U.S. DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

THE SOUTHERN CALIFORNIA NETWORK BULLETIN JANUARY - DECEMBER 1995

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Open-File Report 96-29

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1996

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INTRODUCTION

The Pasadena Office of the U.S. Geological Survey together with the California Institute of Technology Seismology Laboratory (Caltech Seismo Lab) operates a network of more than 300 remote seismometers in southern California called the Southern California Seismic Network (SCSN). Signals from these sites are telemetered to the central processing site at the Caltech Seismology Laboratory in Pasadena. These signals are continuously monitored by computers that detect and record thousands of earthquakes each year. Phase arrival times for these events are picked by analysts and archived along with digital seismograms. Data acquisition, processing and archiving is achieved using the CUSP system (*Dollar, 1989*). These data are used to compile the SCSN Catalog of Earthquakes, a list beginning in 1932 that currently contains more than 282,000 events. This data set is critical to the evaluation of earthquake hazards in California and to the advancement of geoscience as a whole.

This and previous Network Bulletins are intended to serve several purposes. The most important goal is to make Network data more accessible to current and potential users. It is also important to document the details of Network operation, because only with a full understanding of the process by which the data are produced can researchers use the data responsibly.

NETWORK CONFIGURATION

New Stations

Only a few new sites were added in 1995. All new stations through December 31, 1995 are included in this list and Table 1. An explanation for the addition of each station is provided, followed by Table 1 which contains information about each station. Figure 1 is a current SCSN station map showing the locations of all the analog and TERRAscope stations.

<u>CLC</u>

Two horizontal components were added to this already-existing vertical site near China Lake after the activity in Ridgecrest began in August of 1995.

<u>EL2</u>

The station at El Mirage was moved to a slightly different location due to continual vandalism at an unsecure site after the landowner moved.

<u>RGC</u>

This network portable site was moved from Newhall to Ridgecrest to better record the Ridgecrest events.

<u>WMP</u>

This three-component site was installed at Mt. Pheasants early in the year after a microwave facility was installed there.

Table 1. New Stations

Code	Site Name	Lat. (North)	Long. (East)	Elev. (meters)	Date Installed	Instr.	Orientation
CLC VLN	China Lake	35.81574	-117.59751	735	08/19/95	L4	North low-gain
CLC VLE	"	"	"	"	"	L4	East low-gain
*EL2 VHZ	El Mirage	34.52950	-117.64350	1136	05/17/95	L4	vertical high-gain
*RGC VHZ	Ridgecrest	35.84080	-117.66060	801	09/26/95	L4	vertical high-gain
*RGC VLZ	"	"	"	"	"	L4	vertical low-gain
*RGC VLN	"	"	"	"	"	L4	North low-gain
*RGC VLE	"	"	"	"	"	L4	East high-gain
*RGC ASZ	"	"	"	"	"	FBA	vertical
*RGC ASN	"	"	"	"	"	FBA	North
*RGC ASE	"	"	"	"	"	FBA	East
*WMP VHZ	Mt. Pheasants	35.64058	-117.78570	1078	03/01/95	L4	vertical high-gain
*WMP ASZ	"	"	"	"	"	FBA	vertical
*WMP ASN	"	"	"	"	"	FBA	North
*WMP ASE	"	"	"	"	"	FBA	East

Note: The * in front of some station codes indicate that the locations for these sites were determined by a hand-held GPS. The topo sites are in NAD-27; all other sites are in NAD-83.

U.S. Geological Survey - Pasadena Field Office
Earthquake Hazards Program
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February 26, 1996

Dr. Egill Hauksson
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Dear Dr. Egill Hauksson

The annual Southern California Network Bulletins are now available on the World Wide Web. The Bulletins back to 1991 (without figures) are posted on the USGS Pasadena Field Office Web page, and future Bulletins will be posted as soon as they are completed. They will be available on the Web page much sooner than actual distribution of the Open-File Report.

The url address is **http://aladdin.gps.caltech.edu/lisa/NETBULLS/netbull_list.html** .

If you no longer want to receive a paper copy of the Southern California Network Bulletin, please send e-mail to lisa@usgs.gov.

Thank you,

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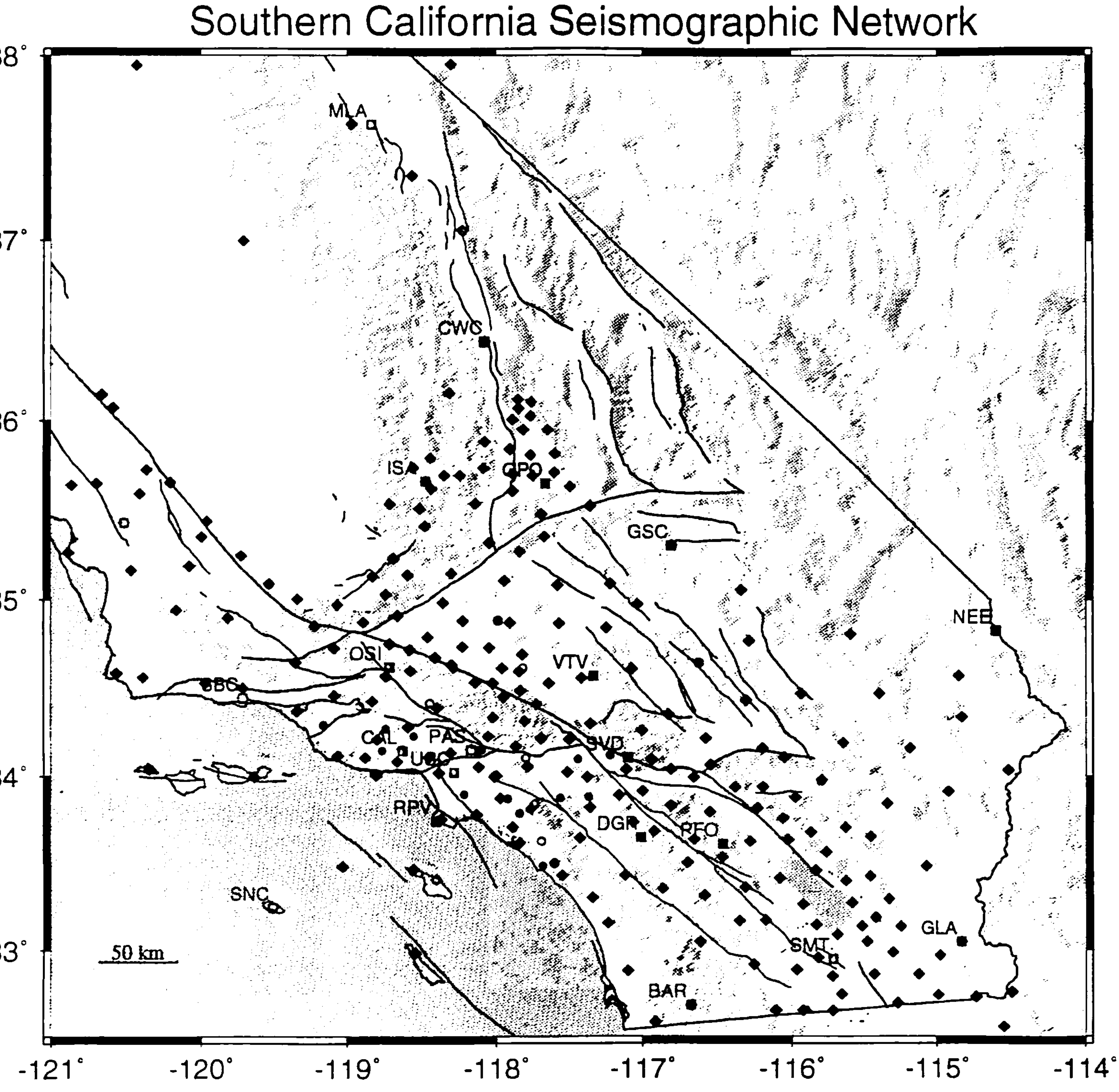

Figure 1. Southern California Seismographic Network and TERRAscope stations. Filled squares labeled with three-letter codes or circles represent TERRAscope stations; diamonds are SCSN stations. Solid or open red circles are AMOES / CalREN installed or planned stations.

