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DATA REPORT FOR THE 1993 LOS ANGELES REGION SEISMIC EXPERIMENT (LARSE93), SOUTHERN CALIFORNIA: A PASSIVE STUDY FROM SEAL BEACH NORTHEASTWARD THROUGH THE MOJAVE DESERT

By

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ABSTRACT

This report contains a description of the first part of the Los Angeles Region Seismic Experiment (LARSE). To date, LARSE has consisted of two experiments: passive, which took place in fall, 1993 (LARSE93), and active, which took place in fall, 1994 (LARSE94). The goal of the 1993 experiment was to collect waveform data from local and distant earthquakes to obtain three-dimensional images of lower crust and upper mantle structure in Southern California, particularly under the San Gabriel Mountains and across the San Andreas fault. During LARSE93, approximately 88 stations were deployed in a 175-km-long, linear array across the Los Angeles basin, San Gabriel Mountains, and Mojave Desert northeast of Los Angeles by scientists from the U.S. Geological Survey, University of California at Los Angeles, California Institute of Technology, and University of Southern California. Reftek recorders were deployed one km apart through the San Gabriel Mountains, and two km apart in the Mojave Desert. This data set has since been complemented by the results of LARSE94 comprising land refraction and deep-crustal seismic reflection profiles from offshore airgun and onshore explosion sources. These additional data sets will be useful in distinguishing crustal structures from adjacent upper mantle structures. During the four weeks of continuous recording, over 150 teleseismic and over 450 local ($M_L \geq 2.0$) events were recorded at each site. Both teleseismic and local sources provided a wide range of raypath azimuths. The teleseismic events include a number of earthquakes with epicenters in the Aleutian Island, Kamchatka, Kuril Island, mid-Atlantic Ridge, Solomon Island, Japan, Fiji Island, Peru, and Chile regions. The local events include aftershocks of recent Southern California earthquakes. The final products of data processing are 1) half-hour files containing the continuous waveform data recorded at each station for each day of the experiment, 2) 150-second time-windowed waveform segments containing local, regional, and teleseismic event arrivals, and 3) one-hour time-windowed waveform segments containing regional and teleseismic event arrivals. Array instrumentation, recorded events, and data processing will be described in this report.

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INTRODUCTION

Crustal and upper mantle structure under Southern California has been investigated by a variety of techniques including P-wave travel-time tomography, surface wave analysis, and seismic reflection lines (e.g., Hadley and Kanamori, 1977; Hearn and Clayton, 1986ab; Humphreys and Clayton, 1990; Li *et al.*, 1992ab; Magistrale *et al.*, 1992; Sung and Jackson, 1992; Zhao and Kanamori, 1992; Zhou, 1994; Zhao *et al.*, 1996). The Southern California Seismic Network (SCSN) now comprises 300 stations with an average spacing of 20-30 km. In order to study in detail Moho depth, anisotropy, and fault structure at depth, much smaller station spacing is required. This was achieved in the 1993 phase of the Los Angeles Region Seismic Experiment (LARSE93). The travel times provided by LARSE93 data should improve the resolution of Los Angeles basin and Southern California tomographic models. Variations in Moho depth across the Los Angeles basin, San Gabriel Mountains, and Mojave Desert have important implications for velocity structure, depth of seismicity, as well as tectonic evolution and present tectonic setting of Southern California. Seismic anisotropy in Southern California also has a bearing on the present tectonic setting and upper mantle structure (Savage and Silver, 1993; Liu *et al.*, 1995). Changes in anisotropy characteristics between basin and mountain stations, or across the San Andreas fault, provide an opportunity to study the shear strain field related to mantle flow and plate motion variations across Southern California. In addition, the structure of the San Andreas fault is not well understood at depth. Data collected during LARSE93 have the potential of elucidating fault structure in the lower crust and upper mantle.

The seismograms collected during the passive phase of LARSE are complemented by the acquisition of deep-crustal multichannel seismic-reflection and refraction profiles using onshore and offshore sensors, and airgun and explosion sources (LARSE94, active phase; Brocher *et al.*, 1995; ten Brink, *et al.*, 1996; Okaya *et al.*, 1996ab; Murphy *et al.*, 1996). The reflection and refraction data are especially useful in resolving upper crustal structure in order to better understand and constrain lower crustal and mantle structures.

LARSE93 was a joint effort involving scientists from the University of California at Los Angeles (UCLA), the U.S. Geological Survey (USGS), the California Institute of Technology (Caltech), and the University of Southern California (USC). It took place between November 11, 1993 and December 16, 1993 and involved the installation and maintenance of approximately 88 digital seismometers along a southwest-northeast array in Southern California. The stations were deployed in a 175-km-long, linear array across the Los Angeles basin, San Gabriel Mountains, and Mojave Desert. For this survey, energy sources were local, regional, and teleseismic earthquakes. The seismometers were placed an average of 1 or 2 km apart along the part of the line from Azusa, in the southern foothills of the San Gabriel Mountains, to the northeastern Mojave Desert (Fig. 1; Table 1). Four stations were placed in the Los Angeles basin (two near Seal Beach and two near Whittier); the signals recorded at these stations contain relatively high noise levels. The denser part of the array was located in the San Gabriel Mountains with 1 km spacing; the sparser part, in the Mojave Desert, had 2 km spacing. A few stations were added to the array during the course of the experiment and, except for the first few and last few days of the experiment, most stations recorded data continuously during the four weeks. One station (#331) was located in the San Andreas fault.

ARRAY INSTRUMENTATION

The array instruments consisted of one-component and three-component sensors, and the data recording units were Reftek Data Acquisition Systems (DAS's) with 16-bit and 32-bit digitizers (Table 2) which ran Reftek CPU Versions 2.45, 2.53, 2.53H, and 2.53J. The DAS's recorded either 25 or 50 sps, depending on data storage space limitations. They were supplied by the Incorporated Research Institutes for Seismology - Program for Array Seismic Studies of the Crust and Lithosphere (IRIS/PASSCAL). The sensor types included Mark Products L4C3D 1Hz (3-component), L4C1D 2Hz (1-component), L4C3D 2Hz (3-component), and L22 2Hz (3-component), and the data were collected by exchanging recorders with internal disks or by copying internal disks to tape (see Tables 2 and 3 for instrument configurations). Each instrument recorded data in record lengths of 30 minutes and each 30-minute interval was automatically written to the internal or external disks. The sensors were borrowed from the collections of UCLA, Los Alamos National Lab, the USGS, the IRIS/PASSCAL instrument facility at the Lamont-Doherty Earth Observatory, the Southern California Earthquake Center (SCEC), and USC.

DAS's with external hard disks were either swapped each week or the data were copied to tapes in the field using field Exabyte and DAT tape drives. All instruments were powered by car batteries (provided by the USGS, IRIS/PASSCAL, and Princeton University) which had to be changed each week. The sensors were interspersed so that no segment of the array would have only one type; however, all stations near the San Andreas fault were three-component.

Every station was visited approximately once a week; the visit times correspond to the beginning time of DAS recording for each week given in Table 3. Events related to timing receivers, power, temperature, and data acquisition were automatically recorded in the log files for each DAS. Operators manually recorded the information requested on the forms shown in Fig. 2. Appendix A contains a summary of operator notes taken during the station visits which recorded any unusual occurrences that may be relevant to data analysis, not given by the log files (which were stored together with the data).

The timing of each instrument was controlled by GPS receivers (Reftek Version 2.2), Omega receivers, or by the Reftek internal clocks. GPS receivers were connected at each visit to calibrate the internal Reftek clock for some stations. Others had continuously connected GPS or Omega receivers (Table 3). A few stations did not receive external time calibration pulses or hookups and may not be reliable in timing as a result. Stations calibrated with Omega receivers contain an uncorrected time error of exactly 1 s due to incorrect leap second firmware input. In addition, a few stations have a 10-second error due to operator input of incorrect time pulses. The log files stored with the data contain detailed information about the type of timing device used with each instrument and the exact times at which calibrations were performed. Corrections made for other timing errors will be described in the section on data processing. The timing receivers were borrowed from IRIS/PASSCAL at Lamont.

DATA PROCESSING

Initial data processing involved several steps, the final product of which was half-hour files containing the continuous waveform data for each station. The initial, uncompressed data set was recorded on approximately 150 Exabyte and DAT tapes, and comprised 87 Gbytes total, with the data from some stations recorded in Reftek internal format and from others in SEG-Y format. Data were converted to SEG-Y format (Table 4) at the IRIS Data Management Center (DMC) facilities in Seattle, WA, and stored on the IRIS DMC Metrum RSS-600 mass storage system.

Sorting earthquakes out of the data was accomplished in several steps. First, the trace start time in the SEG-Y headers of the continuous waveform half-hour files was changed using information from the log files recorded at each station, thereby removing clock drifts (Fig. 3). Next, processed waveforms were windowed into 150-second (local, regional, and teleseismic) and one-hour (regional and teleseismic) segments containing arrivals from each event that was recorded during the experiment. The final products of data processing are 1) half-hour files containing the continuous waveform data recorded at each station for each day of the experiment, 2) 150-second time-windowed waveform segments containing the local, regional, and teleseismic event arrivals, and 3) one-hour time-windowed waveform segments containing the regional and teleseismic event arrivals. The data can be obtained from the IRIS DMC.

Almost every station has a log file associated with it and these are included in the final data product in storage. Log files were recorded for each week (see Table 3) and the log file filename corresponds to the DAS number of the station for that week.

TIMING CORRECTIONS

The log files had to be edited in order to be used properly by the PASSCAL program, *refrate*, in order to make the appropriate timing corrections. Because every instrument had relatively old Reftek firmware, the required timing corrections were written incorrectly to the log files. *Refrate* reads the log files and pairs statements regarding timing events, such as 'unlocked-phase error' and 'phase error-DSP clock set.' ('Unlocked-phase error' defines the time interval between the last time the Reftek clock was unlocked or not synchronized to an external transmitter, and the report of the phase difference between the signal from the external clock and the Reftek's internal clock after the internal clock was synchronized to an external transmitter. 'Phase error-DSP clock set' defines the time interval between the report of the phase difference after locking, and the resetting of the digital signal processing (DSP) chip clock when the phase error between external and internal clocks exceeds limits of -5 and +11 milliseconds.) These event pairs formed intervals in which time corrections were interpolated and used by *clockcor* to correct the absolute start times in the header of each event Some corrections were simple and straightforward; however, we will now address what was done for the more problematic cases.

In many cases, the log files had to be edited by hand to report correct event pairs in order to make the correct time change to the header. All of the log files have names of the form I.** where ** is the DAS number of the Reftek at the sites. Specific lines in the log files containing 'phase error' or 'DSP clock set' event reports should have contained all essential timing correction information. Normally, the corrections contain a seconds and a milliseconds portion of time offset. However, for almost all of our cases, the milliseconds portion was not recorded in the log file. Moreover, if the offset was positive, a whole second was erroneously added. These errors were corrected by manually editing the log files so that they reported the correct phase error. The corrected phase errors were then used by *refrate* and *clockcor* to correct the start time in the event headers, as before. The modified and original log files have been stored together with the data set.

There still remain some problems with the absolute timing in the seismograms which have not been modified but should be easy to observe in the data. The one-second (leap second) and 10-second (time pulse) errors were not removed during the data processing from the stations with Omega timing receivers. See Table 1 for the stations where these timing errors can be expected.

DATA AND EVENTS RECORDED

Most of the data were collected from November 13, 1993 to December 11, 1993. During the four weeks of continuous recording, stations recorded signals from several hundred teleseismic, regional, and local events. The Preliminary Determination of Epicenters (PDE) catalog produced by the USGS National Earthquake Information Center (NEIC) contains information for the approximately 150 teleseismic events that occurred during LARSE93 (Fig. 4;

Table 5). The regional and teleseismic events include the December 4, 1993 aftershock (M_w=5.4) in Klamath Falls, Oregon as well as a number of intermediate magnitude earthquakes with epicenters in the Aleutian Island, Kamchatka, Kuril Island, mid-Atlantic Ridge, Solomon Island, Japan, Fiji Island, Peru, and Chile regions. According to catalog data supplied by the Southern California Earthquake Center Data Center (SCEC_DC), approximately 450 local events with $M_L \geq 2.0$ occurred during the same time window (Fig. 5; Table 6). The local events include aftershocks of recent Southern California earthquakes.

The sensors recorded velocity as voltage. Since the sensors were different, the instrument responses were also different. The software packages (e.g., SAC routines produced by PASSCAL) which translate the data into ground velocity require the input of three parameters that define velocity sensitivity: the free period of the sensor, the observed generator constant, and the observed damping ratio (Rodgers *et al.*, 1995). The values for these parameters were obtained by Aaron Martin at the Institute for Crustal Studies at the University of California at Santa Barbara, by calibrating each sensor after use in LARSE93. The resulting free period, generator constant, and damping ratio values for each sensor component are given in Table 7 (Table 7a: Vertical; 7b: North-South; 7c: East-West).

In general, stations in the San Gabriel Mountains and Mojave Desert display higher signal-to-noise ratios than stations in the Los Angeles basin (which includes the San Gabriel Valley). For most teleseismic events, the initial impulsive arrival is the direct P wave. Because all stations recorded the vertical component, the initial P wave is often the best recorded phase. Ten high-quality teleseismic record-section profiles are shown in Fig. 6. These plots contain the time-corrected, vertical-component velocity signals for events which occurred in the northwest Pacific, south Pacific, South America, and mid-Atlantic. Seismograms which contain high levels of noise and severe, uncorrected timing problems were removed. The largest gaps in these plots correspond to regions in the Los Angeles basin where no stations were deployed. The seismograms have been bandpass filtered for frequencies between 0.1 and 1.0 Hz. In some teleseismic sections, the initial P wave is followed by the larger-amplitude pP and sP phases. The quiet mountain stations show subtle variations in crustal phase amplitudes. The noiser Los Angeles basin stations are usually too noisy to obtain arrival times.

Profiles of time-corrected, vertical-component record sections from local and regional events are shown in Fig. 7. These figures show velocity records for events which occurred in Southern California less than 200 km from the array. They include events which occurred in the Mojave Desert, Los Angeles basin, and the San Gabriel and San Bernardino Mountains. As before, seismograms which contain high levels of noise and severe timing problems were removed from these figures and the largest gaps in these plots correspond to regions in the Los Angeles basin. The seismograms have been bandpass filtered for frequencies between 0.1 and 10.0 Hz. The major arrivals are the crustal phases Pg, Sg, and other crustal reverberations. Data, such as those shown in Figs. 6 and 7, were corrected for timing errors wherever possible.

P-wave travel-time residual curves for stations along the array have been determined for 17 teleseismic events. These events fell into several distinct back-azimuth ranges with distances between sources and receivers ranging from 30°-90°. P-wave travel-time residuals were determined for each station by subtracting one-dimensional Earth model IASP91 travel times (Kennett and Engdahl, 1991). Within each back-azimuth range, the resulting demeaned travel-time residual curves display consistent patterns. Residuals increase from negative values in the northernmost San Gabriel Valley and southern San Gabriel Mountain foothills to positive values across most of the central and northern San Gabriel Mountains, including the San Andreas fault

(Fig. 8). The most drastic difference in residuals, occurring for raypaths from the northwest (Kamchatka, Unimak Island, and Alaska), is about one second. The residual curves display only small variations for different back azimuths and incidence angles, but show almost no spatial (parallax) shift of residual peaks and troughs, indicating that the source of the large residual difference is most likely shallow. The patterns of residuals suggest that a sharp gradient in shallow velocities is required between the Los Angeles basin and the San Gabriel Mountains over a horizontal distance of less than 50 km. A relatively shallow, low-velocity anomaly is required to explain the larger San Gabriel Mountain station residuals.

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Appendix A

This is a summary of notes taken by field volunteers during their weekly station visits. This summary only contains accounts of unusual occurrences at the station which may not be recorded in the log file for that week. It is organized sequentially by station number, then chronologically by station visit date. Time is given as GMT julian day:hour:minute.

Station No.	Time (day:hr:min)	Comments
244	337:18:33	Only 73 events recorded at DAS STATUS check.
216	330:17:06	Seems DAS is not programmed to use Omega clock.
215	316:11:05	Did monitor after START ACQ - seems OK.
203	323:19:06	Dead battery (3.6 volts).
203	330:18:27	Channel 2 looks out of level; ~ 3 cnts of bias (?)
002	330:19:32	Seismometer not level?
004	316:22:57	Background noise level only 5-10 counts. Deep knee-bend produced 80-100 counts. Tried swapping sensors (L22), swapped DAS but still get low amplitudes.
004	330:20:49	On attempt to MONITOR DAS said ACQ was on. Did STOP ACQ and continued with installation.
004	337:20:08	DOA. Hooked up to Reftek power supply and proceeded with step 4.
007	323:22:45	First 5 minutes on this recorder were erroneously recorded at site #008.
007	330:22:28	Site had been uncovered and clock moved but nothing missing and site still operating. Decided to remove site.
006A	328:23:16	After 5 minutes no UTC LOCK message on DAS STATE. Installed 0.9 miles from station # 006 (301) near mile marker #20.40.
010	317:19:24	Changed gain 32 -> 512.
013	330:20:47	Communication failure due to broken cord. Disconnected from battery, then reconnected to battery. Bad hand terminal cord.
013	337:18:16	Stopped because incorrect parameter. Started again.
014	317:16:42	Gain 32 -> 512.
014	323:19:53	Old DAS picked up at Forest Service Station. Vandalized. CHP picked up.
015	331:02:52	Battery cable knocked off. We reconnected to get DAS status.
016	337:21:59	System on when deployed. Stopped then restarted.

018	324:18:58	Animal signs. Paw print at station. Station not disturbed.
018	337:20:55	Animal tracks around site.
018	346	Hand-held terminal broken.
019	323:22:00	Using 2 different clocks this station always read year=1988. GPS has wrong year.
019	337:20:33	DAS on when deployed. Stopped then restarted.
020	317:01:08	Gain change 32 -> 512.
022	331:00:16	Channel 2 dead.
023	316:23:32	Gain change to 512. Bad GPS.
023	324:01:46	Communication failure.
023	330:23:31	System on at deployment. Turned off and reset.
024	316:22:43	Gain change to 512.
024	330:22:52	System on when put out. Turned off. System reset. Had to relevel jug.
025	330:22:49	DAS STATUS communication failure. Switched battery. Communication failure. Tried again.
028	323:20:59	For the sensor: connector cable is in the air and level bubble is visible (noisy?).
028	330:22:11	Signs of animal intrusion. No damage to instrument.
028	337:21:21	Water inside garbage bag. Changed battery to stop acquisition.
028	337:21:44	Not proper box #. Should be 6024. 6004 was programmed for 029. Retrieved parameters from 6022 and used for 6004.
030	323:20:13	Accidentally unplugged hand terminal during STOP ACQ request. Resulting communication failures. Can't check DAS STATUS to see if ACQ STOP OFF. DAS problem with timing.
030	330:21:30	GPS board in DAS is bad.
030	337:20:46	Battery dead. Had to change battery.
032	323:18:42	Sensor partially uncovered. Instrument not completely covered. Human? Only 50 events.
032	330:20:49	No parameters entered into 6032 (receiving parameters from previous DAS unit 6033; sending parameters to new DAS 6032).
032	337	Signs of animal intrusion. Sensor cable chewed through. Pulled out broken sensor cable.
033	323:18:21	A little water around sensor. Nothing bad.
331	330:19:03	Battery died two days ago. Switched batteries right away.
331	337:19:05	Had to use new battery to STOP ACQ.
331	337:19:20	GPS sensor partially covered. Hasn't locked in over one week.
036	323:16:56	Station bag had water from rain; some condensation in bag. DAS seems OK.

037	330:18:03	Swapped batteries right away to check stat. Filled mem then shutdown; last mem stored upon STOP ACQ.
038	330:18:16	Communication failure.
039	317:18:32	Low stomp test amplitude.
039	337:17:41	Used the battery for station 033 because the battery was leaking profusely.
042	330:16:53	Battery too low.
042	330:17:09	Changed stat: station is 040, not 042; we will retrieve parameters from the old box (6064) and transfer to new box (6056).
045	324:16:09	Accidently set 38 s ahead at first pulse; then set 38 s back.
045	338:16:54	Initially forgot to STOP ACQ before beginning copy to disk. Then in midst of that copy got auxiliary device failure. Stopped ACQ and dumped RAM to disk in DAS. Started copy to disk again. Auxiliary device failure again. Switched to new disk and switched SCSI cable and checked old SCSI cable. It seems OK. This disk copy is successful.
046	324:16:50	Signs of animal intrusion; bag chewed on.
046	331:17:25	Low battery; only 76 Mbytes stored.
048	324:17:43	Take-out connectors were dirty (dirt in bag). Cleaned, then OK.
050	338:18:15	Channels 2 and 3 possibly bad.
050	345:15:52	North and east polarities might be wrong.
052	345:16:19	North and east polarities might be wrong.
054	324:21:21	Problems with 2 DAS-hand terminal cables. Had a third cable. No problem with the DAS.
054	331:21:27	Signs of animal intrusion; Omega wire chewed on.
054	338:19:45	Dead battery. Connect Reftek battery for SCSI copy.
056	324:22:22	Condensation in bag above GPS antenna.
056	331:22:34	Found new DAS with 166 events -> assumed last week's data copied but disk not cleared. So cleared RAM and format SCSI.
056	338:20:32	Low battery. Attached DAS to new battery for DAS.
058	345:17:18	North and east polarities might be wrong.
065	345:18:14	North polarity might be wrong.
066	325:22:40	Channel 1 may be bad.
066	338:23:11	New DAS said NO UTC CLK but supposed to have Omega. Not room enough left to copy onto disk because needed for next 2 stations.
070	315	Partial communication failure.
070	325:02:20	DAS STATUS not possible (old version software) (communication failure).
070	339:19:41	No DAS STATUS-old software version. Switched in an Omega from station 066. Forgot to send parameters to DAS. Erased first 7 events, sent parameters and

		restarted. Auxiliary device drive error or timeout during disk copy. Communcation failure. RAM dump doesn't work.
070	345:19:22	North and east polarities might be wrong.
072	339:20:51	Omega wire broke off preamp.
074	339:22:05	Omega wire was cut/chewed between preamp and Reftek. Put in new wire.
074	345:19:54	North and east polarities might be wrong.
080	331:21:27	Low voltage; swapped battery. This site may continue to have power problems due to the combination of low RAM and big hard drive.
082	315	Ex clock status causes Reftek to lose communication to hand terminal.
082	324:18:33	Switched DAS for Omega time problem. Switched with DAS 6045. Signs of animal intrusion.
084	324:20:08	Omega line was broken by an animal.
084	331:22:35	Signs of animal intrusion; chewed bag. Cables look OK. Channel 3 may be weak.
084	345:18:30	Signs of intrusion; something tried to dig the DAS out and broke the Omega wire.
086	318:00:37	Possible problems with RAM.
098	324:18:21	Omega wire broke (cut?) into three sections.
098	331:19:01	Animal broke the Omega wire.
102	324:16:10	Something tried to dig out DAS.
112	322:20:49	No DAS STATUS. Cable to antenna chewed in half. Spliced and taped.
112	328:20:46	Battery dead.
112	335:20:49	Battery dead.

Table 1. Geographical coordinates and elevations of instruments in the LARSE93 array, given by station number. North latitude and east longitude are defined as positive. All coordinates in columns 2, 3, and 4 have been converted to values corresponding to the WGS-84 datum regardless of the location method used (column 5). Column 6 contains elevation values determined from topographical maps based on the NAD-27 datum.

Station No.	Latitude (°N)	Longitude (°E)	Elevation (m) (WGS-84 datum)	Method	Elevation (m) (map)
245	34.7395	-118.0637	-30	GPS	2
244	34.7635	-118.0680	-27	GPS	5
216	34.0058	-118.0087	197	GPS	229
215	34.0170	-118.0110	151	GPS	183
203	34.1142	-117.9507	114	GPS	146
002	34.1545	-117.9170	181	GPS	213
004	34.1620	-117.8960	224	GPS	256
005	34.1703	-117.8872	248	GPS	280
301	34.1802	-117.8810	358	GPS	390
006	34.1875	-117.8710	358	GPS	390
601	34.1883	-117.8784	358	map	390
007	34.1883	-117.8784	358	map	390
008	34.1938	-117.8647	346	GPS	378
009	34.2037	-117.8652	334	map	366
010	34.2125	-117.8669	480	map	512
011	34.2183	-117.8664	486	map	518
012	34.2258	-117.8639	425	map	457
013	34.2458	-117.8624	474	map	506
014	34.2500	-117.8609	504	map	536
015	34.2608	-117.8551	590	map	622
016	34.2648	-117.8476	675	map	707
018	34.2833	-117.8451	922	map	954
019	34.2933	-117.8409	989	map	1021
020	34.3033	-117.8422	1358	map	1390
021	34.3125	-117.8342	1477	map	1509
022	34.3233	-117.8392	1681	map	1713
023	34.3283	-117.8292	1812	map	1844
024	34.3308	-117.8242	1986	map	2018
025	34.3452	-117.8205	2211	GPS	2243
026	34.3510	-117.8090	2278	GPS	2310
027	34.3588	-117.7978	2315	GPS	2347
028	34.3662	-117.7892	2239	GPS	2271
029	34.3720	-117.7818	2187	GPS	2219
030	34.3789	-117.7701	1809	map	1841
031	34.3847	-117.7604	1986	GPS	2018
032	34.3939	-117.7533	1958	GPS	1990
033	34.3932	-117.7410	1858	GPS	1890

Table 1 (continued)

Station No.	Latitude (°N)	Longitude (°E)	Elevation (m) (WGS-84 datum)	Method	Elevation (m) (map)
331	34.3948	-117.7209	1846	map	1878
034	34.3958	-117.7178	1724	GPS	1756
035	34.4073	-117.7173	1577	GPS	1609
036	34.4162	-117.7170	1516	GPS	1548
037	34.4247	-117.7157	1516	GPS	1548
038	34.4325	-117.7120	1382	GPS	1414
039	34.4435	-117.7117	1297	GPS	1329
040	34.4550	-117.7167	1199	GPS	1231
042	34.4749	-117.7129	1090	GPS	1122
045	34.4958	-117.7043	1010	GPS	1042
046	34.5103	-117.6967	977	map	1009
048	34.5278	-117.6933	940	GPS	972
050	34.5418	-117.6812	916	GPS	948
052	34.5542	-117.6605	910	GPS	942
054	34.5737	-117.6508	885	GPS	917
056	34.5913	-117.6485	867	GPS	899
058	34.6078	-117.6402	855	GPS	887
060	34.6225	-117.6335	858	GPS	890
062	34.6398	-117.6190	832	GPS	864
065	34.6653	-117.6137	834	GPS	866
066	34.6758	-117.6145	837	GPS	869
068	34.6902	-117.5975	895	GPS	927
070	34.7094	-117.5968	980	GPS	1012
072	34.7232	-117.5810	1029	GPS	1061
074	34.7375	-117.5658	1224	GPS	1256
077	34.7617	-117.5433	907	GPS	939
080	34.7848	-117.5372	837	GPS	869
082	34.7960	-117.5176	821	GPS	853
084	34.8170	-117.5143	809	GPS	841
086	34.8322	-117.5005	803	GPS	835
088	34.8518	-117.5052	818	GPS	850
090	34.8767	-117.4967	840	map	872
092	34.8887	-117.4868	888	GPS	920
094	34.9035	-117.4855	867	GPS	899
096	34.9177	-117.4683	812	GPS	844
098	34.9366	-117.4541	742	GPS	774
100	34.9482	-117.4430	714	GPS	747
102	34.9575	-117.4192	699	map	732
104	34.9750	-117.4100	680	GPS	713
106	34.9883	-117.3907	659	GPS	692
108	35.0072	-117.3945	656	GPS	689
110	35.0267	-117.3850	607	GPS	640
112	35.0433	-117.3833	613	GPS	646
114	35.0633	-117.3817	610	GPS	643

Table 1 (continued)

Station No.	Latitude (°N)	Longitude (°E)	Elevation (m) (WGS-84 datum)	Method	Elevation (m) (map)
116	35.0835	-117.3835	619	GPS	652
118	35.0945	-117.3830	638	GPS	671
120	35.1133	-117.3423	683	map	716
122	35.1200	-117.3667	674	GPS	707
124	35.1380	-117.3592	723	map	756
126	35.1513	-117.3342	796	map	829
128	35.1858	-117.3117	869	map	902
130	35.2125	-117.2942	955	map	988

Table 2. Sensor type and data format. Sample rate is in samples/s and "Service style" refers to whether the data were collected by swapping DAS units or by copying to tape.

