

Supplementary Data: Input data for thermal histories modelling

Table S1. AFT density data.

2223-1												
Grain	N _s	N _i	A (μm ²)	ρ _s (tr/cm ²)	ρ _i (tr/cm ²)	rse(ρ _s)	rse(ρ _i)	ρ _s /ρ _i	t (Ma)	se(t) (Ma)	rse(t)	
1	9	28	5554	162045	504141	33.33%	18.90%	0.32	25.21	9.66	38.32%	
2	29	44	7541	384564	583477	18.57%	15.08%	0.66	51.59	12.34	23.92%	
3	5	7	5278	94733	132626	44.72%	37.80%	0.71	55.89	32.73	58.55%	
4	4	8	1330	300752	601504	50.00%	35.36%	0.50	39.18	23.99	61.24%	
5	40	109	17044	234687	639521	15.81%	9.58%	0.37	28.78	5.32	18.49%	
6	18	35	8380	214797	417661	23.57%	16.90%	0.51	40.29	11.69	29.00%	
7	25	48	9757	256226	491954	20.00%	14.43%	0.52	40.80	10.06	24.66%	
8	35	73	12042	290649	606212	16.90%	11.70%	0.48	37.57	7.72	20.56%	
9	11	26	5383	204347	483002	30.15%	19.61%	0.42	33.16	11.93	35.97%	
10	34	108	8823	385356	1224073	17.15%	9.62%	0.31	24.69	4.86	19.66%	
11	12	24	7720	155440	310881	28.87%	20.41%	0.50	39.18	13.85	35.36%	
12	11	26	8468	129901	307038	30.15%	19.61%	0.42	33.16	11.93	35.97%	
13	13	24	8960	145089	267857	27.74%	20.41%	0.54	42.43	14.61	34.44%	
14	12	24	6221	192895	385790	28.87%	20.41%	0.50	39.18	13.85	35.36%	
15	8	17	2596	308166	654854	35.36%	24.25%	0.47	36.88	15.81	42.87%	
16	10	29	13845	72228	209462	31.62%	18.57%	0.34	27.04	9.92	36.67%	
17	74	143	16088	459970	888861	11.62%	8.36%	0.52	40.54	5.81	14.32%	
18	15	30	9528	157431	314861	25.82%	18.26%	0.50	39.18	12.39	31.62%	
19	10	32	6842	146156	467700	31.62%	17.68%	0.31	24.51	8.88	36.23%	
20	14	30	7154	195695	419346	26.73%	18.26%	0.47	36.57	11.84	32.37%	
21	6	14	4821	124456	290396	40.82%	26.73%	0.43	33.59	16.39	48.80%	
22	12	32	5140	233463	622568	28.87%	17.68%	0.38	29.40	9.95	33.85%	
23	18	29	7106	253307	408106	23.57%	18.57%	0.62	48.60	14.58	30.01%	
24	7	10	4809	145560	207943	37.80%	31.62%	0.70	54.78	27.00	49.28%	
25	17	33	9134	186118	361287	24.25%	17.41%	0.52	40.36	12.05	29.85%	
26	33	82	10997	300082	745658	17.41%	11.04%	0.40	31.55	6.50	20.62%	
2224-1												
1	13	16	4221	307984	379057	27.74%	25.00%	0.81	63.62	23.76	37.34%	
2	7	5	3403	205701	146929	37.80%	44.72%	1.40	109.24	63.97	58.55%	
3	29	20	7830	370370	255428	18.57%	22.36%	1.45	113.11	32.88	29.07%	
4	24	34	5803	413579	585904	20.41%	17.15%	0.71	55.31	14.75	26.66%	
5	8	10	3336	239808	299760	35.36%	31.62%	0.80	62.65	29.72	47.43%	
6	15	15	2913	514933	514933	25.82%	25.82%	1.00	78.22	28.56	36.51%	

7	16	21	5320	300752	394737	25.00%	21.82%	0.76	59.68	19.80	33.18%
8	23	32	4653	494305	687728	20.85%	17.68%	0.72	56.32	15.39	27.34%
9	20	37	3142	636537	1177594	22.36%	16.44%	0.54	42.40	11.77	27.75%
10	27	29	6570	410959	441400	19.25%	18.57%	0.93	72.85	19.48	26.74%