Discontinued Stations

Four stations were removed in 1995. The removal dates are shown below in Table 2. El Mirage (ELM) was moved to a slightly different location due to vandalism. Fort Tejon (FTC) was removed due to the restructuring of the telemetry network in order to eliminate costly phone lines. It may be relocated in 1996. The three-component stations at Glamis (GLA) was turned off after the TERRAscope site was installed at that location, and after the phone company eliminated the phone line. The network portable station in Newhall (NHL) was removed early in the year and relocated at Ridgecrest after the Ridgecrest events began in August.

Table 2. Discontinued Stations

Station Code	Date Discontinued
ELM	05/02/95
FTC	05/24/95
GLA	01/05/95
NHL	01/20/94

Digital Stations

Table 3 below contains the installation dates and locations of all currently operating digital stations. These include TERRAscope stations, AMOES stations, CalREN stations, and any combination of the three. Instrument response parameters for TERRAscope stations can be found on the SCEC Data Center (scec.gps.caltech.edu). Locations are in NAD-83 coordinate system unless otherwise noted.

Table 3. Digital Stations

Station	Station Name	Install. Date	Latitude (N)	Longitude (E)	Elev. (m)	Datalogger	Telemetry
*AGO	Agoura		34.14647	-118.76699	289	K2	FRAD
BAR	Barrett Dam	10/01/92	32.68005	-116.67215	496	Quanterra	Dial-up
CALB	Calabasas	01/17/94	34.14302	-118.62792	276	Quanterra	Dial-up
*COO	Compton	10/11/95	33.89604	-118.21639	-1	K2	FRAD
*CRN	Corona	08/15/95	33.87574	-117.56106	165	K2	FRAD
CWC	Cottonwood Creek	03/27/95	36.43988	-118.08016	1553	Quanterra	Dial-up
DGR	Domenegoni Reservoir	06/22/93	33.64996	-117.00948	609	Quanterra	Dial-up
FON	Fontana	08/10/95	34.09957	-117.43876	479	K2	FRAD
**FUL	Fullerton	08/15/95	33.87170	-117.92251	-49	K2	FRAD
GLA	Glamis	04/28/94	33.05107	-114.82779	514	Quanterra	Dial-up
GPO	Geothermal Prog. Office	01/12/96	35.6494	-117.6619	735	Quanterra	Dial-up
GSC	Goldstone	08/08/90	35.30176	-116.80572	954	Quanterra	Dial-up
HLN	Highland	08/10/95	34.12128	-117.21897	266	K2	FRAD
**KIK	Kinemetrics	07/12/95	34.15037	-118.10156	198	K2	FRAD
ISA	Isabella	02/07/91	35.66278	-118.47403	817	Quanterra	Dial-up
*LEV	Leona Valley	10/05/95	34.61462	-118.29104	882	K2	FRAD
MLAC	Mammoth	11/04/92	37.63014	-118.83611	2134	Quanterra	Dial-up
NEE	Needles	04/14/93	34.82482	-114.59942	139	Quanterra	FRAD
*NOT	Northridge	10/05/95	34.22869	-118.55829	224	K2	FRAD
*OGC	Orange (Chapman)	10/16/95	33.78816	-117.84400	28	K2	FRAD
*OSI	Osito Adit	06/28/95	34.61450	-118.72350	706	Quanterra	Dial-up
PAS	Pasadena	12/87	34.14844	-118.17113	257	Quanterra	FRAD
PFO	Pinyon Flat	10/31/91	33.61151	-116.45935	1245	Quanterra	Dial-up
*RPV	Rancho Palos Verdes	05/12/93	33.74329	-118.40426	64	Quanterra	FRAD
*RRS	Riverside	08/15/95	33.88217	-117.36646	450	K2	FRAD
*SAN	Santa Ana	08/16/95	33.70432	-117.88578	-12	K2	FRAD
SBC	Santa Barbara Channel	12/20/90	34.44076	-119.71492	61	Quanterra	Dial-up
*SIO	Saticoy	10/05/95	34.2930	-119.1646	-24	K2	FRAD
*SJU	San Juan Capistrano	08/16/95	33.48725	-117.68114	82	K2	FRAD
SNCC	San Nicholas Island	05/27/94	33.24800	-119.71492	227	Quanterra	FRAD
SMTC	Superstition Mountain	11/94	32.94892	-115.72031	3	Quanterra	Dial-up
*SMV	Simi Valley	10/11/95	34.27128	-118.74427	188	K2	FRAD
SVD	Seven Oaks Dam	12/04/90	34.10645	-117.09825	574	Quanterra	Dial-up
USC	Univ. of So. California	02/17/93	34.01916	-118.28597	17	Quanterra	FRAD
VTV	Victorville	04/14/93	34.56058	-117.32961	812	Quanterra	FRAD

Notes: * Location derived from USGS topo maps and elevation taken from GPS instruments done by the stations.

TriNet, The New Digital Real-Time Earthquake Monitoring System for Southern California

(This article was taken from material contributed by Egill Hauksson but was co-authored also by H. Kanamori, R. Clayton, and T. Heaton (Seismological Lab., Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA 91125); J. Mori, and L. Jones (U S Geological Survey, 525 S. Wilson Av., Pasadena, CA 91106); A. Shakal and J. Davis (Department of Conservation, Division of Mines & Geology, Strong Motion Instrumentation Program, Sacramento, CA 94814)

TriNet is a joint proposed project from the California Institute of Technology (Caltech), the USGS Office in Pasadena, and the Department of Conservation's California Strong Motion Instrumentation Program (CSMIP) in the Division of Mines and Geology (CDMG). The proposal is to develop, deploy, operate, and analyze data from a system of ground motion sensors and data recovery computers. These ground motion recorders will provide data necessary for building code improvements, while also providing a network necessary to develop a prototype early warning system for strong shaking. The CDMG element will include a data analysis program focused on applying new and existing strong motion data to building code improvements. Ground motion data, measured at up to 600 different sites in southern California, will be either transmitted to Caltech/USGS in Pasadena or retrieved in near-real-time by CDMG in Sacramento.

Specifically, we plan to upgrade telemetered seismic stations in the Caltech/USGS Southern California Seismographic Network (SCSN) from analog to digital data acquisition and to install strong motion sensors to supplement the existing weak motion sensors. New digital stations will also be added to the Caltech/USGS network to provide as complete coverage as possible. This proposed project also plans to add new stations to the CDMG strong motion network to improve coverage now lacking in the urban areas, upgrade the communication capability for existing stations in southern California, and provide for analysis studies of new and existing strong motion data focused on building code improvements.

This project also involves a prototype early warning system facility. This facility will begin as a rapid information broadcast facility and evolve into a prototype early warning system as technology evolves and developments are made during the project. This facility will have the capability of processing data in a few seconds and will be designed to provide rapid magnitudes, locations and fault mechanisms for up to 35,000 earthquakes expected annually as well as strong motion data from the real-time stations for the one to 10 large earthquakes per year. This project also would expand the existing CDMG processing and communication facility in Sacramento that will process strong motion data from large earthquakes in the region. Caltech/USGS and CDMG will jointly plan and decide the final configuration of the resulting joint network.

Products. TriNet will provide products including strong motion earthquake data, a prototype earthquake shaking warning capability, and analysis studies of new and existing strong motion data focused on accelerating the improvements in building codes. An additional benefit of the system will be to provide rapid post-earthquake information for emergency response officials. TriNet data and information products will be released from both Caltech/USGS in Pasadena and CDMG in Sacramento. For large earthquakes, the strong motion shaking and its distribution are very important for societal response. The data from the existing and expanded CDMG strong-motion instrumentation will be a major contribution to the post-earthquake information base, together with the Caltech/USGS data. The combined data set will be used in analysis studies aimed at building code improvements. These studies, expanding those underway at CDMG, will involve external funded studies by analysis and design engineers to develop actual draft code changes for submittal to Structural Engineers Association of California (SEAOC), International Conference of Building Officials (ICBO), and the National Earthquake Hazards Reduction Program (NEHRP) for adoption in their code cycles.

