

Ware, B., Tumpane, K.P., Kurz, G.A., Schmitz, M.D., and Northrup, C.J., 2021, Geochronology and geochemistry of the Huntington Formation, Olds Ferry terrane, Blue Mountains province, northern U.S. Cordillera: Implications for accreted terrane correlation and assembly: GSA Bulletin, <https://doi.org/10.1130/B36036.1>.

Supplemental Material

Table S1. U-Pb Isotopic Data.

REFERENCES CITED

- Jaffey, A.H., Flynn, K.F., Glendenin, L.E., Bentley, W.C., and Essling, A.M., 1971, Precision measurement of half-lives and specific activities of ^{235}U and ^{238}U : Physical Review. C, v. 4, p. 1889–1906, <https://doi.org/10.1103/PhysRevC.4.1889>.
- Mattinson, J.M., 2005, Zircon U-Pb chemical abrasion (“CA-TIMS”) method: Combined annealing and multi-step partial dissolution analysis for improved precision and accuracy of zircon ages: Chemical Geology, v. 220, p. 47–66, <https://doi.org/10.1016/j.chemgeo.2005.03.011>.
- Schmitz, M.D., and Schoene, B., 2007, Derivation of isotope ratios, errors and error correlations for U-Pb geochronology using ^{205}Pb - ^{235}U - (^{233}U) -spiked isotope dilution thermal ionization mass spectrometric data: Geochemistry, Geophysics, Geosystems, v. 8, no. 8, <https://doi.org/10.1029/2006GC001492>.

Table S1. U-Pb Isotopic Data

Grain	Th U	Radiogenic Isotopic Ratios										Radiogenic Isotopic Dates								
		$^{206}\text{Pb}^*$ $\times 10^{-13}$ mol	mol %	Pb^* Pbc	Pbc (pg)	$\frac{^{206}\text{Pb}}{^{204}\text{Pb}}$	$\frac{^{208}\text{Pb}}{^{206}\text{Pb}}$	$\frac{^{207}\text{Pb}}{^{206}\text{Pb}}$	% err	$\frac{^{207}\text{Pb}}{^{235}\text{U}}$	% err	$\frac{^{206}\text{Pb}}{^{238}\text{U}}$	% err	corr. coef.	$\frac{^{207}\text{Pb}}{^{206}\text{Pb}}$	±	$\frac{^{207}\text{Pb}}{^{235}\text{U}}$	±	$\frac{^{206}\text{Pb}}{^{238}\text{U}}$	±
(a)	(b)	(c)	(c)	(c)	(d)	(e)	(e)	(f)	(e)	(f)	(e)	(f)	(e)	(f)	(g)	(f)	(g)	(f)	(g)	(f)

DC07-04: calcareous siltstone within Dennett Creek limestone, lower Weatherby Formation

z4	0.454	7.616	98.24%	17	11.25	1047	0.144	0.050384	0.223	0.232568	0.262	0.033478	0.085	0.594	212.7	5.2	212.32	0.50	212.28	0.18
z8	0.309	3.104	99.53%	62	1.19	3992	0.098	0.050188	0.135	0.226067	0.166	0.032669	0.056	0.675	203.7	3.1	206.95	0.31	207.23	0.11
z7	0.331	5.010	99.55%	64	1.88	4103	0.105	0.050220	0.130	0.226005	0.168	0.032639	0.071	0.680	205.2	3.0	206.90	0.31	207.04	0.14
z6	0.305	4.279	99.64%	80	1.27	5171	0.097	0.050217	0.117	0.225631	0.156	0.032587	0.076	0.700	205.1	2.7	206.59	0.29	206.72	0.15
z5	0.219	1.223	99.02%	28	1.00	1895	0.070	0.050069	0.271	0.218262	0.303	0.031616	0.057	0.619	198.2	6.3	200.46	0.55	200.66	0.11
z3	0.177	0.644	96.10%	7	2.15	477	0.056	0.050034	1.084	0.217634	1.160	0.031547	0.104	0.751	196.6	25.2	199.94	2.10	200.23	0.21
z2	0.176	0.636	96.08%	7	2.13	475	0.056	0.049924	1.072	0.217086	1.149	0.031537	0.097	0.812	191.4	24.9	199.48	2.08	200.16	0.19
z1	0.267	0.700	98.14%	15	1.09	1001	0.085	0.050092	0.519	0.217802	0.562	0.031535	0.079	0.595	199.3	12.1	200.08	1.02	200.15	0.16

