

**NOTES AND CORRESPONDENCE**

**Source Parameters of Regional Earthquakes in Taiwan:  
January-December, 2002**

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**ABSTRACT**

**We report on the source parameters of 194 earthquakes that occurred between January and December 2002, in the Taiwan region. The improved CMT inversion algorithm by Kao et al. (1998) is used to overcome the generally higher background noise and the heterogeneous velocity structure resulting from the complex tectonic interactions near Taiwan. To make the results more accessible and useful to the academic community, both the table that summarizes the reported source parameters and the complete set of inversion results are available electronically from the BATS world-wide web site at [http://bats.earth.sinica.edu.tw/CMT\\_Solutions/cmtF2002.html](http://bats.earth.sinica.edu.tw/CMT_Solutions/cmtF2002.html).**

**(Key words: Broadband Array in Taiwan for Seismology,  
Earthquake source parameters, Waveform inversion, Taiwan)**

Successful development of the centroid-moment-tensor (CMT) inversion technique in the early 1980's has enabled the systematic determination of source parameters for global large and moderately-sized earthquakes (e.g., Dziewonski et al. 1981; Kawakatsu et al. 1995; Sipkin 1982). The CMT inversion technique was later successfully applied to regional earthquakes because of the increasing knowledge of detailed velocity structures on a regional scale and the establishment of regional broadband networks (e.g., Dreger and Helmberger 1993; Fan and Wallace 1995; Lay et al. 1994; Thio and Kanamori 1995; Zhao and Helmberger 1994). Consequently, the routine CMT solution reports for smaller, regional earthquakes has become

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standard practice for many regional broadband seismographic networks (e.g., Zhu and Helmberger 1996; Pasyns et al. 1996).

Establishment of the “Broadband Array in Taiwan for Seismology (BATS)” has enabled the systematic determination of reliable source parameters for regional earthquakes in Taiwan through the CMT technique (Kao et al. 1998). The network began its test operation in late 1994 (Fig. 1). A brief description of the BATS configuration and operation can be found in Kao et al. (1998, 2001) and Kao and Jian (1999, 2001). The Data Management Center of the

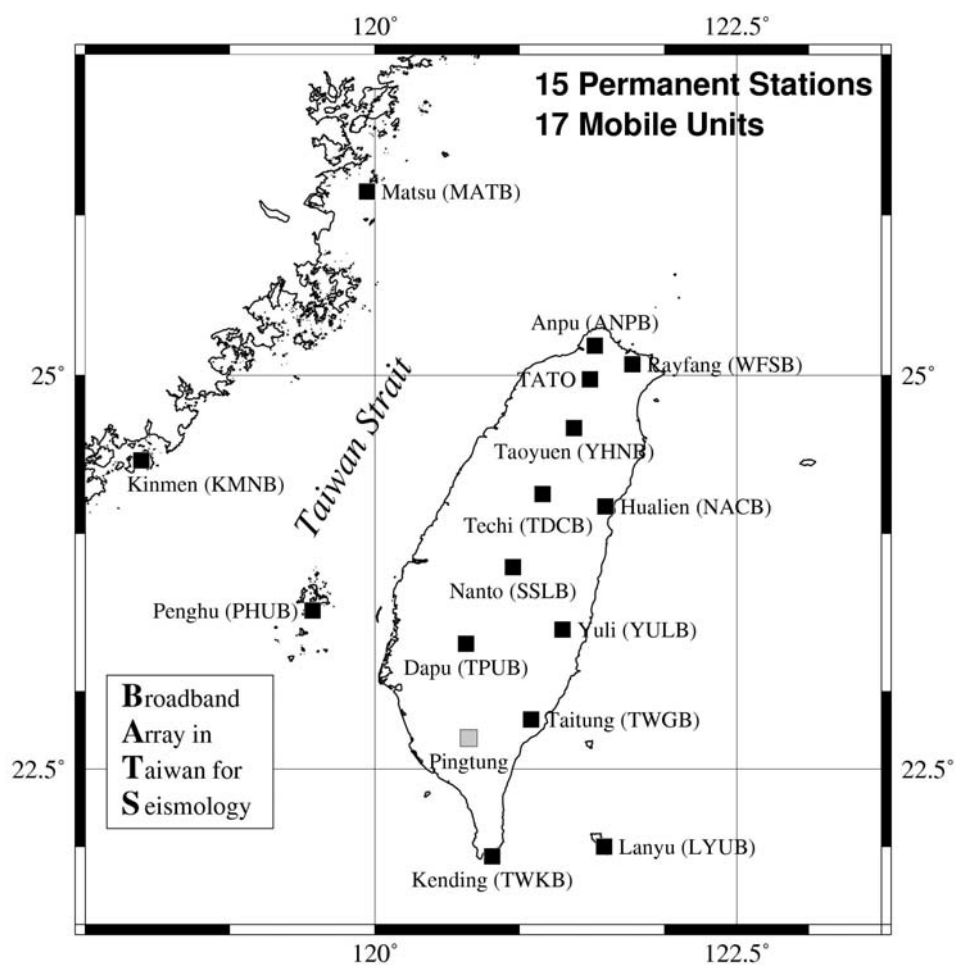


Fig. 1. Map of the “Broadband Array in Taiwan for Seismology (BATS)”. Solid and gray squares show stations currently in operation and under construction, respectively. In addition to the permanent stations, BATS includes 17 portable stations that can be deployed for specific research tasks.

Institute of Earth Sciences (DMC-IES), Academia Sinica is responsible for BATS data archiving and distribution. One copy of BATS data is contributed to the Data Management Center of the Incorporated Research Institutions for Seismology (DMC, IRIS) for the same purpose. Interested readers can obtain updated information at BATS worldwide web site (<http://bats.earth.sinica.edu.tw>).

Our CMT algorithm begins with a background-noise evaluation that determines the frequency band used in the inversion. The cut-off frequency of the lower corner is usually at  $\sim 0.02$  Hz, which is determined by comparing the power spectra of waveform windows 300 s before and after the P first arrival (Kao et al. 1998). We also utilize a two-step procedure to allow different velocity models for different station-source pairs. This is to mimic the effect of heterogeneous velocity structures in the Taiwan region. For more technical details, readers are referred to our previous reports (Kao et al. 1998; Kao and Jian 1999).

To characterize the inversion quality, each inversion result is classified using a letter (A-F) and a digit (1-4) combination depending on two parameters: the waveform misfit (E) and the CLVD component amount ( $\epsilon$ ), respectively. The derivations of E and  $\epsilon$  were presented in our previous reports (Kao et al. 1998; Kao and Jian 1999) and listed in Table 1.

Table 1. Quality classification of the inversion results.

Class	Criteria
Average Waveform Misfit (E)	
A	$0 \leq E < 0.3$
B	$0.3 < E \leq 0.5$
C	$0.5 < E \leq 0.7$
D	$0.7 < E \leq 0.9$
E	$0.9 < E \leq 1.1$
F	$E > 1.1$
CLVD component ( $\epsilon$ )	
1	$\epsilon \leq 0.1$
2	$0.1 < \epsilon \leq 0.25$
3	$0.25 < \epsilon \leq 0.4$
4	$\epsilon > 0.4$

Following the criteria defined in Kao and Jian (1999), we report on source parameters only if they meet the following criteria: (1) 3-component waveforms from at least three stations are used in the inversion, and (2) the inversion quality must be higher than C4. A total of 194 earthquakes that satisfy these conditions are listed in Table 2. The epicenters for all of these studied earthquakes are plotted in Figs. 2a, b and the corresponding moment-tensor solutions and focal depths are plotted in Fig. 2c.

Table 2. Source parameters of the studied earthquakes.