Constituencies Served. The new system will provide a spectrum of products to service multiple user groups that engage in long-term mitigation of earthquake hazards in southern California through improvements in seismic design. Traditionally Caltech/USGS and the CSMIP network of CDMG have served differing constituencies during different time scales. Caltech/USGS (through the Earthquake Research Affiliates (ERA) project) service the broad community of mitigation professionals employed by consulting engineering firms, the Office of Emergency Services (OES), major utilities, and major railroads. Many of these constituencies to be served include agencies able to incorporate early warning information of upcoming ground shaking. CDMG has traditionally served engineering seismologists and the earthquake engineering and structural engineering communities and state agencies including OES with earthquake strong-motion data during the hours, days, weeks, and years after the earthquake, through providing strong motion information and assisting the development of new code provisions. In addition, SEAOC, SAC (combination of SEAOC, Applied Technology Council, and California Universities Research in Earthquake Engineering) and building departments of the major cities in the area affected by Northridge will be provided with data and analysis to assist their development of actual code provisions for strengthening codes and the performance-based codes now being proposed for implementation in the next several years. Together, through this proposal, Caltech/USGS and CDMG can develop this system more quickly and effectively than would be possible separately while avoiding duplication and providing higher quality and more effective products than have been available in the past.

NETWORK OPERATIONS

Status of Processing

The status of each month of the catalog data since the advent of digital recording is described in Table 4. Events for months marked preliminary (P) have been timed but have not yet run the gauntlet of quality checking, addition of helicorder amplitudes and re-archiving necessary to become final (F with shading). For months marked "pinked" (PNK), larger events (~3.0) have only been timed crudely on a few stations and smaller events are absent. A period in 1980-1981 has actually been timed and digital seismograms are available, but the "pinked" version is still used for any purpose requiring good magnitudes or completeness for large earthquakes; some events and magnitudes are missing otherwise. The last three quarters of 1981 are now finalized except for missing magnitude calibrations in the months marked with a "P". The months marked "P" in 1993-94 are finalized except for missing magnitude calibrations. The months marked "P" in 1995 also have been finalized except for missing magnitude calibrations.

In addition to triggered events, an archive of other interesting seismic time periods and teleseisms are kept on continuously-recorded DAT tapes. See Appendix B for a list of these times and/or events for 1995.

Table 4. Processing Status of Network Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1932-1974	PRE-DIGITAL RECORDING - COMPLETE FOR M≥3.0											
1975	F	F	F	F	F	F	F	F	F	F	F	F
1976	F	F	F	F	F	F	F	F	F	F	F	F
1977	P	P	P	P	P	P	P	P	P	P	P	P
1978	F	F	F	F	F	F	F	F	F	F	F	F
1979	P	P	P	P	P	P	P	P	P	P	P	P
1980	PNK	PNK	PNK	PNK	PNK	PNK	PNK	PNK	PNK	PNK	PNK	PNK
1981	PNK	PNK	P	P	P	P	F	F	F	F	F	F
1982	F	F	F	F	F	F	F	F	F	F	F	F
1983	P	PNK	PNK	PNK	PNK	PNK	PNK	F	F	F	F	F
1984	F	F	F	F	F	F	F	F	F	F	F	F
1985	F	F	F	F	F	F	F	F	F	F	F	F
1986	F	F	F	F	F	F	F	F	F	F	F	F
1987	F	F	F	F	F	F	F	F	F	F	F	F
1988	F	F	F	F	F	F	F	F	F	F	F	F
1989	F	F	F	F	F	F	F	F	F	F	F	F
1990	F	F	F	F	F	F	F	F	F	F	F	F
1991	F	F	F	F	F	F	F	F	F	F	F	F
1992	F	F	F	P	P	P	P	P	P	P	P	P
1993	F	F	F	F	F	F	P	P	P	P	P	P
1994	F	P	P	F	F	F	F	F	F	F	F	F
1995	F	F	F	F	F	F	P	P	P	P	P	P

A new version of the CUSP system was implemented in the fall of 1995 which is significantly faster and more robust than the previous version.

WWW Pasadena Field Office Home Page

The Pasadena Field Office created a Web page in late 1994 with Southern California earthquake information and links to other USGS and earthquake pages. From our home page, you can look at current maps of Southern California and Los Angeles earthquakes, the most recent Weekly Southern California Seismicity Report and plot, the focal mechanism and peak ground acceleration contour map for the most recent significant Southern California earthquake, SCSN, TERRAscope, or GPS maps, and many other useful and interesting maps and lists. You can also get information on current research and projects under way by the various staff and scientists in the Pasadena Field Office.

Figure 2 shows an exponentially increasing number of hits to our home page since it was established about a year ago. In early 1996 our home page was moved on to a dedicated machine in the Caltech Geological and Planetary Sciences

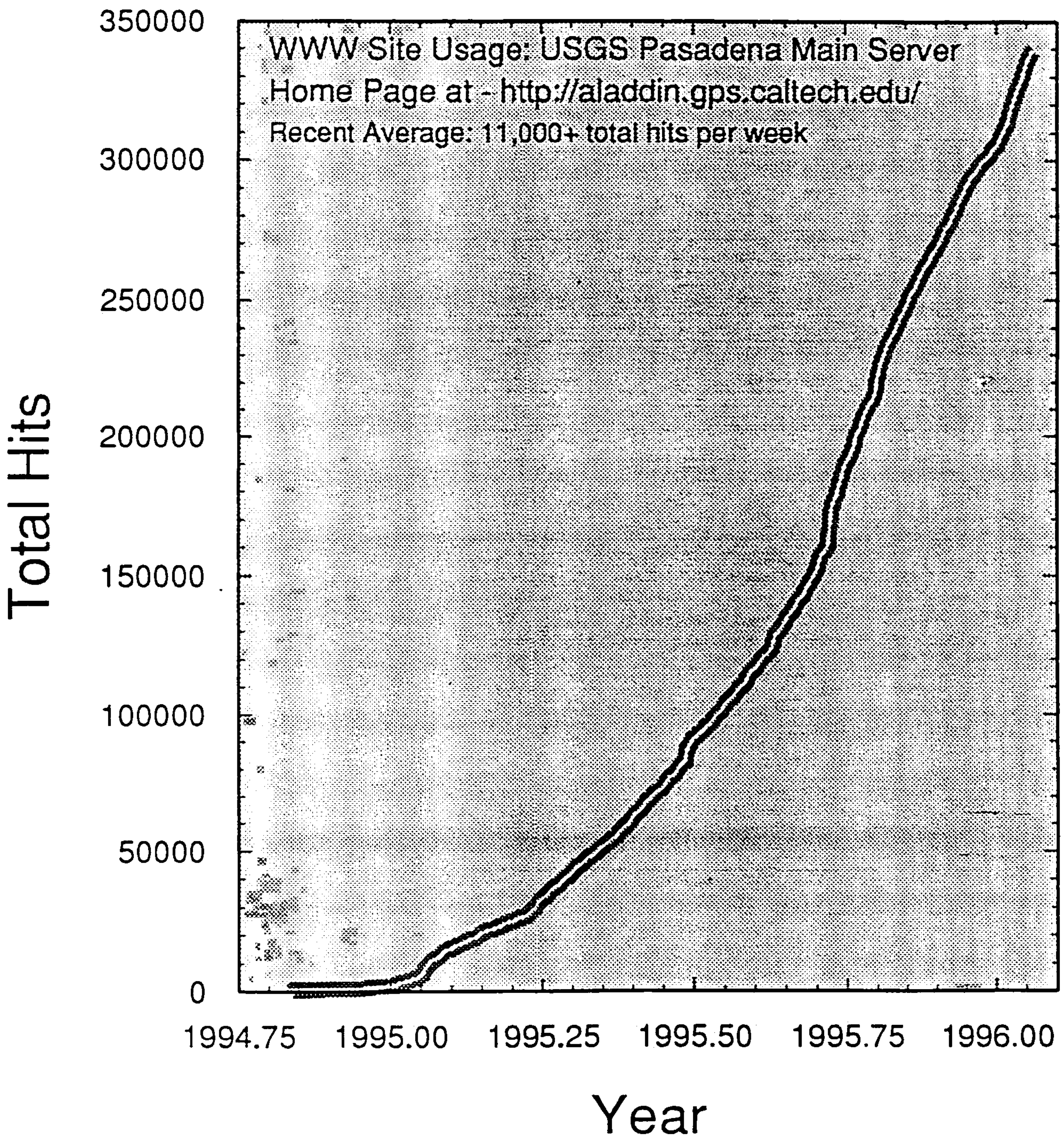

Figure 2. WWW Site Usage: Pasadena Field Office Home Page. The number of "hits" the Pasadena Field Office Home Page has had since it was created in late 1994. The recent average number of hits per week is 11,000+.

