 2009	Kohfeld and Harrison, 2001; Kohfeld et al., 2013
E15-4 (Southern Ocean)	marine core	low		xx		possible non-eolian inputs (IRD)	Bradtmitter et al., 2009	Kohfeld and Harrison, 2001; Kohfeld et al., 2013
E15-5 (Southern Ocean)	marine core	low		xx		possible non-eolian inputs (IRD)	Bradtmitter et al., 2009	Kohfeld and Harrison, 2001; Kohfeld et al., 2013
E15-28 (Southern Ocean)	marine core	low		xx		possible non-eolian inputs (IRD)	Bradtmitter et al., 2009	Kohfeld and Harrison, 2001; Kohfeld et al., 2013
E19-7 (Southern Ocean)	marine core	low		xx		possible non-eolian inputs (IRD)	Bradtmitter et al., 2009	Kohfeld and Harrison, 2001; Kohfeld et al., 2013
E27-23 (Southern Ocean)	marine core	low		xx		possible non-eolian inputs (IRD)	Bradtmitter et al., 2009	Kohfeld and Harrison, 2001; Kohfeld et al., 2013
E36-36 (Southern Ocean)	marine core	low		xx		possible non-eolian inputs (IRD)	Bradtmitter et al., 2009	Kohfeld and Harrison, 2001; Kohfeld et al., 2013
V16-121 (Southern Ocean)	marine core	low		xx		possible non-eolian inputs (IRD)	Bradtmitter et al., 2009	Kohfeld and Harrison, 2001; Kohfeld et al., 2013
Tongsu maar, Cheju Island, Korea	lake	low		xx		quartz proxy	Lim and Matsumoto, 2008	
Lake Biwa, Japan	lake	low	x	xx		quartz proxy	Xiao et al., 1997	

Lake Huguang maar, China	lake	low	xx			inadequate temporal resolution for accumulation	Yancheva et al., 2007	G. Haug, personal comm.
Native Companion Lagoon, Australia	lake	low	x		x	age model, local sources	McGowan et al., 2008; Petherick et al., 2009	
Elk Lake, Minnesota	lake	low		x	x	aluminium proxy, no size, possible local sources	Dean et al., 1997	
Hongyuan, Tibet	peat bog	low		x	xx	dust proxy, separation of local/remote sources (size-dependent)	Ferrat et al., 2011	
Store Mosse, Sweden	peat bog	low		x	xx	dust proxy, separation of local/remote sources (size-dependent)	Kylander et al., 2013	
Old Man Range, New Zealand	peat bog	low		x	x	dust proxy, separation of local/remote sources (size-dependent)	Marx et al., 2009	
Upper Snowy Mountains, Australia	peat bog	low		x	xx	dust proxy, separation of local/remote sources (size-dependent)	McGowan et al., 2010	
Etang de la Gruere, Switzerland	peat bog	low		x	xx	dust proxy, separation of local/remote sources (size-dependent)	Le Roux et al., 2012	
Isla Navarino, Chile	peat bog	low		x	xx	dust proxy, separation of local/remote sources (size-dependent)	Sapkota et al., 2007	
Baxie (Chinese Loess Plateau)	loess / paleosol	low	xx	x		Section with potential local river sources	Kohfeld and Harrison, 2003	Sun et al., 2000
Halali (Chinese Loess Plateau)	loess / paleosol	low	xx	x		Section with potential local sources from the lacustrine sediments of Qinghai Lake	Kohfeld and Harrison, 2003	Sun et al., 2000
Yinwan (Chinese Loess Plateau)	loess / paleosol	low	xx	x		Section with potential local river sources	Kohfeld and Harrison, 2003	Sun et al., 2000
Dadiwan (Chinese Loess Plateau)	loess / paleosol	low	xx	x		Section with potential local river sources	Kohfeld and Harrison, 2003	Sun et al., 2000
Laoguantai, China	loess / paleosol	low	xx			lack of nearby sites in this compilation with matching horizon stratigraphy	Jia et al., 2008	