No	Origin Time	Lat. <sup>1</sup>	Long. <sup>1</sup>	dep.	M <sub>x</sub> <sup>2</sup>	M <sub>y</sub> <sup>2</sup>	M <sub>z</sub> <sup>2</sup>	M <sub>x</sub> <sup>2</sup>	M <sub>y</sub> <sup>2</sup>	M <sub>z</sub> <sup>2</sup>	M <sub>x</sub> <sup>2</sup>	M <sub>y</sub> <sup>2</sup>	M <sub>z</sub> <sup>2</sup>	M <sub>w</sub> <sup>2</sup>	M <sub>w</sub> <sup>2</sup>	Strike <sup>3</sup>	Dip <sup>3</sup>	Rake <sup>3</sup>	E <sup>4</sup>	ε <sup>4</sup>	Class
1	02/01/07:02:45:07.60	22.98	120.90	11±5.0	42.95	284.59	-246.74	234.90	45.90	-333.21	4.40±0.22	299±4.1	34±3.0	(-142)±4.8	0.550	7.51	C1				
2	02/01/08:17:00:39.25	24.38	120.90	16±5.0	244.14	-790.78	244.85	1123.22	-653.03	-141.14	4.71±0.24	352±25.0	63±3.2	17±25.0	0.438	1.58	B1				
3	02/01/13:18:16:42.67	23.06	121.33	16±6.0	-23.38	-50.39	100.59	53.40	-21.77	-10.42	3.94±0.20	23±5.1	45±5.8	69±3.5	0.397	5.94	B1				
4	02/01/14:16:34:16.59	24.49	122.39	48±8.0	-1203.51	-9.27	1164.79	-187.52	-118.74	-268.12	4.66±0.23	87±6.2	42±8.0	73±3.0	0.387	2.37	B1				
5	02/01/14:18:10:30.42	24.40	120.98	11±5.0	137.87	-114.24	-9.97	388.60	-18.11	298.79	4.41±0.22	83±3.0	55±9.3	(-175)±7.1	0.494	20.24	B2				
6	02/01/14:20:55:21.14	24.39	120.98	11±5.0	35.17	-42.61	5.73	78.84	9.00	20.54	3.91±0.20	76±8.4	76±12.6	176±7.1	0.396	8.14	B1				
7	02/01/15:12:47:44.11	22.88	121.81	26±8.0	-11.96	8.07	10.66	77.49	-29.42	-17.87	3.89±0.19	6±8.8	69±3.0	12±3.1	0.569	9.30	C1				
8	02/01/22:06:47:07.77	21.99	121.59	35±6.0	-415.92	-395.54	959.84	-474.13	-203.84	-157.46	4.59±0.23	136±5.2	37±6.7	93±3.0	0.455	3.76	B1				
9	02/01/29:02:24:24.22	22.93	121.43	16±5.0	-26.59	-335.55	242.97	46.47	-87.46	265.36	4.34±0.22	1±11.7	24±3.0	77±8.8	0.435	7.48	B1				
10	02/02/02:10:39:24.38	24.25	121.17	11±5.0	9.43	0.15	6.88	53.62	-6.90	-2.89	3.76±0.19	358±3.0	83±3.0	4±13.0	0.472	2.07	B1				
11	02/02/08:10:41:34.51	24.49	122.07	22±5.0	16.82	-16.41	2.75	4.38	19.38	-14.41	3.59±0.18	144±5.0	35±6.3	3±6.1	0.527	2.57	C1				
12	02/02/12:03:27:25.00	23.74	121.72	30±8.0	-3892.53	-15465.00	14085.50	13114.10	-4319.66	-11539.90	5.52±0.28	241±3.0	42±3.0	137±8.2	0.425	6.39	B1				
13	02/02/12:03:42:57.74	23.78	121.63	28±7.0	88.89	-348.70	212.39	702.81	-169.08	-493.56	4.58±0.23	257±6.3	54±3.0	166±3.0	0.520	4.86	C1				
14	02/02/12:04:00:36.27	23.75	121.67	31±5.0	88.68	-138.01	-10.52	154.88	-158.56	57.88	4.21±0.21	342±8.2	49±5.3	1±6.9	0.382	6.90	B1				
15	02/02/19:14:52:53.81	23.45	120.72	11±5.0	-10.95	-16.04	14.86	15.95	18.65	-34.87	3.71±0.19	238±6.5	16±3.0	119±8.6	0.589	22.94	C2				
16	02/02/28:20:14:42.26	23.80	122.90	22±8.0	-129.84	262.45	-89.25	15.58	128.67	-7.27	4.20±0.21	320±3.0	62±5.2	(-149)±3.0	0.541	4.85	C1				
17	02/03/01:07:50:16.21	23.10	120.79	11±5.0	2.13	15.52	3.89	44.19	-58.76	-6.79	3.85±0.19	4±7.0	37±3.0	(-3)±10.7	0.496	6.40	B1				
18	02/03/01:08:47:45.08	23.10	120.80	11±5.0	204.36	144.66	-140.76	381.70	-26.72	-497.40	4.48±0.22	275±7.0	36±8.1	(-160)±15.2	0.489	3.68	B1				
19	02/03/01:22:02:01.75	24.42	121.93	22±5.0	-15.29	31.05	-22.94	1.87	18.00	-20.35	3.67±0.18	326±5.4	37±3.0	(-147)±4.3	0.397	6.42	B1				
20	02/03/02:08:48:30.54	23.10	120.80	31±5.0	-198.04	-35.92	349.54	375.45	133.94	-576.58	4.52±0.23	265±7.7	31±4.3	15±9.6	0.519	7.47	C1				
21	02/03/04:09:04:26.56	23.77	121.44	28±8.0	-161.20	-22.27	147.65	233.85	91.95	119.87	4.27±0.21	198±25.0	60±8.5	35±21.7	0.486	6.67	B1				
22	02/03/09:16:35:16.53	21.38	121.29	32±6.0	-35.88	7.28	18.32	-2.45	-38.97	-34.06	3.79±0.19	64±3.0	23±11.0	30±5.4	0.478	6.85	B1				
23	02/03/11:07:49:51.19	24.56	122.58	14±4.0	50.54	-25.58	-45.59	24.86	30.44	-28.90	3.84±0.19	139±3.0	46±4.3	(-33)±8.5	0.550	5.01	C1				
24	02/03/14:11:25:51.91	23.40	120.66	13±5.0	13.65	-141.75	149.01	58.31	59.02	-4.71	4.09±0.20	178±3.2	45±3.9	59±6.7	0.392	5.82	B1				
25	02/03/18:16:38:44.10	24.83	122.63	21±5.0	36.00	-165.77	195.41	159.06	-402.70	204.09	4.41±0.22	357±5.4	22±5.2	30±3.1	0.514	1.71	C1				
26	02/03/20:08:04:05.99	23.79	121.63	27±7.0	-3.78	-16.53	21.79	10.45	0.14	-14.02	3.55±0.18	224±3.0	32±3.0	116±6.6	0.481	0.24	B1				
27	02/03/23:18:53:20.73	23.93	121.10	11±5.0	-2.51	2.58	-7.09	21.46	-6.75	6.58	3.52±0.18	96±9.6	71±9.6	(-161)±7.2	0.479	0.96	B1				
28	02/03/26:16:25:06.15	24.76	121.72	46±5.0	5.71	-30.20	49.02	82.21	117.11	-5.59	4.05±0.20	182±6.9	36±9.5	17±3.0	0.441	8.76	B1				
29	02/03/29:04:53:37.32	22.56	121.37	29±6.0	74.00	-73.46	-22.61	6.05	13.01	30.34	3.88±0.19	50±4.4	66±7.5	(-168)±7.4	0.397	8.40	B1				
30	02/03/30:18:44:09.56	23.95	122.37	18±6.0	-34.06	17.93	33.16	-11.57	28.11	-20.54	3.74±0.19	313±3.7	37±7.2	146±7.0	0.581	5.09	C1				
31	02/03/31:06:52:49.95	24.14	122.19	46±6.0	-5483170.00	-26950.00	528880.00	-1034590.00	-73162.30	-315970.00	7.10±0.35	97±3.0	44±3.0	85±3.0	0.492	7.83	B1				
32	02/03/31:15:42:35.14	24.17	122.25	24±6.0	-28.37	19.60	1.17	-27.00	28.11	-10.45	3.72±0.19	338±3.7	50±6.2	176±5.4	0.581	6.84	C1				

