BSAP2

Baikal Seismic Array Project

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UCLA

PASSCAL Data Report 94-007

IRIS DATA MANAGEMENT SYSTEM

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Table of Contents

Introduction

During June 11 and October 5, 1992, UCLA, U. of Wisconsin (UW), and the Institute of Earth's Crust of Russian Academy of Sciences at Irkutsk conducted a joint seismic array study in the territory of the Baikal rift zone as the second phase for of a two-year study. The UCLA field trip team installed and operated the twenty-eight Reftek stations and two UW recorder stations. All the stations were equipped with 3D short period sensors with central frequencies range from 0.5 to 2 Hz and eleven of the stations were co-sited with broadband (Guralp and STS2) seismometers. All seismographs synchronize internal clocks to signals from the Omega navigation system (locked to either Norway or Japan) which ensured that the timing error for most of the data was less than 2 ms.

This report provides information needed for others to use the unique data set recorded by the 30 UCLA stations during June 11 and October 5, 1992.

Station Information

- Recorders– The twenty-three Reftek-72A recorders were loaned to the experiment from the IRIS/PASSCAL Equipment Center at Lamont and another two were UW recorders.

- Seismometers– six kinds of seismometers were deployed: 1) Thirteen L4C 1 Hz three separate component sensors. 2) Eleven S13 1HZ three separate component sensors from the IRIS/PASSCAL. 3) Four L22 2HZ three component sensors from the IRIS/PASSCAL. 4) Four Guralp VBB CMG3s (vertical components only) with velocity response flat from 30 sec to 10 Hz at stations 06, 15, 80, 84 and 87 (Table 1 and Figure 1). 5) Five Strekiesen STS-2 broad-band 3-component sensors co-occupied with short period sensors at stations 00, 01, 11, 16, 81 and 90. 6) Two UW recorders along with two HS10 1Hz sensors from UW were installed at station 08 and 10.

For all the stations with short period sensors have the vertical component on channel 1, north-south component on channel 2, and east-west component on channel3.

All the Guralps were recorded on channel 4. For the STS-2 stations, channel 4 was recorded vertical component, channel 5 north-south and channel 6 east-west.

• Station Locations– All the station coordinates were measured by using a GPS Pathfinder receiver (borrowed from UCLA's GPS group). The errors of the measurement on horizontal coordinates were less than 50 meters. Due to its poor accuracy on determining elevation, Russian 1:200,000 maps were used to obtain elevation instead of using the GPS measurement. Table 1 lists station coordinates and other information.

• DAS Movement– Some of the recorders (i.e., DAS, Reftek Data Aquisition System) were moved during the experiment for various reasons. The main reason for the movement was to replace a 'sick' DAS with a better one so as to get some useful data from each site. Detailed information about DAS movement can be found in Table 2.

• Station Performance and Problems– Installation and servicing were carried out using a combination of land vehicles, Aeroflot helicopters, boats on lake Baikal and Beijing- Moscow international train. Stations were serviced once about every 20 days for about 4 months. Extremely tricky roads and shortage of gasoline limited the frequency of services. Cloudy and rainy weather in the short summer of Siberia caused some recorder power failure. All of these conditions, together with the non-ideal performance of the Reftek's made a final rate of success 89% for the 30 stations. Table 3 shows the performance of the 30 stations.

Most of the reasons for the loss of data can be found in the log files which are in a tape08B labelled LOGFILES. We suggest those have no experience on Reftek recordings contact the PASSCAL instrument center at Lamont to get some ideas about the using of Reftek data, especially when some of the data were recorded by unhealthy Refteks.

Data Information

• Recording Parameters– For most of the stations we programmed a 10 sample per second continuous data stream to record teleseismic events; a 25 sps (for STS2 stations) or 50 sps triggering stream to record high frequency local and regional events; and for those stations co-sited with broadband stations, another continuous data stream with sample rate 1 sps and 32 bit data words was programmed to record surface waves with wide dynamic range. See Table 4 for the "standard parameters". Detailed parameters can be found in the log files.

• Data format– Data dumped from the station disks were converted to SEGY format by using the REF2SEGY routine written by Early et al. at the PASSCAL Instrument center. The resulting SEGY format data can easily be converted to other formats such as SAC, AH, and SIERRA by using routines provided by the instrument center.

• File name convention and data organization– Files are sorted into sub-directories according to the starting times and data stream that they belong to. For instance, under sub-directory R256.01 are files in data stream 01 with starting time within Julian day 256, from ALL the stations.

File names contain the information about starting hour, minute, and second of the file, as well as DAS serial numbers and channel numbers. For instance, file 20.00.27.0339.2 under sub-directory R256.01 starts between 256:20:00:27.00 and 256:20 :00:28.00 (the exact starting time of each file can be found in the header of the file); the file was recorded by DAS 339 which was station 84 (Table 2) on channel 2 (i.e. the north-south component).

• Tapes– Totally 10 8mm-video tapes are submitted together with this report. Tape 1.a,b through 8.a,b contain tar-files in SEGY format. Each tape has one or two tar files (tape07A,tape07B,tape08A, and tape08B have one file) and the size of each tar file is labeled on the right corner of the tapes in megabytes unit. In tape08B, the file includes log and error files created by the PASSCAL REF2LOG or REF2SEGY routines. From these files one can find most of the information needed for using the data, such as timing errors, recording parameters, and DAS problems. More detailed information for the 10 tapes can be found in Table 6, where "North" means stations north of Lake Baikal and "Mongolia" means those in Mongolia.

Earthquake Information

• Event Statistics– According to the NOAA Earthquake Bulletin, 464 events with mb $\geq$ 5.0 occurred during June 11 and October 5, 1992 (Figure 2). 113 of them are larger than mb=5.5. 217 of these 464 events have delta distance from 30° to 85° to the center of the profile and can be used for teleseismic P wave travel time delay studies. As many as 191 events with mb $\geq$ 4.0 occurred in the area with delta distance less than 30°. Also recorded were 81 deep events with depth larger than 100 km. Most of these deep earthquakes are good sources for studies which favor using simple waveforms such as the calculation of receiver functions (Figure 3 and Table 5).

Example of Seismograms

Figures 4 to figure 6 show some seismograms recorded by the profile. Figure 4 compares teleseisms and spectra from the different instruments. Figure 5 is a seismic section from a teleseism. Figure 6 shows records from the northern profile for a regional event. Figure 7 shows records for a 100 ton shot.

Participated Personals

Personals involved in the installation and operation of the 30 stations include:

• UCLA: *P.M.Davis*, S.Gao, H.Liu, P.D.Slack, M. Benthien and Don Daniels

• Institute of Earth's Crust, Irkutsk: *Yu.A.Zorin*, A.Masalski, V.M.Kozhevnikov, and V.V.Mordvinova, T.Perepelova. Academian N.A.Logatchev, director of the Institute, performed excellent leadership to the entire project.

• PASSCAL Instrument Center, LDGO: *R.W.Busby*

In addition, our colleagues from U.of Wisconsin, Madison led by Prof. R.P.Meyer also contributed to the operation of the stations that were primary responsibility of the UCLA team.

Figure Captions

Figure 1: USA-USSR Baikal 1992 seismic array study UCLA station locations.

Figure 2: Geographic location of earthquakes with mb $\geq$ 5.0 recorded by UCLA stations during June 11 and Oct 5, 1992. (Source: NOAA)

Figure 3: Epicentral locations of events occurred during the experiment period. The center of each polar plot is the location of station 12, which is approximately the center of the profile. Events are plotted according to their azimuth and delta distance (both in degrees) relative to station 12. See Table 5 for parameters of each group.

Figure 4: Comparison of seismograms recorded by different kinds of sensors: L4C (Fig. 4.1a, top three traces) and STS-2 (Fig. 4.1a, bottom three traces) and their spectra (Fig. 4.1b); STS-2 and Guralp (Fig. 4.2a) and their spectra (Fig. 4.2b); S13 and Guralp (Fig. 4.3).

Figure 5: Seismograms for teleseismic events recorded at profile stations. Fig.5.1– an event recorded by short period sensors. Only vertical traces are plotted. Fig.5.2– shows ten hours of data starting from the p arrival of the June 28, 1992 California Ms=7.4 earthquake, recorded by three broadband stations.

Figure 6: Seismograms for a local event recorded at Russian portion of the profile.

Figure 7: Seismograms for a 100 metric ton mining explosion. The location of the explosion was measured by using GPS Trimble Pathfinder and the zero time was recorded by REFTEK 0.53 km from the explosion center. The zero time is 1992:262:06:-05:00.02.

