

Supplementary Table S1. Local name, altitudes, districts and geographical zones collections and codes given for the landrace used for the study.

Sn	Local name	alt ^a	ds ^b	zn ^c	LR ^d	Sn	Local name	alt ^a	ds ^b	zn ^c	LR ^d
1	Merowey 1	890	ATS	NW	LR 27	29	Wedihdar	1270	KH	W	LR 37
2	Tewzale1	1130	ATS	NW	LR 15	30	Koden 1	1500	MR	C	LR 74
3	Hareiekli	950	ATS	NW	LR 18	31	Dagnew	1445	MR	C	LR 77
4	Merowey 2	1050	ATS	NW	LR 106	32	Kumbilu 1	1420	MR	C	LR 73
5	Gahateni	1100	ATS	NW	LR 25	33	Zeriseytan	1510	MR	C	LR 11
6	Feterit	1110	ATS	NW	LR 14	34	Kumbilu 2	1900	MR	C	LR 3
7	Adar	1005	ATS	NW	LR 24	35	Shilquit 1	1850	MR	C	LR 4
8	Wediaker	920	ATS	NW	LR 17	36	Wedi Geremedhn	1900	MR	C	LR 72
9	Meshela	980	ATS	NW	LR 16	37	Koden 2	1700	MR	C	LR 1
10	Wedisbuh	980	ATS	NW	LR 26	38	Tewzale	1795	MR	C	LR 5
11	Kemkem	918	ATS	NW	LR 21	39	Safadin	1800	MR	C	LR 9
12	Tewzale 2	900	ATS	NW	LR 20	40	Shilquit 2	1800	MR	C	LR 2
13	Dagnew	900	ATS	NW	LR 23	41	Wedihdar 1	1390	MR	C	LR 7
14	Coden	1100	ATS	NW	LR 13	42	Wedihdar 2	1400	MR	C	LR 6
15	Coden	1000	KH	W	LR 53	43	Zeriseytan	1410	MR	C	LR 8
16	Wediaker	650	KH	W	LR 41	44	Merowey	1430	MR	C	LR 75
17	Deber 1	1105	KH	W	LR 39	45	Lequa	1700	MR	C	LR 71
18	Deber 2	700	KH	W	LR 51	46	Arogosh	1710	MR	C	LR 10
19	Ganseber	1005	KH	W	LR 98	47	Wedigere	1350	MR	C	LR 76
20	Getsharas	1110	KH	W	LR 38	48	Abaaro	1705	RA	S	LR 59
21	Korekora	710	KH	W	LR 52	49	Kodem	1670	RA	S	LR 63
22	Dagnew 3	1130	KH	W	LR 34	50	Chibrak 1	1650	RA	S	LR 58
23	Kinjiga	1180	KH	W	LR 29	51	Dangle	1710	RA	S	LR 56
24	Chimroy	1070	KH	W	LR 33	52	ZeriHadush	1620	RA	S	LR 55
25	Safra	670	KH	W	LR 40	53	Jugurte	1685	RA	S	LR 62
26	Amal	680	KH	W	LR 42	54	Chibrak 2	1700	RA	S	LR 54
27	Shilquit	1050	KH	W	LR 35	55	Meshala	1710	RA	S	LR 61
28	Dagnew 2	1135	KH	W	LR 36	56	Jamiyu	1750	RA	S	LR 57

Sn	Local name	alt^a	ds^b	zn^c	LR^d	Sn	Local name	alt^a	ds^b	zn^c	LR^d
57	America	1690	RA	S	LR 60	84	Melkam	-	TARI	-	LR 31
58	Wedihidar	1100	TA	NW	LR 88	85	Dekeba	-	TARI	-	LR 30
59	Hriray	1035	TA	NW	LR 91	86	Hugurtay	700	TSE	W	LR 45
60	Zerieseytan	940	TA	NW	LR 92	87	Deber	715	TSE	W	LR 47
61	Zerie Tsegay	1005	TA	NW	LR 87	88	Tekemche	690	TSE	W	LR 32
62	Meretatfi	1150	TA	NW	LR 86	89	Wediaker	650	TSE	W	LR 49
63	Wediaker	1070	TA	NW	LR 46	90	Korekora	650	TSE	W	LR 48
64	Wanze	1070	TA	NW	LR 89	91	Merawi	1255	TSL	NW	LR 104
65	Tewzale	1080	TA	NW	LR 84	92	Tewzale	1310	TSL	NW	LR 102
66	Dagnew 1	1100	TA	NW	LR 83	93	Gedelabay	1420	TSL	NW	LR 105
67	wedifererj	1000	TA	NW	LR 94	94	Wedihdar	1370	TSL	NW	LR 107
68	Dagnew Deqala	1015	TA	NW	LR 90	95	Kemkem	1475	TSL	NW	LR 108
