Data repository

Ion-probe analytical method

Rock samples were crushed using a jaw crusher, sieved to < 300 µm and a heavy mineral concentrate produced using a Wilfley table. This concentrate was magnetically separated and the least magnetic fraction was further concentrated using heavy liquid separation (methylene iodide). This fraction was used for further hand picking. Over 200 grains with minimum and maximum dimensions from *c.* 50 to 300 µm were picked from each heavy concentrate and mounted in epoxy resin and imaged in an SEM using both secondary electron and cathodoluminescence. Representatives of the full grain size spectrum were analyzed.

U-Th-Pb zircon analyses were performed on a Cameca IMS 1270 ion-microprobe following methods described by Whitehouse et al. (1997) modified after Whitehouse et al. (1999) using a spot size of *c.* 20 µm. Analyses used between 12-18 scans per mass dependent on primary beam density which on average was c. 7 na. Analyses were carried out under automated running procedures (location, peak centering, mass calibration, sputtering and acquisition), allowing chains of unknowns to be measured. U/Pb ratio calibration was based on analyses of the Geostandards zircon 91500, which has an age of 1065.4 ± 0.3 Ma and U and Pb concentrations of 80 and 15 ppm respectively (Wiedenbeck et al., 1995). Data reduction employed Excel macros developed by Whitehouse at the Swedish Natural History Museum, Stockholm. Age calculations were made using Isoplot version 3.02 (Ludwig, 2003) and probability density plots constructed using the Excel workbook of Sircombe (2004). Common lead corrections were applied using a modern-day average terrestrial common Pb composition, i.e., $^{207}Pb/^{206}Pb = 0.83$ (Stacey and Kramers, 1975), where significant ^{204}Pb counts were recorded (Table DR2). Detrital zircon probability plots were constructed using Concordia ages (Ludwig, 1998) and the vast majority of grains are concordant at the 2σ level. Data with ≥ 10% discordance were not used in placing age constraints. Due to their significance in delimiting the maximum age of deposition, Concordia ages (Ludwig, 1998) are quoted in the text for the youngest detrital grains.

Stable isotope analyses – sampling methodology, preparation and analytical method

Samples (38 analyses and 26 replicate analyses) were taken from fresh hand samples carefully selected in the field. Each hand sample was sliced and powders (0.5 – 5 mg) were obtained by using a microdrill. Sampling density was high in lithologically diverse portions of the sequence and low in massive, lithologically monotonous portions. Diagenetic overprinting of original seawater isotopic signatures is a concern in Neoproterozoic carbonates, and every sample analyzed has probably experienced some degree of alteration during either diagenesis, dolomitization or metamorphic recrystallization. However, due to the high concentration of C in carbonate rocks, relative to meteoric fluids, the $\delta^{13}C$ composition of carbonate rocks is far more resistant to chemical overprinting than $\delta^{18}O$. Many previous studies have addressed the reliability of $\delta^{13}C$ signatures in Neoproterozoic carbonates and the typical conclusion is that even clearly diagenetically altered and dolomitized carbonates appear to preserve their original $\delta^{13}C$ composition (e.g., Kaufman et al., 1991, see detailed discussion in Halverson et al., 2005). Due to the extreme depletion of ^{13}C in organic matter, the one process that can potentially substantially alter primary carbonate $\delta^{13}C$ compositions is the incorporation of carbon from the oxidation of organic matter or methane during diagenesis (e.g., Irwin et al., 1977). Due to the low organic matter contents in both hand sample and in the Chiquerío and San Juan Formations as a whole, we feel our samples are not affected by this type of isotopic alteration.

Samples were run on a Thermo Delta^{plus} Continuous Flow Isotope Ratio Mass Spectrometer (CF-IRMS) at Trinity College Dublin. For $\delta^{13}C$ and $\delta^{18}O$ analysis of carbonates a CTC Analytics CombiPal Autosampler with a thermostated hot block and FMI acid pump is interfaced to the Delta^{plus} via a Thermo GasBench II. 0.6mg of each sample was weighed into a clean dry round-bottomed borosilicate exetainer using a Sartorius MC5 microbalance. The exetainer was capped with a new septum and racked in the hotblock. Each sample exetainer was flush filled with 100ml/min flow of helium for five minutes and then a double needle configuration was set up on the autosampler. Each sample was dosed with 5 drops of phosphoric acid by the acid needle and allowed to equilibrate for 91 minutes at 72°C before the sample needle filled a 100µl loop on the valco valve in the Gas Bench. 10 sequential aliquots of CO_2 were introduced to the Delta^{plus} and the first and the last peaks discarded. Average $\delta^{13}C$ and $\delta^{18}O$ values of the eight peaks were recorded.

The International Atomic Energy Authority standard CO-1 was used to correct each batch of unknown samples to primary standard values (VPDB for $\delta^{13}C$ and SMOW for $\delta^{18}O$). Cranford dolomite run with each batch of samples is used as a cross check and to monitor machine stability. 239 replicates of Cranford dolomite run in 20 sample batches from the period between 16.02.05 and 23.02.06 gave a 1SD of 0.06‰ for $\delta^{13}C$ and 0.11‰ for $\delta^{18}O$. These values are consistent with the stated precision recorded by Thermo for the GasBench II Carbonate option is 0.06 per mil for $\delta^{13}C$ and 0.10 per mil for $\delta^{18}O$.

