

## Katalog potresa s epicentrima u SR Hrvatskoj i susjednim područjima 1986. i 1987. godine

*Davorka Herak i Snježana Cabor*

*Geofizički zavod Prirodoslovno-matematičkog fakulteta, Zagreb, Horvatovac bb*

*Primljeno 30. kolovoza 1988, u konačnom obliku 24. listopada 1988.*

Priredjen je katalog potresa u SR Hrvatskoj i susjednim područjima 1986. i 1987. godine. Sadrži osnovne parametre za 458 potresa. Magnituda  $M_L$  je računata na osnovi zapisa seizmoloških stanica Zagreb i Hvar. Svi hipocentri su locirani metodom HYPOSEARCH (Herak, M., 1989a). Karte epicentara potresa za 1986. i 1987. godinu prikazane su slikama 2 i 3.

### Earthquake catalogue for S.R. Croatia (Yugoslavia) and neighbouring regions for the years 1986 and 1987

The systematic collection of data on earthquakes with epicenters in S.R. Croatia began in the framework of the UNDP/UNESCO project (1974) for events before 1971. The earthquake catalogue for the years 1971–1985 is currently in preparation. As a continuation of this effort a catalogue of earthquakes which occurred in 1986 and 1987 on the territory of S.R. Croatia and neighbouring regions has been compiled. It reports the basic parameters for a total of 458 events, and may be considered complete for magnitudes  $M_L \geq 3.0$ . The HYPOSEARCH program (Herak M., 1989a) has been used for determination of focal coordinates and origin times, and the magnitudes were calculated on the basis of records from stations Zagreb and Hvar. The maps of epicentres are given on Figures 2 and 3.

#### 1. Uvod

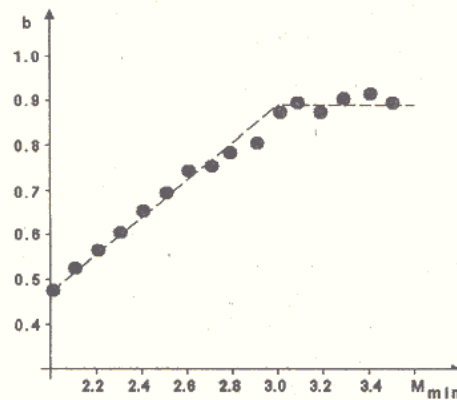
Ovaj rad nastavak je sustavnog prikupljanja podataka o potresima na području Hrvatske i njihovog katalogiziranja, koje je započelo u okviru projekta UNDP/UNESCO istraživanja seizmičnosti na području Balkana za period od 1901-1970. (Part I) i prije 1901. (Part II) (1974) i nastavlja se za razdoblje 1971-1985. u okviru rada Stalnog koordinacionog komiteta za smanjenje seizmičkog rizika na Balkanskom poluotoku – Radna grupa 1, pod pokroviteljstvom UNDP/UNESCO (u pripremi). Osnova za izradu ovog Kataloga bili su svi raspoloživi podaci stalnih seizmoloških postaja na području SFR Jugoslavije, privremenih seizmoloških postaja Geofizičkog zavoda Prirodoslovno-matematičkog fakulteta u Zagrebu kao i podaci seizmoloških stanica iz susjednih država: Albanije, Austrije, Italije, Mađarske i Rumunjske. Prikupljeni su i obrađeni podaci za potrese na području Hrvatske i susjednim područjima bez obzira na iznos magnituda.

Katalog za 1986. godinu sadrži 261 potres a za 1987. godinu 197 potresa. Godina 1986. obilovala je potresima na području Hrvatske. Siječnja mjeseca 1986. započela je pojačana seizmička aktivnost u središnjem dijelu Jadranskog mora (najjači potres imao je magnitudu  $M_L = 5.1$ ). Na granici s Bosnom i Hercegovinom, između Knina i Bosanskog Grahova, dogodio se 25. studenog razoran potres ( $M_L = 5.5$ ,  $I_{max} = VII-VIII$  °MCS) koji je nanio veliku materijalnu štetu ovom kraju. Pojačana seizmička aktivnost tog područja trajala je i tokom 1987. godine. Krajem 1986. godine (16. prosinca) dogodio se jak potres kraj Novog Vinodolskog ( $M_L = 4.7$ ,  $I_{max} = VI-VII$  °MCS). Nakon njega potresi u tom području događali su se i tijekom 1987. godine. Katalog sadrži i podatke o potresima iz epicentralnih područja susjednih SR Hrvatskoj koja zbog svoje blizine mogu utjecati na njenu seizmičnost.

Kompletnost kataloga procijenjena je primjenom relacije (Aki, 1965; Zhang i Song, 1981)

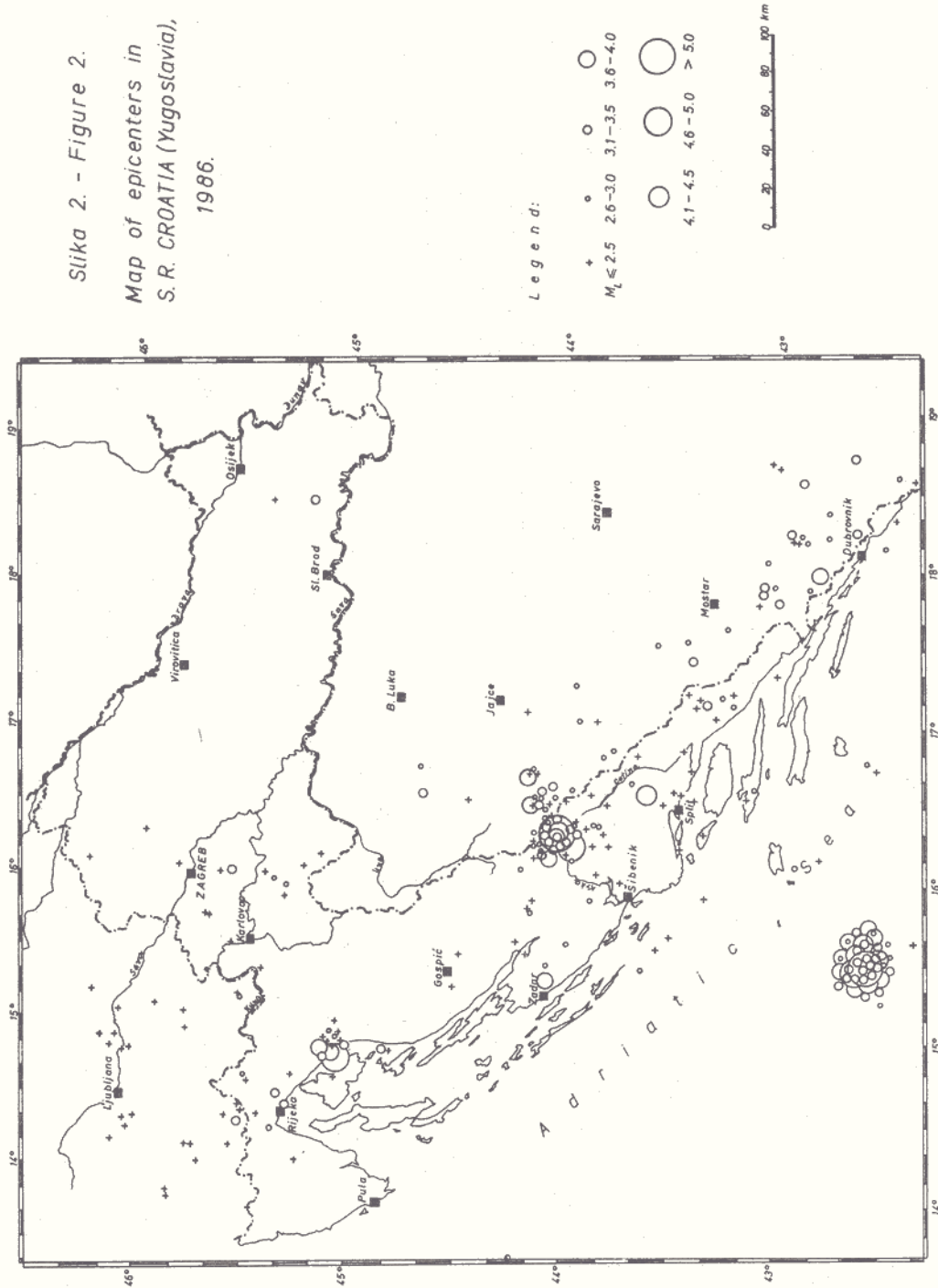
$$b = \frac{0.43429}{M - M_{min}} \frac{n - 1}{n}$$

za određivanje vrijednosti koeficijenta  $b$  u izrazu (Gutenberg i Richter, 1944),  $\log n = a - bM$ . U gornjem izrazu  $M$  označava srednju magnitudu potresa u katalogu, a  $M_{min}$  onu magnitudu od koje je katalog potpun.  $n$  je broj potresa s magnitudom većom ili jednaka  $M_{min}$ . Slika 1 prikazuje vrijednosti koeficijenta  $b$  za vrijednosti  $2.0 \leq M_{min} \leq 3.5$ . Vidi se da za  $M_{min} \geq 3.0$   $b$  ima gotovo konstantnu vrijednost od oko 0.89, pa se može reći da je katalog potpun za magnitudo  $M_L$  veće ili jednake 3.0. Uz katalog priložene su i karte epicentara potresa za razmatrano područje (slika 2 i 3). U karte su ucrtani i epicentri potresa za koje se ne zna iznos magnitudo. Kako se radi o slabim potresima, svrstani su u kategoriju  $M_L \leq 2.5$  (oznaka "+" na slikama).



Slika 1. Vrijednost koeficijenta  $b$  u ovisnosti o pretpostavljenom pragu potpunosti kataloga ( $M_{min}$ )  
Figure 1. The  $b$ -values as a function of the assumed catalogue completeness threshold ( $M_{min}$ )

Slika 2. - Figure 2.  
Map of epicenters in  
S. R. CROATIA (Yugostavia),  
1986.



Slika 3 - Figure 3  
Map of epicenters in  
S. R. CROATIA (Yugoslavia),  
1987.



Legend:

- +  $M_L \leq 2.5$
- 2.6-3.0
- 3.1-3.5
- 3.6-4.0
- 4.1-4.5
- 4.6-5.0



## 2. Parametri potresa

Određeno je pet osnovnih parametara svakog potresa:

- hipocentralno vrijeme,
- geografska širina epicentra,
- geografska dužina epicentra,
- dubina žarišta,
- magnituda potresa.

Vrijeme nastanka potresa i koordinate žarišta određivani su metodom HYPOSEARCH (Herak, M., 1989b). Magnituda  $M_L$  potresa određena je na osnovi zapisa potresa na seizmološkim stanicama Zagreb i Hvar na način koji je opisan u radu Herak D. i dr. (1988). Može se primijetiti da svim potresima nije pridijeljena magnituda. To se dogodilo kad ti potresi nisu bili zapisani niti na jednoj od dviju referentnih stanica jer su bili preslabi da bi ih zabilježili instrumenti na tim stanicama. Parametri potresa određivani su pomoću modela brzina prostornih valova potresa određenog za područje Balkana (B.C.I.S., 1972), osim za središnji dio Jadranskog mora (potresi označeni \*) i za šire područje Dinare (potresi označeni \*\*). U tim slučajevima rabljene su brzine prostornih valova potresa u razmatranim područjima određene u radovima Herak M. (1989b) i Herak D. (u pripremi). Osnovni parametri potresa u tim radovima određeni su na isti način kao i u ovom radu, tj. metodom HYPOSEARCH. Za većinu potresa iz ta dva područja osnovni parametri preuzeti su iz radova Herak D. i dr. (1988, 1989).