11	16	19	7021	227888	270617	25.00%	22.94%	0.84	65.93	22.37	33.93%
12	25	31	7704	324507	402388	20.00%	17.96%	0.81	63.15	16.98	26.88%
13	31	32	7466	415216	428610	17.96%	17.68%	0.97	75.79	19.10	25.20%
14	10	7	5401	185151	129606	31.62%	37.80%	1.43	111.45	54.92	49.28%
15	8	9	4921	162569	182890	35.36%	33.33%	0.89	69.57	33.81	48.59%
16	17	24	6226	273049	385480	24.25%	20.41%	0.71	55.50	17.59	31.70%
17	16	19	5611	285154	338621	25.00%	22.94%	0.84	65.93	22.37	33.93%
18	75	66	5764	1301180	1145038	11.55%	12.31%	1.14	88.81	14.99	16.88%
19	6	7	4211	142484	166231	40.82%	37.80%	0.86	67.10	37.33	55.63%
20	16	12	5548	288392	198270	25.00%	30.15%	1.45	113.46	44.44	39.17%
21	34	41	7956	427350	515334	17.15%	15.62%	0.83	64.93	15.06	23.20%
22	18	23	5179	347557	444101	23.57%	20.85%	0.78	61.29	19.29	31.47%
23	12	11	5368	223547	204918	28.87%	30.15%	1.09	85.28	35.60	41.74%
24	7	6	5824	120192	103022	37.80%	40.82%	1.17	91.16	50.72	55.63%
25	4	5	2087	191663	239578	50.00%	44.72%	0.80	62.65	42.03	67.08%
26	40	32	6153	650089	520072	15.81%	17.68%	1.25	97.63	23.15	23.72%
27	12	13	3601	333241	361011	28.87%	27.74%	0.92	72.24	28.92	40.03%
28	40	35	3823	1046299	915511	15.81%	16.90%	1.14	89.32	20.67	23.15%
29	27	27	4326	624133	624133	19.25%	19.25%	1.00	78.22	21.29	27.22%
30	7	7	1867	374933	374933	37.80%	37.80%	1.00	78.22	41.81	53.45%
2225-1											
1	15	23	5916	253550	388776	25.82%	20.85%	0.65	51.18	16.99	33.19%
2	6	11	13214	45406	83245	40.82%	30.15%	0.55	42.83	21.74	50.75%
3	38	51	7311	519765	697579	16.22%	14.00%	0.75	58.44	12.52	21.43%
4	7	14	5187	134953	269906	37.80%	26.73%	0.50	39.28	18.18	46.29%
5	20	45	6446	310270	698107	22.36%	14.91%	0.44	34.92	9.39	26.87%
6	33	96	9500	347368	1010526	17.41%	10.21%	0.34	27.03	5.45	20.18%
7	7	8	2936	238420	272480	37.80%	35.36%	0.88	68.58	35.49	51.75%
8	11	38	6177	178080	615185	30.15%	16.22%	0.29	22.77	7.80	34.24%
9	27	30	7340	367847	408719	19.25%	18.26%	0.90	70.53	18.71	26.53%
10	28	34	11837	236546	287235	18.90%	17.15%	0.82	64.56	16.48	25.52%
11	51	57	9459	539169	602601	14.00%	13.25%	0.89	70.12	13.51	19.27%
12	27	30	8450	319527	355030	19.25%	18.26%	0.90	70.53	18.71	26.53%
13	33	37	4980	662651	742972	17.41%	16.44%	0.89	69.89	16.74	23.94%
14	4	6	4042	98961	148441	50.00%	40.82%	0.67	52.32	33.77	64.55%
15	39	32	8153	478352	392494	16.01%	17.68%	1.22	95.32	22.74	23.85%

16	16	16	6347	252088	252088	25.00%	25.00%	1.00	78.31	27.69	35.36%
17	48	67	5731	837550	1169080	14.43%	12.22%	0.72	56.20	10.63	18.91%
18	20	40	4665	428725	857449	22.36%	15.81%	0.50	39.28	10.76	27.39%
19	34	39	9050	375691	430939	17.15%	16.01%	0.87	68.33	16.03	23.46%
20	18	21	6921	260078	303424	23.57%	21.82%	0.86	67.18	21.58	32.12%