TABLE 1: 1992 Baikal Rift Project UCLA Station Information

Station-number	Station-name	Coordinates		Elevation(m)	Operational-duration	Sensor type
00	Bratsk	55.965°N	101.410°E	376	08/17-10/03,1992	L4C+STS2
01	Pokosnoe	55.678°N	100.990°E	453	06/27-08/16,1992	L4C+STS2
02	Naratay	55.052°N	101.850°E	346	06/25-07/21,1992	S13
03	Ust-kada	54.516°N	102.070°E	433	06/23-10/01,1992	L4C
04	Sborniy	54.193°N	102.649°E	624	06/22-10/01,1992	S13
05	Konovalova	53.929°N	102.934°E	386	06/21-09/30,1992	L4C
06	Melchituy	53.649°N	103.255°E	355	06/20-09/30,1992	S13+Guralp
07	Suhoy-saglik	53.243°N	103.767°E	719	06/18-09/29,1992	L4C
08	Zacharovska	52.993°N	103.927°E	480	07/02-08/11,1992	HS10
09	Baroy	52.778°N	104.105°E	518	06/17-07/17,1992	L4C
10	Goryashina	52.622°N	104.234°E	524	06/14-09/29,1992	HS10
11	Patrony	52.169°N	104.469°E	619	06/13-09/16,1992	L4C+STS2
12	Listvyanka	51.847°N	104.893°E	600	06/11-10/05,1992	S13
13	Naratay	55.022°N	102.055°E	388	07/21-10/01,1992	S13
14	Stepanovka	52.854°N	103.966°E	619	07/17-09/29,1992	L4C
15	Klyuchi-bulak	55.560°N	101.803°E	400	08/18-10/03,1992	L22+Guralp
16	Patrony2	52.162°N	104.464°E	419	09/19-10/05,1992	L4C+STS2
80	Suha-bator2	50.193°N	106.254°E	608	07/17-10/02,1992	L4C+Guralp
81	Suha-bator	50.242°N	106.240°E	750	06/15-06/17,1992	L22+STS2
82	Yoroo	49.738°N	106.202°E	682	06/16-07/17,1992	S13
83	Sharingol	49.288°N	106.412°E	974	06/17-10/02,1992	L4C
84	Hara	48.931°N	106.682°E	949	06/17-10/02,1992	S13+Guralp
85	Tunhe	48.383°N	106.783°E	1122	06/21-10/01,1992	L4C
86	Ulan-bator	47.921°N	106.954°E	1284	06/20-07/21,1992	S13
87	Bayan-suma	47.209°N	107.422°E	1320	07/09-09/26,1992	L22+Guralp
88	Sumber-suma	46.635°N	107.758°E	1265	07/10-09/26,1992	S13
89	Bayan-argalan	46.115°N	107.619°E	1477	07/10-09/25,1992	L4C
90	Endershil	45.262°N	108.260°E	1232	07/11-09/25,1992	L22+STS2
91	Yoroo2	49.747°N	106.188°E	629	07/17-10/02,1992	S13
92	Ulan-bator2	47.921°N	106.954°E	1284	07/21-09/28,1992	S13

TABLE 2: UCLA Baikal 1992 DAS Movement Chart

Station-Number	Duration Start	Duration End	DAS Number
00	230	276	119
01	179	229	119
02	177	203	373
03	175	275	376
04	174	275	395
05	173	274	099
06	172	274	369
07	170	273	378
08	184	200	345
09	169	199	363
10	166	273	347
11	165	260	359
12	163	260	367
	260	261	153
	261	266	359
13	203	275	373
14	199	273	363
15	231	276	342
16	263	273	367
80	199	276	147
81	167	168	239
82	168	199	152
83	169	276	361
84	169	276	339
85	173	275	388
86	172	203	346
87	191	270	374
88	192	270	231
89	192	269	154
90	193	269	341
91	199	276	152
92	203	272	346

Table 3

PERFORMANCE CHART ----- UCLA BAIKAL 1992 REFTEK STATIONS

Date	JUN	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	JUL	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21
JDay	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203
00																																									
01																	INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	.	.	.
02															INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	DIG
03													INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
04												INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
05											INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	.	.	W	W	W
06										INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
07								INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
08																						INS	W	.	.	.	.	.	.	.	.	.	.	.	.	.	.	W	W	.	.
09							INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	DIG				
10				INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
11			INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
12	INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
13																																									
14																																						INS	W	W	W
15																																									
16																																									
80																																					INS	W	W	W	W
81					INS	W	STL																																		
82						INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	.	.	.	.	.	.	DIG				
83							INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	W	W	W	W
84							INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	W	W	W	W
85											INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
86										INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG
87																													INS	W	W	W	W	W	W	W	W	W	W	W	W
88																														INS	W	W	W	W	W	W	W	W	W	W	W
89																														INS	W	W	W	W	W	W	W	W	W	W	W
90																															INS	W	W	W	W	W	W	W	W	W	W
91																																					INS	W	W	W	W
92																																									INS

INS->Installed; W->Working.data obtained; . -> Not working, no data obtained; DIG->Digged out; STL->Stolen; (blank)->Station not exist

Date	JUL	23	24	25	26	27	28	29	30	31	AUG	02	03	04	05	06	07	08	09	10
JDay	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
00																				
01	.	W	W	W	W	W	W	.	.	.	.	.	.	.	.	.	.	.	.	.
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03	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
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05	W	W	W	W	W	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
06	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
07	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
08	DIG																			
09																				
10	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
11	W	W	.	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
12	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	W	W	W	W
13	INS	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
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80	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
81																				
82																				
83	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
84	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
85	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
86																				
87	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
88	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
89	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
90	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
91	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
92	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W

Date	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
JDay	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244
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01	.	.	.	.	.	DIG															
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03	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
04	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
05	.	.	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
06	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
07	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
08																					
09																					
10	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
11	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
12	.	.	.	.	.	.	.	.	.	.	W	W	W	W	W	W	W	W	W	W	W
13	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
14	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
15								INS	W	W	W	W	W	W	W	W	W	W	W	W	W
16																					
80	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
81																					
82																					
83	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
84	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
85	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
86																					
87	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
88	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
89	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
90	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
91	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W
92	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W

Date	SEP	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	OCT	02	03	04	05	06	*****Statistics******				
JDay	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	TLD	WKD	LST	WGT	PCT
00	.	.	.	.	.	.	.	.	.	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG				48	28	20	0.4	58.
01																																					51	22	29	0.4	43.
02																																					27	24	3	0.2	89.
03	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	DIG						101	96	5	0.9	95.
04	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG						102	102	0	0.9	100.
05	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG							102	77	25	0.9	75.
06	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG							103	103	0	0.9	100.
07	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	.	DIG								104	96	8	0.9	92.
08																																					21	4	17	0.2	19.
09																																					31	29	2	0.3	94.
10	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	DIG								108	103	5	0.9	95.
11	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG																					96	95	1	0.8	99.
12	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	.	.	.	.	.	.	DIG		117	91	26	1.0	78.
13	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	DIG						72	54	18	0.6	75.
14	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	DIG								74	69	5	0.6	93.
15	.	.	.	.	.	.	.	.	.	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG				47	38	9	0.4	81.
16																			INS	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	DIG		17	11	6	0.1	65.
80	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG					78	78	0	0.7	100.
81																																					3	2	1	0.0	67.
82																																					32	19	13	0.3	59.
83	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	.	.	.	.	DIG					108	93	15	0.9	86.
84	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	DIG					108	95	13	0.9	88.
85	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	DIG						103	97	6	0.9	94.
86																																					32	32	0	0.3	100.
87	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG											80	80	0	0.7	100.
88	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG											79	79	0	0.7	100.
89	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG												78	78	0	0.7	100.
90	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG												77	77	0	0.7	100.
91	W	W	W	W	W	W	W	W	W	W	W	W	W	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	DIG					78	59	19	0.7	76.
92	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	DIG									70	70	0	0.6	100.

Total Station.day:2147; Total working Station.day:1901; Rate of Success: 88.54%

TABLE 4: UCLA Baikal 1992 Recording Parameters

Data Stream#	Sample Rate (SPS)	Record Length (Seconds)	Data Form (Bits)	Stations
01	10	1800	16	ALL
02	25	180	16	STS2
	50	180	16	Guralp; short period
03	1	1800	32	Guralp; STS2

TABLE 5: Event Statistics

Group	Mag(mb)	Delta(deg)	Depth(km)	Number	Comments
1	≥5.0	0-180	0-700	464	Medium & Strong events
2	≥5.5	0-180	0-700	113	Strong events
3	≥5.0	30-85	0-700	217	Tele-events with p as first arrivals
4	≥4.0	0-30	0-700	191	Significant regional & local events
5	≥5.0	0-180	100-700	81	Medium & strong deep events
6	≥5.0	85-180	0-700	193	Tele-events for SKS studies etc.

