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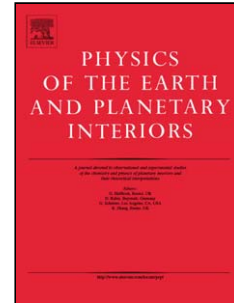
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European-Mediterranean Regional Centroid  
Moment Tensor Catalog: Solutions for Years  
2003 and 2004

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### Abstract

We present an update, for years 2003 and 2004, of the European- Mediterranean Regional Centroid Moment Tensor (RCMT) catalog that we maintain since 1997. This update adds 177 new solutions to the database, relating to moderate-magnitude ( $4.5 \leq M < 5.5$ ) earthquakes. About 30% of our new solutions also appear in the Global CMT Catalog: comparison of the two independent determinations generally shows very good agreement. Within the time span covered, the most noticeable seismic sequences occurred in Northern Africa (Boumerdes, Algerian coast in 2003 and Al Hoceima, Morocco in 2004) and in Southern Greece and Dodecanese region (August 2003 and 2004). The complete RCMT catalog for the European and Mediterranean region now covers 8 years, and contains about 600 solutions.

**Keywords:** Seismicity, seismic moment tensors, European-Mediterranean region

## 1 Introduction

The Mediterranean region is the seat of widespread deformation and seismicity. The tectonics is mainly driven by convergence between Africa and Eurasia, but it is complicated by processes, like back-arc extension, that make it difficult to fully understand the underlying dynamics. Seismic events are distributed in relatively wide belts, but only seldom reach large magnitudes. Mapping seismic deformation through source mechanisms therefore requires also modeling earthquakes with moderate energy. These earthquakes are unfortunately also important because, due to the building characteristics, they can often cause damage.

This paper presents the continuation of our effort to create and maintain a coherent database of seismic moment tensor solutions for intermediate magnitude earthquakes occurring in the European and Mediterranean regions. This effort is intended to complement the Global (formerly Harvard) CMT Catalog (Dziewonski et al., 1981; Dziewonski et al., 2001; Ekström et al., 2005; <http://www.globalcmt.org/>), with events with regional significance for the specific area. Previous reports (Pondrelli et al., 2002; 2004) presented 420 seismic source mechanisms for years 1997 to 2002 with magnitude ranging from 4.0 to 5.5, outlined the method, based on an extension of the global CMT technique to fitting fundamental mode surface waveforms with intermediate to long period, and also provided comparisons with global CMT

determinations of source mechanisms for the largest earthquakes analysed. The Regional CMT (RCMT) Catalog is also available on the Worldwide Web at <http://www.ingv.it/seismoglo/RCMT>.

This is the third report of our activity. We present moment tensor solutions for 177 events that occurred in our study region in the years 2003 and 2004, along with some statistics illustrating the database which now covers 8 years and includes almost 600 solutions. We also briefly comment on a few events of 2003 and 2004 of particular interest.

## 2 Seismic moment tensors for 2003 and 2004

We compute seismic moment tensors using an inversion algorithm based on the original CMT method (Dziewonski et al., 1981), that also models intermediate period surface waves recorded at regional distances (Arvidsson and Ekström, 1998). Fundamental mode Rayleigh and Love waves account for the largest amplitudes in seismograms recorded in this range, and the RCMT method is then able to also model earthquakes with moderate magnitudes — often as low as 4.0. At intermediate periods we have to account for complications of wave propagation in the heterogeneous Earth structure, and we do that by using detailed phase velocity maps (Ekström et al., 1997). The method models seismograms and inverts for the elements of

the seismic moment tensor and for the source centroid in space and time. We constrain the isotropic component of the moment tensor to be equal to zero in the inversion. We use hypocentral information (location, origin time and magnitude) from the National Earthquake Information Center (NEIC, <http://neic.usgs.gov>). We retrieve seismograms mainly from ORFEUS-VEBSN, GEOFON, MEDNET and IRIS data centers. We normally select events with magnitude ( $m_b$  or  $M_L$ ) between 4.5 and 5.5, but in some cases of special interest — earthquakes either taking place in a low-seismicity region, or as part of an important seismic sequence — we may analyze smaller events. Good azimuthal distribution of stations close to the epicenter is the main condition for successful analysis of smaller shocks, that can have magnitude  $M_W$  as low as 3.9 (Table 1, event n.11-03).

Figure 1 shows the results of our analysis of seismicity for years 2003 and 2004. The same solutions are plotted individually in Figures 2 and 3. Source parameters (centroid location, moment tensor components, seismic moment, best double couple parameters) are listed in Tables 1 to 6. For 2003 and 2004, 89 and 88 moment tensors have been determined, respectively; compared to previous years, we record a slight, but regular, increase in the number of RCMTS (Figure 4). This trend appears to be due to the improvement of seismogram availability from the ever increasing number of broadband stations in the Mediterranean region (VEBSN, van Eck et al., 2002) that

allows us to model smaller magnitude earthquakes. In fact, one can note that during the 1997-2000 period, events with magnitude as low as 4.0 could only be analysed in the central part of our study area, where instrumental coverage was better. Improved instrumental coverage now permits us to analyse such small events also when they occur elsewhere, for example in Morocco (e.g., event 08-04, Table 4).

The new moment tensors shown here represent the successful outcome resulting from the attempted analysis of 250 events. A stable solution was found in 71% of the cases, a better ratio than in earlier years of the Catalog (for criteria that define an analysis successful, see Pondrelli et al., 2002). The frequency distribution of events with respect to computed  $M_W$  (Figure 5) is quite similar to previous years. The maximum frequency is for  $M_W$  between 4.5 and 4.7. Plotting frequency with respect to reported magnitudes ( $m_b$  and  $M_L$ , Figures 6a and 6b) similarly shows the same distributions as earlier. The difference between reported magnitudes and computed  $M_W$  is also conserved (Tables 1 and 4). Computed  $M_W$  in most cases differ from reported magnitudes by no more than  $\pm 0.4$  (Figure 7). Only in a few cases the difference is larger, and this generally occurs when magnitude  $M_L$  is reported.

Tables 1 and 4 show the centroid parameters and their deviation with respect to preliminary values ( $\delta t_0$ ,  $\delta lat_0$ ,  $\delta lon_0$ ,  $\delta dep_0$ ) for all computed moment



tensors. The latitude and longitude were held fixed at the reported values if  $\delta lat_0, \delta lon_0$  equal 0.0. Epicentral coordinates are fixed if their variation during inversion exceeds 0.5 degree. Also, when  $\delta dep_0$  equals 0.0, the centroid depth was not allowed to vary from the reported value because of instability. Centroid depth was also fixed when the inversion pushes it shallower than 15 km. At these depths, instabilities in the determination of moment tensor components  $M_{r\theta}$  and  $M_{r\phi}$  may arise (Dziewonski et al., 1981), so in this case we make a systematic search for the best solution with inversions at depth set to fixed values between 10 and 15 km, and choose the solution with the smallest root mean square misfit. These events are recognizable in Tables 1 and 4 by discrete depth values between 10.0 and 15.0 km.

Tables 2 and 5 list the scalar seismic moment  $M_0$  and the six components of the moment tensor. Tables 3 and 6 include parameters of the best fitting double couple, and the value of  $\epsilon$  — where  $\epsilon = -\lambda_2 / \max(|\lambda_1|, |\lambda_3|)$ , with the moment tensor eigenvalues  $\lambda_1 \geq \lambda_2 \geq \lambda_3$ . The parameter  $\epsilon$  represents how close a moment tensor is to a pure double couple ( $\epsilon = 0.0$ ) or to a compensated linear-vector dipole (CLVD,  $\epsilon = \pm 0.5$ ; Ekström, 1994; Nettles and Ekström, 1998). In the 2003-2004 dataset, only in 4 cases the value of  $|\epsilon|$  is larger than 0.3, while 7% of the events have  $|\epsilon|$  between 0.3 and 0.2, 23% between 0.2 and 0.1 and 68%  $|\epsilon| \leq 0.1$ . This distribution is similar to what is found in the previous contributions to the European-Mediterranean Catalog

(Pondrelli et al., 2002, 2004), where few events with large non-double-couple components were also present, if compared to older RCMT and Global CMTs. This trend is presumably related to better seismogram availability at short distance from the event, allowing use of lower-noise data. In fact, values of  $\epsilon$  for events with fewer, noisier, further-away data may be incorrectly large.

Among the moment tensors included in this dataset, 64 also have a standard CMT solution (they are marked by a star in Tables 1 to 6 and in Figures 2 and 3). Generally, we find very good agreement between the two solutions for each event (Figures 8 and 9). Most of the discrepancies are directly related to a different amount of the non-double-couple component (e.g., event n.07-03, Figure 8). This can sometimes generate quite a different focal mechanism, because, for a strongly non-double-couple moment tensor, the definition of the best fitting double-couple solution can be unstable. An example is event n.55-04 (Figure 9), where both RCMT and CMT solutions show globally similar extensional geometry, but the best fitting fault planes are rotated by  $90^\circ$ . In this case we prefer our solution because of its smaller non-double-couple component. In almost all cases, directions of P and T axes — often used for tectonic considerations — agree very well.

Two earthquakes show clear differences: n.33-03 (Figure 8) and n.58-04 (Figure 9). The former has both moment tensor solutions (CMT and RCMT) compressive, but slightly rotated with respect to each other. This is the

first of a group of events belonging to the Boumerdes, Algeria 2003, seismic sequence that we discuss below. Our RCMT solution is more similar to the main shock, and more coherent with the mechanisms of the other events of the sequence, even considering other CMT determinations (see, e.g., n.34-03 and 38-03, Figure 8). The second example, n.58-04, has solutions either extensional to strike-slip (RCMT) or pure strike-slip (Global CMT). We did not find explanations for this difference, other than different seismogram sets have been used.

A comparison between seismic moment  $M_0$  obtained by CMT and RCMT analyses shows for half of the dataset a difference within 10%, for another third a difference in  $M_0$  lower than 25%, while the remaining events have differences even larger than 100%. This trend is in accordance with our previous reports. We do not find any specific correlation between major differences in  $M_0$  and focal mechanisms, or other source parameters.

### 3 Events of interest

As in previous reports of the European-Mediterranean Catalog (Pondrelli et al., 2002, 2004), we include here a description of a few seismic sequences and swarms that are of interest because of the size or location of the earthquake, or because of the damage that was caused. It is, however, beyond the scope of

this paper to provide a complete seismotectonic interpretation of each event.

During 2003 and 2004, a number of interesting seismic sequences occurred in the Mediterranean region. In May 2003 a group of earthquakes struck the northern coasts of Algeria, close to coastal city of Boumerdes, starting with a main shock in May, 21,  $M_W = 6.9$  (Bounif et al., 2004). This event caused thousands of casualties and heavy damage. A connected, small, tsunami has also been recorded in the Balearic Islands, about 300 km north of the epicenter (Hebert and Alasset, 2003). We provide here solutions for 10 earthquakes, occurred in the days immediately following the main shock, and for 3 more events that took place in the following year (2-04, 77-04 and 82-04; Figure 10), with moment magnitude ranging from 4.3 to 5.7. Most of the solutions show pure thrust mechanisms. The few with a strike-slip mechanism are located close to a main transcurrent tectonic feature (Figure 10). Even smaller magnitude events exhibit the same geometry — either pure thrust, or strike-slip — of larger earthquakes presumably occurring on the same tectonic structure. The deformation geometry indicated by these events is typical for this region, where collision between Africa and Eurasia induces compressive deformation, well documented by seismic and geodetic studies (Vannucci et al., 2004 and references therein). The Boumerdes main shock and following seismic sequence have been well studied. We find very good agreement between our moment tensor solutions, and those computed

by Braunmiller and Bernardi (2005). Seismic source parameters, GPS modeling (Yelles-Chaouche et al., 2003), uplift studies (Meghraoui et al., 2004), and seismic slip modeling (Delouis et al., 2004; Semmane et al., 2005) concur to suggest that the main rupture, about 50 km long, occurred on a south-dipping thrust fault.

A strong earthquake, with magnitude  $M_W = 6.2$ , occurred in Western Greece on August 14, 2003 (Figure 11). The hypocenter was close to Lefkada island, 280 km NW from Athens, and the event was strongly felt in other Ionian Islands (Kephalonia, Zakynthos, Ithaki) and in a large area of mainland Greece. At least 50 people were injured, some buildings and infrastructure damaged, landslides and ground fissures occurred on Lefkada island (EERI Special Earthquake Report, 2003; Papadopoulos et al., 2003). According to several studies describing the sequence, the Lefkada main shock and aftershocks occurred on the Kephallinian fault (Benetatos et al., 2005; Papadimitriou et al., 2006). The main shock moment tensor given by the Global CMT Catalog shows a strike-slip focal mechanism (MS in Figure 12). This kind of motion is particularly frequent on the Kephallinia fault — a NE-SW dextral strike-slip fault which parallels the NW coasts of Lefkada and Kephallinia islands and extends for about 100 km toward the centre of the Mediterranean, moving at a rate of 2-3 cm/year (Cocard et al., 1999). This main tectonic structure separates continental collision along the Hellenides

chain to the north, from the oceanic subduction active to the south along the Hellenic trench (Underhill, 1989). Also, it interrupts the compressive front, represented by numerous compressive earthquakes located north and south of it, and is itself locus of mainly dextral strike-slip earthquakes. It is indeed considered the main fault line along which the African plate can still subduct beneath the Hellenic trench toward NE, and that displaces the southern part of the Hellenic belt SW-ward with respect to the northern part (Vannucci et al., 2004). In our dataset, several RCMTs for the aftershocks are included, displaying strike-slip to pure thrust motion. Similar focal mechanisms have also been determined with different techniques, and the comparison shows a good agreement (Benetatos et al., 2005; Papadimitriou et al., 2006). These moment tensors confirm the coexistence in this region of transcurrent and compressive deformation, that seismicity and geodesy have here already well determined (Cocard et al., 1999; Louvari et al., 1999; Vannucci et al., 2004).

During 2003, we note another seismic sequence in the Adriatic Sea, off the Montenegro coast. We computed our RCMT solutions for the main shock, the March 29,  $M_W = 5.5$  earthquake, event n.13-03 in Table 1, for the  $M_W = 4.9$  foreshock, that took place 2 days before, and for several aftershocks (Figure 12). Including a couple of solutions determined for events occurred in 2004, for this seismic sequence we have a ten of RCMTs. What makes this seismicity remarkable is its location, in the center of the Adriatic

Sea — regarded as a generally aseismic area, apart from the active structures off the Gargano promontory shore, more than 100 km to the SE. The thrust focal mechanisms revealed by all RCMTs support the hypothesis that this seismic sequence may be related to the compressive to strike-slip deformation active in the middle of the Adriatic Sea as testified by seismicity (Vannucci et al., 2004; Pondrelli et al., 2006).

In 2004, the Morocco northern coastal zone was struck by a strong seismic sequence starting with the February 24,  $M_W = 6.4$ , event located close to the city of Al Hoceima (Figure 13). Hundreds of people died and thousands of buildings were damaged (Jabour et al., 2004). The main shock moment tensor given by the Global CMT Catalog has a strike-slip mechanism. This region, indeed, predominantly shows strike-slip seismic motion (Vannucci et al., 2004; Stich et al., 2005 and references therein), in contrast to the thrust geometry that typically characterizes the Northern Africa seismicity elsewhere. The Al Hoceima region had been hit before by a  $M_W = 6.0$  earthquake on May 26, 1994 (El Alami et al., 1998), exhibiting a similar strike-slip CMT Catalog solution (black focal mechanism in Figure 13). We have computed RCMT solutions for several aftershocks of the 2004 sequence, all of them, but one, displaying strike-slip geometry (Figure 14). The only exception is an extensional event located in the southernmost part of the region. Similar results have been found by Stich et al. (2005).

During the summer of 2004, a seismic swarm hit the Eastern Mediterranean region. On August 2, 2004 a sequence of moderate magnitude earthquakes started in the Gokova Gulf, along the Southwestern Turkey coasts, within the Aegean Sea (Figure 14). The main shock,  $M_W = 5.5$ , took place on August 4 (event n.45-04, Table 4). We computed RCMT solutions for 2 foreshocks on August 3, and for several aftershocks. All these earthquakes show extensional mechanisms, in good agreement with previous seismic data (Vannucci et al., 2004) and with the tectonic framework of the Western Anatolia-Aegean Sea — characterised by numerous east-west trending grabens associated with the regional north-south extension of the region (Dewey and Sengor, 1979). Marine geology surveys confirm the presence in the Gulf of Gokova of possibly active normal faults and associated roll-over structure (Kurt et al., 1999).