Figure S1

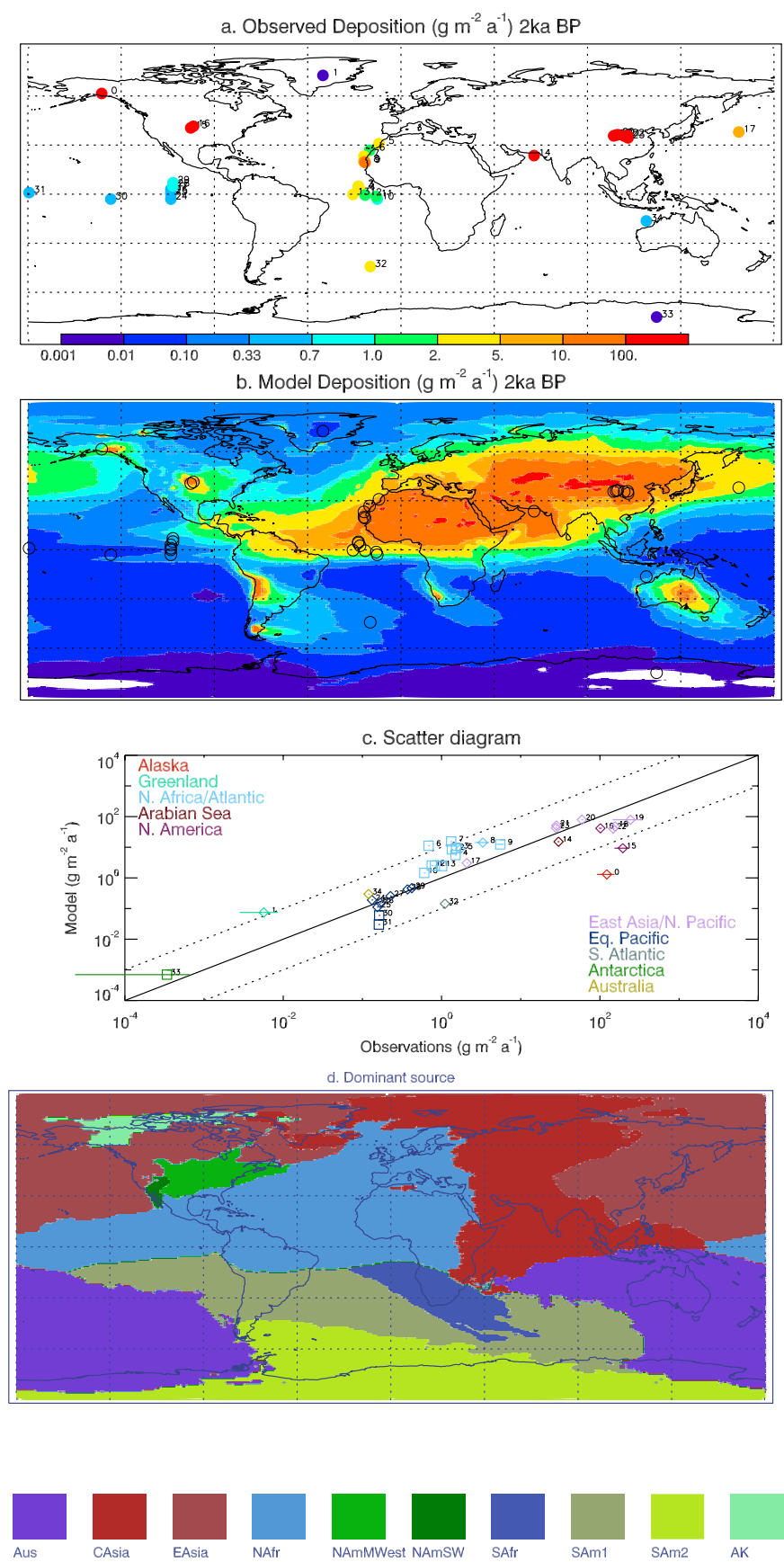


Figure S2

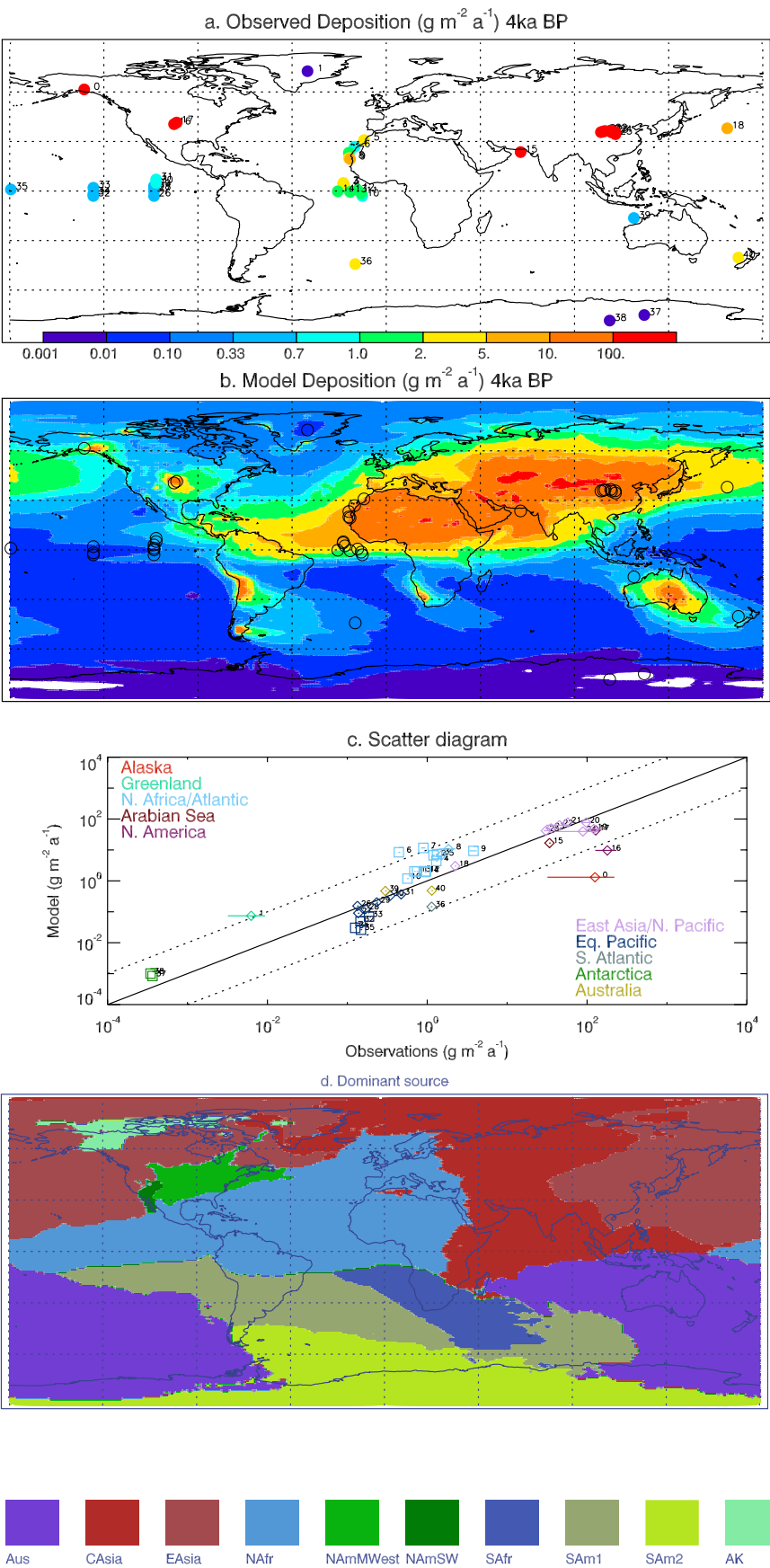