33	02/03/31/17:09:36.50	24.39	121.87	23±5.0	169.81	-113.86	2.31	-200.45	59.00	-237.83	4.30±0.22	106±6.0	45±9.1	(-3)±3.7	0.433	6.53	BI
34	02/03/31/22:09:45.60	24.38	121.94	19±8.0	-18.28	79.58	-92.55	-54.77	-42.97	-50.61	4.00±0.20	53±3.0	45±3.0	(-42)±3.0	0.393	8.64	BI
35	02/04/01/16:36:06.96	24.47	121.93	26±5.0	49.05	-45.19	21.84	-57.87	-38.71	-4.06	3.89±0.19	197±3.0	63±3.0	170±3.0	0.467	3.75	BI
36	02/04/03/06:47:36.00	24.14	122.32	33±8.0	-1144.79	192.79	1093.27	4.78	365.13	-442.40	4.67±0.23	290±5.4	40±3.0	123±7.8	0.526	3.01	CI
37	02/04/03/18:06:10.79	24.32	121.87	21±6.0	-1636.57	-279.88	1251.51	1383.69	1005.51	-3003.80	4.99±0.25	268±7.2	26±3.7	151±20.9	0.494	6.62	BI
38	02/04/03/20:37:05.51	24.54	121.97	11±4.0	6.55	-46.71	-10.15	-16.55	114.67	-124.45	4.10±0.20	130±10.0	10±3.0	(-1)±6.3	0.453	18.85	B2
39	02/04/04/12:58:55.74	24.22	121.73	15±7.0	-62.11	3.10	41.81	31.02	11.27	33.01	3.84±0.19	98±25.0	54±3.0	135±8.7	0.555	7.92	CI
40	02/04/04/13:04:49.58	24.32	121.79	20±8.0	-78.12	-134.70	245.55	113.90	70.48	-140.30	4.24±0.21	224±4.6	29±3.0	101±8.6	0.474	1.95	BI
41	02/04/05/21:54:26.15	24.37	122.01	30±8.0	-55.31	53.04	-7.31	-68.35	34.04	0.16	3.92±0.20	342±3.0	70±3.0	(-173)±6.2	0.532	8.26	CI
42	02/04/06/01:15:13.46	24.68	122.06	13±5.0	75.65	-5.16	-60.72	-8.70	-48.59	33.47	3.91±0.20	283±3.2	29±3.0	(-56)±3.0	0.477	2.88	BI
43	02/04/06/04:05:46.89	23.81	122.69	16±8.0	-143.36	118.94	-11.06	-30.90	63.11	74.65	4.09±0.20	231±3.0	54±3.0	0±8.1	0.595	4.00	CI
44	02/04/07/23:20:45.29	24.28	121.85	20±4.0	-122.00	-132.15	381.16	221.73	-27.92	-188.49	4.35±0.22	245±3.0	40±3.9	125±3.0	0.434	3.81	BI
45	02/04/09/12:57:07.86	24.09	122.28	31±6.0	52.85	39.64	-111.80	-74.47	333.53	-23.25	4.30±0.22	26±9.6	14±6.3	(-146)±15.7	0.527	16.12	C2
46	02/04/10/04:56:46.77	24.20	122.26	28±6.0	-96.95	87.25	19.41	-53.19	144.62	-71.26	4.13±0.21	329±4.8	33±6.0	175±6.8	0.499	9.02	BI
47	02/04/10/16:10:20.77	24.29	121.82	25±8.0	-2.65	8.23	-9.18	12.31	4.28	-26.79	3.60±0.18	291±9.4	26±6.9	(-162)±3.0	0.511	4.20	CI
48	02/04/12/01:13:45.18	23.00	120.60	16±6.0	6.95	-34.72	21.12	-23.87	-19.18	8.02	3.69±0.18	190±7.2	58±6.3	143±3.0	0.325	3.82	BI
49	02/04/14/11:24:19.87	24.04	122.22	24±8.0	-70.63	32.61	51.98	-13.30	39.20	-40.84	3.90±0.20	309±7.8	41±3.0	147±4.5	0.535	5.00	CI
50	02/04/14/16:08:04.76	24.38	121.99	21±6.0	20.68	87.96	-155.47	59.60	-52.49	-148.14	4.15±0.21	322±5.7	21±3.0	(-104)±4.4	0.466	3.94	BI
51	02/04/14/17:44:08.60	24.47	121.89	31±5.0	18.33	6.88	-18.75	-62.38	-17.48	-31.61	3.85±0.19	88±5.1	63±3.9	(-21)±12.7	0.464	3.27	BI
52	02/04/14/19:21:16.65	24.81	122.02	27±8.0	153.41	-158.03	20.47	-19.42	169.35	-209.47	4.27±0.21	132±3.0	30±5.8	3±3.0	0.465	5.27	BI
53	02/04/15/18:46:10.10	24.79	122.02	11±5.0	192.76	17.89	-146.81	-48.40	-106.16	102.32	4.18±0.21	273±13.6	29±6.5	(-58)±10.1	0.525	3.49	CI
54	02/04/15/19:16:20.46	22.11	121.47	36±6.0	3.48	-249.64	277.81	66.89	-9.35	-134.50	4.26±0.21	202±10.4	33±3.0	104±15.7	0.489	2.73	BI
55	02/04/16/15:42:13.37	24.14	121.69	12±5.0	-14.53	-19.57	20.68	15.03	15.00	-28.98	3.69±0.18	232±8.8	21±3.0	111±25.0	0.541	8.13	CI
56	02/04/17/14:46:48.46	24.38	122.05	25±8.0	18.97	51.15	-61.63	39.44	-13.47	-86.27	3.97±0.20	306±3.0	23±3.0	(-127)±13.9	0.464	1.80	BI
57	02/04/18/09:57:06.84	24.28	121.82	19±8.0	2.23	1.59	-14.63	-44.77	-7.60	-27.08	3.76±0.19	87±8.0	58±5.2	(-14)±18.8	0.534	1.58	CI
58	02/04/19/07:19:11.50	24.50	121.98	15±5.0	24.67	-32.24	21.18	-48.26	-21.59	26.47	3.82±0.19	290±6.9	60±7.5	18±3.9	0.497	4.63	BI
59	02/04/20/08:48:00.02	22.83	121.63	15±5.0	246.33	-1991.19	1715.76	421.97	668.01	75.60	4.81±0.24	170±3.0	48±9.8	60±11.7	0.450	6.08	BI
60	02/04/22/15:14:30.56	24.34	122.02	27±5.0	376.58	98.14	-258.46	221.51	-351.32	-609.23	4.54±0.23	273±8.2	20±3.0	(-14)±7.8	0.322	2.99	BI
61	02/04/24/18:41:05.97	21.88	122.02	26±4.0	12.67	-118.70	121.29	-57.63	17.24	78.65	4.07±0.20	332±3.9	30±3.0	79±5.4	0.516	33.60	C3
62	02/04/27/10:43:39.21	23.82	122.36	31±8.0	-38.55	33.57	6.43	-6.68	-3.08	-16.43	3.68±0.18	53±6.3	68±8.7	14±4.9	0.629	4.73	CI
63	02/04/28/04:37:25.33	22.89	121.35	19±4.0	-6.99	-163.21	119.15	53.05	-63.08	20.65	4.08±0.20	356±25.0	42±7.8	57±9.7	0.394	6.30	BI
64	02/04/29/02:02:00.71	24.38	121.90	17±5.0	58.29	-21.86	-17.04	-72.11	-2.98	-51.21	3.94±0.20	100±5.3	59±6.7	(-15)±7.3	0.417	0.20	BI
65	02/05/01/14:41:50.22	24.79	122.04	16±6.0	55.73	-42.58	-5.54	-51.39	-17.49	-18.15	3.86±0.19	203±3.0	72±3.0	(-170)±3.4	0.466	2.01	BI
66	02/05/03/23:52:49.31	24.85	122.18	13±5.0	99.10	-38.32	-46.85	3.95	-13.96	-46.06	3.92±0.20	238±5.5	53±3.0	(-146)±4.4	0.453	5.25	BI
67	02/05/05/08:54:32.47	24.33	122.09	37±7.0	34.64	-8.16	-27.48	18.56	-10.54	17.39	3.69±0.18	321±3.0	52±8.6	(-42)±6.3	0.495	0.75	BI