Time limits are from June 11, 1992, to October 5, 1992.

TABLE 6: UCLA Baikal 1992 Data Tape Information

Tape-Number	File Name	Duration Start End	Section	File Size (Mb)
UCLA92 tape01	01a	163-180	North	697
	01b	181-195	North	924
UCLA92 tape02	02a	196-205	North	545
	02b	206-215	North	693
UCLA92 tape03	03a	216-225	North	562
	03b	226-235	North	681
UCLA92 tape04	04a	236-245	North	698
	04b	246-255	North	818
UCLA92 tape05	05a	256-277	North	1218
UCLA92 tape06	06a	167-190	Mongolia	551
	06b	191-210	Mongolia	1106
UCLA92 tape07A	07a	211-225	Mongolia	1054
UCLA92 tape07B	07b	226-240	Mongolia	1101
UCLA92 tape08A	08a	241-255	Mongolia	1083
UCLA92 tape08B	08b	241-255&Logfiles	Mongolia	0000

Baikal 1992 Project UCLA Station Locations

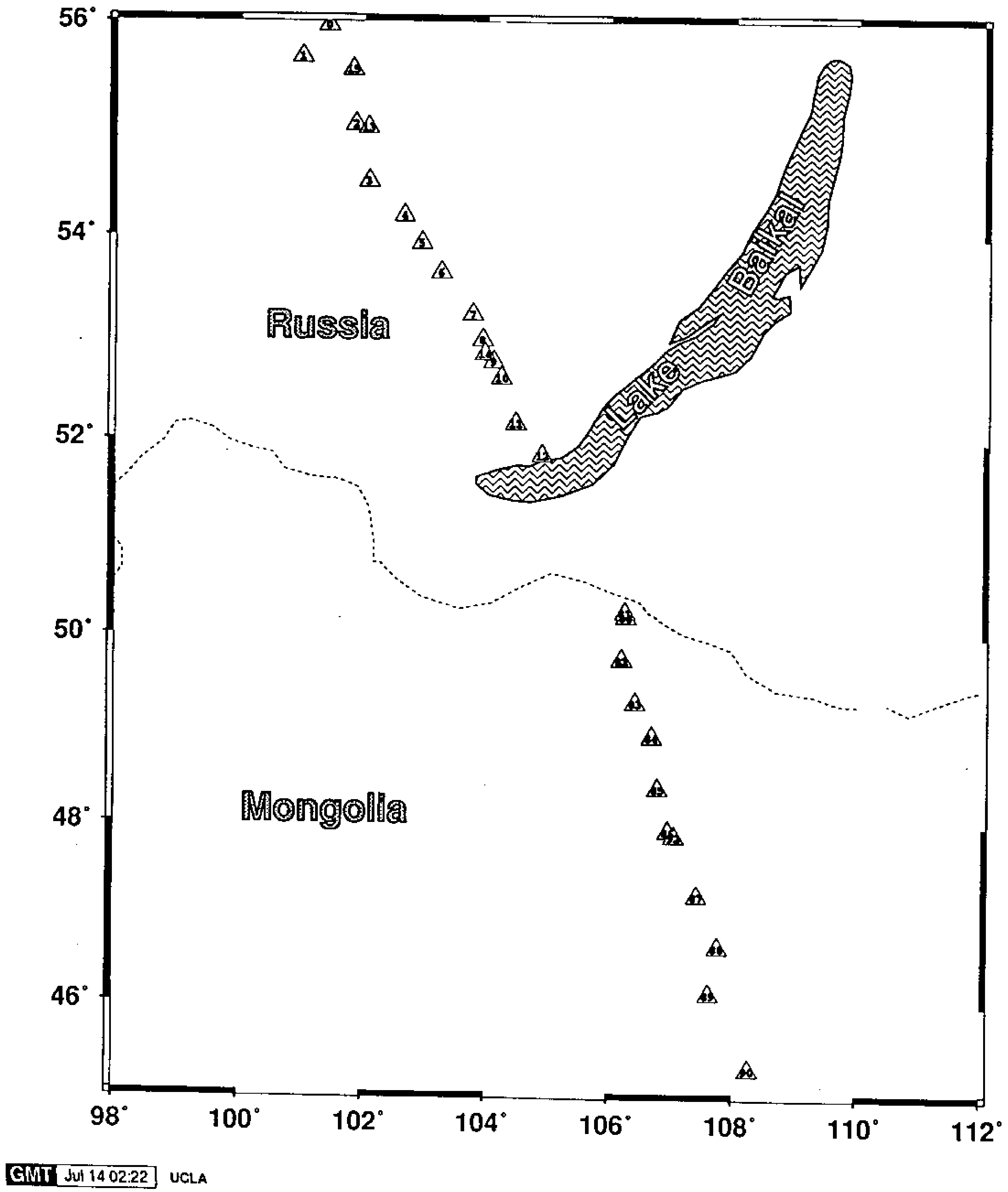


Fig. 1

Events recorded by Baikal 1992 array(Mag. > 5.0)

