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ERRATUM

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The 1999 and 2000 eruptions of Mount Cameroon: eruption behaviour and petrochemistry of lava

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We have discovered an error in some of the data reported in Suh et al. (2003) in relation to the trace element compositions of Mount Cameroon. Comparison was made between the older 20th Century lavas and the 1999 and 2000 lavas. The samples described by Fitton et al. (1983) were re-analysed at the same time as we analysed the 1999 and 2000 lavas because there have been changes in the standardisation of trace elements, in particular Nb. The analyses reported in Fitton et al. (1983) were calibrated against an international standard (BE-N) with a reported value of Nb = 100 ppm (Govindaraju 1989). This standard was reassessed in 1994 and a value of 105 ppm was adopted (Govindaraju 1994), although Jochum et al. (1990) obtained a value of 116±5 ppm using spark-source mass spectrometry. The Nb and Zr values obtained by Jochum et al. (1990) for several international standards give better XRF calibration lines (smaller mean square of weighted deviates) than do the values recommended by Govindaraju (1994) and so the Jochum et al. (1994) Nb and Zr values are now routinely used for calibration in the Edinburgh XRF laboratory. Unfortunately the old rather than the new recalibrated analyses were inadvertently used in Fig. 7 of Suh et al. (2003), which led us to the conclusion that the 1982 and 1999–2000 lavas form distinct trends on a plot of Nb against Zr. When the new recalibrated analyses are plotted (Fig. 1) the 1982 lavas plot on the same trend as the 1999 and 2000 lavas. We report these new analyses in Table 1.

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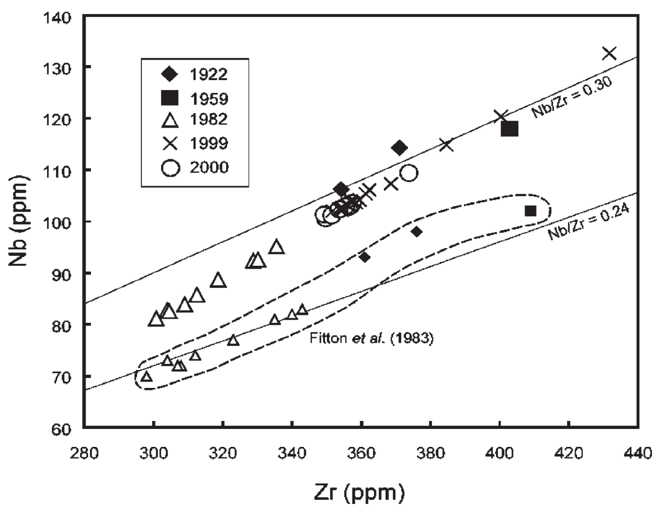

Fig. 1 New Nb and Zr data for the pre-1999 lavas from Mt Cameroon plotted with the data for the 1999 and 2000 eruptions reported by Suh et al. (2003). The old pre-1999 data (small symbols, from Fitton et al. (1983) are plotted for comparison. Analytical precision for the new analyses is less than the size of the data symbols

Table 1 New XRF analyses (ppm) of Mt. Cameroon lava flows analysed with the samples used in Suh et al. (2003). Values for four international standards analysed at the same time are given for comparison with published values