(Table 2. continued)

68	02/05/05/09:55:46.32	24.42	121.93	30±6.0	-64.97	5.18	53.62	-3.11	45.86	-16.98	3.86±0.19	288±14.8	28±4.1	118±13.4	0.421	7.76	B1
69	02/05/05/19:01:53.55	24.32	121.93	30±8.0	41.97	-26.32	-11.75	-6.25	48.70	-47.15	3.86±0.19	126±4.0	26±3.0	(-13)±6.3	0.298	8.15	A1
70	02/05/06/00:19:02.94	23.97	122.43	31±5.0	-61.94	33.34	39.82	-20.37	54.84	-39.94	3.91±0.20	316±6.1	37±4.4	156±5.4	0.587	5.24	C1
71	02/05/06/04:40:52.02	24.18	121.70	24±4.0	-52.10	-20.79	60.02	42.54	3.82	-44.49	3.89±0.19	258±3.8	39±4.6	130±8.3	0.449	4.83	B1
72	02/05/10/04:17:12.92	22.34	121.36	36±6.0	37.86	295.71	-131.90	-664.23	2723.90	-344.28	4.90±0.25	360±25.0	14±3.0	(-172)±25.0	0.404	3.12	B1
73	02/05/10/11:08:54.97	23.71	122.80	26±5.0	-758.41	2903.75	-1097.83	-1945.33	1381.61	2162.75	5.00±0.25	240±8.8	46±6.5	(-22)±5.0	0.491	5.78	B1
74	02/05/13/13:29:03.22	21.87	120.63	39±4.0	-95.53	158.96	-39.84	27.90	-248.28	434.69	4.41±0.22	132±3.0	14±12.9	(-167)±4.0	0.625	7.02	C1
75	02/05/14/08:16:08.29	23.96	122.37	36±6.0	-24.20	29.04	15.61	-16.69	46.36	-31.93	3.81±0.19	324±9.4	30±7.5	172±5.1	0.597	17.52	C2
76	02/05/15/03:46:05.91	24.65	121.87	17±5.0	49304.70	-74934.60	25439.20	-57302.50	67144.10	23014.10	5.97±0.30	20±5.5	49±7.3	167±5.2	0.487	6.05	B1
77	02/05/15/04:42:41.26	24.66	121.84	21±5.0	-68.73	264.01	-80.52	-967.99	139.62	357.78	4.62±0.23	264±3.9	69±6.6	(-8)±3.0	0.495	4.45	B1
78	02/05/15/12:08:32.84	24.66	121.88	18±5.0	58.59	-48.98	-27.76	-26.21	53.55	-74.70	3.97±0.20	118±3.6	32±8.0	(-13)±6.2	0.543	6.75	C1
79	02/05/18/01:10:04.20	24.23	121.73	16±5.0	0.71	-41.26	58.62	17.93	37.27	-39.36	3.86±0.19	186±3.0	25±3.0	62±3.0	0.492	7.89	B1
80	02/05/18/01:40:41.02	24.22	121.73	22±4.0	-29.96	-25.26	84.62	44.18	16.29	-52.12	3.93±0.20	243±20.0	31±3.9	118±17.9	0.523	0.11	C1
81	02/05/18/05:49:38.82	24.23	121.73	29±5.0	-31.85	-6.33	32.71	27.64	6.05	-30.55	3.75±0.19	265±9.8	38±6.7	137±9.4	0.489	5.01	B1
82	02/05/20/09:49:44.98	24.44	121.85	24±6.0	-122.73	79.89	15.20	-374.39	-127.48	19.35	4.34±0.22	172±3.8	71±3.6	178±7.3	0.369	9.23	B1
83	02/05/27/08:55:24.80	22.88	121.14	18±6.0	-54.86	14.50	35.96	56.45	-4.04	-53.47	3.91±0.20	277±9.7	52±8.5	155±6.1	0.401	6.66	B1
84	02/05/28/16:45:14.97	23.91	122.40	27±8.0	-49462.80	29369.20	32525.00	-9114.66	38252.30	-30259.10	5.83±0.29	312±7.8	37±7.9	154±9.4	0.561	4.70	C1
85	02/05/30/06:53:40.15	24.87	121.95	90±5.0	863.41	195.01	-976.89	571.08	2120.11	2129.87	4.94±0.25	103±5.9	11±8.9	(-121)±7.0	0.458	4.82	B1
86	02/05/30/17:27:27.35	22.79	121.42	26±5.0	129.35	-150.48	-72.50	218.68	-246.53	94.16	4.32±0.22	341±6.1	45±7.3	(-7)±6.1	0.373	5.99	B1
87	02/06/01/10:21:29.99	23.58	122.00	27±6.0	32.44	-78.63	77.84	37.15	38.11	34.73	3.95±0.20	47±3.0	47±6.2	139±4.5	0.578	4.19	C1
88	02/06/02/15:03:56.93	24.41	121.91	30±4.0	-15.54	3.06	18.11	-13.93	3.35	-12.01	3.54±0.18	88±9.2	52±10.7	41±4.4	0.488	1.67	B1
89	02/06/03/15:25:49.80	24.78	122.09	17±6.0	349.05	-145.95	-156.34	-72.27	41.45	-189.35	4.30±0.22	117±3.0	53±4.0	(-30)±6.7	0.530	1.71	C1
90	02/06/04/02:03:45.57	22.16	121.06	31±7.0	22.09	-16.70	-13.27	-43.56	-64.19	-12.26	3.88±0.19	195±8.5	36±6.9	(-172)±3.0	0.426	3.55	B1
91	02/06/13/01:23:56.55	24.56	121.89	14±5.0	-12.02	3.55	-1.02	-29.77	-1.33	13.18	3.62±0.18	264±6.5	67±8.1	6±8.0	0.514	2.86	C1
92	02/06/13/20:40:27.83	24.78	122.13	16±8.0	4500.27	-1594.40	-1919.60	124.48	1534.16	-2128.37	5.04±0.25	126±4.0	46±4.1	(-30)±3.0	0.491	6.38	B1
93	02/06/14/07:22:23.29	23.51	121.65	37±8.0	-51.42	-309.40	418.86	1052.52	-458.60	-317.41	4.67±0.23	2±3.0	65±8.3	24±6.0	0.361	5.16	B1
94	02/06/14/10:48:58.57	23.17	122.06	31±8.0	-2.04	0.01	0.53	32.79	1.81	-0.79	3.61±0.18	181±25.0	87±3.0	(-1)±25.0	0.475	6.68	B1
95	02/06/14/12:52:53.29	23.50	121.61	44±5.0	159.27	-133.87	-5.24	28.03	89.97	-75.89	4.12±0.21	140±3.0	52±3.0	(-3)±3.1	0.383	4.09	B1
96	02/06/15/00:42:49.16	24.19	121.74	13±5.0	-64.54	57.64	33.38	-22.42	-53.58	46.97	3.93±0.20	139±3.0	43±8.0	165±8.7	0.530	6.99	C1
97	02/06/15/07:27:44.47	24.68	121.86	20±4.0	2.52	1.44	-8.18	-45.12	12.13	10.61	3.73±0.19	2±5.4	74±9.1	(-165)±13.4	0.525	2.17	C1
98	02/06/16/10:41:42.24	24.82	122.08	23±7.0	1179.83	-940.68	237.13	-325.05	1579.60	-2116.57	4.91±0.25	128±6.5	23±10.4	2±4.2	0.570	2.08	C1
99	02/06/16/13:06:13.39	24.81	122.04	26±6.0	764.96	-1256.31	780.84	-153.73	805.71	-780.84	4.75±0.24	141±7.9	41±6.9	25±4.2	0.494	1.34	B1
100	02/06/17/05:03:40.11	24.02	121.73	24±4.0	-3.46	-3.44	15.07	-6.98	-12.30	-18.47	3.54±0.18	124±7.2	16±6.3	70±7.2	0.405	3.08	B1
101	02/06/17/14:03:02.56	23.23	121.37	17±6.0	-45.56	-185.32	184.25	68.36	9.63	-31.22	4.14±0.21	203±6.2	40±8.3	91±5.7	0.489	2.15	B1
102	02/06/17/20:20:08.73	24.79	122.13	17±6.0	229.07	-21.33	-132.32	0.62	-366.21	143.87	4.36±0.22	294±6.7	16±5.2	(-47)±7.8	0.468	8.21	B1