Station No.	Sensor type	Sample rate	Data format	Pre-amp gain	Service style
245	L4C3D 1Hz	25	32-bit	32	swap DAS
244	L22	25	32-bit	32	swap DAS
216	L22	50	16-bit	512	swap DAS
215	L4C3D 1Hz	25	32-bit	32	swap DAS
203	L22	25	32-bit	32	swap DAS
002	L4C1D Vertical	50	32-bit	32	swap DAS
004	L4C1D Vertical	50	32-bit	32	swap DAS
005	L22	25	32-bit	32	swap DAS
601	L4C1D Vertical	50	32-bit	32	swap DAS
007	L4C1D Vertical	50	32-bit	32	swap DAS
008	L4C1D Vertical	50	32-bit	32	swap DAS
009	L4C3D 1Hz	25	32-bit	32	swap DAS
010	L22	25	32-bit	32	swap DAS
011	L4C1D Vertical	50	32-bit	32	swap DAS
012	L4C3D 1Hz	50	16-bit	512	swap DAS
013	L4C1D Vertical	50	32-bit	32	swap DAS
014	L22	25	32-bit	32	swap DAS
015	L4C3D 1Hz	50	16-bit	512	swap DAS
016	L4C1D Vertical	50	32-bit	32	swap DAS
018	L4C3D 1Hz	50	16-bit	512	swap DAS
019	L4C1D Vertical	50	32-bit	32	swap DAS
020	L4C1D Vertical	50	32-bit	32	swap DAS
021	L4C3D 1Hz	50	16-bit	512	swap DAS
022	L22	50	16-bit	512	swap DAS
023	L4C1D Vertical	50	32-bit	32	swap DAS
024	L4C3D 1Hz	50	16-bit	512	swap DAS
025	L22	50	16-bit	512	swap DAS
026	L4C1D Vertical	50	32-bit	32	swap DAS
027	L4C3D 1Hz	50	16-bit	512	swap DAS
028	L4C3D 1Hz	50	16-bit	512	swap DAS
029	L22	50	16-bit	512	swap DAS
030	L4C3D 1Hz	50	16-bit	512	swap DAS
031	L22	50	16-bit	512	swap DAS
032	L4C3D 1Hz	50	16-bit	512	swap DAS
033	L4C3D 1Hz	50	16-bit	512	swap DAS
331	L4C3D 1Hz	50	16-bit	512	swap DAS
034	L4C3D 1Hz	50	16-bit	512	swap DAS
035	L4C3D 1Hz	50	16-bit	512	swap DAS
036	L4C3D 1Hz	50	16-bit	512	swap DAS
037	L22	50	16-bit	512	swap DAS
038	L4C3D 1Hz	50	16-bit	512	swap DAS
039	L4C1D Vertical	50	32-bit	32	swap DAS
040	L22	50	16-bit	512	swap DAS
042	L4C3D 1Hz	50	16-bit	512	swap DAS

Table 2 (continued)

Station No.	Sensor type	Sample rate	Data format	Pre-amp gain	Service style
045	L22	50	16-bit	512	copy to tape
046	L4C3D 1Hz	50	16-bit	512	copy to tape
048	L4C1D Vertical	50	16-bit	512	copy to tape
050	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
052	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
054	L22	50	16-bit	512	copy to tape
056	L4C1D Vertical	50	32-bit	32	copy to tape
058	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
060	L22	50	16-bit	512	copy to tape
062	L4C1D Vertical	50	32-bit	32	copy to tape
065	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
066	L22	50	16-bit	512	copy to tape
068	L4C1D Vertical	50	16-bit	512	copy to tape
070	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
072	L22	50	16-bit	512	copy to tape
074	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
077	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
080	L22	50	16-bit	512	copy to tape
082	L4C1D Vertical	50	16-bit	512	copy to tape
084	L4C3D 1Hz	50	16-bit	512	copy to tape
086	L22	50	16-bit	512	copy to tape
088	L4C1D Vertical	50	32-bit	32	copy to tape
090	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
092	L22	50	16-bit	512	copy to tape
094	L4C1D Vertical	50	32-bit	512	copy to tape
096	L4C3D 1Hz UCLA	50	16-bit	512	copy to tape
098	L22	50	16-bit	512	copy to tape
100	L4C1D Vertical	50	32-bit	32	copy to tape
102	L4C3D 1Hz	50	16-bit	512	copy to tape
104	L4C1D Vertical	50	32-bit	32	swap DAS
106	L22	50	16-bit	512	swap DAS
108	L4C3D 1Hz	50	16-bit	512	swap DAS
110	L4C1D Vertical	50	32-bit	32	swap DAS
112	L22	50	16-bit	512	swap DAS
114	L4C3D 1Hz	50	16-bit	512	swap DAS
116	L4C1D Vertical	50	32-bit	32	swap DAS
118	L22	50	16-bit	512	swap DAS
120	L4C3D 1Hz	50	16-bit	512	swap DAS
122	L4C1D Vertical	50	32-bit	32	swap DAS
124	L4C1D Vertical	50	32-bit	32	swap DAS
126	L4C3D 1Hz	50	16-bit	512	swap DAS
128	L22	50	16-bit	512	swap DAS
130	L4C1D Vertical	50	32-bit	32	swap DAS

Table 3. DAS number-external timing device combination for each week of recording. Station times are given as GMT julian day:hour:minute. The timing method abbreviations in column 3 are defined as follows:

gps=had a GPS receiver hookup the entire week.
omega=had an Omega receiver hookup the entire week.
nclk=had no permanent external time receiver hookup.
n/gbe=had no permanent external time receiver hookup; received a GPS receiver hookup at beginning and end of week.
n/gb=had no permanent external time receiver hookup; received a GPS receiver hookup at beginning of week only.
n/pbe=had no permanent external time receiver hookup; received a GPS receiver time calibration pulse at beginning and end of week.
n/pb=had no permanent external time receiver hookup; received a GPS receiver time calibration pulse at beginning of week only.
n/pe=had no permanent external time receiver hookup; received a GPS receiver time calibration pulse at end of week only.
o/p=had an Omega receiver hookup the entire week; received a GPS receiver time calibration pulse at some point during week.
o/pb=had an Omega receiver hookup the entire week; received a GPS receiver time calibration pulse at end of week.
o/n=had an Omega receiver hookup part of the week; had no permanent external time device hookup part of the week.
nclk/oe=had no permanent external time receiver hookup; received an Omega receiver time calibration pulse at end of week only.
n/gps=had no permanent external time device hookup part of the week; had a GPS receiver hookup part of the week.

Table3a (week 1)

DAS No.	Station No.	Timing	Start Time (day:hr:min)	End Time (day:hr:min)
7063	245	gps	316:19:36	323:17:48
7089	244	gps	316:20:30	323:18:23
6071	216	nclk	316:20:27	323:17:49
7068	215	gps	316:18:54	323:17:15
7067	203	gps	316:22:05	321:09:30
7064	002	n/gbe	317:00:00	323:20:29
7060	004	n/gb	316:22:55	318.05.39
7058	005	n/gbe	316:00:17	323:21:29
7056	301	gps	317:01:07	323:23:02
7053	007	gps	317:02:25	323:16:51
7051	008	n/gbe	317:02:03	323:22:01
7049	009	gps	316:17:19	324:16:51
7048	010	gps	317:19:24	323:15:24
7045	011	n/gbe	317:19:02	323:16:28
6047	012	n/gbe	317:18:39	324:17:54
7041	013	gps	317:18:12	323:17:15
7093	014	gps	317:16:42	317:18:05
6049	015	n/gbe	317:17:09	323:18:12
7090	016	gps	317:17:34	323:20:49
6051	018	gps	317:03:27	324:18:58
7084	019	n/gbe	317:02:51	323:21:33
7082	020	n/gbe	317:01:08	323:22:39
6057	021	n/gbe	317:01:58	323:23:47
6060	022	gps	317:00:17	324:00:31
7081	023	gps	316:23:32	321:17:00
6062	024	n/gbe	316:22:43	324:02:27
6135	025	gps	316:16:18	323:21:52
7039	026	gps	316:16:55	323:21:35
6020	027	gps	316:18:18	323:21:22
6022	028	gps	316:19:04	323:21:08
6025	029	gps	316:19:33	323:20:47
6027	030	nclk	316:20:22	323:20:10
6029	031	gps	316:21:18	323:19:11
6032	032	gps	316:21:48	317:22:03
6034	033	gps	316:22:17	323:18:22
6066	331	gps	320:22:24	323:18:00
6038	034	gps	317:00:01	323:17:23
6040	035	gps	317:00:21	323:17:18
6042	036	gps	317:00:45	323:16:56
6046	037	gps	317:01:14	323:16:47
6053	038	gps	317:17:39	323:16:35
7116	039	gps	317:18:32	323:16:21
6095	040	omega	317:19:20	323:16:04

Table 3a (continued)

DAS No.	Station No.	Timing	Start Time (day:hr:min)	End Time (day:hr:min)
6056	042	gps	317:19:43	323:15:28
6119	045	omega	321:00:33	324:15:23
6065	046	gps	319:00:04	324:16:50
6134	048	gps	321:01:11	324:17:44
6131	050	omega	319:00:14	324:18:29
6132	052	omega	318:23:14	324:19:46
6129	054	o/pb	318:22:41	324:21:21
7076	056	gps	318:21:58	322:05:15
6121	058	omega	318:21:51	324:22:58
6125	060	n/pb	318:21:13	325:23:48
7107	062	gps	318:21:11	325:23:28
6122	065	o/n	318:19:35	325:22:31
6127	066	omega	319:19:40	322:09:18
6111	068	omega	318:20:18	325:21:41
0499	070	omega	318:17:52	325:13:01
0504	072	omega	318:16:00	325:20:35
6126	074	omega	318:19:29	325:20:18
0489	077	omega	318:16:53	324:16:17
0615	080	gps	318:17:27	324:17:32
6124	082	n/pb(o?)	318:01:00	324:18:33
0503	084	omega	318:15:30	324:19:28
0501	086	omega	318:00:37	320:10:42
7095	088	n/pb	317:22:29	323:20:59
0500	090	omega	318:00:05	324:23:21
0506	092	omega	317:23:38	324:21:53
0592	094	gps	317:21:46	323:14:46
0507	096	omega	317:22:21	324:19:49
0502	098	omega	317:21:24	324:18:24
7098	100	n/pb	317:20:01	324:17:12
0593	102	gps	317:19:23	323:14:38
7071	104	n/gb	315:19:31	322:17:24
6088	106	nclk	315:20:30	322:16:57
6004	108	gps	315:21:14	322:21:34
7073	110	n/gb	315:22:36	322:21:07
6112	112	nclk	315:22:01	318:11:07
6085	114	gps	316:00:25	322:18:58
7110	116	n/gb	315:23:20	322:19:25
6110	118	nclk	315:23:48	322:19:55
6083	120	gps	316:01:09	322:20:56
7106	122	nclk	316:00:09	322:21:03
7104	124	nclk	315:23:19	322:20:19
6115	126	nclk	315:22:41	322:19:47
6118	128	nclk	315:21:00	322:18:43
7101	130	gps	315:19:21	322:17:42

Table 3b (week 2)

DAS No.	Station No.	Timing	Start Time (day:hr:min)	End Time (day:hr:min)
7062	245	gps	323:18:01	330:17:25
7088	244	gps	323:18:34	330:18:05
6080	216	nclk	323:18:03	330:16:55
7069	215	gps	323:17:34	330:01:21
7066	203	gps	323:19:06	330:18:12
7065	002	n/gbe	323:20:49	330:19:20
7061	004	n/gbe	323:21:11	330:20:34
7059	005	n/gbe	323:21:42	329:10:25
7057	301	gps	323:23:09	330:22:48
7054	007	gps	323:22:45	330:22:29
7052	008	n/gbe	323:22:22	330:22:53
7050	009	gps	324:17:10	331:17:55
7047	010	gps	323:15:50	330:17:23
7046	011	n/pbe	323:16:51	330:20:21
6048	012	gps	324:18:07	331:17:15
7042	013	gps	323:17:26	330:18:26
7092	014	gps	323:19:53	330:18:09
6050	015	n/pbe	323:18:25	325:18:00
7091	016	gps	323:21:04	331:16:09
6052	018	gps	324:19:15	331:15:37
7087	019	n/gbe	323:21:52	331:14:50
7083	020	gps	323:22:52	331:01:18
6058	021	n/gbe	324:00:01	331:00:45
6061	022	gps	324:00:48	330:23:53
7080	023	gps	324:01:46	330:23:19
6063	024	n/gbe	324:03:11	330:22:25
6Q18	025	gps	323:22:02	330:22:19
7040	026	gps	323:21:43	330:22:34
6021	027	gps	323:21:29	330:22:23
6024	028	gps	323:21:00	330:22:12
6026	029	gps	323:20:54	330:22:00
6028	030	gps	323:20:24	330:21:20
6030	031	gps	323:19:18	330:20:42
6033	032	gps	323:18:52	330:20:07
6035	033	gps	323:18:29	330:20:09
6069	331	gps	323:18:09	328:19:20
6039	034	gps	323:17:41	330:18:51
6041	035	gps	323:17:27	330:18:41
6043	036	gps	323:17:05	330:18:14
6044	037	gps	323:16:53	330:18:03
6055	038	gps	323:16:43	330:17:52
7114	039	gps	323:16:31	330:17:40
6093	040	omega	323:16:16	330:17:27
6064	042	gps	323:15:49	330:16:54

Table 3b (continued)

DAS No.	Station No.	Timing	Start Time (day:hr:min)	End Time (day:hr:min)
6119	045	omega	324:16:10	331:15:41
6065	046	gps	324:17:23	327:15:00
6134	048	gps	324:18:05	331:17:53
6131	050	omega	324:19:21	331:18:54
6132	052	omega	324:20:22	331:20:14
6129	054	omega	324:21:25	331:21:27
7112	056	gps	324:22:31	330:20:01
6121	058	o/pb	324:23:55	331:23:13
6125	060	n/pbe	326:00:37	332:00:13
7108	062	gps	325:23:39	332:03:24
6122	065	o/n	325:23:05	332:04:18
6114	066	o/p	325:23:03	332:01:41
6111	068	omega	325:22:03	332:01:00
0499	070	omega	325:22:20	325:22:21
0504	072	omega	325:21:12	331:17:41
6126	074	omega	325:21:26	331:34:46
0489	077	omega	324:17:00	331:20:11
0615	080	gps	324:18:07	331:21:26
6045	082	gps	324:18:54	332:01:45
0503	084	omega	324:20:08	331:22:36
0501	086	omega	324:20:54	329:02:20
7095	088	n/pb	324:21:50	331:23:42
0500	090	omega	325:00:04	331:22:37
0506	092	omega	324:22:43	331:21:37
0592	094	gps	324:21:30	331:20:53
0507	096	omega	324:20:35	331:19:59
0502	098	omega	324:19:27	331:19:03
7098	100	n/pb	324:17:57	331:18:21
0593	102	gps	324:16:50	331:16:24
7070	104	n/gb	322:17:40	328:17:13
6098	106	omega	322:17:51	328:16:48
6087	108	gps	322:21:42	328:21:08
7072	110	n/gb	322:21:17	328:18:06
6113	112	omega	322:20:49	326:00:10
6086	114	gps	322:19:06	328:18:56
7111	116	n/gb	322:19:38	328:19:19
6107	118	omega	322:20:26	328:19:45
6081	120	gps	322:21:38	328:19:12
7109	122	n/gb	322:21:10	328:18:44
6120	126	omega	322:19:59	328:18:08
6116	128	omega	322:18:56	328:17:40
7103	130	gps	322:18:17	328:17:06

Table 3c (week 3)

DAS No.	Station No.	Timing	Start Time (day:hr:min)	End Time (day:hr:min)
7063	245	gps	330:17:44	337:17:40
7089	244	gps	330:18:15	332:05:48
6071	216	nclk	330:17:07	337:16:47
7068	215	gps	330:17:34	337:17:17
7067	203	gps	330:18:27	337:18:09
7064	002	n/p(be?)	330:19:32	337:18:59
7060	004	n/pbe	330:20:49	332:12:51
7038	005	n/pbe	330:21:28	337:20:24
7056	301	gps	330:22:59	337:20:49
7077	601	n/pe	328:23:17	337:22:02
7051	008	n/pbe	330:22:04	337:21:24
7049	009	gps	331:18:24	338:16:51
7048	010	gps	330:17:39	337:14:55
7045	011	n/pbe	330:20:32	337:17:19
6047	012	gps	331:17:28	338:17:29
7041	013	gps	330:20:47	337:17:54
7093	014	gps	330:18:31	337:16:38
6049	015	n/pbe	331:03:14	337:18:29
7090	016	gps	331:16:31	337:21:44
6051	018	gps	331:15:51	337:20:55
7084	019	n/pbe	331:14:59	337:20:19
7082	020	gps	331:01:29	338:18:44
6057	021	n/pbe	331:00:56	338:01:12
6060	022	gps	331:00:16	338:00:36
7081	023	gps	330:23:31	337:23:54
6062	024	n/pbe	330:22:53	337:23:20
6135	025	gps	330:23:25	337:22:12
7039	026	gps	330:23:42	337:21:57
6020	027	gps	330:22:30	337:21:34
6022	028	gps	330:22:19	337:21:21
6025	029	gps	330:22:38	337:21:11
6027	030	nclk	330:21:31	337:00:44
6029	031	gps	330:21:33	337:20:05
6032	032	gps	330:21:20	337:19:50
6034	033	gps	330:20:29	337:19:35
6066	331	gps	330:19:55	337:14:16
6038	034	gps	330:18:59	337:18:54
6040	035	gps	330:19:17	337:18:44
6042	036	gps	330:18:36	337:18:30
6046	037	gps	330:18:25	337:18:20
6053	038	gps	330:18:47	337:17:59
7116	039	gps	330:17:52	337:17:42
6056	040	gps	330:17:10	337:16:36
6095	042	omega	330:17:38	337:17:20

Table 3c (continued)

DAS No.	Station No.	Timing	Start Time (day:hr:min)	End Time (day:hr:min)
6119	045	o/pb	331:16:23	338:15:42
6065	046	gps	331:17:25	338:17:14
6134	048	gps	331:18:12	338:17:42
6131	050	omega	331:19:46	338:18:15
6132	052	omega	331:20:54	338:19:05
6129	054	omega	331:22:08	337:00:50
7076	056	gps	331:22:48	335:08:06
6121	058	omega	331:23:48	338:20:58
6125	060	n/pb	332:00:43	337:22:27
7107	062	gps	332:03:37	338:22:18
6124	065	nclk	332:04:37	338:22:46
6114	066	omega	332:04:16	338:23:12
6111	068	omega	332:01:19	339:02:48
0499	070	omega	331:19:21	339:01:07
0504	072	omega	331:18:12	339:16:59
6126	074	omega	331:17:15	339:21:17
0489	077	omega	331:20:48	339:23:14
0615	080	gps	331:22:03	338:06:12
6045	082	gps	332:02:11	339:23:29
0503	084	nclk	331:23:51	339:20:24
0501	086	omega	332:01:10	339:19:16
7095	088	n/pb	332:00:05	339:00:51
0500	090	omega	331:23:12	338:23:55
0506	092	omega	331:22:12	338:22:37
0592	094	gps	331:21:16	338:21:46
0507	096	omega	331:20:38	338:19:48
0502	098	omega	331:19:39	338:18:44
7098	100	n/pb	331:18:47	338:17:59
0593	102	gps	331:17:59	338:11:16
7071	104	n/gb	328:17:28	335:17:53
6088	106	omega	328:17:41	335:17:34
6004	108	gps	328:21:48	335:21:09
7073	110	n/gb	328:18:18	335:18:34
6112	112	omega	328:20:47	331:21:50
6085	114	gps	328:19:05	335:19:18
7110	116	n/gb	328:19:30	335:19:38
6110	118	omega	328:20:22	335:19:59
6083	120	gps	328:19:21	335:20:55
7106	122	gps	328:18:52	335:20:22
6115	126	nclk/oe	328:18:17	332:03:40
6118	128	nclk	328:17:49	335:18:47
7101	130	gps	328:17:18	335:18:17

Table 3d (week 4)

DAS No.	Station No.	Timing	Start Time (day:hr:min)	End Time (day:hr:min)
7062	245	gps	337:17:57	344:16:29
7088	244	gps	337:18:32	344:15:53
6080	216	nclk	337:17:01	344:17:55
7069	215	gps	337:17:27	344:17:31
7066	203	gps	337:18:24	342:14:38
7065	002	n/gbe	337:19:09	344:20:03
7061	004	n/gbe	337:20:08	344:20:18
7059	005	n/gbe	337:20:35	344:20:45
7057	301	gps	337:21:32	344:21:01
7053	601	gps	337:22:13	344:21:15
7052	008	n/gbe	337:22:15	344:21:27
7050	009	gps	338:17:07	345:21:58
7047	010	gps	337:15:27	345:22:27
7046	011	n/gbe	337:18:00	345:22:54
6048	012	gps	338:17:39	345:23:04
7042	013	gps	337:18:16	345:23:33
7092	014	gps	337:16:47	345:23:55
6050	015	n/gb	337:18:59	346:00:19
7091	016	gps	337:21:59	346:00:45
6052	018	gps	337:21:42	346:17:50
7087	019	n/gb	337:20:33	346:18:15
7083	020	gps	338:18:56	346:18:50
6058	021	n/gb	338:01:26	346:09:23
6061	022	gps	338:00:49	346:18:38
7080	023	gps	338:00:39	346:20:30
6063	024	n/gb	337:23:33	346:17:22
6018	025	gps	337:22:26	346:16:17
7040	026	gps	337:22:14	351:01:45
6021	027	gps	337:21:58	346:15:49
6004	028	n/gps	337:21:45	339:19:22
6026	029	gps	337:22:23	346:14:42
6028	030	gps	337:21:25	346:14:47
6030	031	gps	337:21:00	345:03:16
6035	033	gps	337:20:13	346:13:34
6069	331	gps	337:19:50	345:23:52
6039	034	gps	337:19:35	346:12:57
6041	035	gps	337:18:53	346:12:44
6043	036	gps	337:18:42	338:09:43
6044	037	gps	337:19:01	345:05:22
6055	038	gps	337:18:45	346:12:05
7114	039	gps	337:18:01	350:21:33
6093	040	omega	337:18:14	346:11:33
6064	042	gps	337:17:13	346:10:32
6119	045	o/n	338:16:53	345:14:56

Table 3d (continued)

DAS No.	Station No.	Timing	Start Time (day:hr:min)	End Time (day:hr:min)
6085	046	gps	338:17:25	345:15:15
6134	048	gps	338:17:59	345:15:39
6131	050	omega	338:18:44	345:15:53
6110	052	omega	338:19:44	345:16:20
6129	054	omega	339:20:11	345:16:46
7112	056	gps	338:20:44	345:17:02
6088	058	o/n	338:21:09	345:17:18
6125	060	nclk	338:21:56	345:17:42
7108	062	gps	338:22:57	344:18:03
6122	065	nclk?	338:22:56	345:18:14
6118	066	n/pbe	338:23:40	345:18:30
6111	068	omega	339:00:19	345:18:54
6114	070	omega	339:19:41	345:19:22
0504	072	omega	339:20:51	345:19:38
6115	074	omega	339:22:36	345:19:56
0489	077	omega	339:23:54	345:19:55
0615	080	gps	339:23:04	345:19:29
6083	082	gps	339:23:45	345:19:02
0503	084	o/n	340:00:31	345:18:31
0501	086	omega	339:20:01	341:12:30
7101	088	nclk	339:01:00	345:18:01
0500	090	omega	339:00:33	345:17:32
0506	092	omega	338:22:30	345:17:11
0592	094	gps	338:22:20	345:16:55
0507	096	omega	338:21:26	345:16:34
0502	098	omega	338:19:23	345:16:17
7110	100	gps	338:18:12	345:16:05
0593	102	gps	338:17:40	344:12:02
7070	104	n/gb	335:18:01	348:16:29
6098	106	omega	335:18:12	344:12:01
6087	108	gps	335:21:17	344:15:06
7072	110	n/gb	335:18:41	337:00:21
6113	112	omega	335:20:50	338:14:29
6086	114	gps	335:19:25	345:13:14
7111	116	n/gb	335:19:46	348:17:46
6107	118	omega	335:20:19	344:14:09
6081	120	gps	335:21:03	344:14:52
7109	122	gps	335:20:38	348:18:59
7104	124	nclk	335:19:49	348:18:37
6120	126	nclk	335:19:18	344:13:08
6116	128	omega	335:18:55	344:12:44
7103	130	gps	335:18:27	348:17:10

Table 4. Entries in the PASSCAL SEG-Y trace headers; range of byte numbers in header is given for each entry. This PASSCAL header format is a modified version of the standard SEG-Y format and the entries marked with an asterisk are header values not specified in the standard SEG-Y format.

