Appendix (Data Repository Item)

Methods and Data

Apatites were separated using conventional heavy-liquid and magnetic separation techniques and sieved to 100-150 um minimum dimension. 10 to 20 euhedral and inclusion-free grains were hand-picked under a 120x binocular microscope with cross-polars, measured for α-emission correction (Farley et al., 1996), loaded into steel capsules, and outgassed in a vacuum resistance furnace at 950 ^{o}C for 20 minutes. Evolved helium was spiked with ^{3}He, cryogenically concentrated and purified, and the ^{4}He/^{3}He ratio measured on a quadrupole mass spectrometer. After outgassing the grains were retrieved from the capsules, dissolved in HNO_3, spiked with ^{235}U and ^{230}Th, and Th and U isotope ratios analyzed by ICPMS. The propagated analytical uncertainty on these He ages is ~2% 1σ. He ages from 29 of the 55 samples were analyzed two or more times and yielded a reproducibility of 2.7% (1σ), so for samples analyzed N times we adopt an uncertainty figure of 5.4%/$\sqrt{N}$ (2σ). This reproducibility is substantially better than obtained in our previous studies (e.g., House et al., 1998) suggesting that analytical complications, especially associated with mineral inclusions, have largely been overcome. Over the course of these measurements the Durango apatite standard was repeatedly analyzed, yielding a He age of 32.6 Ma with a 1σ variability of 3%.

Apatites from both the Ecstall and Quotoon plutons were subjected to step heating experiments to assess the He retention characteristics of Coast Mountains apatites. These data, to be described elsewhere, indicate a closure temperature of ~68^{o}C (assuming a cooling rate of 10 ^{o}C/ m.y.), in excellent agreement with analyses from other localities (Wolf et al., 1996; Farley 2000).

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Table: Sample Locations and (U-Th)/He Age Data

