	Narauli Suite												
Sample #	J4/2	J11/1	J12/1	J21/1	J21/2	J22/1	J23/1	J24/2	J25/1	J26/1	J31/4	J35/2	J36/1
Unit Name	Narauli	Narauli	Narauli	Narauli	Narauli	Narauli	Narauli	Narauli	Narauli	Narauli	Narauli	Narauli	Narauli
Latitude (N)	60°16'20	60°17'10"	60°17'45"	60°16'25	60°16'30	60°16'25	60°17'00	60°17'10	60°17'15	60°17'20	60°13'40	60°13'50	60°13'50
Longitude (E)	150°39'10"	150°39'15"	150°38'30"	150°42'40"	150°42'50"	150°43'10"	150°43'50"	150°43'50"	150°43'40"	150°43'45"	150°42'50"	150°44'30"	150°44'40"
SiO_2	54.38	54.63	54.15	57.3	55.45	57.37	55.23	56.34	53.37	58.58	60.72	55.38	54.1
TiO_2	1.24	1.09	1.13	0.69	0.77	0.79	0.99	1.05	1.16	0.89	0.75	0.81	1.01
AL_2O_3	17.27	17.43	19.19	17.4	18.3	18.36	18.21	18.48	19.72	18.44	16.89	15.65	18.8
FeO	7.632	7.884	7.776	6.75	6.894	5.742	7.191	7.02	7.263	6.021	5.814	6.615	6.903
MnO	0.07	0.13	0.14	0.15	0.15	0.15	0.1	0.11	0.14	0.08	0.08	0.16	0.12
MgO	1.95	3.39	2.46	2.78	2.52	1.53	3.03	2.5	2.63	2.4	1.7	3.18	2.52
CaO	7.32	3.48	5.58	4.35	6.74	4.28	6.45	5.45	8.64	6.01	4.69	5.11	5.3
Na_2O	4.18	5.64	4.55	5.5	3.74	6.61	3.73	4.31	3.67	3.54	2.92	3.81	4.42
K_2O	0.41	0.98	1.87	1.17	1.19	0.94	1.08	1.25	1.02	1.33	1.17	1.08	1.12
P_2O_5	0.36	0.36	0.33	0.35	0.34	0.18	0.28	0.34	0.36	0.35	0.14	0.26	0.35
LOI	4.34	4.1	1.95	2.82	3.12	3.4	2.91	3.16	1.21	1.69	4.46	7.22	4.6
TOTAL	100	99.99	99.99	100.01	99.98	99.99	100	99.99	99.99	100	99.98	100.01	100.01
Mg#	0.31	0.43	0.36	0.42	0.39	0.32	0.43	0.39	0.39	0.42	0.34	0.46	0.39
Rb	9	21	45	24	23	22	23	23	21	23	20	30	28
Sr	417	558	483	934	796	850	764	896	661	642	183	453	729
Y	29	32	29	24	22	40	21	23	26	23	23	16	19
Zr	133	138	131	134	130	184	140	139	121	156	144	119	145
Nb		3											
Rock Name*	basaltic andesite	basaltic trachy-andesite	basaltic trachy-andesite	trachy-andesite	basaltic andesite	trachy-andesite	basaltic andesite	basaltic andesite	basaltic andesite	andesite	andesite	basaltic andesite	basaltic trachy-andesite

	Kholchan Suite				
Sample #	J18/1	J3/1	J50/1	J54/2	J54/3
Unit Name	Kholchan	Kholchan	Kholchan	Kholchan	Kholchan
Latitude (N)	60°16'45	60°16'20	60°18'30"	60°17'15"	60°17'15"
Longitude (E)	150°32'35"	150°39'40"	150°50'05"	150°52'30"	150°52'35"
SiO_2	67.01	69.45	75.95	76	80.08
TiO_2	0.76	0.39	0.14	0.12	0.1
AL_2O_3	16.08	15.69	13.16	13.3	8.96
FeO	3.546	3.186	1.719	1.323	1.233
MnO	0.07	0.1	0.03	0.01	0.03
MgO	0.56	0.66	0.21	0.19	2.21
CaO	1.96	1.07	0.48	0.27	0.32
Na_2O	3.61	6.59	3.1	3.04	2.97
K_2O	3.53	1.3	3.85	4.11	2.79
P_2O_5	0.14	0.17	0.01		0.41
LOI	2.35	1.05	1.15	1.48	0.76
TOTAL	100.01	100.01	99.99	99.99	100
Mg#	0.22	0.27	0.18	0.20	0.76
Rb	81	21	117	114	91
Sr	244	369	88	61	65
Y	24	31	35	45	33
Zr	249	226	184	175	140
Nb					
Rock Name*	dacite	rhyolite	rhyolite	rhyolite	rhyolite

	Ulyn Suite													
Sample #	J4	J5/2	J6/2	J14/1	J14/2	J27/1	J3/2	J32/1	J33/1	J34/1	J34/2	J35/1	J36/2	R15/7
Latitude (N)	60°16'25	60°16'30"	60°16'40"	60°18'40"	60°18'30"	60°17'30	60°16'20	60°13'30	60°13'45	60°13'50	60°13'50	60°13'50	60°13'50	60°15'30"
Longitude (E)	150°39'30"	150°39'00"	150°38'35"	150°37'30"	150°37'45"	150°43'45"	150°39'45"	150°42'55"	150°43'35"	150°43'50"	150°43'50"	150°44'10"	150°44'45"	150°41'50"
SiO_2	53.44	53.42	57.64	58.59	55.47	54.73	47.93	53.46	60.58	54.88	55.31	60.9	56.88	60.77
TiO_2	1.22	1.16	0.9	0.7	0.97	1.09	1.38	1.24	0.88	1.05	0.88	0.66	0.93	0.73
AL_2O_3	17.63	18.32	18.08	18.86	19.97	17.54	20.78	17.95	14.68	19.31	18.61	18.19	17.91	17.55
FeO	9.054	8.55	6.48	5.463	6.399	7.848	9.135	7.965	6.003	7.074	7.326	5.067	6.777	6.12
MnO	0.17	0.18	0.11	0.12	0.13	0.17	0.14	0.14	0.11	0.14	0.13	0.12	0.12	0.13
MgO	3.63	3.32	2.16	1.79	2.2	3.36	2.88	3	2.68	2.53	2.78	1.37	2.6	2.38
CaO	7.96	7.54	7.05	6.1	7.46	7.72	8.4	8.65	4.36	7.75	7.65	4.05	6.2	1.42
Na_2O	3.09	3.46	3.52	4.24	3.84	3.2	3.75	3.34	3.77	4.18	3.65	5.06	3.93	5.78
K_2O	0.68	1.24	1.42	1.28	1.06	1.22	0.33	1.41	0.97	0.94	1.01	1.75	1.26	0.9
P_2O_5	0.3	0.29	0.27	0.3	0.3	0.3	0.35	0.33	0.36	0.3	0.35	0.26	0.3	0.31
LOI	1.81	1.56	1.62	1.86	1.48	1.96	3.9	1.63	4.94	1.06	1.5	2	2.33	3.23
TOTAL	99.99	99.99	99.97	100	99.99	100.01	99.99	100	100	100	100.01	99.99	99.99	100
Mg#	0.42	0.41	0.37	0.37	0.38	0.43	0.36	0.40	0.44	0.39	0.40	0.33	0.41	0.41
Rb	12	26	32	22	19	23	11	22	21	17	15	37	24	21
Sr	524	473	436	593	667	586	590	508	612	716	688	903	600	492
Y	27	34	29	24	23	25	32	36	21	25	18	19	23	26
Zr	116	144	138	146	126	124	135	163	138	115	121	158	145	153
Nb							3							
Rock Name*	basaltic andesite	basaltic andesite	andesite	andesite	basaltic andesite	basaltic andesite	basalt	basaltic andesite	andesite	basaltic andesite	basaltic andesite	trachy-andesite	basaltic andesite	

	Ola Suite			
Sample #	J7/1	J7/2	J7/3	J7/4
Latitude (N)	60°16'40"	60°16'40"	60°16'40"	60°16'35"
Longitude (E)	150°38'15"	150°38'00"	150°37'50"	150°37'40"
SiO_2	73.16	72.96	76.36	74.69
TiO_2	0.11	0.17	0.11	0.15
AL_2O_3	12.75	13.43	13.05	12.78
FeO	1.008	2.43	1.089	1.692
MnO	0.01	0.02		0.01
MgO	0.28	0.41	0.18	0.38
CaO	1.79	0.61	0.36	0.44
Na_2O	2.74	2.74	4.01	2.47
K_2O	3.39	5.45	3.42	3.48
P_2O_5	0.02	0.03		
LOI	4.65	1.49	1.28	3.7
TOTAL	100.02	100.01	99.98	99.98
Mg#	0.33	0.23	0.23	0.29
Rb	67	132	57	133
Sr	229	78	78	53
Y	27	22	20	50
Zr	103	114	111	203
Nb				3
Rock Name*	rhyolite	rhyolite	rhyolite	rhyolite

