

Supplementary Table A1: Major and trace-element data for Lilaviti and Krafla samples.

RECENT LAVAS				Major Elements (wt %, Fe as FeO*, normalized to 100%)													Trace Elements (ppm)								
Sample Name	Location	Eruption	δ (for Litv. Seogitude (°N)clinal Longitude)	SiO2	Al2O3	FeO*	MgO	CaO	Na2O	K2O	TiO2	MnO	P2O5	Mg #	Ti	Li	Nb	Zr	Y	Sr	Rb	Zn	Cu		
Krafla 1	Krafla Rift Zo 1984		16° 47'123" 65° 43.375'	-16.785	65.723	50.40	13.36	14.47	5.94	10.40	2.51	0.34	2.13	0.25	0.22	42	No Data	No Data	11.42	114	37.6	164	6.7	121	145
Krafla 2	Krafla Rift Zo 1984		16° 47'149" 65° 43.375'	-16.786	65.723	50.33	13.35	14.46	5.91	10.44	2.56	0.34	2.13	0.25	0.22	42	No Data	No Data	11.20	113	36.7	164	6.6	122	141
Krafla 3	Krafla Rift Zo 1724		16° 56.219' 65° 39.229'	-16.937	65.654	50.24	13.57	14.41	5.95	10.47	2.47	0.34	2.09	0.25	0.21	42	No Data	No Data	11.45	114	38.1	164	6.8	119	137
Krafla 4	Krafla Rift Zo 1724		16° 56.275' 65° 39.219'	-16.938	65.654	50.39	13.54	14.37	5.88	10.50	2.48	0.34	2.06	0.24	0.21	42	No Data	No Data	10.76	113	35.7	164	6.5	121	142
POSTGLACIAL LAVAS																									
LTLV-096	Theistareykir Storavitihräu	0.0	16° 50.497' 65° 52.505'	-16.842	65.875	50.25	15.26	10.62	8.32	12.08	2.05	0.15	0.97	0.20	0.09	58	No Data	No Data	3.91	50	19.7	132	2.8	78	130
LTLV-09D	Theistareykir Storavitihräu	0.0	16° 50.497' 65° 52.505'	-16.842	65.875	50.15	15.32	10.65	8.33	12.09	2.06	0.14	0.97	0.20	0.09	58	No Data	No Data	3.92	48	20.2	134	2.8	76	127
LTLV-09C	Theistareykir Storavitihräu	0.0	16° 50.497' 65° 52.505'	-16.842	65.875	50.55	15.03	10.81	7.83	12.28	2.01	0.15	1.04	0.21	0.10	56	No Data	No Data	4.12	52	21.1	133	3.0	80	132
LTLV-09B	Theistareykir Storavitihräu	0.0	16° 50.497' 65° 52.505'	-16.842	65.875	50.21	15.28	10.74	8.24	12.10	2.00	0.14	0.99	0.20	0.09	58	No Data	No Data	4.02	49	20.6	136	2.9	77	128
LTLV-09A	Theistareykir Storavitihräu	0.0	16° 50.497' 65° 52.505'	-16.842	65.875	50.26	15.24	10.76	8.20	12.13	1.99	0.14	0.99	0.20	0.09	58	No Data	No Data	3.91	50	19.8	133	2.8	79	125
LTLV-04	Theistareykir Storavitihräu	1.8	16° 50.497' 65° 52.505'	-16.842	65.875	50.03	15.42	10.40	8.60	12.27	1.97	0.11	0.92	0.20	0.08	60	No Data	No Data	3.58	46	18.7	133	2.0	75	145
LTLV-06	Theistareykir Storavitihräu	4.0	16° 50.497' 65° 52.505'	-16.842	65.875	50.45	14.99	10.98	7.70	12.30	2.09	0.15	1.05	0.21	0.09	56	No Data	No Data	4.24	51	21.8	137	2.6	79	143
LTLV-05	Theistareykir Storavitihräu	7.2	16° 50.497' 65° 52.505'	-16.842	65.875	49.84	15.27	11.06	8.36	12.07	2.01	0.14	0.97	0.20	0.08	57	No Data	No Data	3.91	49	19.5	138	2.5	79	104
LTLV-10	Theistareykir Storavitihräu	11.2	16° 50.497' 65° 52.505'	-16.842	65.875	49.93	15.38	10.62	8.56	12.13	2.03	0.13	0.94	0.20	0.08	59	No Data	No Data	3.74	46	20.4	141	2.3	82	137
LTLV-13	Theistareykir Storavitihräu	12.4	16° 50.497' 65° 52.505'	-16.842	65.875	49.84	15.23	11.08	8.33	12.10	2.06	0.14	0.95	0.20	0.08	57	No Data	No Data	3.60	47	19.4	137	2.4	77	141
LTLV-11	Theistareykir Storavitihräu	19.4	16° 50.497' 65° 52.505'	-16.842	65.875	49.54	15.50	10.87	8.84	11.97	1.96	0.13	0.91	0.20	0.08	59	No Data	No Data	3.48	46	18.5	132	2.3	77	124
LTLV-12	Theistareykir Storavitihräu	23.0	16° 50.497' 65° 52.505'	-16.842	65.875	49.80	15.22	11.02	8.54	12.08	1.99	0.14	0.93	0.20	0.08	58	No Data	No Data	3.44	47	18.7	131	3.5	77	141
LTLV-03	Theistareykir Storavitihräu	29.8	16° 50.497' 65° 52.505'	-16.842	65.875	50.13	15.14	11.00	8.12	12.18	2.04	0.13	0.98	0.21	0.08	57	No Data	No Data	3.80	49	20.6	136	2.7	74	149
LTLV-02	Theistareykir Storavitihräu	31.4	16° 50.497' 65° 52.505'	-16.842	65.875	50.74	14.29	12.08	7.13	12.03	2.05	0.14	1.21	0.23	0.11	51	No Data	No Data	4.79	58	25.3	139	3.1	91	162
LTLV-01	Theistareykir Storavitihräu	32.4	16° 50.497' 65° 52.505'	-16.842	65.875	50.19	15.42	10.50	8.27	12.26	2.02	0.13	0.93	0.20	0.08	58	No Data	No Data	3.65	46	19.3	132	2.7	75	136
LTLV-01B	Theistareykir Storavitihräu	32.4	16° 50.497' 65° 52.505'	-16.842	65.875	50.45	15.32	10.19	8.13	12.54	2.02	0.13	0.94	0.20	0.08	59	No Data	No Data	3.48	45	19.2	133	2.5	76	131
LTLV-07	Theistareykir Storavitihräu	35.4	16° 50.497' 65° 52.505'	-16.842	65.875	49.96	15.38	10.62	8.55	12.14	2.03	0.12	0.93	0.20	0.08	59	No Data	No Data	3.54	46	19.2	134	2.2	75	140
LTLV-08	Theistareykir Storavitihräu	36.4	16° 50.497' 65° 52.505'	-16.842	65.875	50.01	15.46	10.44	8.58	12.18	1.98	0.14	0.93	0.20	0.08	59	No Data	No Data	3.63	45	19.8	137	2.6	76	136
Quality Assurance for Majors																									
duplicate analysis																									
LTLV-09B*						50.21	15.28	10.74	8.24	12.10	2.00	0.14	0.99	0.204	0.091	58									
LTLV-09B (repeat)*						50.06	15.16	11.20	8.14	12.10	1.91	0.14	0.99	0.203	0.091	56									
% difference						0.3%	0.8%	-4.1%	1.2%	0.0%	4.7%	0.0%	-0.1%	0.5%	0.0%	2.4%									
BHVO-1*						50.27	13.75	11.05	7.24	11.59	2.31	0.53	2.80	0.174	0.274	54									
BHVO-1(A)						49.50	13.80	11.10	7.20	11.40	2.30	0.50	2.70	0.20	0.3	54									
% difference						1.6%	-0.4%	-0.5%	0.6%	1.7%	0.4%	6.0%	3.6%	-13.0%	-8.7%	0.5%									
HK-10-KWWS-92*						43.41	12.95	13.37	8.35	12.76	3.44	1.31	3.68	0.204	0.525	53									
HK-10-KWWS-92(B)						42.64	12.51	14.99	8.30	12.57	3.39	1.30	3.61	0.19	0.5	50									
% difference						1.8%	3.5%	-10.8%	0.6%	1.5%	0.8%	1.9%	7.4%	5.0%	6.1%										