21	27	37	6198	435624	596967	19.25%	16.44%	0.73	57.24	14.49	25.31%
2226-1											
1	39	33	6174	631681	534500	16.01%	17.41%	1.18	92.59	21.90	23.65%
2	21	17	6627	316885	256526	21.82%	24.25%	1.24	96.75	31.57	32.63%
3	30	20	6992	429062	286041	18.26%	22.36%	1.50	117.30	33.86	28.87%
4	15	17	3668	408942	463468	25.82%	24.25%	0.88	69.26	24.53	35.42%
5	33	29	8181	403374	354480	17.41%	18.57%	1.14	89.18	22.70	25.45%
6	16	21	5957	268592	352526	25.00%	21.82%	0.76	59.85	19.86	33.18%
7	28	26	7383	379250	352160	18.90%	19.61%	1.08	84.43	22.99	27.24%
8	29	21	4852	597692	432811	18.57%	21.82%	1.38	108.06	30.96	28.65%
9	27	26	4095	659341	634921	19.25%	19.61%	1.04	81.43	22.38	27.48%
10	35	32	5301	660253	603660	16.90%	17.68%	1.09	85.74	20.97	24.46%
11	26	34	4876	533224	697293	19.61%	17.15%	0.76	60.06	15.65	26.05%
12	51	43	10930	466606	393413	14.00%	15.25%	1.19	92.92	19.24	20.70%
13	12	22	5874	204290	374532	28.87%	21.32%	0.55	42.90	15.40	35.89%
14	23	39	11581	198601	336758	20.85%	16.01%	0.59	46.37	12.19	26.29%
15	20	29	6732	297089	430778	22.36%	18.57%	0.69	54.19	15.75	29.07%
16	26	23	5631	461730	408453	19.61%	20.85%	1.13	88.59	25.36	28.63%
17	40	33	9144	437445	360892	15.81%	17.41%	1.21	94.95	22.33	23.52%
18	29	43	9496	305392	452822	18.57%	15.25%	0.67	53.00	12.74	24.03%
19	25	23	6978	358269	329607	20.00%	20.85%	1.09	85.21	24.62	28.89%
20	28	35	3594	779076	973845	18.90%	16.90%	0.80	62.82	15.93	25.35%
21	16	24	4047	395355	593032	25.00%	20.41%	0.67	52.40	16.91	32.27%
22	70	59	6461	1083424	913171	11.95%	13.02%	1.19	92.95	16.43	17.67%
23	29	25	6370	455259	392465	18.57%	20.00%	1.16	90.90	24.81	27.29%
24	32	37	15228	210139	242973	17.68%	16.44%	0.86	67.89	16.39	24.14%
25	27	26	7873	342944	330243	19.25%	19.61%	1.04	81.43	22.38	27.48%
26	31	25	9771	317265	255859	17.96%	20.00%	1.24	97.12	26.11	26.88%
27	26	21	6500	400000	323077	19.61%	21.82%	1.24	96.97	28.45	29.34%
28	8	10	3754	213106	266383	35.36%	31.62%	0.80	62.82	29.80	47.43%
29	29	39	5510	526316	707804	18.57%	16.01%	0.74	58.41	14.32	24.52%
30	36	45	6302	571247	714059	16.67%	14.91%	0.80	62.82	14.05	22.36%
31	45	32	6429	699953	497745	14.91%	17.68%	1.41	110.03	25.44	23.12%
32	45	37	5973	753390	619454	14.91%	16.44%	1.22	95.27	21.14	22.19%
33	21	33	8278	253684	398647	21.82%	17.41%	0.64	50.02	13.96	27.91%

34	52	65	6294	826184	1032730	13.87%	12.40%	0.80	62.82	11.69	18.61%
35	40	62	16927	236309	366279	15.81%	12.70%	0.65	50.71	10.28	20.28%
36	36	42	9014	399379	465942	16.67%	15.43%	0.86	67.29	15.28	22.71%
37	34	29	6139	553836	472390	17.15%	18.57%	1.17	91.86	23.22	25.28%
38	24	28	6097	393636	459242	20.41%	18.90%	0.86	67.29	18.72	27.82%