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Table DR1 Stable isotope data

Sample Number	Description, locality	Calcite / Dolomite	weight (mg)	height above base (m)	weight loaded (mg)	$\delta^{13}C$ Corrected	$\delta^{18}O$ Corrected	replicate loaded (mg)	$\delta^{13}C$ Corrected	$\delta^{18}O$ Corrected	$\delta^{13}C$ average	$\delta^{18}O$ average	$\delta^{13}C$ S.D.	$\delta^{18}O$ S.D.
SJ-17a	dolomite (turbiditic layer)	calcite	18.822	367.0	0.600	0.068	-17.203	0.686	0.139	-17.123	0.104	-17.163	0.025	0.028
SJ-17b	dolomite (turbiditic layer)	calcite	23.678	367.0	0.715	0.059	-17.050				0.059	-17.050		
SJ-18a	dolomite (turbiditic layer)	calcite	8.350	368.0	0.636	-0.322	-16.660	0.570	-0.148	-16.543	-0.235	-16.602	0.061	0.041
SJ-18b	dolomite (turbiditic layer)	calcite	13.965	368.0	0.693	-0.176	-17.303				-0.176	-17.303		
SJ-19a	dolomite clast	calcite	17.363	379.0	0.657	-0.084	-14.846	0.682	-0.074	-14.921	-0.079	-14.883	0.004	0.027
SJ-19 b	dolomite clast	calcite	15.274	379.0	0.649	0.013	-14.679				0.013	-14.679		
SJ-23	dolomite	calcite	18.230	397.9	0.726	-1.955	-8.154	0.611	-1.914	-8.230	-1.935	-8.192	0.014	0.027
SJ-24c	dolomite	dolomite	11.110	397.2	1.017	-1.550	-8.600	0.975	-1.534	-8.530	-1.542	-8.565	0.006	0.025
SJ-25	dolomite	dolomite	26.840	396.6	1.003	-2.610	-6.452	5.064	-2.296	-5.596	-2.296	-5.596		
SJ-26	dolomite	dolomite	8.538	396.2	1.038	-2.461	-10.313	1.536	-2.373	-10.249	-2.417	-10.281	0.031	0.022
SJ-27	dolomite	dolomite	20.186	396.1	1.112	-2.489	-10.336	0.870	-2.483	-10.381	-2.486	-10.358	0.002	0.016
SJ-28	dolomite	dolomite	9.534	395.0	0.948	-2.544	-10.571	1.568	-2.550	-10.534	-2.547	-10.552	0.002	0.013
SJ-29	dolomite	dolomite	7.300	395.0	1.088	-2.455	-10.809	0.867	-2.508	-10.664	-2.481	-10.737	0.019	0.051
SJ-30	dolomite	dolomite	10.022	394.7	1.065	-2.468	-10.526	1.489	-2.490	-10.412	-2.479	-10.469	0.008	0.040
SJ-31	dolomite	dolomite	25.151	394.4	1.086	-2.490	-10.747	1.013	-2.512	-10.544	-2.501	-10.645	0.008	0.072
SJ-33	dolomite	dolomite	20.725	393.0	1.049	-2.410	-11.330	1.481	-2.347	-11.737	-2.378	-11.534	0.022	0.144
SJ-34	dolomite	dolomite	7.888	393.8	1.042	-2.479	-10.785	0.912	-2.494	-10.798	-2.486	-10.791	0.005	0.005
SJ-35	dolomite	dolomite	18.420	392.5	1.113	-2.313	-11.564	1.467	-2.282	-11.747	-2.297	-11.655	0.011	0.065
SJ-36	dolomite	dolomite	10.446	391.5	0.997	-2.171	-12.053	1.048	-2.155	-12.004	-2.163	-12.029	0.006	0.017
SJ-37	dolomite	dolomite	14.666	391.1	1.525	-2.189	-11.350				-2.189	-11.350		
SJ-38	dolomite	dolomite	10.987	388.5	0.979	-1.553	-12.857	0.870	-1.590	-12.804	-1.572	-12.831	0.013	0.019
SJ-39	dolomitic clast	dolomite	9.416	383.0	1.015	2.682	-12.011	0.876	2.616	-11.925	2.649	-11.968	0.023	0.030
SJ-40	dolomite	dolomite	9.350	396.5	0.933	-2.261	-10.212	0.943	-2.294	-10.396	-2.277	-10.304	0.012	0.065
SJ-41	massive beige dolomite	dolomite	6.797	402.7	1.110	2.363	-5.040	0.951	2.282	-4.457	2.322	-4.749	0.029	0.206
SJ-42	massive beige dolomite	dolomite	18.869	417.9	1.028	0.349	-5.061	1.557	0.410	-4.913	0.379	-4.987	0.022	0.052
SJ-43	massive beige dolomite	dolomite	11.440	415.2	1.072	0.842	-5.478	0.858	0.848	-5.574	0.845	-5.526	0.002	0.034
SJ-44	massive beige dolomite	dolomite	18.371	700.0	1.047	0.932	-8.093				0.932	-8.093		
SJ-45	massive beige dolomite	dolomite	9.869	777.0	1.069	2.461	-8.478				2.461	-8.478		
SJ-46	beige dolomite	dolomite	11.858	936.0	0.930	1.726	-8.137				1.726	-8.137		
SJ-49	laminated dol / mudstone	calcite	9.730	1093.0	0.620	-7.825	-12.785	0.704	-7.903	-12.756	-7.864	-12.771	0.028	0.010
SJ-50	beige dolomite	calcite	24.869	1105.0	0.699	-6.468	-10.193				-6.468	-10.193		
SJ-51	beige dolomite	calcite	15.522	1111.0	0.707	-5.947	-10.657				-5.947	-10.657		
SJ-52	laminated dolomite	dolomite	10.612	1111.0	0.962	-6.443	-8.836				-6.443	-8.836		
SJ-53	laminated dolomite	calcite	19.028	1234.0	0.729	-4.867	-10.467	0.622	-4.943	-10.491	-4.905	-10.479	0.027	0.009
SJ-54	massive grey coarse dolomite	dolomite	15.756	1359.0	1.064	2.625	-8.920				2.625	-8.920		
SJ-58	massive clean dolomite	dolomite	14.710	1625.0	1.122	1.186	-7.166				1.186	-7.166		
SJ-63	massive grey fractured dolomite	dolomite	11.666	1992.0	1.078	1.193	-8.517				1.193	-8.517		
SJ-64	massive grey fractured dolomite	dolomite	9.513	2065.0	0.941	0.822	-4.236				0.822	-4.236		

38 samples and 26 replicate analyses

Table DR2 Ion microprobe U-Th-Pb data

SJ-16 18L 484886 8296668 (15°24.41' S 75°14.09' W)

