

Public-Data File 86-99

PRELIMINARY AGE DATES AND ANALYTICAL DATA FOR SELECTED
IGNEOUS ROCKS FROM THE SLEETMUTE, RUSSIAN MISSION, TAYLOR
MOUNTAINS AND BETHEL QUADRANGLES, SOUTHWESTERN ALASKA

By

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This public data file contains previously unpublished preliminary information on the geochronology of selected igneous rocks in the Sleetmute, Russian Mission, Bethel and Taylor Mountains Quadrangles of southwestern Alaska. This data was collected during the 1982 and 1983 field seasons by Alaska Division of Geological and Geophysical Surveys (DGGS) personnel. Analyses and age determinations were produced by Don Turner, Joel Blum and Robin Cottrell of the DGGS-University of Alaska cooperative geochronological laboratory in Fairbanks, Alaska.

LOWER KUSKOKWIM RIVER REGION GEOCHRONOLOGY

LOWER KUSKOKWIM RIVER REGION GEOCHRONOLOGY

SAMPLE NUMBER	83GA148	83JD317	83JD372	82MR311	83GA149
ROCK TYPE	BASALTIC ANDESITE	GRANODIORITE	GRANITE	GRANODIORITE	BASALTIC ANDESITE
LATITUDE	61 29' 38"	61 21' 15"	61 21' 32"	61 18' 36"	61 23' 47"
LONGITUDE	157 52' 30"	157 47' 05"	157 47' 41"	157 48' 01"	157 58' 23"
QUADRANGLE	SLMT B-5	SLMT B-5	SLMT B-5	SLMT B-5	SLMT B-6
MINERAL DATED	PLAGIOCLASE	BIOTITE	BIOTITE	BIOTITE	PLAGIOCLASE
K2O (wt. percent)	1.609	7.609	7.991	8.423	1.779
SAMPLE WT. (g)	7.813	0.2957	0.1139	0.5323	1.2043
40 Ar(rad)(moles/g) x 10 ex -11	16.7	76.3	80.5	83.3	18.5
40 Ar(rad) / 40 K x 10 ex -3	4.19	4.05	4.07	3.99	4.2
40 Ar(rad) / 40 Ar(total)	0.702	0.74	0.859	0.755	0.834
Age +- (m.y. B.P.)	*70.7+-2.1	68.4+-2.1	68.7+-2.1	67.5+-2.0	70.8+-2.1

NOTE: rad = radiogenic; σ = standard deviation; $\sigma + \sigma' = 0.581 \times 10^{-11}$
 $\lambda = 4.962 \times 10^{-10} \text{ yr}^{-1}$; $40 \text{ K} / \text{K total} = 1.167 \times 10^{-4} \text{ mol/mol}$;
 * = minimum age (sample does not meet petrographic criteria for a reliable date)

LOWER KUSKOKWIM RIVER REGION GEOCHRONOLOGY

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SAMPLE NUMBER	83JD417A	83MR172A	83MR177C	83TS632A	83MR148A	82MR300	82MR300
ROCK TYPE	ANDESITE	RHYOLITE	RHYOLITE	VEIN QTZ	RHYOLITE	GRANODIORITE	GRANODIORITE
LATITUDE	61 14' 45"	61 27' 16"	61 29' 57"	61 25' 09"	61 26' 28"	61 07' 52"	61 07' 52"
LONGITUDE	158 12' 58"	158 14' 27"	157 53' 11"	158 08' 55"	157 49' 28"	159 49' 44"	159 49' 44"
QUADRANGLE	SLMT A-5	SLMT B-6	SLMT B-6	SLMT B-6	SLMT B-5	RUS MIS A-3	RUS MIS A-3
MINERAL DATED	BIOTITE	BIOTITE	BIOTITE	WHITE MICA	WHOLE ROCK	BIOTITE	HORNBLende
K ₂ O (wt. percent)	1.45	8.548	5.574	9.755	4.849	8.575	0.55
SAMPLE WT. (g)	0.125	0.206	0.1598	0.1442	2.5464	0.2818	1.7054
40 Ar(rad)(moles/g) x 10 ^{ex -11}	14.85	79.6	56.44	87.03	30.9476	138	8.23
40 Ar(rad) / 40 K x 10 ^{ex -3}	4.13	3.76	4.09	3.6	2.5763	6.49	6.04
40 Ar(rad) / 40 Ar(total)	0.657	0.469	0.877	0.866	0.5061	0.822	0.512
Age +- (m.y. B.P.)	69.8+-2.1	63.6+-1.9	69.0+-1.8	60.90+-1.8	43.81+-1.3	108.5+-3.3	101.1+-3.0