DC07-05: 'Mineral rhyolite', welded vitroclastic rhyolite tuff, upper member, Huntington Formation

z11	0.511	0.887	98.29%	18	1.27	1087	0.162	0.049835	0.420	0.203102	0.454	0.029558	0.073	0.526	187.32	9.8	187.75	0.78	187.78	0.14
z6	0.516	1.983	99.57%	71	0.70	4354	0.164	0.049802	0.127	0.202261	0.159	0.029455	0.056	0.691	185.78	3.0	187.04	0.27	187.14	0.10
z2	0.497	1.499	95.82%	7	5.39	441	0.159	0.050057	0.317	0.203261	0.352	0.029450	0.064	0.618	197.66	7.4	187.88	0.60	187.10	0.12
z10	0.504	1.487	99.47%	57	0.66	3486	0.161	0.049898	0.156	0.202572	0.190	0.029444	0.064	0.653	190.26	3.6	187.30	0.33	187.07	0.12
z9	0.479	1.050	99.63%	80	0.32	4972	0.152	0.049839	0.129	0.202317	0.180	0.029441	0.097	0.721	187.50	3.0	187.08	0.31	187.05	0.18
z7	0.514	1.571	99.71%	106	0.37	6511	0.163	0.049683	0.112	0.201664	0.148	0.029439	0.061	0.723	180.21	2.6	186.53	0.25	187.03	0.11
z4	0.487	1.430	97.63%	12	2.86	779	0.154	0.049696	0.276	0.201642	0.311	0.029428	0.068	0.595	180.80	6.4	186.51	0.53	186.97	0.13
z8	0.474	1.657	99.47%	56	0.73	3493	0.151	0.049763	0.158	0.201920	0.190	0.029428	0.058	0.650	183.96	3.7	186.75	0.32	186.97	0.11
z12	4689.1	1.573	99.60%	77	0.51	4689	0.179	0.049737	0.181	0.201817	0.205	0.029429	0.066	0.507	182.73	4.2	186.66	0.35	186.97	0.12
z3	0.508	2.314	98.64%	22	2.63	1357	0.162	0.049806	0.167	0.202056	0.203	0.029423	0.058	0.706	185.97	3.9	186.86	0.35	186.94	0.11

Weighted mean $^{206}\text{Pb}/^{238}\text{U}$ date = 187.03 ± 0.04 Ma, MSWD = 1.6, n = 9 of 10**DC08-06: 'Mineral rhyolite', welded vitroclastic rhyolite tuff, upper member, Huntington Formation**

z3	0.498	2.107	99.30%	43	1.22	2648	0.158	0.049852	0.163	0.202802	0.197	0.029504	0.066	0.636	188.1	3.8	187.49	0.34	187.45	0.12
z5	0.530	1.872	99.68%	96	0.49	5882	0.169	0.049822	0.110	0.202378	0.144	0.029460	0.055	0.744	186.7	2.6	187.14	0.25	187.17	0.10
z9	0.492	2.428	99.84%	186	0.32	11446	0.157	0.049871	0.067	0.202496	0.107	0.029449	0.054	0.856	189.0	1.5	187.24	0.18	187.10	0.10
z4	0.517	2.356	99.75%	124	0.48	7587	0.164	0.049787	0.096	0.202037	0.131	0.029431	0.055	0.752	185.1	2.2	186.85	0.22	186.99	0.10
z8	0.506	1.903	99.84%	188	0.25	11510	0.161	0.049865	0.069	0.202326	0.109	0.029427	0.054	0.850	188.7	1.6	187.09	0.19	186.96	0.10
z10	0.525	1.553	99.69%	97	0.40	5951	0.167	0.049914	0.107	0.202517	0.149	0.029426	0.073	0.743	191.0	2.5	187.25	0.26	186.96	0.13
z7	0.507	1.766	99.44%	54	0.82	3329	0.161	0.049848	0.157	0.202244	0.186	0.029426	0.053	0.657	187.9	3.7	187.02	0.32	186.95	0.10
z2	0.543	5.400	99.67%	91	1.49	5536	0.173	0.049802	0.071	0.201987	0.114	0.029416	0.059	0.853	185.7	1.6	186.81	0.19	186.89	0.11
z6	0.505	3.395	99.68%	95	0.90	5815	0.161	0.049823	0.099	0.202053	0.133	0.029413	0.054	0.751	186.7	2.3	186.86	0.23	186.87	0.10