39	38	34	10160	374016	334646	16.22%	17.15%	1.12	87.60	20.68	23.61%
40	48	44	8411	570681	523124	14.43%	15.08%	1.09	85.52	17.85	20.87%
2227-1											
1	10	8	3839	260485	208388	31.62%	35.36%	1.25	98.01	46.49	47.43%
2	5	10	3196	156446	312891	44.72%	31.62%	0.50	39.38	21.57	54.77%
3	28	34	12429	225280	273554	18.90%	17.15%	0.82	64.74	16.52	25.52%
4	12	23	4254	282087	540668	28.87%	20.85%	0.52	41.09	14.63	35.61%
5	12	28	7589	158124	368955	28.87%	18.90%	0.43	33.77	11.65	34.50%
6	8	9	9999	80008	90009	35.36%	33.33%	0.89	69.85	33.94	48.59%
7	26	30	7658	339514	391747	19.61%	18.26%	0.87	68.11	18.25	26.79%
8	10	20	4312	231911	463822	31.62%	22.36%	0.50	39.38	15.25	38.73%
9	26	26	8167	318354	318354	19.61%	19.61%	1.00	78.53	21.78	27.74%
10	4	13	2809	142399	462798	50.00%	27.74%	0.31	24.27	13.87	57.18%
11	10	24	5250	190476	457143	31.62%	20.41%	0.42	32.84	12.36	37.64%
12	5	9	5467	91458	164624	44.72%	33.33%	0.56	43.75	24.40	55.78%
13	5	14	3056	163613	458115	44.72%	26.73%	0.36	28.16	14.67	52.10%
14	10	13	4054	246670	320671	31.62%	27.74%	0.77	60.49	25.44	42.06%
15	6	5	1952	307377	256148	40.82%	44.72%	1.20	94.12	56.99	60.55%
16	6	6	5343	112296	112296	40.82%	40.82%	1.00	78.53	45.34	57.74%
17	4	5	3382	118273	147842	50.00%	44.72%	0.80	62.90	42.19	67.08%
18	17	20	4001	424894	499875	24.25%	22.36%	0.85	66.81	22.04	32.99%
19	10	11	6733	148522	163374	31.62%	30.15%	0.91	71.43	31.21	43.69%
20	9	11	3826	235233	287507	33.33%	30.15%	0.82	64.32	28.91	44.95%
21	57	69	9589	594431	719575	13.25%	12.04%	0.83	64.94	11.62	17.90%
22	19	31	6152	308843	503901	22.94%	17.96%	0.61	48.24	14.06	29.14%
23	13	21	3537	367543	593723	27.74%	21.82%	0.62	48.73	17.20	35.29%
24	69	73	6111	1129111	1194567	12.04%	11.70%	0.95	74.25	12.47	16.79%
25	11	25	2733	402488	914746	30.15%	20.00%	0.44	34.67	12.54	36.18%
26	27	29	5537	487629	523749	19.25%	18.57%	0.93	73.14	19.56	26.74%
27	14	25	4810	291060	519751	26.73%	20.00%	0.56	44.09	14.72	33.38%
28	15	23	3882	386399	592478	25.82%	20.85%	0.65	51.32	17.03	33.19%
29	59	64	5306	1111949	1206182	13.02%	12.50%	0.92	72.43	13.07	18.05%
30	14	32	6110	229133	523732	26.73%	17.68%	0.44	34.47	11.05	32.04%
31	31	32	4237	731650	755251	17.96%	17.68%	0.97	76.09	19.18	25.20%
32	6	16	6454	92966	247908	40.82%	25.00%	0.38	29.56	14.15	47.87%

33	26	40	11218	231770	356570	19.61%	15.81%	0.65	51.15	12.89	25.19%
34	22	47	5393	407936	871500	21.32%	14.59%	0.47	36.88	9.53	25.83%
35	10	12	4049	246975	296369	31.62%	28.87%	0.83	65.51	28.05	42.82%
36	16	12	5303	301716	226287	25.00%	28.87%	1.33	104.50	39.90	38.19%
37	28	23	7655	365774	300457	18.90%	20.85%	1.22	95.48	26.87	28.14%
38	7	12	4173	167745	287563	37.80%	28.87%	0.58	45.93	21.84	47.56%