*WSU (this study)

(A) Gladney and Roelandts (1988)

(B) Sims et al., 1999 (WSU)

Mg# = (MgO/(MgO + FeO)) calculated in molar abundances

Supplements

RECENT LAV

Sample Name	Ni	Cr	V	Ba	Sc	Co	Ga	Ta	Hf	Cs	Pb	Th	U	Rare Earth Elements (ppm)													
														La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Krafla 1	50	119	440	85.4	49.5	No Data	23	0.82	3.26	0.09	0.83	0.77	0.21	9.67	22.11	3.02	14.82	4.74	1.70	5.82	1.06	6.95	1.47	4.01	0.59	3.68	0.58
Krafla 2	47	120	449	84.0	49.1	No Data	17	0.80	3.21	0.09	0.82	0.76	0.21	9.41	21.57	2.96	14.48	4.64	1.65	5.69	1.04	6.80	1.43	3.92	0.57	3.59	0.56
Krafla 3	54	133	437	87.1	51.2	No Data	21	0.81	3.29	0.09	0.85	0.77	0.22	9.81	22.31	3.06	14.95	4.76	1.72	5.91	1.07	7.03	1.49	4.10	0.60	3.76	0.59
Krafla 4	51	136	442	82.0	48.9	No Data	19	0.76	3.07	0.09	0.79	0.73	0.20	9.18	20.92	2.85	14.12	4.52	1.60	5.56	1.00	6.64	1.40	3.81	0.56	3.51	0.55