<table>
<tr><th>Byte Numbers</th><th>Description</th></tr>
<tr><td>1-4</td><td>Trace sequence number within data stream</td></tr>
<tr><td>5-8</td><td>Trace sequence number within reel (same as above)</td></tr>
<tr><td>9-12</td><td>Event number</td></tr>
<tr><td>13-16</td><td>Channel number</td></tr>
<tr><td>|</td><td></td></tr>
<tr><td>29-30</td><td>Trace identification code (= 1 for seismic data)</td></tr>
<tr><td>|</td><td></td></tr>
<tr><td>69-70</td><td>Elevation scale constant (= 1)</td></tr>
<tr><td>71-72</td><td>Coordinate scale constant (= 1)</td></tr>
<tr><td>|</td><td></td></tr>
<tr><td>89-90</td><td>Coordinate units (= 2 for latitude/longitude)</td></tr>
<tr><td>|</td><td></td></tr>
<tr><td>103-104</td><td>Low 2 bytes of the total shift in milliseconds</td></tr>
<tr><td>|</td><td></td></tr>
<tr><td>115-116</td><td>Number of samples in this trace (note if equal to 32767 see bytes 229-232)</td></tr>
<tr><td>117-118</td><td>Sample interval in microsecs for this trace (note if equal to 1 see bytes 201-204)</td></tr>
<tr><td>119-120</td><td>Fixed gain flag (= 1)</td></tr>
<tr><td>121-122</td><td>Gain of amplifier</td></tr>
<tr><td>|</td><td></td></tr>
<tr><td>157-158</td><td>Year data recorded</td></tr>
<tr><td>159-160</td><td>Day of year</td></tr>
<tr><td>161-162</td><td>Hour of day (24 hour clock)</td></tr>
<tr><td>163-164</td><td>Minute of hour</td></tr>
<tr><td>165-166</td><td>Second of minute</td></tr>
<tr><td>167-168</td><td>Time basis code (1 = local; 2 = GMT; 3 = other)</td></tr>
<tr><td>|</td><td></td></tr>
<tr><td>181-186*</td><td>Station name code (5 chars + 1 for termination)</td></tr>
<tr><td>187-194*</td><td>Sensor serial code (7 chars + 1 for termination)</td></tr>
<tr><td>195-198*</td><td>Channel name code (3 chars + 1 for termination)</td></tr>
<tr><td>199-200*</td><td>High 2 bytes of the total shift in milliseconds</td></tr>
<tr><td>201-204*</td><td>Sample interval in microsecs as a 32 -bit integer</td></tr>
<tr><td>205-206*</td><td>Data format flag (0 = 16-bit interger; 1 = 32-bit integer)</td></tr>
<tr><td>207-208*</td><td>Milliseconds of second for first sample</td></tr>
<tr><td>209-210*</td><td>Trigger time year</td></tr>
<tr><td>211-212*</td><td>Trigger time julian day</td></tr>
</table>

Table 4 (continued)

Byte Numbers	Description
213-214*	Trigger time hour
215-216*	Trigger time minutes
217-218*	Trigger time seconds
219-220*	Trigger time milliseconds
221-224*	Scale factor (IEEE 32 -bit float); true amplitude = (data value)*(scale factor)/gain
225-226*	Instrument serial number
229-232*	Number of samples as a 32-bit integer
233-236*	Max value in counts
237-240*	Min value in counts

Table 5. Teleseismic and regional events that occurred during LARSE93. Source information is from the Preliminary Determination of Epicenters (PDE) catalog published by the USGS National Earthquake Information Center (NEIC).

Time (GMT)						Location coordinates		Depth	Magnitude
yr	mo	day	hr	min	sec	latitude (°N)	longitude (°E)	(km)	
93	11	11	00	06	07.5	38.993	142.363	32	5.2
93	11	11	00	28	34.3	50.225	-177.432	23	6.3
93	11	11	10	13	59.1	-4.569	153.082	80	5.7
93	11	11	13	59	58.2	-30.783	-178.160	120	5.1
93	11	11	16	46	42.9	13.785	-90.641	71	5.8
93	11	12	10	11	37.4	54.813	-160.256	33	4.8
93	11	12	11	16	33.7	51.342	-177.925	33	5.1
93	11	12	14	16	30.1	21.988	121.965	182	5.3
93	11	12	19	19	07.5	4.777	127.537	109	5.1
93	11	13	00	16	48.7	16.281	-98.606	19	5.8
93	11	13	01	18	04.2	51.919	158.704	34	6.5
93	11	13	02	08	25.2	52.127	158.835	46	5.1
93	11	13	06	52	13.3	50.200	179.763	33	4.5
93	11	13	10	31	30.7	-22.426	169.742	36	5.5
93	11	13	12	30	55.0	-16.383	-70.877	125	5.5
93	11	13	22	42	12.0	-7.686	127.666	33	5.1
93	11	13	23	44	22.7	3.225	128.100	33	5.2
93	11	14	01	59	19.9	-22.657	-68.620	110	5.8
93	11	14	07	10	25.1	-11.625	116.886	33	5.0
93	11	14	09	22	07.3	53.371	-172.626	33	4.5
93	11	14	19	49	31.2	-5.963	104.194	83	5.0
93	11	15	01	02	57.8	-21.852	170.714	19	5.2
93	11	15	22	45	21.1	-18.519	167.439	53	5.2
93	11	16	00	53	09.5	-24.168	-176.008	33	5.1
93	11	16	15	52	49.2	30.755	67.220	33	5.4
93	11	17	00	19	40.0	52.694	-168.044	33	5.2
93	11	17	02	42	30.4	1.567	124.022	246	5.5
93	11	17	11	18	52.9	51.805	158.700	44	6.0
93	11	18	13	07	48.3	2.426	126.668	33	5.0
93	11	18	14	55	13.7	6.778	-74.611	90	4.6
93	11	19	01	43	23.8	54.276	-164.187	31	6.2
93	11	19	02	25	08.9	14.809	-93.981	25	5.5
93	11	19	03	02	48.1	14.627	-94.137	22	4.5
93	11	19	03	22	30.5	54.292	-164.267	33	5.0
93	11	19	03	58	53.2	54.275	-164.162	33	5.5
93	11	19	04	37	49.1	-22.063	-179.586	491	5.3
93	11	19	04	53	39.2	-17.121	-173.893	33	5.0

Table 5 (continued)

Time						Location coordinates		Depth	Magnitude
93	11	19	05	55	12.4	7.955	127.013	34	5.0
93	11	19	08	53	41.8	54.286	-164.250	33	4.6
93	11	19	09	05	39.3	7.317	-34.695	10	5.7
93	11	19	10	19	13.4	54.328	-164.226	33	4.8
93	11	19	10	55	44.1	10.210	126.301	41	5.2
93	11	19	14	40	39.2	54.335	-164.322	33	4.8
93	11	20	01	14	28.2	54.344	-164.213	33	4.6
93	11	20	11	54	02.1	54.337	-164.229	33	5.4
93	11	20	11	58	40.2	51.911	158.437	33	5.2
93	11	20	19	24	53.4	60.031	-153.078	120	5.5
93	11	21	00	16	00.9	-35.909	-102.912	10	5.3
93	11	21	08	57	46.5	52.889	-175.762	218	4.6
93	11	21	17	29	55.7	-22.813	171.445	33	5.2
93	11	22	03	00	55.3	5.872	126.315	33	5.8
93	11	22	04	16	45.7	50.770	156.555	33	5.3
93	11	22	22	34	03.8	10.441	126.448	69	5.0
93	11	22	22	43	26.4	11.725	-86.179	108	5.5
93	11	23	15	02	12.7	6.411	125.833	154	5.2
93	11	23	20	07	39.2	41.257	142.755	46	5.2
93	11	24	02	40	17.5	-2.401	141.144	33	5.2
93	11	24	05	49	53.0	-27.206	-176.562	33	5.3
93	11	24	06	19	50.4	15.316	-105.090	10	4.7
93	11	24	11	27	20.6	-21.310	-174.344	35	5.3
93	11	25	08	31	14.9	-21.991	170.078	33	5.7
93	11	25	20	24	00.8	-0.935	-13.254	10	5.7
93	11	25	21	45	25.3	12.198	125.690	33	5.2
93	11	26	09	03	49.7	12.390	-86.612	149	4.7
93	11	26	10	53	36.2	2.207	126.972	68	5.1
93	11	26	21	12	31.0	-3.417	129.783	33	5.0
93	11	26	22	20	38.0	6.794	-73.079	148	4.6
93	11	26	23	20	05.2	-9.590	158.142	23	5.8
93	11	27	06	11	23.1	38.606	141.188	108	6.0
93	11	27	22	25	15.8	-25.161	179.987	523	5.3
93	11	28	10	50	26.9	-5.608	110.250	565	5.6
93	11	28	12	40	48.5	-3.828	128.715	129	5.2
93	11	28	20	59	27.1	36.472	71.339	108	5.1
93	11	29	06	35	24.3	-20.814	-174.139	35	5.2
93	11	29	07	32	05.5	-0.095	122.994	145	5.2
93	11	29	20	28	43.4	10.250	126.506	33	5.6
93	11	30	04	34	45.6	-22.398	172.711	33	5.1
93	11	30	04	59	26.1	-59.138	-18.138	33	5.2
93	11	30	15	40	47.8	51.489	-172.662	33	4.6
93	11	30	20	37	12.9	39.283	75.593	19	5.2
93	11	30	20	44	13.0	-16.961	-177.059	412	5.2

Table 5 (continued)

Time						Location coordinates		Depth	Magnitude
93	12	01	00	59	01.5	-57.506	-25.894	33	5.4
93	12	01	01	51	06.5	-2.502	139.790	33	5.0
93	12	01	08	21	54.4	-6.259	127.974	362	5.1
93	12	01	13	23	56.9	-23.151	-71.068	33	5.1
93	12	01	13	42	15.8	-17.415	168.188	80	5.0
93	12	01	15	55	05.6	10.261	126.581	33	5.2
93	12	01	17	24	27.0	12.100	-86.502	126	4.7
93	12	01	22	04	22.0	-12.829	44.765	10	5.1
93	12	01	22	18	27.5	1.406	66.504	10	5.0
93	12	03	05	01	24.5	51.106	179.331	33	4.6
93	12	03	05	41	08.1	51.223	179.266	33	5.2
93	12	03	10	16	19.0	-49.918	114.176	10	5.1
93	12	03	12	22	17.4	-15.758	-171.743	10	5.0
93	12	03	12	36	28.9	-60.320	-20.438	33	5.4
93	12	03	13	16	15.7	4.875	-75.640	145	4.6
93	12	04	09	30	14.4	41.735	141.975	84	5.2
93	12	04	14	11	28.5	69.731	-146.758	10	4.8
93	12	04	17	21	23.3	-3.599	131.230	33	5.2
93	12	04	18	12	56.7	11.169	-86.189	33	4.7
93	12	04	22	15	19.6	42.258	-121.977	5	5.2
93	12	04	23	16	52.8	-33.834	-71.863	53	5.3
93	12	05	02	36	10.0	52.109	-173.956	29	5.0
93	12	05	06	36	24.6	19.829	121.207	33	5.0
93	12	05	19	37	02.0	-6.462	130.324	143	5.7
93	12	05	20	33	31.4	11.849	-86.837	66	5.1
93	12	06	02	25	03.2	-28.489	-176.906	79	5.1
93	12	06	04	59	13.3	-4.741	138.302	33	5.3
93	12	06	10	42	03.8	-6.379	154.937	48	5.6
93	12	06	15	37	54.4	41.490	142.001	69	5.2
93	12	06	20	54	45.5	6.864	78.325	10	5.4
93	12	06	23	00	17.8	21.775	121.013	33	5.2
93	12	07	11	50	14.3	-2.423	139.871	10	5.0
93	12	07	14	39	28.2	5.221	-82.514	10	4.5
93	12	07	16	27	25.5	0.749	122.677	79	5.5
93	12	08	00	22	11.7	-20.938	-175.022	45	5.1
93	12	08	02	21	02.7	-12.473	166.509	33	5.2
93	12	08	23	37	13.9	-6.544	129.938	106	5.1
93	12	09	04	32	22.2	0.479	125.982	33	6.3
93	12	09	08	27	16.1	0.493	125.853	33	5.2
93	12	09	11	38	30.8	0.426	125.890	33	6.1
93	12	09	11	44	00.4	0.055	125.562	33	5.2
93	12	09	11	50	52.8	0.344	125.768	33	5.1
93	12	09	12	05	25.5	0.235	125.789	33	5.0
93	12	09	12	07	36.1	0.404	125.829	33	5.1

Table 5 (continued)

Time						Location coordinates		Depth	Magnitude
93	12	09	12	40	30.4	0.341	125.760	33	5.0
93	12	09	14	11	53.3	0.241	125.708	33	5.1
93	12	09	14	46	58.3	-28.158	-70.470	60	5.1
93	12	09	19	14	22.5	-26.059	178.377	600	5.1
93	12	10	01	52	54.0	-10.193	161.921	33	5.2
93	12	10	06	31	54.4	-22.063	-179.670	606	5.6
93	12	10	08	59	36.7	20.846	121.278	19	5.8
93	12	10	11	52	15.7	-19.652	-178.178	613	5.0
93	12	10	22	21	17.3	0.500	125.859	33	5.2
93	12	11	00	01	30.5	41.931	142.461	72	5.0
93	12	11	00	07	20.6	59.528	-152.410	90	4.8
93	12	11	13	04	52.9	49.668	157.186	33	5.1
93	12	11	14	45	38.7	0.596	126.312	33	5.1
93	12	11	16	00	44.3	-19.878	-178.146	583	5.1
93	12	11	23	47	30.3	-21.986	-176.502	164	5.3
93	12	11	23	57	56.9	19.236	-64.799	33	4.6
93	12	12	04	28	03.5	-19.749	-174.412	33	5.3
93	12	12	05	12	23.3	50.951	160.891	33	5.0
93	12	12	05	55	13.6	53.185	-162.872	33	4.6
93	12	12	17	03	20.6	0.305	125.959	33	5.8
93	12	12	18	26	28.5	0.330	125.956	33	5.7
93	12	12	20	41	30.2	36.402	141.063	43	5.3
93	12	12	23	34	18.4	27.289	92.049	33	5.1
93	12	13	11	43	43.6	-20.546	-173.762	33	5.6
93	12	13	16	27	47.2	0.525	126.079	33	5.1
93	12	13	16	34	34.3	5.439	-82.452	33	4.8
93	12	13	17	13	42.9	0.536	126.291	33	5.2
93	12	13	22	25	41.2	-55.756	-27.934	33	5.0
93	12	14	06	07	16.0	-9.347	-79.037	64	5.1
93	12	14	06	31	19.4	-20.765	-173.446	33	5.4
93	12	14	06	47	45.6	-20.629	-173.609	37	5.1
93	12	14	07	12	14.8	37.960	72.739	134	5.0
93	12	14	07	21	56.2	9.872	126.341	33	5.0
93	12	14	07	49	59.7	-13.697	168.963	21	5.4
93	12	14	21	41	50.9	0.514	126.387	33	5.0
93	12	15	20	17	41.9	0.518	126.066	33	5.2
93	12	15	21	49	42.2	23.110	120.635	17	5.6
93	12	16	03	12	16.8	-9.988	128.251	150	5.0
93	12	16	12	17	15.4	3.777	127.817	33	5.1
93	12	16	13	04	34.6	13.394	145.920	52	5.0
93	12	16	20	11	25.1	53.762	171.488	30	5.8
93	12	16	23	41	20.7	-15.368	-173.464	114	5.0

Table 6. Local events with $M_L \geq 2.0$ that occurred during LARSE93. Source information is from the Southern California Earthquake Center Data Center (SCEC_DC) catalog.

Time (GMT)						Location coordinates		Magnitude	Depth
yr	mo	day	hr	min	sec	latitude (°N)	longitude (°E)		(km)
93	11	11	04	28	16.09	32.3623	-115.3728	2.1	5.51
93	11	11	06	20	49.57	37.4218	-118.6325	2.5	6.00
93	11	11	07	02	09.75	0.0000	0.0000	3.0	6.00
93	11	11	10	31	18.87	37.1365	-117.8403	2.5	6.00
93	11	11	12	33	12.43	33.3607	-116.9498	2.3	4.84
93	11	11	13	07	17.68	32.3220	-115.1303	2.2	6.00
93	11	11	15	16	09.69	37.4743	-118.7935	3.2	6.00
93	11	11	15	56	46.29	37.6445	-118.8720	2.6	4.19
93	11	11	16	54	05.15	37.1182	-117.8440	2.1	6.00
93	11	11	18	02	00.09	35.9773	-117.6530	2.3	5.03
93	11	11	19	57	25.44	33.1967	-115.5675	2.4	3.55
93	11	11	23	31	05.39	34.4953	-116.5085	2.9	2.68
93	11	12	05	31	09.56	35.6768	-118.3242	3.5	10.82
93	11	12	08	49	06.40	34.9032	-116.6985	2.3	2.20
93	11	12	14	45	10.75	37.6410	-118.8818	2.5	6.00
93	11	12	19	32	38.26	33.9737	-117.0798	2.2	6.00
93	11	12	20	00	31.61	34.9503	-117.0162	2.1	2.40
93	11	13	01	17	15.81	32.7527	-115.4340	2.1	15.89
93	11	13	01	20	42.99	32.7442	-115.4288	2.2	16.11
93	11	13	01	27	42.44	0.0000	0.0000	3.7	0.00
93	11	13	08	09	20.82	33.9920	116.9742	2.1	11.03
93	11	13	10	53	33.12	32.8880	-115.7853	2.5	12.30
93	11	13	21	14	06.69	35.9527	-120.4750	3.0	6.00
93	11	13	21	48	08.38	33.9895	-116.8390	2.1	19.46
93	11	13	23	01	37.41	34.3070	-116.4482	2.2	5.51
93	11	14	00	11	13.81	35.9510	-120.5068	2.5	12.06
93	11	14	02	04	54.15	32.7893	-115.4368	2.1	12.18
93	11	14	03	44	21.00	33.8397	-120.1303	2.1	6.00
93	11	14	04	41	00.87	35.9545	-120.5143	2.3	12.56
93	11	14	04	48	28.21	35.9518	-120.5143	2.3	9.50
93	11	14	06	10	34.46	33.8345	-117.7302	2.2	4.40
93	11	14	07	34	53.13	33.7090	-116.7765	2.2	15.28
93	11	14	12	25	35.40	35.9648	-120.5072	4.6	18.00
93	11	14	12	29	15.31	35.9477	-120.5062	2.7	10.00
93	11	14	12	34	54.56	35.9855	-120.5118	2.9	17.45
93	11	14	12	53	00.24	35.9475	-120.4675	2.8	6.00
93	11	14	14	55	37.58	35.9692	-120.4837	2.2	6.00
93	11	14	20	17	33.30	34.3648	-116.4730	2.2	0.85

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	11	15	03	05	05.57	35.9858	-120.5432	2.6	15.14
93	11	15	11	01	01.86	36.0083	-120.5562	2.3	11.82
93	11	15	14	17	38.67	37.1197	-117.9277	2.3	6.00
93	11	15	17	31	35.44	37.5665	-118.7912	2.3	6.00
93	11	15	22	32	21.69	35.8075	-119.2695	2.1	6.00
93	11	16	04	14	21.46	34.3503	-116.4658	2.4	7.68
93	11	16	04	21	01.10	34.4207	-116.4772	2.4	1.44
93	11	16	05	02	05.98	34.9145	-116.7747	2.3	3.66
93	11	16	06	47	31.18	33.1648	-115.6517	2.2	3.10
93	11	16	08	35	39.55	37.6262	-118.9373	2.4	6.00
93	11	16	08	47	23.75	37.6410	-118.9427	2.6	6.00
93	11	16	09	13	52.89	37.6405	-118.9417	2.4	6.00
93	11	16	09	40	46.67	37.6398	-118.9403	2.3	6.00
93	11	16	12	40	57.33	33.1660	-115.6488	2.4	1.94
93	11	16	14	47	01.71	33.8473	-116.8813	2.6	16.30
93	11	16	16	39	51.59	37.6638	-118.8507	2.7	6.00
93	11	16	18	25	26.72	37.5253	-118.7878	2.3	6.00
93	11	17	00	47	35.06	36.7947	-118.1650	2.4	6.00
93	11	17	01	40	28.69	35.6888	-121.1110	2.3	6.00
93	11	17	06	56	31.68	34.4748	-116.5247	2.1	0.01
93	11	17	11	30	02.43	32.9473	-115.7383	2.2	11.76
93	11	17	15	35	46.25	35.9502	-120.5323	2.1	6.00
93	11	17	19	12	59.20	33.0378	-114.9433	2.5	0.00
93	11	17	22	56	08.91	34.5867	-116.6480	2.1	4.61
93	11	17	23	35	34.33	34.3893	-116.4668	2.1	3.27
93	11	18	00	45	28.75	31.8633	-115.7180	2.4	6.00
93	11	18	02	07	09.32	36.0038	-120.5662	2.1	12.99
93	11	18	05	22	31.73	35.5475	-117.3710	2.1	8.97
93	11	18	05	58	54.48	36.3967	-116.9695	2.1	6.00
93	11	18	07	00	41.33	34.1475	-116.4297	2.3	4.25
93	11	18	08	07	12.99	31.7500	-116.5000	2.3	6.00
93	11	18	11	29	15.61	33.7398	-117.5098	2.1	9.56
93	11	18	11	29	18.87	34.2472	-116.8623	2.1	12.67
93	11	18	12	24	38.16	35.9623	-120.5150	2.2	12.27
93	11	18	17	41	01.99	37.4393	-119.0353	2.6	6.00
93	11	18	19	16	30.49	34.0337	-116.3258	2.7	5.45
93	11	18	20	37	33.50	34.1682	-116.4265	3.5	11.52
93	11	18	21	18	21.95	34.1570	-116.4325	2.3	8.44
93	11	18	21	29	51.57	36.3423	-120.4527	2.5	6.00
93	11	18	22	41	08.46	34.1425	-117.5898	2.3	10.85
93	11	18	23	50	24.83	34.4265	-116.5370	2.1	3.15
93	11	19	01	12	15.90	33.7658	-116.9933	2.9	17.29
93	11	19	01	49	57.99	0.0000	0.0000	3.4	0.00
93	11	19	01	52	27.25	36.0807	-120.5977	2.4	7.78

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	11	19	02	32	06.25	36.0697	-119.7652	2.3	6.00
93	11	19	02	37	17.05	36.0692	-119.7877	2.8	6.00
93	11	19	04	05	37.14	0.0000	0.0000	2.1	0.00
93	11	19	08	59	54.82	34.1263	-117.0057	2.4	5.34
93	11	19	16	21	59.77	34.2065	-116.4342	2.1	4.29
93	11	19	16	27	42.95	35.4002	-119.4828	2.1	26.88
93	11	19	18	18	07.18	34.2125	-116.4320	2.1	4.29
93	11	19	19	40	26.49	36.3027	-120.8800	2.2	6.00
93	11	20	03	27	44.10	33.9497	-116.3132	2.8	8.52
93	11	20	03	42	32.71	34.3830	-116.4527	2.2	6.00
93	11	20	03	57	16.79	37.6033	-118.8633	2.2	6.00
93	11	20	05	58	03.21	37.6235	-118.8683	2.6	4.63
93	11	20	06	15	00.33	34.3235	-116.4613	3.5	6.17
93	11	20	10	47	31.68	37.6265	-118.8690	2.4	5.50
93	11	20	10	52	18.73	37.6158	-118.8615	2.3	8.42
93	11	20	11	27	40.68	37.6160	-118.8593	2.4	6.00
93	11	20	11	47	01.69	34.3903	-116.4640	2.3	1.27
93	11	20	12	00	59.84	0.0000	0.0000	2.2	6.00
93	11	20	12	06	55.58	36.2787	-119.6718	2.1	6.00
93	11	20	12	22	57.01	34.4760	-116.7518	2.1	5.29
93	11	20	12	26	30.70	37.6120	-118.8610	2.5	7.48
93	11	20	13	29	37.42	37.6163	-118.8738	2.5	9.06
93	11	20	14	32	45.20	37.6117	-118.8613	2.4	7.67
93	11	20	14	41	44.19	37.6378	-118.8575	2.5	4.75
93	11	20	17	59	05.08	34.0747	-116.8643	2.4	11.75
93	11	20	18	26	00.55	35.3072	-118.5988	2.1	1.21
93	11	21	01	12	24.11	34.0470	-118.9122	2.2	0.01
93	11	21	07	46	50.77	33.4972	-116.4658	2.2	9.48
93	11	21	08	50	49.18	34.0675	-116.3595	2.1	2.73
93	11	21	22	01	17.75	34.3222	-116.4778	2.2	1.30
93	11	22	02	09	57.72	35.9573	-115.6178	2.3	6.00
93	11	22	02	20	42.36	34.9817	-116.9760	2.1	5.19
93	11	22	03	23	45.89	32.6685	-115.9115	2.2	3.59
93	11	22	04	28	42.95	34.5537	-116.5542	2.1	4.26
93	11	22	08	54	11.80	34.2722	-116.9015	2.2	10.25
93	11	22	15	36	36.33	34.1757	-116.4363	2.5	4.85
93	11	22	15	58	23.81	34.1702	-116.4368	2.4	4.30
93	11	22	22	04	12.24	34.2645	-116.3950	2.2	3.04
93	11	22	22	55	40.79	37.6217	-118.8367	2.7	6.00
93	11	22	23	08	21.64	37.5762	-118.8432	3.0	6.00
93	11	22	23	10	21.23	37.5675	-118.8367	2.7	3.59
93	11	22	23	42	04.86	32.9633	-114.6285	2.3	0.00
93	11	23	03	44	47.28	31.9060	-115.7797	2.3	6.00
93	11	23	04	09	55.98	34.2408	-116.4243	2.7	3.15

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	11	23	11	00	46.81	33.3472	-116.3627	2.7	11.47
93	11	23	19	55	04.50	33.0682	-114.9723	2.5	0.00
93	11	24	05	46	16.79	34.1858	-116.8242	2.1	8.90
93	11	24	12	22	25.89	37.6577	-118.9497	2.5	7.43
93	11	24	18	08	48.60	35.3003	-117.6685	2.7	7.05
93	11	24	19	20	30.88	34.1227	-116.9947	2.1	4.40
93	11	24	22	13	13.48	32.1057	-114.9723	2.2	6.00
93	11	25	01	12	55.29	32.0728	-114.9418	2.3	6.00
93	11	25	01	27	23.12	34.6345	-116.5188	2.3	3.68
93	11	25	02	46	35.00	35.9575	-115.7000	3.6	6.00
93	11	25	02	54	54.21	32.0817	-114.9563	2.2	6.00
93	11	25	04	02	54.73	37.6288	-118.9600	2.3	1.76
93	11	25	04	09	50.76	37.5860	-118.9133	2.4	6.00
93	11	25	08	06	47.01	0.0000	0.0000	2.7	6.00
93	11	25	10	24	04.82	37.6270	-118.9317	2.2	8.34
93	11	25	10	26	03.55	37.6340	-118.9350	2.4	8.61
93	11	25	10	34	23.20	37.6355	-118.9335	2.3	8.08
93	11	25	13	27	51.75	32.0680	-114.9435	2.2	6.00
93	11	25	13	31	49.70	32.0460	-114.9397	2.2	6.00
93	11	25	14	45	57.36	0.0000	0.0000	2.7	6.00
93	11	25	17	20	32.31	36.0833	-117.7222	2.3	0.01
93	11	25	18	26	01.98	35.8918	-115.7278	2.1	6.00
93	11	25	20	27	06.85	34.0862	-116.4238	3.1	9.38
93	11	26	01	56	40.63	37.6448	-118.8572	2.6	5.00
93	11	26	03	54	12.30	35.6488	-117.6350	2.1	6.00
93	11	26	06	14	28.11	35.7495	-118.0173	2.1	3.50
93	11	26	08	46	00.35	34.4710	-116.4765	2.1	2.94
93	11	26	09	14	41.83	32.8573	-115.6770	2.2	8.88
93	11	26	19	49	52.28	37.6438	-118.8618	3.0	4.73
93	11	26	20	05	29.97	34.0092	-116.3178	2.3	5.35
93	11	26	20	18	56.02	32.8620	-115.6772	3.0	10.79
93	11	26	20	38	14.80	36.3042	-120.1523	2.4	6.00
93	11	27	01	15	34.77	34.0013	-116.3078	2.6	5.41
93	11	27	03	23	23.64	37.6395	-118.8623	2.2	1.42
93	11	27	04	48	55.17	34.8272	-120.4318	2.7	1.24
93	11	27	11	07	22.42	37.5033	-118.6483	2.4	6.00
93	11	27	13	20	56.50	36.4122	-117.8623	2.1	0.00
93	11	27	13	56	42.95	34.0055	-116.3222	2.7	6.52
93	11	27	17	41	49.38	34.0140	-116.3232	2.1	5.84
93	11	27	19	55	21.41	34.6283	-116.5567	2.6	7.90
93	11	27	21	55	00.87	37.9305	-118.5398	2.6	6.00
93	11	28	00	32	47.95	37.6197	-118.9407	3.5	6.00
93	11	28	00	34	12.02	37.6248	-118.9480	3.2	6.00
93	11	28	00	35	35.42	37.6245	-118.9353	2.2	6.00