Sample/ spot #	[U] ppm	[Th] ppm	[Pb] ppm	Th/U meas	f_{206}%	$^{238}U/^{206}Pb$	±σ %	$^{207}Pb/^{206}Pb$	±σ %	Disc. % conv.	$^{207}Pb/^{206}Pb$	±σ	$^{206}Pb/^{238}U$	±σ	Concordia	±σ
n2324-3	943	106	160	0.11	0.72	6.4371	1.66	0.0713	4.99	-4.0	967.3	98.6	930.9	14.4	931.5	14.2
n2405-22	1130	31	192	0.03	{3.65}	6.3564	1.17	0.0722	3.01	-5.5	992.6	59.9	941.9	10.3	943.1	10.1
n2570-18	444	284	84	0.64	0.3	6.7839	1.39	0.0759	0.81	-20.3	1093.5	16.1	886.4	11.5	946.5	9.9
n2570-10	2766	1349	440	0.49	0.16	7.5926	1.81	0.0725	0.43	-21.5	999.5	8.7	797.6	13.6	949.2	6.8
n2570-29	1353	153	222	0.11	0.18	6.6750	1.46	0.0724	0.34	-10.4	996.3	6.8	899.9	12.3	975.5	5.7
n2570-22	382	185	77	0.48	0.03	6.0833	1.25	0.0718	0.56	0.0	981.0	11.3	981.1	11.4	981.0	8.0
n2570-1	325	306	73	0.94	3.5	6.0111	1.25	0.0748	2.05	-7.1	1062.2	40.6	992.0	11.5	996.5	11.1
n2570-32	871	178	165	0.20	0.04	5.9903	1.34	0.0731	0.47	-2.2	1016.4	9.4	995.2	12.4	1008.7	7.5
n2570-41	114	254	34	2.22	0.07	5.8837	1.32	0.0726	1.02	1.0	1002.6	20.6	1011.9	12.4	1009.4	10.6
n2324-5	758	438	154	0.58	{1.77}	5.9718	2.10	0.0758	2.09	-9.1	1089.4	41.3	998.1	19.4	1012.5	17.9
n2405-10	1321	229	253	0.17	{2.15}	5.8363	1.17	0.0719	1.19	4.0	982.8	24.0	1019.5	11.0	1012.9	9.9
n2405-17	629	31	116	0.05	{3.12}	5.8990	1.17	0.0756	1.67	-7.4	1083.3	33.1	1009.5	10.9	1015.8	10.5
n2570-33	1479	87	256	0.06	0.07	6.2732	1.28	0.0737	0.29	-8.3	1033.1	5.9	953.5	11.3	1017.1	5.1
n2570-25	819	64	150	0.08	0.04	5.9658	1.30	0.0736	0.37	-3.3	1031.0	7.5	999.0	12.0	1022.1	6.3
n2570-28	645	478	136	0.74	0.26	6.1147	1.26	0.0750	0.46	-9.3	1068.3	9.2	976.4	11.4	1032.8	7.1
n2570-14	275	192	62	0.70	0.04	5.7361	1.25	0.0742	0.67	-1.1	1046.2	13.4	1035.9	12.0	1040.5	9.0
n2324-6	744	626	166	0.84	{1.78}	5.7456	1.67	0.0767	1.74	-7.7	1114.1	34.4	1034.4	16.0	1047.0	14.8
n2570-17	758	980	163	1.29	0.76	6.3845	1.83	0.0769	0.67	-17.3	1117.8	13.2	938.0	16.0	1047.1	10.2
n2570-23	241	126	50	0.52	0.32	5.8447	1.26	0.0771	0.89	-10.2	1124.1	17.6	1018.1	11.9	1048.8	10.1
n2405-12	1066	214	213	0.20	{1.56}	5.6637	1.17	0.0760	1.27	-4.7	1095.4	25.2	1048.2	11.3	1055.5	10.4
n2570-3	1137	275	231	0.24	0.06	5.6274	1.32	0.0756	0.31	-3.1	1085.3	6.3	1054.4	12.9	1079.5	5.6
n2405-25	795	231	168	0.29	{1.29}	5.4813	1.17	0.0759	0.97	-1.2	1092.5	19.4	1080.3	11.6	1083.4	10.0
n2405-18	865	166	179	0.19	{1.14}	5.3940	1.17	0.0745	1.06	4.3	1054.6	21.2	1096.4	11.8	1086.2	10.2
n2405-9	383	177	83	0.46	{4.22}	5.4931	1.17	0.0819	1.87	-14.4	1243.7	36.3	1078.1	11.6	1089.4	11.2
n2570-35	104	64	24	0.62	{0.09}	5.4890	1.29	0.0774	0.98	-5.1	1132.4	19.4	1078.9	12.9	1094.5	10.9
n2405-1	408	139	85	0.34	{0.35}	5.6446	1.17	0.0775	0.48	-7.9	1134.6	9.6	1051.4	11.3	1099.9	7.4
n2324-1	252	172	59	0.68	0.68	5.3087	1.66	0.0744	2.77	6.3	1052.0	54.9	1112.5	17.0	1107.0	16.1
n2570-11	774	311	172	0.40	0.22	5.4180	1.54	0.0773	0.66	-3.7	1130.2	13.2	1091.9	15.5	1114.1	10.1
n2570-5	270	100	61	0.37	1.32	5.3255	1.99	0.0785	1.75	-4.7	1159.3	34.2	1109.3	20.3	1121.6	17.7
n2324-2	304	172	70	0.57	0.82	5.1749	2.91	0.0745	3.54	8.6	1055.5	69.7	1138.9	30.4	1124.9	27.5
n2405-20	680	123	148	0.18	{5.51}	5.1390	1.17	0.0779	2.15	0.3	1143.6	42.1	1146.2	12.3	1146.0	11.8
n2570-38	315	100	70	0.32	0.14	5.2077	1.25	0.0791	0.57	-4.0	1175.2	11.3	1132.3	13.0	1156.6	8.6
n2570-31	263	98	60	0.37	0.15	5.2454	1.25	0.0800	0.63	-6.6	1197.4	12.5	1124.9	13.0	1162.3	9.1
n2571-9	132	64	32	0.48	0.08	5.0664	1.30	0.0788	0.97	-0.6	1168.1	19.1	1161.2	13.8	1163.5	11.2
n2570-40	241	510	81	2.11	0.04	5.0382	1.41	0.0786	0.82	0.4	1162.6	16.1	1167.2	15.1	1165.1	11.0