Figure S3

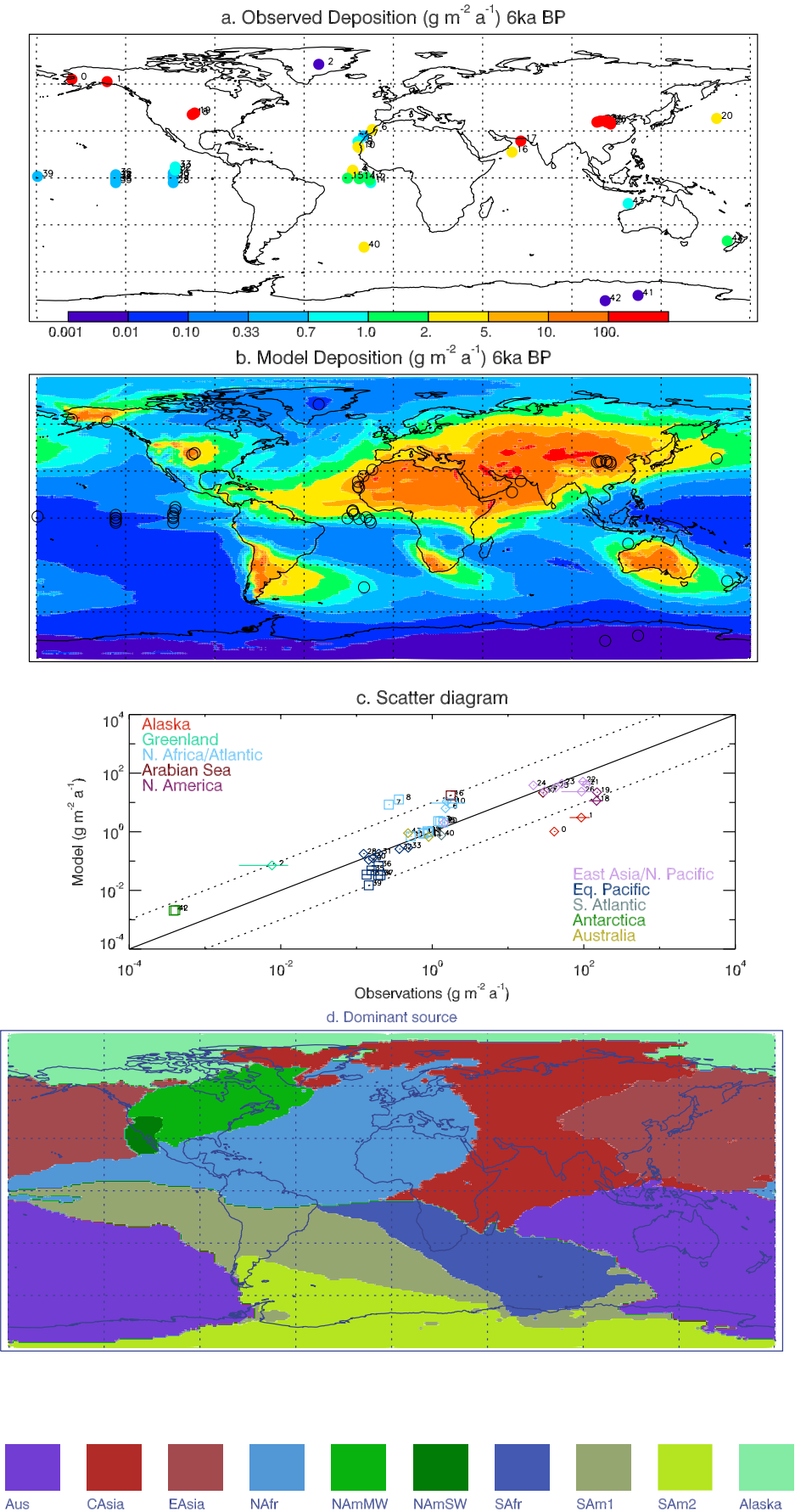


Figure S4

