

ERRATUM. In the V9 catalogue, three events are listed to have distances and magnitudes by mistake: S0323d (LF, QC), S0357a (LF, QC), S0423a (LF, QD). These events are corrected in Supp. Table S1 below, and will be corrected in the catalogue QuakeML for future releases.

Supplementary Table S1: List and feature summary of all LF family events in the V9 catalogue. Events are ordered by event name. Distance, origin time and magnitude are provided for each of the phase-pick inversion (Inv.) and alignment methods. The signal-to-noise ratio (SNR) is given for seismic (S), wind (W) and pressure (P) methods when available. Origin times in UTC are provided with date. The sol number for LMST is inferred from the event name. Phase arrivals are in UTC, while distances and back-azimuth (BAZ) are in degrees. Uncertainties are in degrees or seconds as relevant when available.

Name	Type	Qual.	Distance		BAZ Inv.	O. time (UTC)		O. time (LMST)		Mag [M_W^{Ma}]		Phases	SNR		
			Inv.	Align.		Inv.	Align.	Inv.	Align.	Inv.	Align.		S	W	P
S0105a	LF	B	32.5	32.5	-	2019-03-14 20:59:21	20:58:52	18:02:05	18:01:36	3.0	3.0	P 21:03:31.1(± 20) S 21:06:39.4(± 20)	10.0	2.5	8.3
S0132a	BB	D	-	-	-	2019-04-11 13:27:57	-	16:43:58	-	-	-	x1 13:33:46.4(± 60) y1 13:31:14.3(± 20)	1.4	1.8	2.8
S0133a	BB	C	-	88.5	-	2019-04-12 18:10:36	18:00:20	20:40:31	20:30:32	-	3.1	x1 18:14:35.3(± 60) x2 18:17:55.7(± 20)	4.6	-	6.1
S0152a	BB	C	-	98.0	-	2019-05-02 07:19:49	07:19:57	21:16:35	21:16:43	-	2.9	x1 07:30:47.6(± 60) x2 07:39:37.0(± 20) y1 07:30:02.0(± 20) y2 07:31:42.0(± 20)	2.1	2.3	2.5
S0154a	BB	C	-	33.8	-	2019-05-04 07:03:46	07:03:35	19:43:55	19:43:44	-	2.9	x1 07:07:05.3(± 20) x2 07:11:56.8(± 20) x3 07:15:00.5(± 20)	19.4	15.0	20.3
S0167a	LF	C	-	95.3	-	2019-05-17 16:43:26	16:33:30	20:47:12	20:37:32	-	3.6	x1 16:47:25.7(± 60) x2 16:51:57.9(± 20)	10.4	3.9	1.6
S0167b	LF	C	-	60.3	-	2019-05-17 19:27:04	19:24:14	23:26:27	23:23:42	-	-	x1 19:31:04.3(± 60) x2 19:38:33.7(± 5)	5.2	-	-
S0171a	LF	D	-	-	-	2019-05-21 18:53:52	-	20:20:02	-	-	-	-	1.4	-	-
S0173a	LF	A	30.0	30.0	91	2019-05-23 02:19:09	02:18:48	02:54:52	02:54:32	3.7	3.7	P 02:22:59.0(± 1) S 02:25:53.7(± 2)	91.3	-	54.5
S0183a	LF	B	46.4	45.9	73	2019-06-03 02:22:01	02:21:40	19:53:51	19:53:31	3.1	3.1	P 02:27:49.0(± 1) S 02:32:15.6(± 60)	3.6	3.0	5.0
S0185a	BB	B	59.8	59.7	-	2019-06-05 02:06:37	02:06:32	18:21:49	18:21:44	3.1	3.1	P 02:13:50.4(± 60) S 02:19:34.8(± 20) y1 02:13:13.4(± 20) y2 02:19:48.7(± 60)	4.9	-	-