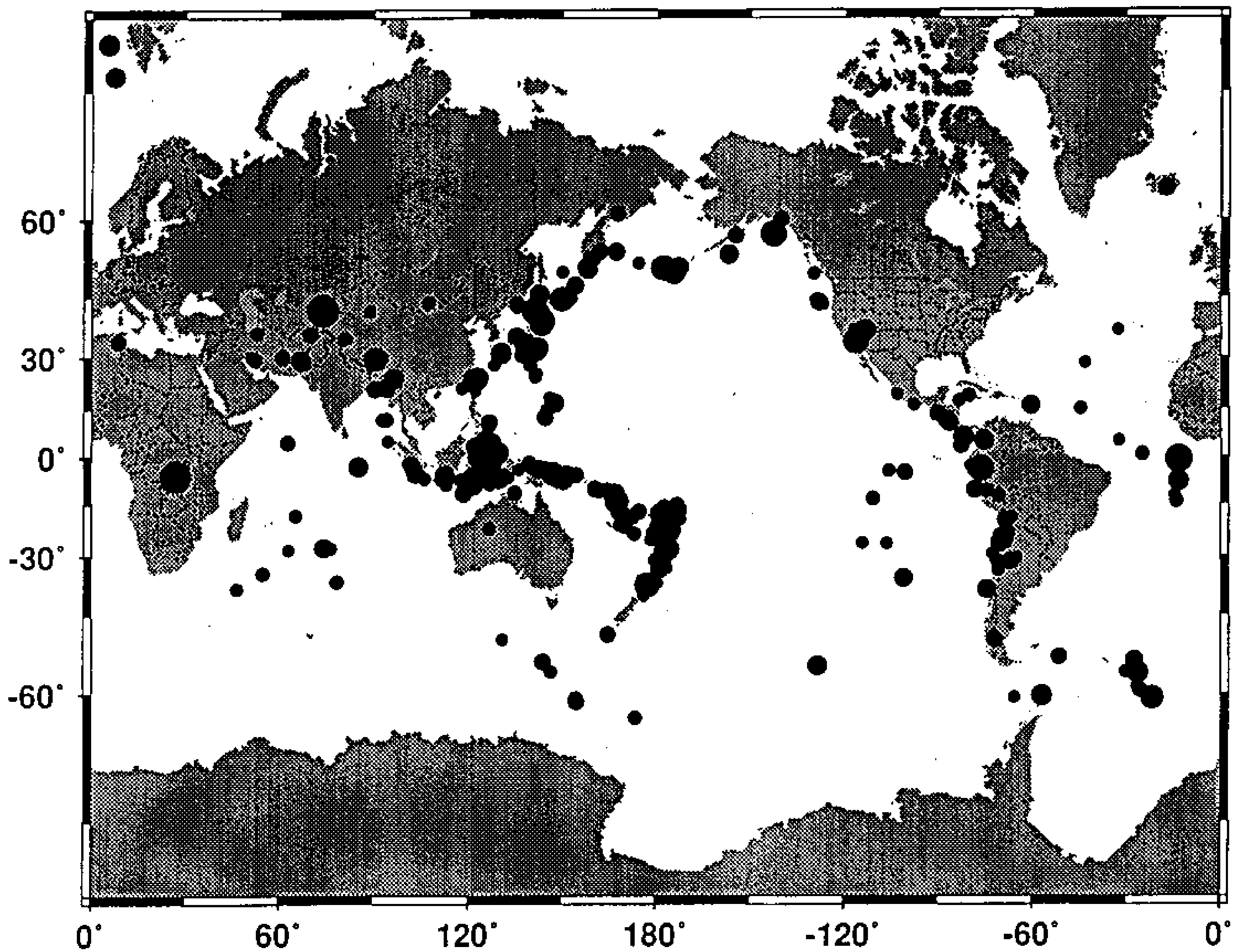


Fig. 2

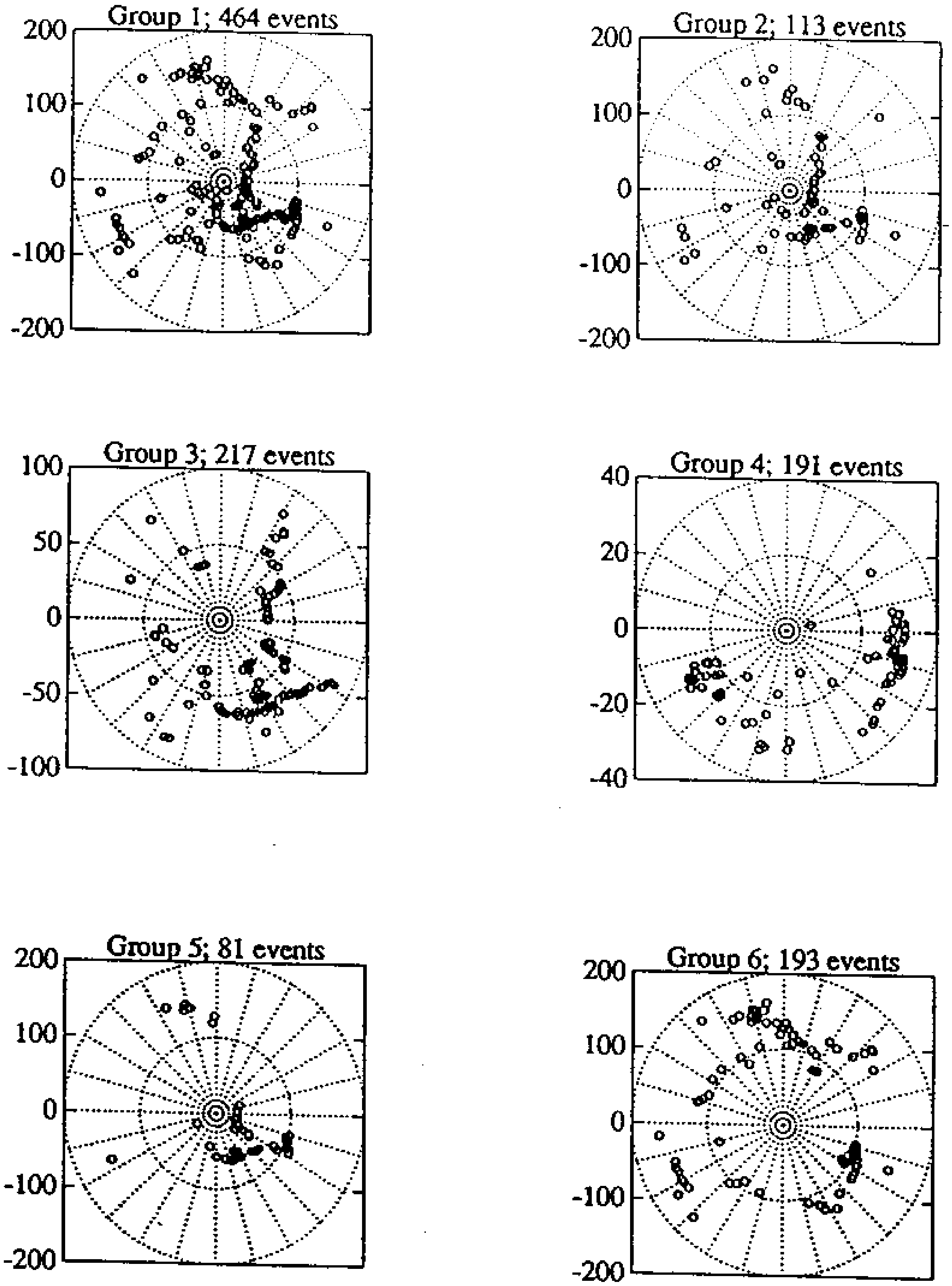

Group 1; 464 events
200
100
0
-100
-200
Group 2; 113 events
200
100
0
-100
-200
Group 3; 217 events
100
50
0
-50
-100
Group 4; 191 events
40
20
0
-20
-40
Group 5; 81 events
200
100
0
-100
-200
Group 6; 193 events
200
100
0
-100
-200

Fig.3.1–3.6

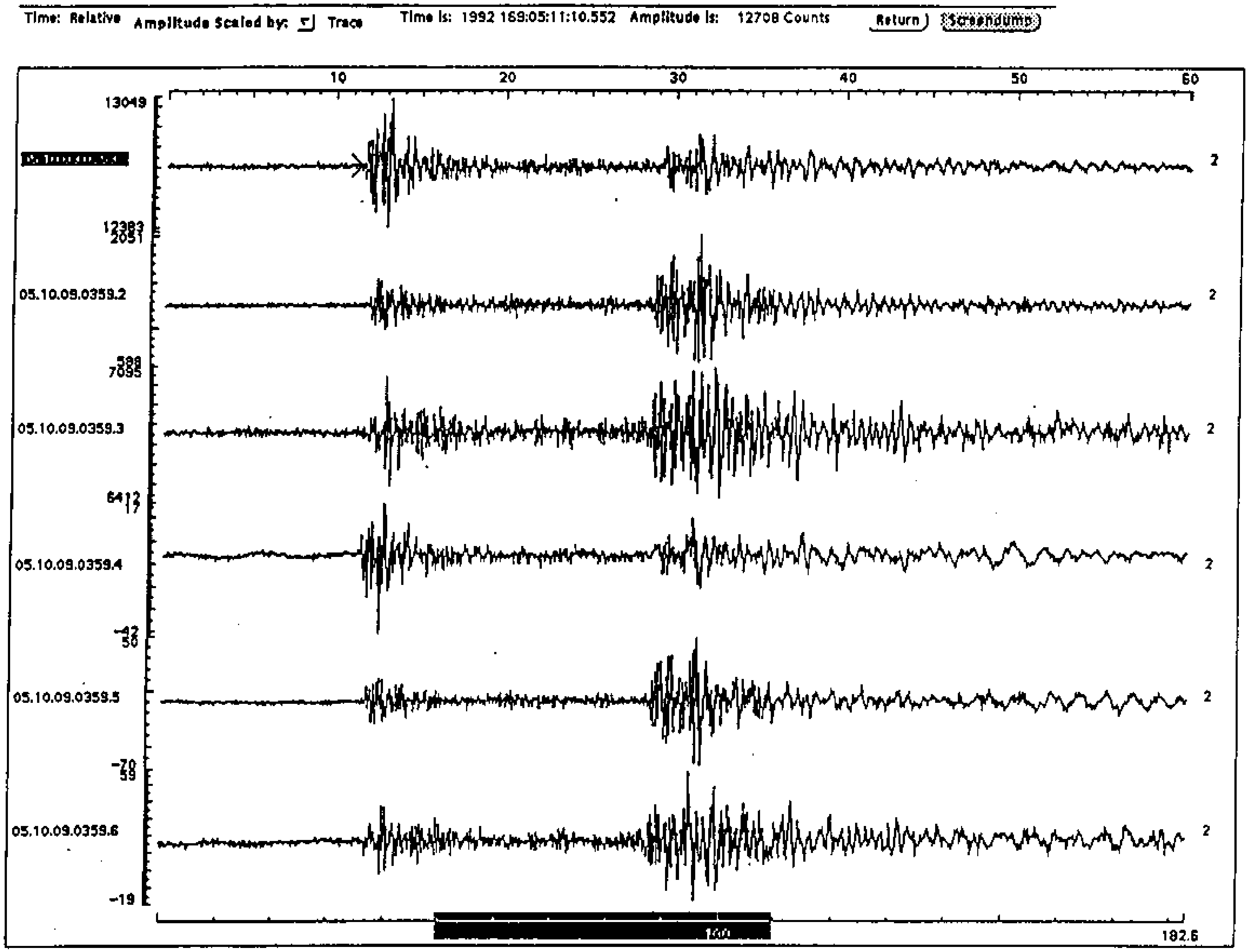

Time: Relative
Amplitude Scaled by: Trace
Time is: 1992 169:05:11:10.552
Amplitude is: 12708 Counts
Return
Screendump
10
20
30
40
50
60
13049
12383
2051
05.10.09.0359.2
588
7095
05.10.09.0359.3
6412
17
05.10.09.0359.4
-42
56
05.10.09.0359.5
-70
59
05.10.09.0359.6
-19
182.6
2