NOTE: rad = radiogenic; = standard deviation; e + e' = 0.581 x 10^{ex -11}
 B = 4.962 x 10^{ex -10} yr^{ex -1}; 40 K / K total = 1.167 x 10^{ex -4} mol/mol;
 * = minimum age (sample does not meet petrographic criteria for a reliable date)

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SAMPLE NUMBER	82MR307	82MR309	82MR322	82MR322	82JD435A	82JD435A	82JD4508
ROCK TYPE	GRANODIORITE	GRANITE	BASALT	BASALT	BASALT	BASALT	RHYOLITE
LATITUDE	61 02' 21"	60 56' 18"	60 53' 01"	60 53' 01"	60 46' 30"	60 46' 30"	60 35' 02"
LONGITUDE	159 40' 32"	157 22' 20"	158 51' 27"	158 51' 27"	159 06' 18"	159 06' 18"	160 16' 17"
QUADRANGLE	RUS MIS A-2	TAY MTN D-4	TAY MTN D-8	TAY MTN D-8	BETHEL D-1	BETHEL D-1	BETHEL C-4
MINERAL DATED	BIOTITE	BIOTITE	WHOLEROCK	PLAGIOCLASE	PLAGIOCLASE	WHOLEROCK	WHOLEROCK
K2O (wt. percent)	6.099	8.58	1.097	0.847	2.56	1.51	4.159
SAMPLE WT. (g)	0.452	0.5417	6.1676	3.3999	1.1648	5.0733	1.9218
40 Ar(rad)(moles/g) x 10 ex -11	59.6	82.1	0.745	0.565	25.91	15.8	35.8
40 Ar(rad) / 40 K x 10 ex -3	3.94	3.86	0.274	0.269	4.08	4.23	3.48
40 Ar(rad) / 40 Ar(total)	0.871	0.786	0.358	0.282	0.967	0.909	0.855
Age +- (m.y. B.P.)	*66.6+-2.0	65.3+-2.0	4.72+-0.1	4.62+-0.14	69.0+-2.1	*71.4+-2.1	59.3+-1.8

NOTE: rad = radiogenic; ± = standard deviation; e + e' = 0.581 x 10 ex-11
 B = 4.962 x 10 ex-10 yr ex-1; 40 K / K total = 1.167 x 10 ex-4 mol/mol;
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LOWER KUSKOKWIM RIVER REGION GEOCHRONOLOGY

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SAMPLE NUMBER	82JD4508	83MR233C	83MR233C	83MR234C	83MR234C	83MR235C	83MR235C
ROCK TYPE	RHYOLITE	QTZ MONZ	QTZ MONZ	GRANITE	GRANITE	GRANITE	GRANITE
LATITUDE	60 35' 02"	60 55' 11"	60 55' 11"	60 56' 02"	60 56' 02"	60 56' 02"	60 56' 02"
LONGITUDE	160 16' 17"	156 43' 18"	156 43' 18"	157 22' 08"	157 22' 08"	157 22' 08"	157 22' 08"
QUADRANGLE	BETHEL C-4	TAY MTN D-2	TAY MTN D-2	TAY MTN D-4	TAY MTN D-4	TAY MTN D-4	TAY MTN D-4
MINERAL DATED	BIOTITE	BIOTITE	AMPHIBOLE	BIOTITE	WHITE MICA	BIOTITE	WHITE MICA
K2O (wt. percent)	8.332	5.836	1.56	7.343	10.144	9.155	9.846
SAMPLE WT. (g)	0.1812	0.1759	1.1297	0.2343	0.1931	0.3118	0.1865
40 Ar(rad)(moles/g) x 10 ^{ex -11}	76.2	57.6	15.3	72.8	97.47	87.3	93.1
40 Ar(rad) / 40 K x 10 ^{ex -3}	3.69	3.98	3.97	4	3.88	3.85	3.82
40 Ar(rad) / 40 Ar(total)	0.674	0.41	0.838	0.59	0.89	0.939	0.872
Age ± (m.y. B.P.)	62.5±1.9	67.3±2.0	67.1±2.0	67.6±2.0	65.5±2.0	65.0±2.0	64.5±1.9

NOTE: rad = radiogenic; ± = standard deviation; e + e' = 0.581 x 10^{ex-11}
 B = 4.962 x 10^{ex-10} yr^{ex-1}; 40 K / K total = 1.167 x 10^{ex-4} mol/mol;
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LOWER KUSKOKWIM RIVER REGION GEOCHRONOLOGY