S0189a	LF	B	33.4	33.0	-	2019-06-09 05:35:55	05:36:05	19:11:24	19:11:34	2.8	2.8	P 05:40:05.5(± 20) S 05:43:19.4(± 20)	2.8	2.8	2.3
S0201a	LF	D	-	-	-	2019-06-21 12:50:10	-	18:31:41	-	-	-	x1 12:53:30.5(± 20)	2.1	1.5	2.4
S0205a	BB	C	-	46.3	-	2019-06-25 17:06:13	17:03:51	20:06:47	20:04:28	-	3.0	x1 17:09:34.3(± 20) y1 17:10:39.4(± 20)	2.0	-	-
S0217a	BB	C	-	-	-	2019-07-08 00:25:36	-	19:32:04	-	-	-	x1 00:29:34.0(± 60) x2 00:33:47.9(± 20)	1.6	2.5	2.2
S0226b	LF	C	-	94.1	-	2019-07-17 05:40:01	05:27:48	18:51:19	18:39:26	-	3.2	x1 05:44:02.3(± 60) x2 05:46:24.8(± 60)	2.7	4.8	3.3
S0234c	LF	C	-	60.0	-	2019-07-25 12:51:18	12:46:45	20:42:50	20:38:24	-	2.9	x1 12:55:27.8(± 60) x2 13:00:33.9(± 20)	0.9	1.7	2.2
S0234d	BB	D	-	-	-	2019-07-25 14:11:09	-	22:00:33	-	-	-	-	1.3	2.1	3.0
S0235b	BB	A	28.8	28.3	74	2019-07-26 12:15:38	12:15:17	19:29:36	19:29:15	3.7	3.7	P 12:19:18.0(± 1) S 12:22:05.3(± 2) y1 12:19:20.9(± 2) y2 12:19:53.3(± 5)	1001.6	-	112.5

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Name	Type	Qual.	Distance		BAZ Inv.	O. time (UTC)		O. time (LMST)		Mag [M_W^{Ma}]		Phases	SNR		
			Inv.	Align.		Inv.	Align.	Inv.	Align.	Inv.	Align.		S	W	P
S0235c	BB	C	29.3	-	-	2019-07-26 12:50:10	-	20:03:12	-	2.7	-	P 12:53:59.9(± 20) S 12:56:48.8(± 10) y1 12:53:55.4(± 20)	2.2	1.3	1.0
S0240a	LF	D	-	-	-	2019-07-31 14:42:38	-	18:40:01	-	-	-	-	1.7	-	-
S0251a	LF	D	-	-	-	2019-08-11 23:04:15	-	19:44:24	-	-	-	-	12.8	18.1	14.2
S0254b	LF	D	-	89.5	-	2019-08-15 03:06:01	02:50:25	21:44:07	21:28:56	-	2.7	-	1.5	3.6	2.1
S0290b	LF	B	30.4	32.2	-	2019-09-21 03:15:13	03:15:10	22:07:32	22:07:29	3.5	3.5	P 03:19:09.4(± 20) S 03:22:04.9(± 20) x1 03:22:40.9(± 2)	1.0	3.9	4.8
S0320b	LF	C	-	32.7	-	2019-10-21 20:10:54	20:10:47	19:20:11	19:20:05	-	3.0	x1 20:14:54.0(± 60) x2 20:18:02.6(± 60)	3.4	7.5	3.5
S0323d	LF	C	-	-	-	2019-10-25 00:20:29	-	21:27:31	-	-	-	-	2.7	-	16.6
S0325a	LF	B	39.7	39.9	-	2019-10-26 06:54:04	06:53:24	03:12:02	03:11:23	3.7	3.7	P 06:58:57.0(± 2) S 07:02:46.0(± 20)	12.6	18.9	22.9
S0327d	LF	D	-	-	-	2019-10-29 04:18:02	-	22:44:36	-	-	-	x1 04:22:01.4(± 60) x2 04:25:12.5(± 20)	2.2	1.4	7.5
S0329b	LF	D	-	-	-	2019-10-31 00:41:32	-	17:56:50	-	-	-	x1 00:44:52.5(± 20)	2.1	0.1	5.1
S0330a	LF	D	-	-	-	2019-10-31 10:19:13	-	03:19:03	-	-	-	x1 10:22:32.9(± 20) x2 10:31:02.1(± 20)	8.2	18.7	18.9
S0345a	LF	C	-	91.5	-	2019-11-16 12:03:41	11:52:52	18:44:17	18:33:45	-	3.2	x1 12:06:11.8(± 60) x2 12:12:09.0(± 60)	4.6	1.5	3.7
S0357a	LF	C	-	-	-	2019-11-28 19:22:03	-	18:08:34	-	-	-	x1 19:25:13.2(± 10) x2 19:28:29.8(± 60)	2.8	1.4	3.9