39	40	44	4730	845666	930233	15.81%	15.08%	0.91	71.43	15.61	21.85%
40	19	26	10145	187284	256284	22.94%	19.61%	0.73	57.48	17.35	30.18%
41	15	35	12507	119933	279843	25.82%	16.90%	0.43	33.77	10.42	30.86%
2228-1											
1	45	56	5835	771208	959726	14.91%	13.36%	0.80	63.26	12.66	20.02%
2	5	13	3097	161447	419761	44.72%	27.74%	0.38	30.35	15.97	52.62%
3	12	18	4153	288948	433422	28.87%	23.57%	0.67	52.52	19.57	37.27%
4	24	26	3412	703400	762016	20.41%	19.61%	0.92	72.61	20.55	28.31%
5	21	36	5810	361446	619621	21.82%	16.67%	0.58	45.98	12.63	27.46%
6	19	30	6230	304976	481541	22.94%	18.26%	0.63	49.91	14.63	29.32%
7	29	26	3426	846468	758903	18.57%	19.61%	1.12	87.64	23.67	27.01%
8	15	21	5322	281849	394589	25.82%	21.82%	0.71	56.26	19.02	33.81%
9	9	16	2482	362611	644641	33.33%	25.00%	0.56	44.34	18.48	41.67%
10	5	13	3966	126072	327786	44.72%	27.74%	0.38	30.35	15.97	52.62%
11	12	16	2587	463858	618477	28.87%	25.00%	0.75	59.06	22.55	38.19%
12	8	16	2646	302343	604686	35.36%	25.00%	0.50	39.43	17.07	43.30%
13	13	15	4873	266776	307819	27.74%	25.82%	0.87	68.20	25.84	37.89%
14	14	26	5777	242340	450061	26.73%	19.61%	0.54	42.46	14.07	33.15%
15	11	17	1858	592034	914962	30.15%	24.25%	0.65	50.98	19.73	38.70%
16	29	37	3855	752270	959792	18.57%	16.44%	0.78	61.71	15.30	24.80%
17	9	11	5644	159461	194897	33.33%	30.15%	0.82	64.40	28.95	44.95%
18	31	42	9046	342693	464294	17.96%	15.43%	0.74	58.13	13.76	23.68%
19	61	66	7606	801998	867736	12.80%	12.31%	0.92	72.70	12.91	17.76%
20	37	37	7755	477112	477112	16.44%	16.44%	1.00	78.63	18.28	23.25%
21	7	13	2823	247963	460503	37.80%	27.74%	0.54	42.46	19.90	46.88%
22	11	21	4880	225410	430328	30.15%	21.82%	0.52	41.30	15.37	37.22%
23	44	49	12678	347058	386496	15.08%	14.29%	0.90	70.65	14.67	20.77%
24	61	63	9954	612819	632911	12.80%	12.60%	0.97	76.14	13.68	17.96%
25	32	28	7477	427979	374482	17.68%	18.90%	1.14	89.78	23.23	25.88%
26	17	19	3486	487665	545037	24.25%	22.94%	0.89	70.39	23.50	33.38%
27	48	60	5964	804829	1006036	14.43%	12.91%	0.80	62.98	12.20	19.36%
28	58	99	7590	764163	1304348	13.13%	10.05%	0.59	46.18	7.64	16.54%
29	12	23	4601	260813	499891	28.87%	20.85%	0.52	41.14	14.65	35.61%
30	32	43	2130	1502347	2018779	17.68%	15.25%	0.74	58.60	13.68	23.35%

31	32	43	4109	778778	1046483	17.68%	15.25%	0.74	58.60	13.68	23.35%
32	36	60	16473	218539	364232	16.67%	12.91%	0.60	47.29	9.97	21.08%
33	31	41	6443	481142	636350	17.96%	15.62%	0.76	59.54	14.17	23.80%
34	24	41	7471	321242	548789	20.41%	15.62%	0.59	46.14	11.86	25.70%
35	38	40	3037	1251235	1317089	16.22%	15.81%	0.95	74.72	16.93	22.65%
36	53	73	5611	944573	1301016	13.74%	11.70%	0.73	57.18	10.32	18.05%

Table S2 AFT lengths data.