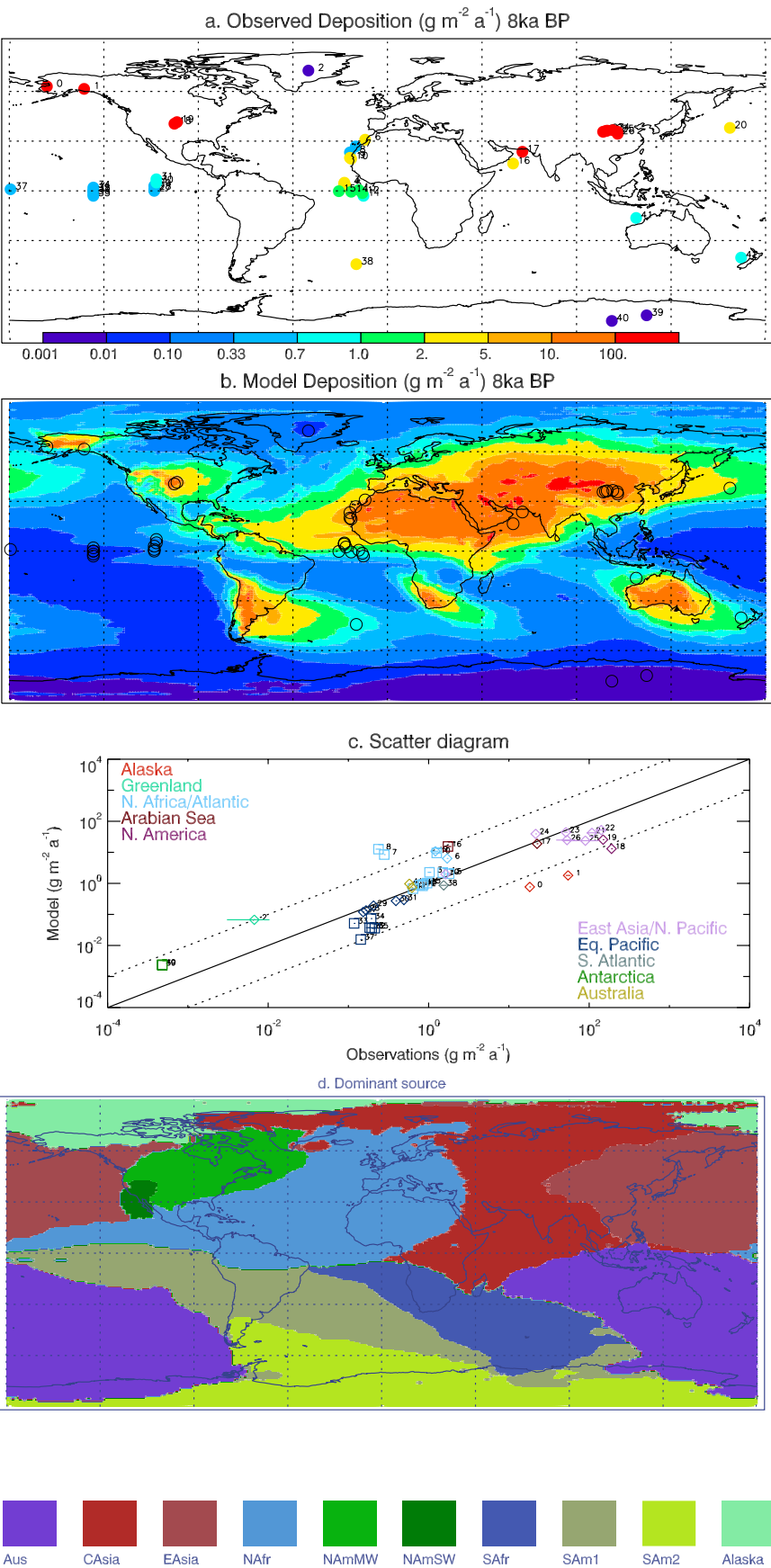
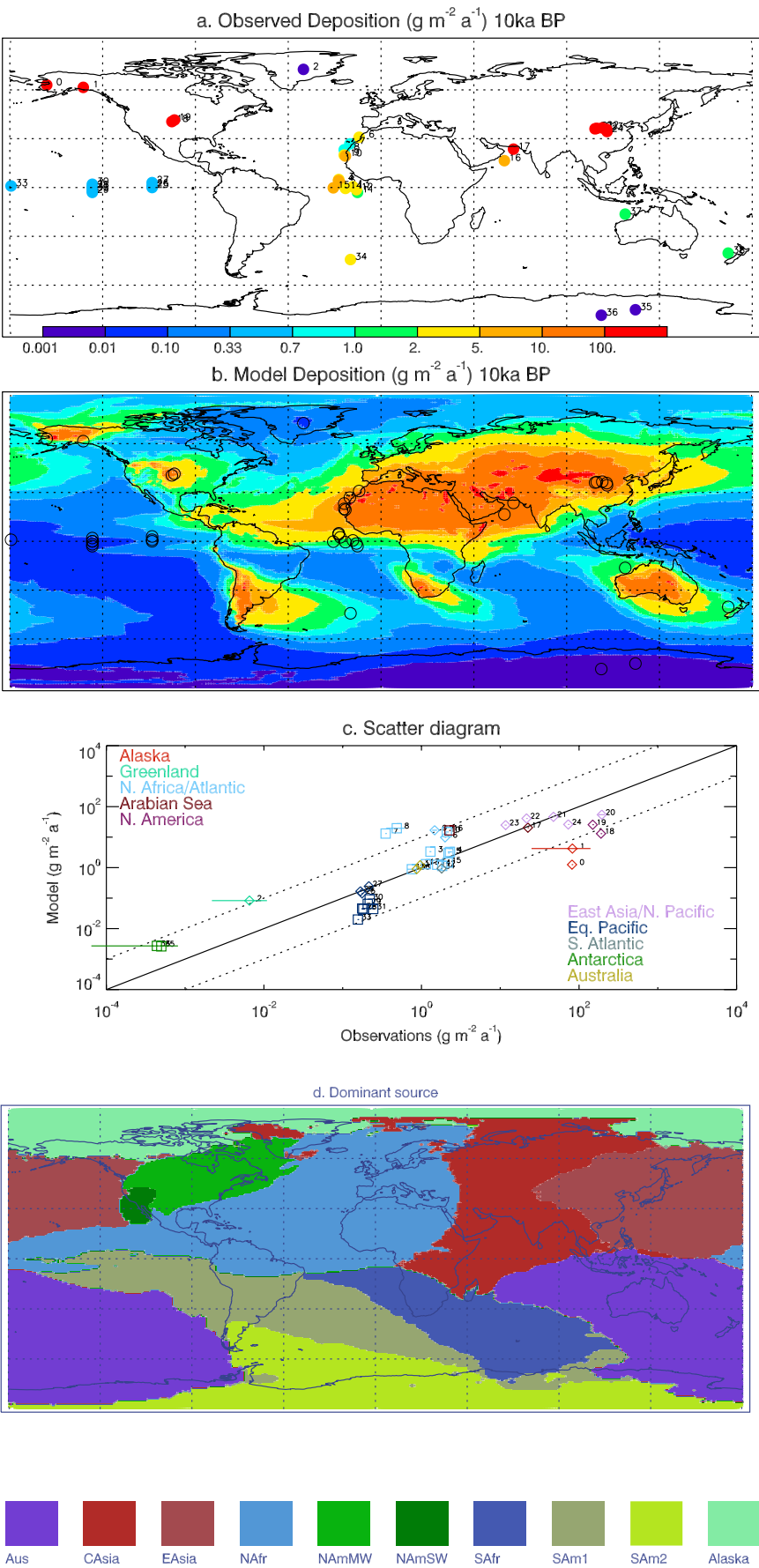