S0362b	BB	C	-	-	-	2019-12-03 23:30:38	-	18:57:52	-	-	-	x1 23:33:58.7(± 20) x2 23:35:58.9(± 20)	1.3	3.5	2.6
S0377c	LF	C	-	-	-	2019-12-19 11:56:19	-	21:25:40	-	-	-	x1 12:00:19.8(± 60) x2 12:02:40.2(± 20)	2.3	3.6	1.2
S0395a	BB	C	-	90.6	-	2020-01-06 22:28:45	22:19:59	20:07:41	19:59:09	-	3.1	x1 22:32:45.1(± 60) x2 22:36:00.1(± 20) x3 22:39:26.2(± 20) y1 22:36:40.1(± 10) y2 22:40:28.9(± 10)	6.6	6.7	6.1
S0405c	BB	C	-	-	-	2020-01-17 01:36:58	-	16:45:35	-	-	-	x1 01:40:46.4(± 60) y1 01:41:43.7(± 20) y2 01:45:39.4(± 20)	1.1	-	0.7
S0407a	LF	B	29.3	31.0	-	2020-01-19 09:54:02	09:53:14	23:32:17	23:31:31	2.9	2.9	P 09:57:45.7(± 5) S 10:00:36.5(± 2)	2.8	21.4	14.9
S0409d	LF	B	31.1	29.7	-	2020-01-21 11:27:02	11:27:13	23:45:45	23:45:55	3.2	3.2	P 11:31:05.3(± 20) S 11:34:06.0(± 2)	22.6	-	14.8
S0421b	LF	C	-	93.7	-	2020-02-02 16:53:32	16:42:33	21:21:10	21:10:29	-	3.3	x1 16:56:12.4(± 60) x2 17:00:35.4(± 60) x3 17:04:16.5(± 20)	2.3	-	-
S0423a	LF	D	-	-	-	2020-02-04 15:17:10	-	18:30:19	-	-	-	-	1.9	1.9	2.8
S0474a	LF	C	29.1	-	-	2020-03-28 00:32:48	-	18:07:37	-	2.9	-	P 00:35:20.5(± 60) S 00:37:58.9(± 5)	1.9	-	-
S0474b	LF	C	-	-	-	2020-03-28 03:18:43	-	20:49:06	-	-	-	x1 03:22:42.8(± 60) x2 03:25:53.0(± 60)	6.5	-	-
S0484b	BB	B	31.8	31.8	-	2020-04-07 08:48:20	08:48:08	19:44:37	19:44:25	2.9	2.9	P 08:52:24.0(± 20) S 08:55:28.5(± 1)	2.7	3.5	5.4
S0729a	LF	D	-	-	-	2020-12-14 18:20:00	-	11:50:24	-	-	-	x1 18:24:00.6(± 60)	6.1	-	-
S0748a	LF	C	29.5	-	-	2021-01-03 14:12:44	-	18:59:12	-	2.8	-	P 14:15:14.8(± 60) S 14:18:03.9(± 20)	1.9	-	2.0
S0784a	BB	B	34.5	32.1	-	2021-02-09 12:11:32	12:11:43	17:15:42	17:15:52	3.3	3.3	P 12:15:56.5(± 10) S 12:19:16.3(± 5)	20.7	-	32.6

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Name	Type	Qual.	Distance		BAZ Inv.	O. time (UTC)		O. time (LMST)		Mag [M_W^{Ma}]		Phases	SNR		
			Inv.	Align.		Inv.	Align.	Inv.	Align.	Inv.	Align.		S	W	P
S0802a	BB	B	30.0	29.9	-	2021-02-28 06:07:21	06:07:00	23:09:13	23:08:53	2.9	2.9	y1 12:16:12.1(± 10) P 06:11:10.7(± 5) S 06:14:05.2(± 10) x1 06:12:55.2(± 20)	9.2	-	11.2
S0809a	LF	A	29.8	29.5	87	2021-03-07 11:09:26	11:09:09	23:33:31	23:33:15	3.3	3.3	y1 06:12:01.3(± 5) P 11:13:15.9(± 1) S 11:16:09.1(± 5) x1 11:15:09.3(± 5) x2 11:18:04.5(± 10)	53.0	-	11.7
S0815a	LF	D	-	-	-	2021-03-13 10:46:51	-	19:20:22	-	-	-	-	1.0	-	3.2
S0817a	LF	D	-	-	-	2021-03-15 16:20:10	-	23:27:43	-	-	-	-	6.0	-	-