Three earthquakes in Italy also have special interest. The event of December 18, 2004, located off the eastern coast of Sardinia (Figure 1), is rather peculiar because it has compressional geometry in the Tyrrhenian Sea, generally regarded in extension. We note other compressional events in the same area during the last 5 years (Pondrelli et al., 2002; 2004). Two thrust events hit Northern Italy: one occurred near the town of Monghidoro, in the Northern Apennines, on September 14, 2003 (event n. 71-03, Table 1); the other took place close to the Lago di Garda region, in November, 24, 2004 (event n.



74-04, Table 4). These events, both with magnitude larger than 5.0, did not result in casualties but caused significant damage. Both earthquakes shook rather densely populated areas with scarce historical seismicity records. The  $M_W = 5.3$  Monghidoro event occurred close to the Northern Apennines axial chain area. Our RCMT has thrust geometry, very similar to the fault plane solution computed by Piccinini et al. (2005) using different data and technique. The  $M_W = 5.0$  Lago di Garda earthquake occurred at the western lake shore, in the Southern Alps, and had maximum intensity VII-VIII MCS in the surrounding villages. The area is characterized by low instrumental seismicity, though a similar-sized event ( $I_0 = \text{VIII MCS}$ ) occurred in 1901 (Camassi and Stucchi, 1997), so the earthquake raised high interest locally. Our thrust centroid-moment tensor is almost identical to the Global CMT solution (Figure 8) and to the one by Baer et al. (2005).

## 4 Conclusions

This paper adds 177 new regional centroid-moment tensor solutions for years 2003 and 2004 to the European-Mediterranean Catalog, which now lists 598 solutions for the time period 1997-2004. The main statistical features of the new data set are similar to those described in the previous reports. The most significant quantity indicators — e.g. the numbers of RCMTs computed

yearly, the lowest magnitude for which an RCMT is computed — show slight but continuous improvement over the years, a possible sign of the evolution of the European seismographic array and its public data distribution system. As an *a posteriori* test of the reliability of our solutions, we compare with the Global CMTs. This is possible for about one third of the solutions in our data set, and it results in excellent agreement. Other initiatives, also based on modeling waves at regional distance, but following different methods and different aims, also provide seismic moment tensors for earthquakes in the European and Mediterranean region. There is partial overlap, but general good agreement, with the efforts due to Swiss Seismological Service (Braunmiller et al., 2002; Baer et al., 2005) and to the Instituto Andaluz de Geofísica regional moment tensor project (Stich et al., 2003), that are geographically more focused.

In the European and Mediterranean region, and for the same time span, the upgraded RCMT Catalog — including solutions from this paper — represents a moment tensor set nearly three times more numerous than the Global CMT Catalog. Our paper mostly targets intermediate magnitude earthquakes. The moderate and small events that we study can significantly contribute to quantifying seismic strain in this area, where large magnitude earthquakes are few and far between. Also, high population density — sometimes combined with poor building codes — often make intermediate mag-

nitide earthquakes cause significant property damage and casualties. Thus, better knowledge of their source properties can also contribute to earthquake risk mitigation.

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## Figure captions

Figure 1: Maps of 2003 and 2004 RCMTs. *Top*: events with a hypocentral depth greater than 30 km; *bottom*: events with an hypocentral depth between 30 and 100 km (black), and deeper than 100 km (grey).

Figure 2: RCMT Solutions for 2003. A star indicates those for which the standard CMT solution is also available.

Figure 3: RCMT Solutions for 2004. A star indicates those for which the standard CMT solution is also available.

Figure 4: Attempts (white columns) and computed solutions (black columns) per year.

Figure 5: Histogram of the  $M_W$  distribution of computed solutions (grey columns: 1997-2004 time period; black columns: 1997-2002 only).

Figure 6: Histograms of  $m_b$  (a) and  $M_L$  (b) in 1997 to 2004 attempts (white columns) and computed solutions (black columns: 1997-2002 time period; grey columns: 1997-2004).

Figure 7: *Left*: comparison between bulletin magnitude  $M$  (either  $M_L$ ,  $m_b$ , or  $M_D$ , as indicated) and  $M_W$ . Dashed lines correspond to  $M = M_W \pm 0.2$ . *Right*: frequency histogram of the difference  $M_W - M$ .

Figure 8: Comparison between RCMT (grey) and Global CMT (black) so-

lutions for 2003. Labels to the left of each pair identify entries in Table 1. The seismic moment  $M_0$  (dyne cm) is indicated below each focal solution.

Figure 9: Comparison between RCMT (grey) and Global CMT (black) solutions for 2004. Labels to the left of each pair identify entries in Table 4. The seismic moment  $M_0$  (dyne cm) is indicated below each focal solution.

Figure 10: Map of the region of the Boumerdes, Algeria, 2003 seismic sequence. MS indicates the main shock focal solution (black focal mechanism) in the Global CMT Catalog. ID numbers over grey focal mechanisms, from this work, are from Table 1. The main tectonic features are taken from the larger scale Geodynamic Map of the Mediterranean (Barrier et al., 2005), and here are only meant to be indicative.

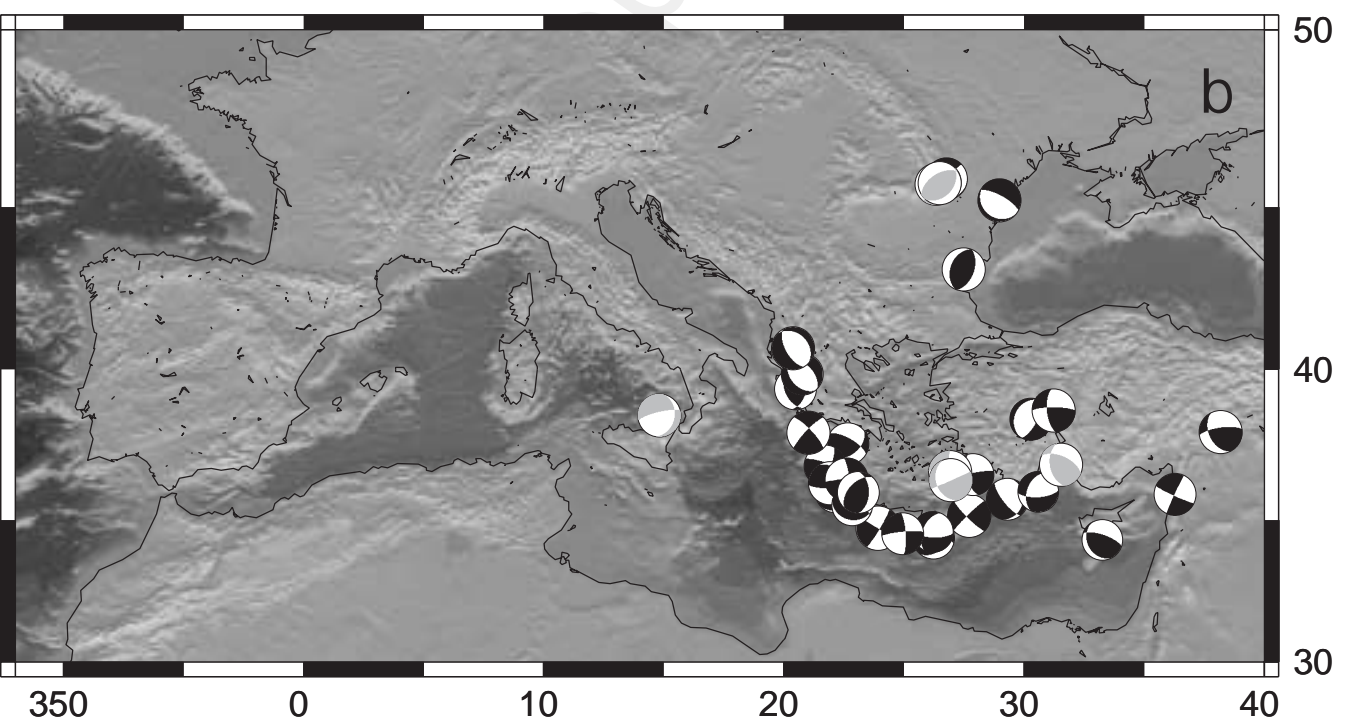
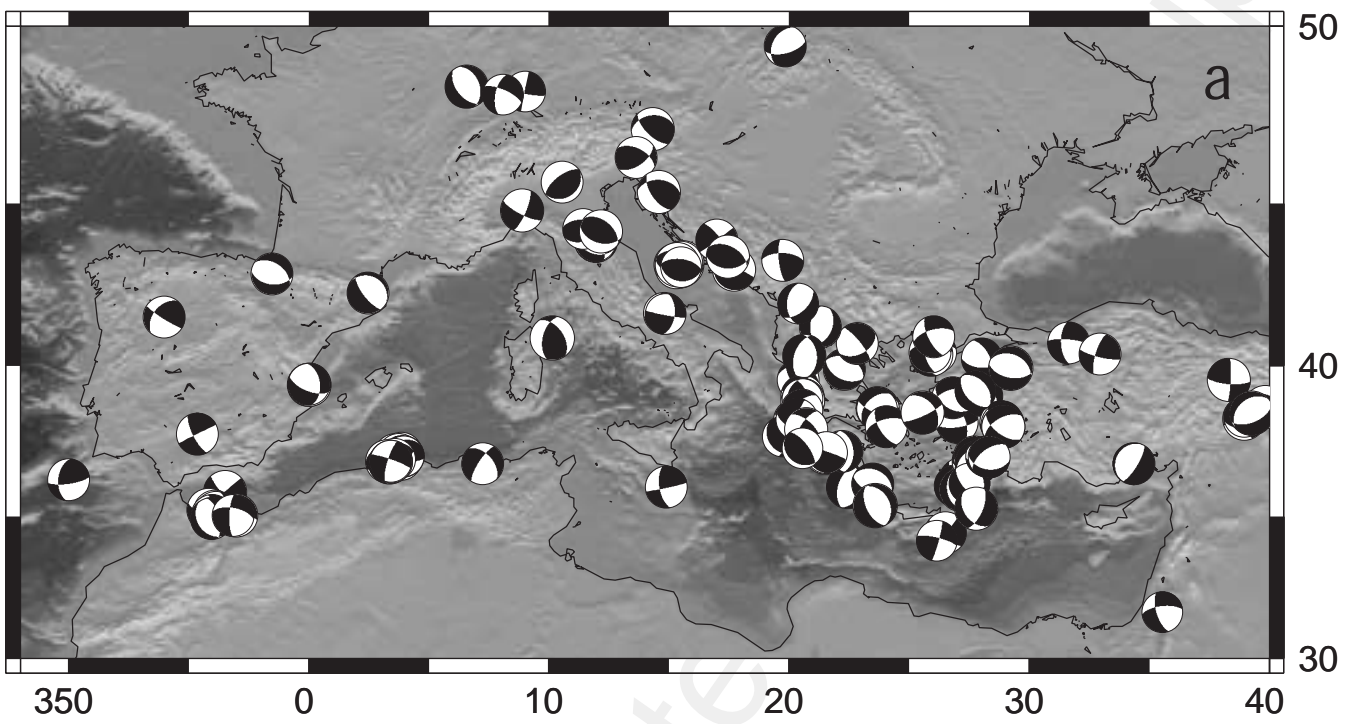
Figure 11: Map of the region of the Lefkada, Southern Greece, 2003 seismic sequence. The MS label indicates the main shock from the Global CMT Catalog. ID numbers above each of the other grey focal mechanisms, determined in this work, are from Table 1. Black focal mechanisms plotted in the background with smaller symbols are from Global CMT and European Mediterranean RCMT Catalogs. Indicative tectonic features are from Barrier et al. (2005).

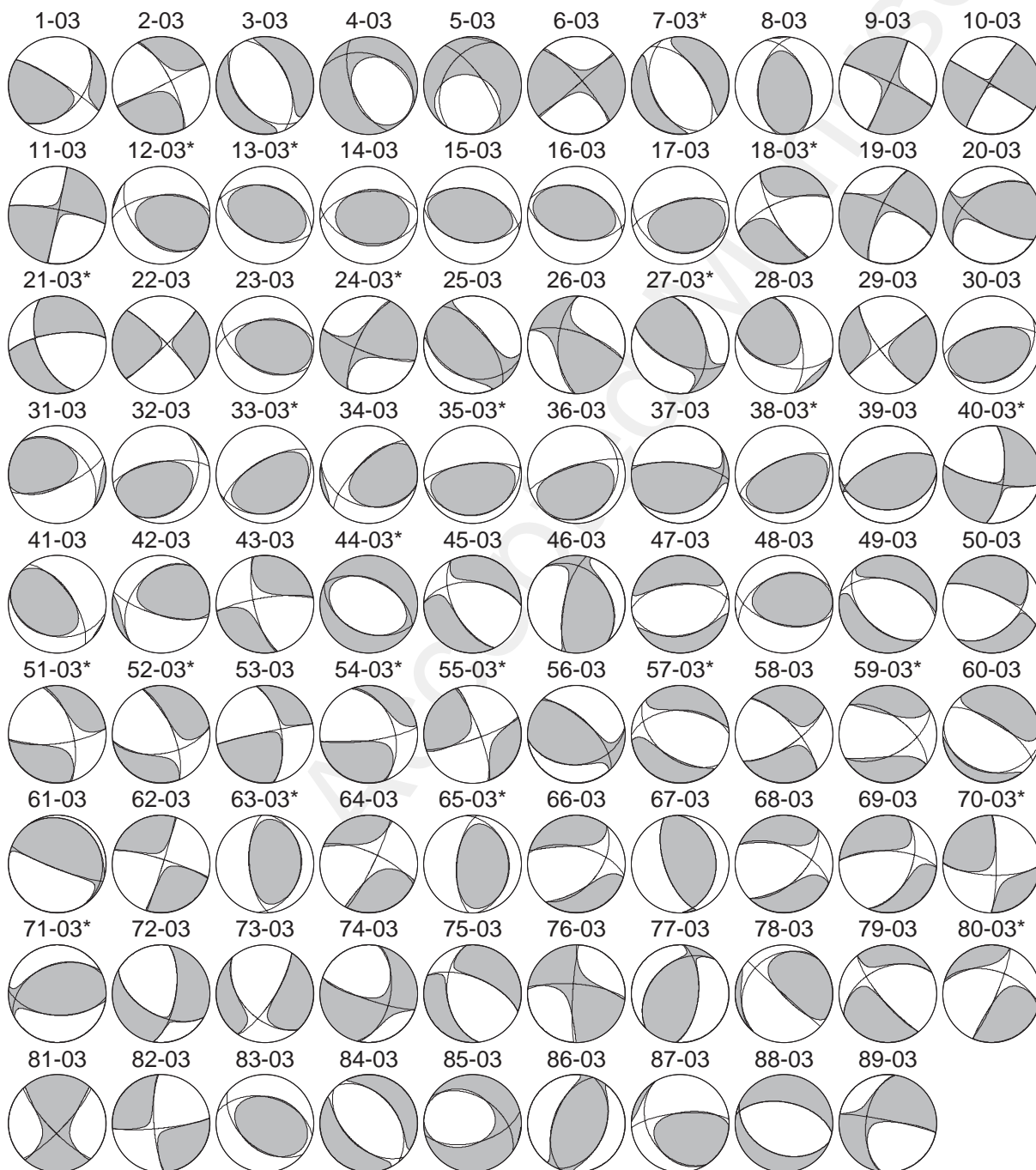
Figure 12: Map of the region of the Adriatic Sea, 2003 seismic sequence. All grey focal mechanisms are from this paper. ID numbers above each of them