(Table 2. continued)

103	02/06/19/10:38:04.07	24.85	122.02	15±5.0	310.51	-144.96	-35.99	-290.28	-156.62	-96.13	4.35±0.22	201±3.0	63±4.2	(-169)±9.3	0.495	10.87	B2
104	02/06/20/05:30:41.94	24.72	122.25	21±8.0	28.71	-39.84	21.81	45.86	-49.15	5.72	3.86±0.19	347±5.3	50±9.8	15±8.9	0.514	8.46	C1
105	02/06/20/12:19:51.07	22.77	120.90	14±6.0	2.40	81.20	-96.87	54.98	8.66	-78.40	4.02±0.20	311±5.7	33±5.4	(-128)±3.0	0.515	8.89	C1
106	02/06/20/19:50:46.52	23.47	122.11	38±8.0	31.82	-64.45	22.14	7.73	32.57	-2.89	3.80±0.19	147±3.5	59±3.5	28±3.0	0.415	4.95	B1
107	02/06/21/20:51:38.88	22.12	121.08	19±5.0	51.56	-43.87	0.70	-29.26	63.75	36.97	3.91±0.20	30±6.4	37±11.0	(-179)±3.0	0.544	2.10	C1
108	02/06/22/21:54:41.94	24.32	121.79	13±5.0	-26.18	5.85	13.40	5.67	0.95	12.59	3.54±0.18	112±3.7	54±3.1	139±3.0	0.474	4.29	B1
109	02/06/23/09:19:58.39	22.52	120.00	23±8.0	1.36	59.70	-47.12	9.32	16.20	-19.51	3.79±0.19	333±23.3	39±4.3	(-119)±10.3	0.589	4.81	C1
110	02/06/24/01:12:21.17	24.03	121.54	23±6.0	-147.10	-59.72	166.82	147.79	46.06	97.27	4.20±0.21	80±7.8	50±3.0	132±3.3	0.427	1.76	B1
111	02/06/25/07:42:40.28	23.60	121.65	16±5.0	3.00	0.15	-3.54	21.80	1.55	-12.19	3.54±0.18	270±3.0	61±3.0	(-172)±16.3	0.480	4.07	B1
112	02/07/07/10:01:08.26	24.06	121.40	46±8.0	18.25	-22.55	2.12	39.36	22.00	4.19	3.73±0.19	169±13.3	66±6.0	10±25.0	0.498	18.68	B2
113	02/07/11/07:36:22.57	23.94	122.41	30±5.0	-32565.70	15008.30	25773.70	-6650.52	22005.40	-17535.10	5.69±0.28	309±7.0	38±6.6	146±8.0	0.495	2.47	B1
114	02/07/11/09:11:08.74	23.97	122.30	24±8.0	-99.49	-54.59	200.53	96.70	69.52	-138.76	4.20±0.21	246±6.3	28±3.0	116±7.5	0.528	6.06	C1
115	02/07/13/12:07:05.87	23.80	122.68	27±6.0	-793.87	765.72	239.40	254.70	387.37	-493.17	4.62±0.23	305±3.0	52±3.0	173±4.1	0.589	17.72	C2
116	02/07/16/16:12:30.33	24.01	122.35	29±5.0	-36.05	19.10	27.23	-8.24	54.28	-31.41	3.84±0.19	311±9.9	24±8.2	154±5.3	0.485	2.42	B1
117	02/07/17/16:57:21.37	23.99	122.20	27±8.0	-410.27	765.67	-260.70	-995.19	1408.84	-348.85	4.79±0.24	348±3.3	38±3.0	(-171)±13.5	0.578	1.24	C1
118	02/07/17/17:22:48.62	23.91	122.27	26±8.0	-144.79	71.68	82.96	-31.34	49.28	-69.17	4.07±0.20	313±3.0	50±3.0	149±3.0	0.562	6.58	C1
119	02/07/17/19:14:41.90	23.33	122.15	11±5.0	1073.87	-1310.83	-136.45	499.86	125.14	-298.81	4.69±0.23	146±3.3	79±6.7	(-7)±7.4	0.490	8.76	B1
120	02/07/18/04:52:31.52	21.90	120.08	46±7.0	194.25	-408.21	263.74	229.21	189.20	373.60	4.46±0.22	55±3.5	40±7.5	155±3.4	0.593	7.88	C1
121	02/08/03/22:18:74	24.93	122.07	20±5.0	70.51	11.55	-84.09	-81.19	133.75	-311.72	4.31±0.22	86±9.7	14±3.0	(-30)±7.7	0.505	0.49	C1
122	02/08/07/11:23:52.91	24.45	121.89	20±6.0	10.58	-1.66	-10.89	-6.25	-1.68	-6.80	3.37±0.17	95±16.3	51±4.0	(-47)±12.7	0.576	9.74	C1
123	02/08/09/09:31:00.97	23.96	122.35	27±5.0	-154.84	66.27	116.69	-5.46	108.95	-104.54	4.15±0.21	302±5.6	35±3.0	147±9.3	0.497	5.15	B1
124	02/08/10/09:03:15.61	24.13	121.70	18±5.0	-719.00	-32.73	354.84	551.37	936.91	207.34	4.67±0.23	207±6.9	32±3.0	26±9.2	0.397	2.60	B1
125	02/08/11/02:42:11.08	24.14	121.67	14±5.0	-12.84	-12.56	17.18	10.21	33.03	-20.74	3.70±0.19	215±7.5	14±3.4	69±6.0	0.499	2.26	B1
126	02/08/11/07:46:40.80	23.57	121.39	21±5.0	-39.14	-10.65	39.61	44.90	4.41	41.17	3.85±0.19	85±9.4	46±3.0	144±3.1	0.495	0.76	B1
127	02/08/11/20:57:27.22	23.35	120.45	15±5.0	-1.14	-23.86	29.85	10.54	-9.94	2.11	3.60±0.18	6±10.5	42±6.3	66±5.0	0.387	6.36	B1
128	02/08/14/23:28:56.77	24.42	121.95	21±8.0	18.83	-279.86	324.99	120.27	-90.74	-155.02	4.32±0.22	220±6.8	39±3.0	124±8.2	0.445	6.74	B1
129	02/08/22/08:49:23.72	23.87	122.58	26±4.0	-91.19	38.26	117.10	-12.03	172.61	-70.89	4.16±0.21	298±10.3	19±8.6	134±8.9	0.475	3.25	B1
130	02/08/23/02:32:05.56	24.39	121.97	31±7.0	17.28	-38.66	27.07	-17.58	23.02	-7.90	3.72±0.19	130±3.0	57±8.3	37±17.0	0.590	6.77	C1
131	02/08/26/15:32:10.52	24.16	122.51	48±8.0	758.26	-526.48	152.66	236.98	827.15	-553.25	4.66±0.23	146±9.3	35±4.8	1±5.5	0.477	3.00	B1
132	02/08/28/17:05:34.06	22.26	121.37	31±5.0	5569.08	-13119.80	6020.75	7931.40	-6773.19	-2671.47	5.39±0.27	238±3.1	62±7.5	149±3.0	0.379	4.90	B1
133	02/08/28/20:35:13.87	24.10	121.79	12±5.0	-0.74	-7.11	12.79	10.46	-0.33	-29.63	3.62±0.18	246±10.0	20±5.9	150±15.0	0.472	7.21	B1
134	02/08/29/13:36:33.41	23.85	121.01	21±6.0	15.86	-203.73	139.95	5.95	-86.40	0.21	4.13±0.21	337±3.0	51±9.9	54±6.2	0.500	12.31	B2
135	02/08/29/15:53:34.82	22.47	121.00	26±6.0	-28.88	-72.31	74.64	36.42	22.41	-106.69	4.03±0.20	222±3.0	20±5.2	115±9.4	0.556	6.15	C1
136	02/08/29/20:05:53.00	24.80	121.81	79±7.0	-729.97	139.68	622.85	481.48	-423.98	839.07	4.67±0.23	97±7.9	32±4.0	147±6.9	0.487	4.41	B1
137	02/09/01/05:56:21.04	23.92	122.43	30±6.0	-12131.80	5616.33	8911.83	-1081.62	7464.83	-7568.03	5.40±0.27	305±4.1	38±3.0	148±3.0	0.485	4.17	B1