n2570-39	202	213	56	1.05	0.09	5.0349	1.52	0.0786	0.72	0.4	1163.3	14.2	1167.9	16.2	1165.3	10.7
n2570-42	225	128	55	0.57	0.1	4.9922	1.28	0.0783	0.84	2.1	1155.0	16.5	1177.0	13.8	1168.0	10.6
n2570-13	1082	85	236	0.08	0.08	5.0585	1.27	0.0791	0.30	-1.0	1173.6	5.9	1162.9	13.5	1171.9	5.4
n2570-21	186	73	44	0.39	0.07	5.0447	1.25	0.0801	0.98	-3.1	1200.0	19.2	1165.8	13.3	1176.6	11.0
n2570-26	505	122	117	0.24	0.02	4.9795	1.25	0.0792	0.42	0.2	1177.5	8.2	1179.7	13.5	1178.1	7.0
n2570-16	278	126	67	0.45	0.29	5.0042	1.25	0.0795	0.70	-0.9	1184.0	13.8	1174.4	13.5	1179.1	9.7
n2405-4	110	92	29	0.84	{0.29}	5.0514	1.22	0.0805	0.88	-4.0	1208.8	17.2	1164.4	13.0	1180.1	10.5
n2405-2	229	228	62	1.00	{0.44}	5.0916	1.17	0.0803	0.61	-4.3	1203.7	12.0	1156.0	12.3	1180.3	8.7
n2570-6	153	106	39	0.69	0.05	5.0990	1.25	0.0808	0.76	-5.5	1216.0	14.9	1154.4	13.2	1180.9	10.0
n2570-24	131	97	34	0.74	0.06	5.0126	1.25	0.0803	0.97	-2.8	1203.7	19.0	1172.6	13.5	1182.8	11.1
n2570-12	154	218	46	1.42	{0.04}	4.9236	1.48	0.0792	0.90	1.4	1177.3	17.7	1192.0	16.1	1185.4	11.9
n2570-30	1537	210	347	0.14	0.01	4.9639	1.29	0.0796	0.25	-0.4	1187.4	5.0	1183.1	14.0	1186.9	4.7
n2570-8	223	80	53	0.36	0.09	5.0393	1.25	0.0807	0.77	-4.3	1214.5	15.0	1166.9	13.4	1187.6	10.1
n2405-19	1156	284	267	0.25	{1.03}	4.9065	1.17	0.0793	0.86	1.5	1179.9	16.9	1195.8	12.7	1190.0	10.2
n2570-19	254	163	66	0.64	{0.02}	4.9460	1.26	0.0803	1.07	-1.7	1205.2	20.9	1187.0	13.7	1192.4	11.5
n2570-27	166	61	40	0.37	{0.04}	4.9574	1.25	0.0801	0.70	-1.5	1200.6	13.7	1184.6	13.6	1192.4	9.7
n2405-13	253	82	60	0.33	{2.45}	4.8943	1.20	0.0770	2.40	7.4	1122.4	47.1	1198.5	13.1	1192.5	12.6
n2405-14	235	88	56	0.37	{2.19}	4.8941	1.17	0.0773	2.43	6.8	1128.9	47.6	1198.5	12.8	1193.5	12.3
n2570-2	320	68	79	0.21	0.36	4.5884	1.38	0.0779	0.68	12.2	1144.5	13.4	1271.0	15.9	1197.7	10.2
n2405-3	227	47	54	0.21	{0.29}	4.8364	1.17	0.0797	0.61	1.9	1190.4	12.1	1211.6	12.9	1200.4	8.8
n2405-6	55	42	15	0.77	{1.07}	4.9494	1.17	0.0827	1.24	-6.5	1261.4	24.0	1186.3	12.6	1201.2	11.4
n2405-21	289	132	71	0.46	{3.24}	4.8764	1.17	0.0823	2.08	-4.4	1252.9	40.1	1202.5	12.8	1206.7	12.3
n2570-4	845	80	193	0.09	0.09	4.8391	1.28	0.0804	0.51	0.3	1207.4	10.1	1210.9	14.2	1208.6	8.2
n2405-16	583	189	138	0.32	{2.22}	4.8838	1.21	0.0824	1.46	-4.8	1255.3	28.3	1200.8	13.3	1209.9	12.1
n2570-7	117	96	32	0.82	{0.03}	4.8010	1.25	0.0807	0.91	0.4	1215.2	17.8	1219.7	13.9	1218.0	11.0
n2405-24	400	46	93	0.12	{2.44}	4.8004	1.18	0.0810	1.74	-0.2	1222.6	33.9	1219.8	13.1	1220.2	12.2
n2405-5	276	70	67	0.25	{0.46}	4.7562	1.17	0.0807	0.64	1.5	1213.4	12.5	1230.2	13.1	1221.5	9.0
n2405-23	380	335	108	0.88	{2.19}	4.6980	1.17	0.0809	1.79	2.3	1218.7	34.8	1244.0	13.2	1240.8	12.3
n2570-20	506	459	146	0.91	0.11	4.6404	1.25	0.0844	0.41	-3.6	1300.8	8.0	1258.0	14.3	1290.8	6.9
n2570-36	272	76	69	0.28	0.13	4.6920	1.44	0.0869	0.80	-9.1	1358.1	15.3	1245.5	16.3	1304.7	11.3
n2405-11	93	144	31	1.55	{2.08}	4.2936	1.17	0.1176	3.10	-32.9	1920.4	54.6	1349.7	14.3	1359.3	14.2
n2570-15	685	773	241	1.13	0.14	3.9111	1.30	0.1050	0.41	-16.1	1714.8	7.5	1467.7	17.1	1680.6	6.3
n2570-9	178	142	71	0.80	0.09	3.4070	1.37	0.1072	0.65	-6.0	1751.9	11.9	1659.1	20.1	1728.2	10.1
n2324-4	578	237	226	0.41	{0.56}	3.0717	5.53	0.1053	4.53	6.5	1719.2	81.0	1816.8	88.2	1765.0	59.7
n2570-34	255	127	101	0.50	{0.02}	3.1949	1.25	0.1106	0.66	-3.4	1808.9	12.0	1755.5	19.3	1794.1	10.1
n2570-37	145	141	64	0.97	{0.03}	3.1573	1.29	0.1102	0.54	-1.9	1803.4	9.9	1773.7	20.1	1797.7	8.8