Division that offers a direct connection to the Caltech Computing Center, allowing for faster access without putting a load on the networks used for research computing.

For earthquake information, please visit our site at:

http://aladdin.gps.caltech.edu/usgs-pas.html

Seismic Station Information On-line

Although in the early stages of development, a seismic station history database is now in place on the SCEC machine that contains time-dependent station parameters for all the SCSN stations. It is currently being populated with information about TERRAscope, TRINET, and portable stations, and may eventually hold information about the USGS strong-motion stations and the permanent GPS stations maintained by the Pasadena USGS office. This project began in 1987 using Ashton-Tate's software package DBase III Plus on an IBM PC clone with a small database containing information about the SCSN stations. The contents grew over time to include information pertaining not only to locations and attenuation settings, but also battery dates, communication information and instrument response parameters, to name a few. The information before 1987 is incomplete, but since 1987 a complete record has been kept of all pertinent instrument information. When Borland purchased the DBase software from Ashton-Tate a few years ago, they developed a version for UNIX-based systems, making it possible to move the database onto the network where it could be accessed by anyone with an account on the SCEC machine.

The database has been used for a wide variety of purposes. The technicians who maintain the seismic stations use the database for monitoring the status of the instruments in order to schedule maintenance visits. The real-time earthquake location/magnitude system uses information from the database in order to compute earthquake magnitudes. The SCEC Data Center will soon use the database to maintain a current file as a pointer into the seismic data. The CUSP processing system will also use the database to keep the most current list of station information used for routine processing and archiving of triggered seismic events. In addition to these ongoing tasks, the database has been used by many scientists to obtain information for research efforts. In the past, this information had to be requested from the station history database manager, but with the system on-line, it is now directly accessible to anyone who is interested.

The database will eventually have a user-friendly, flexible interface that allows users to select specifically what type of information they want for specific stations, but for now there are two rather rigid applications that produce output files with the most commonly used information for all the stations. If you happen to be well-versed in DBase IV, you will be able to tailor your data request more precisely. For most users, there will be two choices. The first is a station list with locations, elevations, and some other basic information in HYPOINVERSE (*Klein, 1989*) format or an alternative predetermined format with more information such as on and off dates. The second choice is a station list with instrument response parameters needed to determine the nominal gain of each station, plus the equations and other information to help perform that calculation. Poles and zeroes files will be provided in the future.

If you have an account on the SCEC Data Center machine, you can get additional information about the contents of the database and how to use it by typing "man dbase". Questions and comments should be directed to the database manager, Lisa Wald (lisa@usgs.gov or 818-583-7822).

Outreach Summary

Almost everyone in the Pasadena Field office is very active in public outreach in the community. In 1995 the 15-person staff gave 75 talks, more than 39 television/video interviews, at least 12 newspaper/print interviews (this category was almost certainly under-reported), more than 12 radio interviews, and four other types of outreach such as special electronic postings.

These outreach efforts included an interview with National Public Radio, many talks to civic organizations, schools, and Girl Scout troops, several interviews with Japanese television, an interview on the PBS "Life and Times" show, an interview for NBC's "The Other Side", participation in many earthquake and safety fairs, several keynote speeches, many earthquake response interviews, several Seismology Lab tours, and judging entries at the California State Science Fair.

RESEARCH NOTES

The Ridgecrest Events of August 17 & September 20, 1995

(summarized from the article entitled "*Preliminary Report on the 1995 Ridgecrest Earthquake Sequence in Eastern California*" in the 1995 November/December issue of Seismological Research Letters (Hauksson *et al.*, 1995).)

The eastern edge of the Indian Wells Valley is an area typically characterized by swarms of earthquakes which occur over a period of days, weeks, and even months. The swarms in this area tend to migrate in space over time. Before 1995 the largest earthquake to occur in the valley was an M_L4.9 in April 1982 that caused some ground cracking.

The valley is part of the Eastern California Shear Zone (ECSZ) that transfers some of the relative motion between the North American and Pacific plates away from the San Andreas fault to the western Great Basin of the Basin and Range province. Notable earthquakes in this zone include the 1992 M_W7.3 Landers earthquake and the 1872 M7.6 Owens Valley earthquake.

On August 17 on M_L5.4 earthquake occurred 18km (11 mi) north of Ridgecrest that was felt widely in southern California. It was shallow (6km), and several different mechanism determinations indicate that it probably started as a normal-faulting mechanism and quickly evolved into a right-lateral strike-slip mechanism on a north-northwest-striking fault. Over 2,500 aftershocks occurred in the five weeks that followed. These aftershocks outlined three separate faults involved in the seismic activity. In addition to the mainshock fault, there was also a northeast-striking fault, and a north-striking lineation. Figure 3 shows a map view and cross-sections of the mainshocks and aftershocks with focal mechanisms for the larger events.

On September 20 an M_L5.8 occurred about 2km southeast of the M_L5.4 epicenter. It had a strike-slip focal mechanism on a north-northwest-striking plane coincident with the earlier earthquake. The aftershocks define a 7km-long vertical rupture plane that extends from 3 to 11 km in depth. Over 1900 aftershocks were recorded in the two weeks after this second event.

A short (3km) segment of the Airport Lake fault zone 3km northwest of the epicenter experienced surface cracking indicating the possibility of triggered slip with surface rupture. After the first event, 1-2m long cracks with about 2mm of right slip were found along the Airport Lake fault zone. After the second earthquake the same fault segment had more extensive cracking with skip up to 1cm vertically and 8mm laterally.

The M_L5.8 earthquake is now the largest event to be recorded in this region, however there is the potential for a larger earthquake.