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	11	28	00	35	54.14	37.6847	-118.9685	2.9	6.00
93	11	28	00	36	37.40	37.6555	-118.9613	3.3	6.00
93	11	28	00	41	43.47	37.6363	-118.9482	3.2	6.00
93	11	28	00	50	19.30	37.5655	-118.9818	3.0	6.00
93	11	28	00	50	43.42	37.6307	-118.9377	3.2	6.00
93	11	28	00	55	14.06	37.6343	-118.9393	2.8	6.00
93	11	28	00	56	11.99	37.6370	-118.9443	3.2	6.00
93	11	28	01	01	52.71	37.6318	-118.9475	3.2	6.00
93	11	28	01	09	14.37	37.6350	-118.9260	3.0	5.51
93	11	28	01	09	42.19	37.6245	-118.9228	2.8	5.94
93	11	28	01	10	18.89	37.6255	-118.9313	3.0	7.05
93	11	28	01	14	12.66	37.6130	-118.9075	2.9	6.00
93	11	28	01	14	22.13	37.6267	-118.9295	3.2	6.00
93	11	28	01	15	50.78	37.6253	-118.9382	3.2	6.46
93	11	28	01	18	35.01	37.6302	-118.9212	2.4	6.00
93	11	28	01	19	10.97	37.6222	-118.9235	3.1	6.00
93	11	28	01	31	58.95	37.6320	-118.9220	3.1	6.00
93	11	28	01	35	37.46	37.6268	-118.9267	2.7	6.00
93	11	28	02	06	16.14	37.6348	-118.9278	3.1	6.00
93	11	28	02	08	03.60	37.6265	-118.9357	2.4	6.00
93	11	28	02	19	15.84	37.6327	-118.9313	2.7	6.00
93	11	28	02	27	44.29	37.6270	-118.9377	2.8	6.00
93	11	28	02	32	44.12	37.6237	-118.9305	2.8	6.00
93	11	28	02	46	40.51	37.6368	-118.9405	2.9	6.00
93	11	28	02	58	27.54	37.6140	-118.9350	2.4	6.00
93	11	28	03	19	30.67	37.6257	-118.9412	2.8	6.00
93	11	28	03	30	27.14	37.6378	-118.9463	2.6	5.58
93	11	28	05	34	45.30	37.6400	-118.8573	2.2	6.00
93	11	28	06	01	25.36	37.6232	-118.9293	2.6	6.00
93	11	28	06	53	53.16	36.2943	-120.8860	2.4	6.00
93	11	28	08	21	22.96	37.6293	-118.9355	5.1	6.00
93	11	28	08	22	11.45	37.6330	-118.9337	2.8	6.00
93	11	28	09	40	16.40	37.6362	-118.9447	2.5	5.85
93	11	28	11	09	36.19	0.0000	0.0000	2.8	6.00
93	11	28	11	23	20.53	34.3238	-116.9173	2.9	7.35
93	11	28	11	27	20.58	37.6392	-118.8592	2.9	4.73
93	11	28	11	34	38.56	37.6342	-118.8502	2.6	4.20
93	11	28	15	05	59.50	37.6407	-118.8635	2.7	6.00
93	11	28	19	39	25.62	37.6387	-118.8640	2.8	6.00
93	11	28	19	50	39.12	37.6358	-118.8612	2.1	6.00
93	11	28	19	51	43.66	34.3712	-116.4482	2.6	0.96
93	11	28	20	01	50.36	37.6338	-118.8610	2.3	6.00
93	11	28	22	32	47.77	37.6187	-118.9390	3.0	6.00
93	11	28	22	48	34.08	37.4295	-118.5268	3.0	6.00

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	11	29	01	30	13.28	37.6105	-118.8540	2.3	0.01
93	11	29	04	58	14.10	37.6373	-118.8560	2.4	1.12
93	11	29	05	01	06.13	37.6330	-118.8632	2.9	5.51
93	11	29	05	07	59.33	37.6235	-118.8700	2.9	6.00
93	11	29	07	21	26.38	34.6355	-116.6527	2.2	4.94
93	11	29	11	07	00.32	33.7113	-116.8470	2.7	16.30
93	11	29	12	13	54.60	31.6418	-116.0162	3.0	6.00
93	11	29	15	11	58.73	37.6302	-118.9520	2.5	6.00
93	11	29	17	55	27.37	34.3188	-116.7633	2.5	3.15
93	11	29	18	16	47.35	34.4430	-119.0073	2.2	11.00
93	11	29	18	17	09.90	34.3928	-116.4622	2.1	2.78
93	11	29	20	06	45.47	33.0543	-114.9535	2.5	0.00
93	11	29	23	40	18.22	37.6317	-118.9525	2.7	5.52
93	11	30	04	37	25.07	35.8657	-116.7240	2.5	8.09
93	11	30	06	37	56.17	37.5645	-118.8440	2.9	5.40
93	11	30	07	44	01.57	37.5623	-118.8452	2.2	6.00
93	11	30	14	33	50.16	34.1593	-116.4217	2.4	1.91
93	11	30	15	34	17.85	37.5745	-118.8497	2.5	6.00
93	11	30	15	35	46.00	37.6343	-118.9532	2.3	6.00
93	11	30	16	52	02.62	37.6472	-118.9668	2.8	6.00
93	11	30	21	00	32.15	33.0737	-114.9760	2.5	0.00
93	11	30	21	08	15.45	35.2748	-117.6803	2.4	3.67
93	11	30	23	09	35.46	37.6293	-118.9537	2.2	6.00
93	12	01	06	01	05.54	34.5995	-116.6328	2.3	3.85
93	12	01	07	10	04.01	37.6185	-118.9400	2.6	6.00
93	12	01	07	41	03.36	37.4532	-118.3878	2.7	6.00
93	12	01	10	33	30.89	37.6162	-118.9503	2.1	6.00
93	12	01	12	30	12.78	37.6230	-118.9517	2.2	6.00
93	12	01	12	39	11.26	34.1542	-117.4670	2.1	16.25
93	12	01	16	35	21.06	37.5113	-118.6408	3.2	6.00
93	12	01	20	10	55.65	33.0715	-114.9905	2.4	0.00
93	12	01	20	21	03.40	32.6997	-117.5763	2.3	6.00
93	12	01	23	38	08.87	34.6185	-116.6568	2.9	4.24
93	12	01	23	58	40.89	37.6278	-118.9447	2.7	6.00
93	12	02	00	18	03.31	0.0000	0.0000	2.6	6.00
93	12	02	00	52	32.69	37.0658	-117.8167	2.6	6.00
93	12	02	02	22	05.08	34.6335	-116.5078	2.1	7.04
93	12	02	03	07	05.61	37.6300	-118.9548	3.0	6.00
93	12	02	07	10	59.22	32.0045	-116.2662	2.4	6.00
93	12	02	10	16	02.63	37.2407	-117.9027	2.2	6.00
93	12	02	12	10	24.42	37.6307	-118.9502	2.9	6.00
93	12	02	14	52	49.17	32.2397	-115.7398	2.6	6.00
93	12	02	19	31	53.17	35.9112	-117.7280	2.7	7.28
93	12	02	19	53	37.60	35.9100	-117.7275	2.6	7.10

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	12	02	20	17	01.64	35.9108	-117.7287	2.2	7.96
93	12	02	22	32	46.39	34.3782	-116.4657	2.1	3.63
93	12	02	22	38	25.44	33.0655	-114.9605	2.1	0.00
93	12	03	00	17	00.47	34.4897	-116.5085	2.2	0.90
93	12	03	00	18	52.13	34.3358	-116.4630	2.4	3.00
93	12	03	00	34	08.18	34.8278	-120.4253	2.7	0.75
93	12	03	01	51	24.75	34.2593	-116.7210	3.8	1.61
93	12	03	12	31	58.59	33.9617	-118.3190	2.1	8.94
93	12	03	13	42	51.86	37.6297	-118.9598	2.4	6.00
93	12	03	14	11	09.03	37.6298	-118.9558	2.6	4.73
93	12	03	17	44	20.27	34.4045	-118.4015	2.9	7.25
93	12	03	18	42	03.76	37.6248	-118.9473	2.8	6.00
93	12	03	19	31	15.04	37.6360	-118.9448	2.8	5.51
93	12	03	20	00	37.58	37.6308	-118.9505	2.7	5.44
93	12	03	20	27	00.55	33.0452	-114.9493	2.1	0.00
93	12	03	21	41	01.60	34.6358	-116.5425	2.3	3.99
93	12	03	22	00	20.10	34.3943	-116.4655	2.1	3.16
93	12	03	23	11	44.14	35.3092	-116.8607	2.8	4.01
93	12	04	01	36	44.86	34.3357	-116.4743	2.1	8.98
93	12	04	02	13	37.90	34.0000	-116.3228	2.3	9.23
93	12	04	03	08	23.05	32.9350	-117.6268	2.2	6.00
93	12	04	04	41	28.64	34.6290	-116.5877	2.4	7.24
93	12	04	05	46	31.43	37.6285	-118.9523	2.7	6.11
93	12	04	16	27	59.51	34.4895	-116.5093	2.1	12.06
93	12	04	18	59	23.59	35.0110	-116.9650	2.6	6.00
93	12	04	20	27	07.43	36.0078	-120.5483	2.5	13.51
93	12	04	22	15	19.60	42.2580	-121.9770	5.1	5.00
93	12	05	04	51	49.10	34.6192	-116.6642	2.2	4.54
93	12	05	06	25	06.20	37.2640	-121.6430	3.4	7.00
93	12	05	17	14	24.98	34.5613	-116.5567	2.1	6.00
93	12	05	17	15	04.60	37.9880	-121.8680	3.2	17.00
93	12	05	18	55	00.60	38.7970	-120.0310	3.0	14.00
93	12	05	19	51	44.19	35.2817	-116.8525	2.6	0.01
93	12	05	22	55	47.05	34.9845	-116.9487	2.1	5.51
93	12	06	00	45	56.97	34.1720	-116.4395	2.1	3.22
93	12	06	03	18	55.76	36.0532	-117.9687	2.4	2.22
93	12	06	06	35	43.96	37.5232	-118.7652	2.6	6.00
93	12	06	07	03	35.14	35.2873	-116.8542	2.9	6.00
93	12	06	09	27	20.52	35.0698	-116.6567	2.5	6.00
93	12	06	10	53	33.40	34.9808	-116.9467	2.3	6.00
93	12	06	12	36	48.88	36.0540	-120.4442	2.2	6.00
93	12	06	13	45	07.36	34.1475	-116.7237	2.2	5.50
93	12	06	20	50	07.69	33.3293	-115.7417	2.6	3.53
93	12	06	20	52	50.59	33.3217	-115.7410	2.1	3.29

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	12	07	03	38	47.68	33.3885	-116.8960	2.2	5.71
93	12	07	04	03	06.50	33.8020	-118.3240	2.1	6.27
93	12	07	04	17	28.87	37.0112	-117.9315	2.9	6.00
93	12	07	05	10	10.48	37.6623	-118.8478	2.6	6.00
93	12	07	05	32	14.03	35.2915	-116.8525	2.5	6.00
93	12	07	08	37	24.34	37.6572	-118.8292	2.5	4.27
93	12	07	18	57	30.14	34.1212	-116.3843	2.3	2.71
93	12	07	20	07	27.73	34.1402	-116.9713	2.8	11.62
93	12	07	21	10	26.63	0.0000	0.0000	2.6	6.00
93	12	07	22	22	47.59	32.7290	-118.1455	2.5	6.00
93	12	07	23	05	04.18	37.0183	-117.9195	2.1	6.00
93	12	08	01	56	42.71	37.6627	-118.8377	2.6	6.00
93	12	08	02	49	38.98	32.3565	-115.3538	3.9	6.00
93	12	08	02	52	28.74	32.3530	-115.3487	2.9	6.00
93	12	08	02	54	55.26	32.3442	-115.3483	2.6	6.00
93	12	08	03	02	50.10	32.3588	-115.3555	3.2	6.00
93	12	08	03	06	17.38	32.3042	-115.3585	3.2	6.00
93	12	08	03	10	14.35	32.3408	-115.3482	3.0	6.00
93	12	08	03	10	44.95	32.3025	-115.3538	3.3	6.00
93	12	08	03	17	09.93	32.3275	-115.3605	2.9	6.00
93	12	08	03	25	56.21	32.3522	-115.3457	3.0	6.00
93	12	08	04	20	27.78	32.3528	-115.3572	2.2	6.00
93	12	08	04	21	00.75	32.3147	-115.3500	2.3	6.00
93	12	08	04	27	16.42	32.3362	-115.3490	2.5	6.00
93	12	08	04	31	30.17	32.3257	-115.3477	2.8	6.00
93	12	08	04	32	37.13	32.3202	-115.3500	3.0	6.00
93	12	08	04	37	18.68	32.3478	-115.3452	2.5	6.00
93	12	08	04	53	01.77	32.3563	-115.3572	2.2	6.00
93	12	08	05	00	30.24	32.3417	-115.3598	3.0	6.00
93	12	08	05	45	03.53	33.5932	-118.2970	2.2	0.00
93	12	08	06	06	35.80	32.3263	-115.3518	2.3	6.00
93	12	08	06	11	32.89	32.2958	-115.3393	2.5	6.00
93	12	08	07	16	47.19	37.6090	-118.9712	2.7	5.51
93	12	08	07	23	47.01	32.3558	-115.3643	2.1	6.00
93	12	08	07	31	19.82	32.3372	-115.3523	2.2	6.00
93	12	08	07	31	34.65	32.2443	-115.3227	2.9	6.00
93	12	08	07	58	45.83	32.3627	-115.3373	2.1	6.00
93	12	08	08	23	42.11	32.3467	-115.3373	2.3	6.00
93	12	08	08	47	30.10	32.3362	-115.3573	3.3	6.00
93	12	08	09	06	28.81	35.0085	-116.9658	3.7	2.33
93	12	08	09	47	52.74	32.3402	-115.3512	2.8	6.00
93	12	08	10	30	42.38	32.3303	-115.2488	2.8	6.00
93	12	08	11	58	34.45	35.0012	-116.9525	2.1	0.01
93	12	08	13	09	47.84	34.9865	-116.9477	2.7	5.50

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	12	08	13	25	50.92	32.3582	-115.3543	2.6	6.00
93	12	08	14	56	51.66	34.1953	-116.7983	2.3	4.88
93	12	08	15	02	38.92	36.6943	-116.3335	2.4	6.00
93	12	08	16	36	34.51	32.3510	-115.3560	2.1	6.00
93	12	08	19	25	21.31	37.6255	-118.9385	2.2	6.00
93	12	08	20	02	58.73	32.3442	-115.3503	2.8	6.00
93	12	08	21	10	22.72	33.5663	-118.2725	2.6	0.01
93	12	08	21	39	26.96	32.3652	-115.3402	2.1	6.00
93	12	08	22	44	28.94	37.3750	-118.5923	2.1	6.00
93	12	08	23	30	20.73	32.3278	-115.3535	2.2	6.00
93	12	08	23	59	50.33	32.3415	-115.3478	2.4	6.00
93	12	09	00	07	00.63	32.3600	-115.3478	3.1	6.00
93	12	09	00	07	32.64	32.3672	-115.3500	3.6	6.00
93	12	09	00	12	51.09	32.3723	-115.3733	2.4	6.00
93	12	09	03	01	48.20	32.3578	-115.3495	2.3	6.00
93	12	09	03	16	43.63	34.1585	-116.4207	2.3	5.50
93	12	09	03	25	51.47	34.1595	-116.4212	2.5	5.39
93	12	09	04	10	46.57	37.4927	-118.8893	2.4	6.00
93	12	09	04	18	10.10	32.3675	-115.3560	3.1	6.00
93	12	09	05	11	40.98	32.3578	-115.3427	2.2	6.00
93	12	09	06	31	54.02	32.4110	-115.3445	2.2	6.00
93	12	09	08	08	20.53	32.3357	-115.3520	2.2	6.00
93	12	09	08	28	00.28	32.3397	-115.3442	2.2	6.00
93	12	09	09	03	29.67	32.3570	-115.3507	2.3	6.00
93	12	09	09	11	33.71	32.3557	-115.3495	2.9	6.00
93	12	09	12	24	11.51	37.2150	-117.8602	2.1	6.00
93	12	09	12	25	02.29	37.4327	-118.6717	2.3	6.00
93	12	09	13	23	38.61	34.4908	-118.6827	2.4	15.01
93	12	09	13	59	25.10	36.2558	-120.3667	2.5	6.00
93	12	09	15	40	18.29	34.5023	-116.5228	2.1	1.05
93	12	09	16	07	49.33	34.0115	-116.3187	2.1	4.92
93	12	09	16	08	05.32	34.9883	-116.9607	2.1	5.28
93	12	09	20	21	19.26	34.2232	-116.4357	2.1	4.29
93	12	09	20	21	51.23	34.2218	-116.4378	2.1	4.13
93	12	09	21	37	24.11	32.3675	-115.3548	2.1	6.00
93	12	09	22	09	04.56	32.3648	-115.3367	3.0	6.00
93	12	09	23	15	18.65	0.0000	0.0000	2.5	6.00
93	12	09	23	25	15.97	37.1447	-117.8117	2.2	6.00
93	12	10	00	27	18.99	37.0168	-117.9150	3.3	6.00
93	12	10	02	45	37.59	32.3402	-115.3477	2.1	6.00
93	12	10	03	37	44.32	36.1342	-118.0695	2.2	0.00
93	12	10	03	37	59.69	32.5725	-117.6818	2.5	6.00
93	12	10	06	43	05.73	37.5497	-118.8745	2.6	6.00
93	12	10	10	06	08.93	35.6483	-117.6365	2.9	5.08

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	12	10	10	10	10.50	34.0177	-117.1083	3.2	8.17
93	12	10	10	14	40.30	35.6457	-117.6363	2.1	5.48
93	12	10	10	28	20.61	34.2710	-116.7225	2.3	0.68
93	12	10	13	51	07.48	34.2370	-119.4990	2.4	13.76
93	12	10	15	06	37.11	35.6480	-117.6377	3.0	5.50
93	12	10	15	44	21.91	32.3950	-115.3245	2.8	6.00
93	12	10	16	08	15.30	37.6192	-118.8625	2.3	0.67
93	12	10	16	58	40.55	35.0163	-116.9643	2.2	0.21
93	12	10	18	40	10.24	34.6215	-116.5503	2.1	6.00
93	12	10	21	18	47.40	33.0648	-114.9618	2.2	0.00
93	12	10	22	00	59.06	34.6057	-116.6175	2.2	3.95
93	12	10	23	51	22.30	33.8043	-118.1518	2.1	10.59
93	12	11	00	07	06.70	33.9843	-116.7978	2.2	19.16
93	12	11	00	19	33.92	34.5718	-116.6932	2.2	5.28
93	12	11	01	06	07.76	37.0197	-117.9338	2.6	6.00
93	12	11	01	35	56.97	32.2998	-115.3377	2.1	6.00
93	12	11	06	47	55.20	37.6293	-118.9362	2.7	7.99
93	12	11	06	57	54.36	37.6392	-118.8735	2.2	6.00
93	12	11	07	01	20.48	32.4160	-115.3228	2.2	6.00
93	12	11	09	14	33.10	32.4077	-115.3285	2.3	6.00
93	12	11	14	05	27.80	36.1722	-118.0225	2.2	6.00
93	12	11	14	17	35.16	32.3992	-115.3317	2.1	6.00
93	12	11	15	59	18.85	36.1535	-118.0292	2.8	0.01
93	12	11	15	59	52.78	37.0208	-117.9320	2.8	6.00
93	12	11	16	14	13.41	32.4230	-115.3282	2.1	6.00
93	12	11	18	57	55.97	32.3703	-115.3477	2.7	6.00
93	12	11	19	12	54.76	37.6393	-118.8700	2.8	6.00
93	12	11	19	54	34.77	32.4100	-115.3332	2.6	6.00
93	12	11	21	52	52.66	37.4765	-118.8272	2.2	6.00
93	12	12	00	45	09.07	35.4695	-119.9802	2.6	9.66
93	12	12	01	39	01.96	37.0260	-117.9125	2.3	6.00
93	12	12	02	25	29.83	34.3793	-116.4570	2.1	2.65
93	12	12	05	32	55.38	36.3252	-120.3530	2.3	6.00
93	12	12	07	24	45.63	0.0000	0.0000	2.9	6.00
93	12	12	11	12	58.67	37.0132	-117.9240	3.0	6.00
93	12	12	12	56	09.05	37.0040	-117.9258	3.1	6.00
93	12	12	13	58	38.37	37.6668	-118.9210	2.9	6.00
93	12	12	14	55	13.52	35.6508	-117.6332	2.6	5.68
93	12	12	15	45	33.69	33.9487	-116.3413	2.4	6.37
93	12	12	19	05	02.84	32.4137	-115.3305	2.3	6.00
93	12	12	19	45	58.42	32.3878	-115.3262	2.3	6.00
93	12	12	23	00	15.59	32.4435	-115.3292	2.8	6.00
93	12	13	03	25	28.00	34.4802	-116.5095	2.1	1.13
93	12	13	09	32	08.57	37.6515	-118.8312	2.6	6.00

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	12	13	10	46	22.31	35.3413	-118.5525	2.2	1.89
93	12	13	11	00	15.62	35.6495	-117.6328	2.2	5.89
93	12	13	14	00	57.02	34.3065	-117.0100	2.9	5.48
93	12	13	14	30	48.51	34.3507	-116.4690	2.1	8.02
93	12	13	19	49	17.14	32.4175	-115.3338	2.2	6.00
93	12	13	20	54	09.89	37.6427	-118.8223	2.7	6.00
93	12	13	22	17	41.80	0.0000	0.0000	2.6	6.00
93	12	13	22	46	53.79	37.6403	-118.8267	2.7	6.00
93	12	13	23	25	58.06	36.9362	-118.1382	2.1	6.00
93	12	13	23	35	43.32	36.9243	-118.1642	2.2	6.00
93	12	14	00	21	24.36	36.9333	-118.1543	2.3	6.00
93	12	14	00	40	20.96	37.6498	-118.8817	2.4	12.77
93	12	14	01	32	11.19	37.6377	-118.8265	2.4	6.00
93	12	14	01	42	35.94	34.0728	-117.0927	2.1	0.00
93	12	14	03	52	15.53	37.6620	-118.9060	2.4	6.00
93	12	14	04	00	44.17	37.6527	-118.8920	2.3	6.00
93	12	14	04	04	27.07	37.6443	-118.8908	2.8	6.00
93	12	14	05	46	28.49	34.3357	-116.4720	2.1	4.81
93	12	14	06	07	23.15	37.6262	-118.9623	2.4	5.41
93	12	14	06	52	37.29	36.4207	-117.8777	2.8	6.00
93	12	14	10	03	5.40	37.5553	-118.8300	2.6	6.00
93	12	14	11	39	33.89	34.6312	-116.6675	2.3	4.37
93	12	14	15	56	53.02	35.9913	-117.6917	2.2	2.53
93	12	14	17	48	07.29	37.5520	-118.8460	2.7	6.00
93	12	14	18	04	44.24	36.0770	-117.7195	3.2	1.26
93	12	14	18	50	05.27	37.6433	-118.8467	2.3	6.00
93	12	15	01	11	30.53	37.6507	-118.8265	2.3	6.00
93	12	15	09	23	43.19	34.4413	-116.5062	2.4	1.35
93	12	15	09	55	48.64	34.3130	-116.4377	2.1	6.62
93	12	15	10	26	22.88	36.1898	-120.1805	3.0	6.00
93	12	15	13	37	44.15	32.3460	-115.3498	2.1	6.00
93	12	15	20	11	34.56	37.6302	-118.9590	2.7	5.51
93	12	15	20	15	50.52	33.0677	-114.9593	2.3	0.00
93	12	15	21	24	04.43	34.0568	-116.4388	2.5	5.32
93	12	15	21	48	50.14	32.9610	-114.6035	2.2	0.00
93	12	15	22	47	08.33	34.6280	-116.6665	2.1	4.43
93	12	16	00	23	02.22	34.9423	-120.8397	2.6	6.00
93	12	16	00	43	57.60	38.6030	-119.4590	3.8	5.00
93	12	16	03	03	56.52	0.0000	0.0000	2.3	0.00
93	12	16	03	52	29.09	32.4343	-115.3275	2.2	6.00
93	12	16	06	54	16.57	34.1187	-116.6405	2.2	8.56
93	12	16	09	55	50.42	37.0183	-117.9460	2.6	6.00
93	12	16	10	23	45.29	37.6222	-118.8253	3.0	6.00
93	12	16	10	35	06.57	37.6165	-118.8280	2.9	6.00

Table 6 (continued)

Time						Location coordinates		Magnitude	Depth
93	12	16	15	49	29.99	33.4717	-118.2962	2.1	1.52
93	12	16	17	01	39.60	37.2850	-121.6520	3.7	10.00
93	12	16	17	43	01.33	37.0083	-117.9478	2.1	6.00
93	12	16	20	11	25.10	53.7620	171.4880	5.7	30.00
93	12	16	21	20	37.95	33.0245	-117.7735	2.4	6.00
93	12	16	23	10	54.44	33.4522	-118.2653	2.5	0.01
93	12	16	23	11	38.15	33.4618	-118.2840	2.3	0.00
93	12	16	23	23	01.91	33.4153	-118.2745	2.1	11.27

Table 7. Values for the free period, generator constant, and damping ratio for each sensor. Channel 1 (7a) refers to Vertical component, channel 2 (7b) refers to North-South, and channel 3 (7c) refers to East-West. Note that these factors can be different for different channels of the same station.