Weighted mean $^{206}\text{Pb}/^{238}\text{U}$ date = 186.96 ± 0.07 Ma, MSWD = 2.1, n = 7 of 9

DC08-04: porphyritic rhyodacite flow, upper member, Huntington Formation

z5	0.544	10.82	99.80%	155	1.76	9370	0.173	0.049873	0.052	0.204353	0.097	0.029718	0.054	0.918	189.1	1.2	188.80	0.17	188.78	0.10
z9	0.519	4.044	99.81%	160	0.64	9753	0.165	0.049851	0.075	0.204156	0.114	0.029702	0.055	0.833	188.1	1.7	188.64	0.20	188.68	0.10
z1	0.579	0.416	97.85%	14	0.75	866	0.184	0.049831	0.758	0.204051	0.803	0.029699	0.131	0.416	187.1	17.6	188.55	1.38	188.66	0.24
z8	0.516	4.341	99.84%	187	0.58	11407	0.165	0.049935	0.065	0.204316	0.105	0.029675	0.053	0.866	192.0	1.5	188.77	0.18	188.51	0.10
z6	0.515	2.669	99.51%	62	1.07	3826	0.164	0.049827	0.132	0.203839	0.173	0.029670	0.077	0.692	186.9	3.1	188.37	0.30	188.48	0.14
z4	0.627	3.282	99.75%	127	0.67	7561	0.200	0.049860	0.078	0.203942	0.117	0.029666	0.055	0.824	188.5	1.8	188.46	0.20	188.46	0.10
z3	0.463	4.262	99.72%	105	1.00	6545	0.147	0.049882	0.096	0.203923	0.144	0.029650	0.082	0.773	189.5	2.2	188.44	0.25	188.35	0.15
z2	0.441	1.067	97.99%	15	1.80	919	0.140	0.049899	0.338	0.203962	0.376	0.029645	0.078	0.568	190.3	7.9	188.47	0.65	188.33	0.15
z7	0.551	1.621	99.56%	69	0.59	4194	0.175	0.049851	0.137	0.203006	0.171	0.029535	0.059	0.683	188.1	3.2	187.67	0.29	187.64	0.11

Weighted mean $^{206}\text{Pb}/^{238}\text{U}$ date = 188.45 ± 0.05 Ma, MSWD = 1.6, n = 5 of 9**HT08-15 tuffaceous lithic sandstone, upper member, Huntington Formation**

z3	0.283	0.177	97.03%	9	0.45	627	0.089	0.050272	0.894	0.241733	0.962	0.034875	0.110	0.654	207.6	20.7	219.84	1.90	220.98	0.24
z2	0.287	0.442	98.57%	20	0.53	1300	0.091	0.050354	0.504	0.236667	0.544	0.034088	0.083	0.535	211.4	11.7	215.69	1.06	216.08	0.18
z5	0.272	0.057	85.13%	2	0.82	125	0.083	0.046147	9.229	0.112904	9.436	0.017745	0.544	0.404	5.3	222	108.62	9.72	113.39	0.61
z4	0.246	0.112	95.76%	6	0.41	439	0.077	0.046856	1.544	0.090532	1.639	0.014013	0.109	0.879	41.9	36.9	88.00	1.38	89.71	0.10
z1	0.330	2.292	99.76%	120	0.45	7758	0.106	0.047652	0.089	0.079646	0.126	0.012122	0.055	0.791	82.0	2.1	77.81	0.09	77.68	0.04

HT04-03: tuffaceous volcanic sandstone, upper member, Huntington Formation

z5	0.669	0.694	98.91%	31	0.63	1712	0.187	0.173515	0.156	11.74350	0.362	0.490862	0.316	0.904	2591.8	2.6	2584.2	3.4	2574.4	6.7
z7	0.348	0.274	98.68%	22	0.30	1407	0.110	0.050382	0.440	0.238981	0.484	0.034402	0.072	0.651	212.6	10.2	217.59	0.95	218.04	0.15
z6	0.280	0.170	96.96%	9	0.44	611	0.088	0.050256	0.987	0.238275	1.058	0.034387	0.109	0.678	206.8	22.9	217.01	2.07	217.95	0.23
z10	0.362	0.742	98.82%	24	0.73	1571	0.115	0.050499	0.322	0.238891	0.356	0.034310	0.063	0.603	218.0	7.5	217.51	0.70	217.47	0.14
z8	0.412	0.299	98.81%	25	0.30	1563	0.131	0.050432	0.359	0.236702	0.400	0.034040	0.083	0.575	214.9	8.3	215.72	0.78	215.79	0.18
z4	0.079	0.683	99.04%	29	0.54	1939	0.034	0.067489	0.245	0.241225	0.290	0.025923	0.093	0.607	852.9	5.1	219.42	0.57	164.98	0.15
z9	0.672	0.148	97.82%	14	0.27	852	0.217	0.048384	0.975	0.100820	1.042	0.015113	0.094	0.733	118.1	23.0	97.53	0.97	96.69	0.09

