Table S1: Zircon U-Th-Pb isotopic data

	Compositional Parameters						Radiogenic Isotope Ratios								Isotopic Ages (Ma)						Weighted Mean (Ma)
Sample	$\frac{Th}{U}$	$^{206}Pb^*$ x10^{-13} mol	mol % $^{206}Pb^*$	$\frac{Pb^*}{Pb_c}$	Pb_c (pg)	$\frac{^{206}Pb}{^{204}Pb}$	$\frac{^{208}Pb}{^{206}Pb}$	$\frac{^{207}Pb}{^{206}Pb}$	% err	$\frac{^{207}Pb}{^{235}U}$	% err	$\frac{^{206}Pb}{^{238}U}$	% err	corr. coef.	$\frac{^{207}Pb}{^{206}Pb}$	±	$\frac{^{207}Pb}{^{235}U}$	±	$\frac{^{206}Pb}{^{238}U}$	±	$\frac{^{207}Pb}{^{206}Pb}$
(a)	(b)	(c)	(c)	(c)	(c)	(d)	(e)	(e)	(f)	(e)	(f)	(e)	(f)		(g)	(f)	(g)	(f)	(g)	(f)	(h)
ECMB4																					
z1	0.459	1.7560	99.84%	189	0.24	11080	0.134	0.108748	0.071	4.747907	0.150	0.316793	0.096	0.927	1777.72	1.29	1775.74	1.26	1774.05	1.50	
z2	0.538	2.9136	99.88%	258	0.29	14816	0.157	0.108642	0.065	4.746500	0.131	0.317007	0.072	0.961	1775.96	1.19	1775.49	1.10	1775.09	1.12	
z3	0.482	0.8672	99.78%	138	0.16	8032	0.141	0.108731	0.088	4.737140	0.177	0.316124	0.120	0.896	1777.44	1.60	1773.83	1.49	1770.77	1.85	
z4	0.468	1.1223	99.79%	144	0.20	8395	0.137	0.108707	0.076	4.742804	0.168	0.316572	0.115	0.921	1777.04	1.39	1774.84	1.41	1772.97	1.78	**1776.76 ± 0.49 [2.40]**
z5	0.572	2.6740	99.84%	201	0.35	11478	0.167	0.108678	0.068	4.730009	0.135	0.315801	0.074	0.952	1776.56	1.25	1772.57	1.13	1769.19	1.14	MSWD = 1.15 POF = 0.33
z6	0.467	3.2913	99.82%	173	0.49	10119	0.136	0.108710	0.067	4.749514	0.134	0.317009	0.074	0.956	1777.10	1.22	1776.02	1.12	1775.11	1.15	
z7	0.446	3.8518	99.92%	381	0.26	22347	0.130	0.108530	0.064	4.711602	0.130	0.315002	0.072	0.959	1774.07	1.17	1769.30	1.09	1765.27	1.11	
z8	0.506	5.8883	99.75%	119	1.28	6606	0.148	0.108644	0.067	4.746793	0.132	0.317021	0.070	0.959	1775.98	1.23	1775.54	1.10	1775.17	1.09	
QP1																					
z1	0.359	9.6958	99.96%	768	0.32	45979	0.105	0.108903	0.061	4.774622	0.126	0.318120	0.070	0.967	1780.33	1.12	1780.45	1.06	1780.54	1.08	
z2	0.401	4.9637	98.54%	21	6.10	1236	0.117	0.108932	0.149	4.775515	0.206	0.318096	0.073	0.847	1780.81	2.72	1780.60	1.73	1780.43	1.14	
z3	0.423	6.4130	99.89%	269	0.61	15865	0.123	0.108960	0.064	4.772557	0.128	0.317818	0.069	0.967	1781.28	1.16	1780.08	1.07	1779.06	1.07	
z4	0.336	2.7906	99.91%	325	0.21	19550	0.098	0.108956	0.064	4.771584	0.131	0.317764	0.073	0.963	1781.22	1.17	1779.91	1.10	1778.80	1.13	**1780.78 ± 0.45 [2.39]**
z5	0.366	2.5302	99.85%	198	0.32	11825	0.107	0.108944	0.068	4.775083	0.136	0.318032	0.077	0.944	1781.02	1.24	1780.53	1.14	1780.11	1.19	MSWD = 0.53 POF = 0.82
z6	0.360	2.8906	99.92%	401	0.18	23996	0.105	0.108922	0.066	4.772373	0.132	0.317916	0.074	0.951	1780.65	1.20	1780.05	1.11	1779.54	1.15	
z7	0.451	5.0856	99.69%	100	1.30	5857	0.131	0.108882	0.072	4.771395	0.135	0.317968	0.070	0.952	1779.98	1.31	1779.88	1.13	1779.80	1.08	