Figure S5



Reference list

- Adkins, J., deMenocal, P. and Eshel, G.: The “African humid period” and the record of marine upwelling from excess ^{230}Th in Ocean Drilling Program Hole 658C, *Paleoceanography*, 21(4), n/a–n/a, doi:10.1029/2005PA001200, 2006.
- Albani, S., Delmonte, B., Maggi, V., Baroni, C., Petit, J.-R., Stenni, B., Mazzola, C. and Frezzotti, M.: Interpreting last glacial to Holocene dust changes at Talos Dome (East Antarctica): implications for atmospheric variations from regional to hemispheric scales, *Clim. Past*, 8(2), 741–750, doi:10.5194/cp-8-741-2012, 2012.
- An, Z., Kukla, G., Porter, S. C. and Xiao, J.: Late quaternary dust flow on the chinese Loess Plateau, *CATENA*, 18(2), 125–132, doi:10.1016/0341-8162(91)90012-M, 1991.
- Anderson, R. F., Barker, S., Fleisher, M., Gersonde, R., Goldstein, S. L., Kuhn, G., Mortyn, P. G., Pahnke, K. and Sachs, J. P.: Biological response to millennial variability of dust and nutrient supply in the Subantarctic South Atlantic Ocean., *Philos. Trans. A. Math. Phys. Eng. Sci.*, 372(2019), 20130054, doi:10.1098/rsta.2013.0054, 2014.
- Anderson, R. F., Fleisher, M. Q. and Lao, Y.: Glacial–interglacial variability in the delivery of dust to the central equatorial Pacific Ocean, *Earth Planet. Sci. Lett.*, 242(3–4), 406–414, doi:10.1016/j.epsl.2005.11.061, 2006.
- Begét, J.: Middle Wisconsinan Climate Fluctuations Recorded in Central Alaskan Loess, *Géographie Phys. Quat.*, 44(1), 3, doi:10.7202/032793ar, 1990.
- Bory, A., Wolff, E., Mulvaney, R., Jagoutz, E., Wegner, A., Ruth, U. and Elderfield, H.: Multiple sources supply eolian mineral dust to the Atlantic sector of coastal Antarctica: Evidence from recent snow layers at the top of Berkner Island ice sheet, *Earth Planet. Sci. Lett.*, 291(1–4), 138–148, doi:10.1016/j.epsl.2010.01.006, 2010.
- Boven, K. L., and Rea, D. K.: Partitioning of eolian and hemipelagic sediment in eastern equatorial Pacific core TR 163-31B and the Late Quaternary paleoclimate of the northern Andes, *Journal of Sedimentary Research*, 68, 850–855, 1998.
- Box, M. R., Krom, M. D., Cliff, R. A., Bar-Matthews, M., Almogi-Labin, A., Ayalon, A. and Paterne, M.: Response of the Nile and its catchment to millennial-scale climatic change since the LGM from Sr isotopes and major elements of East Mediterranean sediments, *Quat. Sci. Rev.*, 30(3–4), 431–442, doi:10.1016/j.quascirev.2010.12.005, 2011.
- Bradt Miller, L. I., Anderson, R. F., Fleisher, M. Q. and Burckle, L. H.: Diatom productivity in the equatorial Pacific Ocean from the last glacial period to the present: A test of the silicic acid leakage hypothesis, *Paleoceanography*, 21(4), n/a–n/a, doi:10.1029/2006PA001282, 2006.
- Bradt Miller, L. I., Anderson, R. F., Fleisher, M. Q. and Burckle, L. H.: Opal burial in the equatorial Atlantic Ocean over the last 30 ka: Implications for glacial–interglacial changes in the ocean silicon cycle, *Paleoceanography*, 22(4), n/a–n/a, doi:10.1029/2007PA001443, 2007.
- Bronk Ramsey, C.: Radiocarbon calibration and analysis of stratigraphy : The OxCal Program, *Radiocarbon*, 37, 425–430 [online] Available from: <http://ci.nii.ac.jp/naid/80008936407/en/> (Accessed 25 July 2014), 1995.
- Brunelle, B.G. et al.: Evidence from diatom-bound nitrogen isotopes for subarctic Pacific stratification during the last ice age and a link to North Pacific denitrification changes, *Paleoceanography*, 22 (PA1215), doi:10.1029/2005PA001205, 2007.
- Brunelle, B.G. et al.: Glacial/interglacial changes in nutrient supply and stratification in the western subarctic North Pacific since the penultimate glacial maximum, *Quaternary Science Reviews*, 29, 2900–2929, 2010.
- Bullard, J. E.: Contemporary glacial inputs to the dust cycle, *Earth Surf. Process. Landforms*, 38(1), 71–89, doi:10.1002/esp.3315, 2013.
- Chase, Z., Anderson, R. F., Fleisher, M. Q., and Kubik, P. W.: Accumulation of biogenic and lithogenic material in the Pacific sector of the Southern Ocean during the past 30,000 years, *Deep-sea Research II*, 50, 799–832, 2003.
- Clemens, S. C. and Prell, W. L.: Late Pleistocene variability of Arabian Sea summer monsoon winds and continental aridity: Eolian records from the lithogenic component of deep-sea sediments, *Paleoceanography*, 5(2), 109–145, doi:10.1029/PA005i002p00109, 1990.
- Crusius, J., Pedersen, T. F., Kienast, S., Keigwin, L., Labeyrie, L.: Influence of northwest pacific productivity on north pacific intermediate water oxygen concentrations during the Boiling-Allerød interval (14.7–12.9 ka), *Geology*, 32(7), 633–636, 2004.
- Delmonte, B., Baroni, C., Andersson, P. S., Narcisi, B., Salvatore, M. C., Petit, J. R., Scarchilli, C., Frezzotti, M., Albani, S. and Maggi, V.: Modern and Holocene aeolian dust variability from Talos Dome (Northern Victoria Land) to the interior of the Antarctic ice sheet, *Quat. Sci. Rev.*, 64, 76–89, doi:10.1016/j.quascirev.2012.11.033, 2013.
- Delmonte, B., Baroni, C., Andersson, P. S., Schoberg, H., Hansson, M., Aciego, S., Petit, J.-R., Albani, S., Mazzola, C., Maggi, V. and Frezzotti, M.: Aeolian dust in the Talos Dome ice core (East Antarctica, Pacific/Ross Sea sector): Victoria Land versus remote sources over the last two climate cycles, *J. Quat. Sci.*, 25(8), 1327–1337, doi:10.1002/jqs.1418, 2010b.
- deMenocal, P., Ortiz, J., Guilderson, T., Adkins, J., Sarnthein, M., Baker, L. and Yarusinsky, M.: Abrupt onset and termination of the African Humid Period., *Quat. Sci. Rev.*, 19(1–5), 347–361, doi:10.1016/S0277-3791(99)00081-5, 2000.
- Ferrat, M., Weiss, D. J., Strekopytov, S., Dong, S., Chen, H., Najorka, J., Sun, Y., Gupta, S., Tada, R. and Sinha, R.: Improved provenance tracing of Asian dust sources using rare earth elements and selected trace elements for palaeomonsoon studies on the eastern Tibetan Plateau, *Geochim. Cosmochim. Acta*, 75(21), 6374–6399, doi:10.1016/j.gca.2011.08.025, 2011.
- Fischer, H., Fundel, F., Ruth, U., Twarloh, B., Wegner, A., Udisti, R., Becagli, S., Castellano, E., Morganti, A., Severi, M., Wolff, E., Littot, G., Röthlisberger, R., Mulvaney, R., Hutterli, M. A., Kaufmann, P., Federer, U., Lambert, F., Bigler, M., Hansson, M., Jonsell, U., de Angelis, M.,