HT09-03: dacitic volcanic flow, lower member, Huntington Formation

z3	0.359	0.411	99.36%	45	0.22	2898	0.114	0.050431	0.219	0.242321	0.257	0.034849	0.069	0.638	214.9	5.1	220.32	0.51	220.83	0.15
z1	0.370	0.428	99.13%	34	0.31	2149	0.118	0.050628	0.289	0.243079	0.326	0.034822	0.075	0.583	223.9	6.7	220.94	0.65	220.66	0.16
z4	0.289	0.863	96.64%	8	2.48	546	0.092	0.050588	0.411	0.242759	0.452	0.034804	0.084	0.554	222.1	9.5	220.68	0.90	220.54	0.18
z2	0.369	0.750	99.54%	63	0.29	4030	0.117	0.050603	0.186	0.242731	0.219	0.034790	0.075	0.576	222.8	4.3	220.65	0.43	220.46	0.16
z5	0.332	1.581	99.83%	173	0.22	11108	0.105	0.050578	0.077	0.242619	0.121	0.034790	0.064	0.828	221.7	1.8	220.56	0.24	220.46	0.14

Weighted mean $^{206}\text{Pb}/^{238}\text{U}$ date = 220.52 ± 0.08 Ma, MSWD = 1.4, n = 4 of 5**HT05-11: dacitic tuff breccia, lower member, Huntington Formation**

z4	0.338	0.139	94.65%	5	0.65	347	0.108	0.050796	1.685	0.244482	1.797	0.034908	0.188	0.634	231.6	38.9	222.08	3.59	221.19	0.41
z10	0.299	0.291	97.81%	13	0.54	848	0.095	0.050342	0.633	0.242090	0.684	0.034877	0.086	0.639	210.8	14.7	220.13	1.35	221.00	0.19
z7	0.323	0.287	97.68%	12	0.56	802	0.102	0.050448	0.671	0.242506	0.732	0.034864	0.082	0.770	215.7	15.5	220.47	1.45	220.92	0.18

z9	0.318	0.387	98.12%	15	0.61	991	0.100	0.050228	0.574	0.241259	0.626	0.034837	0.090	0.621	205.6	13.3	219.45	1.23	220.75	0.20
z6	0.346	0.549	98.21%	16	0.82	1041	0.110	0.050618	0.532	0.243011	0.575	0.034820	0.068	0.678	223.5	12.3	220.88	1.14	220.64	0.15
z5	0.323	0.201	98.35%	17	0.28	1125	0.103	0.050540	0.537	0.242530	0.588	0.034804	0.103	0.558	219.9	12.4	220.49	1.16	220.55	0.22
z1	0.290	0.147	96.55%	8	0.43	539	0.092	0.050302	1.086	0.241379	1.170	0.034803	0.174	0.538	209.0	25.2	219.55	2.31	220.54	0.38
z8	0.385	0.284	97.58%	12	0.58	770	0.122	0.050564	0.762	0.242421	0.825	0.034772	0.112	0.608	221.0	17.6	220.40	1.64	220.34	0.24
z3	0.291	0.063	94.10%	5	0.32	315	0.091	0.049945	2.632	0.239362	2.770	0.034759	0.329	0.469	192.4	61.2	217.90	5.43	220.26	0.71

Weighted mean $^{206}\text{Pb}/^{238}\text{U}$ date = 220.60 ± 0.09 Ma, MSWD = 1.7, n = 6 of 9