(Table 2. continued)

138	02/09/01/07:07:35:47	23.97	122.37	31±8.0	-5436.17	3677.95	3379.84	-528.35	3145.32	-3403.32	5.17±0.26	309±4.3	43±3.0	156±5.3	0.491	2.66	B1
139	02/09/06/11:02:01:99	23.89	120.73	23±8.0	399.41	-927.85	664.94	289.94	-499.76	-548.39	4.65±0.23	224±8.0	42±3.0	148±5.6	0.431	3.76	B1
140	02/09/07/22:10:30:90	22.86	121.59	11±4.0	0.30	-42.54	32.99	6.09	10.50	11.52	3.68±0.18	25±7.6	40±5.0	118±16.7	0.438	2.17	B1
141	02/09/07/22:59:32:85	24.45	121.69	45±4.0	621.23	8.31	-660.12	268.14	742.56	12.65	4.61±0.23	126±3.0	24±3.1	(-62)±3.9	0.296	6.35	A1
142	02/09/10/08:38:14:94	24.87	122.01	92±6.0	-687.48	762.08	-43.61	416.69	1089.35	628.63	4.72±0.24	209±6.8	34±5.5	(-2)±7.4	0.373	0.46	B1
143	02/09/15/01:06:53:42	23.92	122.53	26±6.0	-1757.52	689.75	1707.24	-450.54	1641.90	-873.10	4.88±0.24	308±17.0	32±9.6	140±9.1	0.538	2.20	C1
144	02/09/17/20:26:11:76	24.45	122.97	116±10.0	-143.11	101.69	42.10	168.84	-98.63	328.53	4.34±0.22	104±3.4	31±4.8	173±4.3	0.515	5.25	C1
145	02/09/18/02:21:09:60	22.01	121.52	35±5.0	-101.41	-1158.57	1501.27	-398.31	-230.45	-964.21	4.76±0.24	159±3.0	27±3.0	85±6.9	0.496	5.98	B1
146	02/09/24/22:43:22:89	22.67	121.08	19±5.0	-614.42	30.87	577.96	-304.09	795.99	-148.07	4.62±0.23	316±3.0	26±7.2	136±4.9	0.441	0.15	B1
147	02/09/25/18:44:09:65	23.90	122.31	32±6.0	-41.17	21.13	22.67	-17.63	34.95	-23.60	3.78±0.19	321±3.0	39±6.7	158±3.0	0.622	2.43	C1
148	02/09/27/05:07:47:90	24.16	120.95	17±5.0	70.77	-67.24	-31.82	100.74	13.09	-58.45	4.03±0.20	256±8.6	67±7.1	(-165)±3.0	0.486	6.63	B1
149	02/09/28/19:20:17:62	23.97	122.44	28±5.0	-37.85	23.82	21.60	-14.47	63.41	-28.91	3.87±0.19	320±3.1	25±8.5	161±9.3	0.562	7.58	C1
150	02/09/30/08:35:13:53	23.33	120.61	15±5.0	-29.67	-1073.98	1116.64	394.62	347.61	141.90	4.66±0.23	366±6.2	47±3.0	115±4.9	0.414	4.05	B1
151	02/09/30/23:50:14:16	23.35	120.63	15±5.0	-9.92	-19.38	34.30	14.61	-3.58	1.15	3.61±0.18	32±6.7	42±4.6	84±3.0	0.526	6.71	C1
152	02/10/04/00:15:44:88	24.95	122.46	110±4.0	-23.07	72.06	-53.15	32.85	-47.84	-13.25	3.90±0.20	14±3.0	45±3.0	(-36)±5.9	0.395	4.49	B1
153	02/10/06/23:38:33:83	24.30	122.10	31±7.0	60.35	118.43	-134.04	-177.78	-47.30	-130.77	4.22±0.21	73±6.2	48±3.0	(-35)±15.3	0.486	8.76	B1
154	02/10/07/00:55:48:44	23.82	121.02	17±5.0	-12.90	-48.78	74.39	28.72	4.84	-13.56	3.84±0.19	211±3.0	39±3.6	93±3.0	0.410	3.61	B1
155	02/10/09/11:54:41:39	22.58	121.34	27±7.0	98.64	-55.98	-79.18	0.03	69.12	-70.85	4.03±0.20	122±8.6	36±9.4	(-31)±9.0	0.372	1.65	B1
156	02/10/11/22:39:41:65	24.23	121.76	26±7.0	-58.04	8.37	21.45	20.02	51.68	-73.66	3.94±0.20	287±3.5	23±8.2	156±3.0	0.564	4.71	C1
157	02/10/13/03:43:28:52	22.54	121.32	32±8.0	374.32	-308.98	41.00	240.62	111.77	-21.24	4.36±0.22	153±3.0	76±5.3	4±3.0	0.399	4.96	B1
158	02/10/14/20:48:59:81	22.10	121.32	19±7.0	-4.74	-60.55	48.30	-15.23	-22.43	-45.99	3.86±0.19	175±8.4	25±3.0	106±8.3	0.569	9.28	C1
159	02/10/18/06:43:20:54	24.23	121.77	17±6.0	-135.80	19.24	221.09	117.25	153.83	-216.36	4.29±0.21	265±13.7	24±7.6	131±6.2	0.465	7.50	B1
160	02/10/18/08:04:58:24	24.22	121.76	17±5.0	-133.09	-23.24	257.70	132.61	119.56	-218.53	4.40±0.22	256±7.2	26±3.0	126±13.8	0.469	0.23	B1
161	02/10/18/08:45:22:52	24.23	121.76	21±5.0	-98.79	-4.25	79.43	78.11	21.79	-111.89	4.08±0.20	271±5.3	38±3.3	147±14.0	0.494	8.57	B1
162	02/10/18/10:11:30:99	24.22	121.75	21±8.0	-12.69	-13.36	46.11	22.94	17.20	-49.72	3.82±0.19	242±9.5	22±8.0	125±13.7	0.590	6.07	C1
163	02/10/20/21:25:52:56	24.20	121.76	15±5.0	-84.07	-124.91	360.97	152.92	200.73	-267.86	4.38±0.22	224±7.3	22±3.8	96±5.3	0.406	0.80	B1
164	02/10/20/22:19:47:34	24.21	121.75	26±5.0	-62.70	-57.17	98.91	142.64	2.02	-192.96	4.21±0.21	260±4.8	35±5.7	154±12.9	0.496	1.23	B1
165	02/10/20/22:32:58:29	24.21	121.76	17±5.0	-36.80	-65.97	141.36	106.45	37.84	-211.79	4.22±0.21	248±6.4	24±3.0	139±17.4	0.381	3.40	B1
166	02/10/21/10:49:42:38	22.82	121.48	109±10.0	-122.53	1.86	122.09	11.74	-64.24	-25.47	4.04±0.20	73±9.4	33±3.0	69±7.9	0.444	5.29	B1
167	02/10/22/13:55:56:01	24.36	122.07	30±5.0	29.25	15.65	-38.56	-99.68	73.83	16.93	4.01±0.20	7±4.5	52±6.0	(-162)±9.6	0.495	5.23	B1
168	02/10/27/09:55:59:55	24.25	121.77	12±6.0	-8.15	-12.05	50.18	18.56	65.41	-63.92	3.94±0.20	219±3.0	12±5.4	84±3.0	0.561	3.10	C1
169	02/10/28/10:24:53:92	24.03	121.64	11±4.0	-21.40	-30.37	35.48	32.45	-9.85	-25.70	3.77±0.19	247±6.1	44±7.5	133±5.7	0.493	3.03	B1
170	02/10/31/21:15:52:20	21.98	121.35	19±6.0	-8.12	-480.53	521.38	-177.61	98.71	-50.53	4.43±0.22	149±3.0	45±8.4	72±10.0	0.554	5.81	C1
171	02/10/31/22:31:06:89	24.39	122.00	19±8.0	27.67	-1.08	-40.14	-12.65	-67.29	-21.07	3.87±0.19	232±7.4	18±8.2	(-138)±4.7	0.432	24.63	B2
172	02/11/01/19:13:29:07	24.42	121.91	29±8.0	-52.68	13.49	35.31	-4.94	64.74	-16.73	3.88±0.19	298±17.5	21±7.0	130±16.6	0.430	23.55	B2