	Ola Suite																		
Sample #	J8/2	J8/3	J9/1	J9/2	J5/1	J18/2	J40/1	J41/1	J41/2	J43/1	J44/1	J45/1	J46/1	J49/3	J51/1	J51/3	J51/4	J52/1	J55/1
Latitude (N)	60°16'40"	60°16'40"	60°16'40"	60°16'40"	60°16'30"	60°16'50	60°14'20	60°14'10	60°14'20	60°14'45	60°15'05	60°15'30	60°16'00"	60°18'00"	60°18'35"	60°18'40"	60°18'45"	60°18'55"	60°17'30"
Longitude (E)	150°37'20"	150°37'05"	150°37'05"	150°37'00"	150°39'10"	150°32'25"	150°40'30"	150°40'15"	150°39'35"	150°39'00"	150°38'50"	150°38'40"	150°37'10"	150°49'50"	150°50'10"	150°50'15"	150°50'15"	150°50'05"	150°52'55"
SiO_2	70	69	73.42	75.34	74.25	72.66	68.03	77.21	75.34	68.63	77.23	74.8	77.9	80.47	72.08	72.03	71.92	71.57	70.91
TiO_2	0.59	0.54	0.18	0.11	0.18	0.21	0.22	0.1	0.11	0.08	0.11	0.19	0.1	0.09	0.27	0.3	0.26	0.3	0.27
AL_2O_3	15.13	14.86	12.72	12.72	12.78	14.2	17.15	12.23	12.19	12.44	11.4	13.04	11.09	11.36	13.41	14.18	14.46	14.14	13.9
FeO	2.736	2.988	1.908	1.683	1.998	2.079	2.043	1.179	1.125	2.907	1.053	1.836	1.053	0.774	2.196	2.511	2.457	2.547	2.583
MnO	0.05	0.07	0.05	0.02	0.02	0.01	0.05	0.03	0.01		0.01	0.02	0.02		0.04	0.05	0.05	0.04	0.04
MgO	0.5	0.49	0.46	0.41	0.43	0.44	0.24	0.2	0.15	0.25	0.16	0.43	0.35	0.19	0.46	0.61	0.58	0.69	0.13
CaO	1.3	1.95	1.15	0.57	0.75	1.04	0.46	0.96	0.69	0.27	0.78	0.3	0.31	0.27	2.07	1.68	1.51	1.82	2.47
Na_2O	4.31	4.31	3.18	3.01	2.01	2.75	6.08	1.57	4.28	3.36	0.86	3.6	1	3.35	2.92	3.97	4.37	3.43	3.44
K_2O	3.76	3.29	3.59	4.87	4.97	4.7	4.53	4.1	2.04	3.55	6.3	3.86	6.09	2.39	3.44	3.01	3.03	2.98	2.96
P_2O_5	0.1	0.09	0.01	0.04	0.02	0	0.02	0.01							0.04	0.07	0.05	0.09	0.05
LOI	1.21	2.07	3.11	1.04	2.35	1.68	0.94	2.28	3.95	8.18	1.97	1.7	1.98	1.03	2.84	1.3	1.03	2.12	2.65
TOTAL	99.99	99.99	99.99	100	99.98	99.99	99.99	100	100.01	99.99	99.99	99.98	100.01	100.01	100.01	99.99	99.99	100.01	99.98
Mg#	0.25	0.23	0.30	0.30	0.28	0.27	0.17	0.23	0.19	0.13	0.21	0.29	0.37	0.30	0.27	0.30	0.30	0.33	0.08
Rb	72	57	112	108	92	86	90	104	68	101	129	102	131	69	90	74	76	67	77
Sr	181	213	140	99	251	155	122	55	69	32	72	80	64	83	168	208	258	202	164
Y	30	34	33	7	21	4	26	32	27	21	38	23	39	22	7	13	13	11	8
Zr	294	275	173	102	154	110	253	97	149	170	117	145	188	134	132	140	148	136	134
Nb																			
Rock Name*	rhyolite	dacite	rhyolite	rhyolite	rhyolite	rhyolite	trachy-dacite	rhyolite	rhyolite	dacite	rhyolite	rhyolite	rhyolite	rhyolite	rhyolite	rhyolite	rhyolite	rhyolite	rhyolite

	Mygdykit Suite										Momoltykich Suite		
Sample #	J15/2	J17/1	J19/1	J20/1	J47/2	J47/3	J47/4	J47/5	J47/6	J47/7	S4/4	S4/5	S4/8
Latitude (N)	60°16'45"	60°16'50	60°16'45	60°16'55	60°17'10"	60°17'15"	60°17'15"	60°17'15"	60°17'15"	60°17'15"	60°03'00"	60°03'00"	60°03'00"
Longitude (E)	150°33'30"	150°33'30"	150°33'00"	150°31'55"	150°30'28"	150°30'15"	150°29'50"	150°29'45"	150°29'30"	150°29'10"	150°33'00"	150°33'00"	150°33'00"
SiO_2	50.18	52.32	53.05	50.19	52.69	52.48	54.16	54.72	53.42	58.15	52	49.59	53.03
TiO_2	1.86	1.72	1.58	2.28	1.65	1.75	1.58	1.5	1.49	1.36	1.38	1.44	1.33
AL_2O_3	16.19	15.91	16.21	15.54	16.04	16.07	15.64	16.29	17.26	13.18	16.46	17.14	16.15
FeO	9.333	9.108	7.956	10.548	8.604	8.955	8.199	8.145	8.037	7.776	8.604	9.378	8.73
MnO	0.15	0.23	0.14	0.17	0.14	0.14	0.15	0.12	0.16	0.11	0.17	0.22	0.15
MgO	4.36	4.45	3.8	4.82	3.76	4.12	4.17	4.1	4.23	4.74	5.53	5.6	5.48
CaO	9.13	8.01	8.52	7.81	8.21	7.82	7.54	6.96	7.41	6.77	8.39	7.2	8.2
Na_2O	3.03	3.03	3.15	3.48	3.22	3.48	3.57	3.23	3.34	2.52	3	3.69	2.81
K_2O	1.31	1.37	1.28	0.73	1.68	0.97	0.73	1.56	1.77	1.31	0.73	0.98	1.32
P_2O_5	0.8	0.73	0.7	1.12	0.7	0.75	0.62	0.55	0.61	0.76	0.47	0.54	0.48
LOI	2.6	2.1	2.73	2.13	2.36	2.46	2.72	1.92	1.37	2.45	2.32	3.19	1.35
TOTAL	99.98	99.99	100	99.99	100.01	99.99	99.99	100	99.99	99.99	100.01	100.01	100
Mg#	0.45	0.47	0.46	0.45	0.44	0.45	0.48	0.47	0.48	0.52	0.53	0.52	0.53
Rb	28	24	28	17	30	21	22	28	37	32	15	18	24
Sr	642	773	653	845	589	705	688	530	872	606	567	804	570
Y	33	25	30	40	31	35	33	30	27	32	40	40	39
Zr	240	198	234	301	260	279	253	266	243	221	181	188	182
Nb	11	6	8	15	7	9	7	7	7	7	4	4	5
Rock Name*	basalt	basaltic andesite	basalt	basalt	basaltic andesite	basaltic andesite	basaltic andesite	basaltic andesite	basaltic andesite	andesite	basalt	basalt	basaltic andesite

Arman Volcanic Field

Narauliisk Andesite

Sample:S46-03 J21/2 Hornblende J=0.0010644

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
800	8	5.86E-14	913.0505	3.6713	3.1768	0.133	0.042	-2.8%	-49.8 ± 63.0
1000	8	4.62E-15	143.1050	7.8952	0.2793	0.062	0.063	42.7%	114.3 ± 20.5
1075	8	2.22E-15	58.3204	10.3285	0.0625	0.047	0.087	69.5%	76.8 ± 14.2
1125	8	2.21E-14	51.1297	14.2926	0.0274	0.034	0.367	86.0%	83.4 ± 1.4
1160	8	3.73E-14	48.2949	14.8591	0.0129	0.033	0.865	94.1%	86.2 ± 0.8
1200	8	1.15E-14	61.0576	14.3659	0.0579	0.034	0.987	73.5%	85.1 ± 3.0
1250	8	2.34E-15	164.2182	9.6595	0.3666	0.050	0.996	34.4%	106.2 ± 42.9
1400	8	7.94E-16	128.5775	4.7391	0.2307	0.103	1.000	47.2%	113.4 ± 91.4

Inverse Isochron fit: Model 1 Solution on 7 points Age = **84.4 ± 2.5 Ma** 40/36 intercept: 309 ± 50
MSWD = 1.3, Probability = 0.26 (for Tsteps 1000 C -1400 C)
Spectrum age fit: Plateau age = **85.5 ± 1.3 Ma,** MSWD = 0.98, probability = 0.44
Includes 100% of the 39Ar

Sample: S46-11 S3-1 Hornblende J=0.001077

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
700	8	2.71E-14	170.04	0.8991	0.4984	0.545	0.008	13.40%	43.8 ± 9.4
800	8	9.80E-15	82.6694	1.1187	0.2039	0.438	0.019	27.20%	43.1 ± 7.4
900	8	2.91E-15	79.5626	2.7415	0.1948	0.178	0.044	27.90%	42.7 ± 16.3
1000	8	1.70E-15	89.6254	6.2505	0.2249	0.078	0.102	26.30%	45.4 ± 29.9
1100	8	1.01E-15	41.1041	9.2487	0.0021	0.053	0.188	100.00%	78.6 ± 21.3
1050	8	4.26E-15	56.5819	13.3684	0.0692	0.036	0.311	65.40%	71.3 ± 7.3
1125	8	1.63E-14	50.0473	14.9359	0.0218	0.032	0.449	89.10%	85.6 ± 1.8
1150	8	8.82E-14	48.3876	15.5375	0.0162	0.031	0.593	92.20%	85.7 ± 0.7
1175	8	2.42E-14	49.6692	16.8218	0.0214	0.029	0.749	89.50%	85.5 ± 1.3
1200	8	4.29E-15	45.6005	17.0662	0.0039	0.028	0.907	100.00%	87.6 ± 5.8
1300	8	3.13E-16	21.2522	10.0544	0.0032	0.048	1.000	98.60%	40.6 ± 36.3