SJ-11 18L 485087 8296669 (15°40.68' S 75°13.90' W)

Sample/ spot #	[U] ppm	[Th] ppm	[Pb] ppm	Th/U meas	f_{206}%	$^{238}U/^{206}Pb$	±σ %	$^{207}Pb/^{206}Pb$	±σ %	Disc. % conv.	$^{207}Pb/^{206}Pb$	±σ	$^{206}Pb/^{238}U$	±σ	Concordia	±σ
n2323-45	210	171	43	0.82	0.48	6.2478	1.01	0.0690	2.23	7.1	897.8	45.3	957.1	9.0	954.7	8.8
n2323-1	129	157	31	1.21	0.74	6.1081	1.02	0.0706	1.68	3.5	946.6	33.9	977.4	9.3	975.2	8.9
n2323-4	218	78	42	0.36	0.27	6.0681	1.32	0.0722	0.94	-1.0	992.4	18.9	983.4	12.0	985.9	10.2
n2323-22	1011	594	200	0.59	0.36	6.1325	0.98	0.0766	1.24	-13.3	1111.4	24.5	973.8	8.9	986.3	8.5
n2323-39	229	150	46	0.66	0.65	5.9886	1.13	0.0666	2.83	22.3	825.0	58.0	995.5	10.5	988.5	10.2
n2323-42	652	696	147	1.07	0.51	5.9040	0.99	0.0697	1.32	10.7	918.1	26.9	1008.7	9.3	998.0	8.6
n2323-17	316	106	60	0.34	2.97	5.8226	0.98	0.0621	3.71	55.3	676.0	77.4	1021.7	9.2	1013.5	9.1
n2323-2	250	124	52	0.50	0.12	5.8878	0.98	0.0733	0.76	-1.2	1022.5	15.4	1011.3	9.2	1014.2	7.9
n2323-7	113	153	29	1.35	0.07	5.8770	1.01	0.0739	1.28	-2.6	1037.6	25.6	1013.0	9.5	1015.8	8.9
n2323-32	424	902	118	2.13	0.46	5.9056	1.17	0.0764	1.29	-9.6	1106.4	25.5	1008.4	11.0	1021.6	10.3
n2323-5	362	8	70	0.02	0.15	5.6069	0.98	0.0747	0.82	-0.2	1060.3	16.4	1058.0	9.5	1058.5	8.3
n2323-37	79	124	21	1.57	0.83	5.4313	0.98	0.0696	3.61	20.6	915.7	72.5	1089.4	9.8	1085.4	9.7
n2323-10	301	165	67	0.55	0.21	5.5465	0.98	0.0789	0.95	-9.4	1169.8	18.6	1068.6	9.6	1087.6	8.7
n2323-14	317	150	69	0.47	1.66	5.4458	1.12	0.0776	1.84	-4.7	1136.0	36.3	1086.8	11.3	1090.7	10.8
n2323-35	212	183	50	0.86	0.65	5.4170	1.12	0.0750	2.32	2.5	1067.9	45.9	1092.1	11.2	1090.7	10.9
n2323-15	659	77	133	0.12	0.25	5.4838	1.20	0.0770	0.84	-4.0	1121.1	16.7	1079.8	11.9	1093.4	9.8
n2323-40	413	164	88	0.40	1.45	5.3543	0.99	0.0737	2.17	7.5	1032.9	43.2	1103.8	10.0	1099.9	9.7
n2323-50	313	337	79	1.08	0.54	5.2714	1.84	0.0735	2.33	9.7	1028.0	46.4	1119.8	19.0	1105.6	17.3

n2323-11	1351	83	278	0.06	0.07	5.3161	0.98	0.0769	0.46	-0.8	1118.9	9.2	1111.1	10.0	1115.3	6.8
n2323-19	1180	168	249	0.14	0.07	5.2991	1.02	0.0769	0.49	-0.5	1119.9	9.7	1114.4	10.5	1117.3	7.1
n2323-47	446	153	98	0.34	0.44	5.2453	0.99	0.0764	1.38	2.0	1104.7	27.4	1124.9	10.3	1122.4	9.6
n2323-31	168	89	38	0.53	0.87	5.2307	0.98	0.0751	2.95	5.7	1072.1	58.1	1127.8	10.1	1126.0	9.9
n2323-9	118	98	30	0.83	0.49	5.1598	0.98	0.0739	2.03	10.8	1039.5	40.4	1142.0	10.2	1134.9	9.8
n2323-3	144	162	39	1.12	0.08	5.1192	1.04	0.0766	0.90	3.8	1111.2	17.8	1150.3	11.0	1139.4	9.3
n2323-49	144	109	35	0.75	0.71	5.0797	1.54	0.0729	2.36	16.1	1009.8	47.2	1158.4	16.3	1139.8	15.2
n2323-43	257	254	66	0.99	0.54	5.1429	0.99	0.0759	1.70	5.2	1093.1	33.6	1145.4	10.4	1140.5	9.9
n2323-33	274	138	64	0.50	0.54	5.1174	1.02	0.0754	1.50	7.3	1078.9	29.7	1150.6	10.7	1141.8	10.0
n2323-20	37	36	10	0.97	0.36	5.1002	1.00	0.0736	3.02	13.1	1030.2	59.9	1154.2	10.6	1149.8	10.3
n2323-34	80	160	25	2.02	0.48	5.1041	1.06	0.0795	2.66	-2.9	1185.3	51.7	1153.4	11.2	1154.7	10.9
n2323-12	426	126	98	0.30	0.12	5.0523	0.98	0.0779	0.74	1.9	1144.2	14.6	1164.2	10.5	1157.4	8.5
n2323-48	404	306	100	0.76	0.73	5.0227	0.99	0.0744	2.04	12.2	1053.1	40.6	1170.5	10.6	1161.7	10.2
n2323-28	106	161	31	1.52	0.33	5.0302	1.02	0.0765	2.18	6.0	1107.6	43.0	1168.9	10.9	1164.9	10.6
n2323-46	64	69	17	1.08	0.97	5.0321	1.41	0.0793	3.89	-1.1	1180.3	75.1	1168.5	15.1	1168.9	14.8
n2323-44	802	164	181	0.20	0.47	4.9335	1.00	0.0772	1.10	6.3	1125.5	21.8	1189.8	10.9	1176.3	9.6
n2323-16	59	158	21	2.65	0.67	4.9685	1.12	0.0766	2.79	6.9	1111.8	54.8	1182.1	12.1	1178.6	11.8
n2323-38	243	808	92	3.32	0.44	4.9682	1.06	0.0782	1.77	2.8	1152.3	34.7	1182.2	11.4	1179.2	10.8
n2323-30	34	76	11	2.24	1.33	4.9755	0.99	0.0769	5.17	6.1	1118.7	99.8	1180.6	10.6	1179.9	10.6
n2323-27	443	515	125	1.16	0.45	4.8710	0.98	0.0760	1.12	10.9	1094.9	22.2	1203.7	10.7	1181.2	9.5
n2323-6	124	87	32	0.70	0.22	4.9462	1.01	0.0788	1.15	1.8	1167.8	22.7	1187.0	10.9	1183.4	9.8
n2323-36	563	833	164	1.48	0.2	4.9184	1.00	0.0786	1.08	2.9	1162.5	21.2	1193.1	10.9	1186.7	9.6
n2323-8	339	120	82	0.35	0.15	4.8826	1.00	0.0784	0.83	4.1	1157.3	16.4	1201.1	11.0	1187.4	9.1
n2323-23	342	296	91	0.87	0.23	4.9258	0.98	0.0786	1.43	2.7	1162.7	28.1	1191.5	10.7	1187.8	9.9
n2323-26	419	154	99	0.37	2.69	4.8928	0.98	0.0739	2.49	17.0	1037.9	49.6	1198.8	10.8	1189.9	10.4
n2323-21	469	187	113	0.40	0.19	4.9033	1.02	0.0799	0.98	0.1	1195.1	19.3	1196.5	11.1	1196.1	9.7
n2323-41	298	358	84	1.20	0.34	4.8652	1.04	0.0786	1.43	4.0	1162.3	28.0	1205.0	11.4	1198.7	10.5
n2323-18	388	267	101	0.69	0.23	4.8566	0.98	0.0815	1.28	-2.3	1233.3	24.9	1207.0	10.8	1210.9	10.0
n2323-25	649	90	155	0.14	0.32	4.6364	1.11	0.0806	0.88	4.2	1212.7	17.3	1259.0	12.7	1242.6	10.1