(Table 2. continued)



173	02/11/02/17:13:40.46	24.21	121.73	20±6.0	-21.33	-19.23	36.08	21.11	-3.07	-11.34	3.68±0.18	241±4.8	43±6.9	112±5.5	0.455	1.99	BI
174	02/11/07/19:27:53.74	23.90	122.42	27±5.0	-65.72	66.60	44.04	-24.28	90.60	-66.52	4.03±0.20	318±3.0	32±7.6	166±3.9	0.571	7.02	CI
175	02/11/07/19:34:08.40	23.88	122.42	27±6.0	-255.70	142.92	136.14	-158.72	240.71	-147.11	4.34±0.22	327±3.0	42±3.5	161±4.0	0.585	4.17	CI
176	02/11/10/00:07:04.98	24.89	121.84	118±12.0	-367.85	-386.91	785.55	723.88	290.39	506.78	4.64±0.23	74±7.3	49±3.0	137±7.3	0.498	7.02	BI
177	02/11/10/12:19:26.86	23.96	122.43	32±6.0	-54.91	36.91	45.37	-10.87	66.36	-47.09	3.94±0.20	310±6.0	30±7.5	155±5.5	0.516	3.82	CI
178	02/11/11/19:33:49.93	23.94	122.37	25±6.0	-43.13	17.36	17.93	-23.09	53.29	-25.01	3.84±0.19	326±3.6	32±11.8	162±3.0	0.589	1.36	CI
179	02/11/14/15:26:03.43	24.47	121.86	28±6.0	-20.82	50.27	-14.40	-44.84	-25.35	-24.08	3.83±0.19	66±3.0	61±3.0	(-20)±3.0	0.477	4.26	BI
180	02/11/22/13:27:34.59	23.10	121.34	35±8.0	-26.39	37.00	0.37	-22.84	-20.68	4.76	3.70±0.19	155±4.6	62±3.2	(-173)±5.8	0.405	9.03	BI
181	02/11/26/05:40:12.02	23.29	120.93	11±4.0	21.87	-30.50	-8.41	42.83	2.25	15.54	3.75±0.19	75±3.0	73±7.2	(-177)±3.6	0.506	4.52	CI
182	02/11/26/15:29:42.79	23.73	122.52	21±8.0	-442.03	192.82	312.67	-56.71	461.98	-320.50	4.50±0.23	307±9.3	29±6.8	150±3.1	0.588	2.14	CI
183	02/12/01/12:35:16.15	23.95	122.26	19±8.0	-208.45	36.41	118.71	-40.45	7.92	-95.68	4.14±0.21	70±3.0	53±4.8	45±6.1	0.581	4.24	CI
184	02/12/03/23:58:16.15	23.42	122.05	31±5.0	41.71	-57.33	9.99	29.00	25.61	12.37	3.81±0.19	57±3.0	68±5.0	163±3.0	0.455	6.78	BI
185	02/12/04/00:06:09.75	22.92	121.25	13±6.0	-3.23	-17.06	7.37	21.69	-2.72	-36.92	3.71±0.19	254±7.3	31±5.9	162±18.1	0.578	5.94	CI
186	02/12/07/03:45:12.00	21.42	121.93	36±5.0	560.24	-2277.23	1871.67	476.61	-954.53	-2193.61	4.94±0.25	215±8.1	28±8.6	137±8.7	0.497	5.26	BI
187	02/12/10/08:29:10.04	23.39	120.52	12±5.0	65.45	-109.13	21.66	61.88	-66.44	8.93	4.01±0.20	337±3.0	59±3.8	16±3.0	0.438	4.10	BI
188	02/12/13/01:30:25.35	23.17	121.65	42±5.0	53.13	-227.59	218.72	94.60	-105.20	-22.20	4.22±0.21	351±6.0	51±4.4	52±5.9	0.250	6.37	AI
189	02/12/16/00:59:46.47	24.05	121.60	28±4.0	6.23	-6.63	-11.21	17.46	40.46	-4.83	3.71±0.19	164±13.7	24±4.9	(-12)±10.7	0.418	0.23	BI
190	02/12/21/06:09:14.47	21.53	121.37	21±6.0	-689.56	1006.24	-470.55	694.58	-535.09	183.15	4.68±0.23	20±25.0	67±8.3	(-25)±25.0	0.588	6.28	CI
191	02/12/22/01:25:14.33	22.63	121.35	25±5.0	115.93	-102.83	12.49	55.40	23.99	-1.37	4.00±0.20	149±3.0	80±4.5	5±3.0	0.471	0.07	BI
192	02/12/23/11:54:17.21	23.27	121.53	28±6.0	-6.13	-325.97	256.58	120.01	-108.90	-49.64	4.29±0.21	220±3.0	48±3.4	122±3.0	0.392	4.40	BI
193	02/12/25/07:01:30.14	24.46	121.83	55±11.0	1187.37	-2113.12	997.71	452.08	-1394.65	584.55	4.86±0.24	331±4.1	48±3.0	24±3.0	0.350	5.51	BI
194	02/12/31/16:36:48.27	23.31	121.04	13±5.0	30.76	-2.48	-17.28	20.75	-2.39	-21.54	3.66±0.18	262±3.2	47±3.0	(-147)±3.0	0.535	7.09	CI

(Table 2. continued)

<sup>1</sup> Origin time (Year/Month/Day/hr:min:sec) and epicentral locations (°N, °E) are reported by the Seismology Center, Central Weather Bureau, Taiwan.

<sup>2</sup> X, Y, Z point to the north, east, and vertically down, respectively. All are in the unit of  $1 \times 10^{13}$  Nt m.

<sup>3</sup> Estimated best double-couple solutions in degrees.

<sup>4</sup> E and  $\epsilon$  are defined by equations (2) and (1), respectively. (  $\epsilon$  is expressed in percent (%).