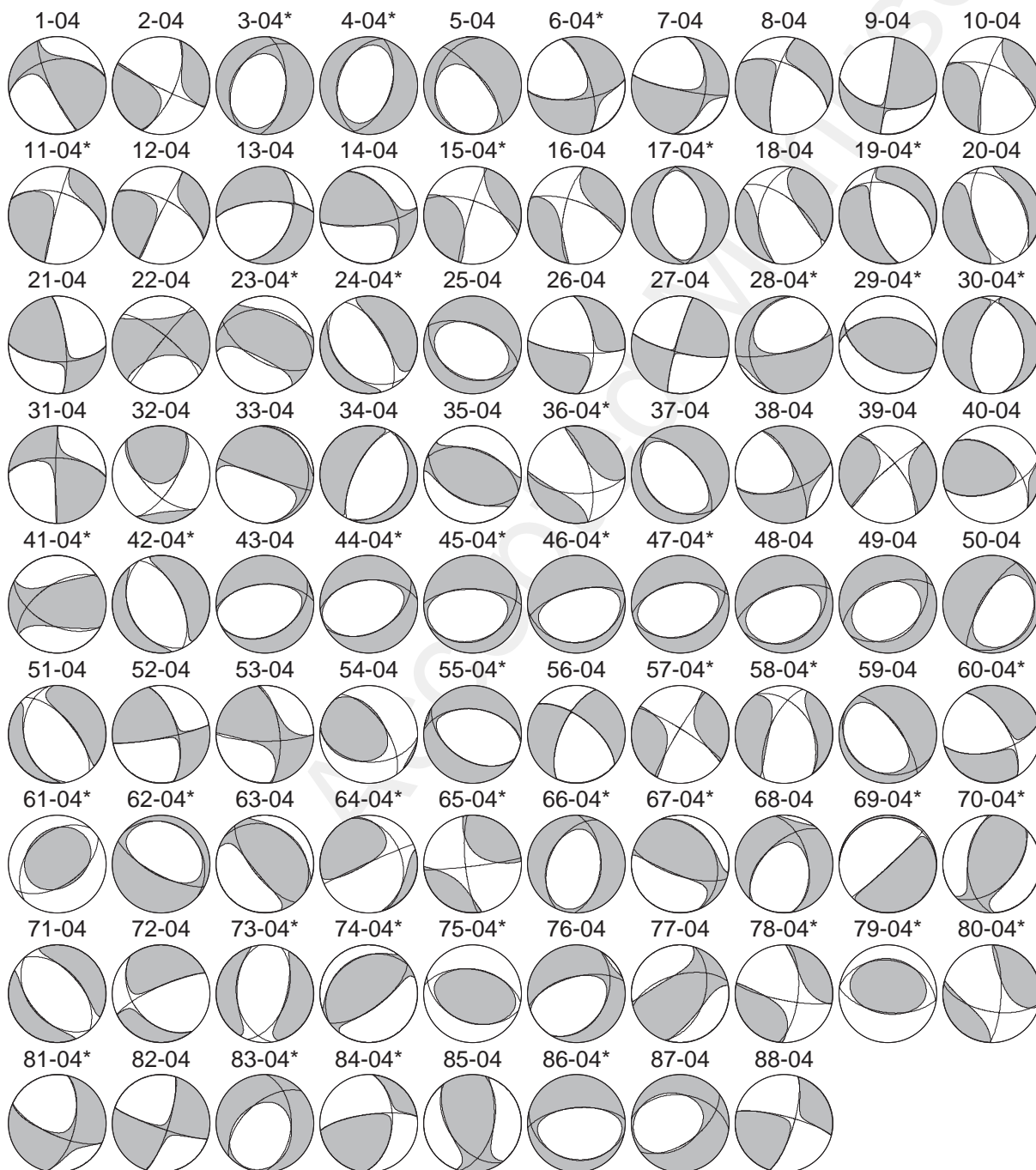
are from Table 1. Black focal mechanisms plotted in the background with smaller symbols are from the Italian CMT dataset (Pondrelli et al., 2006). Indicative tectonic features are from Barrier et al. (2005).

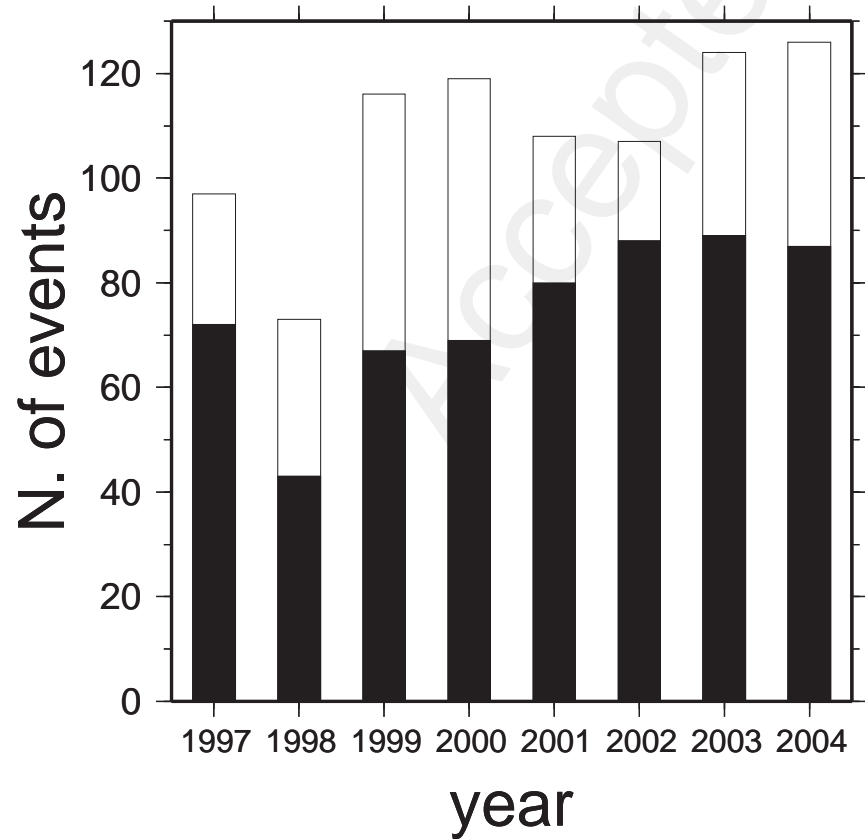
Figure 13: Map of the region of the Al Hoceima, Morocco, 2004 seismic sequence. The MS label indicates the main shock, from the Global CMT Catalog. ID numbers above grey focal mechanisms, determined in this work, are from Table 4. The black focal mechanism in the upper center is for the 1994 earthquake (from the Global CMT Catalog). Indicative tectonic features are from Barrier et al. (2005).

Figure 14: Map of the region of the Gulf of Gokava, SW Turkey, 2004 seismic swarm. ID numbers above each grey focal mechanism are from Table 4. Black focal mechanisms plotted in the background with smaller symbols are from Global CMT and European Mediterranean RCMT Catalogs. Indicative tectonic features are from Barrier et al. (2005).

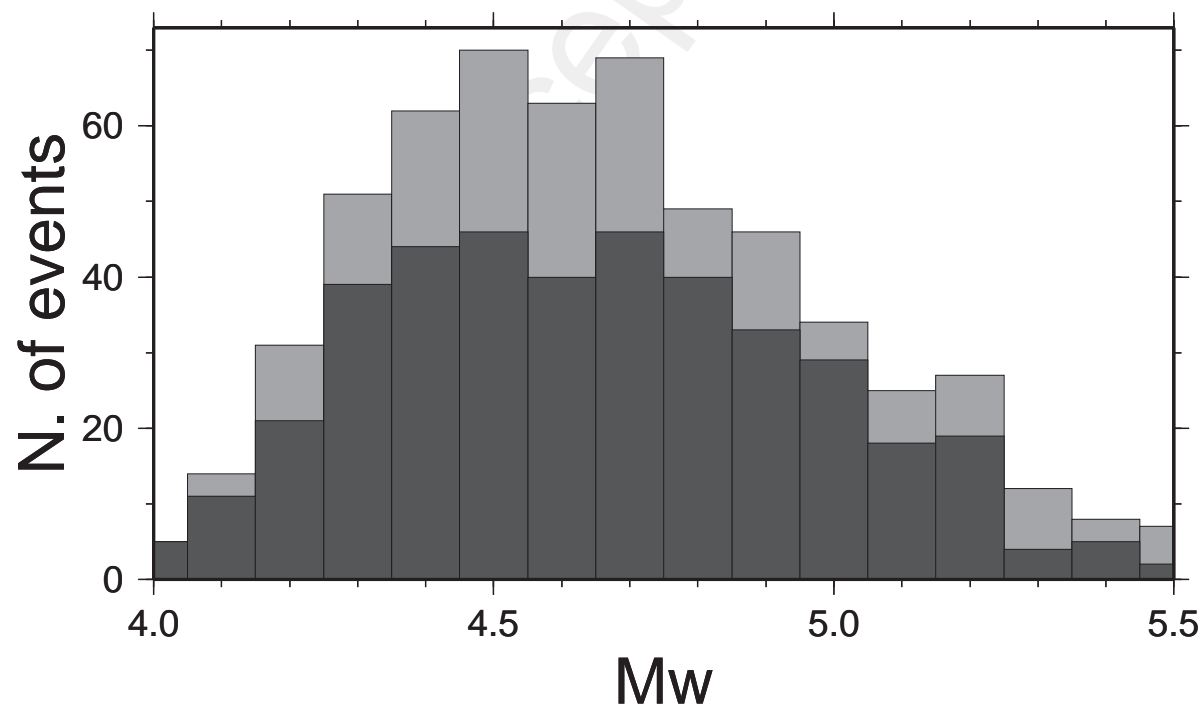


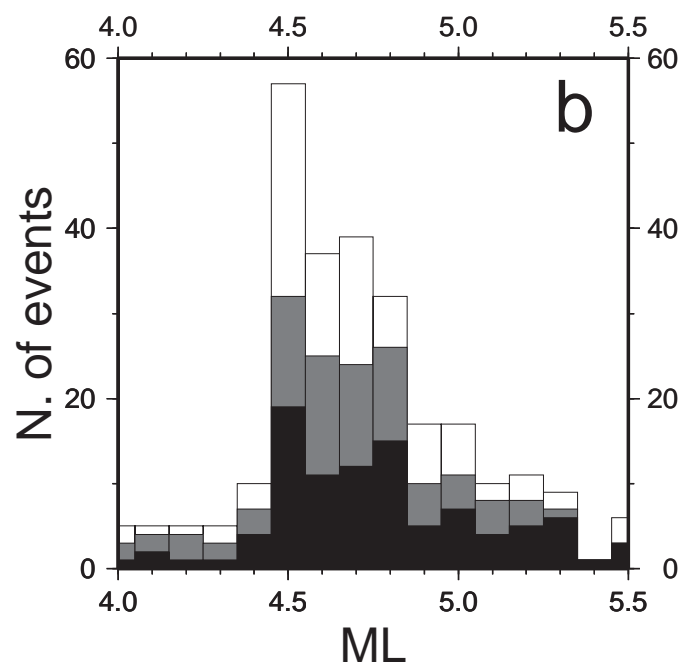
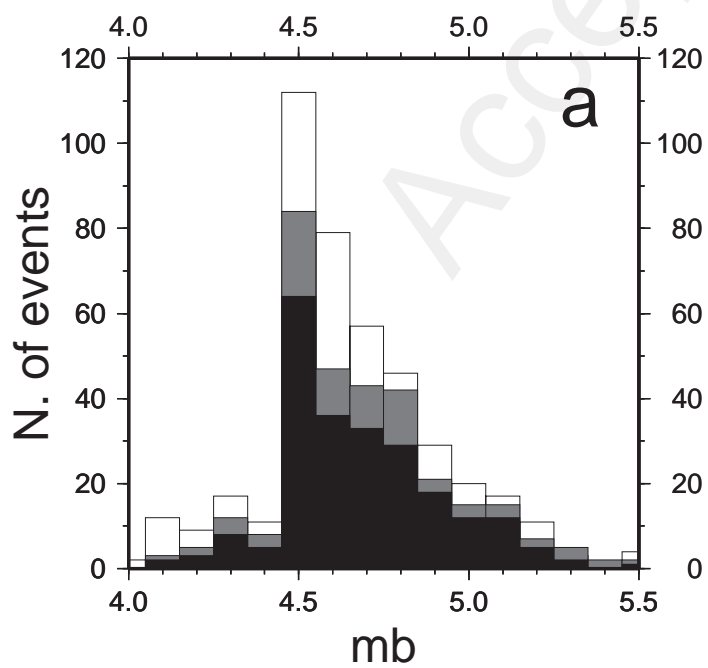