U Katalogu su za podatke o svakom potresu predviđena dva retka. Prvi je redak rezerviran za vrijednosti osnovnih parametara potresa, a u drugom se nalaze numeričke vrijednosti njihovih standardnih devijacija.

Parametri potresa navedeni su ovim redom:

- ◊ datum, dan u mjesecu kada se dogodio potres,
- ◊ vrijeme nastanka potresa izraženo u satima, minutama i sekundama UTC,
- ◊ epicentar, geografske koordinate u stupnjevima i decimalnim dijelovima stupnja sjeverne geografske širine i istočne geografske dužine. Vrijednosti standardnih devijacija koordinata epicentara izražene su u kilometrima,
- ◊ dubina žarišta i standardna devijacija izražene u kilometrima,
- ◊ lokalna magnituda i
- ◊ primjedbe.

U primjedbe su uvršteni podaci o standardnoj pogrešci  $S$  rješenja, broju podataka s kojima je potres lociran i o najvećem intervalu azimuta u kojem nije postojao ni jedan podatak o nastupnim vremenima (engl. *gap*, izražen u stupnjevima). U rubrici primjedbe navedena je i vrijednost maksimalnog poznatog intenziteta  $I_{max}$ . Iznosi makroseizmičkog intenziteta  $I_{max}$  dobiveni su na dva načina – obilaskom područja zahvaćenog potresom i/ili na osnovi podataka prikupljenih upitnicama poslanim u epicentralno područje i korištenjem makroseizmičkih podataka seizmoloških postaja iz drugih republika. Također je navedeno i ako se potres osjetio u epicentralnom području, ali bez podatka o intenzitetu (*felt*).

### Zahvala

Zahvaljujemo anonimnom recenzentu i mr. Marijanu Heraku na konstruktivnim prijedlozima za poboljšanje rukopisa. Također zahvaljujemo i Zlatku Matici, višem tehničaru u Geofizičkom zavodu, na pažljivo nacrtanim kartama epicentara potresa.

### Literatura

- Aki, K. (1965): Maximum likelihood estimate of  $b$  in the formula  $\log N = a - bM$  and its confidence limits. Bulletin of the Earthquake Research Institute, University of Tokyo, 43, 237-239
- B.C.I.S. (1972): Tables des temps de propagation des ondes séismiques (Hodochrones) pour la region des Balkans. Manuel d'utilisation. Strasbourg
- Gutenberg, B. and C.F. Richter (1944): Frequency of earthquakes in California, Bulletin of the Seismological Society of America, 34, 185-188
- Herak, M. (1989a): HYPOSEARCH – An earthquake location program. Computers & Geosciences. (in press)
- Herak, M. (1989b): Velocities of body waves in the Adriatic region (submitted for publication).
- Herak, D., Herak, M. i S. Cabor (1988): Neka obilježja seizmičnosti i katalog potresa šireg područja Dinare za razdoblje 1979-1987. Acta Seismologica Iugoslavica, No. 14, 27-59
- Herak, D., Herak, M., Prelogović, E., and S. Cabor (1989): Some characteristics of the Adriatic Sea earthquake sequence (January–February 1986). Bolletino di geofisica teorica ed applicata. (in press)
- Shebalin, N.V., Kárník, V. and D. Hadžievski (editors) (1974): Catalogue of earthquakes I-III, UNDP/UNESCO Survey of the seismicity of the Balkan region, Skopje.
- Zhang, J.Z. and L.Y. Song (1981): On the method of estimating  $b$ -value and its standard error. Acta Seismologica Sinica, 3, 292-301

Day	Origin time h m s	Epicenter (°N) (± km)	Depth (km)	M <sub>L</sub>	Remarks
January 1986					
2**	10 22 18.4	44.215 ±3.87	17.079 ±4.66	0.0 ±6.2	S=0.77s, N=14 Gap=101.0*
3	14 36 42.8	42.675 ±2.64	18.725 ±2.46	17.8 ±3.7	S=0.90s, N=33 Gap=44.2*
5	07 57 54.6	43.338 ±13.56	17.058 ±25.90	30.2 ±14.2	S=0.61s, N=6 Gap=292.3*
6*	19 22 03.6	42.611 ±1.78	15.458 ±2.11	3.6 ±3.5	S=0.69s, N=74 Gap=27.1*
6**	20 52 09.4	43.770 ±8.19	15.987 ±8.81	32.0 ±24.0	S=0.77s, N=7 Gap=145.4*
7**	02 20 53.7	43.880 ±8.42	16.045 ±12.85	9.1 ±22.0	S=0.91s, N=6 Gap=185.1*
7*	22 20 23.3	42.655 ±1.89	15.517 ±3.34	0.0 ±2.3	S=0.55s, N=24 Gap=49.5*
7*	23 30 09.7	42.653 ±1.89	15.589 ±2.89	6.7 ±3.6	S=0.40s, N=20 Gap=135.7*
8*	00 27 20.8	42.644 ±1.45	15.451 ±1.67	1.5 ±2.5	S=0.67s, N=86 Gap=26.3*
8*	00 59 22.4	42.628 ±1.89	15.484 ±1.89	3.1 ±3.3	S=0.71s, N=74 Gap=22.9*
8*	01 04 19.1	42.627 ±3.00	15.534 ±3.89	5.1 ±5.5	S=0.67s, N=22 Gap=103.3*
8*	02 46 04.4	42.619 ±2.33	15.471 ±2.99	15.7 ±4.5	S=0.60s, N=22 Gap=102.1*
8*	03 02 24.2	42.605 ±2.22	15.535 ±4.23	3.6 ±5.3	S=0.71s, N=30 Gap=68.0*
8*	06 09 10.8	42.603 ±2.22	15.475 ±2.78	5.3 ±3.7	S=0.62s, N=32 Gap=112.9*
8*	17 20 52.3	42.612 ±2.45	15.529 ±3.89	4.7 ±4.7	S=0.50s, N=17 Gap=93.8*
8*	18 12 58.8	42.586 ±3.00	15.443 ±3.00	0.0 ±4.0	S=0.77s, N=19 Gap=160.1*
9*	16 59 26.4	42.606 ±2.34	15.550 ±4.00	6.3 ±4.5	S=0.39s, N=12 Gap=136.2*
January 1986					
10*	11 32 19.4	42.617 ±2.67	15.437 ±5.00	1.8 ±7.9	S=0.57s, N=13 Gap=133.0*
10*	13 48 46.2	42.629 ±2.34	15.520 ±5.23	4.9 ±5.0	S=0.63s, N=21 Gap=113.5*
10	19 12 46.3	45.391 ±2.11	15.963 ±3.34	22.5 ±3.6	S=0.57s, N=22 Gap=121.5* I <sub>max</sub> =IV-VHCS
11*	15 01 06.0	42.619 ±1.89	15.449 ±2.00	1.6 ±3.1	S=0.72s, N=73 Gap=29.3*
11*	15 09 55.6	42.677 ±2.22	15.391 ±3.67	0.3 ±4.5	S=0.46s, N=16 Gap=80.2*
11*	15 14 29.8	42.613 ±2.45	15.477 ±4.11	3.3 ±4.5	S=0.60s, N=21 Gap=57.7*
11**	16 00 47.8	43.854 ±3.08	16.795 ±2.98	8.7 ±5.7	S=0.57s, N=13 Gap=123.9*
11*	16 19 32.9	42.617 ±1.67	15.538 ±3.45	0.0 ±3.6	S=0.51s, N=21 Gap=59.4*
11*	17 29 04.4	42.586 ±3.17	15.406 ±4.86	5.7 ±8.1	S=0.74s, N=13 Gap=103.5*
11*	19 29 51.3	42.623 ±2.00	15.482 ±3.56	0.0 ±2.2	S=0.60s, N=23 Gap=128.1*
11*	20 53 07.2	42.507 ±4.17	15.530 ±4.44	0.0 ±6.3	S=0.76s, N=14 Gap=143.8*
12*	00 00 53.2	42.624 ±2.56	15.511 ±4.23	2.4 ±6.2	S=0.72s, N=29 Gap=42.0*
12*	01 14 19.2	42.588 ±2.34	15.493 ±2.45	6.4 ±3.5	S=0.66s, N=37 Gap=51.2*
12*	01 29 45.6	42.662 ±3.22	15.501 ±4.00	5.5 ±6.5	S=0.72s, N=25 Gap=64.5*
12*	01 43 58.4	42.681 ±4.11	15.425 ±5.00	1.5 ±7.1	S=0.72s, N=21 Gap=52.4*
12*	02 02 49.6	42.623 ±3.45	15.437 ±6.00	3.1 ±6.7	S=0.74s, N=15 Gap=126.5*
12*	12 03 43.0	42.536 ±4.04	15.486 ±5.89	3.2 ±9.1	S=0.84s, N=15 Gap=139.8*