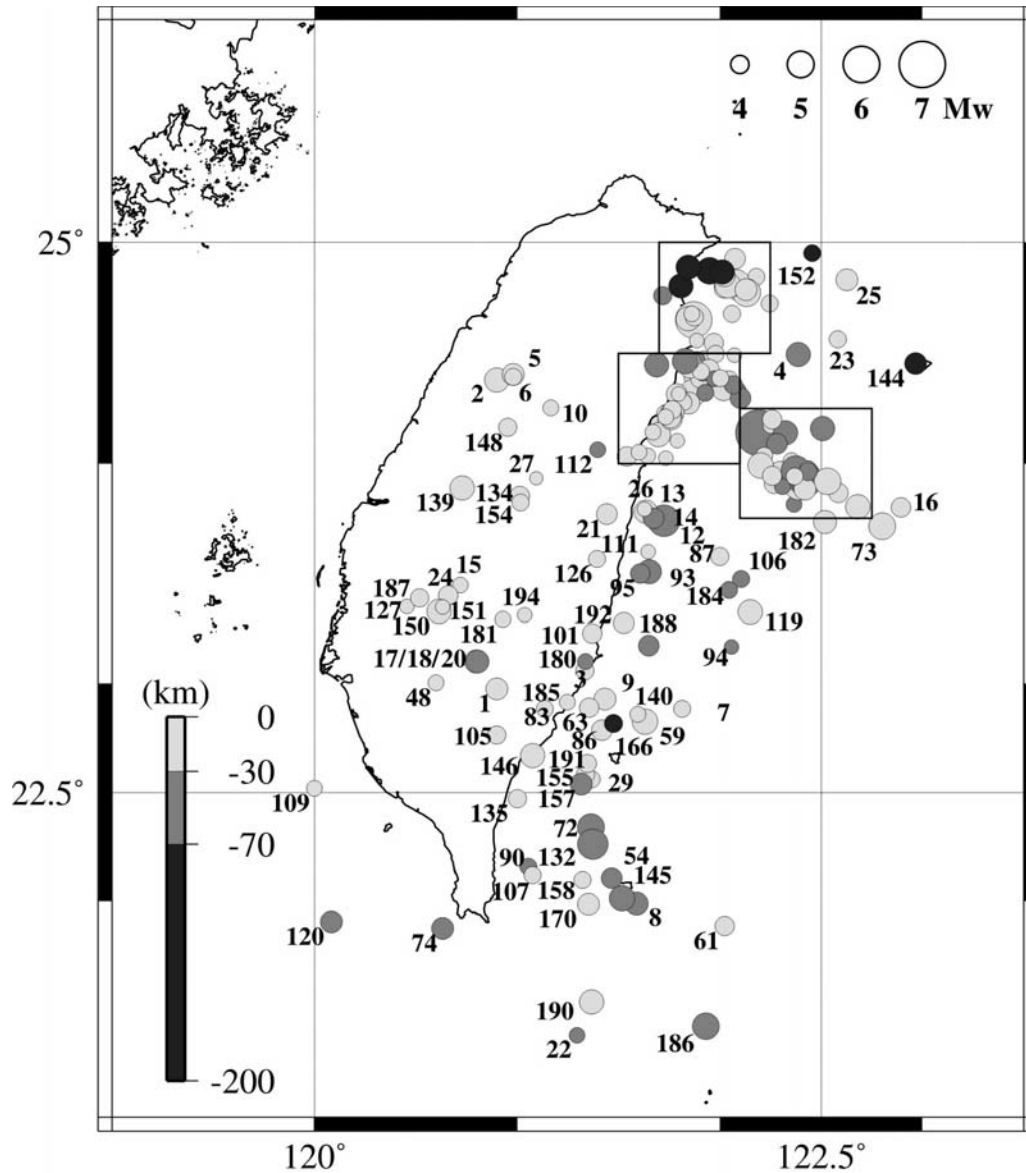
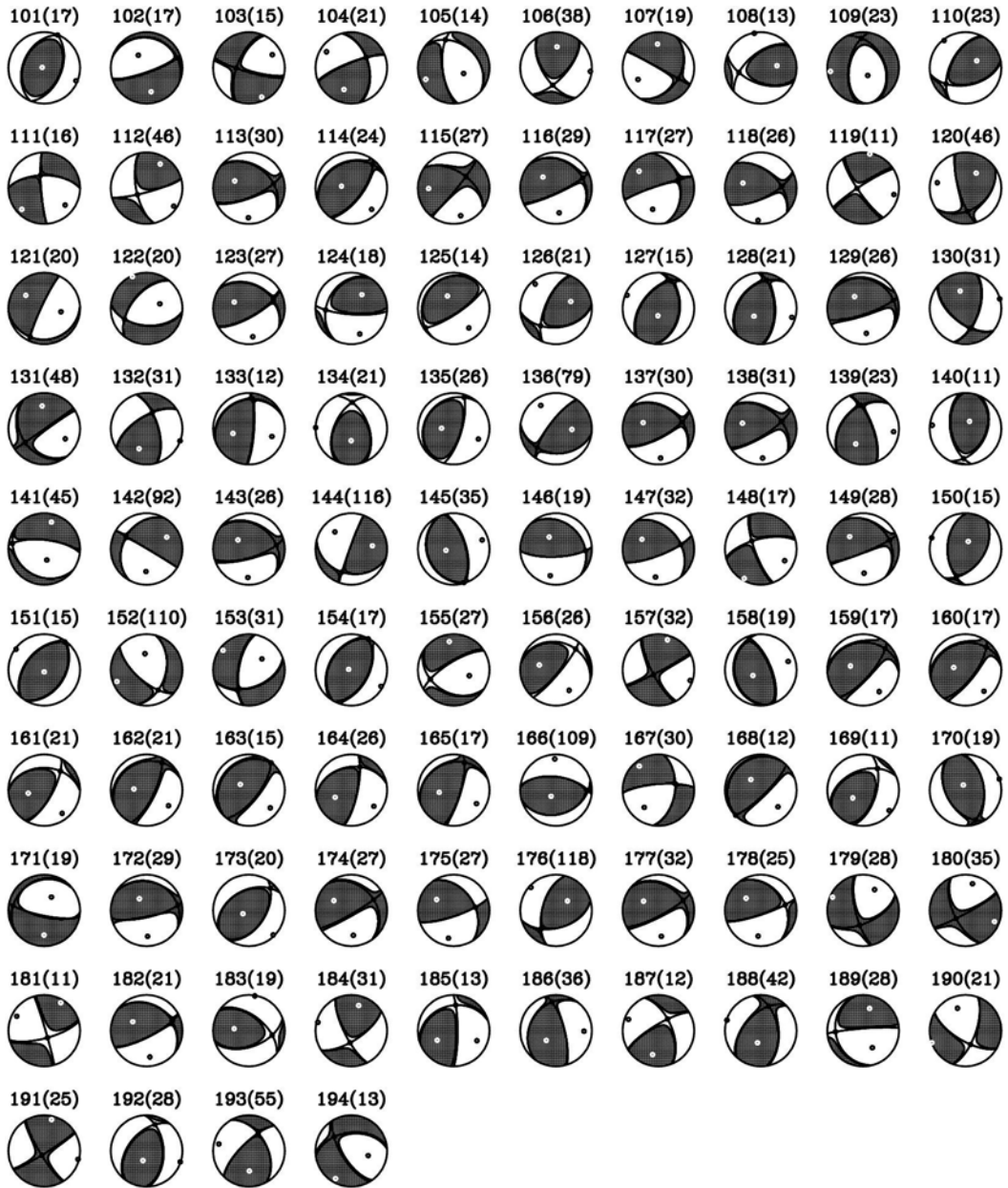


Fig. 2a. Moment-tensor inversion results. (a) Map showing the epicenters of 194 studied earthquakes. The size and shade of each symbol represent the corresponding moment magnitude and focal depth, respectively, as shown by the scales. Event numbers are according to Table 2.



Fig. 2b. Moment-tensor inversion results. (b) A blow-up map to show the epicentral region of the March 31, 2002 sequence ( $M_w = 7.1$ ).

*Fig. 2c.* Moment-tensor inversion results. (c) Corresponding moment-tensor solutions. Darkened areas show quadrants with compressional P-wave first motions. P and T axes are marked by small solid and open circles, respectively. The corresponding best double couple solutions are shown by pairs of solid lines. The first number above each fault plane solution is the event number, whereas the number in parenthesis is the best focal depth.



(Fig. 2c. continued)

Due to practical concerns, the inversion results are presented as an electronic appendix to this report. Interested readers can download the complete set from the BATS worldwide web site at [http://bats.earth.sinica.edu.tw/CMT\\_Solutions/cmtF2002.html](http://bats.earth.sinica.edu.tw/CMT_Solutions/cmtF2002.html). To make the results more accessible and useful to the academic community, Table 2 and the tables in our previous reports showing the source parameters of earthquakes between 1995 and 2001 (Kao and Jian 1999; Kao et al. 2001, 2002a, 2002b; Liang et al. 2003) are also available from our web site ([http://bats.earth.sinica.edu.tw/CMT\\_Solutions/](http://bats.earth.sinica.edu.tw/CMT_Solutions/)).

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