69	Merowey	1075	TA	NW	LR 81	96	Zeriadis 1	1315	TSL	NW	LR 103
70	Tewzale dekala	1110	TA	NW	LR100	97	Zeriadis 2	1295	TSL	NW	LR 12
71	Dagnew 2	1110	TA	NW	LR 96	98	Wediaker	1305	TSL	NW	LR 50
72	Ganseber 1	1090	TA	NW	LR 28	99	Wedisbuh	1400	TSL	NW	LR 19
73	Chimroy 1	1100	TA	NW	LR 79	100	Achire	1300	TSL	NW	LR 109
74	Kinjiga	1005	TA	NW	LR 93	101	Kemkem1	815	WL	W	LR 44
75	Shilquit	1030	TA	NW	LR 85	102	Wedihdar	900	WL	W	LR 68
76	Wedisubuh	1030	TA	NW	LR 22	103	Beyan	870	WL	W	LR 43
77	Kimbiba	1060	TA	NW	LR 82	104	Gule	915	WL	W	LR 66
78	Zerigebru	1055	TA	NW	LR 78	105	Tuemay	1010	WL	W	LR 69
79	Chimroy 2	1070	TA	NW	LR 99	106	Dagnew	995	WL	W	LR 67
80	Ganseber 2	1100	TA	NW	LR 97	107	Bayush	1005	WL	W	LR 70
81	Getsharas 2	995	TA	NW	LR 95	108	Wareta	1035	WL	W	LR 101
82	Chimroy 3	1120	TA	NW	LR 80	109	Kemkem2	1045	WL	W	LR 64
83	Chramutsu	715	TSE	W	LR 32	110	Getsharas	1100	WL	W	LR 65

alt^a, altitude classes; ds^b, districts; ATS, Asgede Tsimbla; KH, Kafta Humera; MR, Mereb Leke; RA, Raya Azebo; TA, Tahyat Adyabo; TARI, Tigray agricultural research institute; TSE, Tsegede; TSL, Tselemti; WL, Welkait; zn^c, Geographical Zones, C, central; NW, north western; S, Sothern; W, western; LR^d, landrace.

Supplementary Table S2. Genotype by Trait of the 108 sorghum landraces and two checks evaluated in three locations of Tigray in the 2018 and 2019.

Landraces	DH	DF	DM	Pwt	Pnl	Pwd	TGWT	GY
LR1	69.71	74.06	110.01	70.29	24.36	8.25	36.19	3612.3
LR 2	69.7	74.43	108.87	69.73	24.46	8.67	35.45	3409.6
LR 3	72.62	76.91	110.06	67.56	25.43	8.98	31.67	3342.9
LR 4	70.56	74.83	109.76	66.76	24.86	9.04	35.33	3077
LR 5	68.11	72.54	107.61	72.04	23.36	7.57	35.67	3297.6
LR 6	67.24	71.26	106.37	51.67	29.81	9.31	26.39	2830.8
LR 7	67.53	71.65	108.37	52.67	27.37	8.91	26.28	2995.6
LR 8	66.39	70.75	105.8	34.33	20.82	6.72	14.21	1917.3
LR 9	71.13	75.62	108.3	47.1	20.9	8.53	23.89	2546.3
LR 10	69.77	75.82	110.72	38.86	23.65	8.29	22.23	2167.2
LR 11	67.16	71.04	105.78	43.54	23.83	8.02	20.05	1994.3
LR 12	69.72	73.44	108.93	73.96	27.1	9.25	37.62	3766.3
LR 13	72.97	77.25	112.32	59.38	25.32	9.65	32.7	3284.2
LR 14	69.21	73.87	112.4	67.57	26.84	9.34	31.66	3297.8
LR 15	65.68	69.72	104.97	66.67	25.6	8.07	32.2	3460.5
LR 16	73.34	77.68	112.22	66.6	22.5	8.99	32.21	3228.4
LR 17	69.62	73.65	106.97	47.5	22.01	7.8	22.8	2974.6
LR 18	73.38	77.78	115.31	32.97	17.16	8.39	14.54	2116.8
LR 19	73.2	77.01	115.11	71.72	23.67	9.55	32.62	3430.2
LR 20	70.89	74.75	118.1	54.34	22.67	7.89	27.06	3358.6
LR 21	73.46	77.98	114.31	51.79	22.8	8.27	29.15	3070.4
LR 22	72.03	75.94	111.35	63.91	21.31	8.56	34.42	3126.4