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
January 1986					
12 <sup>h</sup>	14 43 54.0	42.626 15.625 ±2.67 ±3.56	9.5 ±5.4	3.1	S=0.70s, N=29 Gap=60.0*
13 <sup>h</sup>	04 34 08.3	42.668 15.477 ±1.89 ±3.89	3.3 ±3.9	3.0	S=0.51s, N=20 Gap=105.9*
13 <sup>h</sup>	07 53 35.5	42.633 15.473 ±1.78 ±2.00	6.0 ±3.1	4.1	S=0.77s, N=72 Gap=30.0*
14 <sup>h</sup>	04 41 21.9	42.594 15.439 ±3.02 ±4.31	5.7 ±7.1	3.1	S=0.65s, N=16 Gap=105.5*
14 <sup>h</sup>	13 33 23.5	45.338 15.930 ±2.33 ±3.34	10.9 ±4.5	3.0	S=0.63s, N=21 Gap=118.7*
14 <sup>h</sup>	15 50 47.8	42.661 15.450 ±5.34 ±4.64	19.0 ±9.5	2.9	S=0.66s, N=9 Gap=202.8*
14 <sup>h</sup>	17 53 40.2	45.838 13.886 ±4.56 ±4.76	11.4 ±12.7		S=0.53s, N=8 Gap=148.1*
15 <sup>h</sup>	05 18 41.1	45.257 16.050 ±10.91 ±7.93	0.0 ±7.9	2.4	S=0.72s, N=11 Gap=290.8*
15 <sup>h</sup>	18 53 47.0	42.621 15.400 ±2.22 ±2.89	5.4 ±3.4	3.6	S=0.71s, N=40 Gap=78.8*
16 <sup>h</sup>	17 13 26.2	45.834 13.834 ±3.20 ±3.11	15.5 ±11.4		S=0.35s, N=8 Gap=146.3*
16 <sup>h</sup>	18 34 21.0	42.690 15.474 ±2.22 ±2.34	6.2 ±3.2	3.7	S=0.62s, N=39 Gap=88.2*
16 <sup>h</sup>	23 52 22.6	43.988 16.132 ±2.80 ±4.62	6.1 ±6.1	3.0	S=0.77s, N=18 Gap=129.8*
19 <sup>h</sup>	16 57 02.1	45.382 15.897 ±3.95 ±2.86	17.0 ±2.7	1.8	S=0.30s, N=10 Gap=275.2*
19 <sup>h</sup>	21 40 59.0	44.186 15.789 ±2.46 ±3.60	2.1 ±5.5	2.8	S=0.66s, N=17 Gap=148.9*
20 <sup>h</sup>	09 39 44.7	45.165 16.117 ±5.48 ±10.81	0.0 ±18.8	1.5	S=0.91s, N=9 Gap=191.7*
23 <sup>h</sup>	09 36 13.6	42.625 15.437 ±1.67 ±2.45	2.4 ±3.3	3.0	S=0.32s, N=13 Gap=129.6*
January 1986					
25 <sup>h</sup>	05 57 25.1	42.590 15.529 ±1.78 ±2.67	0.0 ±2.8	3.2	S=0.29s, N=14 Gap=112.0*
26 <sup>h</sup>	07 33 58.0	42.614 15.456 ±2.22 ±2.45	1.4 ±3.6	4.0	S=0.63s, N=52 Gap=75.6*
27 <sup>h</sup>	01 18 10.4	42.619 15.428 ±2.11 ±2.56	2.7 ±3.4	3.7	S=0.68s, N=46 Gap=59.8*
27 <sup>h</sup>	04 27 07.2	42.618 15.496 ±1.56 ±1.89	3.4 ±2.5	3.8	S=0.54s, N=51 Gap=42.5*
27 <sup>h</sup>	04 55 21.6	42.553 15.548 ±3.11 ±4.45	1.9 ±6.2	3.4	S=0.62s, N=18 Gap=76.8*
31 <sup>h</sup>	22 31 46.7	42.586 15.668 ±3.22 ±4.11	13.8 ±4.8	3.7	S=0.65s, N=19 Gap=95.2*
February 1986					
7 <sup>h</sup>	01 18 22.0	42.571 15.558 ±2.00 ±3.89	14.9 ±4.8	3.3	S=0.60s, N=28 Gap=58.6*
13 <sup>h</sup>	00 41 14.1	45.090 14.720 ±15.81 ±16.51	1.4 ±23.5		S=0.81s, N=8 Gap=320.8*
16 <sup>h</sup>	08 20 08.5	42.853 16.158 ±7.00 ±13.90	19.8 ±10.6	1.8	S=0.48s, N=6 Gap=193.4*
16 <sup>h</sup>	13 01 00.8	42.521 15.621 ±6.23 ±10.67	21.6 ±8.2	2.6	S=0.17s, N=6 Gap=330.0*
17 <sup>h</sup>	11 36 08.0	42.654 15.419 ±1.78 ±3.34	0.0 ±2.4	3.4	S=0.68s, N=36 Gap=94.9*
18 <sup>h</sup>	05 31 21.1	43.853 16.296 ±6.32 ±6.64	16.9 ±20.0	1.9	S=0.63s, N=7 Gap=177.9*
18 <sup>h</sup>	05 44 06.7	43.829 16.225 ±2.93 ±4.02	11.3 ±7.9	2.2	S=0.61s, N=11 Gap=155.1*
18 <sup>h</sup>	06 53 42.8	43.851 16.303 ±4.20 ±4.40	14.6 ±14.6	1.8	S=0.49s, N=8 Gap=178.6*
19 <sup>h</sup>	00 14 45.4	42.586 15.691 ±2.00 ±3.89	15.6 ±4.7	2.8	S=0.55s, N=24 Gap=145.0*
22 <sup>h</sup>	00 59 22.1	43.189 16.539 ±12.56 ±21.24	8.3 ±18.8		S=0.30s, N=5 Gap=240.9*



Day	Origin time h m s	Epicenter (°N °E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
February 1986					
22	15 23 20.6	42.800 18.376 45.69 13.49 ±26.7	26.8	2.7	S=0.67s, N=12 Gap=125.1°
24**	14 05 13.5	43.904 16.223 11.25 11.24 ±2.9	17.2	1.5	S=0.09s, N=6 Gap=180.5°
26**	08 14 22.7	43.445 16.722 45.16 19.40 ±15.8	15.8	1.2	S=0.55s, N=7 Gap=215.6°
26**	12 15 47.4	43.491 16.213 13.80 13.79 ±17.0	20.2	0.8	S=0.39s, N=7 Gap=125.7°
28**	22 39 01.6	43.808 16.849 12.23 12.52 ±3.7	17.0	2.9	S=0.81s, N=34 Gap=89.5°
March 1986					
2	20 06 54.1	45.348 14.539 11.67 12.89 ±2.5	15.6	3.5	S=0.49s, N=26 Gap=75.9° I <sub>max</sub> =IV-V*MCS
3**	02 29 52.3	43.967 17.036 15.56 10.52 ±32.0	0.0	2.8	S=0.69s, N=7 Gap=200.7°
3	10 43 11.8	43.428 16.521 13.67 15.34 ±4.8	25.2	1.0	S=0.33s, N=7 Gap=151.0°
6**	11 54 31.4	43.403 17.183 12.97 14.62 ±8.8	25.5	5.5	S=0.53s, N=6 Gap=300.6°
6**	16 54 33.6	43.424 17.129 18.68 14.00 ±23.8	14.0	2.1	S=0.62s, N=7 Gap=296.6°
7	00 45 16.4	43.110 17.849 12.67 12.89 ±2.2	0.0	3.2	S=0.88s, N=35 Gap=130.2° felt.
10	07 50 05.5	43.490 16.561 13.22 12.56 ±2.4	29.0	1.1	S=0.12s, N=6 Gap=227.1°
12**	03 17 32.1	43.608 17.537 11.16 16.91 ±11.2	0.0	2.7	S=0.94, N=8 Gap=174.4°
12	21 45 09.1	42.937 18.194 14.90 13.25 ±5.8	0.0	2.4	S=0.69s, N=15 Gap=155.4°
19	07 21 46.2	42.803 18.215 14.43 15.12 ±6.0	0.2	2.9	S=0.97s, N=16 Gap=137.3°
19**	07 42 14.0	44.172 15.867 15.64 17.30 ±10.1	0.0	2.1	S=0.55s, N=7 Gap=175.6°
March 1986					
19**	13 54 15.0	43.463 17.218 15.53 16.91 ±20.4	0.0	1.7	S=0.23s, N=6 Gap=311.3°
20	07 09 38.8	42.552 15.218 13.22 14.56 ±1.7	29.4	2.7	S=0.08s, N=6 Gap=334.8°
20	14 23 04.7	42.401 15.622 117.23 125.68 ±9.5	10.2	2.4	S=0.42s, N=6 Gap=335.1°
21	14 26 06.4	43.052 17.339 14.09 12.63 ±4.3	0.0	2.4	S=0.74s, N=18 Gap=169.3°
24**	08 34 43.3	43.538 15.640 13.50 12.76 ±7.9	9.9	2.1	S=0.33s, N=8 Gap=213.1°
24**	08 36 15.8	43.597 15.560 14.56 14.00 ±9.0	17.5	2.0	S=0.47s, N=8 Gap=212.1°
24	11 22 13.1	43.577 16.491 11.00 11.00 ±2.0	28.3	1.6	S=0.05s, N=6 Gap=180.8°
24**	11 57 39.6	43.909 16.554 13.03 18.43 ±23.0	12.2	2.2	S=0.44s, N=6 Gap=291.5°
24**	14 08 50.6	43.445 17.437 13.50 11.88 ±3.2	0.0	3.2	S=0.52s, N=15 Gap=108.1°
25	05 57 41.7	45.309 14.467 11.89 13.00 ±3.0	5.3	3.2	S=0.48s, N=22 Gap=79.3° I <sub>max</sub> =IV-V*MCS
26**	10 07 26.6	44.191 15.800 14.89 15.00 ±26.6	26.6	5.5	S=0.08s, N=5 Gap=321.8°
26**	17 43 48.6	44.245 15.597 16.35 16.44 ±4.9	2.7	2.3	S=0.20s, N=6 Gap=328.5°
27	07 25 25.8	45.152 14.862 11.67 12.78 ±3.2	14.5	3.9	S=0.49s, N=25 Gap=59.7° I <sub>max</sub> =V-VI*MCS
27	07 43 08.9	45.102 14.837 11.33 12.45 ±2.9	4.9	4.0	S=0.42s, N=28 Gap=66.3° I <sub>max</sub> =VI*MCS
28	20 49 39.4	45.589 16.018 15.34 16.11 ±3.3	15.7	3.3	S=0.32s, N=8 Gap=284.3°