Fig.4.1a

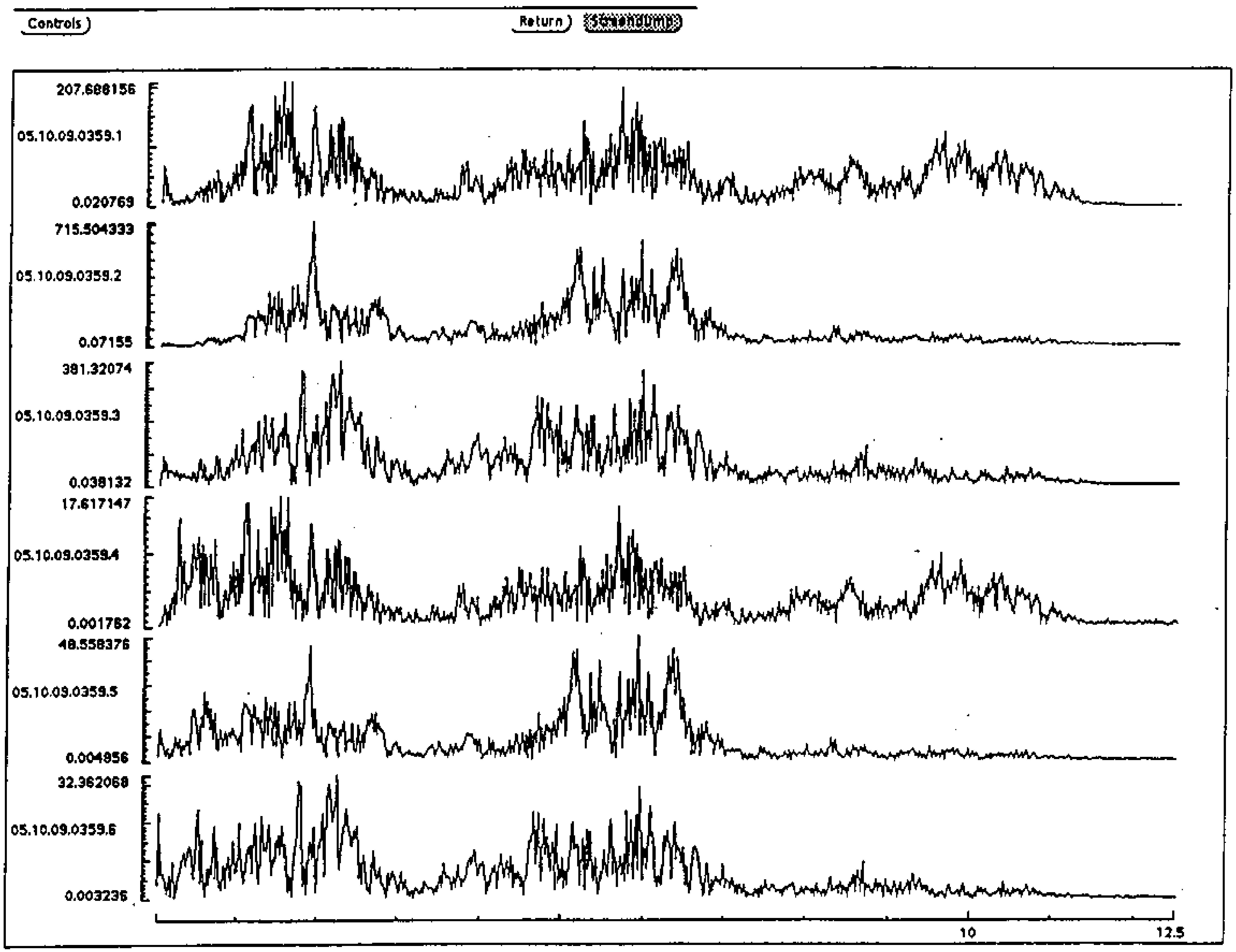

Controls
Return
207.688156
05.10.09.0359.1
0.020769
715.504333
05.10.09.0359.2
0.07155
381.32074
05.10.09.0359.3
0.038132
17.617147
05.10.09.0359.4
0.001762
48.558376
05.10.09.0359.5
0.004856
32.362068
05.10.09.0359.6
0.003236
10
12.5

Fig.4.1b

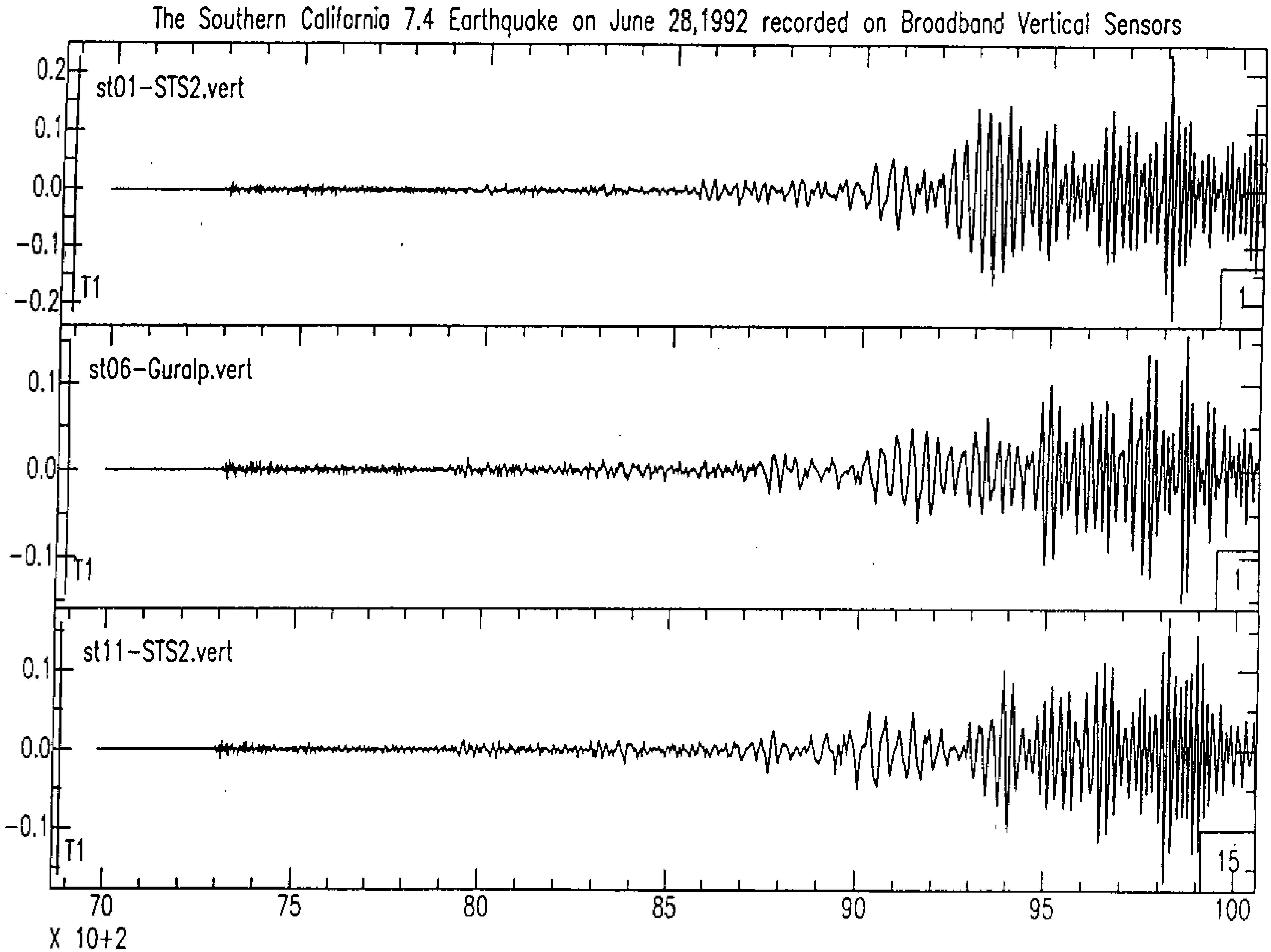

The Southern California 7.4 Earthquake on June 28,1992 recorded on Broadband Vertical Sensors
st01-STS2.vert
st06-Guralp.vert
st11-STS2.vert
T1
T1
T1
0.2
0.1
0.0
-0.1
-0.2
0.1
0.0
-0.1
0.1
0.0
-0.1
1
1
15
70
75
80
85
90
95
100
X 10+2