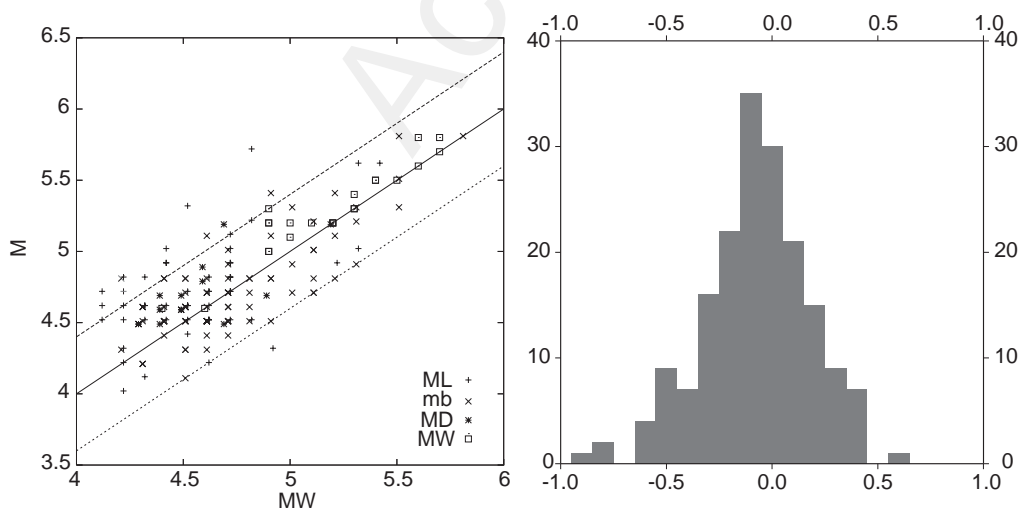


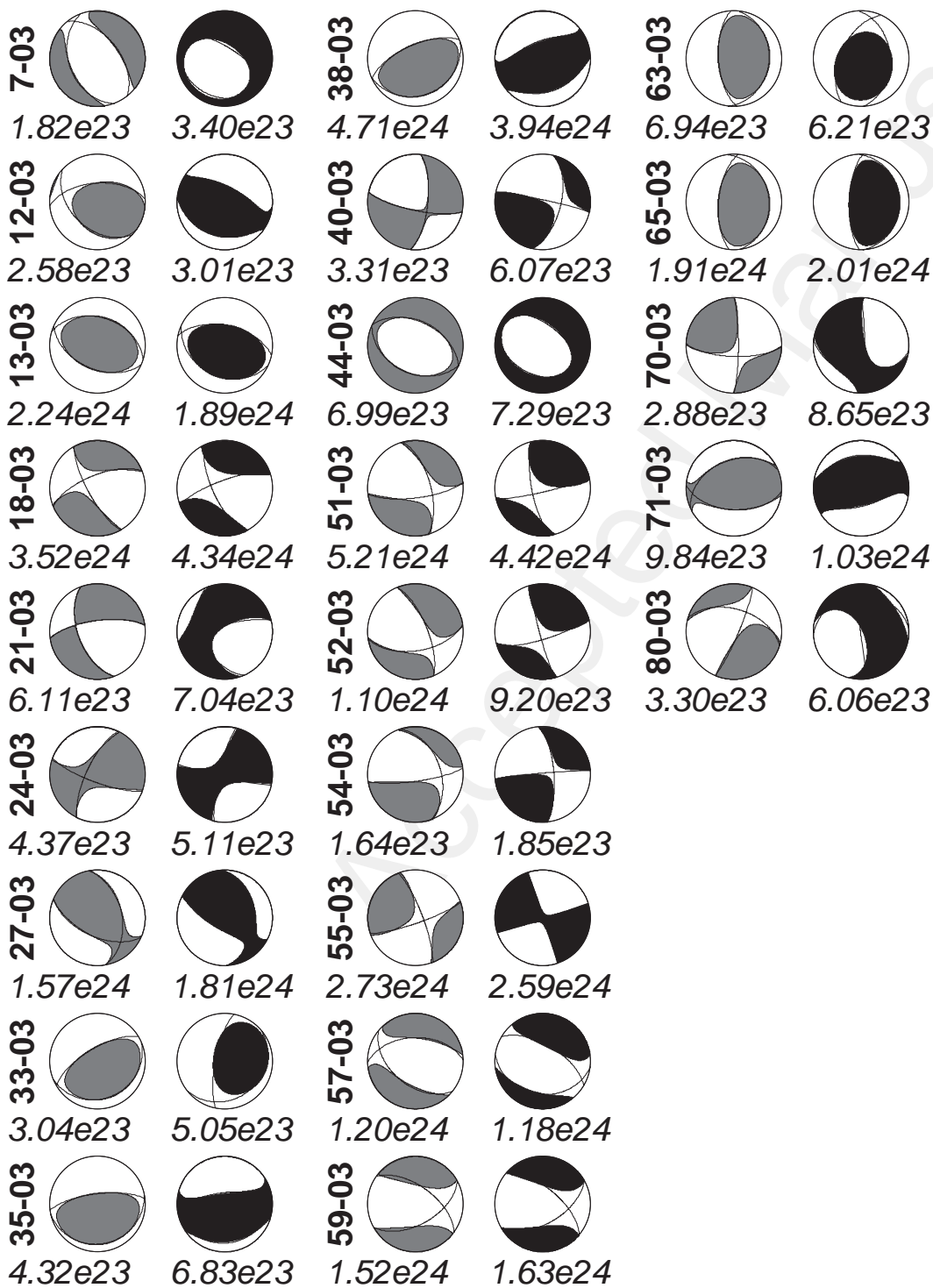


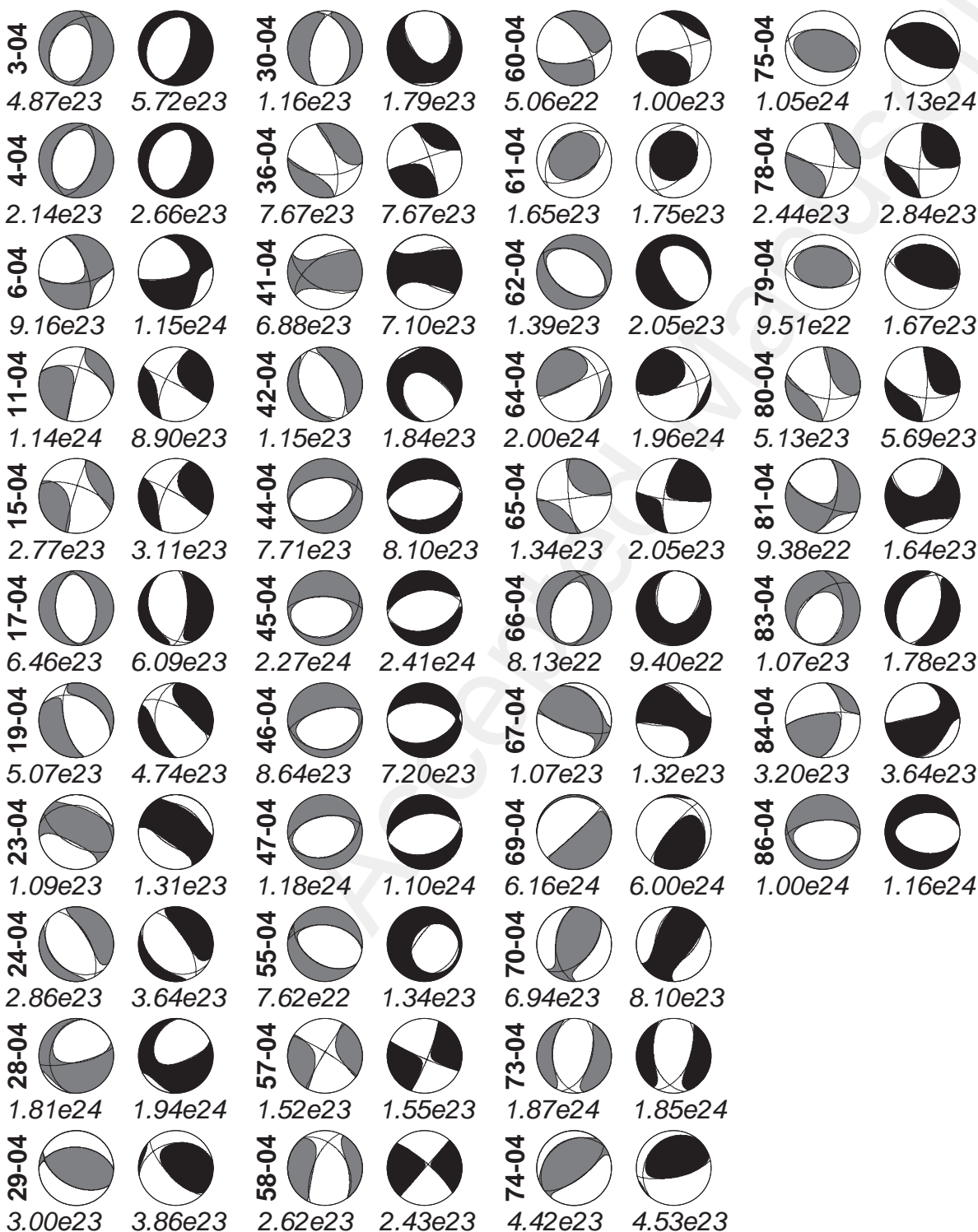


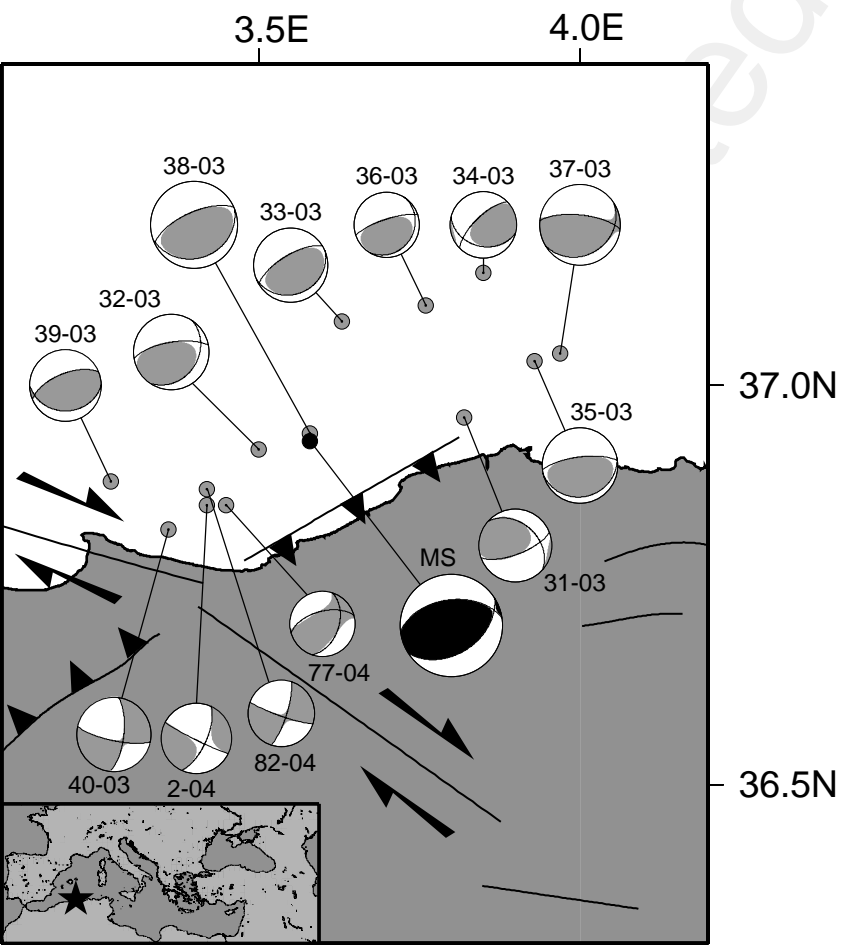


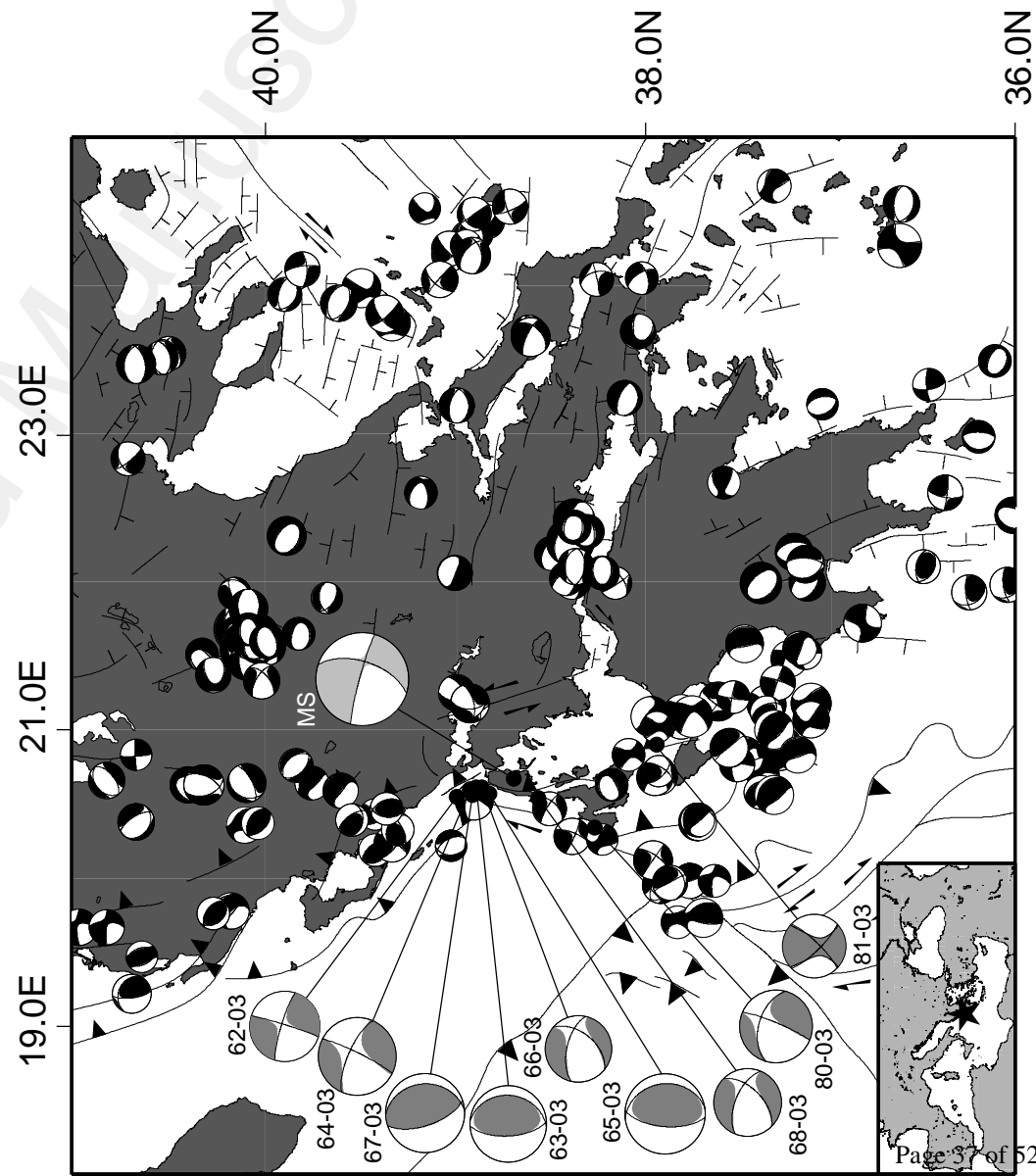


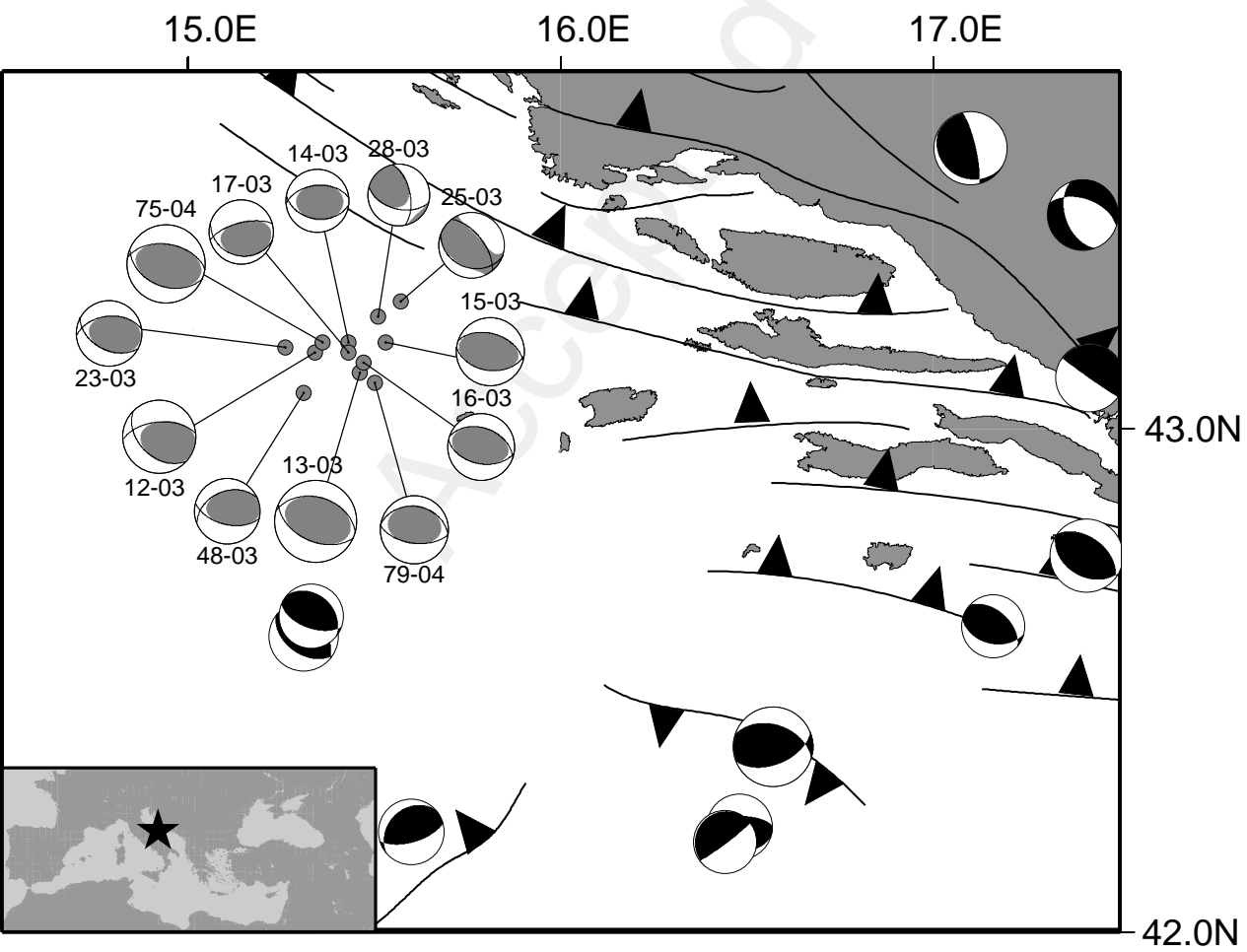




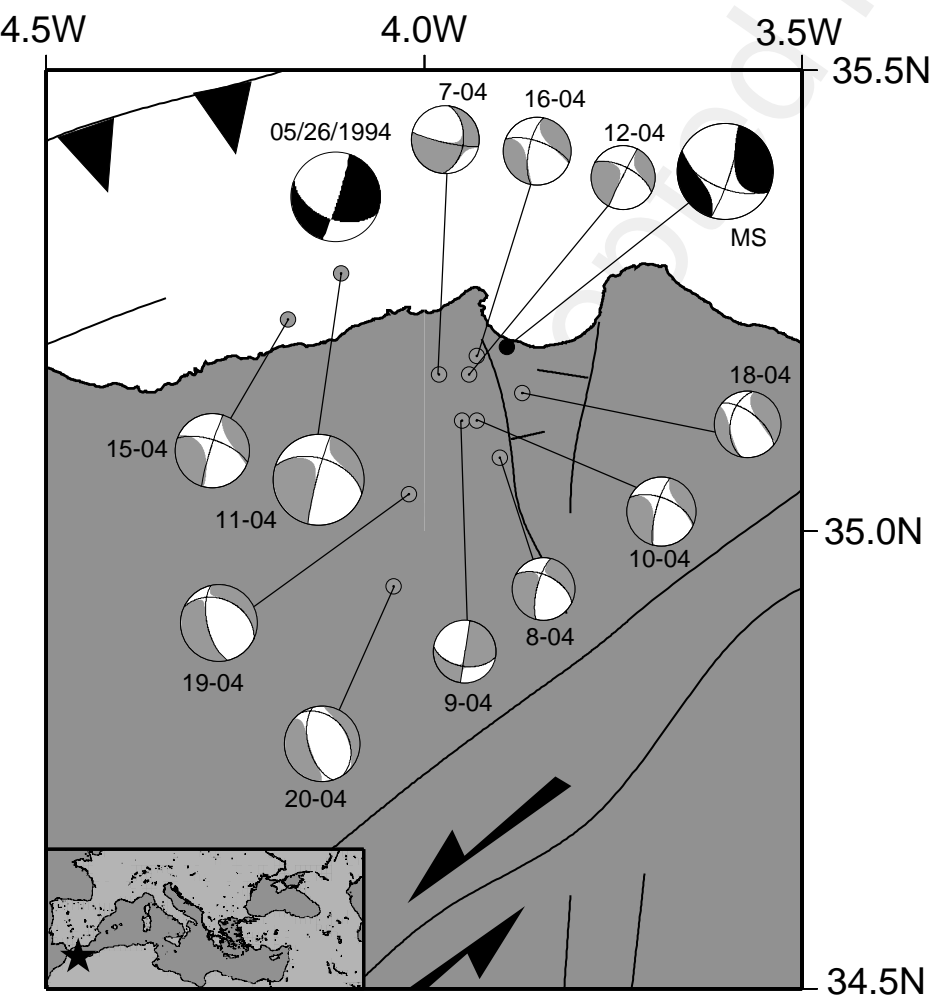












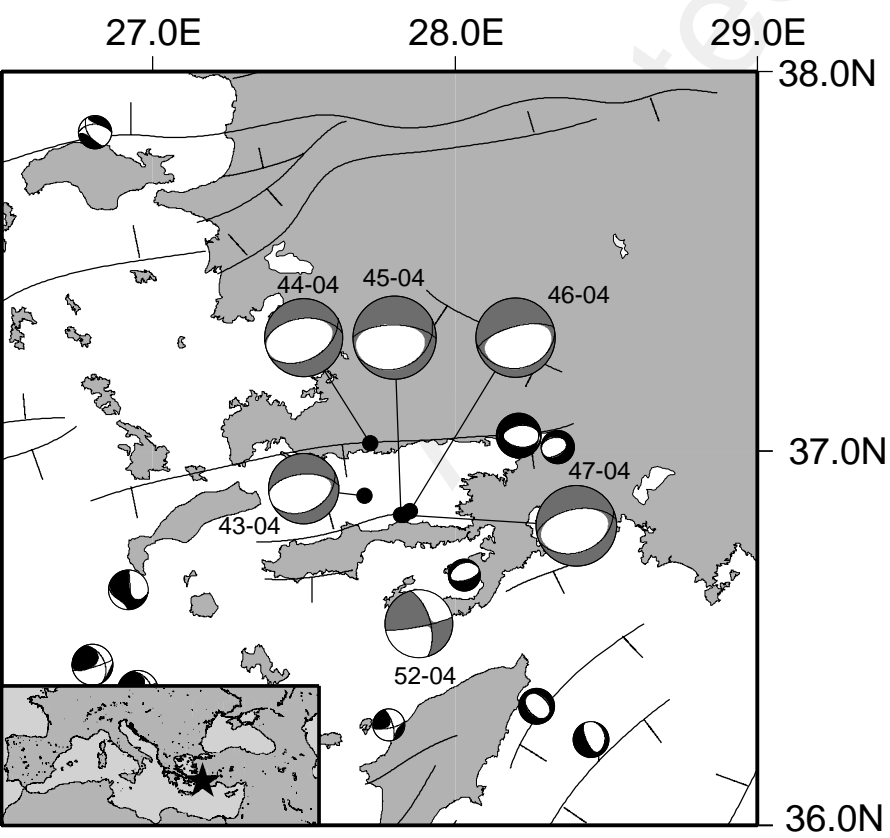


Table 1. Centroid coordinates and parameters for 2003 events. Star: also a CMT standard solution exists; bullet: final depth was fixed.

N.	Date	Time	$\delta t_0$	lat	$\delta lat_0$	lon	$\delta lon_0$	depth	$\delta dep_0$	$M$	$M_W$
1-03	01/23/03	10:13:15.3± 0.8	2.9	41.54± 0.00	0.00	-6.01± 0.00	0.00	22.5	-16.5	4.5 $m_b$	4.5
2-03	01/24/03	20:35:01.8± 1.0	0.0	37.64± 0.03	0.14	-4.86± 0.06	0.23	24.3	-18.3	4.5 $M_D$	4.3
3-03	01/26/03	19:57:07.2± 0.1	-4.0	43.89± 0.01	-0.01	11.98± 0.01	-0.02	10.0	-4.0	4.7 $m_b$	4.7
4-03	01/26/03	20:15:05.3± 0.2	-2.2	43.93± 0.01	-0.05	11.76± 0.03	0.19	10.0	-3.0	4.7 $m_b$	4.5
5-03	01/30/03	20:20:05.4± 0.2	-1.9	36.40± 0.01	-0.13	27.17± 0.01	0.00	18.8	9.2	4.5 $M_L$	4.7
6-03	02/18/03	13:09:40.0± 0.2	-3.9	35.86± 0.01	-0.02	-3.49± 0.01	0.00	15.0	-5.0	4.7 $m_b$	4.8
*7-03	02/22/03	20:41:08.1± 0.1	-4.7	48.35± 0.01	-0.01	6.72± 0.01	-0.15	17.7	-7.7	5.7 $M_L$	4.8
8-03	02/24/03	20:22:26.3± 0.2	-1.6	39.42± 0.03	-0.05	20.37± 0.02	0.10	17.9	15.1	4.8 $m_b$	4.5
9-03	02/26/03	03:08:25.1± 0.9	-2.2	35.87± 0.00	0.00	36.28± 0.00	0.00	39.8	-6.8	4.4 $m_b$	4.4
10-03	03/01/03	04:06:03.4± 0.3	-1.3	34.82± 0.02	-0.10	23.83± 0.02	0.10	25.5	7.5	4.7 $m_b$	4.6
11-03	03/22/03	13:36:14.3± 0.7	1.7	48.23± 0.04	-0.02	8.95± 0.08	0.05	10.0	-4.0	4.7 $M_L$	3.9
*12-03	03/27/03	16:10:38.8± 0.1	-2.4	43.18± 0.01	-0.03	14.95± 0.02	0.39	15.0	-5.0	5.0 $M_W$	4.9
*13-03	03/29/03	17:42:17.3± 0.1	-1.6	43.10± 0.01	0.01	15.11± 0.01	0.35	15.0	-5.0	5.5 $m_b$	5.5
14-03	03/30/03	00:56:26.8± 0.2	-2.4	43.16± 0.03	0.01	15.22± 0.07	0.21	10.0	0.0	4.3 $M_L$	4.2
15-03	03/30/03	11:10:03.0± 0.1	-3.1	43.08± 0.01	0.09	15.22± 0.03	0.31	15.0	-5.0	4.9 $M_D$	4.6
16-03	03/31/03	19:36:31.4± 0.2	-2.3	43.15± 0.01	-0.02	15.24± 0.03	0.23	15.0	-5.0	4.6 $M_L$	4.5
17-03	04/03/03	22:30:13.5± 0.3	-2.1	43.29± 0.03	-0.14	15.12± 0.06	0.31	15.0	-5.0	4.6 $m_b$	4.3
*18-03	04/10/03	00:40:20.7± 0.2	-5.6	38.16± 0.01	0.06	26.90± 0.02	0.06	15.0	-5.0	5.8 $M_W$	5.6
19-03	04/11/03	09:27:03.0± 0.2	-4.8	44.76± 0.01	0.03	8.84± 0.01	0.05	15.0	-11.0	5.2 $M_L$	4.8
20-03	04/11/03	23:53:52.0± 0.4	-4.4	37.28± 0.04	0.30	22.56± 0.03	0.11	70.2	14.8	4.7 $M_D$	4.5
*21-03	04/17/03	22:34:25.2± 0.1	-0.6	38.21± 0.01	-0.05	27.14± 0.01	-0.14	15.9	-5.9	5.2 $M_W$	5.1
22-03	04/19/03	20:55:53.4± 0.2	-2.3	35.39± 0.01	-0.25	27.77± 0.01	-0.06	21.6	11.4	4.7 $M_L$	4.7
23-03	04/26/03	08:20:46.9± 0.2	-3.7	43.22± 0.01	-0.06	15.01± 0.04	0.25	15.0	-5.0	4.6 $M_D$	4.4
*24-03	04/29/03	01:51:18.6± 0.2	1.6	36.60± 0.01	0.23	21.68± 0.01	0.04	31.8	35.2	5.1 $M_W$	5.0
25-03	04/29/03	15:13:08.9± 0.4	-2.7	43.08± 0.04	0.17	15.40± 0.07	0.17	15.0	-5.0	4.9 $M_L$	4.4
26-03	05/01/03	20:04:51.6± 0.3	-3.3	38.29± 0.02	-0.06	20.35± 0.02	-0.09	15.0	-10.0	4.3 $m_b$	4.2
*27-03	05/03/03	11:22:42.9± 0.1	-2.3	36.73± 0.01	0.15	31.40± 0.01	0.14	134.4	0.6	5.5 $M_W$	5.4
28-03	05/05/03	06:16:42.3± 0.3	-4.1	43.11± 0.04	0.11	15.33± 0.04	0.18	15.0	-5.0	4.5 $M_L$	4.1
29-03	05/10/03	06:42:53.0± 0.1	-3.2	43.93± 0.01	-0.02	16.91± 0.01	0.07	29.8	-19.8	4.7 $M_D$	4.4
30-03	05/21/03	08:21:54.1± 0.3	-3.8	40.89± 0.03	-0.07	31.03± 0.04	-0.06	24.3	-16.3	4.5 $M_L$	4.3
31-03	05/21/03	23:18:25.8± 1.4	1.8	36.49± 0.11	0.47	3.38± 0.10	0.44	15.3	-5.3	4.5 $m_b$	4.8
32-03	05/21/03	23:23:46.6± 0.4	-2.7	36.91± 0.04	0.01	3.55± 0.04	-0.05	15.0	-5.0	4.9 $m_b$	5.0
*33-03	05/22/03	03:14:05.3± 0.2	-1.5	37.00± 0.01	0.08	3.51± 0.01	0.12	15.0	-5.0	5.4 $m_b$	4.9
34-03	05/22/03	11:11:07.0± 0.3	-1.7	36.94± 0.03	0.20	3.57± 0.06	0.28	15.0	-5.0	4.8 $m_b$	4.4
*35-03	05/22/03	13:57:24.0± 0.2	-3.4	36.93± 0.01	0.10	3.95± 0.02	-0.02	15.0	-5.0	5.2 $M_W$	5.0
36-03	05/24/03	15:51:45.6± 0.6	-2.8	37.11± 0.06	-0.01	3.68± 0.05	0.08	15.0	-5.0	4.6 $m_b$	4.3
37-03	05/24/03	19:21:21.9± 0.8	2.9	36.72± 0.04	0.32	4.12± 0.03	-0.15	15.0	-5.0	4.7 $m_b$	4.6