SJ-57 18L 483268 8298384 (15°39.13' S 75°15.59' W)

Sample/ spot #	[U] ppm	[Th] ppm	[Pb] ppm	Th/U meas	f_{206}%	^{238}U/^{206}Pb	±σ %	^{207}Pb/^{206}Pb	±σ %	Disc. % conv.	^{207}Pb/^{206}Pb	±σ	^{206}Pb/^{238}U	±σ	Concordia	±σ
n2425-31	482	212	67	0.44	0.98	8.7768	0.87	0.0632	0.89	-3.1	716.5	18.8	695.6	5.8	697.3	5.5
n2452-16	112	141	16	1.26	4.44	8.2195	1.04	0.0587	5.43	34.9	556.6	114.3	740.1	7.2	739.1	7.2
n2571-16	422	175	62	0.41	0.22	8.1925	1.55	0.0653	0.74	-5.7	785.0	15.4	742.4	10.9	756.2	9.0
n2425-24	431	241	61	0.56	5.45	7.9999	1.02	0.0795	1.66	-38.0	1184.4	32.5	759.3	7.3	763.9	7.3
n2452-10	1201	737	183	0.61	0.88	7.9066	1.06	0.0638	1.53	4.9	733.6	32.1	767.7	7.7	765.8	7.4
n2571-17	523	693	99	1.32	0.04	7.7416	1.31	0.0647	0.56	2.6	764.5	11.7	783.1	9.7	775.6	7.4
n2571-13	28	21	5	0.74	{0.13}	7.7344	1.25	0.0636	2.50	8.1	728.1	52.2	783.8	9.2	782.0	9.1
n2571-14	428	287	71	0.67	0.04	7.6789	1.28	0.0655	0.61	-0.1	789.9	12.8	789.2	9.5	789.4	7.7
n2425-26	3474	1269	560	0.37	7.49	7.6060	1.44	0.0662	3.05	-2.3	814.2	62.6	796.3	10.8	796.8	10.6
n2425-30	823	565	122	0.69	3.58	7.6159	1.16	0.0746	3.98	-26.3	1056.5	78.1	795.3	8.7	796.8	8.6
n2445-2	239	383	48	1.60	0.21	7.5115	1.96	0.0655	0.94	2.2	789.6	19.5	805.7	14.9	799.8	11.8
n2425-18	218	256	36	1.17	8.52	7.5302	1.08	0.0901	2.29	-46.5	1428.6	43.2	803.8	8.1	803.6	8.1
n2445-5	56	45	10	0.81	{0.65}	7.5030	1.96	0.0657	1.64	1.3	796.6	34.0	806.6	14.9	805.0	13.6
n2452-22	354	284	62	0.80	0.57	7.3644	1.05	0.0651	1.27	5.7	779.1	26.4	820.8	8.1	817.0	7.7
n2452-15	197	75	32	0.38	0.52	7.2059	1.11	0.0637	1.55	15.7	730.0	32.5	837.7	8.7	829.3	8.3
n2571-5	507	225	90	0.44	3.07	6.6991	1.26	0.0753	2.00	-18.0	1077.8	39.7	896.9	10.6	905.0	10.4
n2452-9	450	29	77	0.06	0.64	6.2960	1.10	0.0694	1.28	4.8	909.8	26.1	950.3	9.7	945.1	9.1
n2452-8	270	91	51	0.34	0.49	6.0469	1.07	0.0692	1.26	9.9	903.9	25.7	986.6	9.8	975.1	9.0
n2452-13	425	186	84	0.44	0.44	6.0133	1.03	0.0719	0.91	0.9	983.9	18.4	991.7	9.5	990.0	8.4
n2452-23	859	29	157	0.03	0.11	5.9061	1.08	0.0717	0.49	3.5	977.0	9.9	1008.3	10.1	992.4	7.0
n2452-14	648	177	124	0.27	0.45	5.9903	1.05	0.0723	0.75	0.1	993.9	15.1	995.2	9.7	994.8	8.2
n2425-21	212	119	44	0.56	0.19	5.9780	0.85	0.0726	0.70	-0.6	1002.2	14.2	997.1	7.9	998.3	6.9
n2425-16	438	26	81	0.06	0.12	5.8582	0.85	0.0721	0.47	3.0	988.3	9.5	1016.0	8.0	1004.4	6.1
n2571-12	905	208	170	0.23	0.04	6.0788	1.26	0.0735	0.36	-4.8	1027.6	7.3	981.8	11.5	1014.7	6.1
n2425-4	461	93	89	0.20	1.67	5.7112	1.32	0.0728	1.21	3.6	1007.1	24.4	1040.1	12.7	1032.9	11.2
n2452-11	1418	185	271	0.13	1.92	5.7542	1.09	0.0772	1.77	-9.0	1126.9	34.9	1032.9	10.4	1039.4	10.1
n2425-7	147	66	31	0.45	0.15	5.7150	0.88	0.0741	0.79	-0.6	1045.4	15.9	1039.5	8.4	1040.8	7.5
n2571-3	62	28	13	0.45	{0.08}	5.7237	1.29	0.0759	1.42	-5.4	1092.1	28.2	1038.0	12.4	1046.1	11.5
n2452-7	348	149	72	0.43	2.59	5.6687	1.33	0.0770	1.86	-7.2	1122.4	36.7	1047.3	12.8	1054.4	12.2
n2571-4	108	65	24	0.60	0.11	5.6610	1.26	0.0752	1.08	-2.7	1075.0	21.6	1048.6	12.2	1054.8	10.7
n2452-18	78	43	17	0.55	1.89	5.5766	1.03	0.0798	3.55	-11.8	1192.7	68.5	1063.3	10.1	1065.3	10.0
n2425-23	51	37	12	0.72	0.79	5.5096	0.92	0.0760	1.85	-2.0	1095.3	36.5	1075.2	9.1	1076.3	8.8