Inverse Isochron fit: Model 1 Solution on 4 points Age = **86.2 ± 6.2 Ma** 40/36 intercept: 276 ± 230
MSWD = 0.0028, Probability = 0.997 (for Tsteps 1100 C -1200 C)
Spectrum age fit: Plateau age = **85.6 ± 1.1 Ma**, MSWD = 1.07, probability = 0.38
Includes 90% of the 39Ar (Steps 1000 C-1300 C)

Ol'sk Rhyolite Sanidine

Sample: S40-9 -> J7/1 san J = 0.0005317 ± 0.000002 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
TF-MG	5	1.54E-13	91.1941	0.0003	0.0093	1745.404	0.162	97.00%	82.9 ± 0.4
TF-MG	5	1.34E-13	90.7961	0.0029	0.0077	168.982	0.303	97.50%	82.9 ± 0.6
TF-MG	5	3.35E-13	91.1362	0.0009	0.0118	541.437	0.655	96.20%	82.2 ± 0.8
TF-MG	8	1.31E-13	89.6261	0.0023	0.0081	214.806	0.795	97.30%	81.8 ± 0.5
TF-MG	8	1.93E-13	90.1534	0.0002	0.0042	2210.758	1	98.60%	83.3 ± 0.8

Total Fusion Age: **82.6 ± 1.4** Ma
Weighted Mean Plateau Age: **82.6 ± 0.5 Ma**, MSWD = 1.10, probability = 0.35, 100% of the 39Ar
Inverse Isochron Age: **83.2 ± 4.9 Ma**, Model 1 Solution on 5 points
40/36 intercept: 224 ± 600, MSWD = 2.2, Probability = 0.087 at J = .0005317 ± .000004 2s

Sample: S40-4 -> J7/4 san J = 0.0005346 ± 0.000002 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
TF-MG	8	6.69E-13	92.3333	0.0013	0.0162	372.715	0.247	94.80%	82.5 ± 0.5
TF-MG	8	5.89E-13	93.8687	0.0013	0.0231	380.313	0.462	92.70%	82.0 ± 0.6
TF-MG	8	4.83E-13	96.6852	0.0019	0.03	257.144	0.632	90.80%	82.7 ± 0.7
TF-MG	8	3.50E-13	91.4265	0.0022	0.015	219.204	0.763	95.10%	82.0 ± 0.7
TF-MG	8	7.07E-13	102.0224	0.0021	0.0467	238.377	1	86.50%	83.1 ± 0.6

Total Fusion Age: **82.5 ± 1.2** Ma
Weighted Mean age: **82.5 ± 0.5 Ma** MSWD = 0.59, probability = 0.67, 100% of the 39Ar, steps 1 through 5
Inverse Isochron Age: **81.7 ± 1.3 Ma** Model 1 Solution on all points 40/36 intercept: 328 ± 42 MSWD = 0.41, Probability = 0.75

Sample: S40-10 -> J41/2 san J = 0.0005315 ± 0.000002 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
TF-MG	8	2.18E-13	114.7419	0.0002	0.0934	1962.303	0.158	75.9%	81.7 ± 1.2
TF-MG	8	6.31E-13	97.0099	0.0001	0.0307	6714.358	0.696	90.7%	82.4 ± 0.6
TF-MG	8	6.00E-13	187.2858	0.0001	0.3499	3306.353	0.962	44.8%	78.7 ± 1.8
TF-MG	8	2.25E-14	99.8459	0.0021	0.0443	232.427	0.981	86.9%	81.3 ± 1.3
TF-MG	8	2.35E-14	99.7940	0.0040	0.0525	121.373	1.000	84.5%	79.0 ± 1.4

Total Fusion Age: **81.2 ± 1.0 Ma**
Weighted Mean Age: **81.9 ± 1.0 Ma**, MSWD = 1.4, probability = 0.23, 98.1% of the 39Ar, steps 1 through 4
Inverse Isochron Age: **82.2 ± 2.3 Ma**, Model 1 Solution on 5 points
40/36 intercept: 284 ± 22, MSWD = 2.5, Probability = 0.060 at J = .0005315 ± .000004

Sample: S40-5 -> J42/1 san J = 0.0005343 ± 0.000002 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
TF-MG	8	3.06E-13	107.5898	0.0002	0.0676	2929.689	0.122	81.40%	82.5 ± 1.0
TF-MG	8	2.55E-13	108.3606	0.0002	0.0709	2433.224	0.223	80.70%	82.3 ± 1.1
TF-MG	8	4.56E-13	93.5411	0.0001	0.0226	5019.169	0.431	92.80%	81.8 ± 0.7
TF-MG	8	1.73E-13	93.6627	0.0003	0.0173	1900.419	0.51	94.50%	83.4 ± 0.9
TF-MG	8	4.67E-13	90.1272	0.0004	0.01	1337.537	0.733	96.70%	82.1 ± 0.6
TF-MG	8	5.74E-13	91.7881	0.0014	0.0186	338.782	1	94.00%	81.3 ± 0.6

Total Fusion Age: **82.0 ± 0.7** Ma
Weighted Mean Age: **82.0 ± 0.6** Ma, MSWD = 0.85, probability = 0.52 100% of the 39Ar
Inverse Isochron Age: **82.0 ± 1.0 Ma** Model 1 Solution on all points 40/36 intercept: 306 ± 28 MSWD = 1.18

Sample: S40-2 -> J44/1 san J = 0.0005354 ± 0.0000021 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
TF-MG	8	1.27E-13	92.1161	1.1625	0.0275	0.421	0.07	91.30%	79.5 ± 1.3
TF-MG	8	1.35E-13	88.8319	2.6415	0.0203	0.185	0.146	93.50%	78.6 ± 1.1
TF-MG	8	3.95E-13	87.2608	1.2089	0.0152	0.405	0.373	94.90%	78.3 ± 0.6
TF-MG	8	3.88E-13	87.0165	1.0042	0.0051	0.488	0.597	98.30%	80.8 ± 0.6
TF-MG	8	9.96E-14	94.3309	0.9617	0.0338	0.509	0.65	89.50%	79.8 ± 1.5
TF-MG	8	2.73E-13	87.9623	0.0654	0.0089	7.49	0.806	97.00%	80.6 ± 0.8
TF-MG	8	3.44E-13	89.051	0.5252	0.0108	0.933	1	96.50%	81.1 ± 0.7

Total Fusion Age: **79.8 ± 1.6** Ma
Weighted Mean Age: **80.7 ± 0.8 Ma**, MSWD = 0.26, probability = 0.85, 62.6% of the 39Ar, steps 4 through 7
Inverse Isochron Age: **81.0 ± 1.2** Ma Model 1 Solution on 4 points
40/36 intercept: 262 ± 100, MSWD = 0.29, at J = .0005354 ± .0000042
All points: Same age, 40/36 intercept: 213 ± 160, MSWD = 2.8,

Sample: S40-39 -> J16/1 bio J = 0.0005088 ± 0.0000019 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
600	5	7.28E-14	667.3722	0.0044	2.2082	112.5	0.005	2.2%	13.6 ± 15.3
650	5	2.16E-14	160.5824	0.0247	0.4441	19.9	0.011	18.3%	11.2 ± 4.1
700	5	9.19E-15	98.4968	0.0254	0.2544	19.3	0.015	23.7%	12.3 ± 3.6
750	5	1.80E-14	55.2767	0.0117	0.1270	41.9	0.030	32.1%	11.7 ± 1.0
800	5	2.33E-14	91.6304	0.0056	0.1868	87.4	0.042	39.8%	26.6 ± 1.4
850	5	3.21E-14	106.5782	0.0079	0.1339	62.2	0.056	62.9%	55.9 ± 1.1
900	5	5.50E-14	103.3058	0.0009	0.0571	549.3	0.080	83.7%	75.7 ± 0.7
965	5	1.76E-13	97.8225	0.0011	0.0200	465.0	0.162	94.0%	81.7 ± 0.4
1000	5	1.49E-13	97.0787	0.0009	0.0161	527.8	0.232	95.1%	82.2 ± 0.4
1033	8	7.72E-15	100.6612	0.0006	0.0124	791.0	0.236	96.4%	86.5 ± 4.0
1066	8	5.54E-14	96.9538	0.0001	0.0141	5895.4	0.262	95.7%	82.7 ± 0.7
1100	8	1.57E-13	98.9510	0.0006	0.0243	816.8	0.334	92.7%	81.5 ± 0.5
1150	8	2.88E-13	95.9260	0.0002	0.0144	3096.6	0.471	95.6%	81.7 ± 0.4
1200	8	5.66E-13	92.6241	0.0000	0.0039	63012.4	0.750	98.8%	81.9 ± 0.4
1300	5	5.01E-13	91.5513	0.0000	0.0011	56488.3	1.000	99.6%	81.8 ± 0.3

Total Fusion Age: 78.7 ± 0.5 Ma
Weighted Mean Plateau Age: 81.8 ± 0.4 Ma, MSWD = 0.66, probability = 0.39, 92% of the 39Ar (965-1300)
Inverse Isochron Age: 81.8 ± 0.2 Ma Model 1 Solution on 7 points (965-1300)
40/36 intercept: 332 ± 23, MSWD = 1.04, Probability = 0.39 at J = .0005088 ± .0000038 2s