- Boutron, C., Siggaard-Andersen, M.-L., Steffensen, J. P., Barbante, C., Gaspari, V., Gabrielli, P. and Wagenbach, D.: Reconstruction of millennial changes in dust emission, transport and regional sea ice coverage using the deep EPICA ice cores from the Atlantic and Indian Ocean sector of Antarctica, *Earth Planet. Sci. Lett.*, 260(1-2), 340–354, doi:10.1016/j.epsl.2007.06.014, 2007.
- Fitzsimmons, K. E., Cohen, T. J., Hesse, P. P., Jansen, J., Nanson, G. C., May, J.-H., Barrows, T. T., Haberlah, D., Hilgers, A., Kelly, T., Larsen, J., Lomax, J. and Treble, P.: Late Quaternary palaeoenvironmental change in the Australian drylands, *Quat. Sci. Rev.*, 74, 78–96, doi:10.1016/j.quascirev.2012.09.007, 2013.
- Francois, R., Bacon, M. P. and Suman, D. O.: Thorium 230 profiling in deep-sea sediments: High-resolution records of flux and dissolution of carbonate in the equatorial Atlantic during the last 24,000 years, *Paleoceanography*, 5(5), 761–787, doi:10.1029/PA005i005p00761, 1990.
- Fujii, Y., Kohno, M., Matoba, S., Motoyama, H., and Watanabe, O.: A 320 k-year record of microparticles in the Dome Fuji, Antarctica ice core measured by laser-light scattering, *Mem. Natl. Inst. Polar Res., Spec. Issue*, 57, 45–62, 2003.
- Gherardi, J. M., Labeyrie, L., McManus, J. F., Francois, R., Skinner, L. C., and Cortijo, E.: Evidence from the northeastern Atlantic Basin for variability in the rate of the meridional overturning circulation through the last deglaciation, *Earth Planet. Sci. Lett.*, 240, 710–723, doi:10.1016/j.epsl.2005.09.061, 2005.
- Hansson, M. E.: The Renland ice core. A Northern Hemisphere record of aerosol composition over 120,000 years, *Tellus B*, 46(5), 390–418, doi:10.1034/j.1600-0889.1994.t01-4-00005.x, 1994.
- Hesse, P. P.: The record of continental dust from Australia in Tasman Sea Sediments, *Quat. Sci. Rev.*, 13(3), 257–272, doi:10.1016/0277-3791(94)90029-9, 1994.
- Hesse, P. P. and McTainsh, G. H.: Australian dust deposits: modern processes and the Quaternary record, *Quat. Sci. Rev.*, 22(18-19), 2007–2035, doi:10.1016/S0277-3791(03)00164-1, 2003.
- Hovan, S. A., Rea, D. K. and Pisias, N. G.: Late Pleistocene Continental Climate and Oceanic Variability Recorded in Northwest Pacific Sediments, *Paleoceanography*, 6(3), 349–370, doi:10.1029/91PA00559, 1991.
- Jaccard, S. L. et al.: Subarctic Pacific evidence for a glacial deepening of the oceanic respired carbon pool, *Earth and Planetary Science Letters* 277, 156–165, 2009.
- Jia, R. F., Huang, C. C., Pang, J. L., and Niu, J. J.: Chronology of the Holocene loess–paleosol section and its deposition and pedogenesis on the south of Chinese Loess Plateau, *Journal of Geographical Sciences*, 18, 425–442, 2008.
- Jouzel, J., Vaikmae, R., Petit, J. R., Martin, M., Duclos, Y., Stievenard, M., Lorius, C., Toots, M., Mélières, M. A., Burckle, I. H., Barkov, N. Y., and Kotlyakov, V. M.: The two-step shape and timing of the last deglaciation in Antarctica, *Climate Dynamics*, 11, 151–161, 1995.
- Kang, S. G., Wang, X. L., and Lu, Y. C.: Quartz OSL chronology and dust accumulation rate changes since the Last Glacial at Weinan on the southeastern Chinese Loess Plateau, *Boreas*, 42, 815–829, 2013.
- Kawahata, H.: Fluctuations in the ocean environment within the Western Pacific Warm Pool during Late Pleistocene, *Paleoceanography*, 14(5), 639–652, doi:10.1029/1999PA000023, 1999.
- Kawahata, H.: Shifts in oceanic and atmospheric boundaries in the Tasman Sea (southwest Pacific) during the Late Pleistocene: Evidence from organic carbon and lithogenic fluxes, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 184, 225–249, 2002.
- Kawahata, H., Okamoto, T., Matsumoto, E., and jiie, H.: Fluctuations of eolian flux and ocean productivity in the mid-latitude North Pacific during the last 200 kyr, *Quat. Sci. Rev.*, 9, 1279–1282, 2000.
- Kawamura, K., Nakazawa, T., Aoki, S., Sugawara, S., Fujii, Y., and Watanabe, O.: Atmospheric CO₂ variations over the last three glacial-interglacial climatic cycles deduced from the Dome Fuji deep ice core, Antarctica using a wet extraction technique, *Tellus*, 55B, 126–137, 2003.
- Kohfeld, K. E., Graham, R. M., de Boer, A. M., Sime, L. C., Wolff, E. W., Quéré, C. L., and Bopp, L.: Southern Hemisphere westerly wind changes during the Last Glacial Maximum: Paleo-data synthesis, *Quat. Sci. Rev.*, 68, 76–95, doi:10.1016/j.quascirev.2013.01.017, 2013.
- Kohfeld, K. E. and Harrison, S. P.: DIRTMAP: the geological record of dust, *Earth-Science Rev.*, 54(1-3), 81–114, doi:10.1016/S0012-8252(01)00042-3, 2001.
- Kohfeld, K. and Harrison, S. P.: Glacial-interglacial changes in dust deposition on the Chinese Loess Plateau, *Quat. Sci. Rev.*, 22(18-19), 1859–1878, doi:10.1016/S0277-3791(03)00166-5, 2003.
- Kylander, M. E., Bindler, R., Cortizas, A. M., Gallagher, K., Mörrth, C.-M. and Rauch, S.: A novel geochemical approach to paleorecords of dust deposition and effective humidity: 8500 years of peat accumulation at Store Mosse (the “Great Bog”), Sweden, *Quat. Sci. Rev.*, 69, 69–82, doi:10.1016/j.quascirev.2013.02.010, 2013.
- Le Roux, G., Fagel, N., De Vleeschouwer, F., Krachler, M., Debaille, V., Stille, P., Mattielli, N., van der Knaap, W. O., van Leeuwen, J. F. N. and Shotyk, W.: Volcano- and climate-driven changes in atmospheric dust sources and fluxes since the Late Glacial in Central Europe, *Geology*, 40(4), 335–338, doi:10.1130/G32586.1, 2012.
- Lu, H., Yi, S., Liu, Z., Mason, J. A., Jiang, D., Cheng, J., Stevens, T., Xu, Z., Zhang, E., Jin, L., Zhang, Z., Guo, Z., Wang, Y. and Otto-Bliesner, B.: Variation of East Asian monsoon precipitation during the past 21 k.y. and potential CO₂ forcing, *Geology*, 41(9), 1023–1026, doi:10.1130/G34488.1, 2013.

Maher, B. A., Prospero, J. M., Mackie, D., Gaiero, D., Hesse, P. P. and Balkanski, Y.: Global connections between aeolian dust, climate and ocean biogeochemistry at the present day and at the last glacial maximum, *Earth-Science Rev.*, 99(1-2), 61–97, doi:10.1016/j.earscirev.2009.12.001, 2010.

Marx, S. K., McGowan, H. A. and Kamber, B. S.: Long-range dust transport from eastern Australia: A proxy for Holocene aridity and ENSO-type climate variability, *Earth Planet. Sci. Lett.*, 282(1-4), 167–177, doi:10.1016/j.epsl.2009.03.013, 2009.