Sample	UTM North	UTM East	Rock Type	Elev. (m)	U (ppm)	Th (ppm)	He (nmol/g)	F_T	Corr. He age(Ma)	2-σ ±
95MR-17	5964050	492450	tonalitic gneiss	1067	27.4	19.4	1.315	0.79	9.65	0.37
95MR-22	5964650	493190	tonalitic gneiss	579	11.4	8.8	0.437	0.83	7.20	0.27
96MR-13	5972050	515160	metagranodiorite	0	14.9	20.7	0.437	0.79	5.18	0.16
96MR-56	5965720	505610	tonalitic gneiss	0	17.5	1.3	0.433	0.80	5.65	0.22
97MR-05	5964090	493960	hornblende tonalite	0	9.3	5.9	0.215	0.84	4.45	0.17
97MR-10	5956010	498100	hornblende tonalite	0	13.8	9.4	0.357	0.86	4.80	0.18
97MR-15	5954310	496290	tonalitic protomylonite	0	15.0	8.5	0.395	0.79	5.47	0.21
97MR-22	5957225	501005	hornblende tonalite	0	14.0	9.2	0.330	0.86	4.37	0.17
97MR-29	5979625	522820	diorite	0	33.5	50.6	1.020	0.75	5.55	0.21
97MR-41	5990905	502860	metagranodiorite	975	9.6	5.3	0.329	0.77	7.29	0.28
97MR-46	5993810	501825	granodiorite	1448	22.7	19.0	1.087	0.78	9.50	0.36
97MR-47	5962925	490060	hornblende tonalite	1402	36.4	24.7	2.227	0.84	11.55	0.44
97MR-48	5956150	494850	hornblende tonalite	983	14.7	9.8	0.698	0.81	9.40	0.36
97MR-49	5922300	491600	hornblende tonalite	1088	22.0	10.4	1.122	0.77	10.96	0.34
98MR-02	5915040	477250	hornblende tonalite	0	11.0	11.2	0.534	0.78	9.24	0.50
98MR-05	5916880	484760	quartz diorite	0	18.3	25.8	0.957	0.79	9.14	0.49
98MR-06	5916880	484760	quartz diorite	0	22.2	37.5	1.169	0.72	9.65	0.52
98MR-07	5920850	484275	tonalite	0	16.2	21.3	1.217	0.75	13.98	0.38
98MR-08	5925100	484125	biotite tonalite	0	6.6	7.6	0.441	0.80	12.18	0.47
98MR-09	5929925	484800	tonalitic gneiss	0	13.9	7.4	0.477	0.70	8.02	0.43
98MR-11	5920275	492250	hornblende tonalite	0	14.9	13.1	0.550	0.80	7.03	0.38
98MR-14	5927025	493750	tonalite	0	8.2	5.9	0.288	0.77	7.15	0.39
98MR-22	5920600	491700	hornblende tonalite	305	25.8	14.5	1.100	0.82	8.48	0.46
98MR-23	5914750	489225	tonalite	0	49.1	39.9	1.862	0.80	7.37	0.40
98MR-25	5922300	488650	biotite quartz diorite	0	42.4	16.7	1.468	0.79	7.44	0.40
98MR-28	5928225	488250	hornblende tonalite	0	62.7	29.1	2.282	0.80	7.56	0.41
98MR-31	5940925	488150	hornblende tonalite	0	15.2	19.0	0.561	0.83	6.32	0.34
98MR-35	5953675	506825	hornblende tonalite	0	6.8	2.9	0.138	0.80	4.23	0.23
98MR-36	5953675	510450	hornblende tonalite	0	42.8	14.9	1.160	0.83	5.57	0.21
98MR-37	5949700	513975	hornblende tonalite	0	15.3	6.0	0.310	0.81	4.23	0.23
98MR-39	5958325	509350	hornblende tonalite	0	110.1	46.1	2.286	0.84	4.15	0.22
98MR-40	5955050	503175	hornblende tonalite	0	42.6	8.8	1.031	0.79	5.38	0.29
98MR-47	5922625	493700	hornblende tonalite	671	19.5	6.2	0.915	0.82	9.83	0.38
98MR-48	5922775	491775	hornblende tonalite	878	21.1	9.8	1.006	0.81	9.76	0.53
98MR-55	5961025	491150	hornblende tonalite	1219	19.2	9.7	0.963	0.83	9.90	0.53
98MR-57	5961325	492700	hornblende tonalite	762	13.4	9.3	0.574	0.82	8.25	0.31
98MR-58	5961075	492425	hornblende tonalite	914	14.6	9.5	0.703	0.83	9.24	0.50
98MR-59	5962175	492150	hornblende tonalite	290	35.0	10.7	1.068	0.81	6.43	0.25
98MR-64	5959700	505000	hornblende tonalite	0	19.8	13.2	0.302	0.86	2.81	0.11
98MR-65	5957825	503575	hornblende tonalite	0	17.2	9.0	0.264	0.84	3.00	0.16
98MR-66	5940100	484225	hornblende tonalite	0	7.7	9.4	0.282	0.79	6.66	0.25
98MR-68	5961160	493650	hornblende tonalite	0	8.2	6.2	0.215	0.83	4.96	0.19
98MR-77	5959925	514300	hornblende tonalite	0	7.3	8.2	0.150	0.83	3.62	0.20
98MR-79	5975450	518320	metagranodiorite	0	11.4	1.6	0.276	0.80	5.38	0.29
98MR-86	5994975	539680	granodiorite	1798	14.8	27.1	1.760	0.79	19.39	0.74
98MR-87	5994995	540620	granodiorite	1631	11.0	20.0	1.109	0.82	15.94	0.61
98MR-91	5995225	537380	granodiorite	1509	14.7	27.3	1.110	0.80	12.09	0.65
98MR-92	5995250	536740	granodiorite	1341	23.6	34.5	1.046	0.71	8.54	0.46
98MR-94	5996520	534530	granodiorite	1021	13.8	27.3	0.660	0.83	7.30	0.39

98MR-96	5999525	531380	granodiorite	594	32.5	56.4	1.127	0.79	5.74	0.22
98MR-97	5994975	539680	granodiorite	853	11.0	21.0	0.446	0.84	6.23	0.34
99MR-44	5962850	507675	metatonalite	0	14.7	27.3	0.479	0.83	5.03	0.27
99MR-48	5957475	502875	tonalite	0	9.1	12.3	0.162	0.83	2.90	0.16
99MR-70	5906800	503100	tonalite	0	12.9	6.3	0.449	0.86	6.75	0.36

Notes: F_T is fraction of alphas retained (Farley et al., 1996); "corrected He ages" are corrected for this effect.