Ol'sk Rhyolite, Agan sub-unit, Biotite

Sample: S40-31 -> J51/1 bio J = 0.0005162 ± 0.000002 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
700	8	6.61E-15	143.3382	0.0103	0.1234	47.657	0.004	74.60%	96.9 ± 6.0
800	8	6.00E-14	109.1064	0.0043	0.0553	113.492	0.045	85.00%	84.4 ± 0.9
900	8	6.08E-14	99.3707	0.0039	0.052	126.267	0.092	84.50%	76.6 ± 0.8
1100	8	1.36E-13	94.3463	0.0013	0.0135	370.694	0.201	95.80%	82.2 ± 0.4
1100	8	3.46E-13	94.1703	0.0005	0.0059	947.862	0.481	98.10%	84.0 ± 0.4
1200	8	4.64E-13	92.8862	0.0005	0.0032	1029.887	0.86	99.00%	83.6 ± 0.4
1300	8	1.70E-13	92.3462	0.0005	0.0036	948.968	1	98.80%	83.0 ± 0.4

Total Fusion Age: **83.3 ± 0.4 Ma**
Inverse Isochron fit: **83.4 ± 1.5 Ma**, Model 1 Solution on 4points (800,1100-11300)
40/36 intercept: 321 ± 160, MSWD = 5.0, Probability = 0.007
Weighted Mean Plateau Age: **83.6 ± 0.4 Ma**, MSWD = 1.7, probability = 0.18, 79.9% of the 39Ar (steps 1100-1300)

Sample: S40-8 -> J51/2 bio J = 0.0005322 ± 0.000002 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)	Excess Corrected Age (Ma)
900	12	3.24E-14	98.2142	0.0014	0.0547	340.221	0.011	83.50%	77.1 ± 1.1	-13.8 ± 5.8
950	12	1.21E-13	101.8664	0.0004	0.0411	1228.14	0.049	88.10%	84.1 ± 0.5	16.6 ± 2.4
1000	12	2.22E-13	98.1389	0.0002	0.013	2332.878	0.121	96.10%	88.3 ± 0.4	67.2 ± 1.3
1033	12	2.31E-13	97.126	0.0002	0.0072	2453.824	0.197	97.80%	89.0 ± 0.4	77.4 ± 0.8
1066	12	2.64E-13	98.3375	0.0002	0.0083	2767.006	0.283	97.50%	89.8 ± 0.4	76.3 ± 1.1
1100	12	3.04E-13	95.5461	0.0004	0.0034	1092.938	0.385	98.90%	88.5 ± 0.4	83.0 ± 0.9
1125	12	2.91E-13	95.3607	0.0002	0.0036	3155.902	0.483	98.90%	88.3 ± 0.4	82.6 ± 1.0
1150	12	3.53E-13	92.5292	0.0001	0.002	3934.185	0.605	99.40%	86.2 ± 0.4	82.9 ± 0.8
1175	12	3.44E-13	90.6522	0.0003	0.0013	1955.785	0.726	99.60%	84.6 ± 0.4	82.6 ± 0.6
1200	12	3.99E-13	89.9291	0.0002	0.0008	2284.699	0.868	99.80%	84.1 ± 0.4	82.9 ± 0.5
1250	12	3.57E-13	89.5328	0.0001	0.0015	4117.573	0.996	99.50%	83.5 ± 0.4	81.0 ± 0.6
1300	12	1.29E-14	100.2955	0.0074	0.0258	66.372	1	92.40%	86.8 ± 2.7	44.7 ± 14.4

Total Fusion Age: **86.3 ± 0.8 Ma**
Data DO NOT define a plateau, Weighted Mean Age: **82.5 ± 0.7Ma** (1125-1250; Trapped 40/36 =2055)
Inverse Isochron Age: **82.8 ± 1.2** Ma Model 1 Solution on 5 points (1125-1250)
36/40 intercept: 2055 ± 600 MSWD = 0.112, Probability = 0.95 at J = .0005322 ± .000004

Sample: S40-32 -> J51/3 bio J = 0.0005157 ± 0.000002 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)	Age (Ma) *
900	12	1.49E-13	110.1775	0.0007	0.119	698.128	0.024	68.10%	68.5 ± 0.9	0
950	12	2.05E-13	115.1803	0.0005	0.0822	918.136	0.055	78.90%	82.6 ± 0.6	0
1000	12	3.69E-13	103.3357	0.0001	0.0221	3683.364	0.119	93.70%	87.9 ± 0.5	64.3 ± 0.7
1033	12	4.03E-13	101.261	0.0004	0.0112	1368.069	0.189	96.70%	88.9 ± 0.4	76.9 ± 0.6
1066	12	4.56E-13	102.2766	0.0001	0.0139	4616.006	0.268	96.00%	89.1 ± 0.5	74.3 ± 0.6
1100	12	6.50E-13	102.8046	0.0001	0.0135	6510.788	0.38	96.10%	89.6 ± 0.4	75.2 ± 0.6
1125	12	5.62E-13	99.1261	0.0001	0.0065	5846.092	0.48	98.10%	88.2 ± 0.4	81.3 ± 0.5
1150	12	7.64E-13	96.0993	0.0001	0.0035	8201.049	0.621	98.90%	86.3 ± 0.4	82.6 ± 0.4
1175	12	7.22E-13	93.9203	0.0001	0.0025	7932.616	0.757	99.20%	84.7 ± 0.4	82.0 ± 0.4
1200	12	6.76E-13	92.6504	0.0001	0.0019	3776.289	0.887	99.40%	83.7 ± 0.4	81.7 ± 0.4
1250	12	5.93E-13	92.6348	0.0001	0.0021	6586.016	1	99.30%	83.6 ± 0.4	81.4 ± 0.5

Total Fusion Age: **86.0 ± 0.8** Ma
Inverse Isochron fit: **81.8 ± 1.8 Ma** Model 1 Solution on 5 points (1125-1250)
36/40 intercept: 1491 ± 590 MSWD = 3.4, Probability = 0.017 at J = .0005157 ± .000004
Data DO NOT yield a true plateau with a trapped 40/36 of 295.5
*40/36 =1491

Mygdikitsk Basalts, Plagioclase Feldspar and Whole-rocks

Sample: S46-9 -> J47/2 plg J = 0.0010751 ± 0.0000018 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
700	12	3.64E-14	198.6302	5.8178	0.5776	0.084	0.044	14.30%	54.3 ± 6.0
800	12	7.79E-15	56.8437	13.6091	0.0729	0.036	0.077	63.70%	69.6 ± 4.0
900	12	1.87E-14	47.8234	19.9313	0.0315	0.024	0.17	83.30%	76.8 ± 1.4
1000	12	4.14E-14	43.8691	21.5042	0.02	0.022	0.395	89.80%	76.0 ± 0.6
1100	12	4.18E-14	44.3742	18.0535	0.0186	0.027	0.62	90.30%	77.1 ± 0.6
1150	12	2.49E-14	55.4758	12.5308	0.0507	0.039	0.727	74.50%	79.1 ± 1.3
1200	12	1.60E-14	69.4685	19.9729	0.1029	0.024	0.782	58.20%	77.9 ± 2.6
1250	12	4.26E-14	369.4399	22.2829	1.152	0.022	0.809	8.30%	59.2 ± 13.5
1300	12	1.45E-14	136.6883	22.7971	0.3318	0.021	0.834	29.40%	77.6 ± 6.5
1350	12	5.47E-15	41.3554	24.227	0.0108	0.02	0.866	96.20%	77.0 ± 4.0
1400	12	1.03E-14	41.9318	25.8972	0.0212	0.019	0.924	89.20%	72.5 ± 2.2
1500	12	1.41E-14	43.8333	27.8924	0.0176	0.017	1	92.30%	78.5 ± 1.7

Total Fusion Age: **75.2 ± 2.1 Ma**
Weighted Mean Plateau age = **76.8± 0.8** Ma, MSWD = 1.5, probability = 0.14, 95.6% of the 39Ar (800-1200)
Inverse Isochron fit: **76.5 ± 1.6 Ma**, Model 1 Solution on 8 points (800-1200,1300-1350)
40/36 intercept: 300 ± 23, MSWD = 1.6, Probability = 0.14 at J = .0010751 ± .0000036

Sample: S46-10 -> J47/7 plg J = 0.0010755 ± 0.0000018 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
700	12	2.06E-14	161.9931	4.1944	0.4531	0.116	0.026	17.50%	54.4 ± 7.7
800	12	1.89E-14	84.3708	9.3312	0.1737	0.052	0.071	39.90%	64.6 ± 2.8
900	12	2.63E-14	46.9407	12.796	0.0331	0.038	0.184	81.00%	73.0 ± 1.1
1000	12	5.21E-14	41.4393	13.9081	0.0113	0.035	0.438	94.20%	74.9 ± 0.5
1100	12	4.48E-14	39.533	13.0501	0.0088	0.037	0.666	95.60%	72.6 ± 0.5
1150	12	1.77E-14	39.114	7.6507	0.0031	0.064	0.758	98.90%	73.9 ± 1.2
1200	12	9.99E-15	39.2117	10.8887	0.0056	0.045	0.809	97.60%	71.6 ± 4.1
1266	12	6.80E-15	42.9711	14.1186	0.009	0.034	0.841	96.00%	75.9 ± 6.6
1333	12	1.04E-14	46.1466	14.9403	0.0211	0.032	0.886	88.60%	68.8 ± 4.7
1400	12	2.10E-14	44.9449	17.167	0.0153	0.028	0.98	92.50%	73.7 ± 2.3
1500	12	5.17E-15	51.3993	22.6581	0.0237	0.021	1	89.30%	78.2 ± 10.4