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
April 1986					
2	12 00 08.9	43.478 16.844 ±3.00 ±11.01	24.7 16.6	1.9	S=0.22s, N=6 Gap=257.9*
4	08 36 25.6	43.526 16.580 ±1.56 ±3.67	30.2 ±2.4	1.5	S=0.13s, N=6 Gap=141.7*
29**	06 13 19.9	43.649 16.560 ±2.07 ±2.25	17.8 ±3.6	4.1	S=0.87s, N=58 Gap=44.0* I <sub>max</sub> =VI*MSK
29**	22 03 34.4	43.719 16.631 ±2.21 ±2.23	14.4 ±3.1	3.0	S=0.69s, N=28 Gap=122.0* I <sub>max</sub> =IV*MCS
May 1986					
3**	19 14 54.9	44.697 16.543 ±2.32 ±2.15	0.0 ±4.0	3.1	S=0.58s, N=23 Gap=102.3* I <sub>max</sub> =V*MCS
3**	22 16 11.1	44.706 16.713 ±3.33 ±2.98	16.5 ±4.8	2.9	S=0.60s, N=15 Gap=109.8*
6	16 05 36.3	45.452 13.791 ±5.10 ±3.14	4.9 ±12.2		S=0.08s, N=5 Gap=298.9*
8	17 20 16.1	46.012 14.349 ±4.44 ±3.04	16.5 ±12.5		S=0.24s, N=6 Gap=182.6*
10**	13 45 55.4	43.909 15.868 ±3.07 ±3.65	0.0 ±7.1	2-7	S=0.50s, N=9 Gap=171.4*
12	19 11 31.0	43.021 18.661 ±13.20 ±5.29	16.2 ±16.2	2.5	S=0.32s, N=6 Gap=274.4*
16	19 59 04.0	42.633 16.783 ±16.12 ±26.57	27.9 ±14.0	2.8	S=0.55s, N=6 Gap=332.2*
17**	03 30 41.2	43.980 17.263 ±2.65 ±3.10	1.3 ±6.5	2.8	S=0.78s, N=20 Gap=136.4*
17**	03 48 39.9	43.862 16.797 ±2.29 ±6.08	10.5 ±5.6	2.0	S=0.23s, N=6 Gap=174.5*
17	21 21 23.0	43.066 18.696 ±8.39 ±3.70	22.7 ±7.9		S=0.20s, N=6 Gap=284.8*
18	22 34 27.4	46.060 14.339 ±4.35 ±2.30	10.9 ±10.9		S=0.21s, N=6 Gap=192.4*
May 1986					
20	16 13 31.4	45.638 16.003 ±3.22 ±2.67	20.2 ±1.6	2.4	S=0.13s, N=7 Gap=280.3*
24	08 44 31.5	46.099 15.052 ±7.09 ±7.08	25.7 ±14.3		S=0.21s, N=6 Gap=324.9*
25	08 13 50.1	45.929 15.103 ±13.11 ±14.62	0.0 ±34.6		S=0.44s, N=6 Gap=322.0* I <sub>max</sub> =III-IV*MCS
27	09 31 06.2	42.487 18.330 ±5.51 ±8.26	9.4 ±10.7		S=0.47s, N=8 Gap=273.0*
June 1986					
6	16 06 24.0	45.438 14.403 ±12.60 ±8.44	6.5 ±7.0		S=0.56s, N=8 Gap=293.0*
6	22 55 08.7	42.474 18.603 ±3.60 ±3.30	6.2 ±7.4	2.6	S=0.59s, N=15 Gap=112.1*
7	20 33 58.3	46.171 14.871 ±6.22 ±6.64	0.0 ±18.6		S=0.22s, N=6 Gap=317.0*
10	00 46 22.2	43.468 17.562 ±3.48 ±2.73	0.0 ±4.4		S=0.33s, N=37 Gap=67.8*
18**	18 27 47.0	43.834 16.494 ±4.33 ±8.89	0.0 ±10.2	2.3	S=0.70s, N=8 Gap=138.4*
18	23 34 15.5	43.105 17.906 ±3.17 ±2.48	0.4 ±3.9	3.1	S=0.23s, N=7 Gap=142.4*
21	13 24 03.1	45.687 14.379 ±6.60 ±6.77	16.3 ±7.0	2.3	S=0.99s, N=13 Gap=136.9*
23*	02 59 30.9	42.670 15.521 ±7.78 ±14.79	0.0 ±12.9	2.6	S=1.38s, N=12 Gap=104.9*
27	10 53 55.2	42.400 18.509 ±3.10 ±3.66	20.7 ±5.2		S=0.36s, N=10 Gap=234.3*
29	07 10 50.0	42.537 18.144 ±3.94 ±2.34	0.6 ±5.3	2.9	S=0.43s, N=11 Gap=181.5*
30**	20 02 32.6	43.870 16.348 ±2.72 ±2.82	7.8 ±5.6	2.8	S=0.76s, N=28 Gap=83.9*
30	23 47 51.2	46.222 15.182 ±2.55 ±3.64	2.9 ±4.0		S=0.31s, N=13 Gap=282.8* I <sub>max</sub> =V*MCS

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
July 1986					
1	00 15 02.9	43.387 16.305 ±3.11 ±4.78	20.6 ±3.4	1.5	S=0.47s, N=10 Gap=170.3*
7	02 07 51.5	42.900 18.185 ±3.46 ±3.37	0.0 ±3.7	2.9	S=0.82s, N=20 Gap=130.0*
7	02 33 32.9	42.929 18.336 ±3.65 ±3.46	23.4 ±4.5	2.7	S=0.65s, N=13 Gap=114.8*
12	12 09 42.7	46.109 14.874 ±9.40 ±10.23	7.9 ±17.4		S=0.33s, N=6 Gap=316.3*
12	20 11 18.6	43.052 17.899 ±4.00 ±5.00	3.0 ±4.7	2.8	S=0.90s, N=21 Gap=133.5*
16	22 58 17.1	45.527 14.452 ±4.52 ±3.13	4.2 ±10.3		S=0.08s, N=5 Gap=295.7*
25	02 24 01.7	42.923 18.572 ±3.05 ±2.69	19.1 ±3.8	3.1	S=0.70s, N=23 Gap=61.8*
25	20 44 00.7	45.449 15.357 ±3.00 ±3.34	14.4 ±4.4	2.5	S=0.54s, N=16 Gap=123.0* I <sub>max</sub> =IV-V*MCS
30	02 40 24.3	42.391 18.577 ±4.65 ±4.69	13.5 ±13.5	2.5	S=0.58s, N=10 Gap=193.8*
30	15 13 34.9	42.668 15.422 ±17.36 ±21.12	5.2 ±5.2	2.9	S=0.93s, N=7 Gap=286.8*
31	12 26 11.5	42.848 17.975 ±2.45 ±3.00	0.2 ±2.5	3.8	S=0.93s, N=48 Gap=48.3* I <sub>max</sub> =V* MCS
August 1986					
4 <sup>**</sup>	18 07 56.4	43.884 17.034 ±3.90 ±5.99	17.3 ±6.2	2.5	S=0.57s, N=9 Gap=134.1*
13	23 29 34.6	45.426 16.005 ±7.32 ±4.23	30.2 ±6.8	2.0	S=0.34s, N=8 Gap=288.6*
14	23 39 51.1	45.981 16.284 ±5.74 ±3.87	26.8 ±2.4	1.9	S=0.19s, N=7 Gap=318.2*
22	00 59 07.5	45.558 14.193 ±9.77 ±3.81	2.9 ±21.6		S=0.48s, N=8 Gap=254.9*
25	15 16 14.7	46.115 14.200 ±5.05 ±2.32	21.8 ±9.0		S=0.28s, N=8 Gap=218.7*
August 1986 (continued)					
25	19 15 24.2	42.888 17.877 ±2.45 ±2.11	5.8 ±3.2	3.0	S=0.40s, N=16 Gap=152.3*
28	06 26 28.0	42.961 16.114 ±11.01 ±6.23	0.0 ±3.9	2.6	S=0.74s, N=12 Gap=266.7*
30	01 01 26.1	43.052 17.779 ±3.56 ±3.78	0.0 ±4.6	3.1	S=0.65s, N=14 Gap=140.8*
September 1986					
4	01 27 43.6	45.288 14.659 ±8.89 ±8.59	26.2 ±26.2		S=0.25s, N=6 Gap=323.9*
5	07 31 17.5	43.306 17.200 ±3.22 ±3.56	0.0 ±4.2	2.8	S=0.72s, N=17 Gap=125.3*
6	11 47 48.4	43.257 17.146 ±9.67 ±8.12	0.0 ±4.6	2.7	S=0.81s, N=13 Gap=205.2*
14 <sup>**</sup>	06 13 03.7	44.535 15.288 ±2.45 ±4.78	10.4 ±5.3	2.5	S=0.53s, N=13 Gap=170.2*
15	17 08 04.6	46.048 14.791 ±4.53 ±5.45	8.7 ±8.7		S=0.28s, N=8 Gap=310.7*
17	13 07 58.7	45.703 14.073 ±4.17 ±2.19	18.4 ±14.5		S=0.19s, N=6 Gap=190.0*
23	10 14 36.7	46.043 14.276 ±1.71 ±0.97	19.0 ±3.7		S=0.13s, N=8 Gap=182.1*
25 <sup>**</sup>	20 48 25.0	44.231 16.057 ±3.96 ±4.97	12.7 ±7.3	2.7	S=0.93s, N=15 Gap=148.5*
October 1986					
3	01 44 25.1	42.669 18.251 ±2.00 ±2.11	0.2 ±3.4	3.1	S=0.64s, N=40 Gap=63.4*
6	01 40 57.9	45.785 14.933 ±5.96 ±8.43	0.0 ±21.2		S=0.34s, N=7 Gap=309.8*
13	00 59 19.3	45.798 15.055 ±5.24 ±5.88	19.0 ±19.0		S=0.17s, N=6 Gap=318.4*
13	05 56 46.2	45.825 16.049 ±10.66 ±5.08	14.6 ±2.8	1.9	S=0.31s, N=8 Gap=335.2* I <sub>max</sub> =IV-V*MCS

Day	Origin time h m s	Epicenter (°N) (± km)	Depth (km)	M <sub>L</sub>	Remarks
October 1986					
16	00 45 00.2	45-523 42.78	14-343 13.0	19.3	S=0.58s, N=22 Gap=71.4 I <sub>max</sub> =V+MCS
19	12 28.6	45-214 46.11	18-500 17.1	13.9	S=0.65s, N=12 Gap=176.5
22	11 38 12.0	45-715 43.67	15-688 14.5	14.5	S=0.39s, N=15 Gap=138.4 I <sub>max</sub> =IV+MCS
31**	19 36 30.2	44-014 46.26	15-589 13.3	13.3	S=0.46s, N=6 Gap=180.4
31**	21 11 18.4	44-171 44.10	16-136 18.0	4.3	S=0.69s, N=10 Gap=191.6
November 1986					
1	14 35 17.6	44-864 41.78	14-868 15.0	15.0	S=0.59s, N=26 Gap=76.9
2	03 18 06.2	45-733 44.90	14-183 15.4	15.4	S=0.22s, N=6 Gap=177.4
3	18 37 14.8	46-234 43.56	16-086 13.9	13.9	S=0.42s, N=13 Gap=254.5
6	03 51 37.5	44-833 42.78	14-855 15.9	5.8	S=0.38s, N=11 Gap=211.8
6**	05 26 44.1	43-988 41.81	16-337 13.9	3.1	S=0.76s, N=47 Gap=55.5 I <sub>max</sub> =IV+MCS
13	17 40 06.6	45-700 42.45	15-691 16.9	16.9	S=0.42s, N=15 Gap=123.0
13**	18 13 19.3	43-981 43.24	16-356 1.3	1.3	S=0.47s, N=8 Gap=171.5
15**	03 09 02.1	44-479 41.44	16-503 10.6	10.6	S=0.25s, N=9 Gap=209.9
16	05 07 49.3	44-228 43.81	13-509 15.3	3.3	S=0.54s, N=13 Gap=262.9
18**	17 50 46.3	43-929 41.98	16-338 13.7	6.0	S=0.30s, N=9 Gap=164.9
November 1986					
19	08 59 34.3	45-757 41.46	14-185 13.7	13.7	S=0.17s, N=10 Gap=152.6
20	23 04 07.0	42-978 42.09	18-244 11.72	4.2	S=0.93s, N=70 Gap=38.3 I <sub>max</sub> =V+MCS
25**	13 59 41.2	44-068 41.74	16-317 13.0	13.0	S=0.76s, N=101 Gap=54.6 I <sub>max</sub> =VII-VIII+MCS
25**	14 08 39.3	44-094 42.78	16-243 14.1	20.1	S=0.39s, N=9 Gap=142.0
25**	14 10 34.0	44-141 44.82	15-574 17.20	0.0	S=0.67s, N=9 Gap=117.6
25**	14 11 54.8	44-116 45.36	16-273 12.2	2.7	S=0.97s, N=10 Gap=136.7
25**	14 12 08.4	44-065 42.28	16-391 14.82	17.7	S=0.23s, N=5 Gap=320.8
25**	14 13 36.8	44-189 42.98	16-481 12.2	12.2	S=0.62s, N=14 Gap=121.4
25**	14 17 56.9	44-083 43.64	16-188 16.4	17.3	S=0.60s, N=10 Gap=146.6
25**	14 30 02.2	44-125 42.98	16-310 16.8	10.5	S=0.68s, N=12 Gap=135.6
25**	14 32 34.5	44-144 42.51	16-232 14.9	6.7	S=0.26s, N=7 Gap=237.4
25**	14 55 24.4	44-102 41.87	16-136 13.7	18.7	S=0.68s, N=41 Gap=56.9 Felt.
25**	14 59 21.3	44-174 42.39	16-215 15.7	7.8	S=0.59s, N=13 Gap=151.6
25**	15 33 39.8	44-040 48.62	16-270 19.14	19.8	S=0.15s, N=5 Gap=231.1
25**	16 03 44.7	44-019 42.91	16-219 14.3	0.0	S=0.65s, N=12 Gap=153.1 I <sub>max</sub> =IV+MCS
25**	17 11 04.8	44-173 44.37	16-468 11.72	0.0	S=0.69s, N=8 Gap=196.1