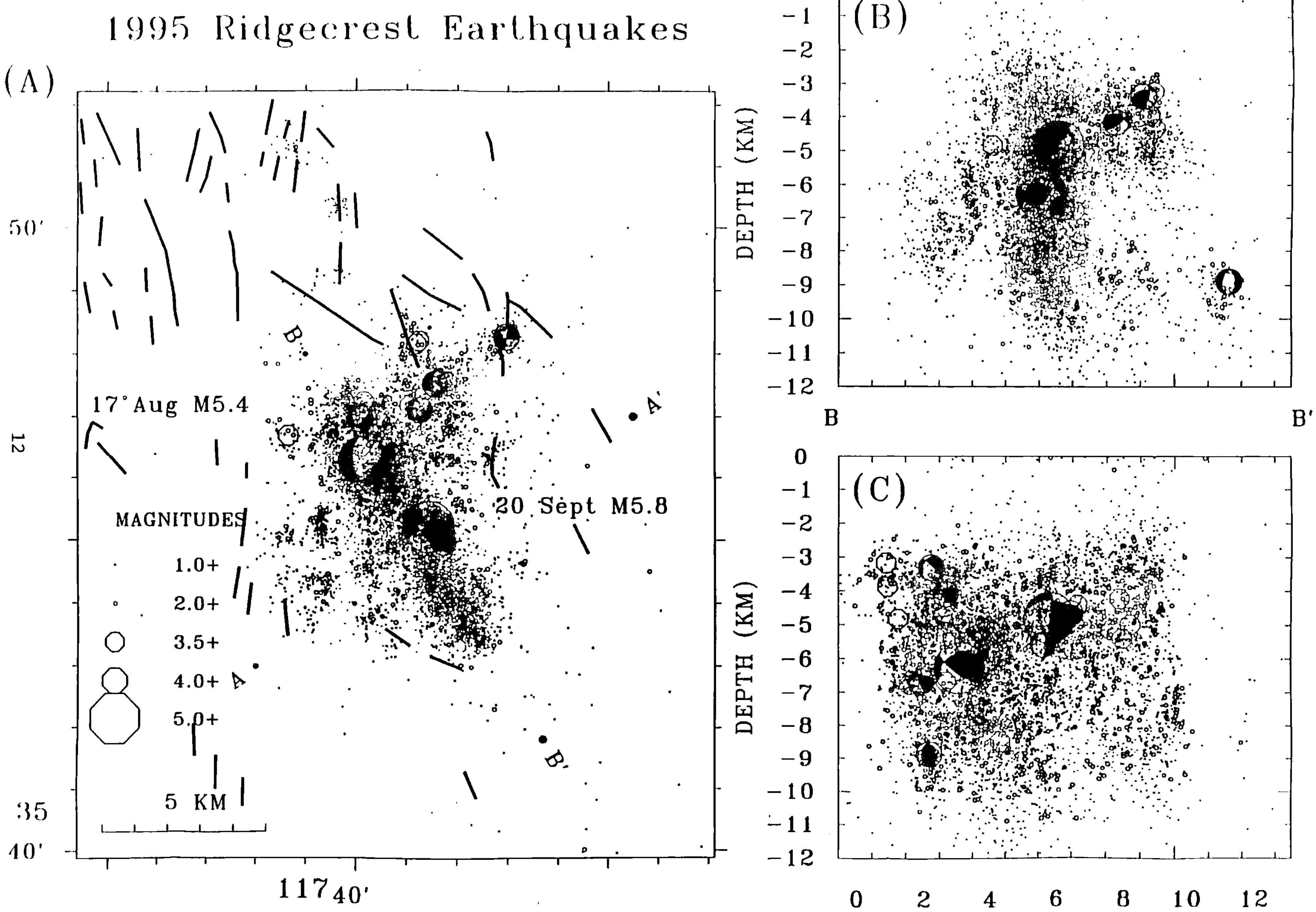

Figure 3. 1995 Ridgecrest Earthquakes. a) a map view of the swarm area with focal mechanisms for M4.0+ events. b) cross-section A-A' perpendicular to the main trend c) cross-section B-B' parallel to the main trend.

SYNOPSIS OF SEISMICITY

A total of 23,587 earthquakes and 875 blasts were cataloged for 1995 (Figure 4) at the time of this writing. Of the cataloged events, 198 were greater than or equal to $M_L3.0$ (Appendix A, Figure 5). The largest earthquake within the SCSN network in 1995 had an magnitude of 5.8 and was located near Ridgecrest. Focal mechanisms for 24 selected events ($M_L \geq 3.5$) are shown in Figure 6.

For the following discussion southern California has been divided into eleven sub-regions (Figure 7). These regions are arbitrary, but useful for discussing characteristics of seismicity in a manageable context. Figure 8 summarizes the activity of each sub-region over the past ten years. A separate discussion section follows for those regions with notable activity. The dates mentioned in the text are based on Pacific time, however those in Appendix A are based on GMT, thus the discrepancy in a few dates.

Imperial Valley - Region 1

This region typically is seismically active, but this year was relatively quiet. Two noteworthy events in this region actually were in Mexico. On January 10 an $M_L3.7$ shook the area across the border. Later in the year on August 9, and $M_L3.4$ occurred south of Imperial Valley. There was a minor swarm in early June. Then on Christmas Day an $M_L3.7$ occurred near Niland with an $M_L2.9$ aftershock two days later that was also felt. An $M_L3.1$ was also felt on December 27 near El Centro.

South San Jacinto - Region 2

The first significant event of the year in this region actually occurred between the San Jacinto and Elsinore faults. It was a felt $M_L3.2$ in May. The other two were in the San Jacinto fault zone. An $M_L3.6$ was felt in the epicentral area near Anza on July 28, and an $M_L3.5$ shook the area near Ocotillo Wells on October 11.

South Elsinore - Region 3

An $M_L3.4$ was felt on June 9 that was located near Lake Henshaw in the Elsinore fault zone.

San Diego - Region 4

The events recorded in this region were all offshore with the exception of an $M_L3.4$ southeast of San Ysidro in Mexico on August 6 that was felt in San Diego. There was an $M_L3.4$ just off San Clemente Island on March 2. Then on June 21 an $M_L4.1$ occurred in the San Clemente/Oceanside area that was fairly widely felt in the coastal areas from San Diego to Orange County. The event had a thrust mechanism. Although this event was near the Oceanside sequence (July 13, 1986; $M_w5.4$), we no longer call it an aftershock because of the amount of time since the mainshock and the hiatus of events in that area in the last few years.

Los Angeles Coast - Region 5

Because this region is highly populated, earthquakes in the magnitude 2-3 range are often felt. For instance, in January an $M_L2.4$ was felt in La Cienega and an $M_L2.6$ was felt in Compton. Other small events that were felt in the Los Angeles area were an $M_L2.3$ in Long Beach in April, an $M_L2.6$ just offshore near the Los Angeles International Airport in June, and an $M_L2.6$ in Panorama City in August.

There were a few slightly larger earthquakes in this region too. On March 1, two $M_L3.7$ earthquakes occurred 20 seconds apart just 18 km (11 miles) west of Palos Verdes Point. There were felt in the South Bay, West Los Angeles, and the San Fernando Valley. They were followed by four aftershocks in the next 4 minutes. A cluster of events near Inglewood on May 3 included an $M_L3.1$ and $M_L2.8$ that were felt. Their focal mechanisms were consistent with the trend of the Newport-Inglewood fault. In November two more events were felt in the Los Angeles area; an $M_L3.4$ on November 3, and an $M_L3.0$ on November 11. The first was a thrust event in the Puente Hills between Whittier and La Habra Heights on an east-northeast-striking plane. Although close, it was outside the Whittier aftershock zone. The second event was felt near Loma Linda. On December 7 an $M_L3.4$ was felt on the coast near Fillmore.

North Elsinore - Region 6

One small $M_L2.5$ in the Santa Ana Mountains was felt on March 1, and then an $M_L2.7$ was felt in late November. An $M_L3.2$ occurred north-northwest of Corona, near the northern end of the Elsinore fault that was felt on July 9.

San Bernardino - Region 7

This region is typically quite seismically active, and 1995 was no exception. Most events in the region were continuing aftershocks from the Joshua Tree/Landers/Big Bear sequence of 1992. The most notable ones were located in the vicinity of Yucca Valley, although there were a few located near Barstow, Big Bear, and even one at the southern end of the Joshua Tree aftershock zone. That one was an $M_L4.8$ near the Blue Cut fault on May 7 and was widely felt in Palm Springs, Indio, and Yucca Valley. On April 10 there was an $M_L3.7$ aftershock in the Yucca Valley area, and on October

22 there was an M_L3.9. The largest aftershock in that area was an M_L4.4 on September 5 that was felt throughout the Inland Empire and the Coachella Valley. A Big Bear aftershock with an M_L3.5 shook residents there on February 19. The aftershocks for this sequence in the Barstow area are discussed in the Region 8 - Northern Mojave discussion.

The Joshua Tree/Landers/Big Bear areas were not the only ones to have notable events, however. An M_L3.5 between Riverside and Moreno Valley was felt on January 24. On March 18, there was an M_L3.3 in the Beaumont/Yucaipa area where the San Andreas fault splits into several strands. This oblique reverse earthquake was on an east-striking plane between the Banning and Mission Creek strands. An M_L3.3 occurred near Desert Hot Springs just west of the Landers aftershock zone (therefore not considered an aftershock) on March 27. It was a north-striking normal mechanism, typical for this area.

The Cajon Pass experienced an M_L3.7 on April 3 that was felt in San Bernardino. This was a northwest-striking thrust fault in a compression zone between the San Jacinto and San Andreas faults. Seventy-eight minutes later an M_L3.5 occurred in Loma Linda, also in the San Jacinto fault zone, that was felt in San Bernardino. An M_L3.1 was felt in May in the Palm Springs area, and an M_L3.8 shook the San Gorgonio Pass near Beaumont and the Banning fault on May 12. In August an M_L3.0 was felt in Hemet near the San Jacinto fault. December 25 brought an M_L3.3 that was felt in Idyllwild.

North Mojave - Region 8

The seismicity in this region was dominated by "Landers" aftershocks in the Barstow area. There were two felt events (an M_L3.0 and M_L3.2) in January, an M_L3.5 on March 12, two more M_L3.5's on June 8 and 19, and yet another M_L3.5 on August 30.

