Table 1. Oxygen isotope compositions of olivine phenocrysts and whole rock trace element and isotope compositions of Samoan lavas.

SAMPLE	VOLCANO	$\delta^{18}O$ of Olivine (Individual Analyses)				AVERAGE	1σ std dev	1σ std err		$^{87}Sr/^{86}Sr$	$^{207}Pb/^{204}Pb$	Ce/Pb	Nb/Th
63-2	Vailulu'u	5.49	5.36	5.18	5.33	5.34	0.13	0.06		0.705385		22.02	9.19
63-11	Vailulu'u	5.39	5.32	5.35		5.35	0.04	0.02		0.705394	15.626	20.95	9.20
68-3	Vailulu'u	5.17	5.12	5.39	5.15	5.21	0.13	0.06		0.705396	15.621	23.51	9.01
71-11	Vailulu'u	5.38	5.59	5.57		5.51	0.11	0.07		0.705394	15.603	28.39	9.32
71-2	Vailulu'u	5.29	5.50	5.35	5.53	5.42	0.12	0.06		0.705943	15.605	26.85	8.94
73-2	Vailulu'u	5.14	5.07	5.17	5.05	5.11	0.05	0.03		0.705424	15.621	30.76	8.82
74-1	Ta'u	5.35	5.34	5.29		5.33	0.03	0.02		0.704686	15.599	31.26	12.54
T16	Ta'u	5.24	5.24	5.17	5.30	5.24	0.05	0.03		0.704605	15.601	34.66	12.67
T25	Ta'u	5.22	5.33	5.34		5.30	0.07	0.04		0.704708	15.601	29.90	9.29
T33	Ta'u	5.12	5.17	5.33	5.35	5.24	0.12	0.06		0.704736	15.596	26.04	10.12
T44	Ta'u	5.35	5.37			5.36	0.01	0.01		0.705086	15.606	26.61	9.30
T54	Ta'u	5.32	5.33	5.22		5.29	0.06	0.03		0.704739	15.596	24.13	10.38
ofu-04-06	Ofu	5.23	5.42	5.43		5.36	0.11	0.07		0.704584	15.571	30.86	12.78
ofu-04-17	Ofu	5.29	5.22	5.43		5.31	0.11	0.06		0.704498	15.576	31.79	12.61
76-9	Malumalu	5.34	5.41			5.38	0.05	0.03		0.706745	15.596	25.02	10.28
77-1	Malumalu	5.42	5.58	5.52		5.51	0.08	0.05		0.706930	15.619	21.95	10.79
77-9	Malumalu	5.49	5.64	5.54		5.56	0.08	0.04		0.707260	15.635	21.37	8.11
78-1	Malumalu	5.53	5.36	5.60	5.64	5.53	0.12	0.06		0.708901	15.647	17.43	6.47
78-3	Malumalu	5.44	5.62	5.55		5.54	0.09	0.05		0.708886	15.641	20.53	7.91
ALIA-115-03	Savaii	5.50	5.94	5.60	5.74	5.70	0.19	0.09		0.711409	15.633	14.33	7.59
ALIA-118-23	Savaii	5.69	5.73	5.64		5.69	0.04	0.02		0.711808	15.643	15.98	5.81
U14	Upolu	5.22				5.22		0.07			15.560	21.75	13.30
U19	Upolu	5.25				5.25		0.07		0.705278	15.569	8.85	13.98

Radiogenic Isotope and trace element data are from Workman et al. (2004), Jackson et al. (2007a) and Jackson et al. (2007b)

Supplementary Materials for *Geology* manuscript entitled "Oxygen isotopes in Samoan lavas: Confirmation of continent recycling" by R.K. Workman, J.M. Eiler, S.R. Hart, M.G. Jackson