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
November 1986					
25**	18 03 48.8	44.019 16.169 42.72 24.93 ±11.0	0.7	2.2	S=0.37s, N=7 Gap=159.0*
25**	18 20 10.4	44.128 16.151 41.66 41.91 ±3.4	12.9	3.4	S=0.78s, N=59 Gap=64.1*
25**	18 23 02.5	44.091 16.219 42.13 43.37 ±6.6	1.0	2.5	S=0.45s, N=11 Gap=151.2*
25**	20 46 08.3	44.171 16.304 42.11 43.27 ±4.5	1.3	2.6	S=0.46s, N=12 Gap=144.7*
26**	00 50 12.2	44.092 16.603 41.59 41.66 ±3.1	9.3	3.4	S=0.80s, N=77 Gap=37.9* I <sub>max</sub> =IV-V <sup>0</sup> MCS
26**	01 03 30.8	44.109 16.373 43.28 45.19 ±6.4	14.1	2.7	S=0.89s, N=17 Gap=135.4* I <sub>max</sub> =IV <sup>0</sup> MCS
26**	01 15 47.1	44.133 16.407 42.79 44.18 ±6.7	0.5	2.5	S=0.68s, N=13 Gap=133.1*
26**	01 41 07.4	44.058 16.269 41.73 41.81 ±3.5	7.3	3.3	S=0.73s, N=57 Gap=78.1* I <sub>max</sub> =IV-V <sup>0</sup> MCS
26**	01 47 11.5	44.105 16.485 42.63 47.35 ±7.3	0.0	2.4	S=0.38s, N=7 Gap=216.1*
26**	02 29 01.8	44.052 16.219 42.10 41.91 ±3.6	4.7	3.1	S=0.78s, N=57 Gap=62.1* I <sub>max</sub> =V <sup>0</sup> MCS
26**	05 28 43.9	44.059 16.307 43.04 44.51 ±6.5	5.1	2.6	S=0.57s, N=11 Gap=146.9* Felt.
26**	08 49 55.2	44.199 15.514 42.06 42.99 ±4.7	11.1	2.2	S=0.38s, N=10 Gap=182.6*
26**	10 18 10.0	44.122 16.395 41.79 42.85 ±3.1	0.0	2.6	S=0.43s, N=12 Gap=134.0*
26**	17 15 45.7	44.024 16.237 43.02 45.29 ±6.6	8.6	2.3	S=0.43s, N=8 Gap=165.7*
26**	22 38 32.1	44.172 16.520 43.78 46.69 ±5.0	0.0	3.0	S=0.68s, N=11 Gap=133.2* I <sub>max</sub> =IV <sup>0</sup> MCS
November 1986					
27**	00 13 21.3	44.161 16.223 43.43 45.39 ±7.3	4.8	2.5	S=0.81s, N=14 Gap=149.3*
27**	12 10 32.0	44.057 16.321 41.67 41.43 ±3.0	14.5	4.4	S=0.78s, N=98 Gap=35.5* I <sub>max</sub> =VI <sup>0</sup> MCS
27**	12 24 00.6	44.143 16.505 43.71 49.42 ±27.1	0.0	2.1	S=0.51s, N=7 Gap=145.2*
27**	12 48 34.3	44.139 16.456 42.31 43.52 ±5.7	12.1	2.8	S=0.61s, N=16 Gap=130.3*
27**	12 54 28.1	44.148 16.525 42.28 43.97 ±5.5	7.1	2.7	S=0.41s, N=11 Gap=143.9*
27**	13 44 51.4	44.151 16.496 42.45 44.03 ±6.2	4.4	2.6	S=0.49s, N=11 Gap=128.0*
27**	14 05 11.1	44.135 16.486 42.31 45.56 ±7.8	0.0	2.2	S=0.30s, N=7 Gap=146.6*
27**	14 05 53.5	44.163 16.511 41.66 44.25 ±3.7	6.8	2.5	S=0.26s, N=8 Gap=141.7*
27**	14 30 16.8	44.072 16.288 41.59 41.68 ±3.4	6.1	3.6	S=0.69s, N=62 Gap=114.2* I <sub>max</sub> =V <sup>0</sup> MCS
27**	18 11 54.6	44.076 16.529 42.06 45.07 ±3.0	25.0	2.6	S=0.17s, N=6 Gap=144.7*
27**	19 17 28.2	44.004 16.577 41.27 42.21 ±2.5	14.0	2.7	S=0.27s, N=13 Gap=131.7*
28**	20 16 38.4	44.104 15.343 41.68 41.53 ±3.4	9.0	3.9	S=0.81s, N=85 Gap=48.6* I <sub>max</sub> =V-VI <sup>0</sup> MCS
30	09 47 32.4	45.377 14.309 46.89 45.11 ±5.8	12.5	2.6	S=0.66s, N=14 Gap=232.4*
December 1986					
1	05 33 30.9	42.960 18.196 43.76 43.24 ±8.2	0.2	2.5	S=0.34s, N=9 Gap=161.5*
2**	02 10 10.8	44.021 16.509 49.82 ±27.30 ±31.5	0.0	2.3	S=0.57s, N=5 Gap=190.0*

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
December 1986					
2**	19 02 44.3	43.987 16.339 ±2.56 ±4.38	16.9 ±4.9	2.8	S=0.63s, N=16 Gap=140.2* I <sub>max</sub> =IV*HCS
5	17 46 11.5	45.551 15.180 ±7.47 ±4.04	0.0 ±7.8		S=0.71s, N=14 Gap=173.3* I <sub>max</sub> =III-IV*HCS
5	21 20 19.9	45.540 15.152 ±2.22 ±2.56	1.2 ±1.2	3.0	S=0.48s, N=17 Gap=122.4* I <sub>max</sub> =IV*HCS
6**	05 59 34.4	44.028 16.251 ±1.86 ±2.16	3.2 ±3.9	3.1	S=0.68s, N=39 Gap=52.5*
6**	09 10 22.1	44.161 16.686 ±2.91 ±7.41	11.0 ±5.4	2.3	S=0.34s, N=7 Gap=213.7*
6	19 01 22.4	45.541 15.169 ±5.22 ±2.85	7.5 ±7.5	1.8	S=0.52s, N=15 Gap=151.6* I <sub>max</sub> =IV*HCS
6**	23 45 01.8	44.111 15.451 ±2.38 ±3.07	14.6 ±4.4	3.0	S=0.66s, N=23 Gap=106.2* I <sub>max</sub> =V*HCS
8**	14 53 21.1	43.896 16.360 ±2.19 ±3.29	22.2 ±3.5	2.9	S=0.48s, N=14 Gap=140.9* I <sub>max</sub> =IV*HCS
9	22 23 26.1	43.119 17.780 ±3.22 ±4.56	4.0 ±4.9	2.5	S=0.66s, N=17 Gap=121.6*
12**	21 33 14.2	44.136 16.184 ±2.58 ±3.63	4.0 ±5.8	2.6	S=0.71s, N=17 Gap=145.0* Felt.
14	14 07 59.5	45.252 14.112 ±6.66 ±4.79	0.0 ±5.9		S=0.66s, N=12 Gap=271.4*
16	06 22 50.6	45.078 14.802 ±1.56 ±2.89	5.8 ±3.0	4.7	S=0.66s, N=53 Gap=153.0* I <sub>max</sub> =VI-VII*HCS
17	14 09 46.1	45.081 15.037 ±1.67 ±3.22	28.4 ±2.0		S=0.24s, N=9 Gap=147.6*
18	00 07 17.0	45.089 14.869 ±2.00 ±4.34	19.1 ±4.3		S=0.08s, N=5 Gap=191.5*
December 1986					
18	09 38 39.1	45.073 14.943 ±1.56 ±0.78	22.2 ±0.8		S=0.08s, N=9 Gap=259.9*
18	11 45 22.8	45.137 14.802 ±2.00 ±3.56	10.0 ±3.2	3.5	S=0.66s, N=28 Gap=160.2* I <sub>max</sub> =V-VI*HCS
18	12 05 34.5	45.066 14.850 ±1.45 ±2.33	9.3 ±3.0	2.5	S=0.36s, N=18 Gap=162.5* I <sub>max</sub> =III-IV*HCS
18	12 32 33.5	45.095 14.889 ±4.00 ±5.56	10.2 ±5.8	2.5	S=0.64s, N=12 Gap=170.3* I <sub>max</sub> =IV*HCS
18	13 46 18.4	45.591 15.514 ±3.67 ±3.11	15.4 ±3.3	2.5	S=0.42s, N=13 Gap=146.7*
19	06 11 17.6	45.056 14.902 ±2.00 ±3.56	14.3 ±4.2	2.8	S=0.53s, N=17 Gap=160.9* I <sub>max</sub> =IV*HCS
19	10 55 22.8	45.073 14.968 ±4.11 ±5.34	14.3 ±7.5	2.4	S=0.59s, N=10 Gap=168.6*
19**	12 09 53.1	44.120 16.457 ±2.10 ±2.58	0.0 ±3.8	2.9	S=0.61s, N=18 Gap=130.6* I <sub>max</sub> =IV*HCS
19	19 23 11.2	43.283 17.646 ±3.95 ±3.83	0.0 ±5.0	3.0	S=0.82s, N=20 Gap=120.5* Felt.
21**	21 45 52.6	43.375 17.154 ±2.12 ±1.67	7.1 ±3.6	3.2	S=0.77s, N=50 Gap=79.7*
22	18 46 17.5	46.874 16.435 ±6.52 ±6.96	21.2 ±4.9	2.6	S=0.70s, N=17 Gap=311.3*
23**	22 58 13.0	44.510 15.505 ±6.47 ±8.73	2.0 ±5.8	2.5	S=0.32s, N=7 Gap=321.5* Felt.
24	12 55 55.3	43.083 18.060 ±3.25 ±3.02	0.0 ±4.9	2.9	S=0.51s, N=20 Gap=160.2*
24**	16 48 03.6	43.997 16.220 ±1.89 ±1.66	9.7 ±3.7	4.7	S=0.81s, N=74 Gap=91.0* I <sub>max</sub> =VI-VII*HCS