Table 7a (channel 1-Vertical component)

Station No.	Free Period (s)	Generator Constant (volts/m/s)	Damping Ratio
245	0.890	406.0040	0.729
244	0.501	87.2854	0.666
216	0.502	87.6997	0.668
203	0.514	89.3370	0.678
002	0.493	134.3400	0.765
004	0.475	133.5020	0.768
005	0.481	91.9350	0.758
301	1.059	169.3540	0.850
601	1.379	8.4729	1.204
007	0.488	140.2260	0.776
008	0.482	144.9560	0.820
009	0.982	166.1000	0.695
010	0.454	97.7360	0.768
011	0.226	135.2730	1.011
012	1.045	165.5860	0.719
013	0.479	143.4410	0.789
014	0.467	88.1217	0.714
016	0.484	138.2270	0.765
018	1.050	164.5890	0.691
019	0.507	226.0150	0.464
020	0.499	141.2140	0.815
021	0.838	418.4450	0.666
022	0.479	90.5298	0.746
024	0.871	413.6210	0.690
025	0.468	88.1379	0.635
027	0.796	290.5990	0.215
028	0.834	250.3250	0.215
029	0.476	95.3678	0.727
030	0.843	399.9580	0.643
031	0.493	93.0692	0.767
032	1.035	166.6320	0.709
033	1.015	169.8990	0.732
331	1.029	168.3770	0.727
034	1.004	164.8790	0.708
035	1.022	166.0710	0.674
036	0.478	239.1550	0.688
037	0.458	89.6289	0.621
038	0.480	242.5190	0.701

Table 7a (continued)

Station No.	Free Period (s)	Generator Constant (volts/m/s)	Damping Ratio
039	0.500	164.2720	0.774
040	0.475	81.8028	0.952
042	0.490	241.9440	0.708
045	0.472	91.3397	0.751
046	0.845	425.3440	0.690
048	0.482	143.3370	0.811
050	0.984	134.0840	0.671
052	1.002	133.5230	0.696
054	0.451	91.2792	0.683
058	0.997	134.4250	0.706
060	0.494	87.9469	0.674
062	0.500	146.9290	0.906
065	0.916	133.9100	0.693
066	0.474	93.1866	0.708
068	1.656	25.7642	1.171
070	0.772	126.8140	0.681
072	0.515	88.9155	0.706
074	0.934	134.3800	0.676
077	0.956	131.5420	0.771
080	0.440	100.4210	0.737
082	0.531	234.7470	0.457
084	0.898	415.7270	0.702
086	0.499	86.8729	0.717
088	0.458	142.8290	0.802
090	0.987	132.3600	0.709
092	0.493	86.2785	0.660
094	0.503	327.6280	0.429
096	0.989	137.9430	0.725
098	0.449	91.2586	0.726
100	0.480	133.5780	0.807
102	0.935	262.2360	0.275
104	0.468	145.8230	0.791
106	0.486	85.9718	0.724
108	0.840	409.1350	0.646
110	0.474	140.9180	0.776
112	0.482	93.3643	0.755
114	0.902	420.9600	0.743
116	0.486	140.4370	0.797
118	0.444	93.4577	0.702
122	0.461	137.6020	0.753
128	0.431	86.5354	0.750
130	0.489	143.5630	0.769

Table 7b (channel 2-North-South component)

Station No.	Free Period (s)	Generator Constant (volts/m/s)	Damping Ratio
245	1.022	410.2190	0.762
244	0.499	93.3271	1.003
216	0.600	87.7659	0.701
203	0.582	89.2091	0.826
005	0.439	87.0482	0.586
301	0.986	167.6180	0.720
009	1.007	166.3110	0.659
010	0.483	94.0344	0.729
012	1.002	164.7410	0.669
014	0.513	86.1178	0.745
018	1.000	163.3540	0.674
021	0.879	406.9780	0.712
022	0.528	94.2723	1.010
024	0.950	408.2470	0.721
025	0.464	90.1702	0.768
027	0.849	260.3330	0.246
028	0.951	253.9320	0.250
029	0.416	95.9912	0.733
030	0.974	419.3300	0.734
031	0.332	91.5438	0.516
032	0.990	169.3480	0.737
033	0.963	161.5950	0.656
331	1.099	165.7040	0.700
034	0.951	158.6720	0.695
035	0.975	169.0560	0.741
036	0.514	233.3490	0.694
037	0.482	86.8858	0.727
038	0.481	236.4410	0.656
040	0.479	93.2249	0.839
042	0.490	237.5750	0.671
045	0.469	84.0182	0.689
046	0.953	411.1730	0.764
050	0.903	88.6862	0.544
052	0.683	133.2130	0.466
054	0.510	86.5998	0.611
058	0.730	129.6610	0.562
060	0.539	88.7479	1.019
065	0.780	130.5380	0.585
066	0.492	94.3758	0.762
070	0.824	6.3543	0.143
072	0.632	81.4488	0.669
074	0.785	123.2950	0.554
077	0.672	111.9660	0.409
080	0.442	91.3685	0.733

Table 7b (continued)

Station No.	Free Period (s)	Generator Constant (volts/m/s)	Damping Ratio
084	0.991	417.6540	0.775
086	0.558	88.3731	0.715
090	0.841	124.1250	0.599
092	0.662	82.3437	0.833
096	0.751	122.4540	0.511
098	0.509	89.9133	0.696
102	1.013	267.5990	0.296
106	0.456	94.1082	0.755
108	0.885	410.7640	0.699
112	0.456	98.3155	0.816
114	0.956	425.1430	0.724
118	0.535	91.4339	0.915
128	0.538	84.3302	0.712

Table 7c (channel 3- East-West component)

Station No.	Free Period (s)	Generator Constant (volts/m/s)	Damping Ratio
245	0.947	417.0490	0.786
244	0.503	92.8504	0.804
216	0.586	83.3077	0.819
203	0.475	90.5604	0.594
005	0.458	87.2550	0.696
301	1.042	161.8670	0.697
009	1.124	163.9360	0.738
010	0.410	89.9278	0.679
012	0.956	172.3430	0.751
014	0.455	92.3174	0.621
018	1.047	165.5810	0.740
021	0.988	411.8190	0.706
022	0.510	96.2127	0.923
024	0.952	430.9310	0.751
025	0.490	90.6195	0.655
027	0.955	282.1770	0.252
028	0.865	281.1540	0.225
029	0.404	88.8648	0.662
030	0.952	412.4670	0.726
031	0.596	85.6349	0.735
032	0.998	162.3400	0.684
033	1.011	161.8760	0.644
331	0.913	165.2220	0.680
034	1.031	167.5240	0.652
035	0.949	165.5610	0.706
036	0.520	239.9450	0.724
037	0.452	94.7209	0.762
038	0.487	240.5810	0.669
040	0.489	97.0072	0.758
042	0.460	235.3980	0.632
045	0.462	90.7180	0.762
046	0.931	415.6860	0.773
050	0.661	94.0997	0.371
052	0.668	85.8947	0.412
054	0.547	87.8557	0.683
058	0.639	121.8360	0.426
060	0.687	81.7821	0.695
065	0.674	118.2020	0.431
066	0.513	92.5487	0.702
070	0.828	119.5480	0.606
072	0.541	86.8392	0.720
074	0.736	103.5310	0.503
077	0.768	118.9410	0.512
080	0.514	92.3221	0.705

Table 7c (continued)

Station No.	Free Period (s)	Generator Constant (volts/m/s)	Damping Ratio
084	0.991	417.6540	0.775
086	0.559	82.4251	0.625
090	0.722	120.4680	0.508
092	0.499	90.0341	0.683
096	0.797	126.5840	0.641
098	0.572	95.5717	1.203
102	0.990	277.0230	0.288
106	0.501	86.9918	0.743
108	0.975	408.3360	0.727
112	0.428	94.3864	0.780
114	0.941	433.0480	0.79
118	0.493	94.0574	0.941
128	0.454	92.5953	0.787

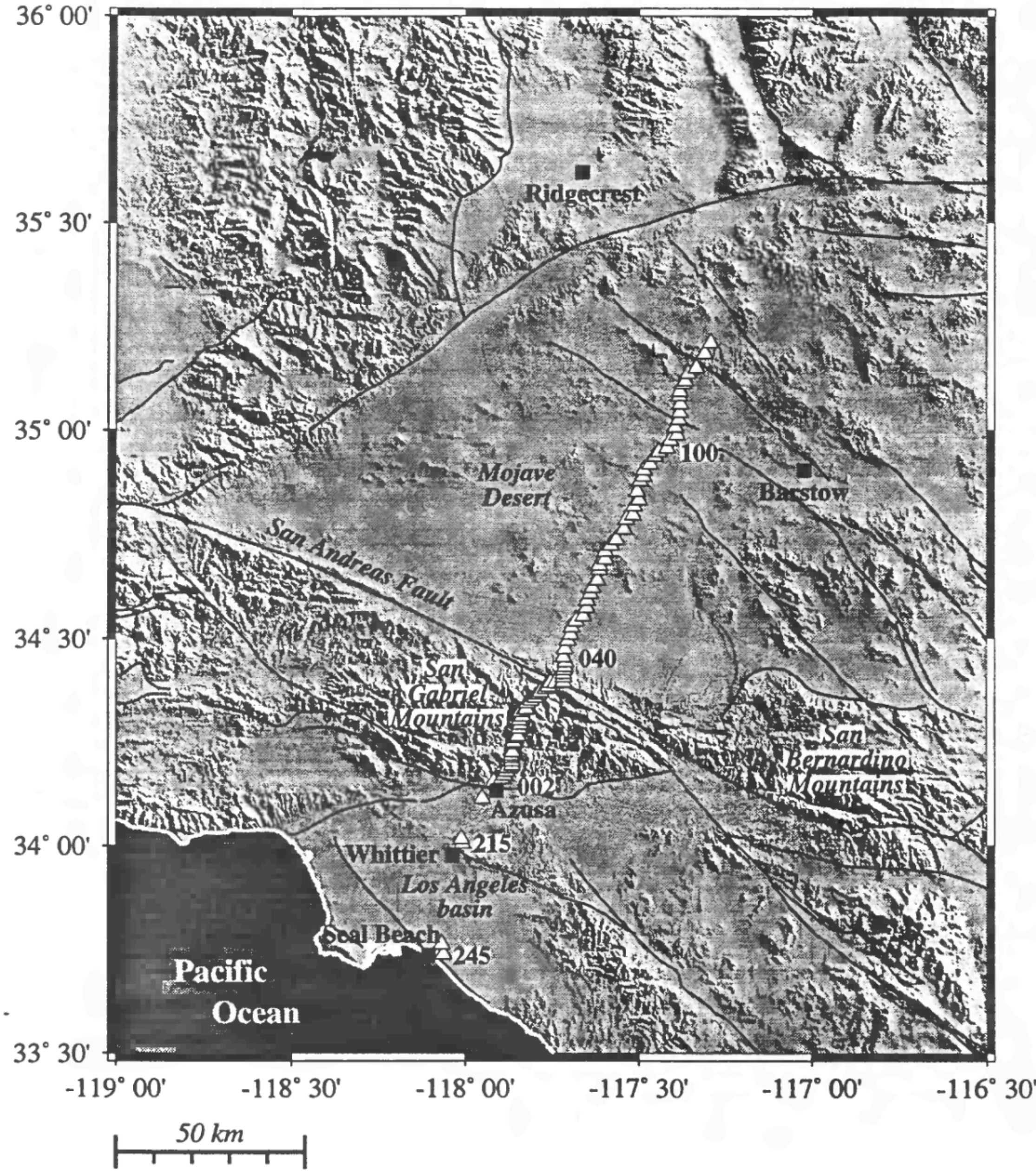

Fig. 1. Shaded relief and fault map of Southern California showing station locations (triangles). Several station numbers are given for reference.

Station Installation Instructions (LARSE-1993)

Station#: ______ Date (MM/DD/YY) ______/ ___/___

Time of arrival (local time) ________ Operator ____________

DAS number ______ Clock type ______

Sensor type ______ Sensor number ___________

1. Install REFTEK and sensors
   a. Dig a 2 ft. deep and 2 ft. diameter hole (or less) for seismometers. Level the sensors carefully. Orientation: channel 1 -> Vertical, channel 2 -> magnetic north and channel 3 -> magnetic east.
   b. Dig a 2.5 ft. by 2.5 ft by 1.5 ft hole (less than 5 ft. away from the sensor hole for environment purpose) for DAS, car battery and timing device. Put battery in a trash bag, then put all in thick plastic bag (4mm thick) to protect the equipment from dirt and water.
2. Check battery voltage ________(volts) (Must be 12V or high).
3. Connect battery — DAS, DAS — Sensor, DAS — GPS(or Omega) and DAS — Hand terminal. (Set up antenna for stations using OMEGA)
4. (optional)Receive parameters from DAS. Press COMMNCTNS/RECV PRMS. Check if parameters are correct. Send parameters back if you have modified them (Press COMMNCTNS/SEND PRMS).
5. (optional)Monitor. Press MONITOR. (to see if all the channels are Okay)
6. Bury the seismometer hole carefully. Do step 5 again.
7. System reset. Press UTILITIES/SYS RESET.
8. Start acquisition. Press COMMNCTNS/START ACQ. Zero delay time.
9. Look at DAS status and record below

   TIME ____________

   KIN OMGA ______ ACQ ______ ____(e.g. STAT ON)

   EVENTS ______

   BLKS US ______ BLKS AV ______
10. Quit DAS status and Unplug HT or AT.
11. Bury the DAS hole carefully.

Time of Departure (local time) ______________.

PLEASE NOTE ANY SPECIAL PROBLEMS ON THE BACK SIDE OF THIS SHEET.

Fig. 2. Sample station deployment and monitoring visiting sheets from which the information in Appendix A was obtained

Station Visit Instructions (LARSE-1993)

Station#: ________ Date (DD/MM/YY) ______/ ______/________

Time of arrival (local time) ____________ Operator ______________

DAS# ________ Clock type ________

1. Look for:

   Signs of water pooling in sensor hole. YES ___; NO ___.

   Signs of animal intrusion. YES ___; NO ___.

2. Check battery voltage ________(volts).
3. Connect hand terminal (or field computer) and turn it on (Don't disturb the sensor).

   (If voltage is low and communication failure when press TIME, go to Step 6)

4. Check DAS status. Press UTILITIES/DAS STATE and record below

   JULIAN DAY ________ TIME ____________

   CLOCK ______________________(e.g. UTC LK PLL)

   ACQ ________ ____(e.g. STRT ON) EVENTS ________

   BLKS US ________ BLKS AV ________

5. Stop acquisition. Press COMMNCTNS/STOP ACQ and wait for FINISHED.
6. Swap DAS and battery. Connect battery–DAS, DAS–Sensor, DAS–GPS(or Omega) and DAS–Hand terminal. (Set up antenna for stations using OMEGA)

   Be careful of battery polarity. Red (+); Black (-).

   Label old DAS immediately with: Station #, DAS #, Year, Day #, and Operator

7. Check battery voltage ________(volts) (Must be 12V or high).
8. New DAS# __________
9. Monitor. Press MONITOR. (to see if all the channels are okay)
10. System reset. Press UTILITIES/SYS RESET.
11. Start acquisition. Press COMMNCTNS/STRT ACQ. Zero delay time.
12. Look at DAS status and record below

    JULIAN DAY ________ TIME ____________

    CLOCK ______________________(e.g. UTC LK PLL)

    ACQ ________ ____(Must be STRT ON) EVENTS ________

    BLKS US ________ BLKS AV ________

13. Quit DAS status and Unplug HT or AT.
14. Bury the DAS hole carefully.

Time of Departure (local time) ________________.

PLEASE NOTE ANY SPECIAL PROBLEMS ON THE BACK SIDE OF THIS SHEET.

Fig. 2 (continued)

Station Pick-up Instructions (LARSE-1993)

Station#: _________ Date (DD/MM/YY) ______/ ______/_________

Time of arrival (local time) ____________ Operator ______________

DAS# _______ Clock type _______

1. Look for:

   Signs of water pooling in sensor hole. YES ___; NO ___.

   Signs of animal intrusion. YES ___; NO ___.

2. Connect hand terminal (or field computer) and turn it on.

   (If voltage is low and communication failure when press TIME, go to Step 6)

3. Check DAS status. Press UTILITIES/DAS STATE and record below

   JULIAN DAY _______ TIME _________

   CLOCK ____________________(e.g. UTC LK PLL)

   ACQ _______ ___(e.g. STRT ON) EVENTS _______

   BLKS US _______ BLKS AV _______

4. Stop acquisition. Press COMMNCTNS/STOP ACQ and wait for FINISHED.

   Label DAS immediately with: Station #, DAS #, Year, Day #, and Operator

5. Quit DAS status and Unplug HT or AT.
6. Pack up DAS (and disk) and battery.
7. Dig out sensors. Write down the sensor # ____________________________

   Be sure to lock the sensors:

   a). L4C-3D: place it 45° with handle at bottom.

   b). UCLA L4C: place it vertically with connection plug at bottom.

   c). Others: no special locking position.

   Note: all the sensors should be protected by soft filling materials when travelling.

8. Bury the holes carefully, clean up the surrounding. The original environment should be recovered completely.

Time of Departure (local time) ________________.

PLEASE NOTE ANY SPECIAL PROBLEMS ON THE BACK SIDE OF THIS SHEET.

Fig. 2 (continued)

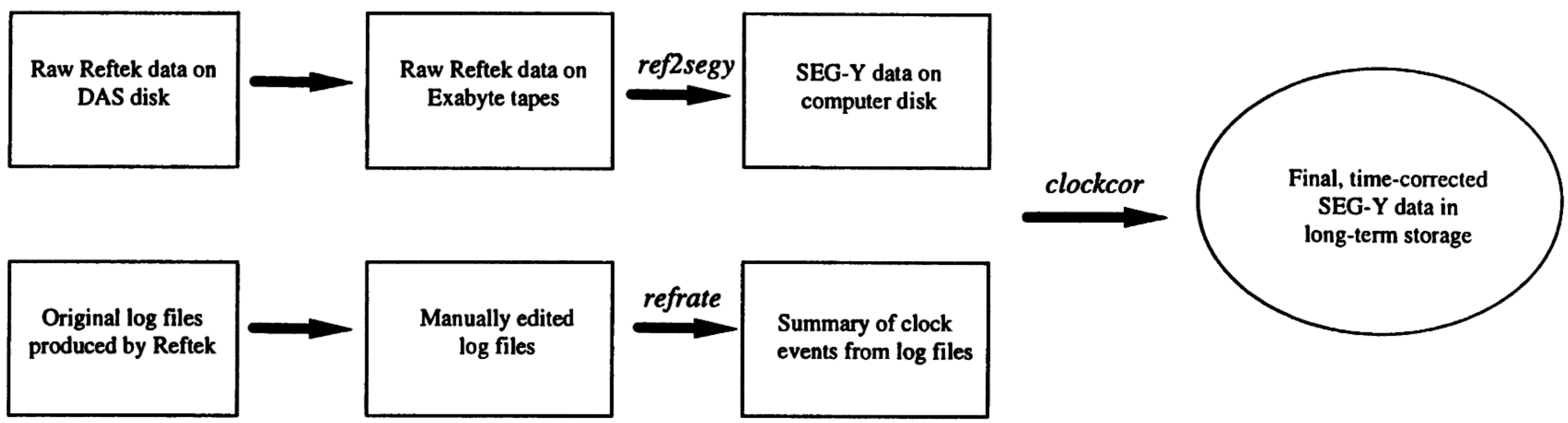

Fig. 3. Flow diagram for data processing. Names in italics refer to PASSCAL routines used in processing.

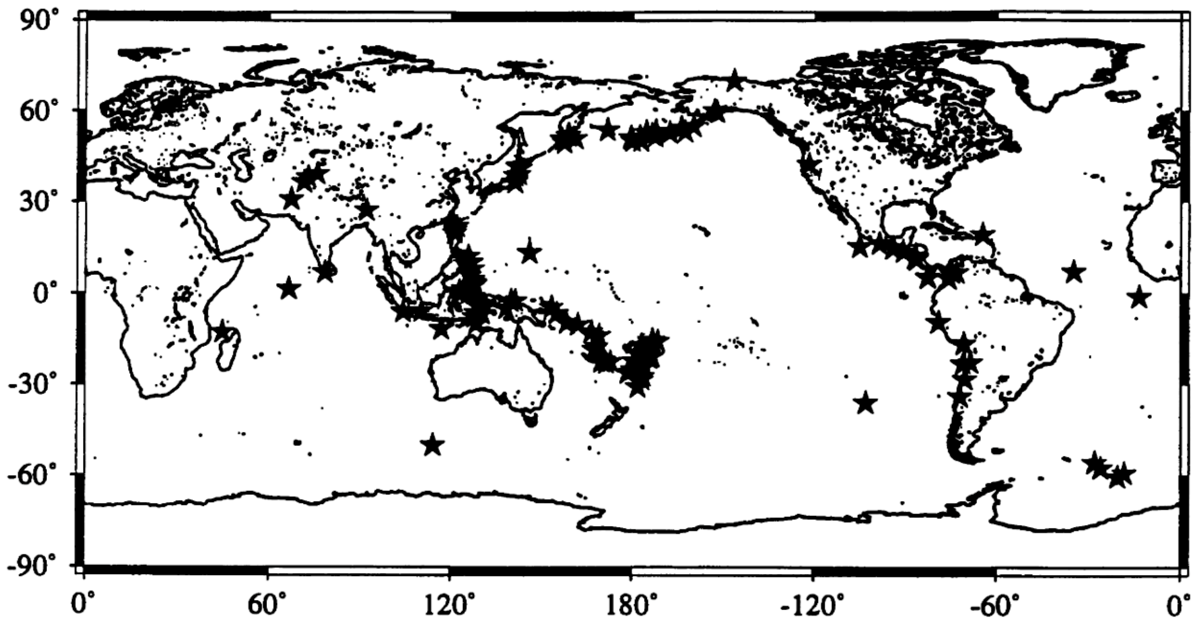

Fig. 4. Teleseismic event locations (stars).

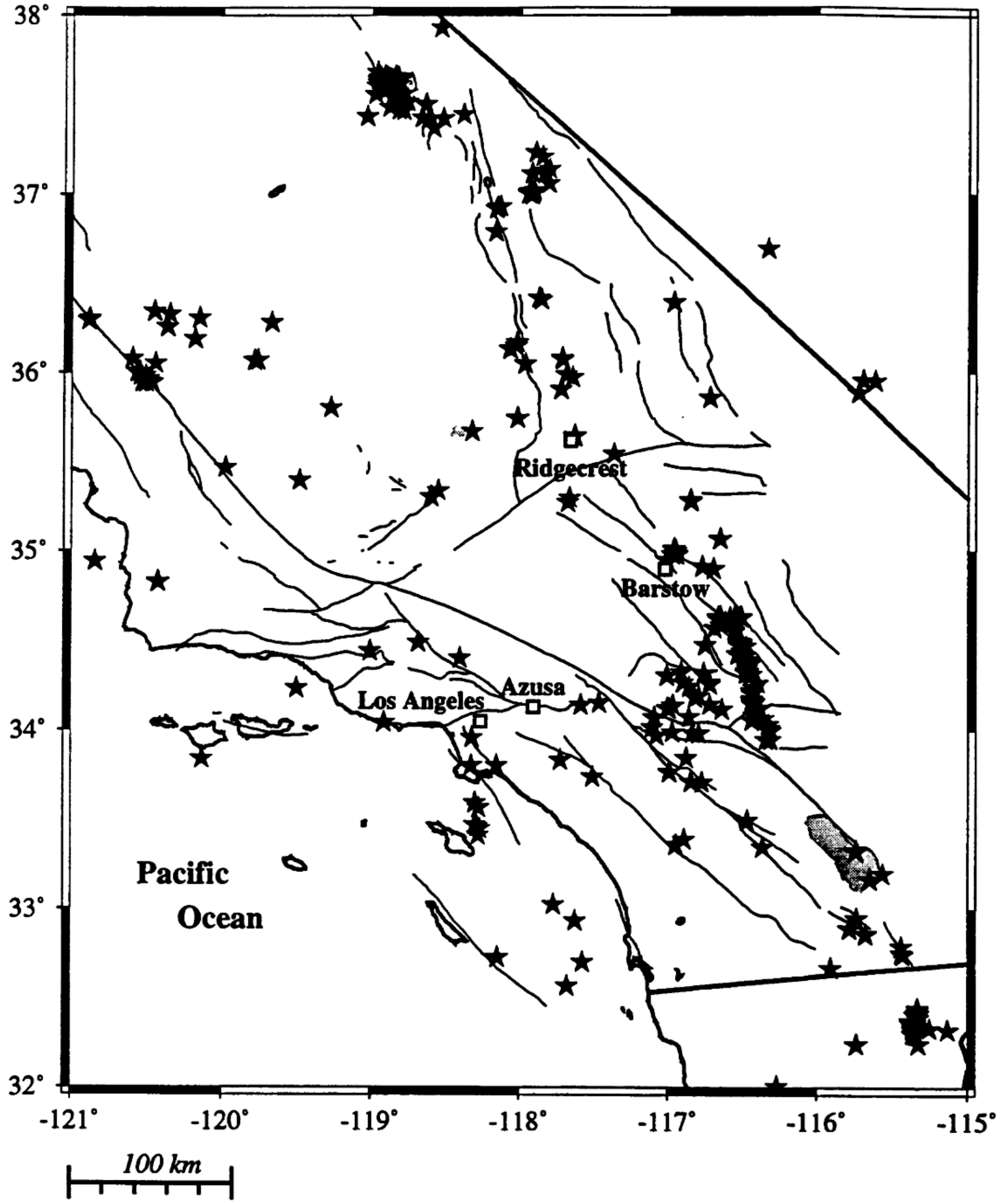

Fig. 5. Local event ($M_L \geq 2.0$) locations (stars) in Southern California. Faults (lighter solid lines), political boundaries (darker solid lines), and cities (open squares) are given for reference.