Fig4.2a

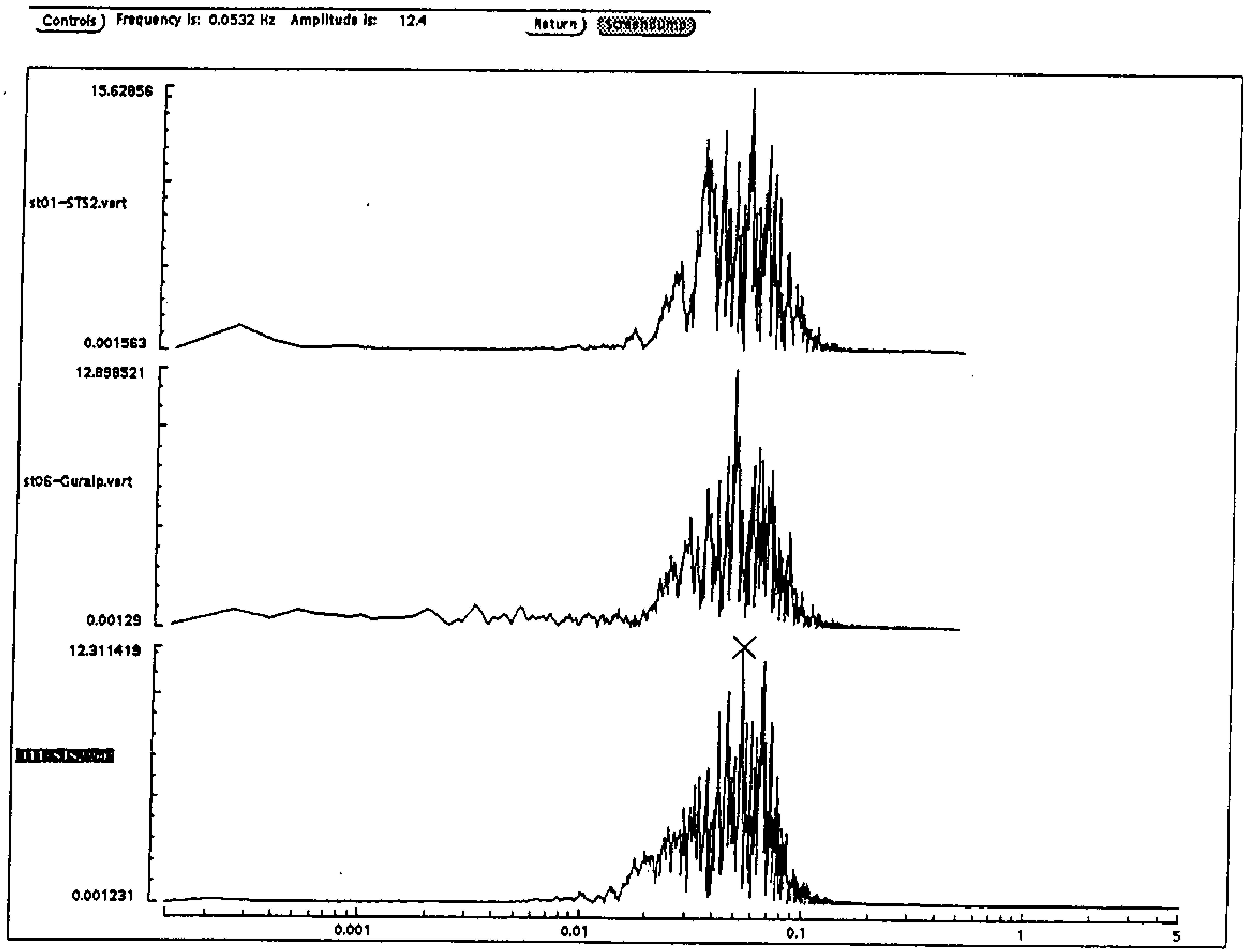

Controls
Frequency is: 0.0532 Hz Amplitude is: 12.4
Return
15.62856
st01-STS2.vert
0.001563
12.898521
st06-Guralp.vert
0.00129
12.311419
0.001231
0.001
0.01
0.1
1
5

Fig.4.2b

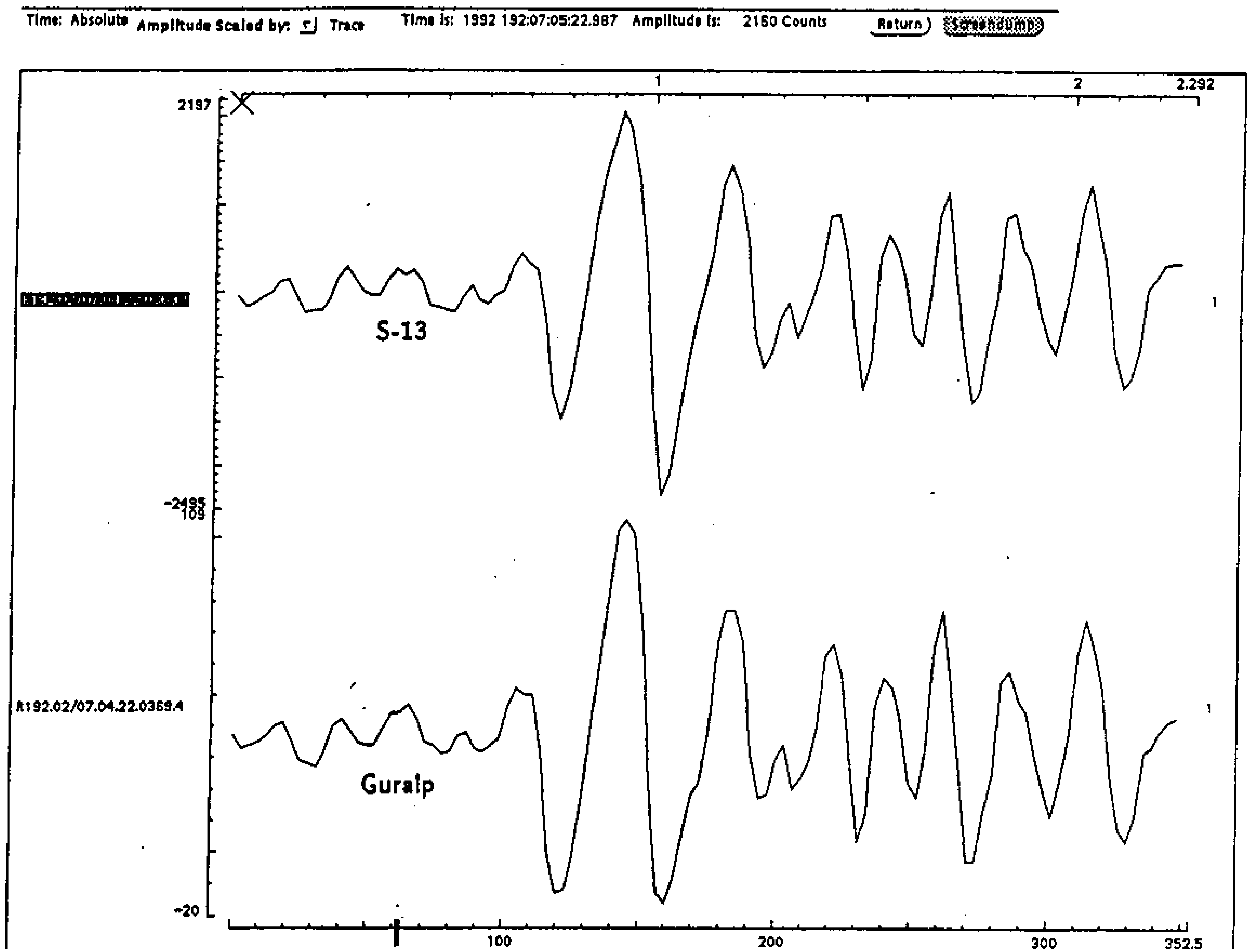

Time: Absolute Amplitude Scaled by: Trace
Time is: 1992 192:07:05:22.987 Amplitude is: 2160 Counts
Return
Screendump
2197
-2495
109
-20
R192.02/07.04.22.0369.4
S-13
Guralp
1
2
2.292
100
200
300
352.5