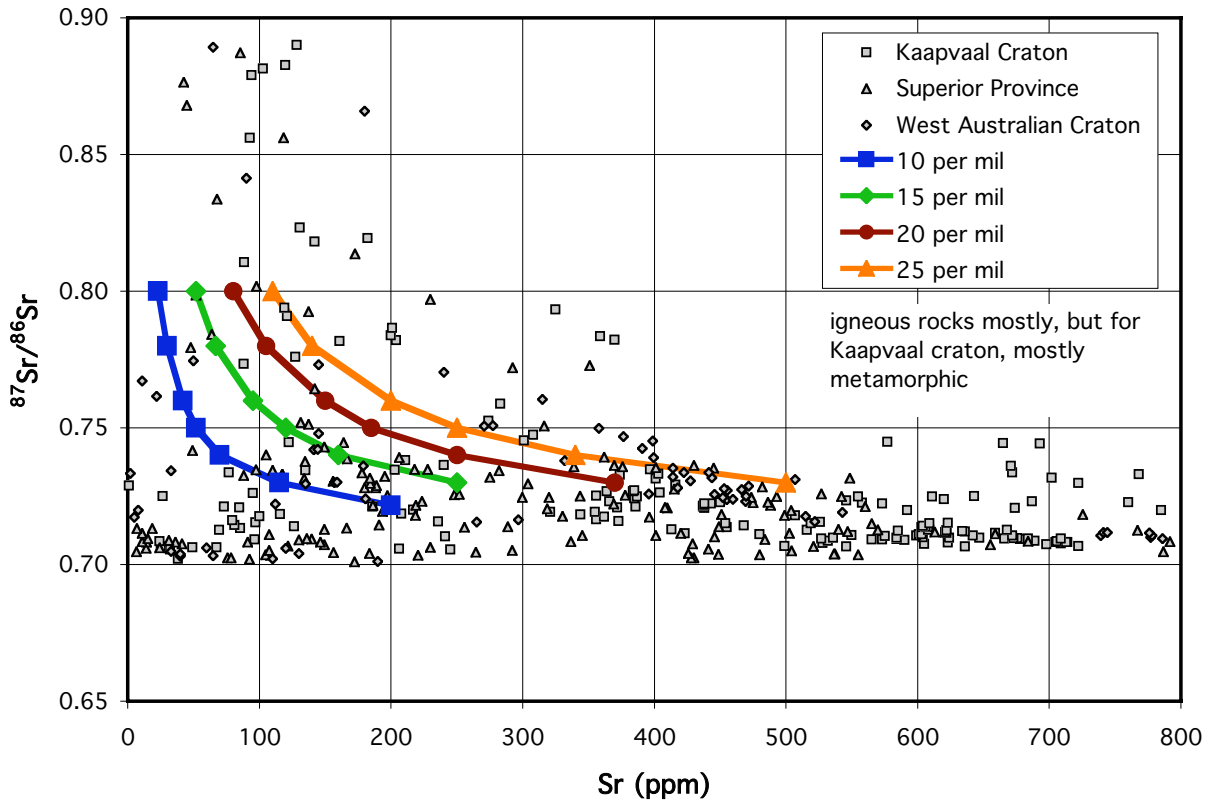

Figure DR1. Partial solution space showing Sr-$^{87}Sr/^{86}Sr$ coordinates of the enriched endmember that result in a good fit of the Samoan Sr-O isotope trend, contoured for various $\delta^{18}O$ values where the 10‰ curve represents Upper Continental Crust (UCC) and the 20-25‰ curves represent continent-derived, clastic marine sediments. These curves fully overlap with values found in continental cratons (craton data from the GEOROC database; http://georoc.mpch-mainz.gwdg.de/georoc/).

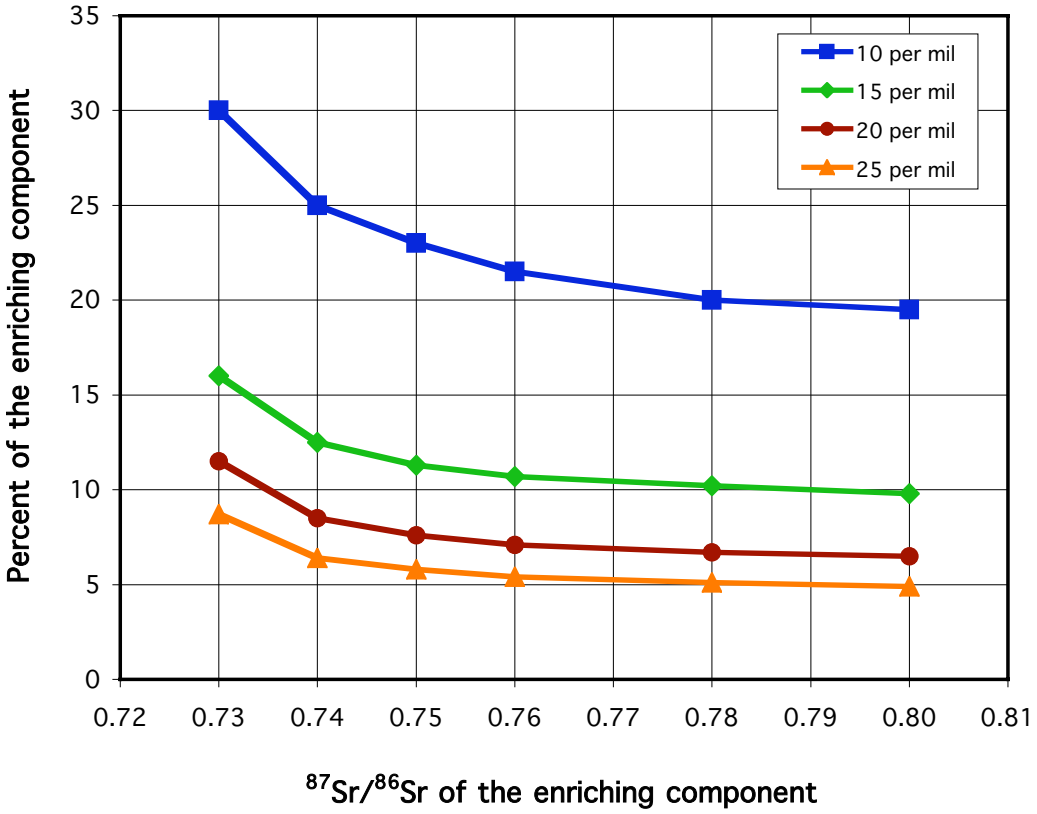

Figure DR2. Same mixing calculations as in Figure DR1, but here showing the percent of the enriching component needed to obtain the $^{87}Sr/^{86}Sr$ ratio observed in the most enriched lava (0.7205). As the $\delta^{18}O$ values decrease, more enriching component is needed. The forward modeling of Jackson et al. (2007a) indicates that misfits to the trace element pattern of the most enriched SEUSS lavas increase rapidly when more than 6% crustal component is used in the mixture. Because of that, we prefer a model in which the enriching component in the SEUSS lavas is recycled, continent-derived, clastic marine sediments.