December 1986							January 1987						
Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks	Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks		
24**	16 50 43.0	44.213 16.664 ±4.77 ±8.59	26.2 ±8.8	3.7	S=0.58s, N=7 Gap=184.2*	2**	10 14 07.5	44.181 16.268 ±2.98 ±5.54	1.1 ±6.8	2.7	S=0.69s, N=11, Gap=157.1*		
24**	16 58 10.6	44.160 16.483 ±2.09 ±2.37	0.9 ±4.4	3.1	S=0.66s, N=26 Gap=133.3*	2**	10 15 34.8	44.133 16.165 ±2.31 ±3.08	8.9 ±5.5	2.4	S=0.44s, N=11 Gap=145.4*		
24**	16 58 54.1	43.972 16.297 ±3.13 ±4.67	22.7 ±5.4	3.2	S=0.79s, N=15 Gap=144.1*	2**	11 15 31.1	44.161 16.251 ±3.73 ±3.95	9.4 ±6.4	2.7	S=0.83s, N=21 Gap=130.3*		
24	17 48 37.0	45.081 14.934 ±1.78 ±2.89	21.2 ±2.0	3.0	S=0.32s, N=13 Gap=175.0*	4**	01 30 04.2	43.961 16.370 ±2.69 ±2.77	0.0 ±2.8	2.8	S=0.32s, N=8 Gap=174.3* I <sub>max</sub> =IV-V*HCS		
24**	20 27 20.5	44.091 16.406 ±3.16 ±5.03	13.2 ±6.3	2.7	S=0.71s, N=12 Gap=168.2*	7	15 30 56.8	44.846 14.933 ±4.29 ±3.74	10.7 ±7.3	2.4	S=0.46s, N=9 Gap=202.2*		
24**	21 54 05.4	44.144 16.501 ±2.21 ±4.84	7.8 ±7.8	2.6	S=0.39s, N=8 Gap=195.9*	7**	23 15 15.0	43.586 17.073 ±3.99 ±5.81	12.2 ±5.4	2.8	S=0.82s, N=19 Gap=137.0* I <sub>max</sub> =III-IV*HCS		
26	02 00 46.7	45.040 14.881 ±1.89 ±3.67	0.0 ±3.4	3.4	S=0.58s, N=20 Gap=162.4* I <sub>max</sub> =V*HCS	8**	01 59 15.4	43.670 16.892 ±1.57 ±1.68	4.0 ±4.0	4.2	S=0.88s, N=94 Gap=25.8* I <sub>max</sub> =VI*HCS		
26	12 23 21.4	46.128 14.810 ±3.41 ±2.92	7.1 ±7.1	2.1	S=0.47s, N=13 Gap=222.8* I <sub>max</sub> =IV*HCS	8**	07 23 29.4	43.584 16.890 ±7.79 ±22.62	17.9 ±9.6	1.9	S=0.60s, N=6 Gap=249.3*		
27**	06 46 03.3	44.102 16.491 ±3.57 ±5.83	7.1 ±8.7	2.3	S=0.45s, N=7 Gap=215.2*	8	20 17 44.1	42.814 18.449 ±2.65 ±2.44	4.6 ±6.8	2.6	S=0.50s, N=14 Gap=96.0*		
27**	12 05 20.7	44.185 16.704 ±1.81 ±3.13	5.4 ±5.4	2.7	S=0.52s, N=18 Gap=183.2*	8**	22 01 36.9	43.634 17.064 ±2.96 ±5.37	8.3 ±4.6	2.5	S=0.50s, N=12 Gap=220.2*		
28**	14 15 36.6	44.196 16.678 ±1.95 ±4.58	2.4 ±4.6	2.4	S=0.51s, N=15 Gap=213.9*	9	13 45 50.8	45.066 14.600 ±10.27 ±10.29	30.0 ±20.6		S=0.76s, N=6 Gap=207.6*		
29	16 20 52.6	42.282 18.540 ±3.59 ±3.17	22.2 ±5.7		S=0.32s, N=10 Gap=260.2*	9	14 03 53.2	45.682 14.072 ±6.32 ±3.06	20.0 ±10.7		S=0.39s, N=8 Gap=200.4*		
31	06 07 55.8	45.507 14.645 ±1.45 ±2.00	16.9 ±2.3	2.9	S=0.39s, N=20 Gap=137.1* I <sub>max</sub> =IV*HCS	9	17 40 40.8	45.053 14.876 ±5.82 ±4.96	25.3 ±9.5		S=0.64s, N=10 Gap=184.6*		
January 1987							14	13 16 21.9	45.386 16.212 ±3.31 ±2.81	13.5 ±6.3	2.9	S=0.45s, N=12 Gap=153.8*	
2**	10 12 24.2	44.074 16.607 ±4.00 ±7.06	28.9 ±8.3	2.2	S=0.63s, N=8 Gap=136.6* Multiple shock.	15	19 17 34.3	45.962 15.261 ±3.72 ±3.36	8.7 ±20.8	1.5	S=0.48s, N=11 Gap=253.6*		
2**	10 13 16.1	44.285 16.221 ±3.01 ±3.08	4.4 ±7.1	2.6	S=0.40s, N=8, Gap=132.2*	21**	02 51 42.6	43.505 17.113 ±3.20 ±3.55	3.6 ±4.8	3.1	S=0.90s, N=37 Gap=128.8* I <sub>max</sub> =IV-V*HCS		

Day	Origin time h m s	Epicenter (°N) (± km)	Depth (km)	M <sub>L</sub>	Remarks
January 1987					
23	17 04 00.5	43.341 17.843 ±8.77 ±5.75	2.4 ±8.9	2.7	S=0.70s, N=11 Gap=220.4*
24**	11 03 44.3	44.120 16.455 ±6.13 ±5.36	11.0 ±7.4	2.6	S=0.63s, N=9 Gap=140.8*
30	07 52 03.3	45.024 14.927 ±6.26 ±2.59	17.6 ±6.6		S=0.36s, N=10 Gap=168.2*
31	23 23 35.7	43.272 18.436 ±5.39 ±5.32	0.0 ±6.3	3.0	S=0.79s, N=22 Gap=178.0*
February 1987					
1**	03 19 51.8	44.115 16.641 ±3.45 ±9.07	7.2 ±7.2	2.6	S=0.69s, N=13 Gap=188.3* Felt.
1	17 40 31.3	46.053 15.070 ±2.20 ±1.56	10.0 ±11.6		S=0.22s, N=9 Gap=255.6*
4**	04 01 43.7	44.633 15.650 ±2.84 ±3.70	9.2 ±5.3	2.8	S=0.98s, N=39 Gap=98.8*
5	22 16 32.1	45.793 15.613 ±9.51 ±6.88	8.1 ±24.6	1.5	S=0.82s, N=8 Gap=224.1*
6	07 14 41.4	42.956 18.391 ±3.50 ±6.34	19.0 ±5.5	2.6	S=0.55s, N=14 Gap=251.5*
6	12 48 18.2	45.130 14.712 ±11.88 ±3.99	28.6 ±8.9		S=0.46s, N=7 Gap=246.3*
9	16 26 25.2	45.468 14.475 ±3.87 ±3.27	11.0 ±5.5		S=0.79s, N=16 Gap=144.1*
11	05 26 51.0	43.543 17.639 ±7.57 ±12.26	0.0 ±30.0	2.7	S=0.36s, N=6 Gap=301.7*
12**	13 40 08.8	43.488 16.935 ±8.47 ±21.87	22.4 ±9.2	1.7	S=0.57s, N=6 Gap=272.2*
15**	00 57 17.3	44.065 16.345 ±2.82 ±4.5	10.3 ±5.4	2.6	S=0.87s, N=26 Gap=145.3* I <sub>max</sub> =IV+MCS
15	14 08 49.1	45.940 15.003 ±4.96 ±3.55	24.7 ±24.7	1.9	S=0.62s, N=12 Gap=229.1*
February 1987					
15**	20 37 38.8	43.890 16.834 ±1.60 ±2.09	10.0 ±3.4	3.7	S=0.81s, N=77 Gap=47.2* I <sub>max</sub> =IV+V+MCS
15**	23 19 20.4	43.909 16.811 ±1.94 ±2.13	5.3 ±5.3	3.5	S=0.85s, N=66 Gap=36.9* I <sub>max</sub> =IV+V+MCS
16	17 43 35.9	45.030 14.948 ±5.82 ±8.90	13.8 ±10.1		S=0.67s, N=7 Gap=179.3*
24	22 55 19.2	43.068 17.497 ±7.51 ±8.20	0.0 ±5.4	2.7	S=0.52s, N=10 Gap=238.8*
25**	21 58 23.8	44.091 16.354 ±2.70 ±3.93	2.4 ±6.5	2.8	S=0.67s, N=14 Gap=134.2* I <sub>max</sub> =IV+V+MCS
March 1987					
1**	10 57 21.7	43.477 17.141 ±8.60 ±11.05	0.0 ±7.5	2.0	S=0.58s, N=9 Gap=272.2*
3**	21 38 13.0	44.149 16.486 ±2.69 ±5.63	0.0 ±6.8	2.6	S=0.57s, N=10 Gap=194.7*
5	09 24 42.5	42.478 18.557 ±3.66 ±3.64	25.0 ±7.8	2.7	S=0.77s, N=18 Gap=99.6*
9	17 14 52.5	45.483 14.351 ±16.82 ±6.93	23.9 ±27.7		S=0.76s, N=7 Gap=211.2*
12	12 51 33.7	45.177 16.123 ±4.06 ±8.23	0.0 ±30.0		S=0.23s, N=6 Gap=297.8*
13	02 48 34.6	45.100 15.091 ±3.77 ±5.25	7.0 ±7.5	1.8	S=0.77s, N=12 Gap=139.0*
15	09 50 27.4	46.465 14.980 ±2.65 ±2.10	11.3 ±4.1	2.4	S=0.54s, N=23 Gap=193.4*
17**	15 57 05.5	43.935 15.484 ±4.06 ±5.43	6.6 ±8.0	2.2	S=0.73s, N=11 Gap=195.5*
20	17 00 40.1	45.050 14.451 ±12.52 ±7.70	0.0 ±30.0	2.5	S=0.88s, N=9 Gap=273.1*
21**	19 50 48.8	44.158 16.075 ±2.65 ±3.63	3.0 ±6.2	2.6	S=0.76s, N=18 Gap=150.0*



Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
March 1987					
22	19 31 06.5	45.743 15.642 42.73 42.20	8.9 43.4	2.7	S=0.72s, N=36 Gap=100.7 I <sub>max</sub> =IV-V*MCS
22	20 49 46.3	45.754 15.641 42.18 41.73	9.8 42.9	3.6	S=0.76s, N=61 Gap=59.4 I <sub>max</sub> =V*MCS
22	22 02 20.3	46.078 14.836 48.90 45.21	11.2 17.7	2.5	S=0.61s, N=8 Gap=246.5
22	22 11 10.1	44.868 16.825 44.47 42.65	1.9 45.0	3.5	S=0.77s, N=21 Gap=149.8 I <sub>max</sub> =IV*MCS
24	01 29 06.8	44.049 16.517 44.55 45.02	21.6 48.3		S=0.65s, N=11 Gap=124.7
24	01 29 11.6	44.083 16.433 42.40 42.51	11.8 46.4	4.4	S=0.76s, N=62 Gap=21.2 I <sub>max</sub> =VI*MCS
25	13 58 51.2	44.958 14.587 41.10 47.13	21.6 42.0		S=0.97s, N=9 Gap=208.2
25	16 49 55.8	45.131 14.509 48.62 44.54	25.8 45.8		S=0.38s, N=7 Gap=264.2
26	11 56 38.2	45.450 14.869 47.39 47.25	19.2 49.2		S=0.74s, N=7 Gap=128.9
April 1987					
2	10 00 03.0	42.436 18.298 43.46 46.34	15.8 43.1	2.6	S=0.60s, N=16 Gap=257.7
11	13 45 03.0	44.168 16.075 43.02 44.65	4.5 46.9	2.2	S=0.81s, N=18 Gap=163.0
12	11 38 36.1	43.082 18.315 43.31 43.77	30.0 47.3	2.3	S=0.39s, N=10 Gap=233.2
14	04 00 24.3	43.671 17.797 41.51 41.52	5.2 45.8	2.5	S=0.60s, N=6 Gap=261.7
17	17 29 00.9	44.072 16.289 42.13 43.49	2.7 46.3	2.6	S=0.58s, N=16 Gap=139.8 Felt.
17	17 37 37.4	44.097 16.354 41.76 43.19	1.5 44.0	2.6	S=0.48s, N=16 Gap=160.1 Felt.
April 1987					
17	17 42 11.9	44.209 15.127 43.22 44.86	14.5 41.9	2.4	S=0.35s, N=6 Gap=162.0
18	05 22 20.5	44.023 16.573 42.49 45.86	1.3 45.6	2.5	S=0.61s, N=14 Gap=197.1
19	04 32 45.9	43.246 15.670 40.06 46.03	16.6 47.7	1.9	S=0.62s, N=8 Gap=239.6
19	05 01 59.0	42.914 15.515 41.48 46.85	12.5 45.6	2.1	S=0.70s, N=8 Gap=267.8
19	08 25 50.4	43.982 16.510 43.11 46.52	0.0 47.0	2.3	S=0.67s, N=11 Gap=187.5
24	07 25 22.8	45.330 15.375 43.19 43.59	8.2 45.8	2.1	S=0.73s, N=16 Gap=109.3
27	02 09 37.9	46.427 14.633 43.52 42.75	12.4 44.1	2.7	S=0.72s, N=26 Gap=146.9 I <sub>max</sub> =V*MCS
30	03 11 36.1	43.073 17.695 46.25 48.92	0.0 46.9	2.8	S=0.67s, N=8 Gap=311.8
May 1987					
2	18 03 09.4	44.008 16.712 42.20 42.66	9.2 44.6	3.0	S=0.69s, N=42 Gap=100.7
8	08 58 36.1	42.946 17.904 2.91 2.34	9.6 9.6	2.6	S=0.37s, N=10 Gap=155.5
8	17 32 24.5	44.048 16.416 46.90 44.14	8.1 42.3	2.2	S=0.71s, N=6 Gap=192.4
11	12 46 04.6	45.283 14.636 47.25 42.98	20.3 40.3		S=0.54s, N=10 Gap=222.0
17	07 11 45.0	44.246 14.453 43.36 43.65	2.4 44.3	2.4	S=0.53s, N=16 Gap=231.2
18	02 30 39.8	44.100 16.394 40.18 40.24	23.3 41.3	2.4	S=0.01s, N=5 Gap=206.0
20	02 50 13.5	43.389 17.451 44.98 44.58	5.5 47.7	2.3	S=0.81s, N=15 Gap=113.6
20	06 08 49.2	43.991 15.698 47.56 49.51	11.0 47.9	2.1	S=0.33s, N=10 Gap=204.9

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
May 1987					
23**	06 27 03.2	43.998 16.487 ±4.92 ±11.11	0.0 ±9.6	2.1	S=0.65s, N=7 Gap=195.7*
23**	10 53 44.9	43.524 16.288 ±2.13 ±2.59	5.6 ±5.6	2.0	S=0.40s, N=11 Gap=165.9*
27	10 06 49.5	45.769 14.152 ±4.25 ±2.35	0.0 ±15.8		S=0.52s, N=11 Gap=141.5*
29**	09 47 42.6	44.015 16.568 ±5.27 ±12.20	0.0 ±32.5	2.0	S=0.31s, N=5 Gap=197.0*
29	09 52 10.0	44.142 14.403 ±11.63 ±7.69	11.1 ±7.6	2.6	S=0.62s, N=9 Gap=300.4*
30**	10 34 41.1	44.042 16.584 ±2.72 ±5.30	4.6 ±9.0	2.6	S=0.54s, N=8 Gap=136.0*
30**	12 24 16.4	44.003 16.529 ±3.36 ±3.49	0.6 ±7.1	3.2	S=0.86s, N=29 Gap=134.6*
30	15 20 49.6	43.170 17.601 ±3.95 ±2.56	30.0 ±5.9	2.4	S=0.68s, N=16 Gap=133.5*
30	18 17 18.8	45.178 14.759 ±3.45 ±2.36	19.8 ±3.0	3.0	S=0.81s, N=53 Gap=73.2* I <sub>max</sub> =IV-V+HCS
June 1987					
1	08 13 07.6	43.049 17.869 ±3.00 ±2.56	13.1 ±4.0	2.8	S=0.71s, N=24 Gap=121.9*
4	00 55 20.3	45.080 14.961 ±5.78 ±8.40	19.8 ±14.8		S=0.50s, N=6 Gap=171.9*
8	02 12 59.9	45.729 15.643 ±7.11 ±4.85	15.9 ±15.9	1.2	S=0.72s, N=8 Gap=145.2*
8	05 22 08.2	45.887 14.865 ±3.54 ±2.78	21.5 ±14.1		S=0.33s, N=8 Gap=200.1*
10	14 09 42.8	46.063 14.732 ±5.75 ±3.34	15.3 ±13.9	2.1	S=0.48s, N=10 Gap=239.3*
12	13 18 20.5	44.932 14.898 ±1.74 ±1.84	17.8 ±2.3	2.4	S=0.23s, N=9 Gap=186.7*
12	14 08 06.1	44.924 14.902 ±3.58 ±3.79	18.0 ±8.3		S=0.47s, N=9 Gap=187.8*
June 1987					
12	19 00 04.2	44.930 14.874 ±4.55 ±5.08	11.1 ±19.4	2.3	S=0.57s, N=8 Gap=202.7*
13	09 07 27.4	44.968 14.963 ±3.59 ±3.75	14.7 ±4.4	2.6	S=0.56s, N=16 Gap=156.8*
14	01 09 13.7	44.940 14.912 ±2.40 ±2.35	17.8 ±3.6	2.1	S=0.34s, N=10 Gap=183.6*
14	02 41 10.9	44.937 14.913 ±4.01 ±3.44	17.6 ±4.7	2.4	S=0.67s, N=16 Gap=167.5*
14	04 25 11.0	44.929 14.929 ±3.28 ±2.84	15.7 ±3.3	2.6	S=0.48s, N=19 Gap=167.8* I <sub>max</sub> =IV+HCS
14	09 42 15.0	44.893 14.862 ±3.23 ±3.02	20.6 ±20.6		S=0.36s, N=8 Gap=198.1*
14	12 37 00.4	44.904 14.884 ±1.75 ±1.54	16.4 ±8.3		S=0.13s, N=6 Gap=193.8*
14	12 40 30.4	44.943 14.909 ±2.28 ±2.23	18.0 ±3.4	2.4	S=0.33s, N=10 Gap=183.6*
14	14 16 48.5	44.935 14.895 ±1.51 ±1.44	15.2 ±2.3	2.4	S=0.22s, N=10 Gap=186.5*
14	14 57 55.7	44.915 14.878 ±3.42 ±3.26	19.0 ±7.4		S=0.43s, N=9 Gap=192.2*
14	14 59 44.6	44.915 14.875 ±3.23 ±2.96	16.4 ±4.8		S=0.44s, N=10 Gap=192.4*
14	15 00 48.4	44.924 14.901 ±8.78 ±10.70	20.2 ±17.3		S=0.62s, N=6 Gap=200.9*
14	15 10 15.5	44.923 14.892 ±3.76 ±3.51	16.1 ±5.6	2.6	S=0.52s, N=10 Gap=189.2*
14	16 04 11.7	44.953 14.932 ±2.66 ±3.10	15.5 ±3.8	2.3	S=0.60s, N=19 Gap=95.9* I <sub>max</sub> =III+HCS
14	16 07 19.9	44.980 14.938 ±2.29 ±2.97	15.8 ±3.2	2.6	S=0.74s, N=34 Gap=97.5* I <sub>max</sub> =III+HCS
14	22 06 04.9	44.974 14.925 ±9.75 ±5.90	5.9 ±5.9		S=0.75s, N=11 Gap=256.0*

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
June 1987					
15	01 57 43.7	44.972 14.898 ±2.28 ±2.83	12.0 ±3.8	2.8	S=0.84s, N=39 Cap=70.5* I <sub>max</sub> =IV-VHCS
15	07 48 33.4	45.280 14.557 ±4.49 ±4.04	25.4 ±8.0	2.6	S=0.68s, N=10 Cap=169.96* Felt.
15	09 16 55.5	44.980 14.918 ±2.74 ±3.13	17.8 ±5.5	3.0	S=0.55s, N=12 Cap=164.3*
20	14 37 58.7	42.553 18.547 ±2.45 ±2.35	7.9 ±4.8	3.2	S=0.81s, N=30 Cap=47.2*
28	09 17 37.9	46.284 14.969 ±3.51 ±2.31	11.5 ±3.9	3.7	S=0.81s, N=35 Cap=172.8* I <sub>max</sub> =VHCS
28	14 26 39.7	43.017 15.237 ±12.97 ±6.30	0.2 ±9.9	2.6	S=0.44s, N=6 Cap=263.5*
29	07 00 57.3	43.068 15.412 ±11.79 ±8.97	30.0 ±14.2	2.5	S=0.72s, N=7 Cap=259.0*
29	13 07 26.0	42.676 15.395 ±1.63 ±2.62	5.1 ±5.1	4.9	S=0.89s, N=73 Cap=37.7*
29	13 15 56.4	42.617 15.424 ±2.01 ±2.40	5.3 ±5.3	3.5	S=0.58s, N=29 Cap=60.3*
July 1987					
6**	02 46 24.4	43.410 17.327 ±5.30 ±3.51	28.5 ±28.5	2.1	S=0.30s, N=6 Cap=208.5*
6	06 26 44.2	42.496 17.386 ±3.13 ±1.86	8.6 ±4.1	3.2	S=0.70s, N=33 Cap=83.1*
6	20 50 04.9	44.791 15.621 ±5.72 ±3.81	19.4 ±5.3	3.2	S=0.61s, N=12 Cap=199.9*
7*	04 54 58.2	42.680 15.452 ±2.30 ±4.21	5.1 ±5.1	3.7	S=0.87s, N=29 Cap=103.9*
14**	13 46 03.3	44.084 16.259 ±2.40 ±2.55	3.8 ±5.6	3.1	S=0.76s, N=36 Cap=113.7*
15	08 40 23.8	42.932 18.368 ±9.65 ±4.36	4.1 ±13.9	2.3	S=0.51s, N=8 Cap=249.8*
July 1987					
20	02 29 25.3	43.239 17.873 ±6.69 ±7.03	10.8 ±6.1	2.4	S=0.52s, N=12 Cap=313.8*
20	08 38 12.3	43.208 17.872 ±6.31 ±6.56	13.4 ±5.5	2.3	S=0.49s, N=12 Cap=313.0*
20	15 10 20.1	46.238 14.913 ±8.26 ±4.96	17.4 ±17.4		S=0.48s, N=8 Cap=267.8*
22	05 04 43.4	45.450 16.634 ±3.96 ±6.70	12.2 ±4.3	2.4	S=0.40s, N=10 Cap=281.5*
23	13 25 58.2	42.803 17.688 ±6.96 ±5.99	7.3 ±4.6	2.3	S=0.44s, N=12 Cap=321.3*
29	07 23 10.6	46.439 15.043 ±3.40 ±1.18	20.5 ±3.0	2.3	S=0.18s, N=10 Cap=246.8*
29	19 10 45.3	43.526 17.753 ±3.10 ±2.71	2.5 ±5.4	3.2	S=0.94s, N=31 Cap=127.0*
29	21 58 46.8	44.807 15.016 ±3.20 ±3.42	21.9 ±2.8	2.2	S=0.39s, N=11 Cap=217.0*
29	23 38 16.3	45.704 14.203 ±3.93 ±2.19	14.7 ±4.7	2.2	S=0.47s, N=12 Cap=166.2*
30	01 12 08.2	45.097 15.041 ±2.79 ±4.23	30.0 ±14.6		S=0.35s, N=7 Cap=145.5*
30	05 14 19.5	42.923 17.736 ±2.54 ±1.77	7.5 ±3.6	3.4	S=0.90s, N=61 Cap=50.5* I <sub>max</sub> =IV-VHCS
August 1987					
2	02 20 27.3	44.718 15.306 ±2.44 ±2.96	3.9 ±5.0	2.9	S=0.57s, N=19 Cap=161.5*
6	14 56 34.7	44.711 15.828 ±1.99 ±2.11	7.1 ±4.1	2.9	S=0.57s, N=23 Cap=112.0*
6	15 06 17.3	44.685 15.775 ±10.12 ±10.46	0.0 ±7.5		S=0.51s, N=6 Cap=273.7*
6	20 05 50.7	44.718 16.103 ±6.92 ±7.40	9.8 ±7.8	2.7	S=0.52s, N=8 Cap=278.1*
7	06 57 14.8	46.449 15.065 ±7.26 ±3.21	21.2 ±7.0	2.1	S=0.55s, N=12 Cap=248.1*