Fig.4.3

eq92-193-12-53; st 2,3,4,6,7,9,10,11,12,83,84,85,86,88

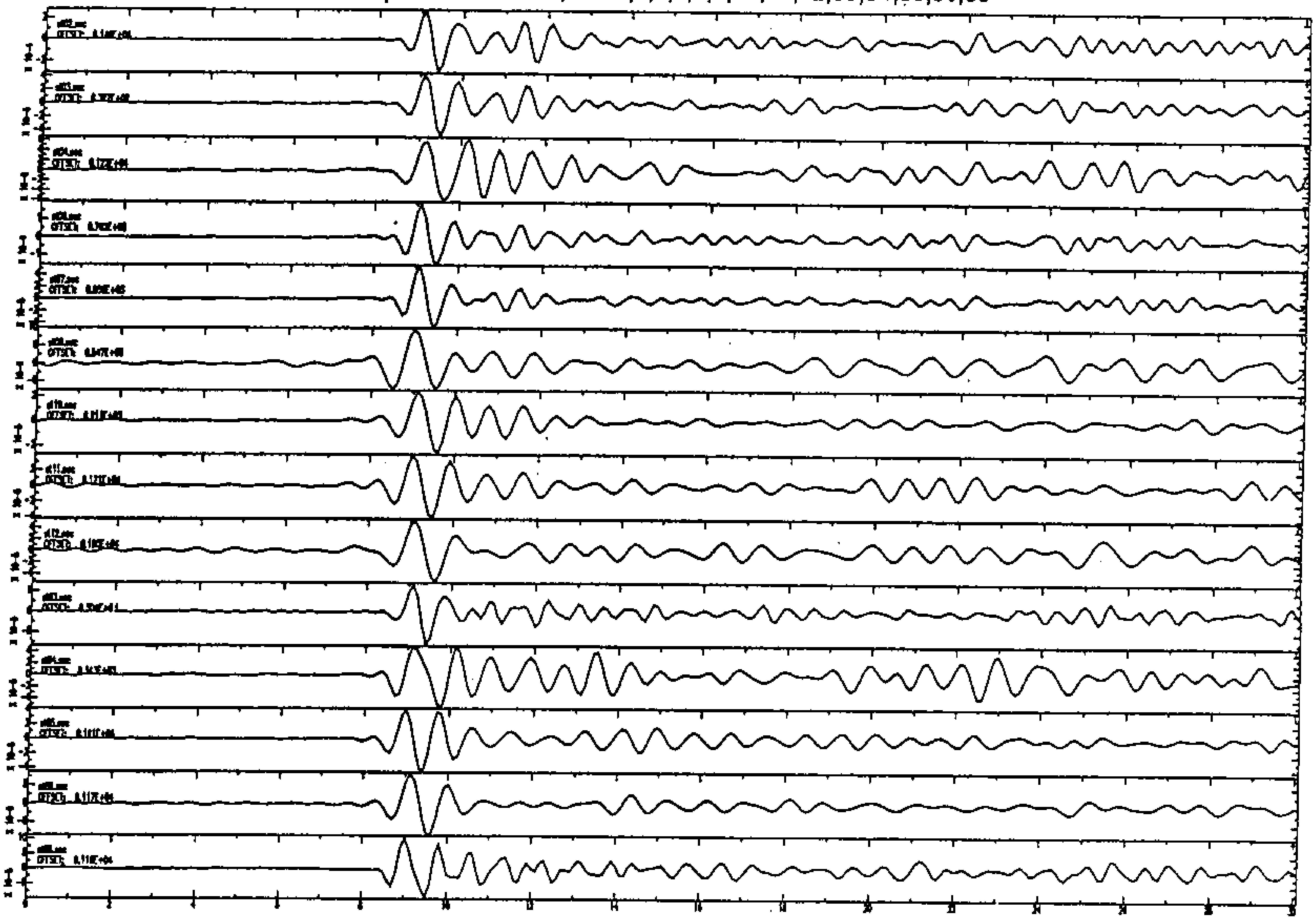
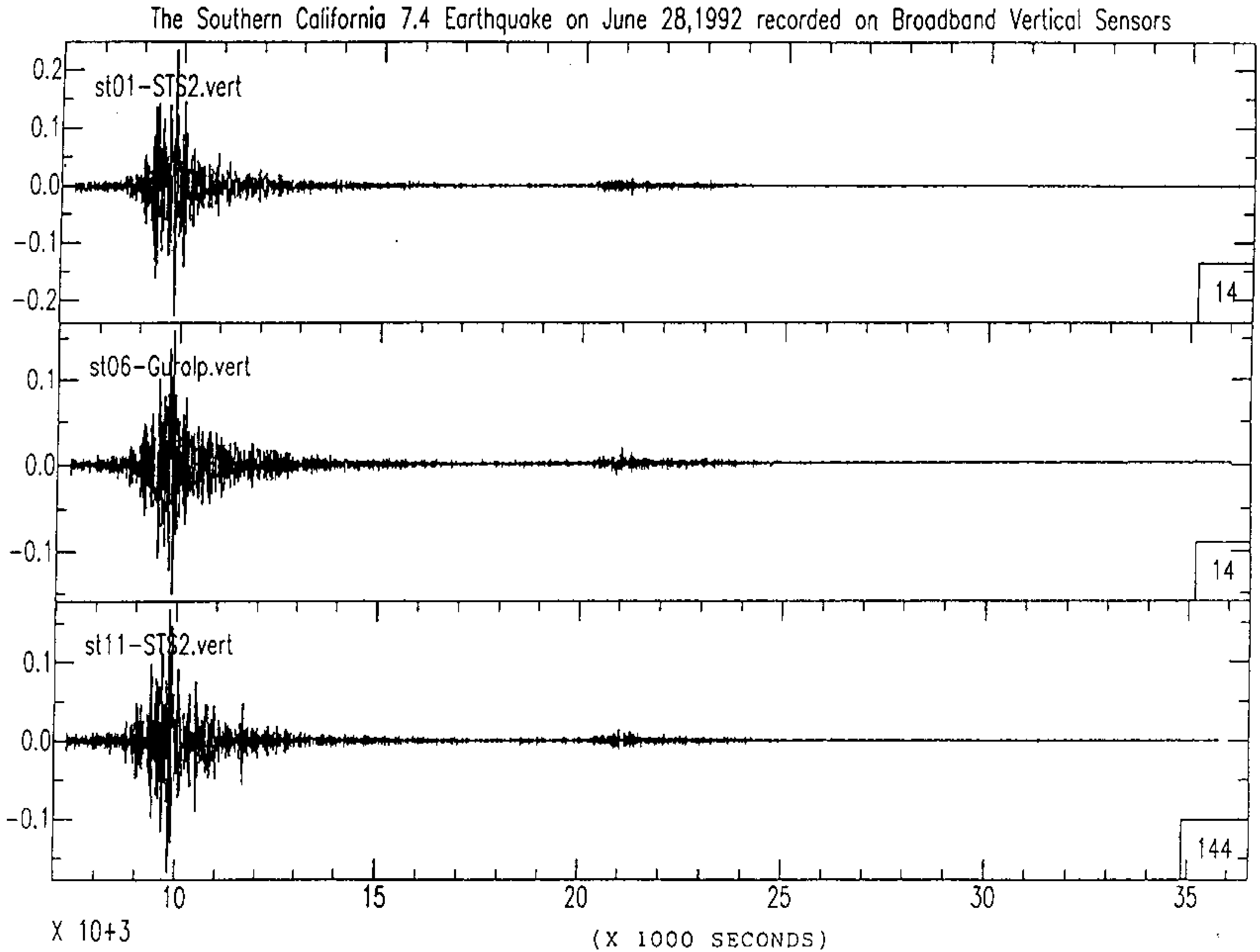


Fig.5.1



The Southern California 7.4 Earthquake on June 28,1992 recorded on Broadband Vertical Sensors
st01-STS2.vert
st06-Guralp.vert
st11-STS2.vert
0.2
0.1
0.0
-0.1
-0.2
14
14
144
10
15
20
25
30
35
X 10+3
(X 1000 SECONDS)