Sample	C1	C25	C26	C192	C193	C194	C195	C196	C197	C199	C200	C212	BE-N	BHVO-1	BCR-1	BIR-1
Year	1959	1922	1922	1982	1982	1982	1982	1982	1982	1982	1982	1982				
Nb	118.0	106.2	114.3	85.8	81.2	82.8	82.6	88.7	92.4	92.6	83.9	95.1	116.1	19.1	12.4	0.8
Zr	403.0	354.2	371.0	312.5	300.8	303.9	304.5	318.7	328.8	330.2	309.0	335.6	267.7	171.5	184.3	18.2
Y	37.1	31.4	33.9	31.5	32.0	31.7	31.4	32.4	33.2	32.6	31.7	32.9	30.4	27.7	37.4	16.5
Sr	1154.5	1007.5	1104.2	928.0	892.0	905.0	900.3	944.4	993.3	986.9	919.2	997.4	1374.0	390.8	326.0	113.1
Rb	42.6	35.0	37.6	30.6	28.2	28.6	28.8	31.0	32.3	33.0	29.8	32.5	47.7	9.2	46.5	0.3
La	84	77	81	57	58	59	59	61	65	69	58	67	82	15	24	2
Ce	171	167	176	126	123	124	123	127	138	138	124	139	152	39	54	2
Nd	74	72	77	59	57	57	55	59	63	62	59	65	67	26	28	2
Zn	107	119	123	121	118	120	117	125	128	121	118	122	128	106	129	68
Cu	68	69	82	112	112	107	109	109	110	105	106	105	72	130	20	132
Ni	48	181	138	63	61	58	61	63	57	58	63	61	277	119	15	157
Cr	59	466	323	61	63	58	58	50	38	45	68	52	378	289	16	382
V	253	274	308	320	328	318	317	331	318	311	329	318	240	315	397	324
Ba	530	437	485	378	370	370	365	378	404	410	384	404	1058	135	681	8
Sc	14	31	28	26	28	26	25	26	22	21	27	2	22	33	37	40

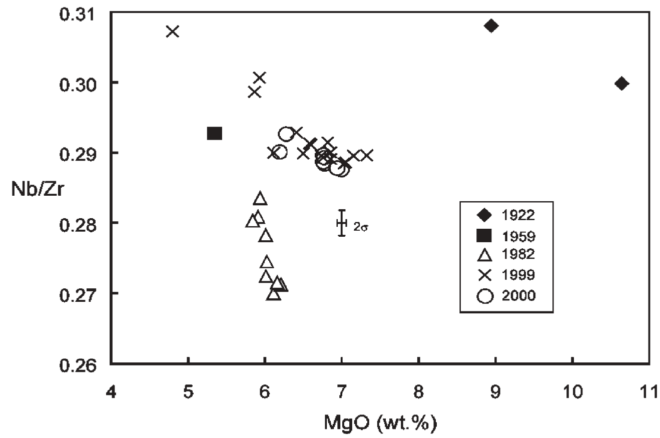

Fig. 2 Nb/Zr variation with degree of magma evolution (falling MgO) for the historic Mt Cameroon lavas. All the analyses were obtained on a single high-precision XRF calibration. Error bars represent typical 2σ analytical precision

At first sight, the new data plotted in Fig. 1 appear to show that the 1982, 1999 and 2000 Mt Cameroon lavas could have evolved along a liquid line of descent from a common parental magma through fractional crystallisation. The data array could, for example, be generated by 40% crystallisation of phases with bulk D_{Nb} = 0.005 and bulk D_{Zr} = 0.28; partition coefficients consistent with a crystallising assemblage dominated by aluminous augite (Wood and Trigila 2001). This simple fractional crystallisation model conflicts with the conclusions of Suh et al. (2003) that the 1982 and 1999-2000 lavas evolved from separate batches of primary magma. The fractional crystallisation model predicts that Nb/Zr should vary systematically with indices of differentiation such as MgO content, and this can easily be tested. Figure 2 shows variation of Nb/Zr with MgO content and it is clear from this plot that the magmas represented by lavas erupted in the 1982, 1999 and 2000 ***eruptions cannot have evolved from a single parent***. In particular, the steep rise in Nb/Zr in the 1982 lavas accompanied by only a very small fall in MgO content cannot result from fractional crystallisation, but is more likely the result of mixing between independently derived magma batches as suggested by Fitton et al. (1983). Thus the conclusions of Suh et al. (2003) are unaffected by our error in plotting the wrong data in Fig. 7 of that paper.

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