Mason, J. A., Miao, X., Hanson, P. R., Johnson, W. C., Jacobs, P. M. and Goble, R. J.: Loess record of the Pleistocene–Holocene transition on the northern and central Great Plains, USA, *Quat. Sci. Rev.*, 27(17-18), 1772–1783, doi:10.1016/j.quascirev.2008.07.004, 2008.

Mayewski, P. A., Meeker, L. D., Twickler, M. S., Whitlow, S., Yang, Q., Lyons, W. B. and Prentice, M.: Major features and forcing of high-latitude northern hemisphere atmospheric circulation using a 110,000-year-long glaciochemical series, *J. Geophys. Res.*, 102(C12), 26345, doi:10.1029/96JC03365, 1997.

Mayewski, P. A., Maasch, K. A., Dixon, D., Sneed, S. B., Oglesby, R., Korotkikh, E., Potocki, M., Grigholm, B., Kreutz, K., Kurbatov, A. V., Spaulding, N., Stager, J. C., Taylor, K. C., Steig, E. J., White, J., Bertler, N. A. N., Goodwin, I., Simões, J. C., Jaña, R., Kraus, S. and Fastook, J.: West Antarctica's sensitivity to natural and human-forced climate change over the Holocene, *J. Quaternary Sci.*, 28: 40–48. doi: 10.1002/jqs.2593, 2013.

McGee, D., deMenocal, P. B., Winckler, G., Stuut, J. B. W. and Bradtmiller, L. I.: The magnitude, timing and abruptness of changes in North African dust deposition over the last 20,000yr, *Earth Planet. Sci. Lett.*, 371–372, 163–176, doi:10.1016/j.epsl.2013.03.054, 2013.

McGee, D., Marcantonio, F. and Lynch-Stieglitz, J.: Deglacial changes in dust flux in the eastern equatorial Pacific, *Earth Planet. Sci. Lett.*, 257(1-2), 215–230, doi:10.1016/j.epsl.2007.02.033, 2007.

McGowan, H. A., Marx, S. K., Soderholm, J. and Denholm, J.: Evidence of solar and tropical-ocean forcing of hydroclimate cycles in southeastern Australia for the past 6500 years, *Geophys. Res. Lett.*, 37(10), n/a–n/a, doi:10.1029/2010GL042918, 2010.

McManus, J. F., Francois, R., Gherardi, J. M., Keigwin, L. D., and Brown-Leger, S.: Collapse and rapid resumption of Atlantic meridional circulation linked to deglacial climate changes, *Nature*, 428, 834–837, 2004.

Miao, X., Mason, J. A., Johnson, W. C. and Wang, H.: High-resolution proxy record of Holocene climate from a loess section in Southwestern Nebraska, USA, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 245(3-4), 368–381, doi:10.1016/j.palaeo.2006.09.004, 2007.

Mix, A. C., and Ruddiman, W. F.: Structure and timing of the last deglaciation: oxygen-isotope evidence, *Quaternary Science Reviews*, 4, 59–108, 1985.

Muhs, D., Agera, T., Bettis III, E. A., McGehehinc, J., Beena, J. M., Begétd, J. E., Pavichc, M. J., Stafford, T. W. and Stevens, D. A. S. P.: Stratigraphy and palaeoclimatic significance of Late Quaternary loess–palaeosol sequences of the Last Interglacial–Glacial cycle in central Alaska, *Quat. Sci. Rev.*, 22(18-19), 1947–1986, doi:10.1016/S0277-3791(03)00167-7, 2003a.

Muhs, D. R., Ager, T. A., Been, J., Bradbury, J. P. and Dean, W. E.: A late quaternary record of eolian silt deposition in a maar lake, St. Michael Island, western Alaska, *Quat. Res.*, 60(1), 110–122, doi:10.1016/S0033-5894(03)00062-0, 2003b.

Muhs, D. R., Aleinikoff, J. N., Stafford, T. W. . J., Kihl, R., Been, J., Mahan, S. A. and Cowherd, S.: Late Quaternary loess in northeastern Colorado: Part I–Age and paleoclimatic significance, *Geol. Soc. Am. Bull.*, 111(12), 1861–1875, doi:10.1130/0016-7606(1999)111, 1999.

Nagashima, K., Tada, R., Matsui, H., Irino, T., Tani, A. and Toyoda, S.: Orbital- and millennial-scale variations in Asian dust transport path to the Japan Sea, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 247(1-2), 144–161, doi:10.1016/j.palaeo.2006.11.027, 2007.

Olivarez, A. M., Owen, R. M. and Rea, D. K.: Geochemistry of eolian dust in Pacific pelagic sediments: Implications for paleoclimatic interpretations, *Geochim. Cosmochim. Acta*, 55(8), 2147–2158, doi:10.1016/0016-7037(91)90093-K, 1991.

Petherick, L. M., McGowan, H. A., and Kamber, B. S.: Reconstructing transport pathways for late Quaternary dust from eastern Australia using the composition of trace elements of long traveled dusts, *Geomorphology*, 105, 67–79, 2009.

Pourmand, A., Marcantonio, F., Bianchi, T. S., Canuel, E. A. and Waterson, E. J.: A 28-ka history of sea surface temperature, primary productivity and planktonic community variability in the western Arabian Sea, *Paleoceanography*, 22(4), n/a–n/a, doi:10.1029/2007PA001502, 2007.

Pourmand, A., Marcantonio, F. and Schulz, H.: Variations in productivity and eolian fluxes in the northeastern Arabian Sea during the past 110 ka, *Earth Planet. Sci. Lett.*, 221(1-4), 39–54, doi:10.1016/S0012-821X(04)00109-8, 2004.

Rea, D. K.: The paleoclimatic record provided by eolian deposition in the deep sea: The geologic history of wind, *Rev. Geophys.*, 32(2), 159, doi:10.1029/93RG03257, 1994.

Rea, D. K. and Hovan, S. A.: Grain size distribution and depositional processes of the mineral component of abyssal sediments: Lessons from the North Pacific, *Paleoceanography*, 10(2), 251–258, doi:10.1029/94PA03355, 1995.

Rea, D. K. and Janecek, T. R.: Late cretaceous history of eolian deposition in the mid-pacific mountains, central North Pacific Ocean, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 36(1-2), 55–67, doi:10.1016/0031-0182(81)90048-1, 1981.

Rea, D. K., and Leinen, M.: Asian aridity and the zonal westerlies: Late Pleistocene and Holocene record of eolian deposition in the Northwest Pacific Ocean, *Palaeogeogr., Palaeoclim., Palaeoecol.*, 66, 1–8, 1988.