S0820a	LF	A	30.2	30.1	88	2021-03-18 14:51:33	14:50:44	20:05:53	20:05:05	3.3	3.3	P 14:55:23.3(± 5) S 14:58:19.0(± 5) x1 14:54:40.3(± 20) x2 14:57:30.2(± 10)	47.6	-	47.6
S0832a	LF	C	-	-	-	2021-03-30 22:56:01	-	20:15:03	-	-	-	x1 22:59:21.0(± 20)	1.5	-	-
S0833a	BB	C	34.7	37.7	-	2021-03-31 23:04:09	23:03:02	19:44:26	19:43:21	2.5	2.5	P 23:08:26.1(± 20) S 23:11:47.0(± 20)	1.8	-	-
S0850c	BB	C	31.6	-	-	2021-04-18 11:15:57	-	20:41:41	-	2.6	-	P 11:18:29.0(± 60) S 11:21:32.4(± 10)	2.0	-	-
S0861a	LF	C	32.0	-	-	2021-04-29 18:27:25	-	20:37:47	-	2.9	-	y1 11:16:42.9(± 20) P 18:31:28.9(± 20) S 18:34:34.5(± 20)	2.4	-	-
S0864a	BB	A	28.8	28.5	97	2021-05-02 00:57:35	00:57:14	01:40:28	01:40:07	3.1	3.1	P 01:01:17.2(± 10) S 01:04:04.0(± 5) x1 01:05:43.4(± 5) y1 01:02:47.6(± 5)	7.3	-	455.6
S0892b	LF	D	-	-	-	2021-05-31 12:26:39	-	18:13:46	-	-	-	-	4.3	-	-
S0899d	LF	B	-	46.7	25	2021-06-07 20:07:39	20:05:00	21:12:44	21:10:10	-	-	x1 20:10:49.8(± 10)	10.0	-	-
S0916d	BB	B	29.3	29.3	-	2021-06-25 05:13:42	05:13:30	19:09:12	19:09:00	2.9	2.9	P 05:17:32.4(± 20) S 05:20:21.9(± 2)	2.3	-	-
S0918a	LF	B	27.9	27.9	-	2021-06-27 05:31:55	05:31:25	18:09:52	18:09:23	3.0	3.0	y1 05:17:41.1(± 20) P 05:35:24.6(± 20) S 05:38:02.6(± 10)	12.5	-	-
S0918b	LF	C	-	-	-	2021-06-27 05:54:09	-	18:31:31	-	-	-	x1 05:36:59.8(± 10) x1 05:57:29.9(± 20) x2 05:59:19.0(± 20)	2.1	-	-
S0923a	BB	C	33.1	30.5	-	2021-07-02 08:05:04	08:05:17	17:26:17	17:26:30	2.9	2.9	P 08:09:21.2(± 20) S 08:12:33.0(± 20)	5.8	-	-
S0936b	BB	C	-	-	-	2021-07-15 19:36:20	-	20:18:11	-	-	-	y1 08:09:46.7(± 60) x1 19:41:34.3(± 10) y1 19:39:40.6(± 20) y2 19:43:58.6(± 20)	6.1	-	-
S0976a	LF	A	146.3	146.2	101	2021-08-25 03:32:20	03:31:57	02:20:20	02:19:57	4.2	4.2	PP 03:49:06.4(± 10) SS 04:03:07.7(± 10)	31.1	-	33.8
S0981b	BB	D	-	-	-	2021-08-31 02:04:48	-	21:03:58	-	-	-	-	1.0	-	-
S0982b	LF	C	-	-	-	2021-09-01 01:47:36	-	20:08:42	-	-	-	x1 01:50:56.9(± 20)	10.3	-	-
S0984c	LF	D	-	-	-	2021-09-03 01:28:15	-	18:32:49	-	-	-	-	0.7	-	-
S1000a	BB	B	115.5	122.6	-	2021-09-18 17:48:00	17:46:18	00:48:25	00:46:46	4.1	4.1	PP 18:01:47.4(± 20) SS 18:14:08.5(± 60) Pdiff 17:59:01.4(± 10) y1 18:00:57.2(± 5) y2 18:14:08.5(± 60)	1035.9	-	-

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Name	Type	Qual.	Distance		BAZ Inv.	O. time (UTC)		O. time (LMST)		Mag [M_W^{Ma}]		Phases	SNR		
			Inv.	Align.		Inv.	Align.	Inv.	Align.	Inv.	Align.		S	W	P
S1000b	BB	C	-	-	-	2021-09-18 19:09:51	-	02:08:05	-	-	-	S 19:16:33.3(± 20) y1 19:13:51.8(± 60)	2.5	-	-
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