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SAMPLE NUMBER	83GA122A	83TS631	83MR257	83MA34A	83MR158	83MA23A
ROCK TYPE	BASALTIC ANDESITE	RHYOLITE	ANDESITE	BASALTIC ANDESITE	RHYOLITE	BASALTIC ANDESITE
LATITUDE	61 27' 18"	61 25' 00"	61 24' 56"	61 24' 48"	61 28' 05"	61 22' 28"
LONGITUDE	157 37' 05"	158 08' 20"	158 05' 31"	157 54' 43"	158 14' 45"	157 55' 52"
QUADRANGLE	SLMT B-6	SLMT B-6	SLMT B-6	SLMT B-6	SLMT B-6	SLMT B-6
MINERAL DATED	WHOLEROCK	WHITE MICA	WHOLEROCK	PLAGIOCLASE	WHITE MICA	PLAGIOCLASE
K2O (wt. percent)	1.61	9.732	1.35	0.28	9.685	0.51
SAMPLE WT. (g)	7.813	0.1189	8.5938	3.0186	0.2106	2.8638
40 Ar(rad)(moles/g) x 10 ex -11	17.6	10.4	14.5	2.64	87.2	5.11
40 Ar(rad) / 40 K x 10 ex -3	4.42	3.64	4.34	3.8	3.63	4.04
40 Ar(rad) / 40 Ar(total)	0.669	0.833	0.607	0.666	0.865	0.404
Age ± (m.y. B.P.)	*74.5±2.2	61.7±1.8	*73.2±2.2	64.3±1.9	61.5±1.8	68.3±1.9

NOTE: rad = radiogenic; ± = standard deviation; e ± e' = 0.581 x 10 ex-11
 B = 4.962 x 10 ex-10 yr ex-1; 40 K / K total = 1.167 x 10 ex-4 mol/mol;
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LOWER KUSKOKWIM RIVER REGION GEOCHRONOLOGY

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SAMPLE NUMBER	83MR167	3MR167	83JD415	83JD553	82MR316	82MR316
ROCK TYPE	QUARTZ MONZONITE	QUARTZ MONZONITE	DIORITE	OLIVINE BASALT	RHYOLITE	RHYOLITE
LATITUDE	61 15' 08"	61 15' 08"	61 14' 57"	61 07' 07"	61 42' 34"	61 42' 34"
LONGITUDE	158 01' 47"	158 01' 47"	158 13' 05"	157 56' 35"	157 12' 00"	157 12' 00"
QUADRANGLE	SLMT B-6	SLMT B-6	SLMT A-6	SLMT A-5	SLMT C-4	SLMT C-4
MINERAL DATED	BIOTITE	HORNBLENDE	HORNBLENDE	WHOLEROCK	BIOTITE	WHOLEROCK
K2O (wt. percent)	7.097	0.358	0.683	1.532	8.263	4.459
SAMPLE WT. (g)	0.1757	1.0787	0.8824	8.7988	0.5818	1.3238
40 Ar(rad)(moles/g) x 10 ex -11	71.5	3.62	6.39	8.51	85.6	44.4
40 Ar(rad) / 40 K x 10 ex -3	4.07	4.08	3.78	2.41	4.18	4.02
40 Ar(rad) / 40 Ar(total)	0.889	0.578	0.272	0.806	0.762	0.709
Age +- (m.y. B.P.)	68.7+-2.1	68.9+-2.1	*63.8+-1.9	38.2+-1.1	70.5+-2.1	*67.9+-2.1

NOTE: rad = radiogenic; = standard deviation; e + e' = 0.581 x 10 ex-11
 B = 4.962 x 10 ex-10 yr ex-1; 40 K / K total = 1.167 x 10 ex-4 mol/mol;
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LOWER KUSKOKWIM RIVER REGION GEOCHRONOLOGY

SAMPLE NUMBER 83MR232C
 ROCK TYPE Q72 MONZ
 LATITUDE 61 09' 57"
 LONGITUDE 156 09' 49"
 QUADRANGLE SLMT A-1
 MINERAL DATED BIOTITE

 K2O (wt. percent) 6.448
 SAMPLE WT. (g) 0.2121
 40 Ar(rad)(moles/g) x 39.2
 10 ex -11
 40 Ar(rad) / 40 K x 2.45
 10 ex -3
 40 Ar(rad) / 40 Ar(total) 0.758
 Age +- (m.y. B.P.) 41.7+-1.3

NOTE: rad = radiogenic; = standard deviation; e + e' = 0.581 x 10 ex-11
 B = 4.962 x 10 ex-10 yr ex-1; 40 K / K total = 1.167 x 10 ex-4 mol/mol;
 * = minimum age (sample does not meet petrographic criteria for a reliable date)