n2425-5	869	598	198	0.69	0.85	5.6143	0.88	0.0791	0.78	-11.0	1175.5	15.4	1056.7	8.6	1081.7	7.7
n2425-35	216	48	45	0.22	1.41	5.3793	0.94	0.0767	1.26	-1.3	1112.4	24.9	1099.1	9.5	1100.7	8.9
n2425-17	200	31	43	0.15	0.59	5.2433	0.88	0.0759	0.80	3.3	1092.4	16.0	1125.3	9.0	1117.2	7.8
n2452-2	71	36	17	0.51	0.43	5.1716	1.03	0.0748	1.92	7.9	1062.4	38.2	1139.6	10.8	1133.3	10.3
n2571-7	879	484	182	0.55	0.11	5.9432	1.79	0.0788	0.45	-15.3	1167.6	8.9	1002.5	16.6	1135.3	7.3
n2452-19	63	64	16	1.02	2.1	5.1683	1.09	0.0774	3.17	0.9	1130.9	61.9	1140.2	11.4	1139.9	11.2
n2571-11	110	43	26	0.39	{0.03}	5.1167	1.38	0.0791	1.01	-2.1	1173.8	19.8	1150.8	14.6	1158.7	11.8
n2571-9	132	64	32	0.48	0.08	5.0664	1.30	0.0788	0.97	-0.6	1168.0	19.1	1161.2	13.8	1163.5	11.2
n2452-5	360	137	85	0.38	0.17	5.0016	1.04	0.0806	0.87	-3.4	1212.6	17.1	1175.0	11.2	1185.9	9.4
n2571-8	366	59	83	0.16	0.14	4.9440	1.25	0.0798	0.51	-0.3	1190.9	10.1	1187.5	13.6	1189.7	8.1
n2571-15	181	54	43	0.30	0.09	4.9851	1.30	0.0816	0.76	-5.1	1236.1	14.8	1178.5	14.0	1205.4	10.3
n2425-1	347	137	86	0.40	0.04	4.8291	0.85	0.0805	0.43	0.4	1209.2	8.4	1213.2	9.4	1211.0	6.3
n2571-6	696	300	170	0.43	0.03	4.9434	1.25	0.0809	0.35	-2.8	1218.5	6.9	1187.6	13.6	1212.3	6.1
n2425-28	49	15	12	0.30	{0.13}	4.8363	0.90	0.0821	1.10	-3.2	1248.0	21.4	1211.6	9.9	1217.7	9.0
n2571-2	77	76	22	0.99	{0.03}	4.7702	1.34	0.0806	1.04	1.5	1210.8	20.2	1226.9	14.9	1221.2	12.0
n2452-4	762	122	171	0.16	0.22	4.9624	1.03	0.0818	0.41	-5.1	1240.8	8.0	1183.4	11.2	1221.6	6.5
n2452-6	213	170	58	0.80	0.3	4.7046	1.05	0.0798	0.87	4.6	1192.9	17.1	1242.4	11.9	1226.1	9.7
n2452-12	1000	7	226	0.01	1.46	4.8014	1.03	0.0816	0.69	-1.5	1236.1	13.5	1219.6	11.5	1226.4	8.8
n2425-2	327	28	76	0.09	0.05	4.7864	0.85	0.0817	0.44	-1.3	1237.4	8.7	1223.1	9.5	1230.9	6.4
n2452-3	457	217	118	0.48	0.21	4.6884	1.04	0.0812	0.57	1.7	1227.2	11.2	1246.3	11.8	1236.3	8.1
n2425-25	292	26	68	0.09	3.18	4.6977	0.86	0.0698	4.48	38.6	921.3	89.4	1244.1	9.7	1238.1	9.6
n2452-21	91	52	24	0.57	0.66	4.6735	1.04	0.0792	1.56	6.7	1177.8	30.6	1249.9	11.8	1240.0	10.9
n2445-4	177	77	46	0.43	0.14	4.6289	2.08	0.0820	1.20	1.4	1245.1	23.3	1260.9	23.9	1252.9	16.7
n2571-1	232	189	65	0.81	0.07	4.8057	1.26	0.0848	0.88	-7.8	1312.0	17.0	1218.6	14.0	1254.7	11.0
n2425-27	109	22	27	0.20	5.77	4.5497	0.87	0.0666	6.17	61.1	824.5	123.7	1280.8	10.2	1275.0	10.1
n2425-3	461	759	158	1.65	0.24	4.5523	0.86	0.0854	1.16	-3.7	1324.1	22.4	1280.1	10.0	1287.0	9.2
n2425-20	69	35	19	0.51	{0.09}	4.4892	0.85	0.0850	1.00	-1.7	1316.6	19.2	1296.4	10.0	1300.6	8.9
n2425-6	59	47	23	0.79	0.2	3.4454	0.86	0.1045	0.85	-4.2	1706.2	15.5	1642.7	12.4	1666.8	9.8
n2571-10	348	168	131	0.48	1.45	3.2504	1.41	0.1127	1.76	-7.0	1842.8	31.5	1729.2	21.5	1762.2	18.2
n2452-1	277	221	122	0.80	1.24	2.9648	1.05	0.1084	0.86	6.6	1772.0	15.6	1873.6	17.2	1817.8	11.5
n2425-29	371	220	145	0.59	0.37	3.1466	0.90	0.1142	0.42	-5.4	1866.9	7.6	1779.0	14.0	1847.4	6.6
n2445-3	154	105	68	0.68	0.15	2.9368	1.96	0.1137	0.55	1.8	1859.4	9.8	1889.1	32.3	1862.0	9.5
n2445-1	254	174	110	0.68	0.18	2.9973	1.99	0.1146	0.43	-1.1	1873.2	7.6	1856.0	32.1	1872.3	7.4
n2425-19	396	223	169	0.56	0.06	2.9660	0.85	0.1147	0.28	-0.1	1874.7	5.0	1872.9	13.9	1874.5	4.7

