

Supplementary Material B - Whole-rock major and trace-element compositions of the silicic rocks outcropping in the Palmas plateau

<i>Lithofacies</i>	<i>rhyolite with planar disjunctions</i>												<i>aphanitic rhyolite</i>	
Sample	PAL07-1	PAL10-1	PAL11-2	PAL11-3	PAL11-4	PAL15-1	PAL16-3	PAL21-1	PAL23-2	PAL23-2A	PAL27-2	PAL28-1	PAL16-2	PAL22-1
SiO ₂	71.1	69.2	68.8	70.4	71.1	71.2	71.0	70.4	70.1	69.5	68.0	69.0	70.3	71.1
TiO ₂	0.72	0.77	0.74	0.75	0.74	0.75	0.74	0.77	0.73	0.84	0.74	0.78	0.73	0.76
Al ₂ O ₃	11.82	12.15	12.11	12.29	12.12	12.11	12.51	12.71	12.49	12.46	13.23	13.46	11.93	11.86
Fe ₂ O ₃	5.69	5.83	5.86	6.01	5.32	5.28	4.55	4.44	5.50	6.07	5.49	6.03	6.17	5.63
MnO	0.07	0.12	0.12	0.11	0.07	0.07	0.05	0.05	0.05	0.05	0.04	0.08	0.11	0.09
MgO	0.51	0.90	0.92	0.69	0.54	0.54	0.33	0.45	0.44	0.47	0.43	0.31	0.67	0.49
CaO	1.17	1.83	1.83	2.23	1.48	1.47	1.25	1.27	0.78	0.27	0.83	0.45	1.88	1.56
Na ₂ O	2.18	2.44	2.41	2.91	2.57	2.58	2.55	2.57	2.06	1.43	2.26	1.85	2.63	2.57
K ₂ O	4.81	4.92	4.77	4.48	4.99	4.98	5.19	4.97	5.62	5.50	6.01	4.64	4.90	4.99
P ₂ O ₅	0.20	0.20	0.21	0.21	0.21	0.21	0.20	0.20	0.19	0.15	0.20	0.18	0.21	0.19
LOI	2.24	2.19	2.14	0.68	1.70	1.66	1.78	2.34	2.36	3.51	3.04	3.67	0.79	1.02
Total	100.59	100.67	100.02	100.85	100.93	100.96	100.23	100.25	100.41	100.33	100.33	100.52	100.41	100.32
(ppm)														
Cr	14	10	9	16	8	9	12	4	8	6	6	7	20	22
Ni	3.5	3.4	2.1	3.1	2.9	2.5	2.2	2.4	3.0	2.8	2.7	2.3	4.6	3.6
Cu	27.50	25.84	26.99	27.65	29.27	28.47	27.82	33.25	27.84	36.22	32.93	30.43	35.38	31.29
Zn	95.7	81.8	81.1	76.8	99.9	97.9	73.1	126.2	93.2	115.1	73.3	95.6	94.8	95.5
Rb	131.5	111.9	144.0	124.2	138.4	128.9	137.4	150.4	113.6	140.8	136.3	152.3	120.0	129.5
Sr	76.1	85.2	83.1	106.5	86.0	80.5	80.2	80.8	57.4	38.7	65.2	61.8	92.9	93.5
Y	53.1	51.0	52.8	47.8	58.3	57.6	199.7	218.4	86.6	122.7	116.0	129.8	52.1	67.9
Zr	268.1	287.5	278.3	285.2	283.8	284.1	285.5	287.4	289.8	325.4	317.1	320.7	279.1	282.9
Nb	20.43	22.40	22.69	22.43	22.41	22.63	23.97	22.74	26.19	30.93	27.62	24.22	20.92	23.29
Cs	12.8	9.0	9.2	8.4	9.7	9.5	11.8	14.0	11.4	11.9	10.1	17.7	10.6	8.0
Ba	660	629	623	632	649	635	756	701	765	797	714	1011	659	676
La	43.7	45.3	46.5	43.7	47.8	46.6	52.1	68.0	56.9	79.0	74.3	98.7	45.6	49.9
Ce	93.06	99.58	103.46	95.12	103.72	101.73	112.86	141.49	115.49	142.86	171.13	171.57	102.96	107.90
Pr	10.14	11.27	11.21	11.23	11.32	11.51	13.09	19.19	12.96	17.90	17.77	23.29	11.35	12.20
Nd	39.6	45.3	44.0	41.0	43.9	44.7	55.0	85.4	58.5	78.6	70.6	95.1	45.1	50.1
Sm	8.23	8.76	9.16	9.11	9.37	9.28	13.18	23.22	11.60	16.61	15.07	20.29	9.54	10.22
Eu	1.49	1.69	1.64	1.59	1.75	1.79	2.79	4.74	2.18	3.43	2.67	3.96	1.66	1.99
Gd	8.47	8.59	8.38	8.85	9.07	9.25	20.58	32.04	12.72	18.17	17.07	21.35	9.85	11.64
Tb	1.32	1.40	1.42	1.43	1.51	1.51	3.48	5.25	2.03	2.98	2.91	3.75	1.62	1.87
Dy	8.09	8.80	8.45	9.07	9.59	9.29	24.67	32.73	13.26	18.69	17.61	21.36	9.02	12.06
Ho	1.64	1.72	1.57	1.55	1.88	1.91	5.80	7.18	2.56	3.57	3.93	4.54	1.87	2.31
Er	5.02	4.70	4.66	5.05	5.29	5.34	17.20	21.33	7.21	9.96	10.92	12.59	5.33	6.82
Tm	0.76	0.71	0.74	0.77	0.81	0.83	2.51	3.09	1.13	1.56	1.51	1.78	0.89	1.00
Yb	4.17	4.68	4.20	4.50	5.13	4.97	15.22	18.42	6.57	9.39	9.50	11.87	5.14	6.27
Lu	0.72	0.67	0.69	0.69	0.77	0.76	2.43	2.92	1.03	1.49	1.57	1.80	0.82	0.98
Hf	7.70	7.98	8.14	7.94	7.72	8.03	7.98	7.79	9.04	10.19	8.85	8.27	7.71	8.17
Ta	1.9	1.9	1.7	2.0	1.7	1.7	1.8	2.0	1.8	2.4	2.0	2.0	1.8	1.8
Tl	0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.2	0.2	0.3	0.3	0.1	0.2	0.2	0.1
Pb	24.94	27.83	27.93	27.78	26.35	25.68	27.53	26.10	31.91	37.81	30.64	30.30	27.22	26.02
Th	15.6	16.1	16.6	15.8	15.4	15.9	16.4	15.8	19.0	22.1	18.3	18.6	15.7	15.8
U	4.0	4.9	5.0	4.6	4.0	4.0	4.6	4.0	6.1	7.3	5.8	5.3	4.8	5.3