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	M <sub>L</sub>	Remarks
August 1987					
7**	09 20 54.7	44.734 15.846 ±4.60 ±4.61	13.2 17.4	2.5	S=0.73s, N=15 Gap=145.5*
9	18 25 28.2	45.621 14.565 ±3.93 ±3.02	10.5 17.0	2.6	S=0.85s, N=18 Gap=127.7*
9	18 34 51.7	45.700 14.642 ±5.26 ±1.68	24.2 ±5.3		S=0.16s, N=6 Gap=189.7*
9	18 42 51.1	45.722 14.638 ±8.95 ±2.23	27.0 ±6.6		S=0.21s, N=6 Gap=199.9*
11	22 57 43.8	46.014 15.110 ±2.83 ±1.66	21.5 ±11.5	1.3	S=0.29s, N=12 Gap=186.4*
14**	21 57 16.1	43.530 17.470 ±7.00 ±6.39	0.0 ±9.2	2.4	S=0.50s, N=7 Gap=203.7*
19	17 57 11.6	45.261 13.999 ±7.90 ±5.21	3.2 ±9.6		S=0.65s, N=10 Gap=265.8*
20	02 54 36.3	46.499 15.058 ±3.97 ±2.80	9.7 ±11.2	3.3	S=0.69s, N=18 Gap=196.7* Felt.
21**	14 59 30.9	43.430 17.188 ±2.06 ±1.86	0.0 ±2.1	3.3	S=0.61s, N=32 Gap=114.0*
21	17 48 33.2	45.736 15.678 ±3.05 ±1.96	15.5 ±4.9	2.1	S=0.51s, N=16 Gap=139.4*
24	16 53 34.8	46.305 16.226 ±5.57 ±4.93	13.3 ±10.1	1.7	S=0.49s, N=12 Gap=297.8*
25	16 27 23.5	45.430 15.181 ±13.74 ±6.66	0.0 ±15.3		S=0.79s, N=7 Gap=251.8*
28	23 31 11.6	45.398 15.969 ±5.87 ±5.15	11.7 ±10.0	1.9	S=0.76s, N=14 Gap=261.3*
31	05 54 11.1	43.257 18.264 ±5.91 ±4.67	0.0 ±19.2	2.1	S=0.36s, N=10 Gap=307.9*
September 1987					
4	07 53 18.6	45.403 14.641 ±13.01 ±8.12	30.0 ±30.0		S=0.44s, N=5 Gap=244.1*
5	04 47 20.0	46.494 14.869 ±8.57 ±6.89	28.1 ±28.1		S=0.37s, N=7 Gap=288.7* Felt.
September 1987					
7	19 24 50.6	45.882 14.242 ±1.39 ±0.84	21.2 ±1.3		S=0.17s, N=12 Gap=109.7*
18	20 22 51.4	45.502 15.366 ±11.37 ±4.01	0.0 ±10.9		S=0.49s, N=7 Gap=226.4*
23	13 09 33.8	45.481 13.589 ±4.67 ±7.35	7.4 ±5.6		S=0.36s, N=8 Gap=292.7*
27**	02 21 50.2	43.954 15.444 ±2.01 ±2.26	4.8 ±4.8	3.3	S=0.59s, N=28 Gap=96.7* I <sub>max</sub> =IV+HCS
October 1987					
3	05 36 44.6	43.140 17.988 ±5.00 ±5.67	0.2 ±25.4	2.3	S=0.62s, N=13 Gap=176.3*
4	10 04 30.0	42.661 18.253 ±2.22 ±3.11	19.6 ±4.8	2.1	S=0.29s, N=10 Gap=137.2*
5	20 58 18.7	45.440 15.273 ±14.30 ±7.13	20.2 ±13.5	1.9	S=0.74s, N=7 Gap=256.2*
10**	10 15 32.1	43.657 15.568 ±2.46 ±2.45	10.1 ±3.7	2.8	S=0.50s, N=18 Gap=202.2*
12	06 17 58.0	44.896 14.871 ±8.90 ±7.00	16.8 ±5.8	3.3	S=0.80s, N=16 Gap=276.7* Felt.
12	07 14 54.5	44.965 14.926 ±7.00 ±4.56	17.5 ±5.6	3.3	S=0.58s, N=15 Gap=272.0* Felt.
12	12 59 44.5	45.582 15.281 ±3.34 ±3.89	0.0 ±11.0	1.9	S=0.45s, N=9 Gap=136.3*
13	12 51 12.9	45.717 14.087 ±5.68 ±2.60	7.5 ±5.6		S=0.45s, N=9 Gap=164.1*
16	06 38 30.6	43.124 18.094 ±6.78 ±6.23	0.0 ±23.3		S=0.52s, N=11 Gap=296.7*
18**	02 02 28.3	43.929 14.973 ±2.96 ±3.13	4.0 ±5.6	2.8	S=0.35s, N=8 Gap=209.7*
21**	15 29 18.5	43.581 17.500 ±2.98 ±1.82	2.9 ±4.2	3.1	S=0.81s, N=52 Gap=90.7*

Day	Origin time h m s	Epicenter (°N) (°E) (± km)	Depth (km)	$M_L$	Remarks
October 1987					
24**	21 05 36.3	43.351 17.256 ±3.22 ±2.45	20.2 12.6	2.4	S=0.43s, N=16 Gap=168.9*
26**	01 11 16.1	43.985 17.459 ±6.95 ±4.94 ±10.0	0.0	2.3	S=0.79s, N=9 Gap=143.8*
27	19 59 01.6	45.556 17.754 ±4.34 ±6.78 ±6.3	0.2	2.6	S=0.43s, N=12 Gap=139.0* Imax=IV-V+MCS
29	04 20 39.2	46.083 14.780 ±8.50 ±4.05 ±17.9	4.1		S=0.71s, N=10 Gap=196.7*
November 1987					
6	15 08 25.2	45.716 14.071 ±5.40 ±2.94 ±8.1	10.6		S=0.63s, N=12 Gap=164.5*
8**	22 43 43.1	44.050 16.372 ±2.03 ±2.06 ±4.9	8.2	4.1	S=0.82s, N=76 Gap=67.9* Imax=V-VI+MCS
10	16 03 44.6	46.136 14.819 ±6.78 ±3.27 ±13.8	9.1		S=0.49s, N=9 Gap=205.2*
11	20 39 13.8	42.969 17.715 ±3.89 ±4.11 ±4.5	0.0	2.7	S=0.95s, N=22 Gap=145.9*
11	21 59 21.4	42.965 17.723 ±3.45 ±3.67 ±6.9	11.9	2.8	S=0.74s, N=18 Gap=145.9*
14	21 27 16.3	46.031 14.924 ±4.34 ±2.53 ±13.3	11.6	2.1	S=0.57s, N=14 Gap=187.2*
28	17 50 43.0	46.126 14.740 ±6.94 ±3.78 ±12.6	12.6		S=0.38s, N=7 Gap=248.5*
December 1987					
3	01 16 35.6	45.868 15.245 ±4.01 ±3.11 ±8.6	5.5	1.5	S=0.71s, N=13 Gap=132.7* Imax=IV+MCS
5	05 21 59.4	42.923 18.413 ±5.23 ±13.23 ±16.2	28.1	2.6	S=0.17s, N=5 Gap=279.4*
5	07 17 14.3	42.937 18.207 ±3.22 ±3.67 ±7.5	7.5	3.0	S=0.80s, N=23 Gap=87.8*
December 1987					
9	20 52 23.8	42.656 18.448 ±2.56 ±3.11 ±3.4	14.9	2.9	S=0.53s, N=21 Gap=98.9*
11	02 47 20.3	42.849 18.751 ±2.61 ±2.40 ±3.7	19.4	3.4	S=0.81s, N=29 Gap=56.9*
13	08 05 31.5	44.866 15.050 ±3.83 ±4.06 ±5.5	22.8	2.7	S=0.61s, N=12 Gap=159.8*
15	14 10 59.2	43.012 17.788 ±10.01 ±12.34 ±30.0	0.0	2.4	S=0.76s, N=6 Gap=198.7*
18	09 13 23.9	42.287 18.545 ±10.59 ±5.05 ±14.5	14.5		S=0.48s, N=7 Gap=228.2*
19**	02 54 33.6	43.401 17.009 ±0.86 ±0.67 ±1.5	27.2	1.7	S=0.04s, N=5 Gap=177.8*
20**	12 18 15.4	44.153 16.266 ±3.25 ±7.08 ±7.0	6.0	2.4	S=0.31s, N=6 Gap=176.8*
21	08 13 06.1	46.082 15.362 ±4.37 ±2.95 ±11.5	8.1	1.8	S=0.72s, N=13 Gap=167.1* Felt.
26	02 04 24.7	43.079 18.000 ±2.78 ±4.56 ±3.1	28.5	2.8	S=0.19s, N=6 Gap=229.0*
26	07 23 54.1	43.345 17.661 ±4.11 ±4.45 ±30.0	30.0	2.6	S=0.76s, N=16 Gap=115.1*