Total Fusion Age: **72.6 ± 1.9 Ma** (Excess Corrected) Total Fusion Age (Uncorrected) **74.1 ± 2.8** Ma
Excess corrected Weighted Mean age = **73.7 ± 0.7** Ma, MSWD = 1.5, probability=0.15 Includes 92.9% of the 39Ar (900-1500), Steps 1200-1550 (40/36 =587)
Inverse Isochron fit: **73.5 ± 1.2** Ma Model 1 solution on all points, Alternative fit show on inverse isochron plot
40/36 intercept: 273 ± 19, MSWD = 2.8, Probability = 0.002, at J = .0010755 ± .0000036

Sample: S46-30 -> J47/2 wrb J = 0.0010684 ± 0.0000018 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
600	12	2.83E-14	133.6099	2.2658	0.3833	0.216	0.016	15.30%	39.1 ± 4.8
750	12	1.88E-14	98.6435	3.6898	0.2169	0.132	0.031	35.30%	66.0 ± 3.5
900	12	5.55E-14	59.2417	4.2036	0.0578	0.116	0.103	71.60%	80.2 ± 0.7
950	12	6.19E-14	46.629	2.9613	0.0132	0.165	0.205	92.00%	81.0 ± 0.5
1000	12	6.57E-14	45.0933	2.4068	0.0091	0.203	0.317	94.40%	80.3 ± 0.4
1033	12	4.41E-14	44.3911	1.9379	0.0076	0.252	0.394	95.20%	79.7 ± 0.6
1066	12	4.07E-14	44.1983	1.3243	0.0098	0.37	0.465	93.70%	78.1 ± 0.6
1100	12	5.89E-14	44.3552	0.847	0.0079	0.578	0.568	94.90%	79.4 ± 0.5
1133	12	5.89E-14	44.9177	0.8948	0.0123	0.547	0.669	92.10%	78.0 ± 0.5
1166	12	8.85E-14	45.8629	1.7677	0.0153	0.277	0.818	90.40%	78.3 ± 0.4
1200	12	7.49E-14	44.8912	4.1907	0.0157	0.117	0.946	90.30%	76.7 ± 0.4
1250	12	2.34E-14	44.9181	7.3486	0.0173	0.066	0.986	89.70%	76.4 ± 1.1
1300	12	8.59E-15	46.6146	9.032	0.0232	0.054	1	86.60%	76.7 ± 2.9

Total Fusion Age: **78.0 ± 0.7 Ma**
Data DO NOT DEFINE a Plateau. Weighted mean age of 11 high T steps is : **78.8 ± 1.4 Ma** (1s)
Inverse Isochron Age = **77.4 ± 3.2 Ma** 40/36 intercept: 322 ± 55 MSWD = 8.1, Probability = 0.000 at J = .0010684 ± .000036

Sample: S46-31 -> J47/7 wrb J = 0.0010661 ± 0.0000018 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
600	12	6.95E-14	139.0115	1.6096	0.4217	0.304	0.018	10.40%	27.7 ± 3.8
750	12	6.00E-14	80.9216	1.7564	0.1218	0.279	0.045	55.70%	84.8 ± 2.1
900	12	1.56E-13	51.0713	2.0098	0.0154	0.243	0.154	91.30%	87.6 ± 0.6
950	12	2.23E-13	44.2493	2.092	0.0034	0.234	0.336	98.10%	81.7 ± 0.3
1000	12	1.69E-13	42.4931	2.2101	0.0016	0.221	0.479	99.30%	79.4 ± 0.3
1033	12	9.88E-14	42.4209	2.3532	0.0027	0.208	0.562	98.50%	78.7 ± 0.4
1066	12	6.61E-14	42.2022	2.2158	0.0061	0.221	0.619	96.10%	76.4 ± 0.6
1100	12	6.19E-14	42.3644	1.563	0.0062	0.313	0.671	95.90%	76.6 ± 0.5
1133	12	8.25E-14	41.9252	0.9994	0.0053	0.49	0.742	96.40%	76.1 ± 0.5
1166	12	1.01E-13	42.7199	1.461	0.0042	0.335	0.827	97.30%	78.3 ± 0.5
1200	12	1.27E-13	43.3539	3.1088	0.0094	0.157	0.932	94.00%	76.9 ± 0.4
1250	12	6.31E-14	44.9774	10.1929	0.0176	0.048	0.982	90.00%	76.7 ± 0.7
1300	12	1.53E-14	45.8427	11.7542	0.0185	0.041	0.994	89.80%	78.1 ± 2.5
1500	12	9.16E-15	54.8791	13.4332	0.057	0.036	1	70.90%	74.1 ± 3.4
1600	12	1.87E-15	492.5854	0.9548	1.4995	0.513	1	10.10%	92.9 ± 331.4

Total Fusion Age: **78.8 ± 1.2** Ma
Inverse Isochron Fit: **76.7 ± 2.6 Ma** 1066-1500 Model 1 Solution on 8 points (1066-1500)
40/36 intercept: 295 ± 48, MSWD = 1.5, Probability = 0.14 at J = .0010661 ± .000036

Maltano-Ol'sk Volcanic Field

Ol'sk Rhyolite Sanidines

Sample: S32B-19 -> S18A J = 0.00621592 ± 0.0000622 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
TF-MG	8	1.80E-12	7.6787	0.0103	0.0002	47.506	0.282	99.40%	83.6 ± 0.8
TF-MG	8	1.04E-12	7.7144	0.0113	0.0003	43.34	0.444	98.80%	83.5 ± 0.8
TF-MG	8	5.66E-13	7.6944	0.0118	0.0002	41.626	0.532	99.40%	83.8 ± 0.8
TF-MG	8	1.23E-12	7.7093	0.0166	0.0003	29.546	0.724	98.80%	83.5 ± 0.8
TF-MG	8	8.59E-13	7.6855	0.0085	0.0001	57.539	0.858	99.70%	84.0 ± 0.8
TF-MG	8	8.09E-13	7.7672	0.0086	0.0004	57.191	0.983	98.60%	83.9 ± 0.8
TF-MG	8	1.08E-13	7.6897	0.0136	0.0001	36.003	1	99.50%	83.8 ± 1.2

Total Fusion Age: **83.7 ± 0.8 Ma**
Weighted Mean age: **83.7 ± 0.6 Ma**, MSWD = 0.054, probability = 0.999, 100% of the 39Ar
Inverse Isochron Age: **83.5 ± 1.7** Ma Model 1 Solution on all points
40/36 intercept: 312 ± 180, MSWD = 1.7, Probability = 0.13 at J = .00621592 ± .0001244

Mygdikitsk Basalts, Plagioclase Feldspar

Sample: S46-1 -> S18E plg J = 0.0010603 ± 0.0000018 (1σ)

T	t	40(mol)	40/39	37/39	36/39	K/Ca	∑ 39Ar	40Ar*	Age (Ma)
700	12	7.68E-15	132.7229	8.2342	0.2868	0.059	0.021	36.60%	91.0 ± 11.3
750	12	1.16E-15	78.6266	11.4125	0.0323	0.043	0.026	88.80%	130.0 ± 35.1
800	12	1.49E-15	50.5042	15.8207	0.1129	0.031	0.036	36.00%	34.9 ± 18.3
850	12	2.43E-15	50.2234	23.0433	0.0392	0.021	0.053	80.00%	76.6 ± 5.6
900	12	3.67E-15	46.2705	29.8282	0.018	0.016	0.081	92.80%	82.2 ± 3.4
950	12	6.46E-15	46.2433	32.0084	0.0339	0.015	0.13	82.90%	73.7 ± 3.8
1000	12	8.93E-15	42.7967	32.1123	0.0136	0.015	0.203	95.60%	78.5 ± 2.6
1050	12	1.09E-14	43.0631	32.6481	0.015	0.015	0.291	94.70%	78.3 ± 2.1
1100	12	8.28E-15	43.5508	32.0885	0.0224	0.015	0.357	89.70%	75.0 ± 1.5
1150	12	9.12E-15	56.6945	32.5584	0.056	0.015	0.413	74.60%	81.2 ± 3.3
1200	12	1.13E-14	46.3952	32.4202	0.0254	0.015	0.498	88.50%	78.8 ± 2.2
1300	12	1.16E-14	47.0333	32.4313	0.0232	0.015	0.583	90.00%	81.2 ± 2.2
1400	12	3.07E-14	45.3653	32.3789	0.0253	0.015	0.819	88.30%	76.9 ± 0.9
1500	12	2.50E-14	48.155	30.998	0.0339	0.015	1	83.50%	77.1 ± 1.8

Weighted Mean Plateau age = **77.5 ± 1.1 Ma**, MSWD = 1.5, probability = 0.095 100% of the 39Ar, steps 700-1500
Inverse Isochron fit: **75.4 ± 1.9 Ma**, Model 1 Solution on 12 points (750, 850-1500)
40/36 intercept: 331 ± 37 MSWD = 0.64, Probability = 0.78 at J = .0010603 ± .0000036