LR 23	69.46	73.92	110.25	70.64	25.3	9.33	33.87	3804.4
LR 24	69.79	74.09	109.85	37.7	17.43	7.1	16.93	1945.2
LR 25	73.42	77.77	112.39	94.4	26.03	9.14	44.35	3921.8
LR 26	73.93	78.53	111.57	63.23	24.35	8.05	37.68	3581.8
LR 27	73.11	77.54	111.16	68.1	22.05	9.27	38.32	3413.5
LR 28	69.04	73.12	108.41	51.64	20.57	8.31	29	3022.5
LR 29	71.78	76.24	110.26	42.02	22.34	8.31	21.71	2435.5
Melkam	68.22	72.28	106.31	61.07	22.77	8.4	25.6	3182.4
Dekeba	68.13	72.38	109.73	64.41	22.32	8.03	28.18	2973
LR 32	68.29	72.61	108.16	65.78	20.67	8.18	27.53	3143.5
LR 33	70.46	74.61	108.63	59.51	22.39	8.56	26.6	2911.5
LR 34	66.31	70.55	104.12	51.05	24.59	8.77	26.82	2939.3
LR 35	70.02	74.04	109.89	60.44	24.74	8.86	36.78	3309.9
LR 36	66.42	70.68	104.13	54.72	24.43	8.66	27.31	2811.9
LR 37	65.86	69.97	105.52	55.89	21.78	8.18	25.67	3029.2
LR 38	65.34	69.33	104.53	54.82	18.81	8.73	23.56	2793.7
LR 39	71.08	74.85	108.04	46.69	20.62	8.54	24.05	2542
LR 40	64.49	68.65	103.25	46.98	17.99	7.66	19.63	2246.7
LR 41	68.28	72.52	106.84	50.97	19.83	7.9	22.73	2639.6
LR 42	68.31	72.73	104.38	53.62	18.38	7.67	23.81	2605.6

LR 43	69.29	73.74	111.68	58.99	23.43	8.87	27.01	2482.9
LR 44	68.41	72.49	103.8	62.48	21.89	7.37	30	2798.6
LR 45	70.74	75.04	110.37	37.18	17.72	6.97	13.98	1607.7
LR 46	67.02	71.32	105.95	49.85	20.47	8.52	24.82	2941.8
LR 47	67.54	71.73	105.63	49.2	20.3	7.64	20.39	2538.2
LR 48	70.47	75.62	109.13	51.23	17.64	7.67	20.63	2394.4
LR 49	66.01	71.39	106.45	50.99	18.66	7.57	22.77	2542.7
LR 50	65.18	69.29	105.18	54.82	17.41	7.74	19.85	2725.8
LR 51	67.69	71.82	107.34	49.71	21.15	7.85	22.78	2224.9
LR 52	65.86	69.46	105.23	47.56	19.34	7.63	24.88	2379.5
LR 53	66.65	70.96	105.19	66.93	20.89	8.78	28.89	3381.6
LR 54	70.57	74.89	111.95	62.03	22.5	9.05	26.65	2521.1
LR 55	67.61	72.11	108.6	56.2	22.06	7.87	26.74	2688.9
LR 56	75.33	79.63	118.12	52.53	15.1	8.81	35.17	1811
LR 57	72.97	77.43	111.54	49.59	17.25	9.3	27.36	1986.4
LR 58	74.18	78.41	117.43	56.46	23.31	9.89	31.27	2269.8
LR 59	73.26	77.39	116.26	54.93	13.75	8.88	34.7	2025.2
LR 60	72.88	77.11	113.26	48.81	14.54	8.61	26.36	1883.2
LR 61	73.64	77.93	117.47	55.74	23.89	8.53	28.49	2596.7
LR 62	74.71	79.43	114.22	56.72	23.96	8.24	31.55	2367.5
LR 63	72.85	77.21	113.92	59.97	22.19	9.22	35.26	2386
LR 64	72.26	76.47	113.11	63.12	22.16	8.3	30.94	2986.5
LR 65	67.66	72.1	109.65	72.27	19.63	8.59	25.41	2921.5
LR 66	66.76	70.58	105.96	71.6	18.56	8.77	28.32	2916.9
LR 67	67.72	71.87	108.27	71.34	20.54	8.36	31.57	3110.3
LR 68	70.7	75.14	113.84	72.04	24.95	8.88	27.97	3202.6
LR 69	70.58	75.15	113.58	55.23	21.74	8.05	27.53	2644.7
