

Table 1: Element ratios and statistical summaries for some picrites and a basalt from the 1968 eruption of Kilauea Volcano at Halemaumau and Hiiaka craters, Hawaii.

Ratio	Value	s	σ_0	B	$Pr[H_0 D \& I]$	Fo	$Pr[F > Fo]$
Ti/K	2.972	0.0594	0.1353	7.7510	0.8857	5.188	0.1160
Al/K	24.724	0.5348	1.1122	1.0474	0.5116	4.325	0.1587
Ca/K	18.303	0.2610	0.8231	0.7992	0.4442	9.945	0.0357
Na/K	6.749	0.0617	0.3188	0.8721	0.4658	26.697	0.0054
P/K	0.346	0.0188	0.0472	19.5786	0.9514	6.303	0.0822
Mean I-121.140	0.7530	5.4275	0.0273		0.0266	51.953	0.0015
X-ratio	85.372	6.6225	3.8776	0.0176	0.0173	2.917	0.0444
Y-ratio	49.603	13.4461	2.3748	<0.00005	<0.00005	32.058	<0.00005

$N = 5$, $Pr[H_0 | I] = 0.5$. Fo is the observed value of F. If $s > \sigma_0$, then $F = s^2/\sigma_0^2$ else $F = \sigma_0^2/s^2$. X-ratio = Si/K, Y-ratio = (Fe + Mg)/K. B is the Bayes factor. I is the intercept of a line with a slope of two drawn through a data point on a plot of (Fe + Mg)/K (Y-ratio) versus Si/K (X-ratio). See Figure 2.

Table 2: Element Ratios and Intercepts for Mount Edziza Lava Flows.

Sample	P/K	$\sigma_0(\text{P/K})$	I	$\sigma_0(\text{I})$				
141B	0.451	0.041	-1.606	0.311				
142B	0.457	0.042	-1.766	0.318				
146B	0.451	0.041	-1.787	0.319				
Weighted values	0.4529	0.0414	-1.7178	0.3159				
194B	0.336	0.042	-3.324	0.558				
197A	0.350	0.043	-3.334	0.547				
Weighted values	0.3428	0.0425	-3.3291	0.5524				
Var	Mean	s	σ_0	$B(s, \sigma_0)$	$\mu_1 - \mu_2$	$\sigma = \tau$	$B(\mu_1 - \mu_2)$	$Pr(H_0 D\&I)$
P/K	0.409	0.0605	0.0418	6.0742	0.1101	0.0593	0.2523	0.2015
I	-2.363	0.8843	0.4267	0.0150	1.6113	0.6363	0.0573	0.0143

Table 3: Coordinates and uncertainties of data points on Pearce element ratio diagram (Figure 4) for lava flows from Volcano Mountain, Yukon

Sample	X	Y	s_x	s_y	s_{xy}	λ	β	B
1. Xe05	71.665	-15.024	1.856	0.439	-0.710	-0.159	-4.867	2.83×10^{-6}
2. Xe05	71.665	-15.024	1.856	0.439	-0.710	1.000	-92.388	0.081
3. VM01	73.700	-19.213	1.977	0.556	-1.005	1.000	-92.388	1.956

1. Olivine + clinopyroxene fractionation hypothesis, 2, 3. Olivine fractionation hypothesis. Data from Trupia (1992), Trupis and Nicholls (1996). The hypothetical initial magma is Xe11. The lines on Figure 4 that relate Xe05 and VM01 to Xe11 have slopes and intercepts λ and β , respectively. B is the Bayes factor for the fractionation hypothesis.