Roberts, H. M., Wintle, A. G., Maher, B. A. and Hu, M.: Holocene sediment-accumulation rates in the western Loess Plateau, China, and a 2500-year record of agricultural activity, revealed by OSL dating, *The Holocene*, 11(4), 477–483, doi:10.1191/095968301678302913, 2001.

Ruddiman, W. F.: Tropical Atlantic terrigenous fluxes since 25,000 yrs B.P., *Mar. Geol.*, 136, 189–207, 1997.

- Ruth, U., Barbante, C., Bigler, M., Delmonte, B., Fischer, H., Gabrielli, P., Gaspari, V., Kaufmann, P., Lambert, F., Maggi, V., Marino, F., Petit, J.-R., Udisti, R., Wagenbach, D., Wegner, A. and Wolff, E. W.: Proxies and Measurement Techniques for Mineral Dust in Antarctic Ice Cores, *Environ. Sci. Technol.*, 42(15), 5675–5681, doi:10.1021/es703078z, 2008.
- Ruth, U., Wagenbach, D., Bigler, M., Steffensen, J. P., Röthlisberger, R. and Miller, H.: High-resolution microparticle profiles at NorthGRIP, Greenland: case studies of the calcium-dust relationship, *Ann. Glaciol.*, 35(1), 237–242, doi:10.3189/172756402781817347, 2002.
- Sapkota, A., Cheburkin, A. K., Bonani, G. and Shotyk, W.: Six millennia of atmospheric dust deposition in southern South America (Isla Navarino, Chile), *The Holocene*, 17(5), 561–572, doi:10.1177/0959683607078981, 2007.
- Sirocko, F., Sarnthein, M., Lange, H. and Erlenkeuser, H.: Atmospheric summer circulation and coastal upwelling in the Arabian Sea during the Holocene and the last glaciation, *Quat. Res.*, 36(1), 72–93, doi:10.1016/0033-5894(91)90018-Z, 1991.
- Stevens, T. and Lu, H.: Optically stimulated luminescence dating as a tool for calculating sedimentation rates in Chinese loess: comparisons with grain-size records, *Sedimentology*, 56(4), 911–934, doi:10.1111/j.1365-3091.2008.01004.x, 2009.
- Stuiver, M., and Reimer, P. J.: Extended 14C data base and revised CALIB 3.0 14C age calibration program, *Radiocarbon*, 35(1):215–30, 1993.
- Sun, Y., Clemens, S. C., Morrill, C., Lin, X., Wang, X., and An, Z.: Influence of Atlantic meridional overturning circulation on the East Asian winter monsoon, *Nat. Geosci.*, 5, 46–49, doi:10.1038/NGEO1326, 2012.
- Thompson, L. G., Mosley-Thompson, E., Davis, M. E., Lin, P. N., Henderson, K. A., Cole-Dai, J., Bolzan, J. F. and Liu, K. B.: Late glacial stage and holocene tropical ice core records from Huascarán, Peru, *Science* (80-.), 269(5220), 46–50, doi:10.1126/science.269.5220.46, 1995.
- Thompson, L. G., Yao, T., Davis, M. E., Henderson, K. A., Mosley-Thompson, E., Lin, P.-N., Beer, J., Synal, H.-A., Cole-Dai, J. and Bolzan, J. F.: Tropical Climate Instability: The Last Glacial Cycle from a Qinghai-Tibetan Ice Core, *Science* (80-.), 276(5320), 1821–1825, doi:10.1126/science.276.5320.1821, 1997.
- Thompson, L. G., Yao T., Davis, M. E., Mosley-Thompson, E., Mashiotta, T. A., Lin, P., Mikhalevko, V. N., and Zagorodnov, V. S.: Holocene climate variability archived in the Puruogangri ice cap on the central Tibetan Plateau, *Ann. Glaciol.*, 43, 61–69, 2006.
- Thompson, L. G., Davis, M. E., Mosley-Thompson, E., Sowers, T. A., Henderson, K. A., Zagorodnov, V. S., Lin, P.-N., Mikhalevko, V. N., Campen, R. K., Bolzan, J. F., Cole-Dai, J., and Francou, B.: A 25,000-year tropical climate history from Bolivian ice cores, *Science*, 282, 1858–1864, 1998.
- Thompson, L. G., Mosley-Thompson, E., Davis, M. E., Henderson, K. A., Brecher, H. H., Zagorodnov, V. S., Mashiotta, T. A., Lin, P. N., Mikhalevko, V. N., Hardy, D. R., and Beer, J.: Kilimanjaro ice core records: evidence of Holocene climate change in tropical Africa, *Science*, 298, 589–593, 2002.
- Wu, G. J., Yao, T. D., Thompson, L. G., and Li, Z. Q.: Microparticle record in the Guliya ice core and its comparison with polar records since the last interglacial, *Chin. Sci. Bull.*, 49, 607–611, 2004.
- Xiao, L., Kumai, H., Yoshikawa, S., Masuda, H., and An, Z. S.: Eolian quartz flux to lake Biwa, central Japan, over the past 145,000 years, *Quat. Res.*, 48, 48–57, 1997.
- Yancheva, G., Nowaczyk, N. R., Mingham, J., Dulski, P., Schettler, G., Negendank, J. F. W., Liu, J., Sigman, D. M., Peterson, L. C., and Haug, G. H.: Influence of the intertropical convergence zone on the East Asian monsoon, *Nature*, 445, 74–77, 2007.
- Zdanowicz, C. M., Zielinski, G. A., Wake, C. P., Fisher, D. A. and Koerner, R. M.: A Holocene Record of Atmospheric Dust Deposition on the Penny Ice Cap, Baffin Island, Canada, *Quat. Res.*, 53(1), 62–69, doi:10.1006/qres.1999.2091, 2000.
- Zhao, H., Chen, F. H., Li, S. H., Wintle, A. G., Fan, X. Y., and Xia, D. S.: A record of Holocene climate change in the Guangzhong Basin, China, based on optical dating of a loess–palaeosol sequence, *The Holocene*, 17, 1015–1022, 2007.
- Zielinski, G. A. and Mershon, G. R.: Paleoenvironmental implications of the insoluble microparticle record in the GISP2 (Greenland) ice core during the rapidly changing climate of the Pleistocene-Holocene transition, *Geol. Soc. Am. Bull.*, 109(5), 547–559, doi:10.1130/0016-7606(1997)109, 1997.