Supplementary Table 1. *Correlations are carried out using the Prais-Winsten regression method (Hammer et al. 2001). Values in bold are significant after a Bonferroni correction (p<0.0009). The Breusch-Pagan test for heteroskedasticity, i.e. non-stationary variance of residuals, indicated that in most cases homoskedasticity could not be rejected. Exceptions in which homoskedasticity was rejected at the 5% level are* Poaceae *percentages vs summer LIG,* Podocarpaceae *and Stoebe-Elytropappus type percentages vs winter LIG,* Anthospermum *and Stoebe-Elytropappus type percentages vs sea-level. The residuals of all correlations failed the Durbin-Watson test for no positive auto-correlation. (see also reference manual for PAST vs 4:*
https://www.nhm.uio.no/english/research/infrastructure/past/downloads/past4manual.pdf)

linear regression correlations	pollen concentrations against micro-charcoal concentration			pollen percentages against SH summer latitudinal insolation gradient			pollen percentages against SH winter latitudinal insolation gradient			pollen percentages against modelled global sea-level after Bintanja et al., 2005			pollen percentages against global stable oxygen stack (LR04)		
Taxon	r	p	residual p	r	p	residual p	r	p	residual p	r	p	residual p	r	p	residual p
Aizoaceae pp	-0.012	0.9060	0.8093	-0,29	0.0036	0.0047	0.154	0.1235	0.1773	-0.206	0.0352	0.3402	-0.524	**0.0001**	0.0001
Pentzia-Cotula type	0.268	0.0104	0.9125	0,00	0.9844	0.8223	0.026	0.7932	0.3254	0.099	0.3230	0.6095	-0.048	0.6416	0.5009
Amaranthaceae	0.198	0.0599	0.4826	-0,19	0.0533	0.0650	0.331	**0.0005**	0.4625	-0.166	0.0984	0.1929	-0.392	**0.0001**	0.2753
Stoebe-Elytropappus type	0.201	0.0553	0.3268	0,15	0.1363	0.0748	0.253	0.0133	0.0457	0.232	0.0218	0.0283	0.210	0.0375	0.2902
Anthospermum	0.263	0.0141	0.1447	-0,03	0.7493	0.4645	0.129	0.2022	0.5331	0.270	0.0072	0.0177	0.101	0.3108	0.6479
Asteraceae pp	0.424	**0.0001**	0.2699	0,24	0.0137	0.3312	0.190	0.0545	0.0756	0.336	**0.0004**	0.6874	0.341	**0.0005**	0.2800
Ericaceae	0.397	**0.0001**	0.2517	0,09	0.3586	0.1373	-0.014	0.8864	0.9339	0.578	**0.0001**	0.8502	0.575	**0.0001**	0.2109
Podocarpaceae	0.208	0.0488	0.9597	0,19	0.0620	0.4400	-0.387	**0.0001**	0.0242	-0.341	**0.0004**	0.0699	-0.028	0.7838	0.5246
Restionaceae pp	0.438	**0.0001**	0.7245	-0,05	0.6075	0.1886	0.258	0.0090	0.1218	0.063	0.5273	0.6222	-0.112	0.2602	0.0078
Poaceae	0.303	0.0036	0.0644	-0,37	**0.0003**	0.0268	0.141	0.1623	0.5011	-0.061	0.5472	0.1075	-0.274	0.0054	0.0623
Cyperaceae	0.309	0.0038	0.2096	-0,34	**0.0001**	0.3653	0.082	0.4096	0.0026	0.221	0.0253	0.8665	0.147	0.1385	0.3853