*38-03	05/27/03	17:11:32.4± 0.1	-3.6	36.83± 0.01	0.11	3.49± 0.01	0.09	15.0	-7.0	5.8 $M_W$	5.7
39-03	05/28/03	06:58:40.7± 0.2	-3.0	36.79± 0.01	0.09	3.25± 0.02	0.02	15.0	-5.0	5.0 $m_b$	4.7
*40-03	05/29/03	02:15:02.1± 0.1	-2.3	36.72± 0.01	0.10	3.29± 0.01	0.07	15.0	-5.0	5.2 $M_W$	4.9
41-03	05/29/03	11:38:11.2± 0.5	-1.9	39.35± 0.03	0.20	20.59± 0.05	-0.20	15.1	-5.1	4.5 $m_b$	4.4
42-03	05/30/03	10:47:11.6± 0.7	-1.6	34.18± 0.04	0.20	26.11± 0.03	0.12	30.3	2.7	4.5 $m_b$	4.5
43-03	06/01/03	15:45:19.4± 0.3	-1.2	41.60± 0.01	0.06	14.86± 0.01	-0.04	18.8	-6.8	4.6 $M_L$	4.5
*44-03	06/09/03	07:06:45.9± 0.1	-6.6	39.94± 0.01	-0.05	22.32± 0.01	-0.01	21.0	-4.0	5.2 $M_W$	5.2
45-03	06/09/03	17:44:04.4± 0.1	-1.4	40.18± 0.01	0.06	27.97± 0.01	0.05	15.0	-5.0	5.1 $M_L$	4.7
46-03	06/16/03	08:27:56.4± 0.2	-5.4	37.58± 0.02	0.11	19.74± 0.01	-0.01	15.0	-5.0	4.5 $M_D$	4.7
47-03	06/18/03	05:25:05.3± 0.2	-3.4	38.53± 0.02	0.09	23.55± 0.03	0.13	15.0	6.0	4.5 $m_b$	4.7
48-03	06/21/03	09:00:24.9± 0.3	-4.1	43.15± 0.03	-0.08	15.13± 0.07	0.18	16.0	-6.0	5.0 $M_L$	4.4
49-03	06/22/03	23:46:23.1± 0.2	-2.7	39.07± 0.01	-0.04	27.98± 0.03	0.06	15.0	-8.0	4.6 $M_L$	4.6
50-03	06/26/03	13:46:01.3± 0.3	-3.8	38.64± 0.02	-0.03	23.78± 0.05	-0.13	15.0	4.0	4.4 $m_b$	4.6
*51-03	07/06/03	19:10:31.7± 0.1	-3.5	40.40± 0.00	0.04	26.12± 0.01	-0.10	15.0	2.0	5.7 $M_W$	5.7
*52-03	07/06/03	20:10:20.4± 0.2	-3.9	40.45± 0.00	-0.03	26.08± 0.01	0.05	15.0	2.0	5.3 $M_W$	5.3
53-03	07/07/03	15:08:13.7± 0.7	-1.7	35.85± 0.02	0.16	14.97± 0.05	-0.07	15.0	-5.0	4.1 $M_L$	4.3
*54-03	07/09/03	22:31:41.7± 0.1	-0.5	40.36± 0.01	-0.01	25.82± 0.01	0.11	15.0	3.0	4.7 $m_b$	4.7
*55-03	07/13/03	01:48:25.0± 0.2	-3.0	38.30± 0.01	-0.01	38.99± 0.01	-0.03	17.3	-7.3	5.6 $M_W$	5.6
56-03	07/21/03	13:15:57.3± 0.8	0.6	46.91± 0.03	0.25	14.41± 0.10	-0.08	15.0	-5.0	4.7 $M_L$	4.1
*57-03	07/23/03	04:56:05.3± 0.1	-2.3	38.03± 0.01	0.14	28.90± 0.01	-0.05	18.0	-13.0	5.4 $M_W$	5.3
58-03	07/26/03	01:00:58.1± 0.1	-0.5	38.02± 0.01	0.09	28.82± 0.01	0.07	15.0	-5.0	5.0 $M_L$	4.7
*59-03	07/26/03	08:36:50.9± 0.1	-1.7	37.98± 0.01	0.04	28.86± 0.01	0.07	16.1	-6.1	5.6 $M_L$	5.4
60-03	07/26/03	13:31:37.6± 0.2	-1.4	38.12± 0.01	0.00	29.03± 0.01	-0.11	15.0	-5.0	4.6 $m_b$	4.8
61-03	08/02/03	10:18:44.3± 0.2	-5.9	43.11± 0.01	-0.10	17.70± 0.02	0.00	18.3	-8.3	4.9 $M_L$	4.7
62-03	08/14/03	08:41:41.0± 0.2	-1.3	38.77± 0.01	0.23	20.53± 0.01	0.02	15.0	-5.0	4.9 $M_L$	4.7
*63-03	08/14/03	12:18:17.7± 0.1	-3.5	38.62± 0.01	0.28	20.40± 0.01	0.21	15.1	-5.1	5.2 $M_W$	5.2
64-03	08/14/03	15:08:59.0± 0.3	-2.2	38.68± 0.01	0.25	20.57± 0.02	0.03	10.0	0.0	4.5 $M_L$	4.6
*65-03	08/14/03	16:18:07.1± 0.1	-4.6	38.69± 0.01	0.14	20.44± 0.01	0.13	16.4	-6.4	5.5 $M_W$	5.5
66-03	08/14/03	16:37:39.2± 0.5	0.5	38.66± 0.03	0.21	20.40± 0.05	0.21	15.0	-1.0	4.5 $M_L$	4.5
67-03	08/14/03	20:46:55.5± 0.2	-2.9	38.64± 0.02	0.28	20.36± 0.02	0.20	17.4	-7.4	4.7 $M_L$	4.7
68-03	08/16/03	14:49:15.0± 0.4	-1.5	38.46± 0.02	0.11	20.52± 0.04	0.02	20.3	-0.3	4.6 $m_b$	4.5
69-03	09/05/03	23:30:06.5± 0.7	4.6	34.39± 0.03	0.20	26.25± 0.03	-0.06	26.4	39.6	4.6 $m_b$	4.6
*70-03	09/13/03	13:46:14.0± 0.2	0.3	36.57± 0.01	0.06	26.90± 0.02	0.02	162.8	-7.8	5.3 $M_W$	4.9
*71-03	09/14/03	21:42:52.4± 0.1	1.0	44.10± 0.01	0.14	11.28± 0.01	0.14	22.7	-2.7	5.6 $M_L$	5.3
72-03	09/16/03	11:02:49.0± 0.4	-1.1	39.18± 0.09	0.21	0.05± 0.05	-0.04	15.0	-6.0	4.6 $M_L$	4.1
73-03	09/20/03	11:50:51.4± 0.2	-1.5	36.43± 0.02	0.36	7.20± 0.02	0.04	15.0	-5.0	4.6 $m_b$	4.5
74-03	09/21/03	09:58:56.7± 0.3	-1.6	39.26± 0.06	0.13	-0.03± 0.03	0.07	15.0	-6.0	4.6 $M_L$	4.2
75-03	09/21/03	10:34:18.1± 0.2	-1.8	39.42± 0.04	-0.01	-0.13± 0.02	0.14	15.0	-5.0	4.9 $M_L$	4.4
76-03	09/24/03	08:13:11.2± 0.4	-0.9	39.52± 0.02	0.03	38.15± 0.02	0.17	18.0	-8.0	4.8 $M_L$	4.7
77-03	10/05/03	21:38:21.7± 0.4	-4.7	45.59± 0.04	0.08	26.43± 0.05	-0.10	143.8	16.2	4.5 $m_b$	4.4
78-03	10/17/03	12:57:07.1± 0.2	0.6	35.84± 0.01	0.10	22.09± 0.01	0.07	15.6	17.4	5.3 $m_b$	5.3
79-03	10/29/03	21:15:50.7± 0.3	-3.1	40.58± 0.01	0.13	22.76± 0.02	0.07	16.0	9.0	4.6 $m_b$	4.5
*80-03	11/16/03	07:22:50.3± 0.2	-0.6	38.11± 0.01	0.16	20.34± 0.01	0.00	15.7	-7.7	5.2 $M_W$	4.9