T= Treatment - Furnace Temperature in degrees Celsius or TF-MG (total laser fusion of multi-grain aliquot)
t = isolation time in minutes.
40(mol) = moles corrected for blank and reactor-produced 40.
∑ 39Ar is cumulative, 40Ar* = radiogenic percent.
Ratios from iraddiations S32B and S46 are corrected for blanks, decay, and interference.
Ratios from iraddiation S40 are corrected for blanks and 39 decay.
For S40 no correction was performed for 37 Decay or $^{36}Ar_{Ca}$ Interference because of a lengthy delay between irradiation and measurement
MAP 216 Sensitivity at 40 m/e (EMHV =1.88 kV) = 4.75 x 10^{-13} mols V^{-1}; Average 40 m/e blanks: 7.5 x 10^{-16} (<1100ºC) 1.5 x 10^{-15} (1400ºC)

Stratigraphic Correlation Scheme of the Okhotsk-Chukotka Volcanic Belt

Time scale (Period / Epoch / Age / Age (Ma) Harland, 1990):

Period	Epoch	Age	Age (Ma)
CRETACEOUS	UPPER	Maastrichtian	74 (± 3.1)
		Campanian	83 (± 3.6)
		Santonian	86.6 (± 3.0)
		Coniacian	88.5 (± 1.8)
		Turonian	90.4 (± 1.6)
		Cenomanian	97 (± 1.9)
	LOWER	Albian – Upper	105
		Albian – Middle	108
		Albian – Lower	112 (± 1.8)
		Aptian	124.5 (± 12.5)
		Barremian	131.8 (± 7.6)
		Hauterivian	135 (± 7.0)
		Valanginian	140.7 (± 7.0)
		Berriasian	145.0 (± 9.0)

Stratigraphy of northeastern Koryak Highlands in Anadyr and Penzhina River basins (Kamchatka MRSS,1974): Impeveem horizon; Koryak horizon; Barykov horizon; Topolev horizon; Mametchin horizon; Ainyn horizon; Karmalivaam horizon; Tylakryl' horizon; Myalekaysn horizon; Upper Gytkinkul' horizon.

West Okhotsk Flank Zone

1. Interfluves of R. Amka, Gyrbynka & Uraka (Ul'insk Basin)

- **Khakarin Suite (K₂hk)** — Basalt, Trachybasalt, Trachyte, Trachyrhyolite with basal conglomerate. 78 Ma (K-Ar). 900-1000Ma
- **Delokanchan Unit (K₂dl)** — Rhyolite, dacite tuff, tuffaceous sediments, lignite. Delokachan Flora. 82 Ma(K-Ar). >150m
- **Khotopechan Unit (K₁₋₂ht)** — Trachyandesite, Trachydacite. Ketandin Flora. 96 Ma (K-Ar). 100-300 m
- **Gyrbykanchin Unit (K₁gr)** — Felsic ignimbrites, tuffs and lavas. Dukchandin, Urekan Flora flora. 300-500 m
- **Buralkitsk Unit (K₁br)** — Trachyte andesitic basalt, Trachy-basalt, andesite. Dukchandin Flora. 250-530 m
- **Grybykanopechen Unit** — Tuff, dacite, rhyolite ash-flow tuffs unconformably on tuffaceous conglomerate. Grybykan Flora. 350 - 400 m
- **Kotlin Unit** — Rhyolite, rhyodacite, dacite tuffs; rhyolite dacite lavas. Arind flora. 300-400 m
- **Emanrin Suite (K₁em)** — Andesite, andesitic basalt, rhyolite dacite and their tuffs. Unconformably on conglomerates. Emanrin and Yadrin Flora. 700-900 m
- **Uchulikan Suite (K₁u)** — Andesite, andesitic basalt, and associated volcanogenic sediments. Felsic tuffs and flows in lower section. Mati Flora. > 130 Ma (K-Ar). 700 m
- Basement: J₃₋₃

Okhotsk Sector

2. Interfluve Left Yana - Mygdykita

- **Mygdykit Suite (K₂mg)** — Basalt, rhyodacitic basalt, felsic tuffs interbeds. 78 Ma (Ar-Ar). >500 m
- **Ola Suite (K₁ol)** — Rhyolite, trachyrhyolite, and dacite ignimbrites, tuffs and lavas. Flora similar to Chaun and Arkagala Flora. 100-700 m
- **Ulyn Suite (K₁ul)** — Andesite, andesitic basalt, basalts and associated tuffs. 300-650 m
- **Khol'chan Suite (K₁hl)** — Dacite, rhyodacite, rhyolite and andesite tuffs and ignimbrites. mid-Cretaceous Flora. 600-700 m
- **Narauli Suite (K₁nr)** — Andesite, andesitic basalt, basalt, mafic tuff, with interbeds of tuffaceous conglomerates, sandstone and siltstone. Early to mid Late Cretaceous flora. 300-600 m
- **Kirik Suite (K₁kr)** — Siltstone, sandstone, conglomerate with layers of andesitic tuff. Silyapin and Buor-Kemyus Flora.
- **Momoltykich Suite (K₁mm)** — Andesite, andesitic basalt, breccia, occasional coal layers. Ozhogin Flora. 450-800 m
- Basement: J₃

2a. Interfluves R. Arman, Ola, Magadvena, Kheta

- **Mygdykit Suite (K₂mg)** — Basalts, andesitic basalt, felsic tuff interbeds. Arkagala Flora. 84 Ma-78Ma (K-Ar). ***77.5 ± 1.1 to 73.7 ± 0.7 Ma (Ar-Ar, plagioclase, this study)*** >500 m
- **Pervomai Suite (K₂pr)** — Conglomerate, sandstone, rhyolite tuff; coal lenses. Arkagala Flora. Enmyvaamsk palynocomplex. 50-120m
- **Ola Suite (K₁ol)** — Rhyolite, trachyrhyolite, and dacite ignimbrites, tuffs and lavas. Arkagala Flora. 102-100 Ma (Rb-Sr WR). ***83.7 ± 0.6 to 81.8 ± 0.8 Ma (Ar-Ar, sanidine, biotite, this study)*** 900-1500 m
- **Ulyn Suite (K₁ul)** — Andesite, andesitic basalt, basalt and tuffs and associated sediments. Arkagala Flora. 50-900 m
- **Khol'chan Suite (K₁hl)** — Dacite, rhyodacite, rhyolite and andesite tuffs and ignimbrites. Arman, possibly Arkagala flora. 106 Ma (Rb-Sr WR). 103 Ma (Rb-Sr WR). 100-1400 m
- **Narauli Suite (K₁nr)** — Andesite, andesitic basalt, and basalt flows; associated tuffs and sediments. Arman Flora. 105 Ma (K-Ar). **** 85.5 ± 1.1 Ma (Ar-Ar, Hornblende, this study)*** >450 m
- **Arman Suite (K₁ar)** — Sandstone, siltstone with occasional intermediate and felsic tuffs. Arman Complex Flora. 1450-1920 m
- **Kirik Suite (K₁kr)** — Siltstone, sandstone, conglomerate with layers of andesitic tuffs lenses of coal. Silyapin and Buor-kemyus Flora. 200-1100m
- **Momoltykich Suite (K₁mm)** — Andesite, andesitic basalt, breccia, occasional coal layers. Ozhogin Flora. 140 Ma (K-Ar). 100-1400 m

3. Interfluve Buyunda - Dzugudzaka

- **Askol'dinsk Suite (K₁as)** — Rhyolite flows, ignimbrites and tuffs. Silyap Flora. 128 Ma (K-Ar). 280-750 m
- **Momoltykichsk Suite (K₁mm)** — Andesite, andesitic basalt, trachybasalt, occasional coal layers. Ozhogin Flora. >138 Ma (K-Ar). >136 Ma (Rb-Sr WR). 340-670 m
- Basement: J₃₋₃

4. Interfluve Balygychan - Sugoi

- **Dzhagyn Unit (K₂d)** — Basalt, trachybasalt, andesitic basalt and rhyolite. 81 Ma (Rb-Sr WR). 80 Ma (K-Ar). 450-800 m
- **Shorokhov Suite (K₁sr)** — Ignimbrite, tuff, and lava of rhyolitic and rhyo-dacitic composition, lenses of andesite. Flora of early Arkagala complex. 100Ma (K-Ar). 800-1300 m
- **Kakhov Suite (K₁kh)** — Andesitic lava and pyroclastic flows and tuffs, andesitic basalt, basalt, dacitic breccia, ignimbrite and tuff. Flora similar to the Arman and Arkagala Flora. 107 Ma (K-Ar). 400-1300 m
- **Zorin Suite (K₁zr)** — Conglomerate with interbeds of andesitic lava and tuff, argillite, dacite, tuffaceous sandstone. Arman Flora. 150-1450 m
- **Toptan Suite (K₁tp)** — Siltstone, Argillite. Toptan Flora. 500-1200 m
- **Aigur Suite (K1ag)** — Sandstone, siltstone, conglomerate lenses. Buor-Kemyus Flora. 650 m
- **Galimov Suite (K₁gl)** — Argillite, siltstone conglomerate, sanstone and coal. Buor-kemyus Flora. 300-900 m
- **Ulik Suite (K₁ ul)** — Sandstone, siltstone, conglomerates, argillites. Silyap Flora. 400-1000 m
- **Arylakhsk Unit (K1ar)** — Andesite, andesitic basalt, trachyandesite intermediate to felsic tuffs and lavas. 570-690 m
- **Askol'dinsk Suite (K₁as)** — Rhyolite flows, ignimbrites and tuffs. Tuffaceous sandstone, siltstone. Silyap Flora. 123 Ma (Rb-Sr WR). 240-1300 m
- Basement: O₁