Length measurements, μm	2223-1	2224-1	2225-1	2226-1	2227-1	2228-1
Track 1	12.88	10.9	13.29	12.75	11.85	14.89
Track 2	14.79	12.27	12.28	12.65	10.1	11.61
Track 3	12.51	11.69	11.73	10.06	10.32	13.49
Track 4	14.48	12.61	12.32	11.34	13.51	11.22
Track 5	12	15.21	11.02	11.91	14.17	10.76
Track 6	10.43	11.58	9.34	12.32	13.13	14.31
Track 7	9.31	14.62	13.6	12.36	14.4	15.74
Track 8	11.25	12.9	12.07	12.04	13.03	13.85
Track 9	8.73	10.96	9.7	11.12	14.97	12.28
Track 10	10.41	10.49	14.86	11	11.86	12.37
Track 11	14.26	14.33	14.85	10.96	12.29	13.7
Track 12	9.2	13.1	9.65	10.64	9.49	13.59
Track 13	13.03	13.92	13.99	9.07	10.43	13.01
Track 14	13.51	11.73	12.64	10.62	10.75	11.31
Track 15	14.88	12.43	12.09	11.47	10.21	10.87
Track 16	14.5	11.19	12.46	11.83	9.67	12.83
Track 17	12.63	11.33	14.42	13.16	12.61	10.06
Track 18	12.88	13.36	14.5	10.79	13.34	14.61
Track 19	11.74	13.95	14.54	12.55	12.94	10.81
Track 20	12.89	13.6	13.46	13.79	11.71	14.28
Track 21	11.94	13.17	11.52	14.07	13.67	12.83
Track 22	11.68	9.86	14.65	10.28	14.18	13.15
Track 23	12.57	9.61	10.49	12.57	11.21	10.68
Track 24	11.99	9.51	12	12.13	13.04	10.12
Track 25	13.12	11.98	11.93	12.52	15.15	9.97
Track 26	13.35	12.88	12.57	8.56	11.39	14.53
Track 27	12.81	10.49	10.42	9.44	11.99	12.11
Track 28	11.91	11.69	11.05	8.07	11.79	11.19