HT08-13: tuffaceous siltstone, lower member, Huntington Formation

z4	0.613	0.034	86.70%	2	0.43	140	0.203	0.049420	7.246	0.091124	7.492	0.013373	0.477	0.539	167.8	169.2	88.55	6.35	85.64	0.41
z1	0.538	0.082	86.60%	2	1.04	139	0.175	0.047522	5.283	0.049518	5.503	0.007557	0.305	0.737	75.6	125.4	49.07	2.64	48.53	0.15

HT08-14: crystal lithic rhyolite tuff, lower member, Huntington Formation

z7	0.601	1.292	99.43%	55	0.61	3254	0.186	0.063343	0.130	1.029008	0.168	0.117820	0.064	0.714	719.8	2.8	718.43	0.87	718.00	0.44
z10	0.426	0.366	96.53%	8	1.08	535	0.136	0.050776	0.933	0.252971	1.008	0.036133	0.128	0.623	230.7	21.6	228.99	2.07	228.82	0.29
z3	0.398	0.110	94.80%	5	0.50	358	0.124	0.049571	1.808	0.239410	1.919	0.035028	0.162	0.704	174.9	42.2	217.94	3.76	221.94	0.35
z4	0.342	0.243	97.82%	13	0.44	854	0.108	0.050053	0.653	0.241528	0.707	0.034997	0.102	0.579	197.5	15.2	219.67	1.40	221.75	0.22
z6	0.375	0.122	96.38%	8	0.38	514	0.119	0.050764	1.108	0.244940	1.194	0.034995	0.170	0.561	230.1	25.6	222.46	2.39	221.73	0.37
z5	0.451	0.134	94.47%	5	0.64	336	0.139	0.048826	2.107	0.235528	2.227	0.034986	0.197	0.640	139.5	49.5	214.75	4.31	221.68	0.43
z8	0.453	0.061	85.80%	2	0.83	131	0.146	0.051526	5.147	0.248528	5.422	0.034983	0.450	0.638	264	118	225.38	10.96	221.66	0.98
z2	0.354	0.447	97.99%	14	0.75	926	0.112	0.050514	0.577	0.243647	0.626	0.034982	0.083	0.630	218.7	13.4	221.40	1.25	221.65	0.18
z1	0.372	1.859	99.17%	35	1.29	2224	0.118	0.050276	0.184	0.225879	0.216	0.032585	0.059	0.635	207.8	4.3	206.79	0.40	206.70	0.12

Weighted mean $^{206}\text{Pb}/^{238}\text{U}$ date = 221.72 ± 0.12 Ma, MSWD = 0.44, n = 6 of 9

Notes:

(a) z1, z2, etc. are labels for analyses composed of single zircon grains or fragments. Labels in bold denote analyses used in the weighted mean date calculations.

Zircon was annealed and chemically abraded (Mattinson, 2005)

(b) Model Th/U ratio calculated from radiogenic $^{208}\text{Pb}/^{206}\text{Pb}$ ratio and $^{207}\text{Pb}/^{235}\text{U}$ date.

(c) Pb* and Pbc are radiogenic and common Pb, respectively. mol % $^{206}\text{Pb}^*$ is with respect to radiogenic and blank Pb.

(d) Measured ratio corrected for spike and fractionation only. Fractionation correction is 0.18 ± 0.02 (1-sigma) %/amu (atomic mass unit) for single-collector Daly analyses, based on analysis of NBS-981 and NBS-982.

(e) Corrected for fractionation, spike, common Pb, and initial disequilibrium in $^{230}\text{Th}/^{238}\text{U}$. Common Pb is assigned to procedural blank with composition of $^{206}\text{Pb}/^{204}\text{Pb} = 18.60 \pm 0.80\%$; $^{207}\text{Pb}/^{204}\text{Pb} = 15.69 \pm 0.32\%$; $^{208}\text{Pb}/^{204}\text{Pb} = 38.51 \pm 0.74\%$ (1-sigma). $^{206}\text{Pb}/^{238}\text{U}$ and $^{207}\text{Pb}/^{206}\text{Pb}$ ratios corrected for initial disequilibrium in $^{230}\text{Th}/^{238}\text{U}$ using Th/U [magma] = 3.

(f) Errors are 2-sigma, propagated using algorithms of Schmitz and Schoene (2007).

(g) Calculations based on the decay constants of Jaffey et al. (1971). $^{206}\text{Pb}/^{238}\text{U}$ and $^{207}\text{Pb}/^{206}\text{Pb}$ dates corrected for initial disequilibrium in $^{230}\text{Th}/^{238}\text{U}$ using Th/U [magma] = 3.