Fig.5.2

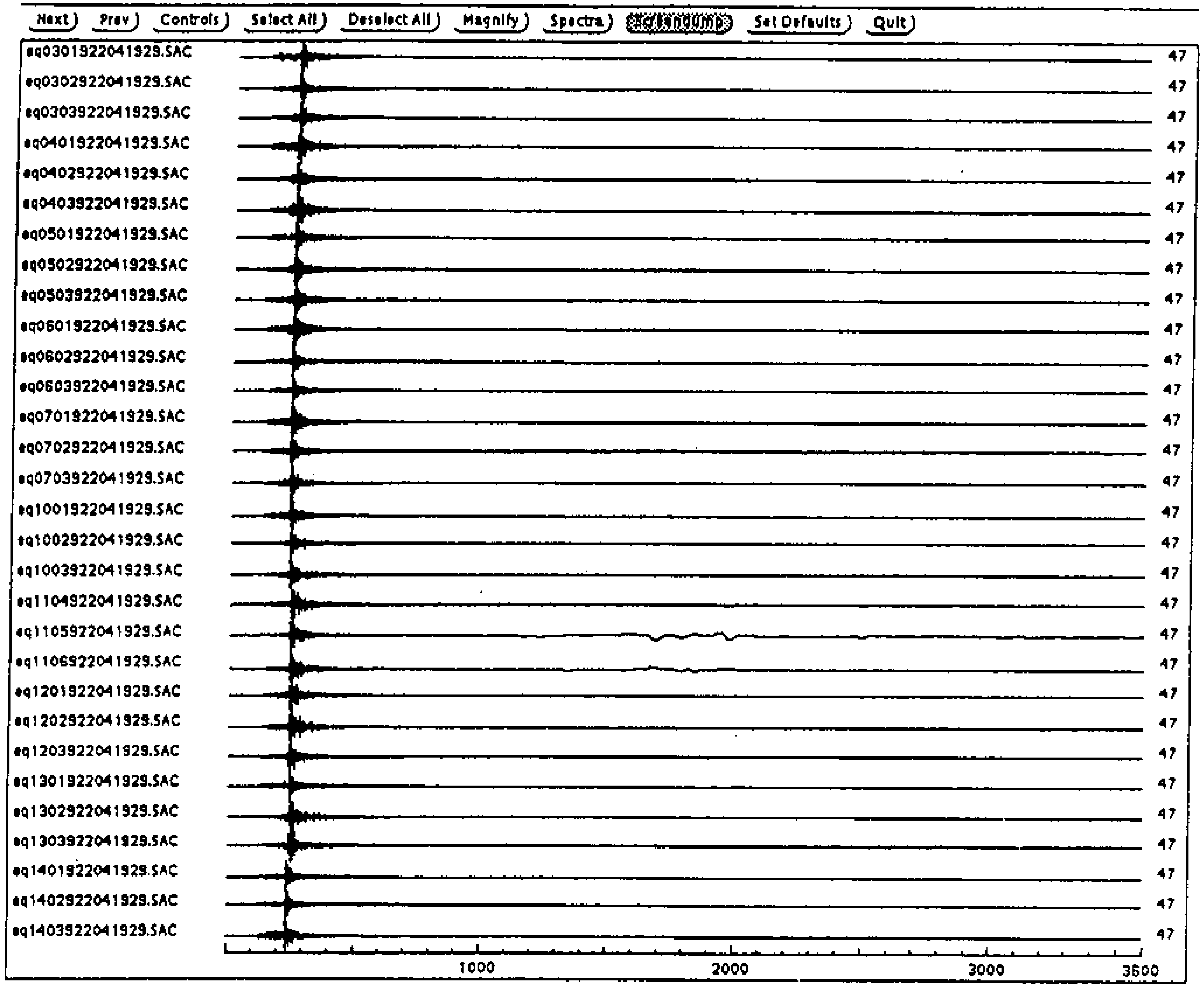

Next
Prev
Controls
Select All
Deselect All
Magnify
Spectra
Set Defaults
Quit
eq0301922041929.SAC
eq0302922041929.SAC
eq0303922041929.SAC
eq0401922041929.SAC
eq0402922041929.SAC
eq0403922041929.SAC
eq0501922041929.SAC
eq0502922041929.SAC
eq0503922041929.SAC
eq0601922041929.SAC
eq0602922041929.SAC
eq0603922041929.SAC
eq0701922041929.SAC
eq0702922041929.SAC
eq0703922041929.SAC
eq1001922041929.SAC
eq1002922041929.SAC
eq1003922041929.SAC
eq1104922041929.SAC
eq1105922041929.SAC
eq1106922041929.SAC
eq1201922041929.SAC
eq1202922041929.SAC
eq1203922041929.SAC
eq1301922041929.SAC
eq1302922041929.SAC
eq1303922041929.SAC
eq1401922041929.SAC
eq1402922041929.SAC
eq1403922041929.SAC
47
1000
2000
3000
3500

Fig.6

Seismograms of Mining Explosion 262-06-05-00.243

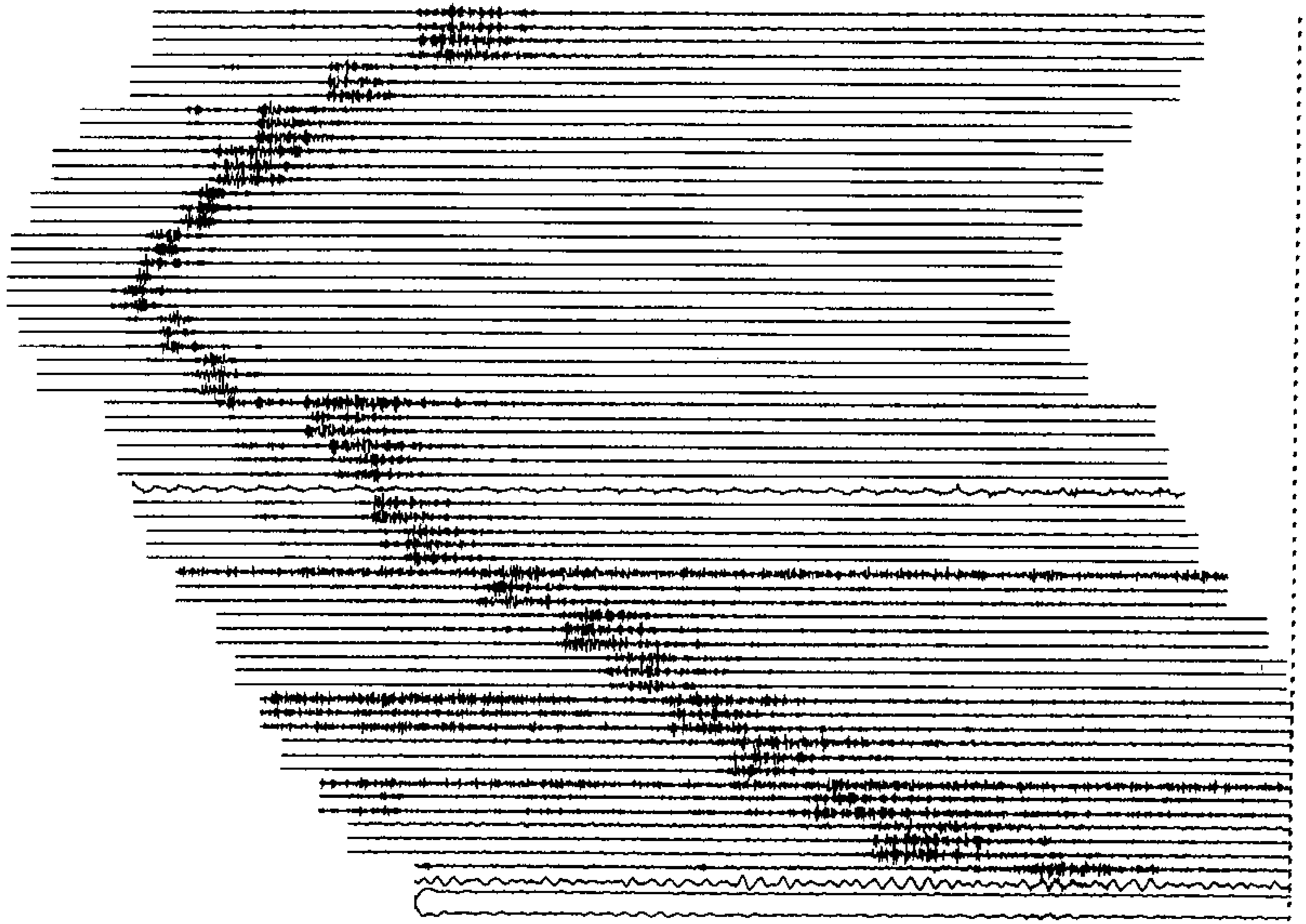


Fig. 7