South Sierra Nevada - Region 9

The first half of the year was very quiet in this region. On June 12 an M_L3.6 happened along the eastern front of the Sierra Nevadas northwest of Olancha. On August 7 an M_L3.3 occurred just east of Coso Junction. However, the real activity began on August 17 near Ridgecrest. On that day an M_L5.4 rattled people as far away as Los Angeles and Bishop. The earthquake had a normal mechanism with a component of strike-slip. One of the largest aftershocks was an M_L4.3 on September 11. Then on September 20 an M_L5.8 rocked the same area with the same extensional mechanism. It was followed in the next few weeks by several felt aftershocks (M_L3.5, M_L3.6, M_L3.8, M_L3.7) and an M_L4.2 on October 18. On December 1, it produced an M_L3.7. See the special article about the Ridgecrest events for additional details.

Kern County - Region 10

The only notable activity in this region was an M_L3.2 near Wheeler Ridge north-northwest of Frazier Park that was felt by residents in Gorman in June, and a small swarm also in early June.

Santa Barbara - Region 11

Aftershocks of the January 17, 1994 M_w6.7 Northridge earthquake dominated seismicity in this region. The largest one was an M_L5.0 on June 26 in the Valencia area at the north edge of the aftershock zone. It was a thrust event with its own two foreshocks and 40 aftershocks. It was felt as far as San Diego and Santa Barbara. It was one of the top nine largest aftershocks in the sequence (the largest was an M_L5.6 one minute after the mainshock), and it was the largest aftershock since an M_L5.2 on March 20, 1994. Other small aftershocks occurred throughout the year with the last felt one being on M_L3.7 near Simi Valley on October 5.

Even without the Northridge sequence, there were a variety of other interesting earthquakes in the region. A small M_L2.9 was felt near Carpenteria in January. Two earthquakes, an M_L4.3 followed 90 minutes later by an M_L3.8 in the same location, were felt near the Malibu coast on February 19. Both had a thrust mechanism. A small M_L2.8 was felt in August in San Luis Obispo, and further south an M_L3.3 occurred under the Santa Barbara Channel earlier that month that was felt along the coast. An M_L3.5 was felt along the coast just west of Malibu on December 8. On August 25 two felt M_L3.3's occurred north of Sunland in the San Gabriel Mountains just northeast of the Northridge aftershock zone. They were not considered to be aftershocks since they were not within the aftershock zone. However, they were in the 1971 San Fernando aftershock zone.

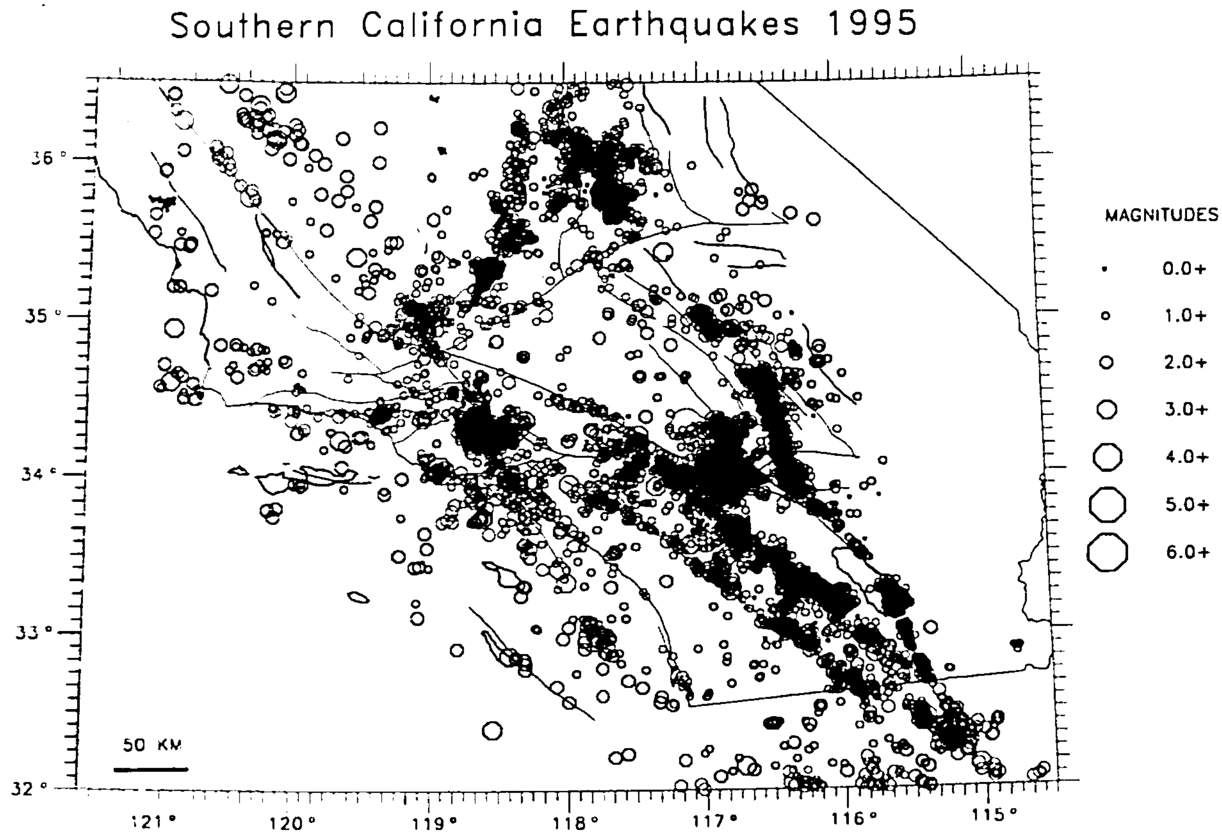

Figure 4. Map of all located earthquakes in southern California for the period of January through December 1995.

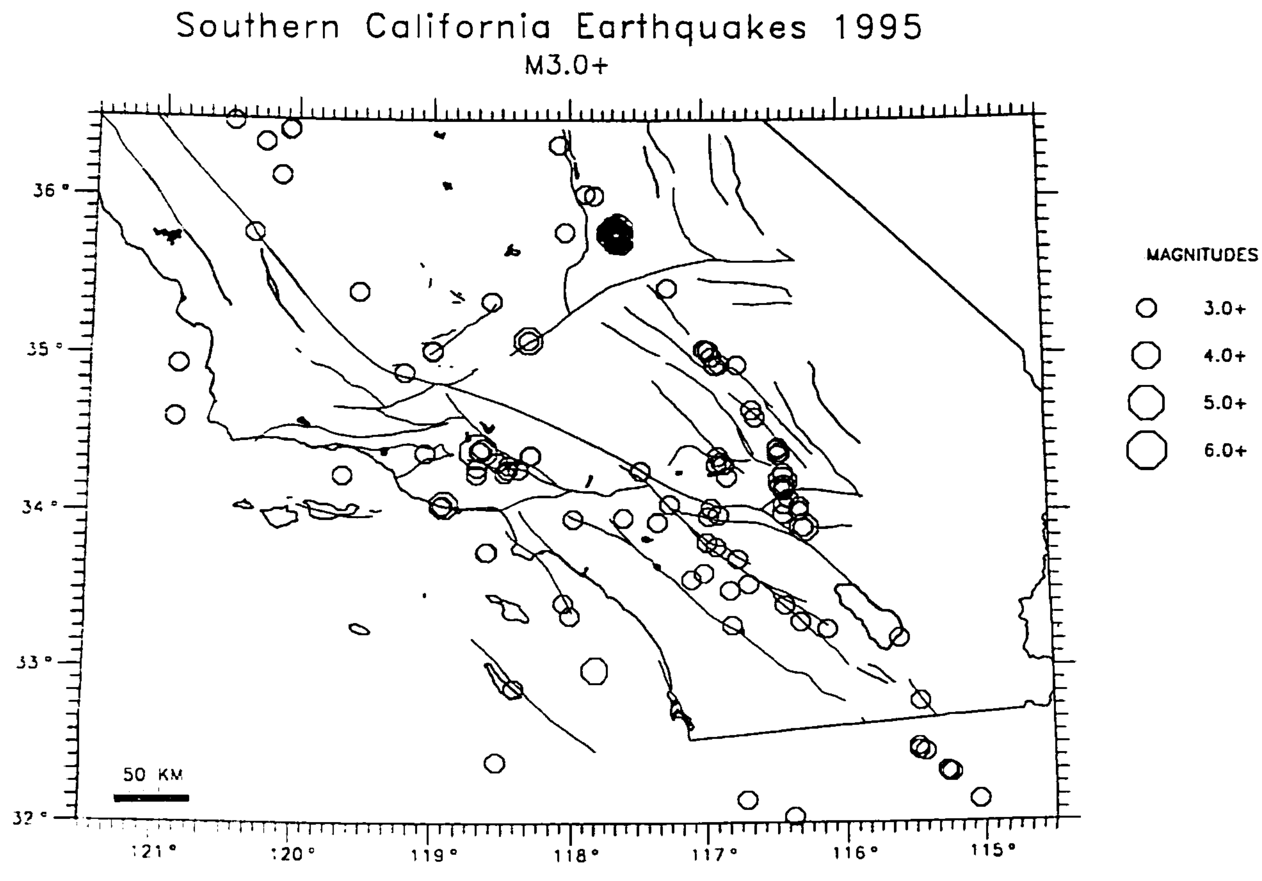

Figure 5. Map of located earthquakes of magnitude 3.0 and larger in southern California for the period of January through December 1995.