5. Interfluve Barkhalam - Turomcha

- **Uykan Unit (K₂uk)** — Basalt, trachybasalt, layers of andesite, dacite. Lower section contains tuffaceous conglomerate and breccia, and tuff. Late Cretaceous-Paleogene flora. 500-600 m
- **Khaichan Unit (K₁h)** — Massive flows of rhyolite, rhyodacite. Lesser tuff and ignimbrite of rhyodacitic composition. Late Cretaceous flora. 200-600 m
- **Turomchin Unit (K₁tr)** — Andesite, andesitic basalt with layers of mafic tuff, rhyolite flows. Mid Cretaceous flora. 550 m
- **Varkhalam Unit (K₁vr)** — Felsic ignimbrites with lesser flows of felsic lava and tuffs. Late Cretaceous flora. 550-1110 m
- **Tainochin Suite (K₁tn)** — Andesite, andesitic tuff. Lower section contains tuffaceous conglomerate, upper section, andesitic basalt and dacite. Arman Flora. 700-800 m
- **Kegalin Suite (K₁kg)** — Sandstone, tuffaceous sandstone, siltstone, conglomerate, lenses of coal-bearing shales, coal, felsic tuff. Buor-Kemyus Flora. 100-350 m
- Basement: J₃

6. Pygina Peninsula

- **Penzhina unit (K₁pg)** — Basalt, andesitic basalt, andesite lavas and tuffs. Early Cretaceous flora. >122 (K-Ar). 800-1500 m
- **Poperech unit (K₁pp)** — Mafic and intermediate composition lavas, tuffs and ignimbrites, lesser felsic volcanics. Early Cretaceous flora. >130 (K-Ar). 800-2200 m
- **Melgek unit (K₁ml)** — Andesite, dacite and rhyolite tuff; interbeds of conglomerate, sandstone, siltstone and tuffaceous sandstone; coal horizons. >135 (K-Ar). < 500 m
- **Siglan unit (K₁pg)** — Basalt, andesitic basalt, andesite lavas and tuffs. >138 (Rb-Sr WR). > 1600 m
- Basement: J₃

7. Taigonos Peninsula

- **Ryabinkin Suite (K₁rb)** — Sandtone, siltstone, conglomerate argillaceous sandstone, with coal horizons. Upper section contains andesite and andesitic basalt flows and associated tuffs with occasional chert horizons. Buor-Kemyus and Toptan Flora. < 4700 m
- **Yavoyam Unit (K₁jav)**

Penzhina Sector

8. Basins of the upper Shaibovee, Oklan, Tylkhoi, Penzhina

- **Atvuveem Suite (K₂at)** — Basalt, andesitic basalt; basal section contains interbedded andesitic tuffs, tuffaceous sandstone, siltstone and conglomerate. 80 Ma (K-Ar). 200-350 m
- **Ken'evkei Unit (K₂kn)** — Sandstone, siltstone and felsic tuff. Murgal and Barykov Flora. 150 m
- **Makkoveem Suite (K₁mk)** — Tuff and ignimbrite with rare lava flows of rhyolite, rhyodacite, and dacite; andesite and andesitic basalt flows; conglomerate, sandstone and siltstone lenses. Okonait, Eropol' and Kholokhovchan Flora (Kuiviken'ev Palyonologic complex). 99Ma (K-Ar). 300-700 m
- **Oklan Suite (K₁ok)** — Andesite, andesitic basalt and basalt lava flows, pyroclastic flows and tuff; Tuffaceous sandstone, siltstone and conglomerate; Felsic lava flows and tuffs. Oklan Flora. 99Ma (K-Ar). 250-700 m
- **Shaiboveem Unit (K₁sb)** — Andesitic basalt and andesite flows and tuff; layers of felsic ignimbrite and tuff; basalt, lenses of tuffaceous conglomerate sandstone and siltstone. Cenomanian flora. 120-400 m
- **Tylkhoi Suite (K₁th)** — Rhyolite, rhyodacite and dacite tuff, ignimbrite and lava flows; rare andesite andesitic basalt and basalt and their tuffs; tuffaceous sadnstone, siltstone and conglomerate. Tylkhoi Flora. 103 Ma (K-Ar). 120-400 m
- **Kun'veem Unit (K₁kn)** — Dacite and rhyolite tuffs and ignimbrite with rare lava flows, layers of occasional tuffaceous sediments. Late Albian flora. 300-500 m
- **Viyuikin Unit (K₁vl)** — Andesite, andesitic basalt, basalt tuffs and lavas; interbeds of sandstone, tuffaceous conglomerate. Viyuikin Flora. 109 Ma (K-Ar). 230-600 m
- **Khaioklan Unit (K₁hk)** — Andesite, andesitic basalt, basalt tuffs and lavas; interbeds of sandstone, tuffaceous conglomerate occasional tuff. Late Albian flora. 107 Ma (K-Ar). 300-500 m
- **Akatkeveem Suite (K₁ak)** — Conglomerate, gravels, sanstone, siltstone, lesser coaliferous horizons with layers of lava and tuff of felsic to intermediate composition. Buor-Kemyus Flora. 150-1500 m
- **Koyachan Suite (K₁kc)**

Anadyr Sector

9. Basins of R. Ainakhkurgen - Yablon - Anadyr

- **Chuvan Unit(K₂cv)** — Basalt, Andesitic basalt and their tuffs. 400 m
- **Balagan Unit (K₁bl)** — Trachytic rhyolite and rhyodacite, rhyolite, rhyodacite and trachydacite tuffs and ignimbrites and lava flows; sandstone, siltstone tuffaceous sandstone. 400 m
- **Tuvyi Unit (K₁tv)** — Andesite andesitic basalt, basalt flows and tuffs; trachyandesite lenses of tuffaceous sandtone and tuffaceous conglomerate. Arkagala Flora. 1000 m
- **Aunei Unit (K₁au)** — Rhyolite, dacite, rhyodacite, trachyrhyolite, and trachydacite tuffs ignimbrites and lavas. Interbedded tuffaceous sandtone and siltstone; basal tuffaceous conglomerate. Chaun Flora. 1000 m
- **Vilkov Unit (K₁vl)** — Andesite, andesitic basalt, trachyandesite lava flows and tuffs, interbeds of intermediate to mafic tuffs and tuffaceous sandstone and conglomerate. Albian flora. 1200 m
- **Salamikhin Suite (K₁sl)** — Basalt and andesite flows and tuffs, andesite basalt and trachyandesite flows, tuffaceous conglomerates and sandstones. Buor-Kemyus Flora. >102 Ma (K-Ar). 1550 m
- **Chimchemel' Suite (K₁cm)** — Sandstone, conglomerate, siltstone, tuffaceous siltstone; andesite, basalt, andesitic basalt,dacite, rhyolite and rhyodacite lava flows and tuffs. Associated tuffaceous sediments. Buor-Kemyus Flora. 800 m
- **Ainakhurgen Suite (K₁an)**

Central Chukotka Sector

10. Upper Reaches rs. Lesser Anyui - Ugatkyn - Anadyr - Pucheveem

- **Enmyvaam Suite (K₂en)** — Basalt, andesitic basalt,subalkalic basalt. Tuffs of intermediate to mafic composition; andesite to dacite flows. 380-450 m
- **Ergyvaam Suite (K₂er)** — Rhyolitic ignimbrites and tuffs, tuffaceous sandstone. Arkagalin Flora complex. 1000 m
- **Koekvun' Suite (K₁₋₂kk)** — Basalt, andesite, andesitic basalt flows and tuffs; layers of tuffaceous sandstones and conglomerates; intermediate to mafic tuffs; lavas and ignimbrites of dacitic and rhyolitic composition. Chaun complex flora. 97 Ma (K-Ar). 1370 m
- **Pykarvaam Suite (K₁pk)** — Rhyolite, rhyodacite, dacite, dacitic andesite, trachyrhyolite and trachydacite lava flows, ignimbrites and tuffs. Chaun Complex flora. 1150 m
- **Kalen'muvaam Suite (K₁kl)** — Andesite, dacitic andesite, dacite, trachydacite flows, tuffs and ignimbrites; layers of rhyolite, trachyrhyolite, trachydacite andesitic basalt, trachyandesite and basalt flows and tuffs. Chaun complex flora. 500 m
- **Ugatkyn Suite (K₁ug)** — Ignimbrite, tuffs and lavas of rhyolitic rhyodacitic, and dacitic composition. Lower and middle part of section contains andesite flows and tuffaceous sediments. Chauna complex flora. 1960 m
- **Pucheveem Suite (K₁p)** — Rhyolite, rhyodacite, trachyrhyolite, trachydacite, dacitic andesite, and andesitic flows, ignimbrites and tuffs. Chaun Complex Flora. 450-500 m
- **Tytyl'veem Suite (K₁tt)** — Andesite, dacite, rhyolite, lesser andesitic basalt; middle section contains tuffaceous conglomerate, sandstone, siltstone. Aptian-Albian flora. >124 Ma (K-Ar). > 1500 m
- Є₃

11. Basin of R. Enmyvaam

- **Enmyvaam Suite (K₂en)** — Olivine basalt flows, interbedded rhyolite ignimbrites; volcaniclastic sediments. Arkagala Flora (Enmyvaam, Merevaam palynologic complexes). 86-79 Ma (K-Ar). 500 m
- Є₁ ?
- **Ergyvaam Suite (K₂er)** — Rhyolite ignimbrites, tuffs and lava flows, rare rhyodacite. Ust'-Emuneret, Emuneret Flora. 93Ma (Ar-Ar)
- **Koekvun' Suite (K₁₋₂ kk)** — Andesite, andesitic basalt and andesitic flows; subalkalic andesite and basalt. 360-510 m
- ?