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Supplementary Material B - Whole-rock major and trace-element compositions of the silicic rocks outcropping in the Palmas plateau

Lithofacies	aphanitic rhyolite			rhyolite with quartz levels	compositionally banded rhyolite				massive rhyolite		Pitchstone		
Sample	PAL23-1	PAL25-1	PAL26-2	PAL10-2	PAL01-4	PAL01-5	PAL02-1	PAL03-2	PAL01-6	PAL01-8	PAL16-1	PAL20-6	PAL20-7
SiO ₂	70.5	70.8	69.6	69.7	70.6	69.7	67.1	68.6	69.9	67.2	68.8	70.5	67.8
TiO ₂	0.75	0.74	0.70	0.76	0.73	0.73	0.77	0.74	0.74	0.76	0.72	0.71	0.72
Al ₂ O ₃	12.11	11.90	12.34	11.96	12.05	12.23	12.21	12.27	12.23	12.59	12.28	12.19	12.29
Fe ₂ O ₃	5.43	5.94	5.88	5.69	6.24	5.82	5.52	5.81	5.83	5.42	5.50	6.04	5.36
MnO	0.07	0.10	0.06	0.07	0.12	0.11	0.12	0.07	0.11	0.12	0.10	0.11	0.10
MgO	0.49	0.55	0.38	0.80	0.62	0.67	0.69	1.02	0.73	0.71	0.67	0.64	0.70
CaO	1.40	1.86	1.00	0.60	1.95	2.09	2.20	1.45	1.89	2.07	2.30	1.70	2.27
Na ₂ O	2.51	2.59	2.27	1.21	2.72	2.82	2.43	2.66	2.82	2.63	3.06	2.65	2.46
K ₂ O	5.34	5.08	5.92	5.54	4.91	4.76	4.29	4.71	4.86	3.84	3.76	4.75	4.12
P ₂ O ₅	0.20	0.20	0.20	0.15	0.20	0.20	0.20	0.21	0.20	0.21	0.20	0.20	0.20
LOI	1.48	0.35	1.94	3.83	0.53	0.71	4.31	2.54	1.10	4.69	3.13	1.29	4.39
Total	100.41	100.23	100.32	100.39	100.78	99.90	99.93	100.22	100.47	100.37	100.58	100.85	100.54
(ppm)													
Cr	15	28	11	8	26	12	7	11	16	7	18	17	6
Ni	3.7	3.3	3.1	2.7	4.2	2.6	2.4	2.8	3.3	2.0	2.6	3.6	2.1
Cu	34.05	37.74	33.64	21.69	28.25	32.41	25.08	52.62	23.37	28.00	30.07	36.64	27.59
Zn	85.9	88.9	94.4	84.7	76.0	83.4	93.4	93.6	84.4	92.2	88.9	91.9	84.1
Rb	137.0	106.2	145.3	126.2	110.7	117.2	153.7	134.8	103.9	173.9	182.7	132.9	182.7
Sr	88.2	95.2	75.7	72.0	95.6	108.6	139.8	89.8	102.7	113.5	116.4	95.8	169.1
Y	59.6	60.9	85.2	38.3	48.6	51.2	614.9	442.8	51.1	197.5	69.9	53.9	75.1
Zr	290.5	279.8	302.2	285.1	304.0	325.2	311.2	300.8	316.7	315.1	285.5	284.3	290.1
Nb	22.81	24.96	26.22	21.10	22.38	23.64	23.59	22.52	23.23	23.98	23.56	23.45	21.91
Cs	9.5	10.6	10.7	10.1	6.8	8.2	13.2	10.2	8.6	15.2	11.2	8.6	12.6