LR 70	68.62	73.25	108.5	53.81	19.15	7.62	29.62	2402.3
LR 71	72.18	76.28	111.13	47.14	22.31	8.32	23.47	2699.6
LR 72	70.39	74.65	110.64	47.06	25.7	8.35	22.41	2476.7
LR 73	71.25	75.58	108.38	68.08	27.07	8.87	28.81	3215.6
LR 74	70.32	74.63	112.12	76.1	28.55	9.24	37.35	3376
LR 75	72.08	76.76	114	70.64	25.3	8.69	38.41	3903.6
LR 76	69.09	73.23	108.61	54.18	23.9	8.56	25.03	2568.4
LR 77	71.84	76.31	112.06	70.49	23.1	9.02	33.59	2928.2
LR 78	67.43	71.74	108.8	62.45	21.36	8.24	34.54	3749.5
LR 79	72.8	77.51	114.16	59.74	19.6	8.64	27.93	2727.9
LR 80	67.94	71.96	111.86	57.63	19.04	8.28	25.98	2565.2
LR 81	72.96	77.54	112.04	69.56	22.57	8.46	34.07	3416.4
LR 82	70.87	75.32	110.29	44.24	20.02	7.71	25.14	2800.2
LR 83	66.5	70.8	107.68	66.56	21.54	9.11	28.55	3223.6
LR 84	69.93	74.19	108.1	57.24	29.02	7.48	27.06	2735.8
LR 85	71.05	75.37	111.02	62.8	25.34	8.64	34.22	3529.2
LR 86	68.57	72.7	103.03	36.07	17.43	7.75	16.99	1771
LR 87	67.74	71.86	108.86	53.32	21.6	9.06	23.84	2548.6
LR 88	71.67	75.95	112.76	62.03	23.11	8.66	29.3	2832.1

LR 89	72.28	76.5	111.12	38.64	20.49	7.37	15.36	2223.4
LR 90	66.84	71.07	107.04	57.61	22.64	8.13	20.93	2758.3
LR 91	71.45	75.73	111.71	36.75	22.32	7.45	15.85	2249.9
LR 92	69.79	74.11	110.97	34.45	21.5	7.38	16.9	1763.7
LR 93	73.35	78.48	113.02	47.33	20.93	7.46	24.21	2376.1
LR 94	69.45	73.81	110.33	66.56	24.92	7.8	27.8	3124.7
LR 95	67.42	71.43	106.27	68.44	22.68	8.74	27.8	2942.9
LR 96	68.44	72.64	107.82	66.16	22.55	8.65	28.43	3310.5
LR 97	68.94	73.49	108.54	58.45	19.18	8.66	29.15	3081.2
LR 98	67.86	71.57	106.35	59.5	23.97	8.33	29.46	2972.8
LR 99	67.88	72.23	109.08	56.18	20.41	8.86	25.1	2771.1
LR 100	67.65	71.77	108.46	65.69	28.5	7.81	31.69	3412.9
LR 101	69.74	74.11	109.8	54.63	25.75	7.8	23.09	2587.3
LR 102	68.53	73.21	108.95	69.95	28.19	8.16	33.25	4100.5
LR 103	72.65	76.76	115.12	84.08	23.08	8.76	36.31	3600.1
LR 104	71.84	75.93	114.11	58.84	26.78	9.29	31.7	3255.2
LR 105	70.75	74.78	111.7	65.38	20.36	7.94	32.73	3136.5
LR 106	69.23	73.53	108.5	77.56	23.82	8.63	36.06	4822.3
LR 107	69.99	74.13	112.47	66.69	27.03	8.76	32.9	3331.5
LR 108	70.53	74.79	114.27	63.03	24.95	8.87	30.67	2800
LR 109	70.08	74.11	114.13	56.77	21.36	8.4	24.35	2815.8
LR 110	73.93	78.07	117.33	62.13	20.62	8.36	25.37	2876.9
Mean	69.9	74.2	110.0	22.3	8.4	58.1	27.9	2869.8
LSD	4.4***	4.6***	8.3***	4.1***	1.5***	11.0***	6.7***	708.7***
CV	3.3	3.2	6.0	11.9	13.1	5.9	9.8	24.1

Supplementary Table S3. Genotype by Yield by Trait (GYT) of the 108 sorghum landraces and two checks evaluated in three locations of Tigray in the 2018 and 2019.