POSTGLACIAL

LTLV-09E	81	91	280	41.8	51.8	No Data	16	0.27	1.35	0.04	0.43	0.30	0.08	3.78	8.64	1.22	6.17	2.12	0.86	2.80	0.53	3.52	0.76	2.14	0.31	1.97	0.31
LTLV-09D	80	89	295	41.9	52.4	No Data	18	0.30	1.35	0.04	0.43	0.28	0.08	3.78	8.69	1.22	6.19	2.16	0.88	2.82	0.54	3.60	0.78	2.16	0.32	2.01	0.32
LTLV-09C	68	92	311	43.7	54.6	No Data	19	0.29	1.42	0.04	0.46	0.30	0.08	3.96	9.15	1.29	6.56	2.29	0.91	2.99	0.57	3.78	0.82	2.28	0.33	2.14	0.34
LTLV-09B	78	89	295	42.6	52.5	No Data	17	0.28	1.39	0.05	0.46	0.31	0.08	3.90	8.94	1.27	6.38	2.24	0.91	2.91	0.56	3.72	0.81	2.26	0.33	2.08	0.32
LTLV-09A	79	89	292	40.9	50.3	No Data	15	0.28	1.38	0.04	0.47	0.28	0.08	3.72	8.61	1.21	6.14	2.15	0.86	2.82	0.54	3.58	0.78	2.17	0.32	2.01	0.32
LTLV-04	83	97	285	37.4	49.4	No Data	18	0.27	1.28	0.04	0.44	0.29	0.07	3.45	7.96	1.12	5.78	2.05	0.83	2.72	0.51	3.45	0.75	2.08	0.31	1.92	0.30
LTLV-06	62	90	299	44.3	54.8	No Data	17	0.32	1.48	0.04	0.49	0.31	0.09	4.07	9.32	1.31	6.72	2.37	0.93	3.10	0.59	3.97	0.86	2.38	0.35	2.20	0.34
LTLV-05	80	87	275	43.2	49.9	No Data	16	0.29	1.36	0.04	0.43	0.29	0.08	3.78	8.70	1.20	6.16	2.15	0.88	2.84	0.54	3.61	0.77	2.16	0.31	1.99	0.31
LTLV-10	86	86	282	40.2	55.2	No Data	17	0.28	1.35	0.04	0.44	0.27	0.07	3.70	8.55	1.21	6.18	2.18	0.88	2.82	0.54	3.63	0.79	2.19	0.32	2.03	0.32
LTLV-13	80	86	282	40.2	48.2	No Data	19	0.31	1.31	0.04	0.45	0.30	0.07	3.49	8.10	1.14	5.89	2.06	0.85	2.79	0.52	3.55	0.76	2.14	0.31	1.97	0.31
LTLV-11	95	85	265	37.5	50.1	No Data	18	0.27	1.24	0.03	0.44	0.25	0.07	3.32	7.72	1.09	5.60	1.96	0.80	2.59	0.49	3.28	0.71	1.97	0.29	1.84	0.29
LTLV-12	85	85	271	37.0	51.8	No Data	19	1.21	1.25	0.06	0.42	0.27	0.07	3.43	7.92	1.11	5.72	1.97	0.82	2.59	0.49	3.29	0.72	2.00	0.29	1.85	0.29
LTLV-03	72	89	287	40.8	51.6	No Data	16	0.29	1.37	0.04	0.51	0.31	0.08	3.73	8.64	1.22	6.29	2.24	0.91	2.98	0.57	3.85	0.83	2.32	0.34	2.12	0.33
LTLV-02	50	73	325	48.8	54.8	No Data	18	0.33	1.71	0.05	0.72	0.40	0.10	4.72	10.88	1.53	7.94	2.83	1.10	3.73	0.71	4.74	1.01	2.82	0.41	2.58	0.41
LTLV-01	78	86	299	38.8	48.5	No Data	16	0.27	1.36	0.05	0.57	0.41	0.09	3.91	8.90	1.24	6.35	2.22	0.87	2.89	0.55	3.67	0.79	2.15	0.32	1.97	0.31
LTLV-01B	73	89	311	37.2	50.8	No Data	18	0.27	1.29	0.04	0.45	0.31	0.07	3.50	8.12	1.15	5.95	2.13	0.85	2.83	0.54	3.60	0.78	2.15	0.32	1.96	0.31
LTLV-07	84	83	282	37.4	50.3	No Data	16	0.27	1.29	0.03	0.48	0.27	0.07	3.47	8.01	1.14	5.82	2.04	0.83	2.73	0.52	3.47	0.75	2.10	0.31	1.93	0.31
LTLV-08	89	88	287	39.8	51.4	No Data	16	0.30	1.31	0.04	0.47	0.27	0.07	3.56	8.20	1.16	5.93	2.09	0.87	2.80	0.54	3.58	0.78	2.15	0.32	1.98	0.31

Quality Assu

duplicate ana

LTLV-09B*

LTLV-09B-(ref)

% difference

BHVO-1*

BHVO-1(A)

% difference

HK-10-KWW5

HK-10-KWW5

% difference

*WSU (this st

(A) Gladney a

(B) Sims et al.

Mg# = (MgO)