

Lister, G., Tkalcic, H., Hejrani, B., Koulali, A., Rohling, E., Forster, M., and McClusky, S., 2018, Lineaments and earthquake ruptures on the East Japan megathrust: Lithosphere, <https://doi.org/10.1130/L687.1>

GSA Data Repository Item 2018143

FILE DR1: DATA USED TO GENERATE THE BEST FIT TO THE TOPOGRAPHIC LINEAMENTS

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TABLE DR2: CMT SOLUTIONS CALCULATED IN THIS STUDY FOR 84 EARTHQUAKES

The first two columns show the origin time of the earthquakes as reported by ISC. The next three columns are the geographical location and depth of the centroid. The following six columns are the seismic moment tensor components in spherical coordinates calculated in this study. The 'Exp' column is the power of 10 in Nm, which defines the magnitude of the moment tensor. The last two columns show the range of the acceptable values for the depth parameter (shown with black lines in Figure 4). Note that some of the depth values are fixed in the inversion.

Date	Time	Lon	Lat	Dep	mrr	mtt	mff	mrt	mrf	mtf	Exp	Top	Bot
2011-02-15	19:06:51	143.4	38.3	17	1.73	0.49	-2.22	0.67	1.92	-1.17	16	11.6	27.1
2011-02-15	19:01:03	143.4	38.3	17	3.22	0.79	-4.01	1.34	3.86	-2.78	16	11.3	26.6
2011-02-26	14:40:57	143.3	38.2	13	0.80	0.20	-1.00	0.28	1.11	-0.74	16	10.2	24.3
2011-02-26	15:38:43	142	37.3	37	1.62	0.27	-1.89	0.28	3.21	-1.49	16	31.3	45
2011-03-09	21:22:17	143	38.2	21	0.19	0.49	-0.68	0.62	1.73	-0.49	18	9.2	36.7
2011-03-09	18:16:16	143	38.2	33	6.15	1.78	-7.93	3.81	8.32	-4.83	17	13	45
2011-03-09	21:24:02	143.1	38.2	29	0.80	0.98	-1.78	1.46	3.14	-1.24	18	12.8	44.1
2011-03-10	16:54:45	143	38.2	9	2.25	-1.64	-0.61	-1.07	-0.58	-2.82	16	7.7	12.5
2011-03-12	9:18:53	143.5	37.4	9	-2.35	1.09	1.26	2.67	0.55	1.06	16	8.3	10.6
2011-03-12	10:20:21	143.5	37.2	9	-3.19	1.41	1.78	-0.27	0.35	2.07	16	4.8	11
2011-03-12	19:11:57	142.8	37.7	9	-5.09	4.43	0.66	7.47	5.64	-0.54	16	8.5	14.5
2011-03-12	23:20:41	142.6	38	29	-0.71	-0.32	1.03	0.09	-0.30	0.24	17	25.1	45
2011-03-12	17:19:23	142.8	36.7	9	1.78	-0.10	-1.68	-0.50	0.84	-0.55	17	8.3	10.6
2011-03-12	23:24:48	142.2	38	13	1.25	-0.77	-0.48	-0.43	-3.66	0.78	17	9.8	30.8
2011-03-12	2:47:33	143	37.5	17	-1.22	-1.66	2.89	1.36	1.91	2.03	17	8.8	33
2011-03-12	22:12:46	142.1	37.6	13	-3.15	0.08	3.06	-0.27	-0.32	-1.72	17	9.4	14.6
2011-03-12	1:47:15	142.9	37.6	17	-0.94	-0.21	1.15	-1.86	-1.22	2.26	18	8.1	30.6