Track 29	10.9	13.47	11.98	9.46	14.06	11.85
Track 30	9.09	10.33	13.01	13.21	13.64	11.85
Track 31	12.44	12.66	10.68	13.96	10.99	10.99
Track 32	10.59	10.27	8.71	13.31	10.46	14.02
Track 33	12.3	14.19	12.78	14.73	10.55	12.49
Track 34	14.01	12.36	12.56	11.91	11.95	11.59
Track 35	10.46	13.47	11.17	10.47	11.35	12.76
Track 36	8.95	12.57	10.03	13.75	12.17	11.61
Track 37	11.78	10.89	12.34	10.38	12.46	12.13
Track 38	9.03	10.24	13.63	14.07	10.36	10.04
Track 39	10.24	11.32	10.45	12.35	15.21	14.93
Track 40	10.92	14.01	12.86	10.49	10.87	9.92
Track 41	14.31	10.63	11.42	12.74	11.95	10.89
Track 42	14.48	11.66	13.25	14.16	11.77	11.26
Track 43	11.17	12.69	8.19	12.88	11.36	9.84
Track 44	-	12.6	12.96	12.79	12.68	11.47
Track 45	-	10.94	13.86	11.11	12.83	12.76
Track 46	-	9.53	13.13	12.33	13.14	13.77
Track 47	-	12.97	9.03	13.25	12.6	11.16
Track 48	-	9.44	-	11.85	11.89	12.91
Track 49	-	9.37	-	13.44	14.32	11.61
Track 50	-	10.7	-	12.38	10.46	11.62
Track 51	-	10.71	-	9.82	-	11.02
Track 52	-	-	-	10.01	-	13.44
Track 53	-	-	-	11.5	-	15.64
Track 54	-	-	-	10.43	-	-
Track 55	-	-	-	13.88	-	-
Track 56	-	-	-	13.79	-	-
Track 57	-	-	-	11.26	-	-
Track 58	-	-	-	11.16	-	-

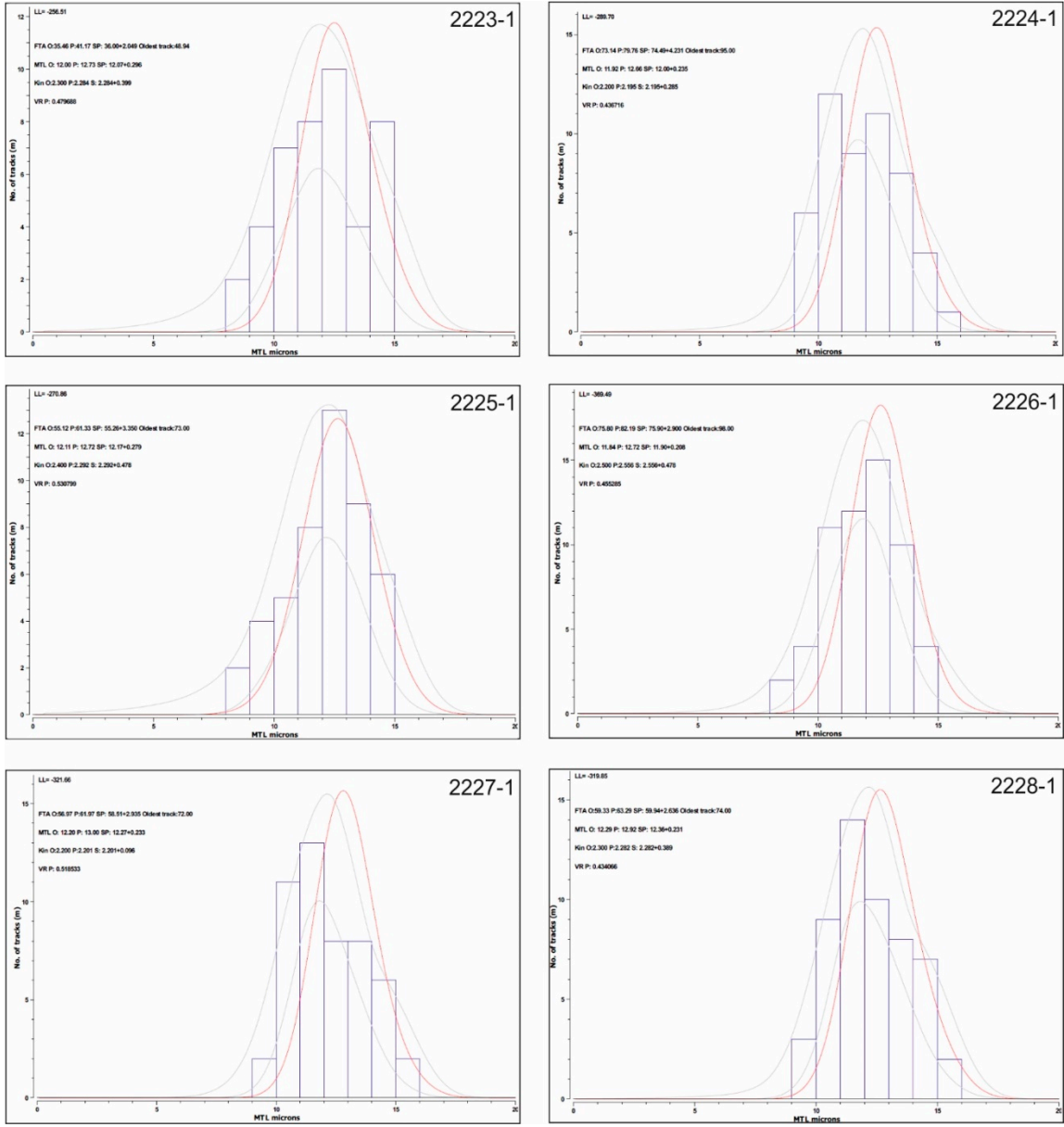


Figure S1. Track lengths histograms output from QTQt software.