Landrace	GY*T data							Standardized data							
	GY/	GY/	GY/	GY*	GY*	GY*	GY*	GY/	GY/	GY/	GY*	GY*	GY*	GY*	mean
	DH	DF	DM	pwt	nlt	Pwd	TGWT	DH	DF	DM	Pwt	Pnl	Pwd	TGWT	(SI)
LR1	51.8	48.8	32.8	253.9	880.0	298.0	130.7	1.3	1.3	1.3	1.3	1.2	1.0	1.6	1.3
LR 2	48.9	45.8	31.3	237.8	834.0	295.6	120.9	1.0	0.9	1.0	1.1	1.0	1.0	1.3	1.0
LR 3	46.0	43.5	30.4	225.8	850.1	300.2	105.9	0.6	0.6	0.8	0.9	1.1	1.0	0.8	0.8
LR 4	43.6	41.1	28.0	205.4	764.9	278.2	108.7	0.3	0.3	0.4	0.5	0.6	0.6	0.9	0.5
LR 5	48.4	45.5	30.6	237.6	770.3	249.6	117.6	0.9	0.9	0.9	1.1	0.6	0.1	1.1	0.8
LR 6	42.1	39.7	26.6	146.3	843.9	263.5	74.7	0.1	0.1	0.1	-0.4	1.0	0.4	-0.3	0.2
LR 7	44.4	41.8	27.6	157.8	819.9	266.9	78.7	0.4	0.4	0.3	-0.2	0.9	0.4	-0.1	0.3
LR 8	28.9	27.1	18.1	65.8	399.2	128.8	27.2	-1.5	-1.5	-1.6	-1.7	-1.3	-2.1	-1.8	-1.6
LR 9	35.8	33.7	23.5	119.9	532.2	217.2	60.8	-0.7	-0.7	-0.5	-0.8	-0.6	-0.5	-0.7	-0.6
LR 10	31.1	28.6	19.6	84.2	512.5	179.7	48.2	-1.2	-1.3	-1.3	-1.4	-0.7	-1.1	-1.1	-1.2
LR 11	29.7	28.1	18.9	86.8	475.2	159.9	40.0	-1.4	-1.4	-1.4	-1.4	-0.9	-1.5	-1.4	-1.3
LR 12	54.0	51.3	34.6	278.6	1020.7	348.4	141.7	1.6	1.6	1.7	1.7	2.0	1.9	1.9	1.8
LR 13	45.0	42.5	29.2	195.0	831.6	316.9	107.4	0.5	0.5	0.6	0.4	1.0	1.3	0.8	0.7
LR 14	47.6	44.6	29.3	222.8	885.1	308.0	104.4	0.8	0.8	0.6	0.8	1.2	1.2	0.7	0.9
LR 15	52.7	49.6	33.0	230.7	885.9	279.3	111.4	1.4	1.4	1.3	1.0	1.3	0.7	0.9	1.1
LR 16	44.0	41.6	28.8	215.0	726.4	290.2	104.0	0.4	0.4	0.5	0.7	0.4	0.9	0.7	0.6
LR 17	42.7	40.4	27.8	141.3	654.7	232.0	67.8	0.2	0.2	0.3	-0.5	0.0	-0.2	-0.5	-0.1
LR 18	28.8	27.2	18.4	69.8	363.2	177.6	30.8	-1.5	-1.5	-1.5	-1.7	-1.5	-1.2	-1.7	-1.5
LR 19	46.9	44.5	29.8	246.0	811.9	327.6	111.9	0.7	0.8	0.7	1.2	0.9	1.5	1.0	1.0
LR 20	47.4	44.9	28.4	182.5	761.4	265.0	90.9	0.8	0.8	0.5	0.2	0.6	0.4	0.3	0.5
LR 21	41.8	39.4	26.9	159.0	700.1	253.9	89.5	0.1	0.1	0.1	-0.2	0.3	0.2	0.2	0.1
LR 22	43.4	41.2	28.1	199.8	666.2	267.6	107.6	0.3	0.3	0.4	0.5	0.1	0.5	0.8	0.4
LR 23	54.8	51.5	34.5	268.7	962.5	355.0	128.9	1.7	1.7	1.6	1.6	1.7	2.0	1.5	1.7
LR 24	27.9	26.3	17.7	73.3	339.0	138.1	32.9	-1.6	-1.6	-1.7	-1.6	-1.7	-1.9	-1.6	-1.7

LR 25	53.4	50.4	34.9	370.2	1020.8	358.5	173.9	1.5	1.5	1.7	3.2	2.0	2.1	3.0	2.2
LR 26	48.4	45.6	32.1	226.5	872.2	288.3	135.0	0.9	0.9	1.2	0.9	1.2	0.8	1.7	1.1
LR 27	46.7	44.0	30.7	232.5	752.7	316.4	130.8	0.7	0.7	0.9	1.0	0.5	1.3	1.6	1.0