Table 1. Continued

N.	Date	Time	$\delta t_0$	lat	$\delta lat_0$	lon	$\delta lon_0$	depth	$\delta dep_0$	$M$	$M_W$
81-03	11/23/03	05:36:44.2± 1.2	2.0	37.93± 0.04	0.01	20.95± 0.09	0.07	28.5	4.5	4.0 $M_L$	4.2
82-03	11/24/03	15:51:07.6± 0.4	-0.9	34.78± 0.02	-0.25	25.03± 0.02	-0.09	26.6	6.4	4.7 $m_b$	5.1
83-03	12/07/03	10:20:34.8± 0.6	-1.8	44.22± 0.06	-0.06	11.95± 0.14	0.23	16.6	-7.6	4.8 $M_L$	4.2
84-03	12/07/03	15:40:21.8± 0.4	-3.8	39.95± 0.03	-0.11	20.99± 0.06	-0.23	43.7	28.3	4.3 $m_b$	4.5
85-03	12/16/03	10:41:11.3± 0.3	-1.5	38.79± 0.03	0.18	27.14± 0.08	-0.31	15.0	0.0	4.6 $M_D$	4.5
86-03	12/17/03	23:15:17.0± 0.2	0.1	43.04± 0.02	0.08	27.50± 0.02	-0.01	15.0	18.0	4.8 $M_L$	4.7
87-03	12/19/03	09:51:27.1± 0.3	0.2	35.96± 0.02	0.29	21.96± 0.02	-0.03	15.8	17.2	4.5 $M_L$	4.8
88-03	12/23/03	12:23:39.3± 0.2	-2.2	39.90± 0.01	0.02	29.24± 0.02	-0.01	16.4	-6.4	4.8 $M_L$	4.6
89-03	12/30/03	05:31:37.1± 0.3	1.2	41.58± 0.02	0.06	14.99± 0.02	-0.14	15.6	-10.6	4.4 $M_L$	4.5

Table 2. Elements of moment tensors for 2003 events. Data with a star have also the CMT standard solution.

N.	$M_0$	$10^{xx}$	$M_{rr}$	$M_{\theta\theta}$	$M_{\phi\phi}$	$M_{r\theta}$	$M_{r\phi}$	$M_{\theta\phi}$
1-03	6.14	22	1.03± 1.11	-4.53± 1.48	3.50± 1.29	-3.18± 1.64	2.94± 1.34	-1.46± 0.79
2-03	3.31	22	-0.44± 0.25	2.78± 0.28	-2.35± 0.31	-0.93± 0.29	-0.34± 0.27	-1.84± 0.22
3-03	1.27	23	-1.18± 0.03	0.27± 0.02	0.92± 0.03	-0.03± 0.08	-0.23± 0.09	-0.65± 0.02
4-03	7.92	22	-6.42± 0.17	3.79± 0.16	2.63± 0.20	0.93± 0.62	5.03± 0.74	-2.97± 0.13
5-03	1.33	23	-0.71± 0.08	-0.14± 0.06	0.85± 0.05	1.22± 0.07	-0.34± 0.04	0.23± 0.05
6-03	2.29	23	0.27± 0.05	-2.37± 0.03	2.09± 0.05	0.36± 0.09	0.27± 0.13	0.30± 0.04
* 7-03	1.82	23	-1.62± 0.07	0.27± 0.04	1.36± 0.04	0.37± 0.05	-0.22± 0.06	-0.96± 0.03
8-03	6.54	22	6.16± 0.72	0.11± 0.41	-6.27± 0.44	-1.94± 0.77	-0.05± 0.44	0.72± 0.20
9-03	4.35	22	0.37± 0.48	3.12± 0.89	-3.49± 0.72	0.02± 0.20	-0.49± 0.09	2.78± 0.81
10-03	1.13	23	0.01± 0.05	-1.00± 0.04	0.99± 0.04	0.10± 0.04	-0.04± 0.05	-0.53± 0.04
11-03	1.01	22	0.44± 0.64	-4.05± 0.55	3.61± 0.76	0.20± 2.71	1.55± 2.74	-9.18± 1.04
*12-03	2.58	23	2.13± 0.05	-1.97± 0.04	-0.16± 0.05	-0.94± 0.12	-1.04± 0.12	0.81± 0.03
*13-03	2.24	24	2.33± 0.03	-1.88± 0.02	-0.45± 0.02	0.25± 0.07	-0.26± 0.10	0.60± 0.02
14-03	2.40	22	2.61± 0.09	-2.06± 0.09	-0.55± 0.10	-0.41± 0.57	-0.41± 0.84	0.07± 0.08
15-03	0.99	23	1.00± 0.02	-0.92± 0.03	-0.08± 0.03	-0.05± 0.13	0.10± 0.15	0.19± 0.02
16-03	6.15	22	6.29± 0.13	-5.54± 0.11	-0.75± 0.13	0.65± 0.36	0.37± 0.58	1.41± 0.08
17-03	3.46	22	2.66± 0.14	-2.29± 0.13	-0.38± 0.11	-2.23± 0.38	-1.01± 0.51	0.15± 0.09
*18-03	3.52	24	-1.09± 0.06	3.03± 0.09	-1.94± 0.09	0.04± 0.38	1.19± 0.38	-2.04± 0.06
19-03	2.17	23	-0.12± 0.05	-1.48± 0.04	1.60± 0.04	0.78± 0.10	0.30± 0.10	-1.29± 0.04
20-03	6.08	22	3.01± 0.43	-5.74± 0.51	2.73± 0.51	2.43± 0.28	-2.52± 0.11	2.83± 0.80
*21-03	6.11	23	-2.18± 0.22	3.38± 0.23	-1.20± 0.15	2.56± 0.31	1.96± 0.29	-4.25± 0.10
22-03	1.38	23	0.01± 0.06	-1.36± 0.05	1.35± 0.05	0.04± 0.04	0.24± 0.03	0.01± 0.04
23-03	5.32	22	5.11± 0.16	-4.75± 0.13	-0.36± 0.18	-0.37± 0.52	-1.86± 0.67	0.88± 0.10
*24-03	4.37	23	1.20± 0.33	-3.50± 0.20	2.30± 0.19	0.84± 0.13	-0.95± 0.09	-2.90± 0.07
25-03	4.89	22	3.38± 0.42	-2.45± 0.40	-0.92± 0.30	-1.44± 1.36	2.24± 1.74	2.93± 0.33
26-03	2.73	22	1.25± 0.12	0.12± 0.11	-1.37± 0.09	-1.03± 0.22	-0.18± 0.23	2.21± 0.07
*27-03	1.57	24	1.10± 0.03	-0.31± 0.02	-0.79± 0.02	0.65± 0.03	0.15± 0.03	1.03± 0.02
28-03	1.93	22	1.18± 0.12	-0.56± 0.12	-0.62± 0.10	0.72± 0.52	0.97± 0.45	1.14± 0.11
29-03	5.63	22	-0.29± 0.52	-5.07± 0.33	5.35± 0.29	-0.99± 0.24	-1.17± 0.43	1.51± 0.26
30-03	3.22	22	-0.19± 0.27	1.40± 0.20	-1.21± 0.23	0.04± 0.21	0.16± 0.22	-2.94± 0.19
31-03	1.88	23	1.05± 0.51	-1.37± 0.50	0.32± 0.41	0.93± 0.37	1.01± 0.43	0.45± 0.43
32-03	3.64	23	2.41± 0.20	-1.55± 0.20	-0.86± 0.12	-2.67± 0.53	0.28± 0.47	-1.34± 0.18
*33-03	3.04	23	2.22± 0.04	-1.63± 0.04	-0.59± 0.03	-1.86± 0.14	-1.21± 0.15	-0.67± 0.03
34-03	4.82	22	2.94± 0.17	-3.51± 0.18	0.56± 0.21	-1.45± 0.97	-3.17± 1.07	-0.92± 0.19
*35-03	4.32	23	2.68± 0.07	-2.28± 0.05	-0.40± 0.05	-3.50± 0.12	-0.41± 0.16	-0.34± 0.05
36-03	3.91	22	2.07± 0.18	-0.96± 0.19	-1.11± 0.11	-3.34± 0.49	-0.69± 0.63	-0.85± 0.16
37-03	1.15	23	6.91± 0.25	-7.89± 0.21	0.98± 0.22	-8.33± 0.75	1.68± 0.91	-1.96± 0.24
*38-03	4.71	24	3.61± 0.05	-2.87± 0.03	-0.74± 0.03	-2.89± 0.08	-1.33± 0.09	-1.10± 0.02
39-03	1.44	23	1.15± 0.03	-1.14± 0.03	-0.01± 0.02	-0.74± 0.10	-0.41± 0.10	-0.25± 0.02
*40-03	3.31	23	-0.55± 0.05	-0.65± 0.04	1.21± 0.04	-1.24± 0.13	-0.55± 0.10	-2.84± 0.03
41-03	4.62	22	3.57± 0.25	-2.73± 0.15	-0.84± 0.25	-0.67± 0.54	2.79± 0.62	1.72± 0.20
42-03	6.88	22	3.41± 0.69	-4.49± 0.49	1.08± 0.39	4.18± 0.52	-2.86± 0.46	-2.41± 0.45
43-03	6.48	22	-1.54± 0.39	3.11± 0.29	-1.57± 0.22	1.52± 0.42	1.00± 0.35	-5.67± 0.23
*44-03	6.99	23	-7.27± 0.26	5.54± 0.14	1.73± 0.14	0.73± 0.09	-0.46± 0.12	-2.29± 0.06
45-03	1.18	23	-7.73± 0.32	7.41± 0.20	0.32± 0.28	1.60± 0.52	4.71± 0.65	-7.64± 0.20
46-03	1.18	23	6.82± 0.37	2.42± 0.32	-9.24± 0.24	-2.79± 0.79	-7.52± 0.65	2.43± 0.23
47-03	1.55	23	-1.35± 0.06	1.51± 0.05	-0.16± 0.05	0.55± 0.15	-0.01± 0.17	0.26± 0.03
48-03	4.87	22	4.42± 0.50	-4.40± 0.40	-0.02± 0.26	1.36± 0.69	-1.57± 0.97	-0.37± 0.18
49-03	9.36	22	-8.43± 0.29	6.99± 0.20	1.45± 0.26	1.30± 0.53	1.77± 1.09	-4.70± 0.17
50-03	1.04	23	-4.68± 1.14	8.80± 0.47	-4.12± 0.89	4.80± 0.64	-4.46± 0.94	2.43± 0.62
*51-03	5.21	24	-1.80± 0.11	2.76± 0.07	-0.96± 0.09	-1.61± 0.13	-1.00± 0.15	-4.27± 0.06
*52-03	1.10	24	-4.63± 0.25	6.87± 0.13	-2.24± 0.19	-0.17± 0.24	-4.95± 0.34	-7.85± 0.14
53-03	3.53	22	0.14± 0.19	1.14± 0.17	-1.28± 0.17	-1.65± 0.47	-0.11± 0.65	-2.87± 0.12
*54-03	1.64	23	-0.47± 0.03	0.86± 0.02	-0.38± 0.03	-1.02± 0.06	-0.18± 0.07	-1.05± 0.02
*55-03	2.73	24	-0.22± 0.07	-1.56± 0.05	1.78± 0.05	0.44± 0.06	0.75± 0.06	2.01± 0.03
56-03	1.90	22	1.27± 0.29	-1.50± 0.13	0.22± 0.28	-0.53± 0.48	0.93± 0.90	0.72± 0.23
*57-03	1.20	24	-0.98± 0.04	1.13± 0.02	-0.15± 0.02	0.11± 0.03	0.27± 0.04	-0.50± 0.01
58-03	1.49	23	-0.44± 0.05	1.52± 0.04	-1.07± 0.02	-0.06± 0.08	-0.56± 0.05	-0.30± 0.02
*59-03	1.52	24	-0.96± 0.06	1.82± 0.04	-0.85± 0.02	0.12± 0.06	-0.29± 0.05	-0.19± 0.02
60-03	2.30	23	-1.30± 0.03	1.38± 0.03	-0.08± 0.02	1.42± 0.09	-0.95± 0.06	-0.83± 0.02
61-03	1.56	23	0.42± 0.06	-0.31± 0.04	-0.11± 0.04	1.39± 0.22	-0.53± 0.09	0.28± 0.02
62-03	1.61	23	-0.13± 0.06	0.96± 0.05	-0.83± 0.05	0.00± 0.12	-0.24± 0.11	1.31± 0.03
*63-03	6.94	23	5.71± 0.31	-0.43± 0.14	-5.28± 0.19	0.57± 0.29	-4.20± 0.26	-0.17± 0.07
64-03	1.01	23	-2.80± 0.38	8.67± 0.39	-5.87± 0.39	-1.16± 1.12	-2.50± 1.04	6.30± 0.27
*65-03	1.91	24	1.57± 0.08	-0.12± 0.04	-1.45± 0.05	-0.19± 0.06	-1.16± 0.07	0.04± 0.02
66-03	6.85	22	-4.26± 0.41	6.60± 0.33	-2.34± 0.40	1.79± 0.87	-1.55± 0.72	3.20± 0.29
67-03	1.23	23	9.65± 0.88	-0.16± 0.44	-9.49± 0.55	3.07± 0.66	-6.84± 0.63	1.86± 0.22
68-03	7.79	22	-4.58± 0.73	8.15± 0.59	-3.58± 0.42	0.89± 0.58	-2.50± 0.42	2.38± 0.29
69-03	8.35	22	-4.13± 0.65	4.97± 0.38	-0.84± 0.46	3.88± 0.22	-1.78± 0.41	5.56± 0.35
*70-03	2.88	23	0.00± 0.06	0.07± 0.09	-0.08± 0.08	0.51± 0.07	0.95± 0.06	2.68± 0.07
*71-03	9.84	23	8.77± 0.31	-9.57± 0.19	0.80± 0.16	2.43± 0.13	-1.73± 0.15	-1.88± 0.10
72-03	1.48	22	-0.73± 0.11	-0.30± 0.15	1.03± 0.08	-0.57± 0.94	-0.55± 0.35	-0.84± 0.06
73-03	6.34	22	-2.41± 0.20	-3.55± 0.18	5.95± 0.15	-2.69± 0.40	-2.41± 0.61	-0.65± 0.17
74-03	2.85	22	-0.44± 0.15	-0.97± 0.20	1.41± 0.12	-1.80± 1.17	-0.07± 0.41	-1.86± 0.10
75-03	4.23	22	-2.65± 0.16	0.64± 0.19	2.02± 0.12	2.15± 1.11	0.36± 0.43	-2.71± 0.11
76-03	1.38	23	0.31± 0.09	0.02± 0.06	-0.34± 0.06	-0.05± 0.08	-0.34± 0.09	1.32± 0.05
77-03	5.63	22	4.54± 0.47	-0.25± 0.68	-4.28± 0.83	-0.92± 0.36	2.46± 0.50	-2.30± 0.49
78-03	1.07	24	1.07± 0.27	-4.34± 0.24	3.28± 0.18	6.70± 0.56	-7.38± 0.67	-1.44± 0.14
79-03	8.04	22	-2.62± 0.62	6.47± 0.44	-3.85± 0.34	-2.64± 0.48	4.43± 0.68	-2.57± 0.31
*80-03	3.30	23	-0.79± 0.14	1.93± 0.11	-1.14± 0.07	-0.85± 0.16	-1.73± 0.19	2.15± 0.06