2011-03-13	10:04:00	143.6	37.8	5	-6.01	1.45	4.56	1.21	2.52	1.93	15	4.8	7.2
2011-03-13	8:26:19	143.5	37.5	9	-1.12	0.30	0.81	0.18	0.85	0.13	16	7.5	10.5
2011-03-13	6:37:48	143.5	37.6	5	-5.98	-0.78	6.76	1.00	5.04	2.53	15	4.8	9.4
2011-03-13	8:49:35	143.8	37.9	9	-2.03	0.65	1.39	0.48	1.32	0.63	16	Fix	Fix
2011-03-13	17:40:30	142.6	37.9	9	-0.95	-0.51	1.46	-0.70	0.30	-0.32	16	7.9	13
2011-03-13	4:23:23	143.1	38.2	21	1.89	-2.75	0.86	0.25	-0.93	0.68	16	14.7	36.4
2011-03-13	9:12:56	144	37.7	17	1.33	-3.39	2.06	-0.14	0.88	0.97	16	8.1	33.1
2011-03-13	19:59:50	142.1	37	33	-1.29	1.33	-0.05	3.94	2.09	-3.04	16	18.7	45
2011-03-13	1:42:51	142.9	37.1	9	-2.83	0.98	1.84	1.06	0.66	1.51	16	8	13.1
2011-03-13	2:57:13	143.3	37.1	9	-5.98	2.02	3.96	3.22	3.35	1.32	17	Fix	Fix
2011-03-13	2:51:24	143.2	37.1	9	-4.64	1.31	3.33	1.53	3.07	0.78	16	7.5	10.1
2011-03-13	14:48:01	143	37.8	13	-6.93	-0.77	7.70	3.87	-5.68	-0.44	16	9	16.9
2011-03-13	11:37:30	142.6	37.4	17	-4.35	1.80	2.55	1.47	1.68	-1.94	17	13.4	22.4
2011-03-13	10:58:57	143	37.2	9	-1.02	0.26	0.76	0.23	0.23	0.19	16	7.4	9.6
2011-03-14	17:59:41	142.6	37.2	17	0.51	-0.10	-0.42	1.13	1.48	-1.01	17	10.7	35.9
2011-03-14	6:12:36	142.9	37.7	17	1.52	-4.04	2.53	-6.24	-7.53	1.41	17	10.9	34.2
2011-03-15	20:14:33	143.5	37.8	17	-1.27	0.20	1.08	0.99	1.63	0.49	16	10.2	35.4
2011-03-15	3:21:35	144	37.7	13	-0.02	-1.33	1.34	0.03	0.32	0.98	16	7.7	38
2011-03-15	11:06:15	142.6	37.2	9	-1.33	-0.27	1.59	1.05	-0.91	1.09	16	7.7	16
2011-03-15	19:01:30	142.3	38.1	5	-6.52	1.09	5.42	0.16	-1.57	-3.17	16	4.8	5.7
2011-03-15	9:49:52	142.4	37.4	9	-5.88	1.93	3.95	1.16	2.05	1.41	17	7.4	9.7
2011-03-15	13:27:56	142.3	37.6	25	-0.45	0.83	-0.38	-1.08	1.15	0.08	18	20.1	45
2011-03-15	18:29:10	143.4	37.7	9	-8.10	1.86	6.24	-1.36	4.54	5.43	15	7.4	10.6
2011-03-16	22:03:18	143.2	37.7	9	-1.14	0.16	0.97	-0.03	0.54	0.15	16	7.6	10
2011-03-16	20:44:41	143.7	37.5	9	-6.10	0.87	5.23	2.66	2.92	0.91	16	Fix	Fix
2011-03-16	4:14:30	141.8	37.5	17	-0.60	-2.44	3.04	0.29	-2.50	6.89	16	7.9	23.8
2011-03-17	0:42:50	143.6	37.5	9	-9.79	1.62	8.17	2.73	2.96	2.83	15	5.7	10
2011-03-17	17:31:54	143.5	37.7	17	-6.47	1.41	5.06	5.46	6.52	3.48	15	11.8	34.8
2011-03-17	5:06:59	143.8	37.9	21	-0.78	-3.62	4.40	0.26	1.93	4.69	16	11.6	38
2011-03-17	18:55:36	142.4	37.3	9	-8.63	-0.59	9.23	0.15	-3.72	-5.47	16	7.5	10
2011-03-17	6:12:41	143.5	37.8	17	-1.21	0.15	1.06	0.60	1.25	0.49	17	10.6	28.2
2011-03-18	19:19:19	142.7	36.7	13	2.43	0.06	-2.49	-0.70	0.55	-0.99	16	8.6	15