LR 28	43.8	41.3	27.9	156.1	621.7	251.2	87.7	0.3	0.3	0.3	-0.3	-0.2	0.2	0.2	0.1
LR 29	33.9	31.9	22.1	102.3	544.1	202.4	52.9	-0.9	-0.9	-0.8	-1.1	-0.6	-0.7	-1.0	-0.9
Melkam	46.6	44.0	29.9	194.3	724.6	267.3	81.5	0.7	0.7	0.7	0.4	0.4	0.5	0.0	0.5
Dekeba	43.6	41.1	27.1	191.5	663.6	238.7	83.8	0.3	0.3	0.2	0.3	0.1	-0.1	0.0	0.2
LR 32	46.0	43.3	29.1	206.8	649.8	257.1	86.5	0.6	0.6	0.6	0.6	0.0	0.3	0.1	0.4
LR 33	41.3	39.0	26.8	173.3	651.9	249.2	77.4	0.0	0.0	0.1	0.0	0.0	0.1	-0.2	0.0
LR 34	44.3	41.7	28.2	150.1	722.8	257.8	78.8	0.4	0.4	0.4	-0.4	0.4	0.3	-0.1	0.2
LR 35	47.3	44.7	30.1	200.1	818.9	293.3	121.7	0.8	0.8	0.8	0.5	0.9	0.9	1.3	0.8
LR 36	42.3	39.8	27.0	153.9	686.9	243.5	76.8	0.1	0.1	0.2	-0.3	0.2	0.0	-0.2	0.0
LR 37	46.0	43.3	28.7	169.3	659.8	247.8	77.8	0.6	0.6	0.5	0.0	0.0	0.1	-0.2	0.2
LR 38	42.8	40.3	26.7	153.2	525.5	243.9	65.8	0.2	0.2	0.1	-0.3	-0.7	0.0	-0.5	-0.1
LR 39	35.8	34.0	23.5	118.7	524.2	217.1	61.1	-0.7	-0.6	-0.5	-0.9	-0.7	-0.5	-0.7	-0.6
LR 40	34.8	32.7	21.8	105.5	404.2	172.1	44.1	-0.8	-0.8	-0.9	-1.1	-1.3	-1.3	-1.3	-1.0
LR 41	38.7	36.4	24.7	134.5	523.4	208.5	60.0	-0.3	-0.3	-0.3	-0.6	-0.7	-0.6	-0.7	-0.5
LR 42	38.1	35.8	25.0	139.7	478.9	199.8	62.0	-0.4	-0.4	-0.2	-0.5	-0.9	-0.8	-0.7	-0.6
LR 43	35.8	33.7	22.2	146.5	581.7	220.2	67.1	-0.7	-0.7	-0.8	-0.4	-0.4	-0.4	-0.5	-0.5
LR 44	40.9	38.6	27.0	174.9	612.6	206.3	84.0	0.0	0.0	0.2	0.0	-0.2	-0.7	0.0	-0.1
LR 45	22.7	21.4	14.6	59.8	284.9	112.1	22.5	-2.3	-2.3	-2.3	-1.8	-1.9	-2.4	-2.0	-2.1
LR 46	43.9	41.2	27.8	146.6	602.2	250.6	73.0	0.3	0.3	0.3	-0.4	-0.3	0.1	-0.3	0.0
LR 47	37.6	35.4	24.0	124.9	515.3	193.9	51.8	-0.4	-0.4	-0.4	-0.8	-0.7	-0.9	-1.0	-0.7
LR 48	34.0	31.7	21.9	122.7	422.4	183.7	49.4	-0.9	-0.9	-0.8	-0.8	-1.2	-1.1	-1.1	-1.0
LR 49	38.5	35.6	23.9	129.7	474.5	192.5	57.9	-0.3	-0.4	-0.4	-0.7	-0.9	-0.9	-0.8	-0.6
LR 50	41.8	39.3	25.9	149.4	474.6	211.0	54.1	0.1	0.1	0.0	-0.4	-0.9	-0.6	-0.9	-0.4
LR 51	32.9	31.0	20.7	110.6	470.6	174.7	50.7	-1.0	-1.0	-1.1	-1.0	-1.0	-1.2	-1.0	-1.0
LR 52	36.1	34.3	22.6	113.2	460.2	181.6	59.2	-0.6	-0.6	-0.7	-1.0	-1.0	-1.1	-0.8	-0.8
LR 53	50.7	47.7	32.1	226.3	706.4	296.9	97.7	1.2	1.2	1.2	0.9	0.3	1.0	0.5	0.9
LR 54	35.7	33.7	22.5	156.4	567.2	228.2	67.2	-0.7	-0.7	-0.7	-0.3	-0.4	-0.3	-0.5	-0.5
LR 55	39.8	37.3	24.8	151.1	593.2	211.6	71.9	-0.2	-0.2	-0.3	-0.3	-0.3	-0.6	-0.3	-0.3