Table 2. Continued

N.	$M_0$	$10^{xx}$	$M_{rr}$	$M_{\theta\theta}$	$M_{\phi\phi}$	$M_{r\theta}$	$M_{r\phi}$	$M_{\theta\phi}$
81-03	2.30	22	$0.57 \pm 0.82$	$1.95 \pm 0.63$	$-2.52 \pm 0.44$	$0.46 \pm 0.51$	$0.10 \pm 0.32$	$0.00 \pm 0.50$
82-03	5.57	23	$-0.60 \pm 0.86$	$-0.57 \pm 0.47$	$1.17 \pm 0.46$	$-1.14 \pm 0.36$	$0.59 \pm 0.34$	$5.33 \pm 0.43$
83-03	2.44	22	$2.48 \pm 0.39$	$-1.83 \pm 0.25$	$-0.65 \pm 0.35$	$-0.20 \pm 0.49$	$-0.66 \pm 0.92$	$0.81 \pm 0.11$
84-03	7.47	22	$-7.11 \pm 0.56$	$3.16 \pm 0.64$	$3.94 \pm 0.46$	$-1.09 \pm 0.32$	$0.47 \pm 0.41$	$-4.07 \pm 0.74$
85-03	6.20	22	$-5.17 \pm 0.31$	$5.06 \pm 0.18$	$0.11 \pm 0.34$	$-1.63 \pm 1.17$	$-3.24 \pm 1.56$	$-1.08 \pm 0.21$
86-03	1.28	23	$1.20 \pm 0.04$	$-0.07 \pm 0.03$	$-1.13 \pm 0.03$	$-0.09 \pm 0.09$	$-0.27 \pm 0.10$	$-0.47 \pm 0.03$
87-03	1.71	23	$0.88 \pm 0.10$	$-0.82 \pm 0.07$	$-0.05 \pm 0.05$	$-1.22 \pm 0.14$	$-0.52 \pm 0.09$	$0.71 \pm 0.04$
88-03	1.17	23	$-1.10 \pm 0.08$	$1.02 \pm 0.05$	$0.08 \pm 0.05$	$0.38 \pm 0.06$	$0.02 \pm 0.09$	$-0.31 \pm 0.03$
89-03	8.30	22	$-0.49 \pm 0.31$	$-1.95 \pm 0.26$	$2.44 \pm 0.27$	$5.18 \pm 0.74$	$0.21 \pm 0.43$	$-6.13 \pm 0.22$

Table 3. Principal axes and best double couple for 2003 events. Data with a star have also the CMT standard solution.

N.	T-axes			N-axes			P-axes			Plane 1			Plane 2			$\epsilon$
	$\sigma$	$\delta$	$\xi$	$\sigma$	$\delta$	$\xi$	$\sigma$	$\delta$	$\xi$	$\phi_s$	$\theta$	$\lambda$	$\phi_s$	$\theta$	$\lambda$	
1-03	6.31	36	250	-0.33	44	115	-5.98	24	359	40	45	10	302	83	135	0.05
2-03	3.53	11	197	-0.44	72	68	-3.09	13	289	333	72	-2	63	89	-162	0.12
3-03	1.33	4	59	-0.12	8	149	-1.22	81	300	140	41	-101	336	50	-80	0.09
4-03	6.83	13	229	2.17	23	325	-9.00	63	111	291	37	-130	158	62	-64	-0.24
5-03	0.93	18	81	0.81	33	338	-1.74	51	194	210	40	-31	325	71	-125	-0.47
6-03	2.16	9	275	0.27	78	55	-2.43	7	183	319	78	179	49	89	12	-0.11
* 7-03	1.95	6	59	-0.26	9	328	-1.70	80	184	159	40	-77	322	52	-101	0.13
8-03	6.74	74	176	-0.38	16	353	-6.35	1	83	189	47	113	338	48	68	0.06
9-03	4.14	2	160	0.41	84	47	-4.55	5	250	295	84	-2	25	88	-174	-0.09
10-03	1.12	3	76	0.02	85	309	-1.14	4	166	211	85	-1	301	89	-175	-0.02
11-03	0.99	7	237	0.04	81	19	-1.03	6	146	281	81	179	11	89	9	-0.04
*12-03	2.82	63	122	-0.47	25	283	-2.35	8	17	133	44	128	266	57	59	0.17
*13-03	2.36	84	60	-0.24	3	291	-2.12	4	200	287	41	85	114	49	95	0.10
14-03	2.70	81	125	-0.61	7	271	-2.09	5	1	99	41	101	264	50	80	0.23
15-03	1.01	85	258	-0.05	4	102	-0.96	2	12	98	43	83	287	47	96	0.05
16-03	6.36	85	314	-0.41	4	105	-5.95	2	195	290	43	97	101	48	84	0.06
17-03	3.76	66	146	-0.60	11	261	-3.16	22	355	105	25	116	256	67	78	0.16
*18-03	3.79	4	200	-0.52	62	299	-3.26	28	108	248	67	-163	151	74	-24	0.14
19-03	2.07	0	250	0.20	69	341	-2.27	21	160	297	75	-165	203	75	-16	-0.09
20-03	5.80	48	74	0.58	38	283	-6.37	15	181	231	45	29	120	70	131	-0.09
*21-03	6.11	9	28	-0.01	50	287	-6.10	38	125	159	57	-23	262	71	-144	0.00
22-03	1.39	10	270	-0.03	80	80	-1.36	2	180	315	82	174	46	84	8	0.02
23-03	5.71	72	101	-0.80	18	281	-4.92	0	11	118	48	114	264	48	66	0.14
*24-03	4.01	23	66	0.72	66	258	-4.73	4	158	205	71	14	110	77	160	-0.15
25-03	4.33	68	265	1.10	15	134	-5.44	16	40	109	32	61	322	63	107	-0.20
26-03	2.46	39	148	0.54	51	315	-3.00	6	53	183	59	155	287	69	34	-0.18
*27-03	1.50	58	330	0.14	31	136	-1.64	6	230	350	47	135	114	58	53	-0.09
28-03	2.10	52	312	-0.36	37	142	-1.75	5	48	105	52	40	348	60	134	0.17
29-03	5.84	12	99	-0.43	75	240	-5.42	9	7	143	75	178	233	88	15	0.07
30-03	1.99	71	188	-0.15	8	74	-1.85	17	341	58	29	73	258	63	99	0.08
31-03	2.07	53	298	-0.37	32	82	-1.69	18	184	312	39	146	69	70	56	0.18
32-03	3.91	60	201	-0.54	20	72	-3.37	22	334	32	29	46	260	69	111	0.14
*33-03	3.18	67	144	-0.28	3	240	-2.90	23	331	67	22	98	239	68	87	0.09
34-03	5.19	56	98	-0.75	27	237	-4.44	19	337	103	35	142	226	69	61	0.14
*35-03	4.50	63	175	-0.35	1	82	-4.15	27	352	78	18	86	263	72	91	0.08
36-03	4.22	57	177	-0.63	11	69	-3.59	30	332	31	18	51	252	76	102	0.15
37-03	1.12	62	209	0.05	14	91	-1.17	24	355	58	25	55	276	70	105	-0.05
*38-03	4.85	69	154	-0.28	1	246	-4.57	21	337	68	24	92	246	66	89	0.06
39-03	1.44	71	139	0.00	8	253	-1.45	18	345	88	28	107	248	63	81	0.00
*40-03	3.28	4	233	0.06	64	134	-3.34	26	325	6	69	-16	102	76	-158	-0.02
41-03	4.93	64	273	-0.61	20	134	-4.32	16	38	101	34	52	325	64	113	0.12
42-03	7.30	51	53	-0.83	32	273	-6.47	20	170	219	38	30	105	72	124	0.11
43-03	6.96	5	33	-0.96	69	291	-6.00	21	125	167	72	-12	261	79	-162	0.14
*44-03	6.67	4	25	0.65	1	115	-7.32	86	217	114	41	-91	296	49	-89	-0.09
45-03	1.24	4	214	-0.11	36	306	-1.13	54	119	272	52	-138	153	58	-47	0.09
46-03	1.12	59	136	0.11	22	4	-1.23	21	265	321	31	43	192	69	114	-0.09
47-03	1.65	10	352	-0.20	4	83	-1.45	79	195	76	35	-97	265	55	-85	0.12
48-03	5.13	71	64	-0.52	17	271	-4.61	8	178	249	40	62	103	56	111	0.10
49-03	9.67	1	30	-0.63	16	299	-9.05	74	122	135	46	-68	285	48	-111	0.07
50-03	1.04	16	356	-0.01	39	99	-1.03	47	247	45	44	-153	295	72	-49	0.01
*51-03	5.64	6	212	-0.88	59	111	-4.77	31	306	345	64	-18	83	74	-153	0.16
*52-03	1.17	9	32	-0.14	50	132	-1.03	39	295	81	57	-156	338	70	-36	0.12
53-03	3.58	22	210	-0.09	62	71	-3.49	17	307	350	62	4	258	87	152	0.03
*54-03	1.77	21	204	-0.25	44	92	-1.52	38	312	342	46	-15	82	79	-135	0.14
*55-03	2.96	15	295	-0.46	74	107	-2.50	2	205	339	78	171	71	81	13	0.16
56-03	1.82	60	266	0.16	25	121	-1.97	15	24	84	37	46	314	64	118	-0.08
*57-03	1.30	0	19	-0.21	21	289	-1.09	69	110	129	48	-61	269	49	-118	0.16
58-03	1.55	0	7	-0.13	60	97	-1.43	30	276	56	69	-158	318	70	-22	0.08
*59-03	1.84	3	4	-0.63	40	97	-1.20	50	271	61	55	-141	306	59	-42	0.34
60-03	2.51	24	27	-0.42	7	120	-2.09	65	226	101	22	-110	303	69	-82	0.17
61-03	1.53	53	16	0.06	5	112	-1.59	36	206	323	10	121	111	82	85	-0.04
62-03	1.66	4	152	-0.10	81	39	-1.56	8	242	287	82	-3	17	87	-172	0.06
*63-03	7.18	71	76	-0.48	4	178	-6.70	19	270	7	27	99	176	64	85	0.07
64-03	1.13	8	159	-0.24	70	46	-0.89	18	251	294	71	-7	26	83	-161	0.22
*65-03	1.98	71	106	-0.14	5	3	-1.84	19	271	353	27	79	185	64	95	0.07
66-03	7.76	6	343	-1.81	38	78	-5.95	52	246	39	51	-142	283	61	-46	0.23
67-03	1.23	70	56	0.00	7	164	-1.23	19	256	357	27	104	161	64	83	0.00
68-03	8.63	2	349	-1.67	42	81	-6.96	48	257	45	57	-143	293	60	-39	0.19
69-03	8.82	11	332	-0.94	42	72	-7.88	46	230	23	50	-151	273	68	-44	0.11
*70-03	3.03	19	315	-0.31	70	157	-2.73	7	47	92	71	8	0	82	161	0.10
*71-03	9.54	75	57	0.60	14	263	-10.14	6	171	246	40	68	94	53	107	-0.06
72-03	1.47	7	67	0.01	43	163	-1.49	46	329	119	54	-149	9	65	-41	-0.01
73-03	6.60	15	90	-0.52	45	196	-6.08	41	347	137	50	-159	33	74	-42	0.08
74-03	2.67	17	235	0.36	52	122	-3.04	33	337	11	53	-13	109	80	-143	-0.12
75-03	4.30	9	49	-0.14	34	313	-4.16	54	152	173	47	-39	292	63	-129	0.03
76-03	1.25	16	138	0.27	72	343	-1.52	7	230	275	74	7	183	84	163	-0.18
77-03	5.57	67	228	0.11	20	17	-5.68	11	111	225	38	123	5	59	67	-0.02
78-03	1.16	42	62	-0.19	22	311	-0.97	40	201	225	22	4	132	89	112	0.16
79-03	8.37	20	199	-0.66	43	309	-7.71	41	91	244	46	-162	141	77	-46	0.08
*80-03	3.61	20	149	-0.62	50	32	-2.99	32	252	287	51	-10	23	82	-141	0.17

Table 3. Continued

N.	T-axes			N-axes			P-axes			Plane 1			Plane 2			$\epsilon$
	$\sigma$	$\delta$	$\xi$	$\sigma$	$\delta$	$\xi$	$\sigma$	$\delta$	$\xi$	$\phi_s$	$\theta$	$\lambda$	$\phi_s$	$\theta$	$\lambda$	
81-03	2.09	17	0	0.43	73	186	-2.52	2	90	136	77	11	44	79	167	-0.17
82-03	5.71	3	131	-0.29	75	231	-5.43	15	40	176	78	-171	84	82	-12	0.05
83-03	2.64	77	111	-0.39	13	298	-2.25	2	208	284	45	71	130	48	108	0.15
84-03	7.73	4	227	-0.51	4	137	-7.22	84	3	322	41	-84	134	49	-95	0.07
85-03	5.39	6	188	1.63	26	95	-7.02	63	290	304	45	-51	76	57	-122	-0.23
86-03	1.23	83	103	0.11	1	201	-1.33	6	291	22	39	91	200	51	89	-0.08
87-03	1.85	53	140	-0.28	28	275	-1.57	22	18	148	34	148	265	73	60	0.15
88-03	1.17	9	16	0.00	6	285	-1.17	79	162	113	36	-80	281	54	-97	0.00
89-03	7.88	22	48	0.84	52	287	-8.73	29	151	187	53	-6	281	85	-142	-0.10





Table 4. Continued

N.	Date	Time	$\delta t_0$	lat	$\delta lat_0$	lon	$\delta lon_0$	depth	$\delta dep_0$	$M$	$M_W$
*81-04	12/05/04	01:52:39.4 $\pm$ 0.2	-2.2	48.11 $\pm$ 0.01	0.01	7.96 $\pm$ 0.02	0.12	18.2	-8.2	4.6 $M_W$	4.6
82-04	12/05/04	08:30:58.5 $\pm$ 0.3	1.1	36.79 $\pm$ 0.01	0.08	3.42 $\pm$ 0.01	0.00	15.0	-5.0	4.5 $m_b$	4.4
*83-04	12/09/04	18:35:20.8 $\pm$ 0.2	-1.1	42.09 $\pm$ 0.02	-0.13	20.32 $\pm$ 0.02	0.05	15.0	-7.0	4.5 $m_b$	4.6
*84-04	12/13/04	14:16:13.0 $\pm$ 0.4	-4.4	36.24 $\pm$ 0.01	0.01	-9.91 $\pm$ 0.04	-0.09	33.6	-23.6	4.8 $m_b$	4.9
85-04	12/18/04	09:12:48.6 $\pm$ 0.5	-0.4	40.95 $\pm$ 0.07	-0.06	10.08 $\pm$ 0.04	0.07	15.0	-5.0	5.1 $m_b$	4.6
*86-04	12/20/04	23:02:13.6 $\pm$ 0.2	-1.2	37.00 $\pm$ 0.01	0.04	28.45 $\pm$ 0.01	-0.24	15.0	-10.0	5.3 $M_W$	5.3
87-04	12/28/04	20:34:12.4 $\pm$ 0.5	-0.1	37.00 $\pm$ 0.06	0.01	28.49 $\pm$ 0.05	-0.15	15.0	-5.0	4.5 $m_b$	4.4
88-04	12/29/04	22:22:22.4 $\pm$ 0.2	-2.6	40.37 $\pm$ 0.00	0.00	32.94 $\pm$ 0.00	0.00	16.2	-11.2	4.6 $M_L$	4.5

Table 5. Elements of moment tensors for 2004 events. Data with a star have also the CMT standard solution.