z8	0.455	2.5040	99.63%	84	0.76	4943	0.133	0.108938	0.076	4.756832	0.140	0.316833	0.072	0.942	1780.92	1.39	1777.31	1.18	1774.25	1.12	
ECMB6																					
z1	0.284	1.213	0.990	30.870	0.97	1899.098	0.083	0.108982	0.123	4.778311	0.211	0.318136	0.135	0.834	1781.66	2.25	1781.10	1.77	1780.62	2.11	
z2	0.335	4.276	0.999	226.896	0.47	13671.762	0.098	0.108953	0.066	4.771689	0.130	0.317780	0.070	0.958	1781.17	1.20	1779.93	1.09	1778.88	1.10	
z3	0.376	2.430	0.998	155.473	0.39	9279.850	0.110	0.109024	0.086	4.774201	0.156	0.317741	0.096	0.872	1782.35	1.57	1780.37	1.31	1778.69	1.48	
z4	0.476	1.918	0.998	191.621	0.26	11163.360	0.139	0.109071	0.098	4.775361	0.155	0.317681	0.084	0.822	1783.14	1.80	1780.58	1.30	1778.39	1.30	**1781.44 ± 0.51 [2.40]**
z5	0.315	2.478	0.999	228.261	0.27	13819.538	0.092	0.108954	0.069	4.777931	0.134	0.318193	0.072	0.953	1781.18	1.25	1781.03	1.13	1780.90	1.13	MSWD = 1.24 POF = 0.28
z6	0.332	1.064	0.998	155.064	0.17	9355.845	0.097	0.109010	0.084	4.755533	0.160	0.316539	0.101	0.893	1782.11	1.52	1777.08	1.35	1772.81	1.57	
z7	0.342	2.990	0.999	215.887	0.35	12986.019	0.100	0.108930	0.069	4.768270	0.133	0.317621	0.071	0.946	1780.77	1.26	1779.33	1.11	1778.10	1.11	
z8	0.368	2.149	0.998	126.819	0.43	7588.570	0.107	0.108921	0.074	4.768637	0.141	0.317671	0.079	0.931	1780.62	1.35	1779.39	1.18	1778.35	1.22	

(a) z1, z2 etc. are labels for single zircon grains or fragments annealed and chemically abraded after Mattinson (2005). Bold indicates z fraction included in weighted mean.
(b) Model Th/U ratio iteratively calculated from the radiogenic $^{208}Pb/^{206}Pb$ ratio and $^{206}Pb/^{238}U$ age.
(c) Pb* and Pbc represent radiogenic and common Pb, respectively; mol % $^{206}Pb^*$ with respect to radiogenic, blank and initial common Pb.
(d) Measured ratio corrected for spike and fractionation only. Fractionation estimated at 0.16 ± 0.03 %/a.m.u. (1 sigma) for Daly analyses, based on analyses of EARTHTIME 202-205 trace solution run recently.
(e) Corrected for fractionation, spike, and common Pb; all common Pb was assumed to be procedural blank: $^{206}Pb/^{204}Pb = 18.042 \pm 0.61\%$; $^{207}Pb/^{204}Pb = 15.537 \pm 0.52\%$; $^{208}Pb/^{204}Pb = 37.686 \pm 0.63\%$ (all uncertainties 1-sigma).
(f) Errors are 2 sigma, propagated using the algorithms of Schmitz and Schoene (2007).
(g) Calculations are based on the decay constants of Jaffey et al. (1971) and Hiess et al. (2012). $^{206}Pb/^{238}U$ and $^{207}Pb/^{206}Pb$ ages corrected for initial disequilibrium in $^{230}Th/^{238}U$ using DTh/U [magma] = 0.20 ± 0.05 (1 sigma).
(h) Weighted mean ± 2s internal uncertainty [± 2s internal + decay constaint uncertainties]. MSWD = Mean Standard Weighted Deviation. POF = Probability of Fit