LR 56	24.0	22.7	15.3	95.1	273.5	159.5	63.7	-2.1	-2.1	-2.1	-1.2	-2.0	-1.5	-0.6	-1.7
LR 57	27.2	25.7	17.8	98.5	342.7	184.7	54.3	-1.7	-1.7	-1.6	-1.2	-1.6	-1.0	-0.9	-1.4
LR 58	30.6	28.9	19.3	128.2	529.1	224.5	71.0	-1.3	-1.3	-1.3	-0.7	-0.6	-0.3	-0.4	-0.9
LR 59	27.6	26.2	17.4	111.2	278.5	179.8	70.3	-1.7	-1.7	-1.7	-1.0	-2.0	-1.1	-0.4	-1.4
LR 60	25.8	24.4	16.6	91.9	273.8	162.1	49.6	-1.9	-1.9	-1.9	-1.3	-2.0	-1.5	-1.1	-1.6
LR 61	35.3	33.3	22.1	144.7	620.4	221.5	74.0	-0.7	-0.7	-0.8	-0.4	-0.2	-0.4	-0.3	-0.5
LR 62	31.7	29.8	20.7	134.3	567.3	195.1	74.7	-1.2	-1.2	-1.1	-0.6	-0.4	-0.9	-0.3	-0.8
LR 63	32.8	30.9	20.9	143.1	529.5	220.0	84.1	-1.0	-1.0	-1.0	-0.5	-0.6	-0.4	0.1	-0.6
LR 64	41.3	39.1	26.4	188.5	661.8	247.9	92.4	0.0	0.0	0.1	0.3	0.1	0.1	0.3	0.1
LR 65	43.2	40.5	26.6	211.1	573.5	251.0	74.2	0.3	0.2	0.1	0.6	-0.4	0.2	-0.3	0.1
LR 66	43.7	41.3	27.5	208.9	541.4	255.8	82.6	0.3	0.3	0.3	0.6	-0.6	0.2	0.0	0.2
LR 67	45.9	43.3	28.7	221.9	638.9	260.0	98.2	0.6	0.6	0.5	0.8	-0.1	0.3	0.5	0.5
LR 68	45.3	42.6	28.1	230.7	799.0	284.4	89.6	0.5	0.5	0.4	1.0	0.8	0.8	0.2	0.6
LR 69	37.5	35.2	23.3	146.1	575.0	212.9	72.8	-0.5	-0.5	-0.6	-0.4	-0.4	-0.5	-0.3	-0.4
LR 70	35.0	32.8	22.1	129.3	460.0	183.1	71.2	-0.8	-0.8	-0.8	-0.7	-1.0	-1.1	-0.4	-0.8
LR 71	37.4	35.4	24.3	127.3	602.3	224.6	63.4	-0.5	-0.4	-0.4	-0.7	-0.3	-0.3	-0.6	-0.5
LR 72	35.2	33.2	22.4	116.6	636.5	206.8	55.5	-0.7	-0.7	-0.7	-0.9	-0.1	-0.6	-0.9	-0.7
LR 73	45.1	42.5	29.7	218.9	870.5	285.2	92.6	0.5	0.5	0.7	0.8	1.2	0.8	0.3	0.7
LR 74	48.0	45.2	30.1	256.9	963.8	311.9	126.1	0.9	0.9	0.8	1.4	1.7	1.3	1.4	1.2
LR 75	54.2	50.9	34.2	275.8	987.6	339.2	149.9	1.6	1.6	1.6	1.7	1.8	1.8	2.2	1.7
LR 76	37.2	35.1	23.6	139.2	613.8	219.9	64.3	-0.5	-0.5	-0.5	-0.5	-0.2	-0.4	-0.6	-0.5
LR 77	40.8	38.4	26.1	206.4	676.4	264.1	98.4	0.0	0.0	0.0	0.6	0.1	0.4	0.5	0.2
LR 78	55.6	52.3	34.5	234.2	800.9	309.0	129.5	1.8	1.8	1.6	1.0	0.8	1.2	1.5	1.4
LR 79	37.5	35.2	23.9	163.0	534.7	235.7	76.2	-0.5	-0.5	-0.4	-0.1	-0.6	-0.1	-0.2	-0.3
LR 80	37.8	35.6	22.9	147.8	488.4	212.4	66.6	-0.4	-0.4	-0.6	-0.4	-0.9	-0.5	-0.5	-0.5
LR 81	46.8	44.1	30.5	237.6	771.1	289.0	116.4	0.7	0.7	0.9	1.1	0.6	0.8	1.1	0.8
LR 82	39.5	37.2	25.4	123.9	560.6	215.9	70.4	-0.2	-0.2	-0.1	-0.8	-0.5	-0.5	-0.4	-0.4
LR 83	48.5	45.5	29.9	214.6	694.4	293.7	92.0	0.9	0.9	0.7	0.7	0.2	0.9	0.3	0.7
LR 84	39.1	36.9	25.3	156.6	793.9	204.6	74.0	-0.2	-0.2	-0.2	-0.2	0.8	-0.7	-0.3	-0.2