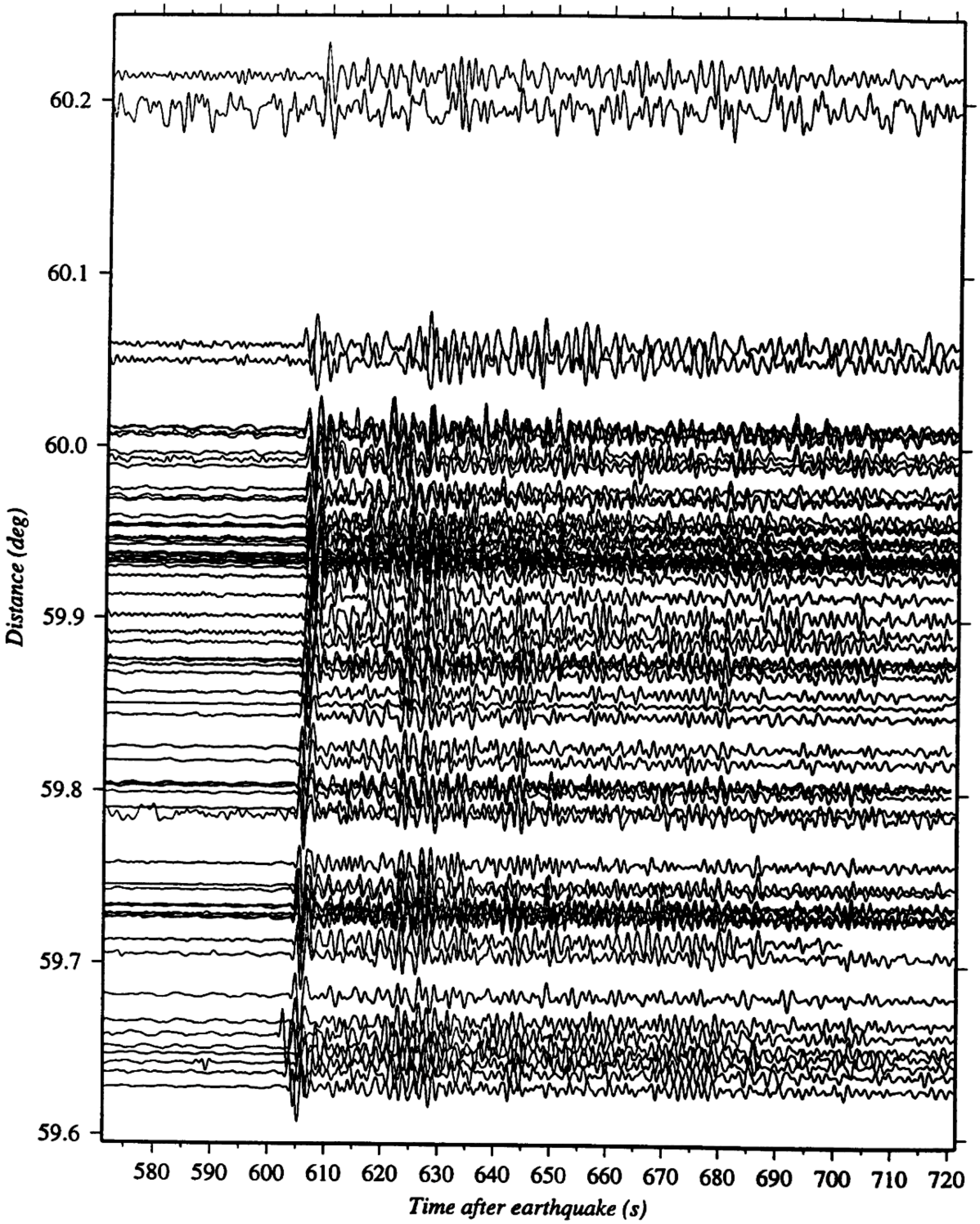

Fig. 6a. Vertical-component record section for teleseismic event which occurred on Nov. 17, 1993 near the east coast of Kamchatka (M_w=5.8). Travel time (unreduced) after earthquake is shown. See text for details.

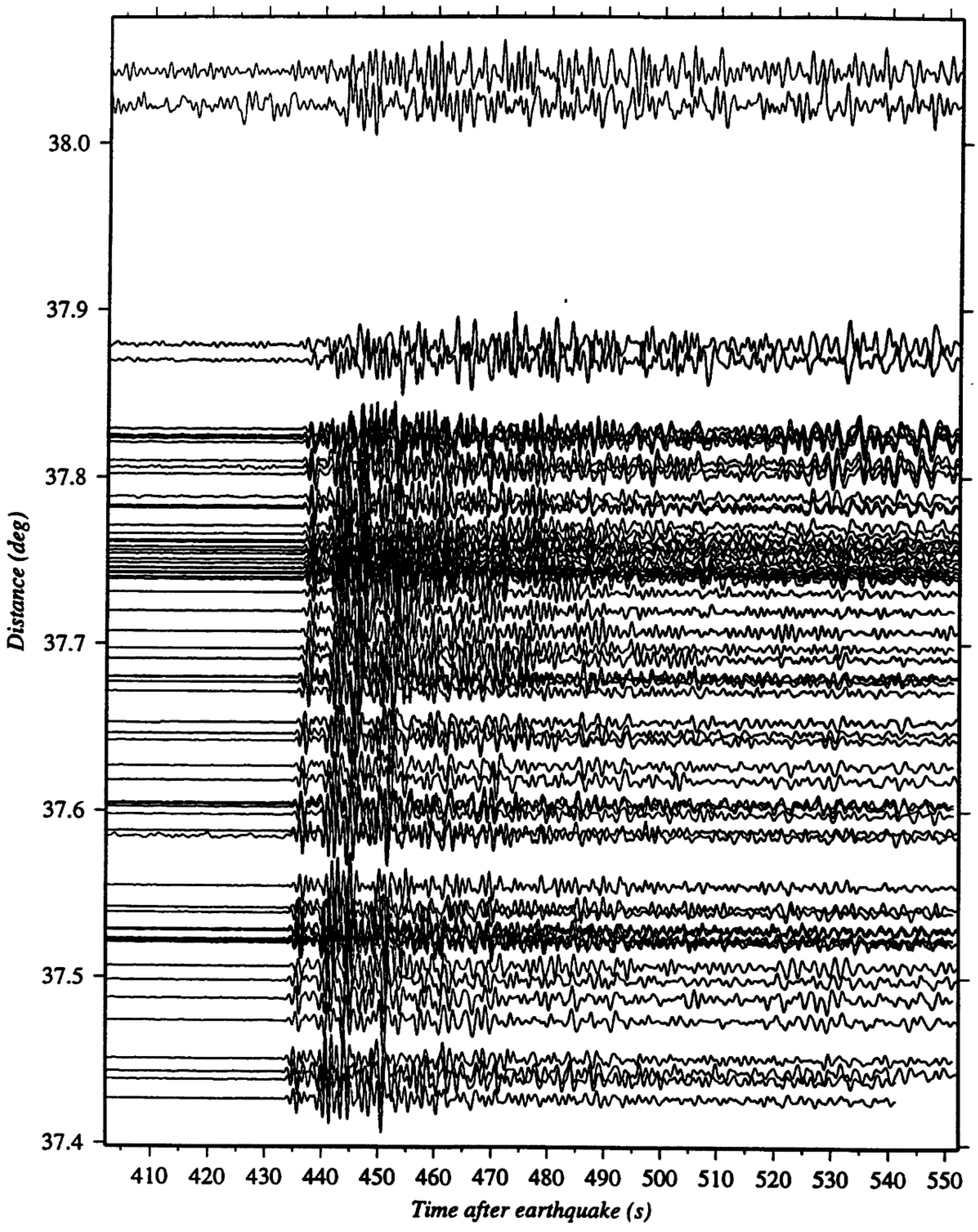

Fig. 6b. Vertical-component record section for teleseismic event which occurred on Nov. 19, 1993 in the Unimak Island Region (M_w=6.5). Travel time (unreduced) after earthquake is shown. See text for details.

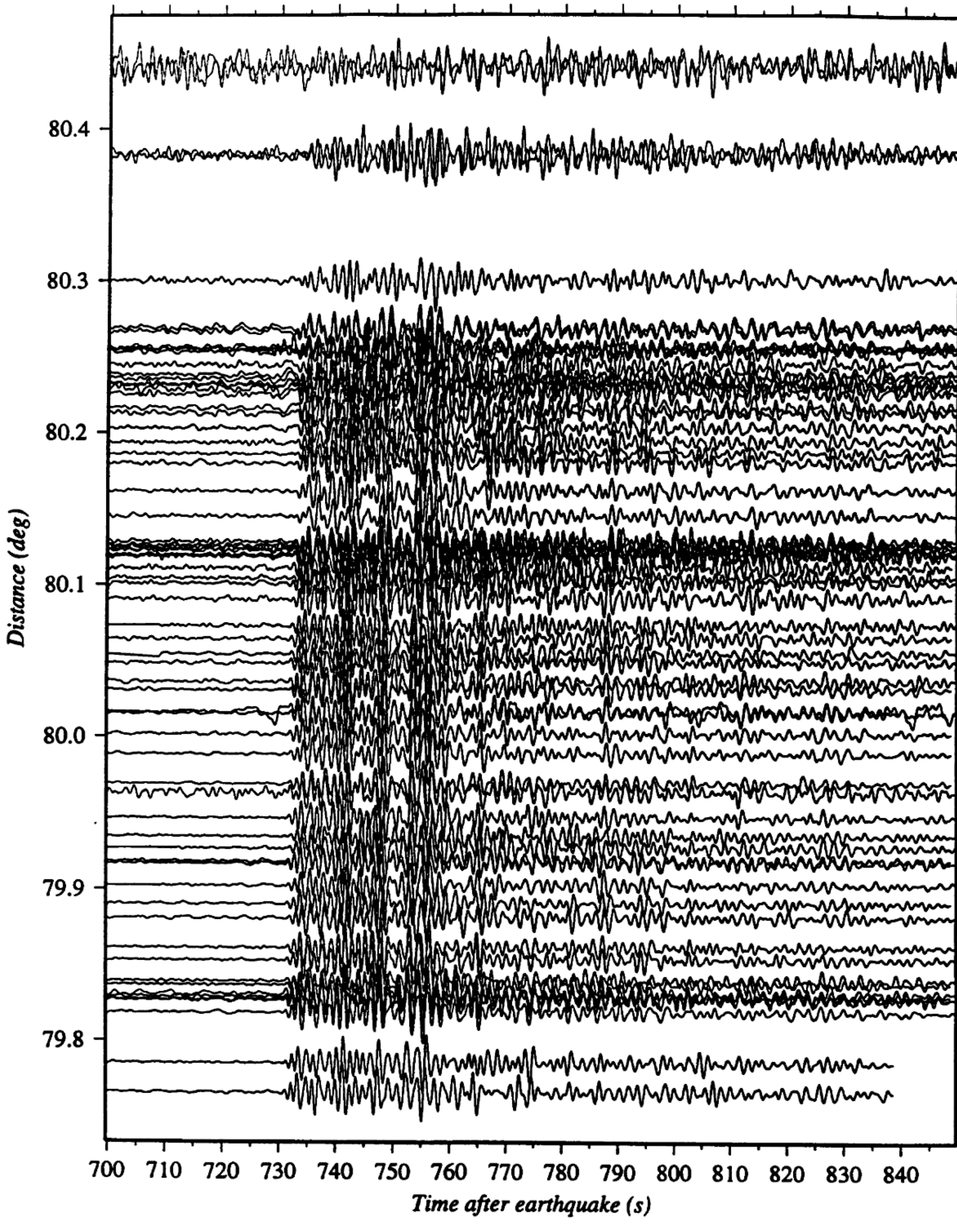

Fig. 6c. Vertical-component record section for teleseismic event which occurred on Nov. 19, 1993 near the central mid-Atlantic Ridge (M_w=5.8). Travel time (unreduced) after earthquake is shown. See text for details.

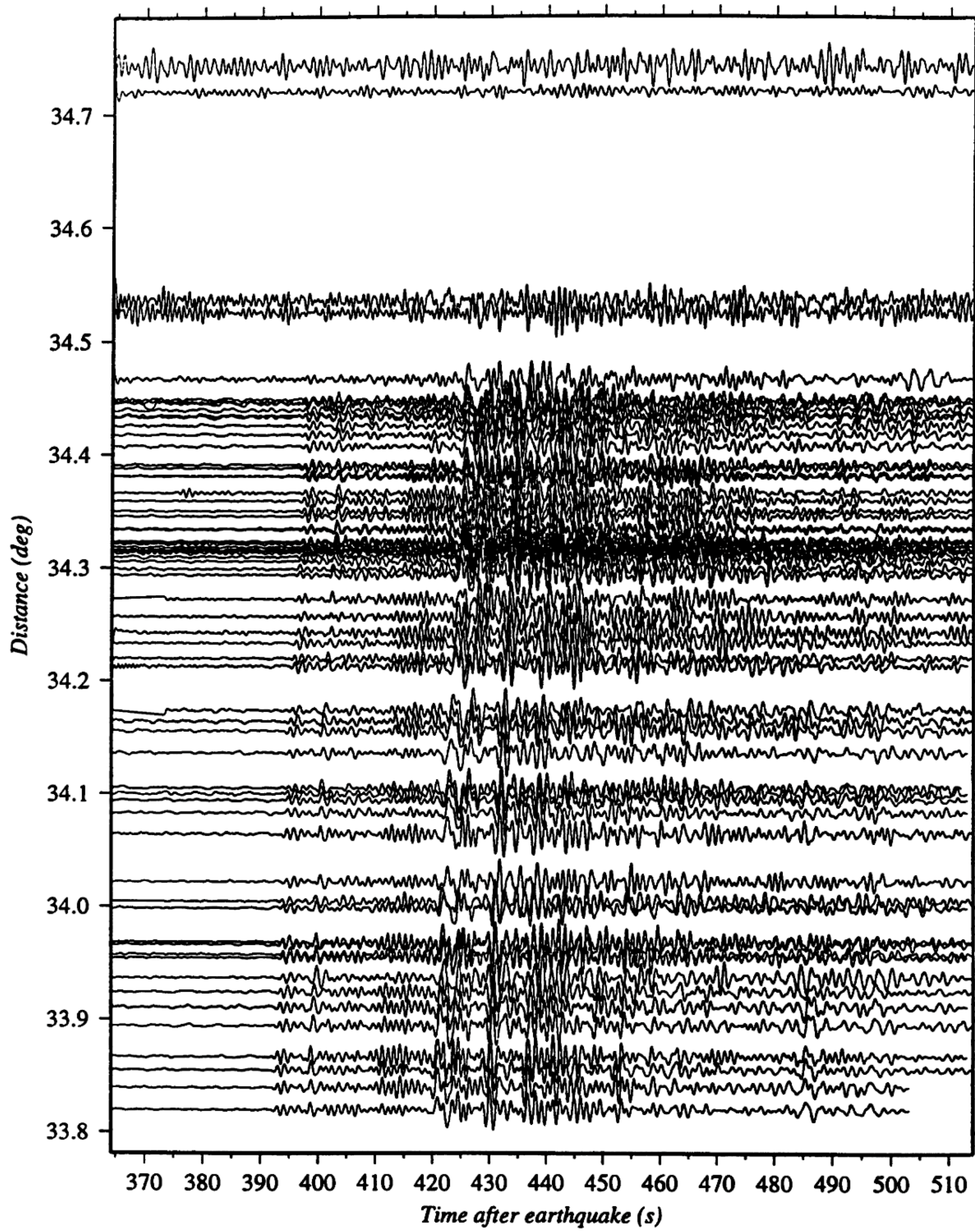

Fig. 6d. Vertical-component record section for teleseismic event which occurred on Nov. 20, 1993 in southern Alaska (M_w=5.9). Travel time (unreduced) after earthquake is shown. See text for details.

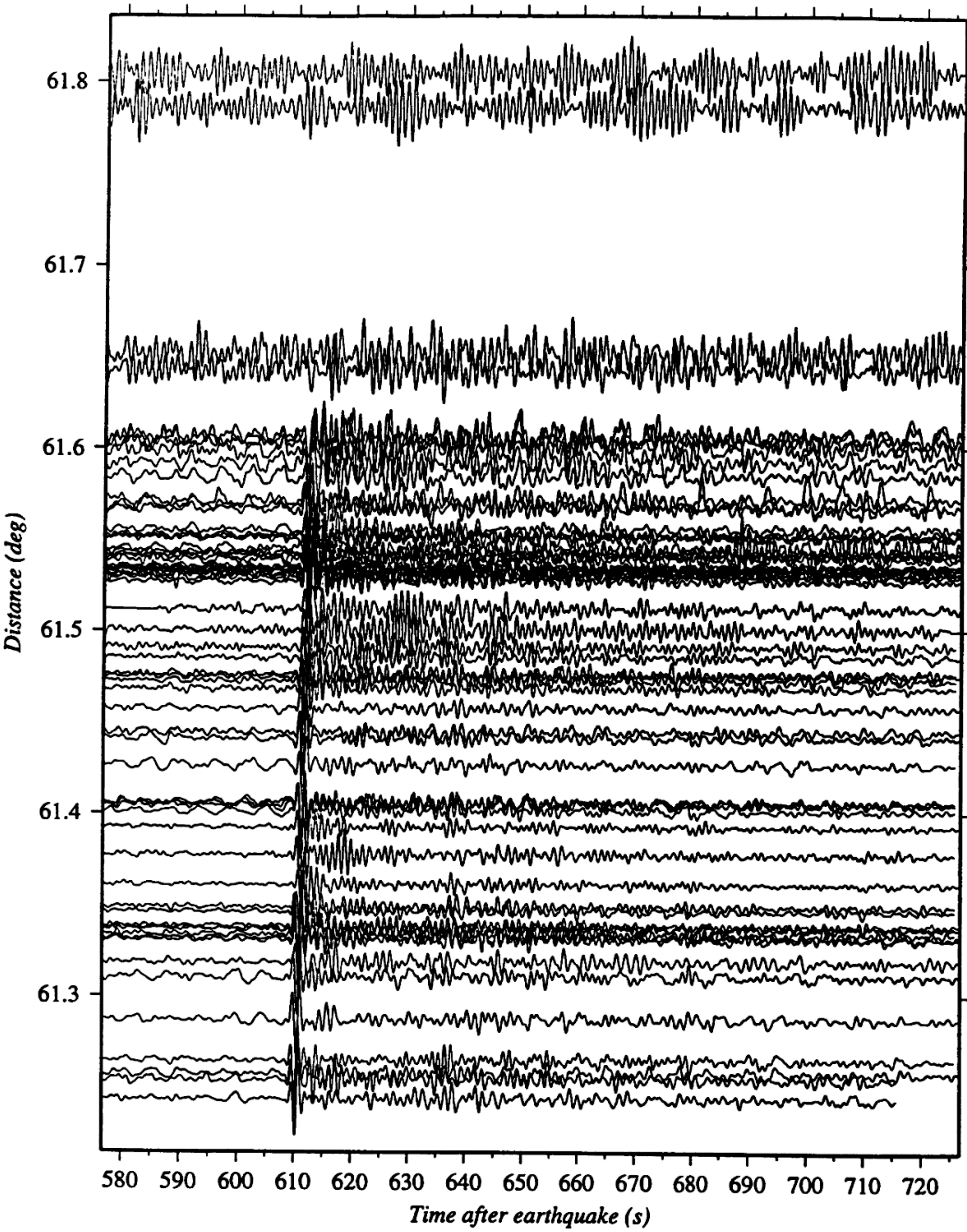

Fig. 6e. Vertical-component record section for teleseismic event which occurred on Nov. 22, 1993 in the Kuril Islands (m_b=5.1). Travel time (unreduced) after earthquake is shown. See text for details.

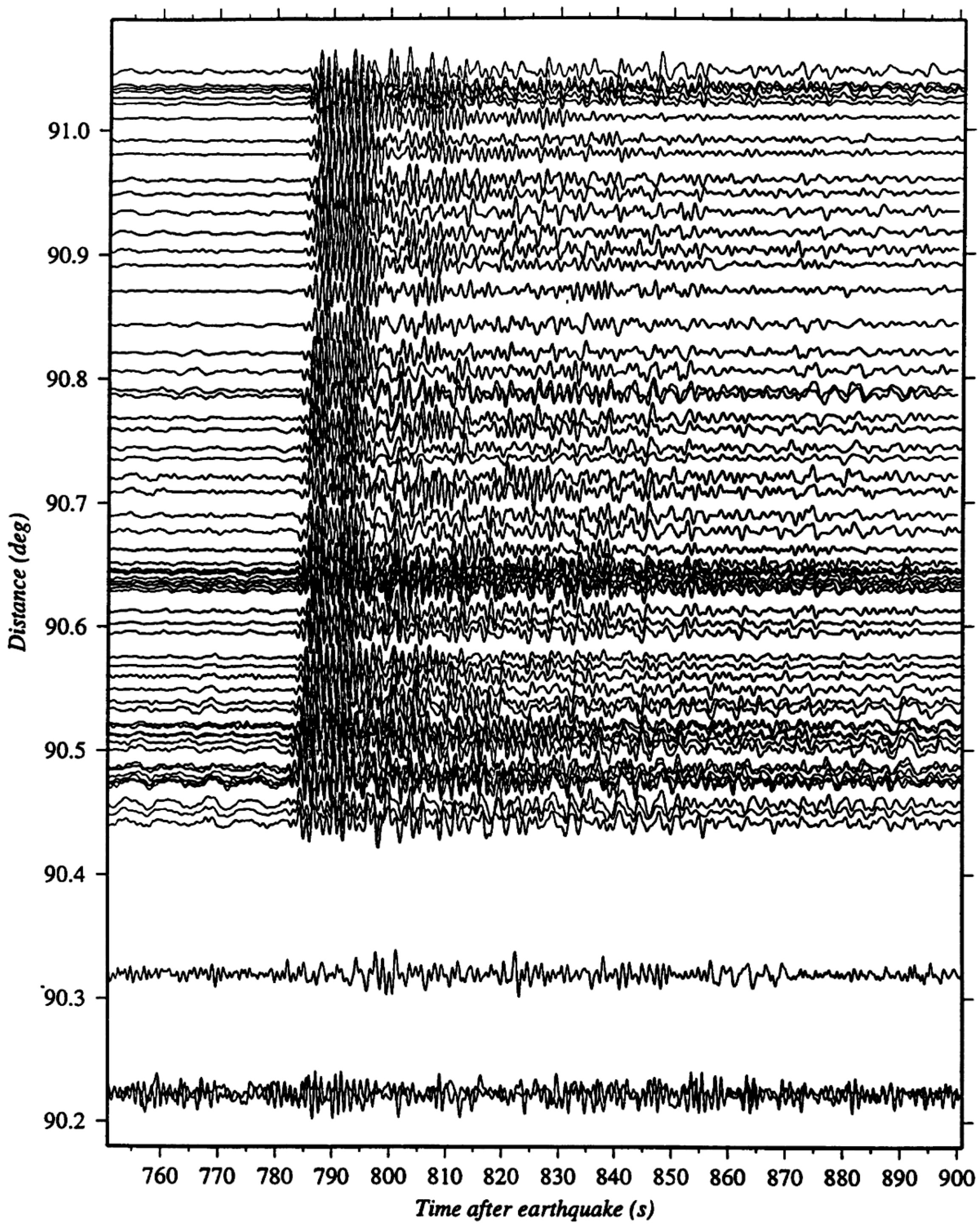

Fig. 6f. Vertical-component record section for teleseismic event which occurred on Nov. 26, 1993 in the Solomon Islands (M_w=6.2). Travel time (unreduced) after earthquake is shown. See text for details.

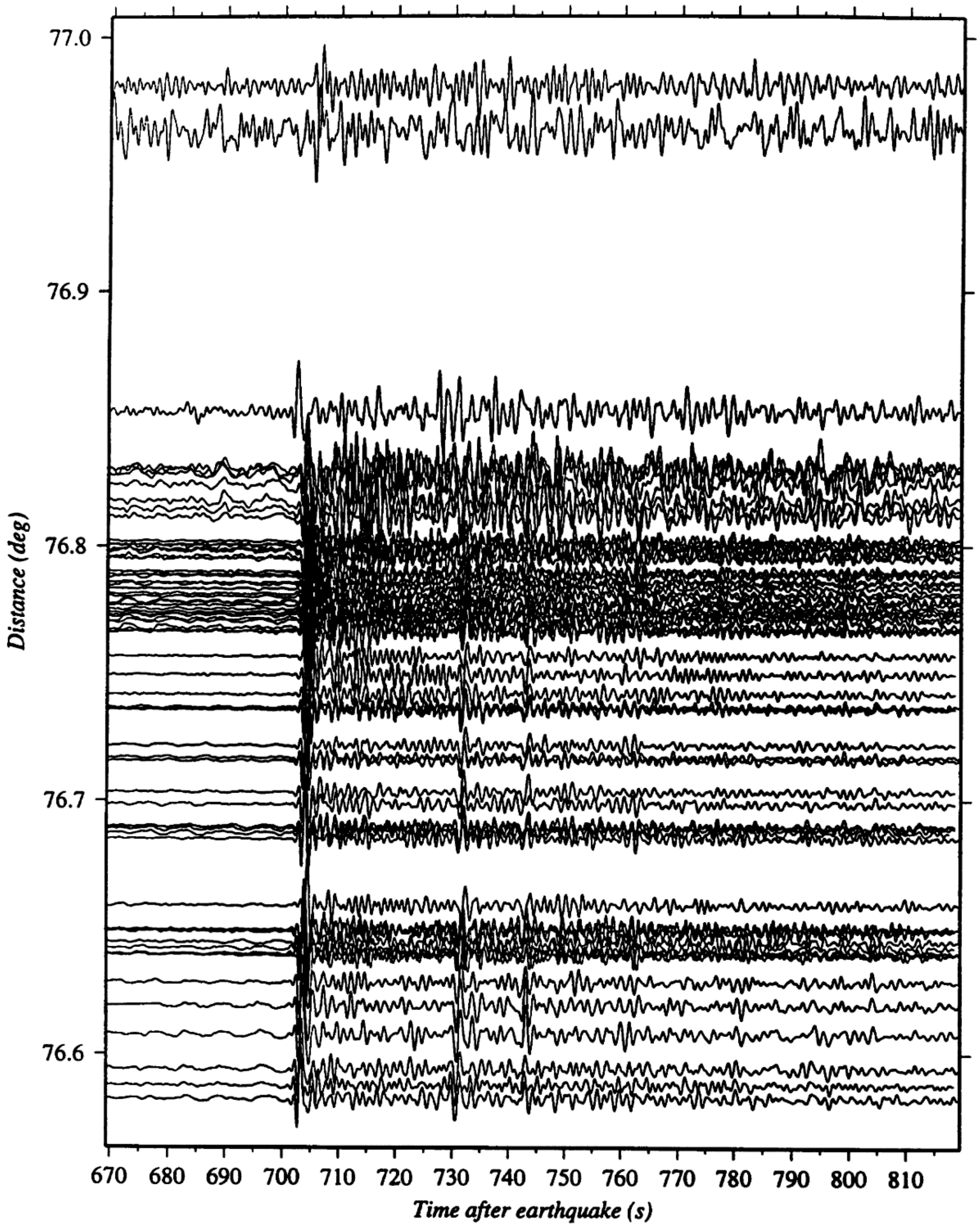

Fig. 6g. Vertical-component record section for teleseismic event which occurred on Nov. 27, 1993 near the east coast of Honshu, Japan (M_w=5.8). Travel time (unreduced) after earthquake is shown. See text for details.