Date	Time	Lon	Lat	Dep	mrr	mtt	mff	mrt	mrf	mtf	Exp	Top	Bot
2011-03-18	3:23:53	143.5	37.8	9	-1.91	0.48	1.43	0.19	2.02	0.40	17	Fix	Fix
2011-03-20	1:24:42	141.9	37.4	37	-1.16	0.77	0.39	-3.72	0.10	0.50	16	34.8	45
2011-03-21	12:37:35	142.4	37.5	17	-7.58	0.29	7.29	1.49	-2.52	-1.31	15	12.7	19.8
2011-03-21	16:46:57	142.6	37.7	17	-1.56	0.20	1.36	1.20	1.62	0.10	16	11.9	45
2011-03-22	12:01:22	143.1	37	5	-2.03	0.70	1.33	1.40	1.46	1.09	17	3.9	9.1
2011-03-24	19:17:18	143.5	38.1	17	-3.92	-0.22	4.14	0.14	5.34	2.80	16	9	32.9
2011-03-26	12:52:51	143.2	37.1	9	-6.24	1.56	4.68	0.57	4.88	0.63	16	Fix	Fix
2011-03-27	22:23:58	142.3	38.4	21	-9.22	8.57	0.65	6.67	-2.26	-4.00	17	15.7	33.5
2011-03-29	10:54:33	142.6	37.4	21	-1.25	0.16	1.09	0.74	-0.01	0.83	18	16.3	35.7
2011-03-30	2:50:10	143.3	38.1	17	-7.94	2.33	5.60	7.68	5.33	7.39	15	9.6	25.3
2011-03-31	19:35:03	142.6	37.7	13	-3.33	1.28	2.05	2.31	5.92	-0.30	16	Fix	Fix
2011-04-01	12:15:06	142.2	36.7	29	0.54	0.14	-0.67	0.64	2.27	-1.23	16	14.2	42.1
2011-04-03	3:09:08	142.1	36.9	5	1.09	-0.10	-1.00	0.16	0.17	-0.51	16	4.7	9.2
2011-04-05	22:01:59	142.4	38.4	17	-0.85	0.37	0.48	1.07	-1.00	-0.19	16	11.5	24.8
2011-04-09	1:25:26	142.2	36.9	13	1.35	0.26	-1.61	-0.22	0.68	-0.05	16	11	18.5
2011-04-15	21:10:38	142.6	37.3	13	-0.22	-0.98	1.20	0.86	-0.93	0.46	16	8.7	25.2
2011-04-19	4:04:30	143.4	37.3	9	-9.51	0.87	8.64	0.80	3.44	4.17	15	4.8	9.3
2011-04-21	3:08:37	142.4	37.3	21	-1.19	0.92	0.27	-0.90	1.42	-0.50	16	15.8	38.1
2011-04-25	9:09:32	143.6	37.6	13	-8.23	2.72	5.51	3.34	2.97	4.82	15	9.9	19.6
2011-04-25	21:14:14	142.3	36.9	13	-1.31	1.13	0.18	0.23	3.83	-0.05	16	11.7	13
2011-04-27	21:42:47	142.7	36.8	13	0.46	-0.65	0.18	1.33	1.01	-1.27	16	8.6	23.2
2011-04-28	0:02:22	142.8	36.8	25	0.64	1.08	-1.72	-0.15	1.74	-1.16	16	10.6	34.9
2011-05-09	20:15:53	143.4	37.9	9	-1.31	0.59	0.71	0.55	0.87	0.87	17	8.5	16.4
2011-05-10	8:30:30	143.4	37.9	17	-2.96	0.61	2.35	1.33	1.90	2.13	16	12	26.5
2011-05-11	1:20:05	143.5	37.9	13	-2.98	1.07	1.91	0.90	2.16	2.81	16	10.6	19.4
2011-05-22	14:46:11	143.6	37.6	21	0.12	-1.57	1.45	0.02	0.41	0.92	17	10.8	36.3
2011-05-23	1:48:52	143.6	37.8	9	-9.84	2.64	7.20	6.45	6.97	3.40	15	8.4	11.7
2011-06-14	13:06:51	143.6	37.7	29	-0.34	-4.11	4.44	1.33	1.27	1.04	17	19.1	42
2011-06-18	11:31:05	142	37.6	21	-1.20	1.57	-0.37	-1.03	2.06	-0.86	17	13.3	35.9
2011-07-10	0:57:10	143.6	37.9	21	0.09	-1.35	1.26	0.18	0.58	1.24	19	10.3	39.7
2011-07-19	1:38:51	141.9	37.4	9	-1.54	1.03	0.51	0.53	1.64	2.18	16	7.8	16.6
2011-07-29	14:53:19	142.2	36.7	29	2.20	0.18	-2.38	2.70	9.02	-5.06	16	14.9	44.2
2011-08-16	12:43:01	143.5	38.2	13	0.01	-0.95	0.95	0.88	0.60	1.47	16	8.9	20.6
2011-10-02	16:49:04	141.6	37.4	5	-1.13	0.15	0.98	0.47	0.87	0.75	16	4.1	6.3