LR 85	49.7	46.8	31.8	221.6	894.3	304.9	120.8	1.1	1.1	1.1	0.8	1.3	1.1	1.2	1.1
LR 86	25.8	24.4	17.2	63.9	308.7	137.3	30.1	-1.9	-1.9	-1.8	-1.8	-1.8	-1.9	-1.7	-1.8

LR 87	37.6	35.5	23.4	135.9	550.5	230.9	60.8	-0.4	-0.4	-0.5	-0.6	-0.5	-0.2	-0.7	-0.5
LR 88	39.5	37.3	25.1	175.7	654.5	245.3	83.0	-0.2	-0.2	-0.2	0.1	0.0	0.1	0.0	-0.1
LR 89	30.8	29.1	20.0	85.9	455.6	163.9	34.2	-1.3	-1.3	-1.2	-1.4	-1.0	-1.4	-1.6	-1.3
LR 90	41.3	38.8	25.8	158.9	624.5	224.2	57.7	0.0	0.0	-0.1	-0.2	-0.1	-0.3	-0.8	-0.2
LR 91	31.5	29.7	20.1	82.7	502.2	167.6	35.7	-1.2	-1.2	-1.2	-1.5	-0.8	-1.4	-1.5	-1.2
LR 92	25.3	23.8	15.9	60.8	379.2	130.2	29.8	-2.0	-2.0	-2.0	-1.8	-1.4	-2.0	-1.7	-1.8
LR 93	32.4	30.3	21.0	112.5	497.3	177.3	57.5	-1.1	-1.1	-1.0	-1.0	-0.8	-1.2	-0.8	-1.0
LR 94	45.0	42.3	28.3	208.0	778.7	243.7	86.9	0.5	0.5	0.4	0.6	0.7	0.0	0.1	0.4
LR 95	43.7	41.2	27.7	201.4	667.4	257.2	81.8	0.3	0.3	0.3	0.5	0.1	0.3	0.0	0.3
LR 96	48.4	45.6	30.7	219.0	746.5	286.4	94.1	0.9	0.9	0.9	0.8	0.5	0.8	0.4	0.7
LR 97	44.7	41.9	28.4	180.1	591.0	266.8	89.8	0.4	0.4	0.4	0.1	-0.3	0.4	0.2	0.3
LR 98	43.8	41.5	28.0	176.9	712.6	247.6	87.6	0.3	0.4	0.4	0.1	0.3	0.1	0.2	0.2
LR 99	40.8	38.4	25.4	155.7	565.6	245.5	69.6	0.0	-0.1	-0.1	-0.3	-0.5	0.1	-0.4	-0.2
LR 100	50.4	47.6	31.5	224.2	972.7	266.5	108.2	1.2	1.2	1.0	0.9	1.7	0.4	0.8	1.0
LR 101	37.1	34.9	23.6	141.3	666.2	201.8	59.7	-0.5	-0.5	-0.5	-0.5	0.1	-0.7	-0.7	-0.5
LR 102	59.8	56.0	37.6	286.8	1155.9	334.6	136.3	2.3	2.3	2.3	1.9	2.7	1.7	1.8	2.1
LR 103	49.6	46.9	31.3	302.7	830.9	315.4	130.7	1.0	1.1	1.0	2.1	1.0	1.3	1.6	1.3
LR 104	45.3	42.9	28.5	191.5	871.7	302.4	103.2	0.5	0.5	0.5	0.3	1.2	1.1	0.7	0.7
LR 105	44.3	41.9	28.1	205.1	638.6	249.0	102.7	0.4	0.4	0.4	0.5	-0.1	0.1	0.7	0.4
LR 106	69.7	65.6	44.4	374.0	1148.7	416.2	173.9	3.5	3.5	3.6	3.3	2.7	3.1	3.0	3.2
LR 107	47.6	44.9	29.6	222.2	900.5	291.8	109.6	0.8	0.8	0.7	0.8	1.3	0.9	0.9	0.9
LR 108	39.7	37.4	24.5	176.5	698.6	248.4	85.9	-0.2	-0.2	-0.3	0.1	0.3	0.1	0.1	0.0
LR 109	40.2	38.0	24.7	159.9	601.5	236.5	68.6	-0.1	-0.1	-0.3	-0.2	-0.3	-0.1	-0.5	-0.2
LR 110	38.9	36.9	24.5	178.7	593.2	240.5	73.0	-0.3	-0.2	-0.3	0.1	-0.3	0.0	-0.3	-0.2
Mean	41.1	38.7	26.1	171.8	650.6	242.4	82.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
STD	8.07	7.57	5.1	61.5	187.9	55.32	30.6	1	1.0	1.0	1.0	1.0	1.0	1.0	1.0