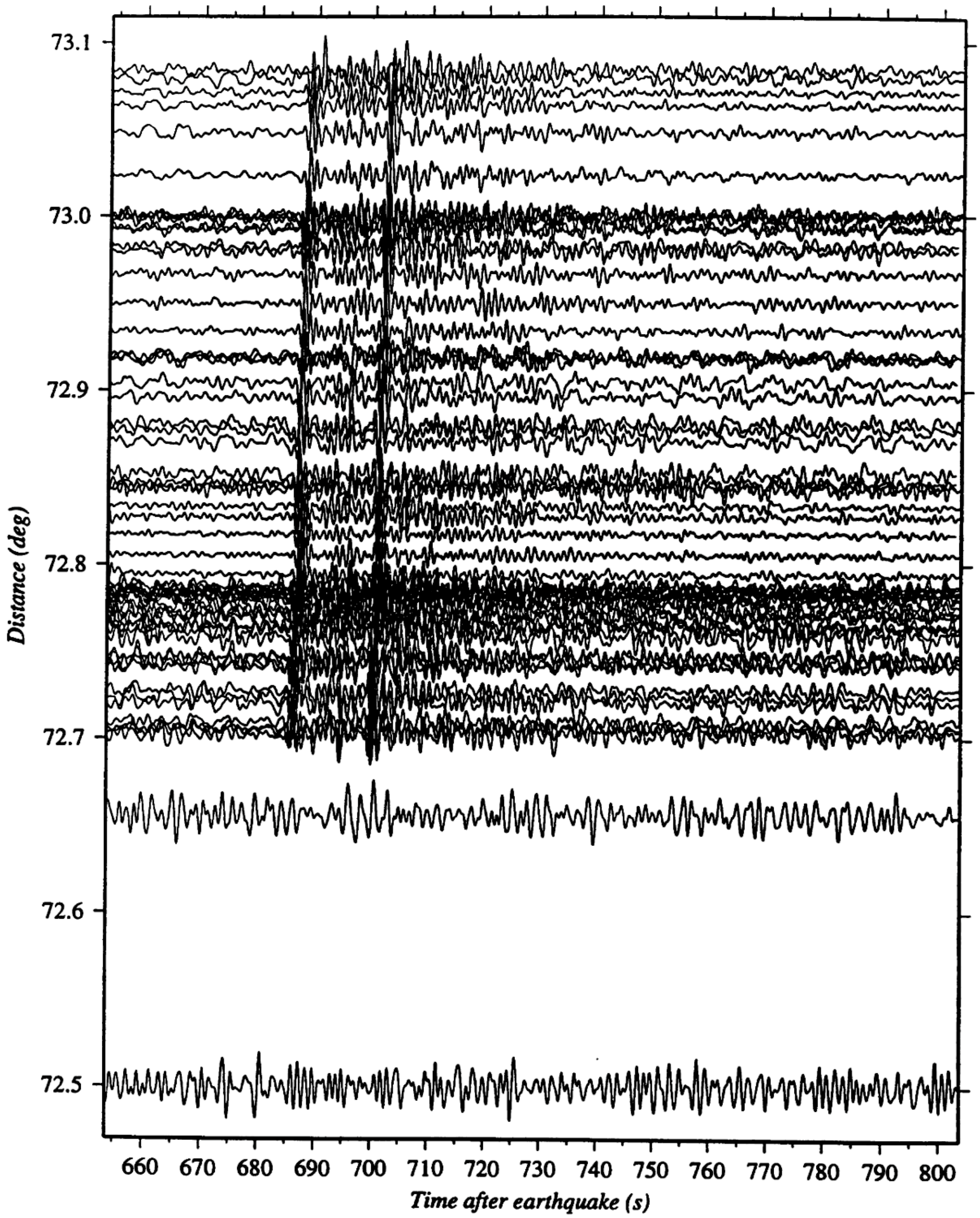

Fig. 6h. Vertical-component record section for teleseismic event which occurred on Dec. 1, 1993 near the coast of Northern Chile (m_b=5.3). Travel time (unreduced) after earthquake is shown. See text for details.

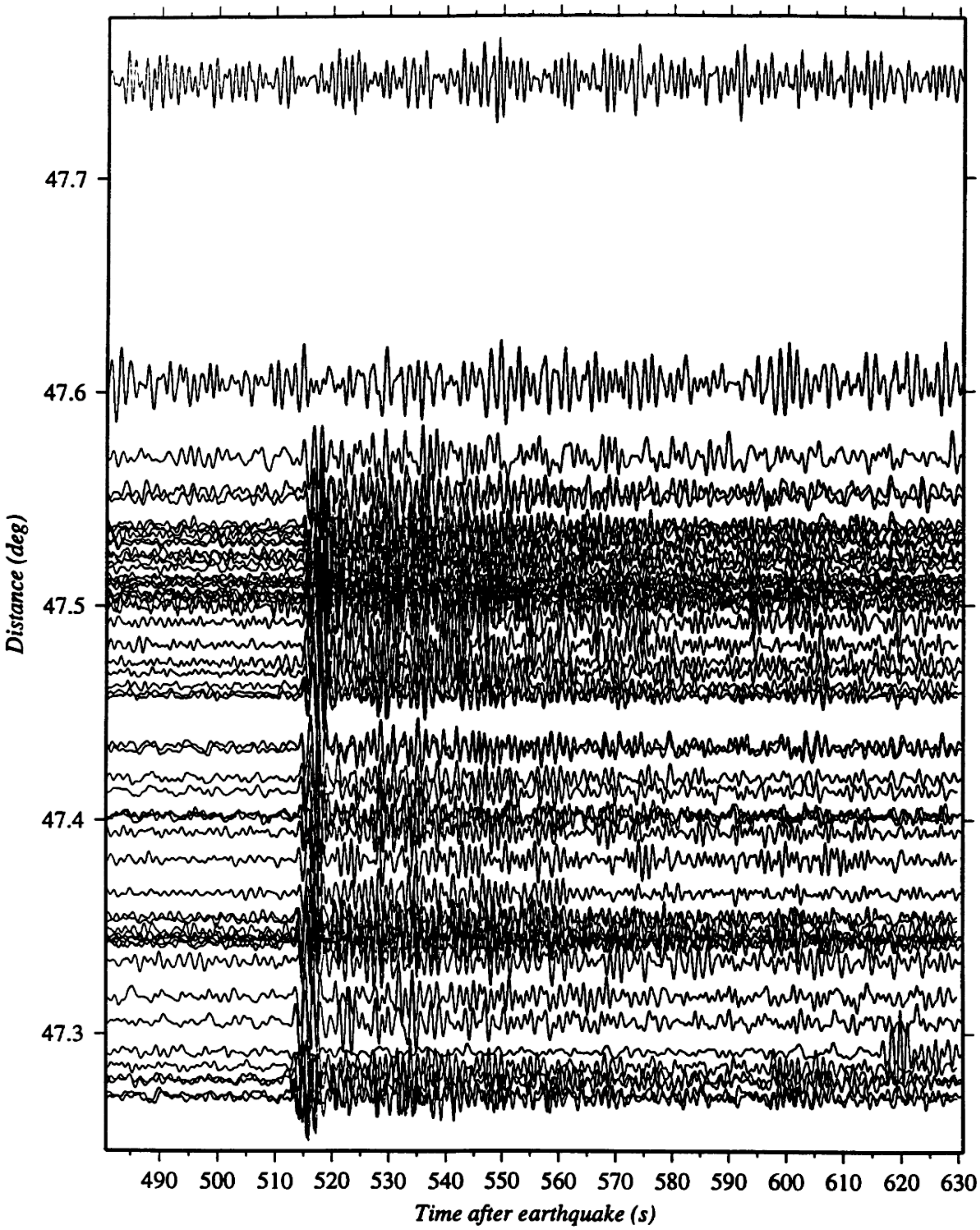

Fig. 6i. Vertical-component record section for teleseismic event which occurred on Dec. 3, 1993 in the Aleutian Islands (M_w=5.6). Travel time (unreduced) after earthquake is shown. See text for details.

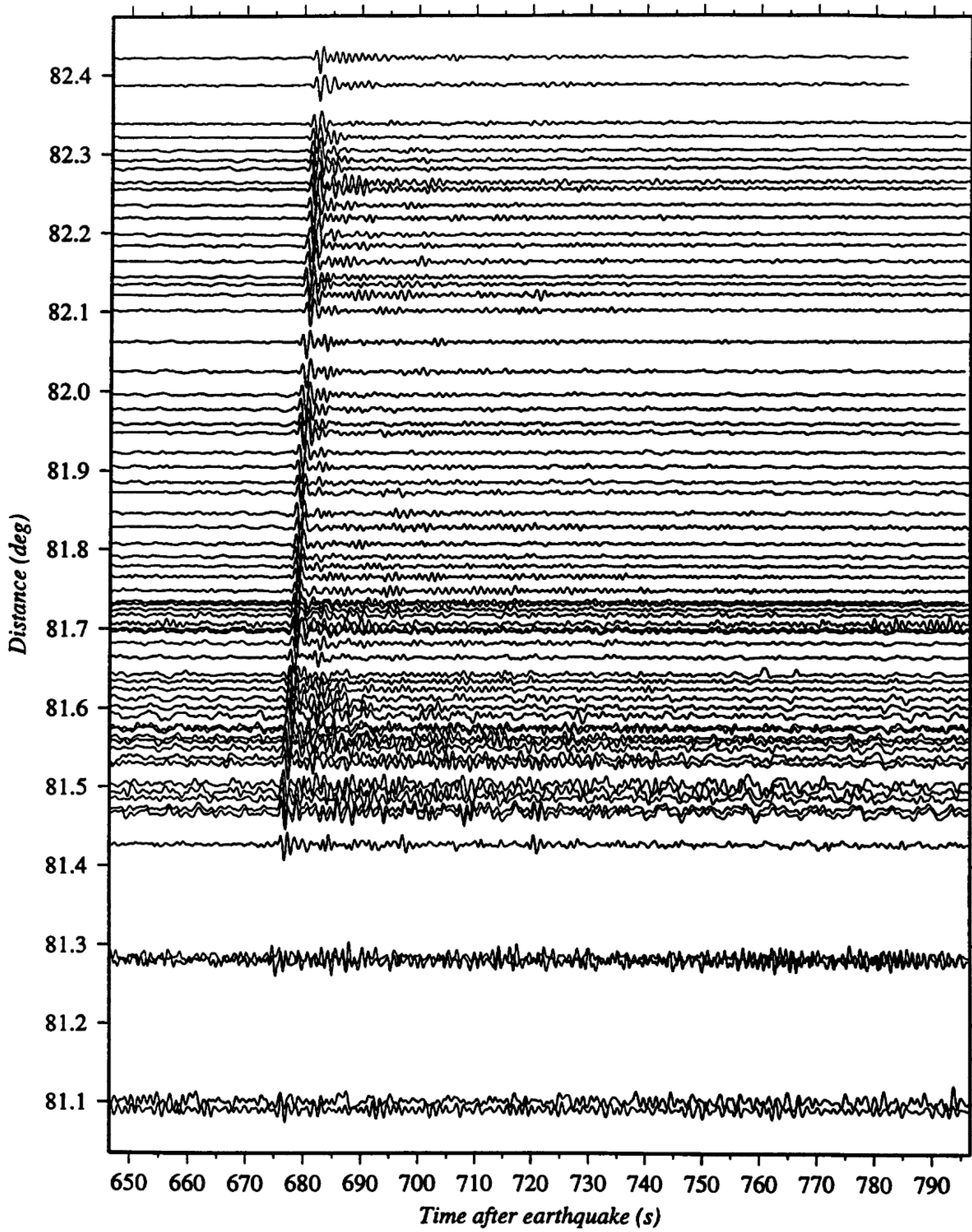

Fig. 6j. Vertical-component record section for teleseismic event which occurred on Dec. 10, 1993 south of the Fiji Islands (M_w=5.7). Travel time (unreduced) after earthquake is shown. See text for details.

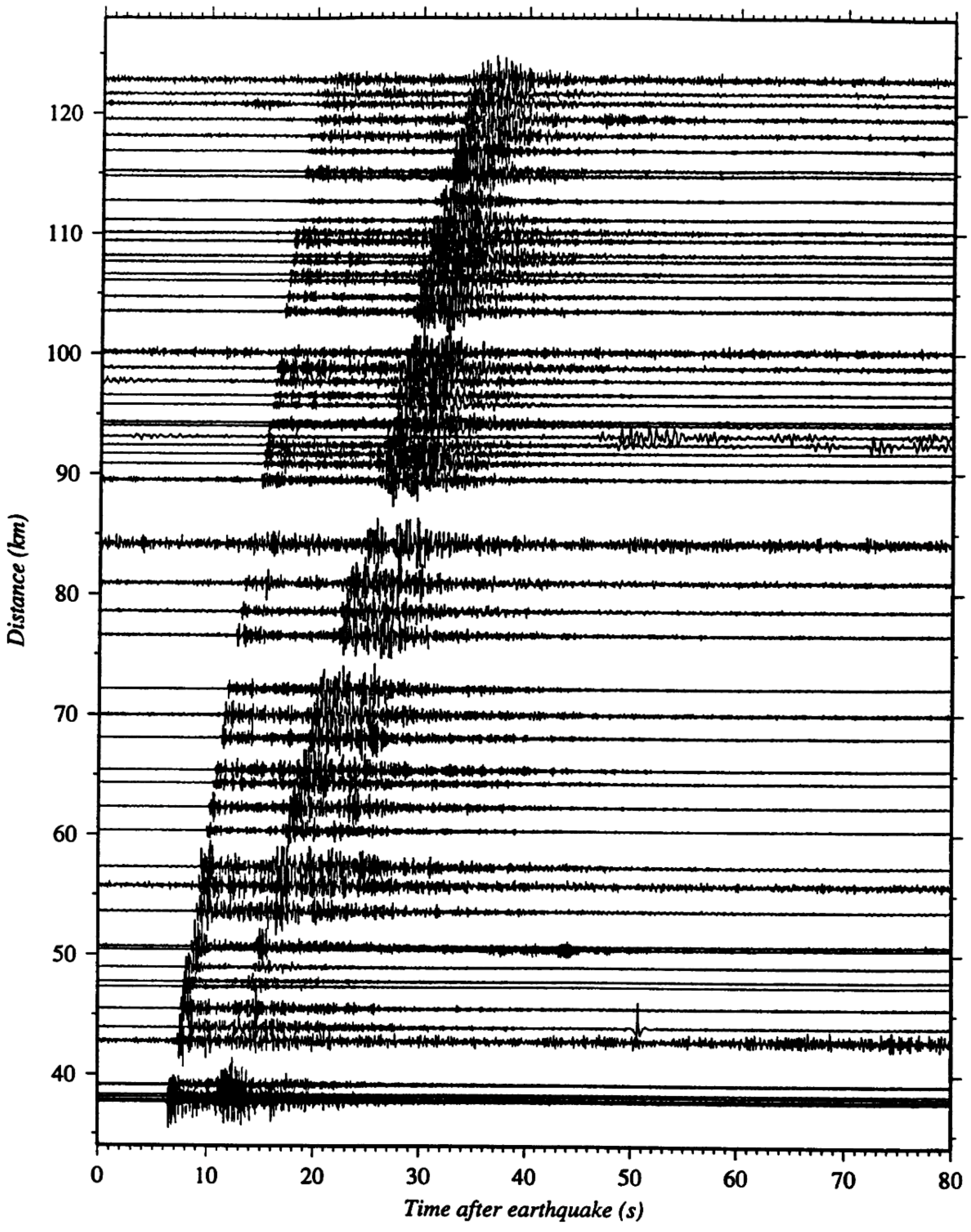

Fig. 7a. Vertical-component record section for local event which occurred on Nov. 22, 1993, 10 km north-northeast of Barstow (M_L=2.1). Travel time (unreduced) after earthquake is shown. See text for details.

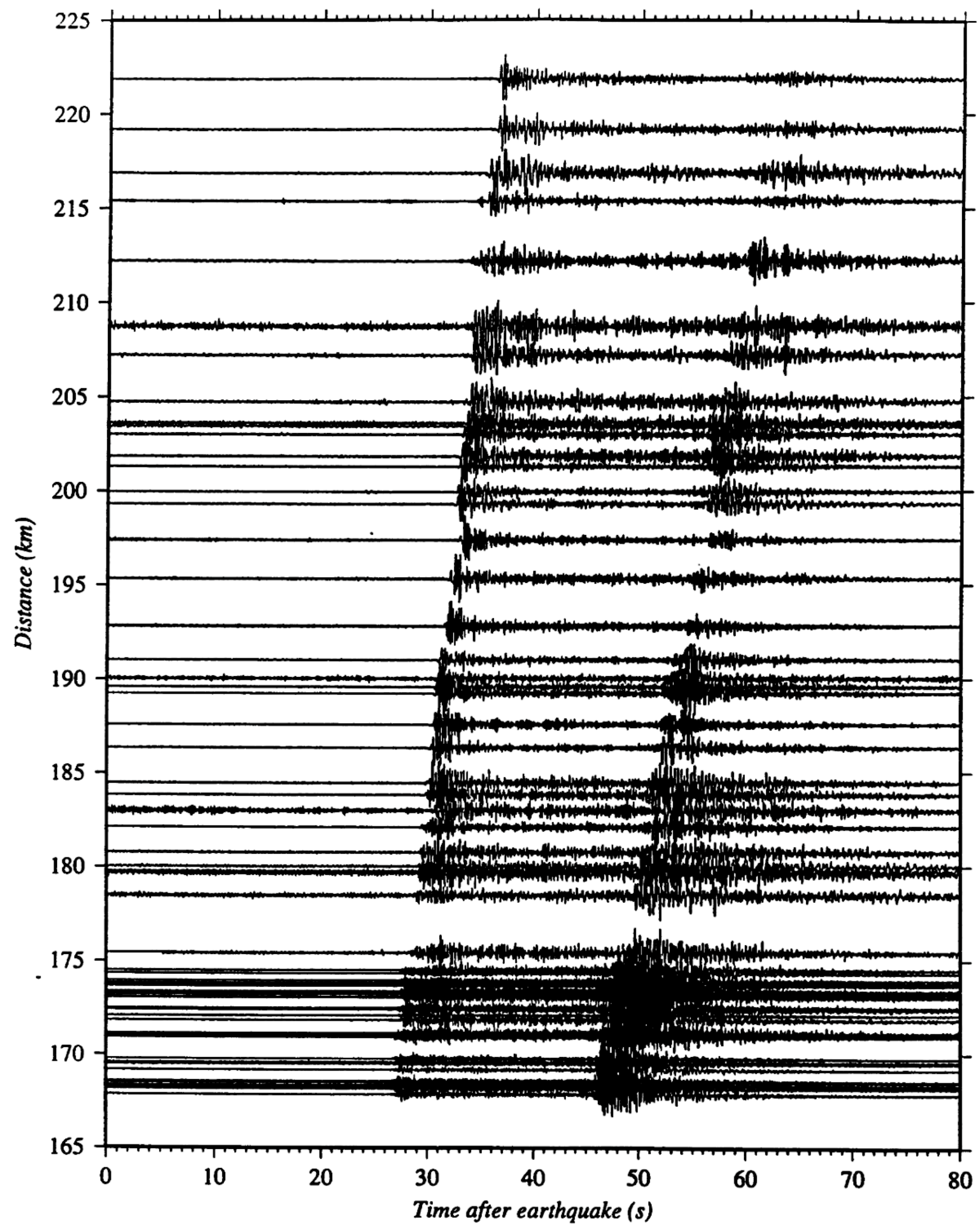

Fig. 7b. Vertical-component record section for local event which occurred on Nov. 23, 1993, 11 km north of Borrego Springs (M_L=2.7). Travel time (unreduced) after earthquake is shown. See text for details.

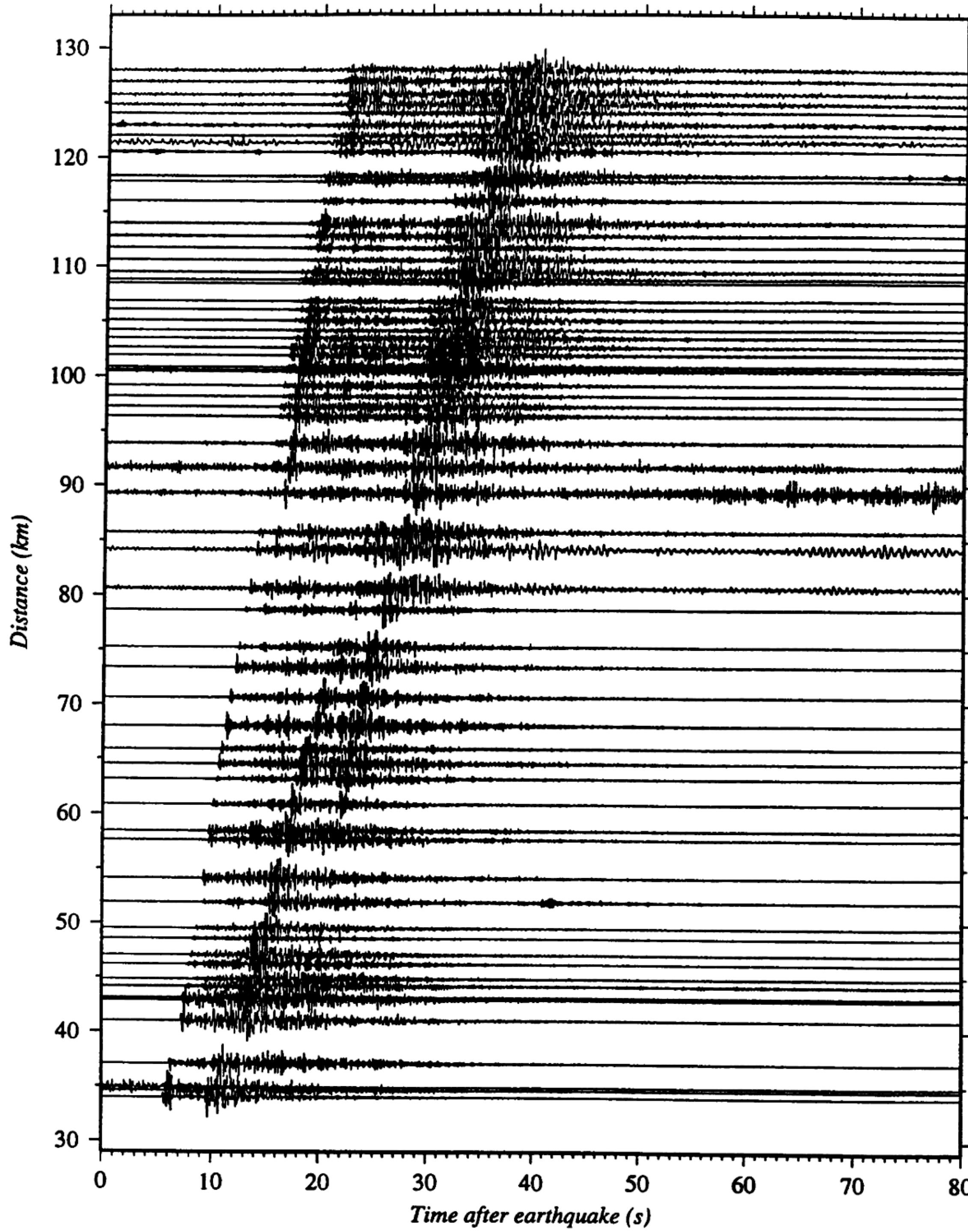

Fig. 7c. Vertical-component record section for local event which occurred on Nov. 24, 1993, 36 km south of Ridgecrest (M_L=2.7). Travel time (unreduced) after earthquake is shown. See text for details.

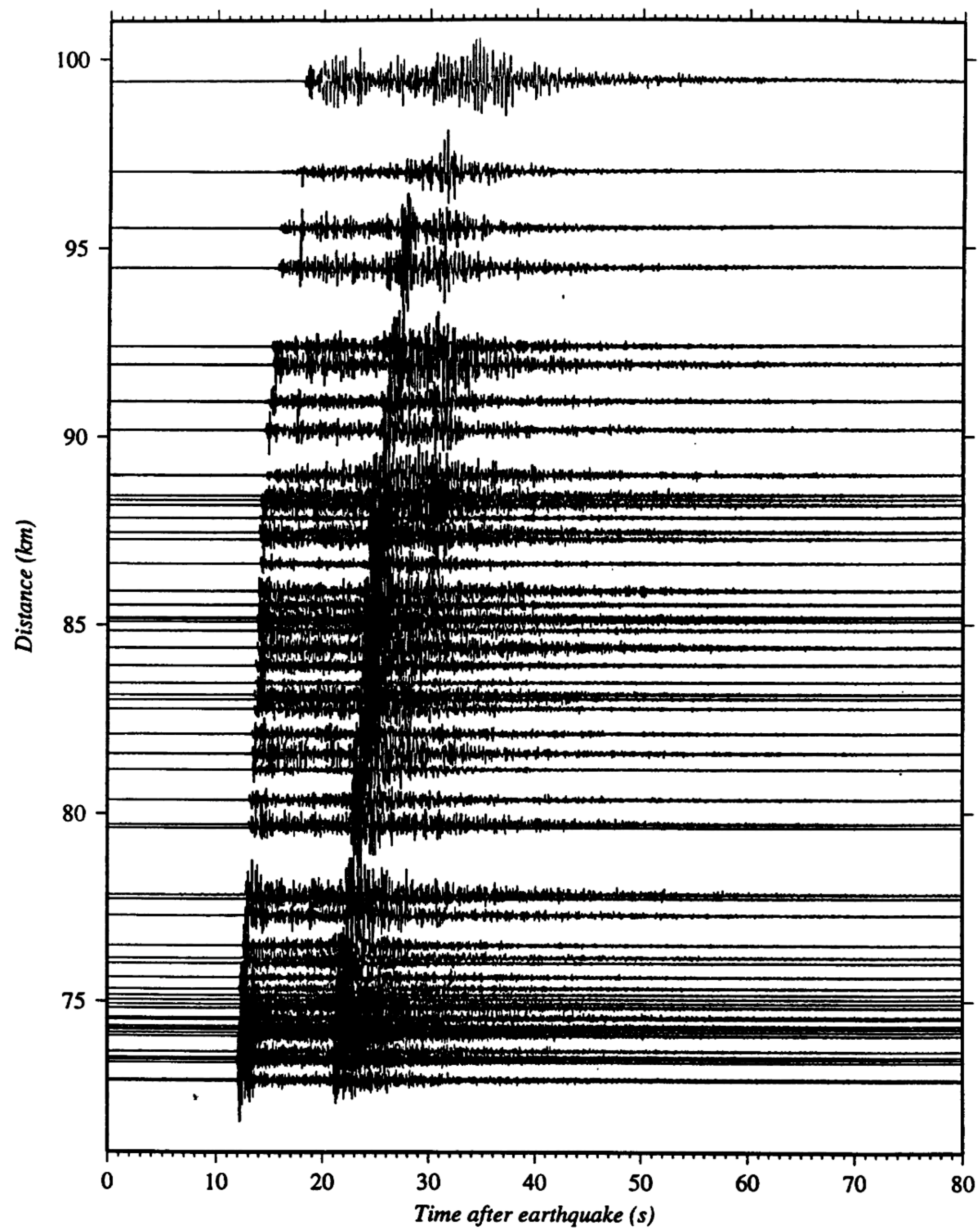

Fig. 7d. Vertical-component record section for local event which occurred on Nov. 28, 1993, 8 km north of Big Bear Lake (M_L=2.9). Travel time (unreduced) after earthquake is shown. See text for details.