Ion microprobe U-Th-Pb data. Disc. conv. % is the age discordance in conventional concordia space. Positive numbers are reverse discordant. All errors are at the 1σ level. F 206 % is the percentage of common ^{206}Pb, estimated from the measured ^{204}Pb. Figures are given in parentheses when no correction has been applied owing to insignificant levels of ^{204}Pb, based on statistical significance of ^{204}Pb counts assuming a yield of 15cps/nA/ppm and 120 seconds total count time. Age calculations use the routines of Ludwig (2003) and follow the decay constant recommendations of Steiger & Jäger (1977). Numbers after sample identification are position in UTM coordinates and decimal degrees and minutes, WGS 84 datum. Data arranged according to increasing Concordia age.

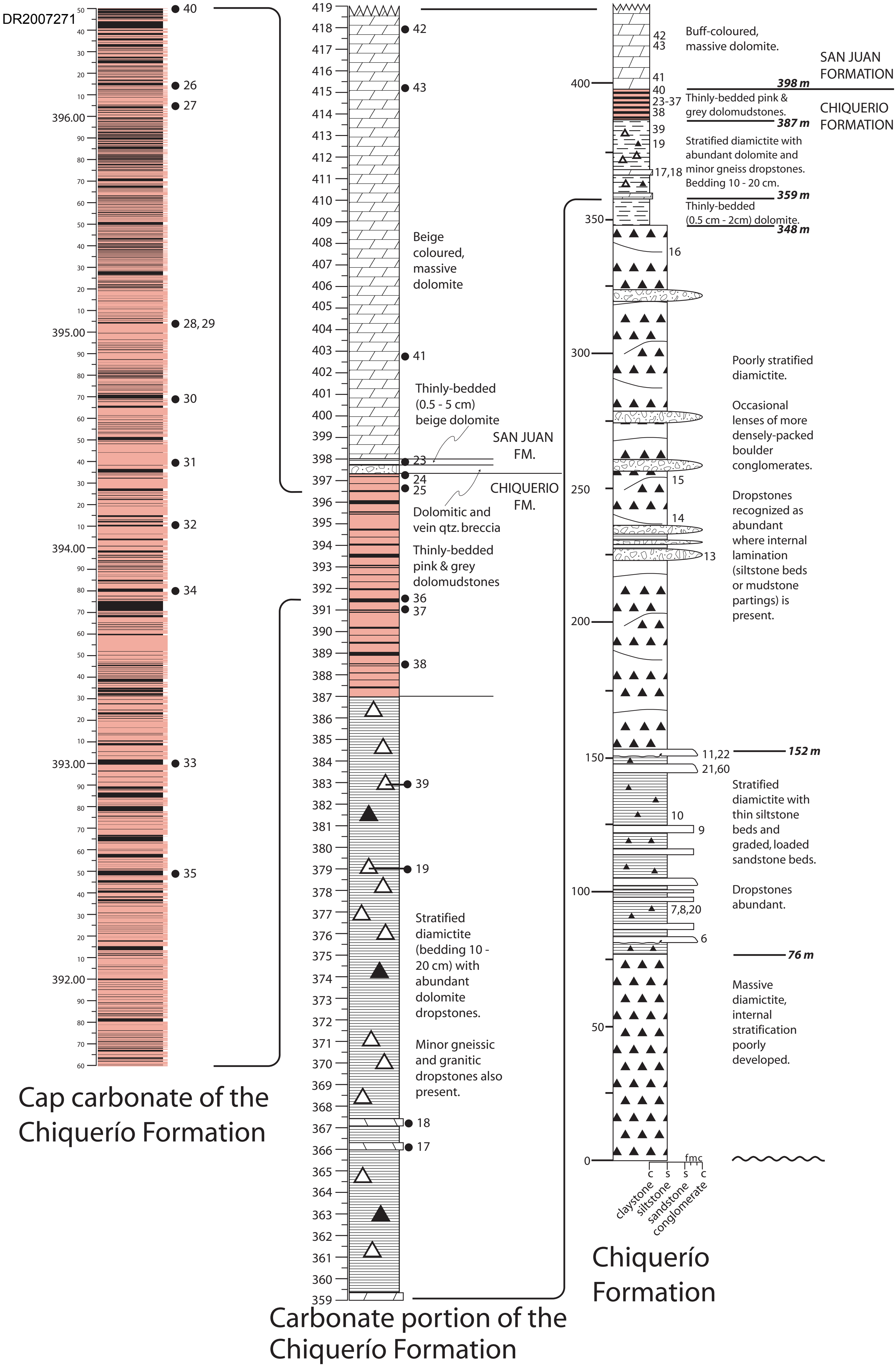

Figure 1. Stratigraphic section of the Chiquerío Formation and basal portion of the San Juan Formation. Sample numbers are denoted adjacent to each section.