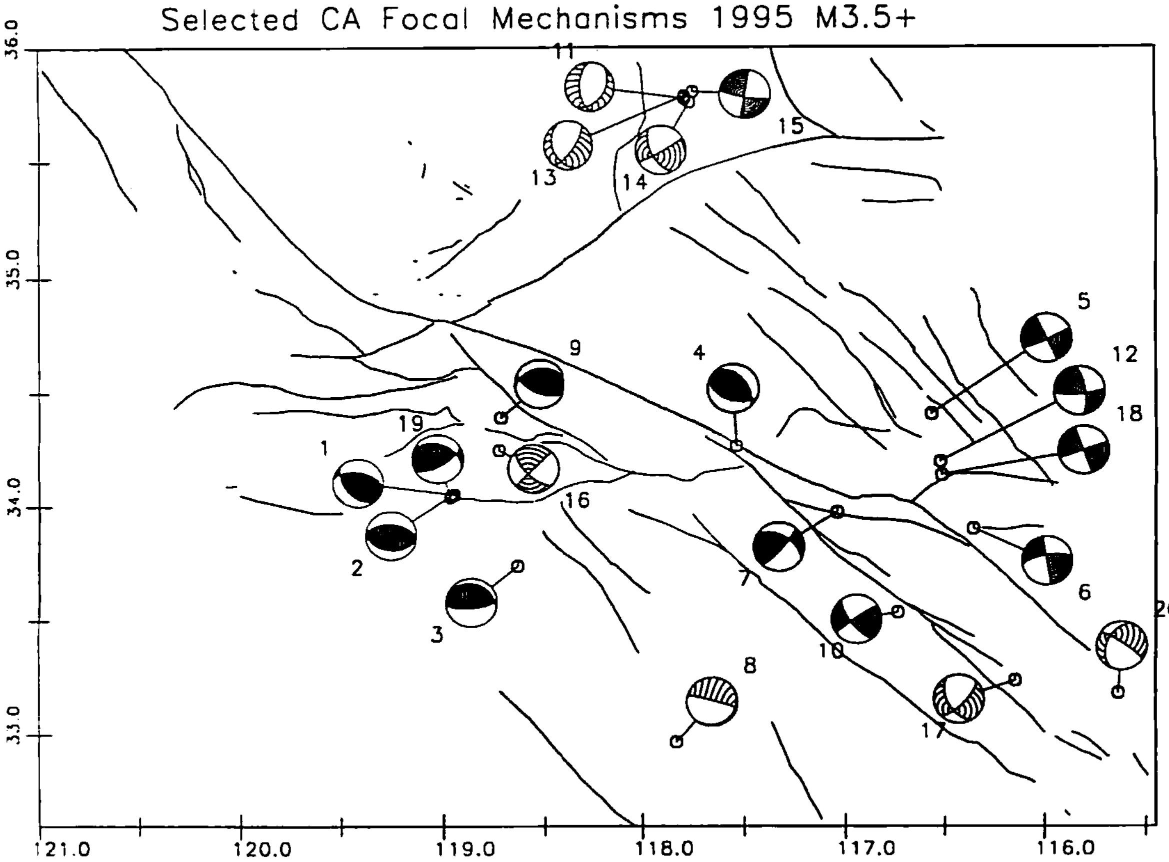

Figure 6. Lower hemisphere focal mechanisms for selected events for the period January through December 1995. Event numbers correspond to numbers in FM column of Appendix A.

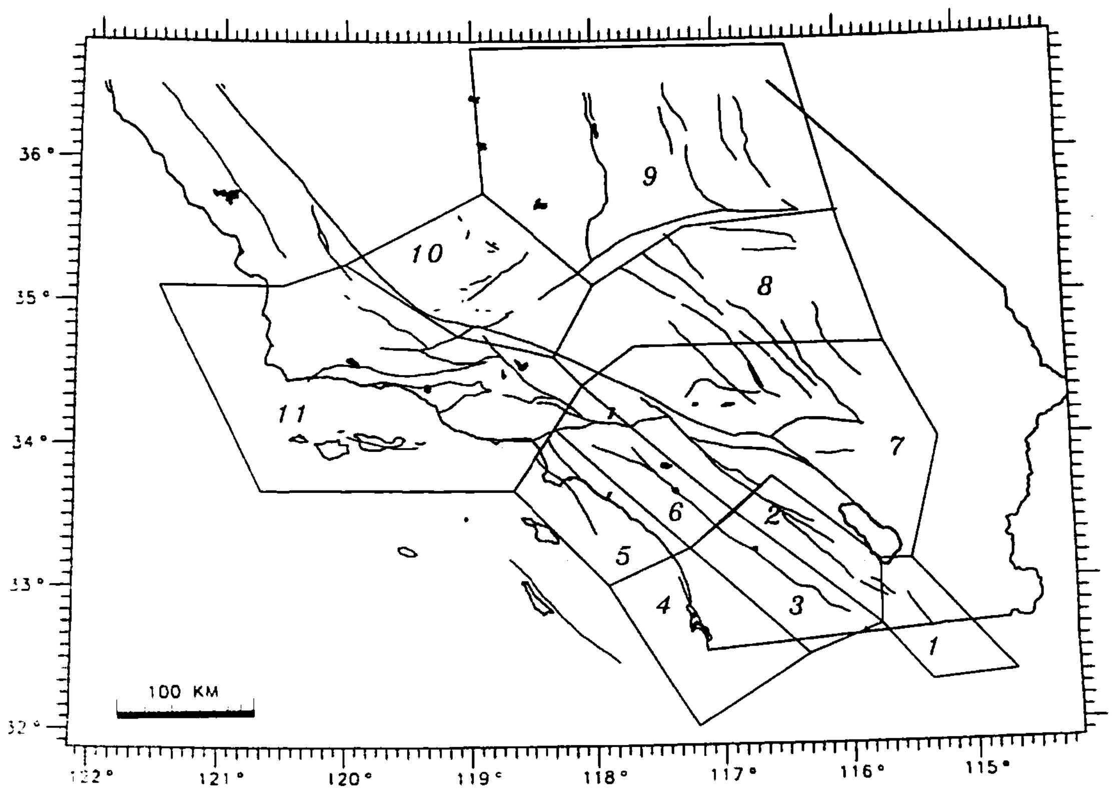

Figure 7. Map of sub-regions used in Figure 8. The geographic name of each sub-region, as used in the text, can be found in the headings of Figure 8.