12. Interfluve of Palyavaam - El'khakvun

- **Koekvun' Suite (K₁₋₂ kk)** — Andesite, andesitic basalt and andesite flows; subalkalic andesite and basalt. Chaun, Palyavaam Flora. ****87.9 ± 0.6 Ma(Ar-Ar, plag; Kelley et al., 1999)*** 100-850 m
- **Voron'in Suite (K₁vr)** — Andesitic dacite, dacite, andesite flows and tuffs. Chaun Flora. 98 Ma (Rb-Sr WR). ****86.7 ± 0.8 Ma (Ar-Ar, Hbl); 87.3 ± 1.4 Ma(Ar-Ar, plag)*** 160-550 m
- **Pykarvaam Suite (K₁pk)** — Rhyodacite, rhyolite and dacite flows and ignimbrites; trachytic dacite,rhyolite and rhyodacite; layers of felsic tuffs. Chaun Flora. ****88.9 ± 0.8 Ma (Ar-Ar, biotite, Kelley et al., 1999)*** 180-470 m
- **Kalen'muvaam Suite (K₁kl)** — Andesite, andesitic dacite; quartz latite, felsic tuffs; layers of latite, dacite, rhyolite and felsic tuffs. Chaun Flora. 80-750 m
- **Al'kakvun' Suite (K1al)** — Tuffs, ignimbrites and lavas of rhyolitic and dacitic composition, rhyolitic vitrophyres, dacite flows. Chauna Flora. >101(Rb-Sr WR), >102 (K-Ar). 100-1100 m
- **Ol'khov Suite (K₁ol)** — Argillite, carbonaceous argillite, siltstone, tuffaceous stanstone and coal horizons. Basal tuffaceous conglomerate, and coarse sandstone with interbeds of rhyolite. Buor-Kemyus Flora. < 280 m
- **Etchinkun' Suite (K₁et)** — Andesite, trachyandesite, andesitic basalt flows and tuffs, lenses of tuffaceous conglomerate. 127 Ma (K-Ar). < 700 m
- Basement: J₃

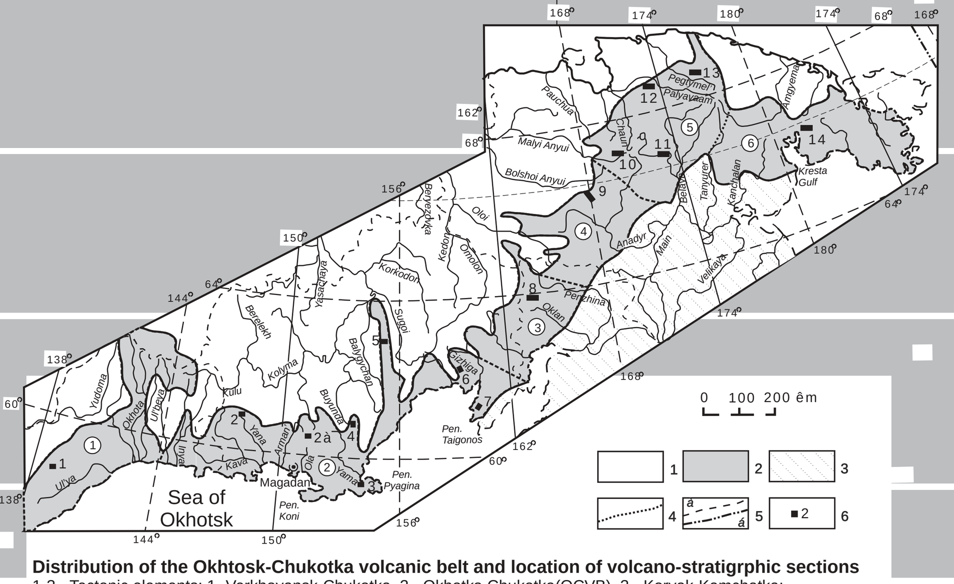
13. Interfluve Pegtymel' - Kuvet

- **Koekvun' Suite (K₁₋₂kk)** — Andesitic basalt, andesite, dacitic andesite, and basalt flows and tuffs. Chaun Flora. 96 Ma (K-Ar). 500-700 m
- **Rymyrken Suite (K₁rm)** — Andesite, andesitic dacite, intermediate tuffs, rhyodacite. Chaun Flora. 550-750 m
- **Mecheg Suite (K₁mc)** — Rhyolite, rhyodacite, dacite flows, vitrophyre; trachyandesite, intermediate tuffs. Chaun Flora. 120-350 m
- **Notarelyan Suite (K₁nt)** — Andesite, trachydacite, dacite flows and ignimbrites; intermediate composition tuffs. Chaun Flora. 102 Ma (K-Ar). 50-150 m
- **Kytapkai Suite (K₁kt)** — Rhyolite, trachyrhyolite, felsic tuff, dacite and trachytic rhyodacite; basal tuffaceous conglomerate and siltstone. Chaun Flora. 104 Ma (Rb-Sr WR). ****87.6 ± 0.2 Ma to 87.1 ± 0.2 Ma (Ispatov et al., 2000)*** 350-650 m
- **Etchinkun' Suite (K₁et)** — Andesite, trachyandesite, andesitic basalt flows and tuffs, lenses of tuffaceous conglomerate. 127 Ma (K-Ar). 129 Ma(Rb-Sr). 150-300 m
- **Kukeveem Suite (K₁kk)** — Sandstone,siltstone, shale, carbonaceous shale, conglomerate, coal horizons. Ozhogin Flora (?). 800-1000 m
- Basement: T₃ n

East-Chukotka Flank Zone

14. R. Erguveem - Kresta Gulf

- **Numligran Suite (K₂nn)** — Basalt, andesitic basalt and andesite flows; subalkalic basalt and basalt; mafic to intermediate tuffs, rhyolite and rhyodacite flows. 83 Ma (K-Ar). < 550 m
- **Leurvaam Suite (K₁lr)** — Rhyolite, rhyodacite, trachyrhyolite ignimbrites and tuffs; lower section contains tuffaceous sandstone, siltstone and conglomerate, coal horizons. Arkagala Flora. > 92 Ma (Ar-Ar study, Calvert,1999). < 1500 m
- **Ekitykin' Suite (K₁ek)** — Andesite, andesitic basalt, dacite andesite flows and tuffs; tuffaceous sandstone, siltstone. Ekitykin (Chaun) Flora. 100 Ma (K-Ar). < 750 m
- **Amgen' Suite (K₁am)** — Dacite, rhyodacite, and rhyolite ignimbrites and tuffs; subalkalic felsic volcanic rocks; tuffaceous sandstone, and coarse sandstone. Amgen', Chaun, and Grebyenka Flora Complexes. >100 Ma (K-Ar). < 2000 m
- **Nyrvakinot Suite (K₁nr)** — Andesite, andesitic basalt, dacitic andesite flows and tuffs; tuffaceous sandstone, siltstone. Nyrvakinot Flora. < 900 m
- **Ol'khov Suite (K₁ol)** — Sandstone, siltstone, conglomerate, argillite; felsic to intermediate tuff. Buor-Kemyus Flora. < 1000 m
- **Chinatenmyvaam Suite (K₁kk)**
- Basement: Q₂₋₃



Distribution of the Okhotsk-Chukotka volcanic belt and location of volcano-stratigrphic sections
1-3 - Tectonic elements: 1- Verkhoyansk-Chukotka, 2 - Okhotsk-Chukotka(OCVB), 3 - Koryak-Kamchatka;
4,5 - boundaries: 4 - flank zone and sector boundaries, 5 - administrative boundaries (â), government (á);
6 - location an number of section Numbered circles: 1,6 - zones: 1 - Westen Okhotsk, 6 -Eastern Chukotka ;
2-5 - sectors: 2 - Okhotsk, 3 - Penzhina, 4 - Anadyr, 5 - Central Chukotka

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Regional stratigraphic correlation of Cretaceous non-marine sections of the Okhotsk-Chukotka volcanic belt

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Figure DR1. English translation of the latest compilation of the lithostratigraphy, phytostratigraphy and available isotopic age designations for representative sections of the Okhotsk-Chukotka volcanic belt (Kotlyar, 2002). Igor Kotlyar (Northeastern Interdisciplinary Scientific Research Institute – Far East Branch – Russian Academy of Sciences) is gratefully acknowledged for providing an electronic copy of this figure to facilitate translation work. Ages in red are recently published 40Ar/39Ar geochronology studies not appearing on the original compilation (this study; Kelley et al., 1999; Isplatov et al., 2000)

Table DR1: Geochemical Data. Major elements analyzed by CPM-25 X-ray fluorescence spectrometry at Northeast Regional Interdisciplinary Scientific Research Institute in Magadan Russia. The uncertainty for major elements is better than 0.4 wt%. Trace elements were analyzed by VRA-30 X-ray fluorescent scanning spectrometer, accuracy for standards measurements are better than 5% (Borkhodoev, 2002).

Table DR2: $^{40}Ar/^{39}Ar$ geochronological data. See text for description of data collection, ratio calculation and data interpretation.