Ba	731	635	706	731	697	689	748	823	726	912	637	622	618
La	46.8	51.4	55.5	40.5	45.7	45.1	84.2	257.9	47.0	70.1	50.4	48.6	57.5
Ce	100.29	106.42	113.61	79.03	99.44	98.37	118.16	249.99	101.62	123.14	98.34	102.12	114.85
Pr	11.68	11.28	12.95	9.58	11.45	12.78	25.05	60.50	12.00	20.24	13.36	11.58	14.61
Nd	46.8	46.0	55.1	35.2	43.3	44.8	107.7	258.8	44.2	77.1	51.8	44.1	56.2
Sm	9.77	9.27	11.16	7.53	9.14	11.00	33.63	56.48	10.02	19.88	10.89	9.82	12.12
Eu	1.82	1.74	2.04	1.44	1.76	1.75	8.15	10.92	1.79	4.49	2.15	1.79	2.27
Gd	9.64	9.58	12.07	6.92	9.43	9.77	65.51	74.07	10.12	27.69	11.49	9.22	12.53
Tb	1.60	1.58	2.08	1.12	1.43	1.60	11.31	10.70	1.53	4.63	1.85	1.46	1.97
Dy	9.67	10.23	12.12	7.01	8.45	9.66	78.03	61.61	8.73	28.93	11.35	9.71	11.80
Ho	1.96	1.87	2.78	1.39	1.85	1.88	18.18	13.93	1.83	6.21	2.36	1.75	2.36
Er	5.34	5.10	7.24	4.01	5.07	5.79	53.52	37.20	5.28	17.83	6.77	4.86	6.56
Tm	0.86	0.83	1.05	0.56	0.65	0.71	7.42	4.38	0.73	2.34	0.97	0.75	0.95
Yb	5.38	4.51	6.81	3.67	5.95	5.13	44.46	25.59	5.50	15.02	6.29	4.84	5.91
Lu	0.76	0.75	1.03	0.54	0.72	0.73	7.57	3.68	0.73	2.20	0.95	0.70	0.91
Hf	7.39	8.25	8.27	7.75	7.66	8.53	7.62	7.60	8.27	8.80	8.34	8.36	7.11
Ta	1.9	1.5	1.9	1.7	1.7	2.2	2.3	2.3	2.4	1.7	1.6	1.8	2.1
Tl	0.3	0.2	0.2	<0.1	<0.1	<0.1	0.5	0.3	<0.1	0.7	0.1	0.2	0.5
Pb	25.61	28.59	28.56	26.79	26.77	28.12	26.33	26.77	26.65	28.05	26.93	27.38	27.15
Th	15.6	17.8	17.5	15.4	16.6	16.9	16.0	16.2	16.8	16.3	16.1	16.6	15.5
U	4.8	5.6	5.2	4.0	5.1	5.1	4.7	5.7	5.1	5.0	4.7	5.4	4.6

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<i>Lithofacies</i>	<i>Pitchstone</i>
Sample	PAL29-1
SiO ₂	68.6
TiO ₂	0.77
Al ₂ O ₃	12.40
Fe ₂ O ₃	5.69
MnO	0.11
MgO	0.67
CaO	2.26
Na ₂ O	3.00
K ₂ O	3.91
P ₂ O ₅	0.20
LOI	2.81
Total	100.51
(ppm)	
Cr	8
Ni	2.6
Cu	30.34
Zn	89.2
Rb	226.7
Sr	120.5
Y	51.8
Zr	340.5
Nb	25.22
Cs	10.3
Ba	734
La	44.1
Ce	97.73
Pr	13.14
Nd	43.4
Sm	10.89
Eu	2.06
Gd	10.79
Tb	1.81
Dy	9.83
Ho	2.28
Er	5.89
Tm	0.89
Yb	6.15
Lu	0.86
Hf	7.85
Ta	2.2
Tl	0.1
Pb	27.60
Th	15.7
U	4.9

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