N.	$M_0$	$10^{xx}$	$M_{rr}$	$M_{\theta\theta}$	$M_{\phi\phi}$	$M_{r\theta}$	$M_{r\phi}$	$M_{\theta\phi}$
1-04	9.79	22	3.20± 0.38	-5.38± 0.50	2.19± 0.27	2.01± 0.41	-5.76± 0.47	6.17± 0.38
2-04	1.27	23	-0.22± 0.02	-0.79± 0.02	1.01± 0.02	-0.42± 0.05	0.21± 0.06	-0.76± 0.02
* 3-04	4.87	23	-4.75± 0.26	1.03± 0.15	3.72± 0.15	0.97± 0.19	-1.82± 0.22	1.20± 0.06
* 4-04	2.14	23	-2.20± 0.12	0.41± 0.07	1.78± 0.07	-0.19± 0.06	-0.51± 0.05	0.47± 0.05
5-04	6.07	22	-3.64± 0.59	-0.01± 0.43	3.65± 0.31	3.92± 0.48	-3.07± 0.25	-0.25± 0.31
* 6-04	9.16	23	-2.57± 0.44	4.33± 0.23	-1.76± 0.31	-2.69± 0.22	-4.05± 0.29	-6.82± 0.19
7-04	6.91	22	-1.16± 2.17	-1.04± 2.68	2.20± 1.83	-4.81± 2.46	-0.06± 1.02	-4.61± 2.11
8-04	2.30	22	-0.82± 0.16	-0.77± 0.13	1.59± 0.19	0.75± 0.35	0.98± 0.73	-1.37± 0.17
9-04	2.23	22	0.01± 0.45	-0.52± 0.39	0.51± 0.62	-0.24± 0.48	-1.39± 1.97	-1.66± 1.00
10-04	9.54	22	-3.61± 0.33	-3.67± 0.35	7.28± 0.41	1.18± 0.72	3.74± 1.12	-6.39± 0.22
*11-04	1.14	24	-1.55± 0.50	-4.37± 0.28	5.92± 0.37	1.51± 0.84	6.81± 0.76	-7.40± 0.43
12-04	3.13	22	-0.37± 0.55	-2.14± 0.43	2.52± 0.74	0.48± 0.38	1.29± 0.51	-1.58± 0.42
13-04	1.33	23	-7.14± 0.63	6.19± 0.48	0.95± 0.55	7.32± 0.25	-2.91± 0.28	8.28± 0.47
14-04	1.68	23	0.71± 0.10	-1.04± 0.13	0.33± 0.14	0.97± 0.05	0.37± 0.03	0.95± 0.11
*15-04	2.77	23	-0.91± 0.13	-1.15± 0.07	2.06± 0.10	0.00± 0.13	1.00± 0.15	-2.04± 0.07
16-04	6.97	22	-3.02± 0.39	-1.82± 0.25	4.84± 0.35	1.49± 0.64	1.05± 0.64	-5.48± 0.19
*17-04	6.46	23	-6.52± 0.29	0.20± 0.17	6.32± 0.19	0.15± 0.44	-0.23± 0.32	-0.65± 0.12
18-04	5.03	22	-3.11± 0.24	-1.43± 0.19	4.54± 0.25	1.46± 0.37	-0.99± 0.41	-3.01± 0.14
*19-04	5.07	23	-3.45± 0.17	1.05± 0.10	2.40± 0.12	0.38± 0.45	2.87± 0.32	-2.82± 0.12
20-04	3.44	23	-2.66± 0.14	-0.09± 0.06	2.75± 0.09	-0.28± 0.11	1.57± 0.16	-1.52± 0.05
21-04	3.26	22	0.82± 0.16	-0.64± 0.15	-0.18± 0.18	0.48± 0.49	1.45± 0.32	2.79± 0.12
22-04	4.60	22	1.71± 0.69	-5.12± 0.41	3.41± 0.42	1.64± 0.52	0.45± 0.74	-1.03± 0.56
*23-04	1.09	23	6.82± 0.74	-8.74± 0.47	1.92± 0.51	5.25± 0.28	-2.91± 0.32	5.81± 0.37
*24-04	2.86	23	-2.20± 0.09	0.67± 0.10	1.53± 0.09	0.64± 0.05	-1.39± 0.05	-1.46± 0.10
25-04	4.34	22	-4.29± 0.39	3.05± 0.44	1.24± 0.20	1.75± 0.25	-0.54± 0.18	-1.10± 0.20
26-04	4.19	22	-1.03± 0.18	0.38± 0.17	0.65± 0.14	-1.86± 0.35	-0.59± 0.47	-3.59± 0.10
27-04	9.33	22	0.53± 0.56	-4.60± 0.40	4.07± 0.39	0.41± 0.40	-2.31± 0.30	-7.90± 0.55
*28-04	1.81	24	-0.77± 0.04	0.19± 0.04	0.58± 0.07	-1.52± 0.02	0.02± 0.06	0.75± 0.04
*29-04	3.00	23	2.84± 0.12	-2.79± 0.08	-0.05± 0.07	0.17± 0.09	-0.70± 0.10	0.77± 0.04
*30-04	1.16	23	-1.01± 0.08	-0.06± 0.04	1.08± 0.05	0.24± 0.13	0.44± 0.08	-0.01± 0.03
31-04	4.05	22	0.39± 0.43	0.03± 0.39	-0.42± 0.24	0.02± 1.32	-1.89± 0.42	3.57± 0.40
32-04	2.85	22	0.94± 1.70	1.47± 0.85	-2.41± 1.02	1.92± 1.26	0.37± 1.83	0.53± 1.05
33-04	7.34	22	0.58± 0.18	-0.42± 0.19	-0.16± 0.14	6.70± 0.33	-2.49± 0.29	1.77± 0.12
34-04	3.38	22	-2.45± 0.29	0.44± 0.18	2.01± 0.16	1.05± 0.17	2.06± 0.20	0.99± 0.25
35-04	1.43	23	1.33± 0.10	-1.25± 0.06	-0.08± 0.05	-0.13± 0.09	-0.02± 0.10	0.61± 0.03
*36-04	7.67	23	-4.17± 0.48	3.23± 0.26	0.94± 0.32	-0.02± 0.44	-2.15± 0.68	-6.79± 0.34
37-04	5.32	23	-4.76± 0.08	2.17± 0.05	2.59± 0.08	1.67± 0.15	-2.14± 0.17	-2.01± 0.04
38-04	5.78	22	-1.62± 0.14	3.86± 0.12	-2.24± 0.16	-0.97± 0.38	-3.19± 0.36	-3.39± 0.13
39-04	3.25	23	-0.86± 0.58	-2.56± 0.36	3.42± 0.27	0.79± 0.22	0.65± 0.11	0.68± 0.12
40-04	3.51	22	2.26± 0.73	-3.15± 1.46	0.89± 1.64	0.85± 0.44	1.66± 0.53	0.99± 1.11
*41-04	6.88	23	4.49± 0.18	-8.03± 0.13	3.54± 0.13	-0.33± 0.36	-1.57± 0.37	-0.85± 0.12
*42-04	1.15	23	-1.03± 0.03	0.17± 0.03	0.87± 0.03	0.18± 0.07	-0.39± 0.07	-0.47± 0.01
43-04	1.23	23	-1.13± 0.02	1.03± 0.02	0.09± 0.01	0.47± 0.06	-0.17± 0.08	0.33± 0.02
*44-04	7.71	23	-7.53± 0.12	6.70± 0.10	0.82± 0.08	1.29± 0.25	-1.47± 0.28	2.14± 0.07
*45-04	2.27	24	-1.81± 0.02	1.56± 0.02	0.25± 0.02	1.45± 0.05	-0.31± 0.06	0.39± 0.01
*46-04	8.64	23	-6.55± 0.13	5.65± 0.11	0.91± 0.08	5.75± 0.26	1.84± 0.26	0.93± 0.07
*47-04	1.18	24	-1.15± 0.01	0.98± 0.01	0.17± 0.01	0.41± 0.04	-0.02± 0.05	0.27± 0.01
48-04	9.67	22	-8.27± 0.30	5.54± 0.37	2.73± 0.21	5.97± 1.04	1.02± 0.92	2.36± 0.22
49-04	0.97	23	-1.01± 0.03	0.60± 0.03	0.42± 0.01	0.41± 0.06	0.01± 0.04	0.24± 0.02
50-04	3.47	22	-2.08± 0.15	0.83± 0.20	1.24± 0.24	1.60± 0.23	2.56± 0.26	0.24± 0.16
51-04	8.62	22	-6.47± 0.64	0.49± 0.52	5.98± 0.32	3.68± 0.75	-2.97± 0.55	-3.67± 0.28
52-04	6.67	22	0.85± 0.26	-2.98± 0.27	2.13± 0.22	2.86± 0.14	1.21± 0.07	5.27± 0.32
53-04	1.23	23	0.39± 0.10	-0.32± 0.08	-0.06± 0.08	0.43± 0.02	0.08± 0.02	1.12± 0.11
54-04	2.48	22	1.89± 0.41	-1.62± 0.25	-0.27± 0.33	0.08± 0.23	1.51± 0.55	0.95± 0.22
*55-04	7.62	22	-7.28± 0.34	6.62± 0.19	0.66± 0.24	0.82± 0.55	1.65± 0.67	-2.46± 0.26
56-04	8.25	22	-3.29± 1.13	-4.19± 0.81	7.48± 0.78	3.90± 1.19	1.11± 0.84	-3.07± 0.82
*57-04	1.52	23	-0.36± 0.13	-1.16± 0.08	1.52± 0.12	0.13± 0.10	0.13± 0.10	-0.69± 0.06
*58-04	2.62	23	-1.61± 0.21	-1.10± 0.10	2.71± 0.13	0.68± 0.11	1.05± 0.12	-0.24± 0.13
59-04	6.69	22	-4.48± 0.87	2.73± 0.85	1.76± 0.44	2.77± 2.15	-4.51± 2.32	-1.49± 0.79
*60-04	5.06	22	-2.36± 0.20	4.01± 0.12	-1.65± 0.20	-0.72± 0.53	-2.34± 0.75	-2.73± 0.22
*61-04	1.65	23	1.83± 0.07	-0.96± 0.06	-0.87± 0.05	0.53± 0.07	0.06± 0.06	-0.40± 0.08
*62-04	1.39	23	-1.42± 0.09	0.98± 0.05	0.44± 0.05	-0.01± 0.05	0.13± 0.04	-0.58± 0.02
63-04	1.19	23	7.12± 0.39	-3.62± 0.41	-3.50± 0.27	5.05± 0.79	-6.86± 0.56	5.74± 0.45
*64-04	2.00	24	-0.07± 0.05	-0.56± 0.04	0.63± 0.03	1.46± 0.05	0.89± 0.03	0.91± 0.05
*65-04	1.34	23	-0.35± 0.06	0.49± 0.08	-0.14± 0.08	0.33± 0.05	-0.17± 0.03	-1.26± 0.07
*66-04	8.13	22	-8.13± 0.79	0.83± 0.43	7.29± 0.50	1.64± 0.41	-1.10± 0.47	1.63± 0.32
*67-04	1.07	23	5.89± 0.87	-4.09± 0.51	-1.80± 0.63	7.54± 0.55	-1.88± 0.46	5.27± 0.40
68-04	2.72	22	-2.02± 0.10	-0.26± 0.13	2.28± 0.12	1.49± 0.36	-0.15± 0.48	0.77± 0.08
*69-04	6.16	24	-0.86± 0.19	0.86± 0.12	0.00± 0.12	-4.45± 0.10	-4.14± 0.10	0.49± 0.09
*70-04	6.94	23	5.68± 0.20	0.34± 0.24	-6.02± 0.23	1.92± 0.16	-0.73± 0.18	-3.17± 0.17
71-04	9.03	22	-8.32± 0.20	3.55± 0.21	4.77± 0.18	0.84± 0.82	-0.90± 0.55	-5.38± 0.15
72-04	2.60	23	-0.82± 0.07	1.96± 0.05	-1.14± 0.06	1.53± 0.14	0.99± 0.13	-0.72± 0.05
*73-04	1.87	24	-1.62± 0.07	-0.31± 0.03	1.93± 0.04	-0.38± 0.06	-0.33± 0.05	0.28± 0.02
*74-04	4.42	23	3.27± 0.15	-2.25± 0.09	-1.02± 0.10	2.22± 0.13	1.68± 0.18	-1.87± 0.05
*75-04	1.05	24	1.07± 0.02	-0.93± 0.01	-0.14± 0.02	-0.17± 0.06	-0.08± 0.06	0.24± 0.01
76-04	5.15	22	-3.98± 0.10	2.51± 0.11	1.47± 0.08	2.83± 0.71	-0.58± 0.51	2.48± 0.12
77-04	3.34	22	2.25± 0.25	-1.38± 0.38	-0.87± 0.20	-0.97± 1.24	0.14± 0.74	-2.70± 0.20
*78-04	2.44	23	-0.84± 0.05	-0.16± 0.04	1.00± 0.04	-0.76± 0.20	0.09± 0.13	-2.20± 0.04
*79-04	9.51	22	9.41± 0.37	-7.47± 0.27	-1.94± 0.43	4.24± 1.12	-0.46± 1.43	0.83± 0.27
*80-04	5.13	23	-2.35± 0.10	-0.16± 0.07	2.51± 0.10	-0.05± 0.24	-1.71± 0.26	-4.49± 0.06

Table 5. Continued

N.	$M_0$	$10^{xx}$	$M_{rr}$	$M_{\theta\theta}$	$M_{\phi\phi}$	$M_{r\theta}$	$M_{r\phi}$	$M_{\theta\phi}$
*81-04	9.38	22	$-2.70 \pm 0.33$	$-2.97 \pm 0.19$	$5.66 \pm 0.28$	$-5.19 \pm 0.49$	$-1.43 \pm 0.34$	$-5.97 \pm 0.27$
82-04	4.48	22	$-0.12 \pm 0.13$	$-2.52 \pm 0.14$	$2.63 \pm 0.11$	$-1.16 \pm 0.43$	$-0.29 \pm 0.36$	$-3.47 \pm 0.10$
*83-04	1.07	23	$-9.38 \pm 0.35$	$1.74 \pm 0.32$	$7.64 \pm 0.22$	$5.91 \pm 1.24$	$-1.14 \pm 1.03$	$3.18 \pm 0.26$
*84-04	3.20	23	$1.07 \pm 0.10$	$-0.40 \pm 0.05$	$-0.68 \pm 0.07$	$-1.94 \pm 0.12$	$0.40 \pm 0.09$	$-2.33 \pm 0.07$
85-04	1.06	23	$0.79 \pm 0.08$	$0.31 \pm 0.07$	$-1.10 \pm 0.06$	$0.31 \pm 0.21$	$0.14 \pm 0.28$	$0.26 \pm 0.07$
*86-04	1.00	24	$-8.12 \pm 0.14$	$7.54 \pm 0.14$	$0.58 \pm 0.10$	$6.16 \pm 0.36$	$1.23 \pm 0.42$	$-0.64 \pm 0.09$
87-04	4.64	22	$-4.16 \pm 0.30$	$3.69 \pm 0.43$	$0.46 \pm 0.32$	$-0.55 \pm 1.35$	$-2.51 \pm 0.56$	$0.73 \pm 0.21$
88-04	5.96	22	$0.48 \pm 0.32$	$-3.12 \pm 0.38$	$2.63 \pm 0.42$	$-1.31 \pm 0.44$	$1.60 \pm 0.44$	$-4.78 \pm 0.25$



Table 6. Continued

N.	T-axes			N-axes			P-axes			Plane 1			Plane 2			$\epsilon$
	$\sigma$	$\delta$	$\xi$	$\sigma$	$\delta$	$\xi$	$\sigma$	$\delta$	$\xi$	$\phi_s$	$\theta$	$\lambda$	$\phi_s$	$\theta$	$\lambda$	
*81-04	8.84	6	241	1.07	53	142	-9.91	36	335	12	60	-23	114	70	-148	-0.11
82-04	4.40	3	243	0.17	75	140	-4.57	15	334	17	77	-8	109	82	-167	-0.04
*83-04	0.91	5	297	0.31	25	29	-1.22	65	196	2	45	-126	228	55	-59	-0.25
*84-04	3.23	40	215	-0.06	46	66	-3.17	16	319	5	50	20	262	75	138	0.02
85-04	0.97	62	346	0.18	28	172	-1.15	2	80	144	49	51	15	54	126	-0.16
*86-04	0.97	19	1	0.08	7	269	-1.04	70	159	103	27	-74	265	64	-98	-0.07
87-04	4.02	9	162	1.24	22	69	-5.26	66	274	276	41	-56	54	57	-116	-0.24
88-04	6.08	20	240	-0.24	70	70	-5.84	3	331	17	74	12	284	78	163	0.04