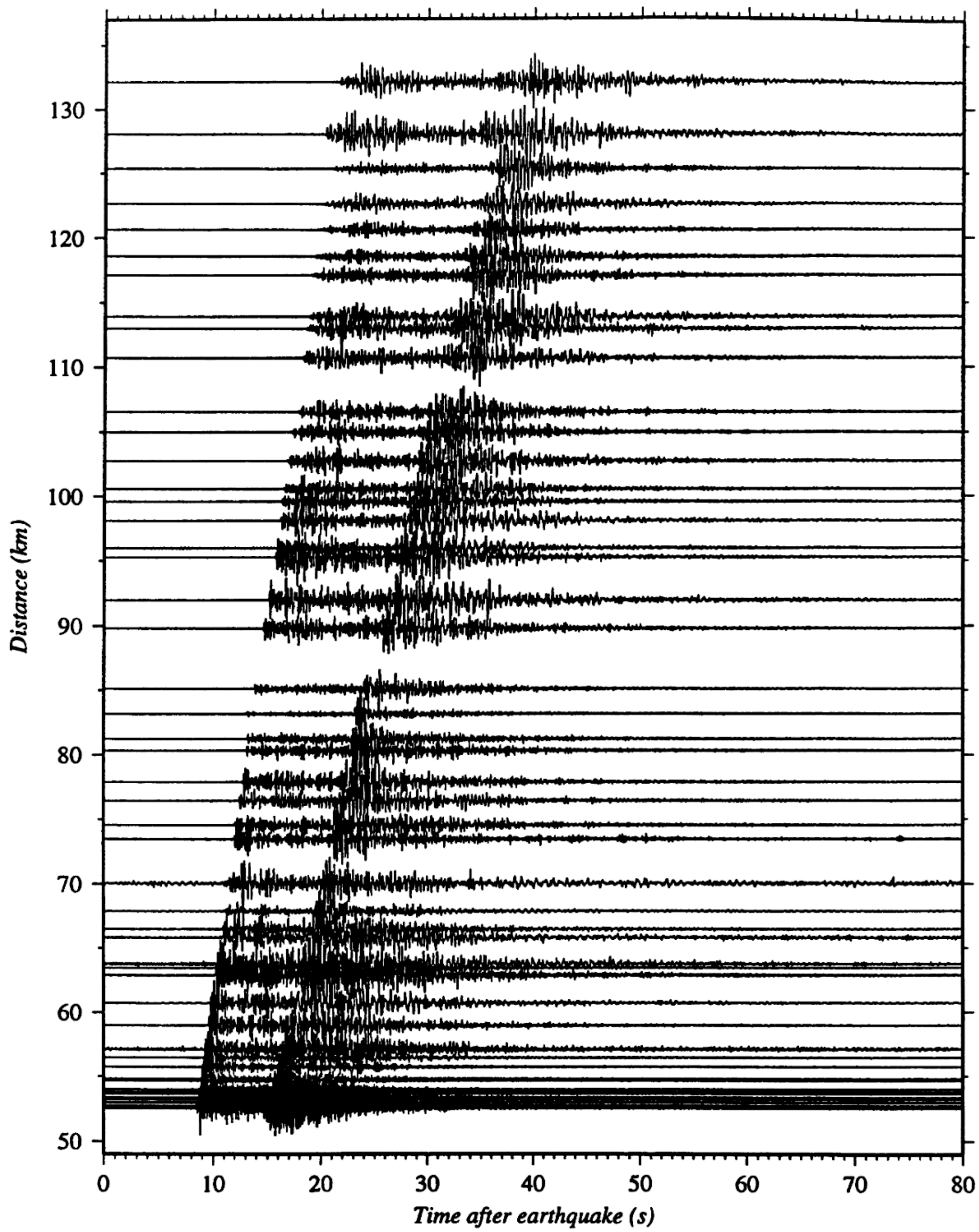

Fig. 7e. Vertical-component record section for local event which occurred on Dec. 3, 1993, 14 km north-northeast of San Fernando (M_L=2.9). Travel time (unreduced) after earthquake is shown. See text for details.

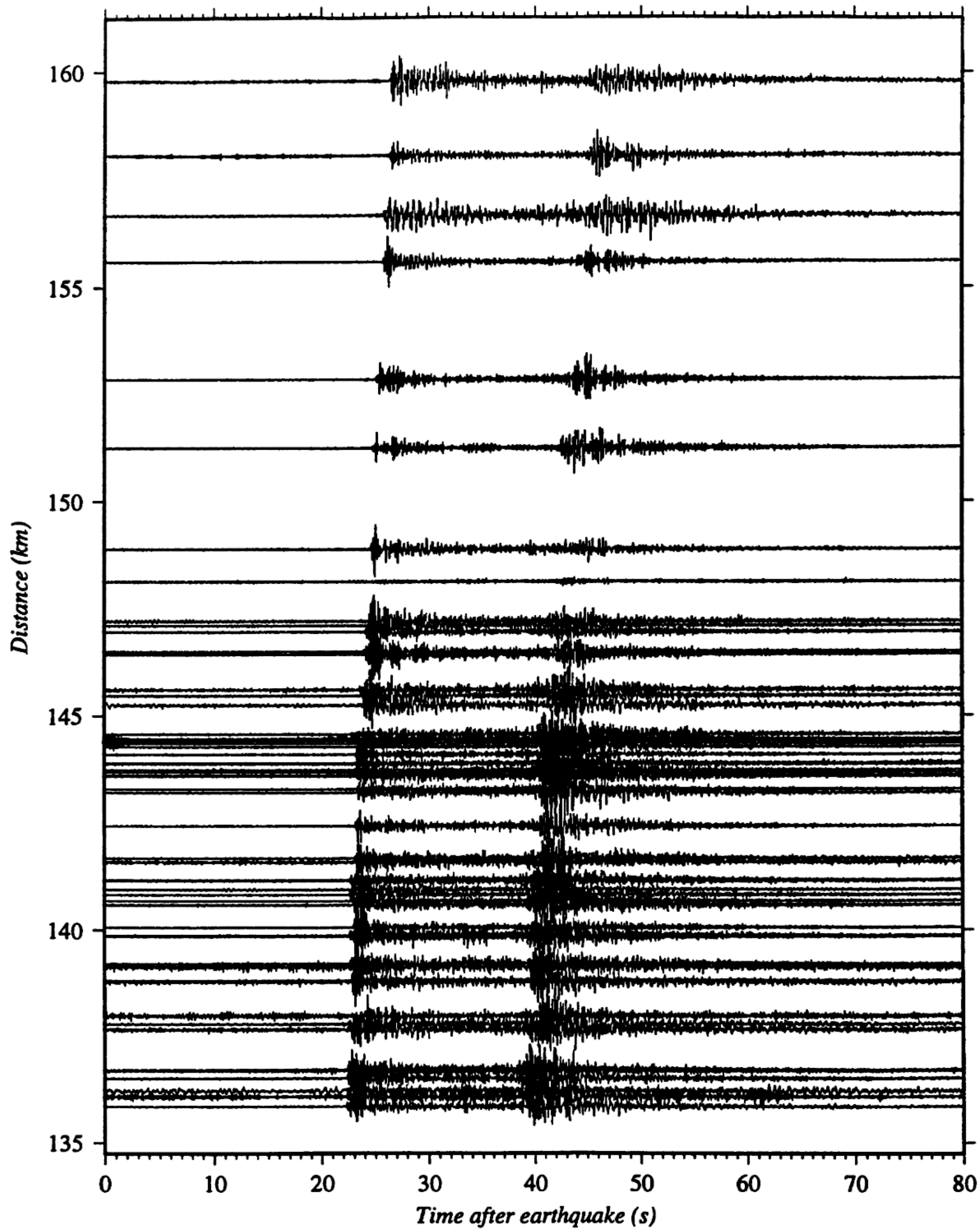

Fig. 7f. Vertical-component record section for local event which occurred on Dec. 4, 1993, 17 km southeast of Yucca Valley (M_L=2.3). Travel time (unreduced) after earthquake is shown. See text for details.

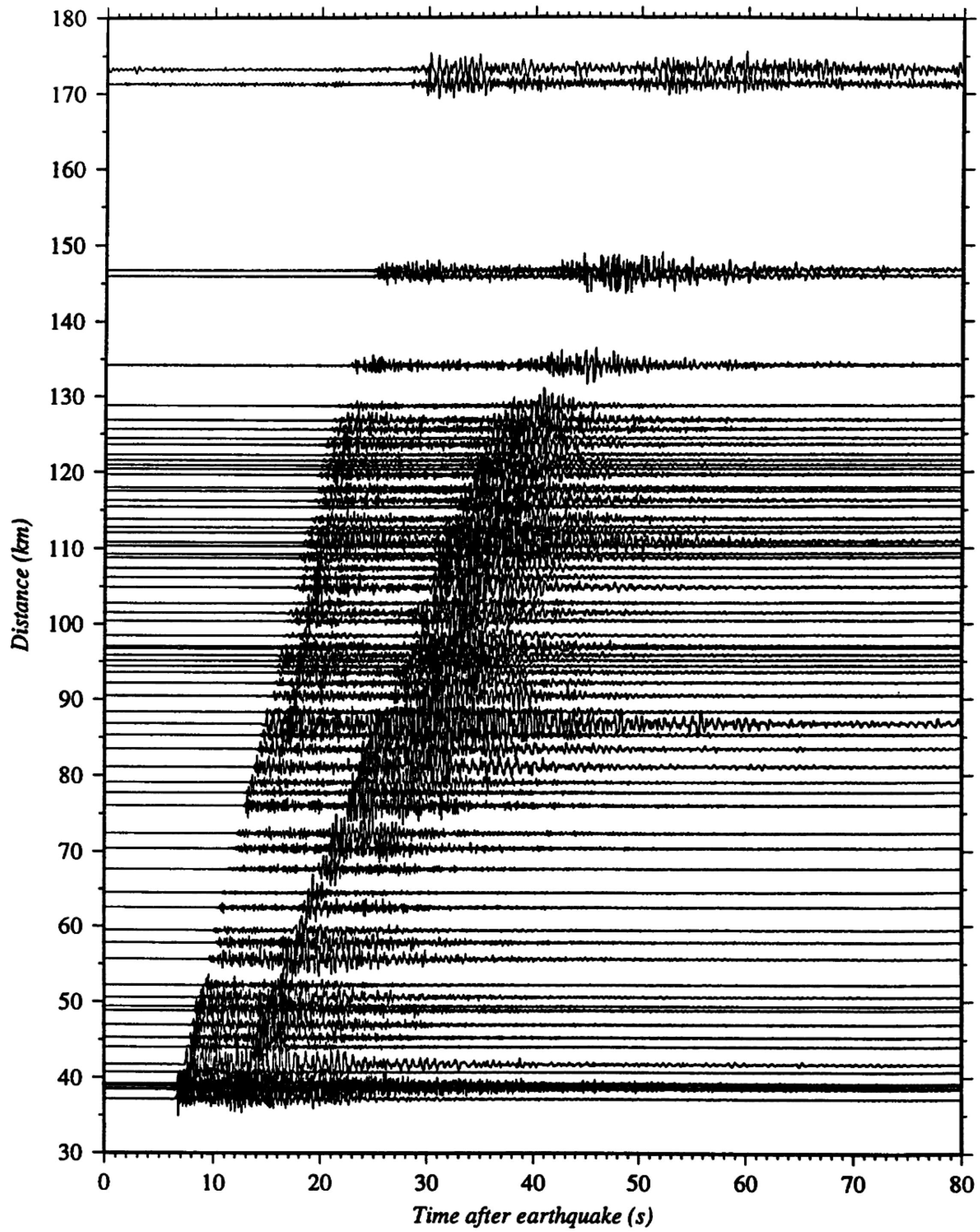

Fig. 7g. Vertical-component record section for local event which occurred on Dec. 8, 1993, 13 km north-northeast of Barstow (M_L=3.7). Travel time (unreduced) after earthquake is shown. See text for details.

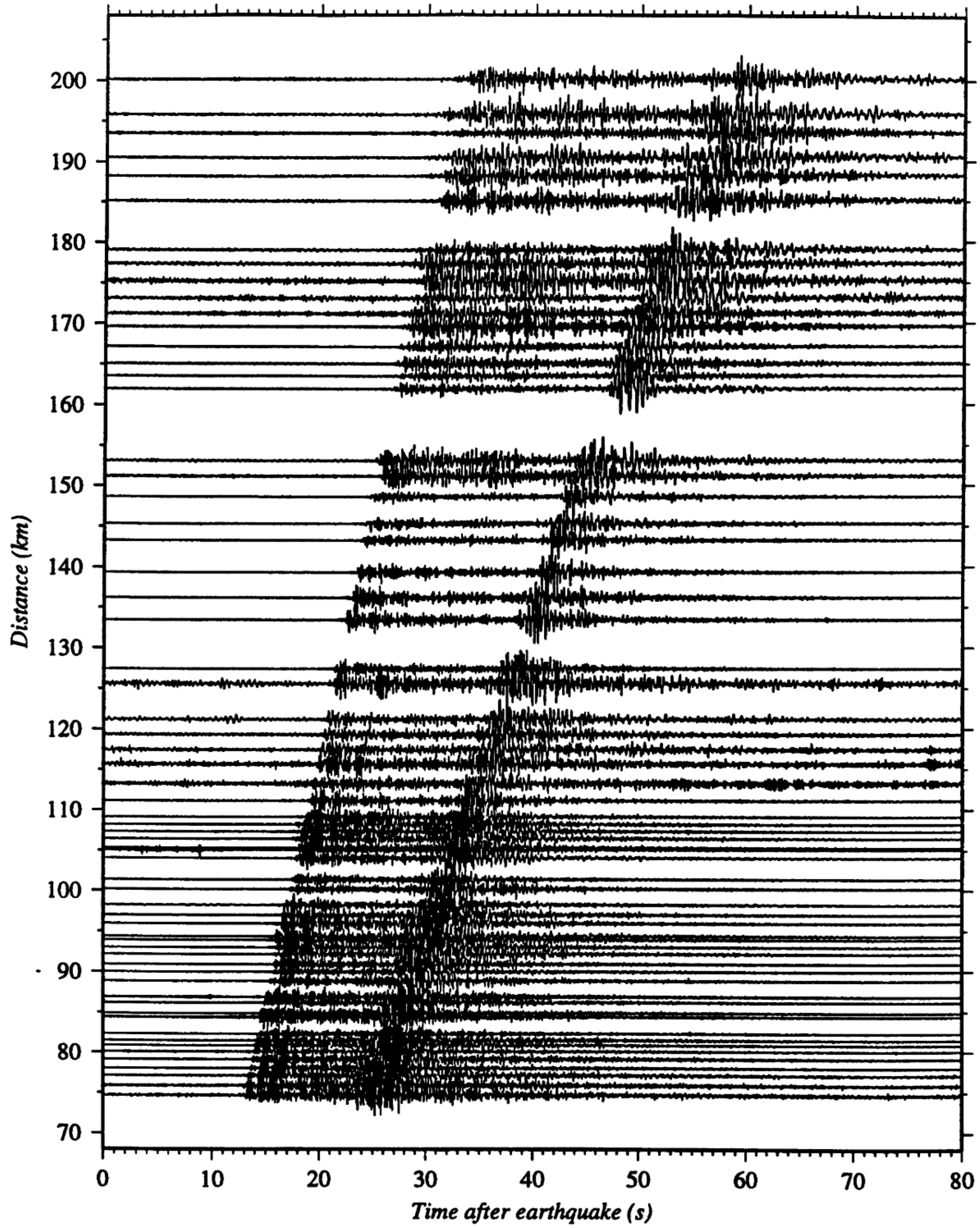

Fig. 7h. Vertical-component record section for local event which occurred on Dec. 8, 1993, 19 km south of San Pedro (M_L=2.6). Travel time (unreduced) after earthquake is shown. See text for details.

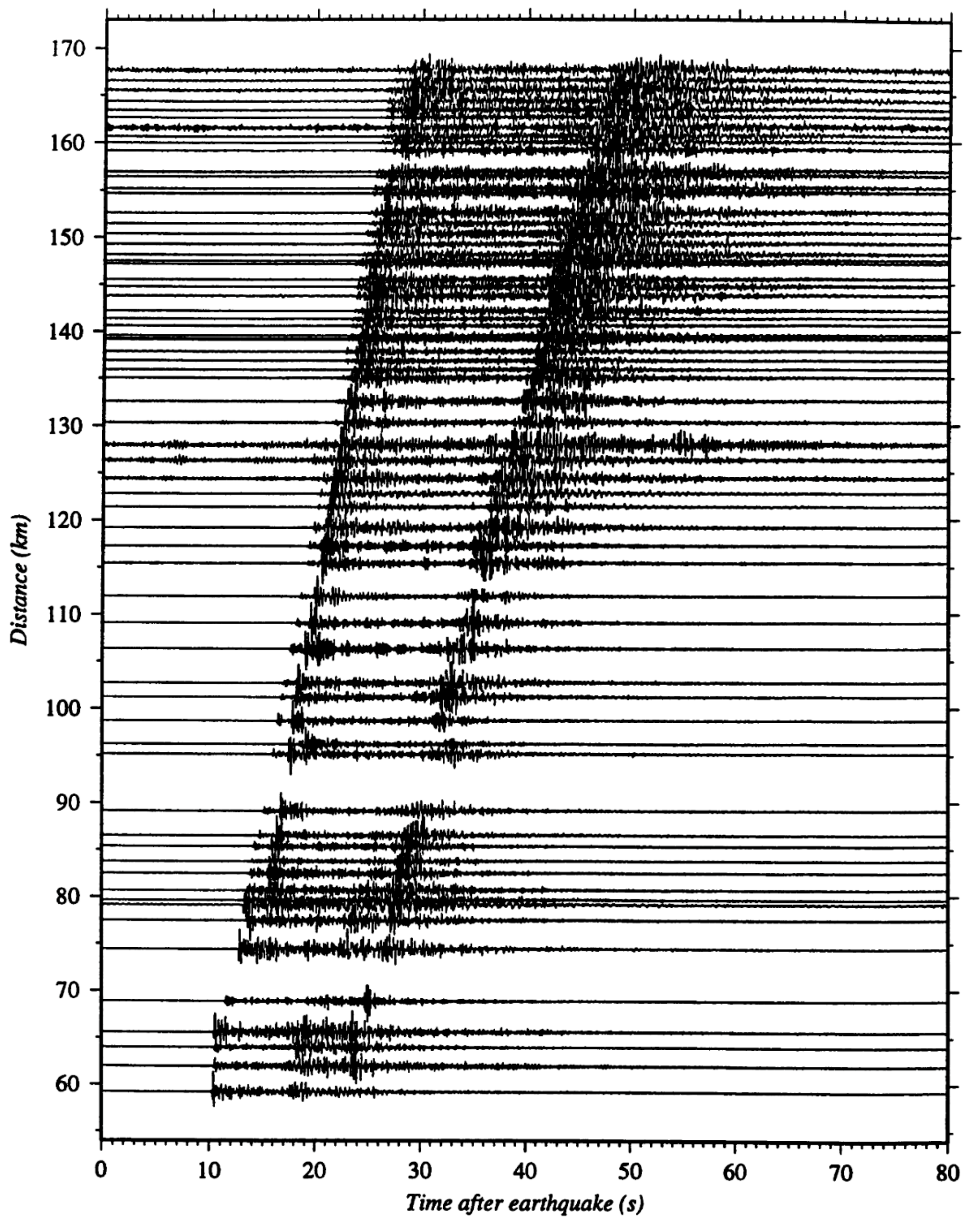

Fig. 7i. Vertical-component record section for local event which occurred on Dec. 10, 1993, 4 km northeast of Ridgecrest (M_L=2.9). Travel time (unreduced) after earthquake is shown. See text for details.

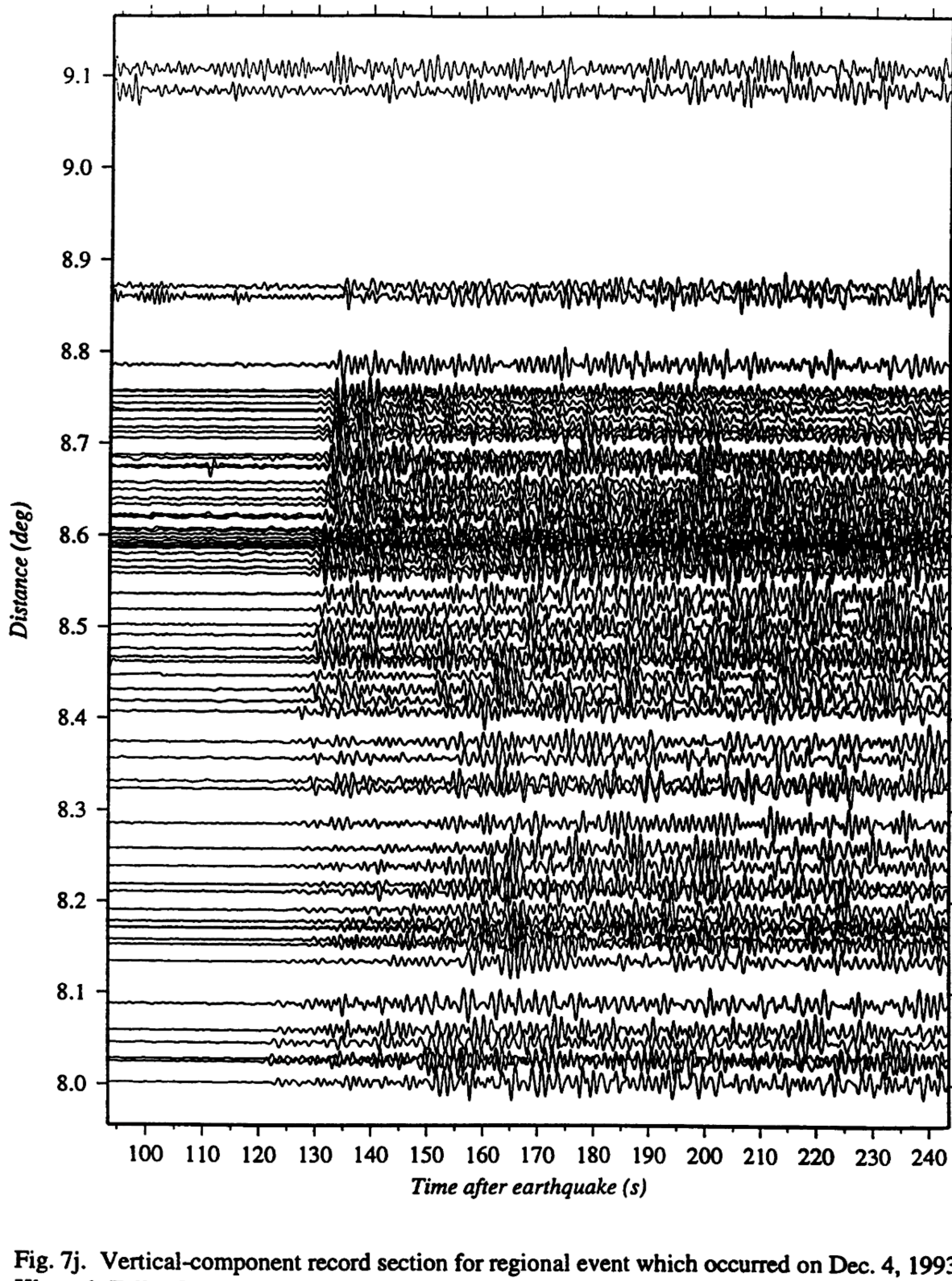

Fig. 7j. Vertical-component record section for regional event which occurred on Dec. 4, 1993, in Klamath Falls, Oregon (M_w=5.4). Travel time (unreduced) after earthquake is shown. See text for details.

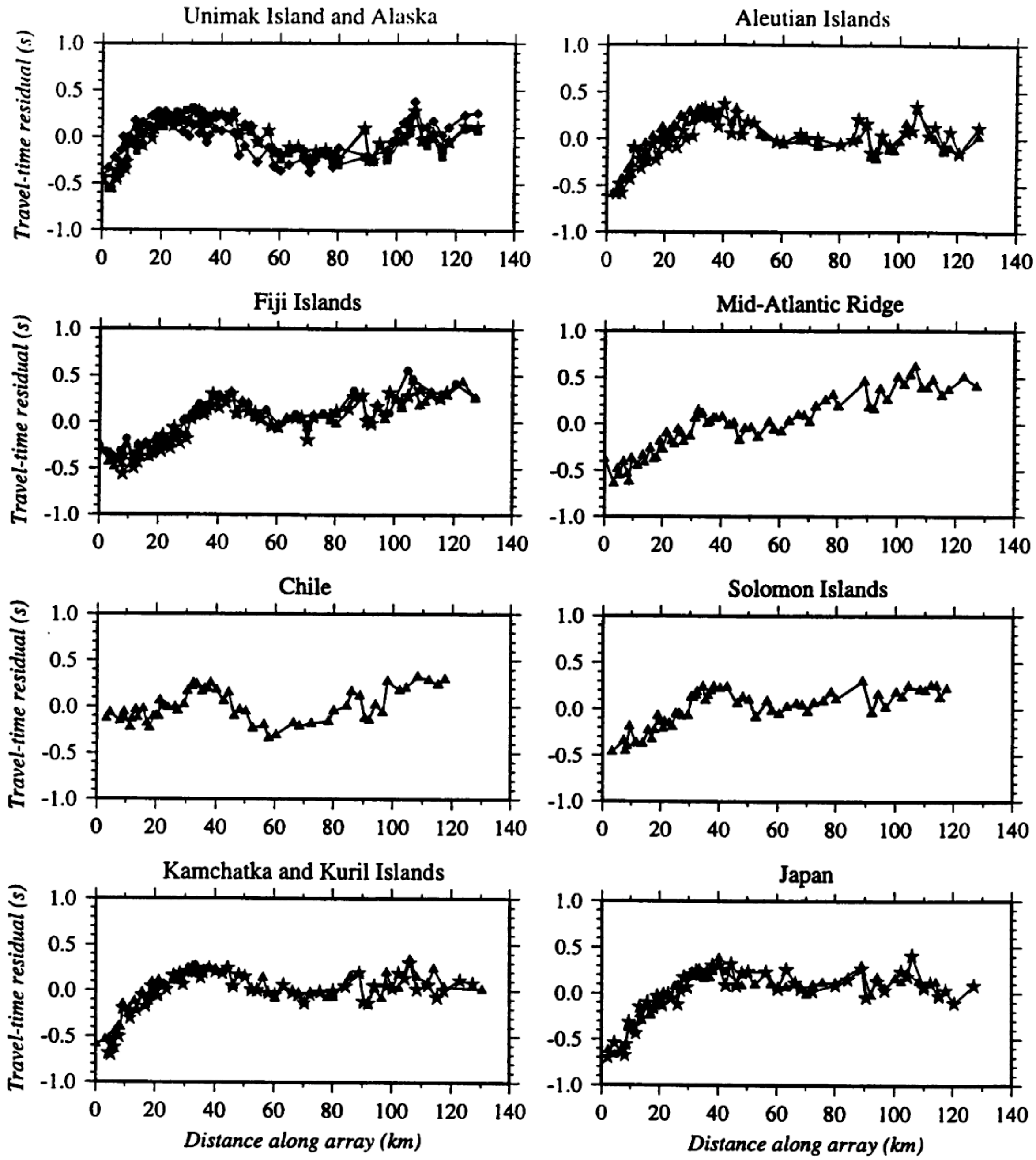

Fig. 8. P-wave travel-time residual curves for 17 teleseismic events which fall into 8 back-azimuth categories. Distance begins with station 002 (Azusa) at 0 km and increases northeast along the array. The travel times have been corrected for one-dimensional Earth model (IASP91) and for topography variations across the array. Note that for most arrivals, especially those from the northwest, residuals are relatively low at the southern end of the array (0-20 km) and relatively high under the San Gabriel Mountains (20-45 km). Residuals remain high in the Mojave Desert with more scatter due to errors in instrument clock timing. Mean residuals have been removed individually from each curve.