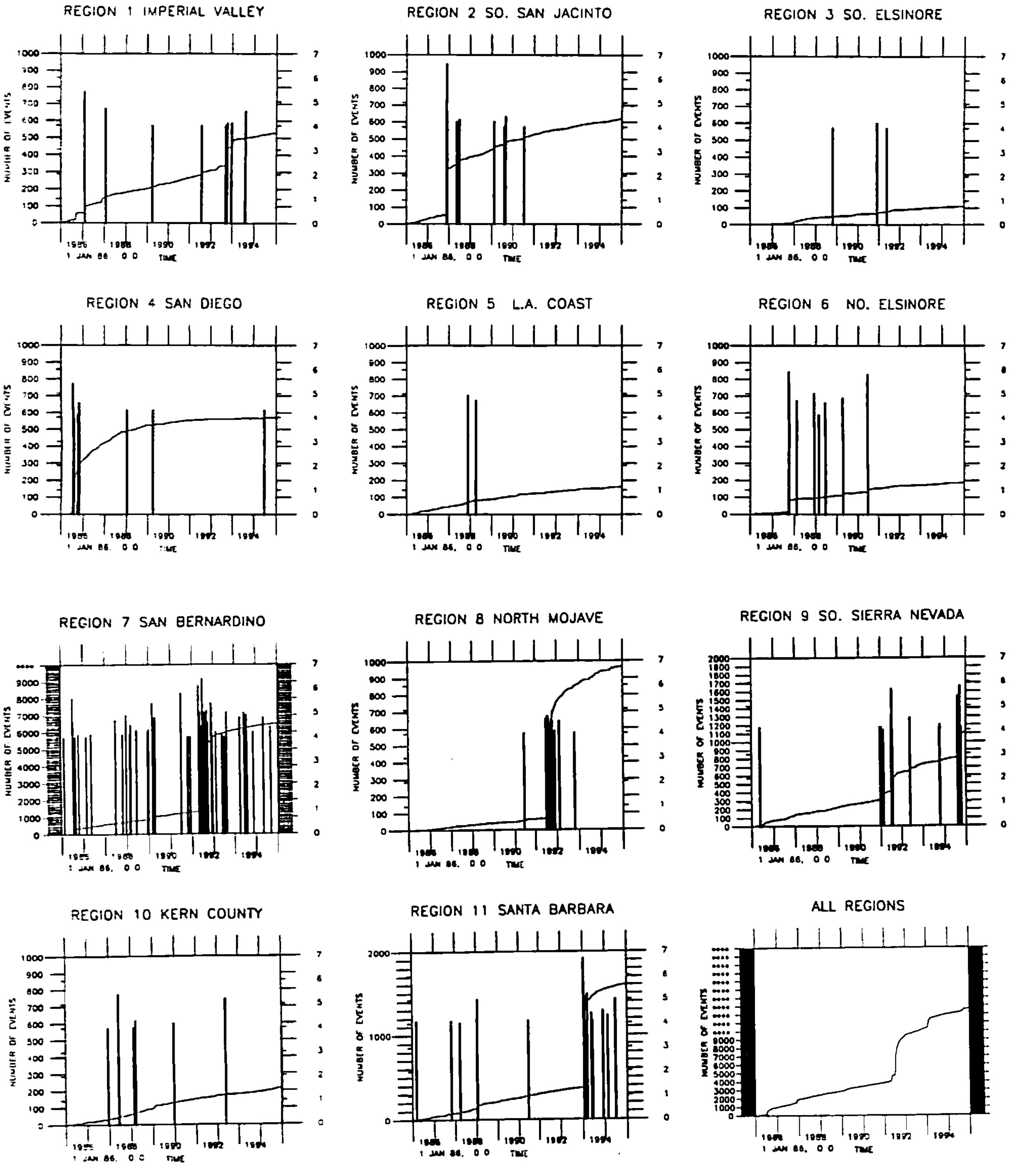

Figure 8. Cumulative number of events ($M_L \geq 2.5$) in all sub-regions over the ten year period ending December 1995. The boundaries of the sub-regions are shown in Figure 7. Vertical bars represent time and magnitude (scale on right) of large events ($M_L \geq 4.0$). Note that the vertical scales of the plots may not be the same.

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Acknowledgements

We would like the thank Nick Scheckel for compiling the DAT tape list for Appendix B, and Ken Hudnut for providing the Web home page hits figure. The Summary of Seismicity section was written using information in the Weekly Earthquake Reports. Thanks to Doug Given for the review.

Appendix A

Significant Southern California Earthquakes

All events of $M_L \geq 3.0$ for the period January to December 1995. Times are GMT, Q is the overall quality of the location, M is the magnitude, Z is the depth in km, PH is the number of phases picked, RMS is the root mean square of the location error, ID is the unique number assigned to the event by the CUSP system, and F denotes the number of the accompanying focal mechanism in Figure 6. Note that these events have not been finalized, therefore their magnitudes may not be correct. In most cases, if the magnitude is incorrect, it is really larger than indicated.

DATE			TIME			LOCATION				Q	M	Z	PH	RMS	ID	F
1995	1	2	11	32	14.73	32	8.62	-115	2.72	D	3.5	6.00	13	0.38	3198886	
1995	1	6	22	14	38.64	35	1.83	-116	59.40	A	3.1	7.85	84	0.19	3199319	
1995	1	11	4	51	25.27	32	20.03	-115	16.38	C	3.9	6.00	43	0.65	3199724	
1995	1	12	22	50	45.86	34	0.53	-116	19.34	A	3.1	5.41	53	0.16	3199907	
1995	1	15	21	56	26.61	34	59.21	-116	56.60	A	3.2	0.01	148	0.28	3200168	
1995	1	16	4	54	30.94	34	35.97	-120	53.17	D	3.3	6.00	26	0.30	3200191	
1995	1	16	12	15	22.81	34	18.19	-118	27.15	A	3.0	7.40	109	0.31	3200236	
1995	1	22	16	11	41.60	34	18.39	-116	51.61	A	3.2	4.46	66	0.15	3200927	
1995	1	23	7	58	53.39	34	18.41	-116	51.79	A	3.1	3.80	108	0.18	3200990	
1995	1	24	11	57	28.99	33	56.48	-117	20.74	A	3.5	15.43	140	0.23	3201076	
1995	2	8	8	46	14.67	34	16.60	-118	22.86	A	3.4	5.98	137	0.29	3202577	
1995	2	9	10	30	49.19	36	28.82	-120	29.56	C	3.0	6.00	41	0.44	3202654	
1995	2	15	2	54	7.21	34	15.18	-118	28.81	A	3.2	14.19	148	0.34	3203218	
1995	2	19	15	47	58.24	34	19.31	-116	52.75	A	3.5	9.29	65	0.13	3203622	
1995	2	19	21	24	18.07	34	2.94	-118	54.90	A	4.3	15.62	158	0.39	3203644	1
1995	2	19	22	54	53.33	34	2.74	-118	55.34	A	3.8	15.61	120	0.36	3203656	2
1995	2	22	4	27	57.66	34	8.75	-116	25.76	A	3.1	2.60	86	0.20	3203881	
1995	2	26	20	2	13.55	34	22.62	-116	27.58	A	3.2	1.25	82	0.20	3204787	
1995	2	27	16	36	39.59	34	3.09	-116	26.07	A	3.1	2.86	106	0.20	3204908	
1995	3	1	15	56	35.79	33	44.71	-118	36.84	A	3.7	14.37	121	0.35	3205134	3
1995	3	1	15	56	57.08	33	45.17	-118	36.06	A	3.7	11.34	45	0.31	3205153	
1995	3	2	20	50	4.42	32	51.93	-118	24.78	C	3.4	6.00	126	0.33	3205294	
1995	3	9	13	45	26.92	32	19.15	-115	14.31	C	3.1	6.00	30	0.53	3206054	
1995	3	13	2	4	25.23	34	56.13	-116	55.27	A	3.4	0.01	120	0.22	3206382	
1995	3	18	8	30	14.83	34	1.80	-116	57.30	A	3.2	11.64	86	0.15	3207055	
1995	3	27	16	26	29.92	33	59.28	-116	26.46	A	3.3	8.20	84	0.18	3208087	
1995	3	28	19	13	33.50	32	29.36	-115	28.42	C	3.2	6.00	38	0.49	3208229	
1995	4	2	7	49	51.43	32	27.86	-115	28.23	C	3.2	6.00	24	0.24	3208720	
1995	4	3	16	13	18.68	35	50.93	-117	37.88	A	3.1	5.28	54	0.16	3208830	
1995	4	4	5	8	15.93	34	15.99	-117	28.12	A	3.7	9.47	132	0.22	3208878	4
1995	4	4	6	26	49.82	34	3.22	-117	15.54	A	3.5	18.23	128	0.19	3208879	
1995	4	5	20	20	26.95	35	46.31	-120	19.30	C	3.3	10.00	53	0.40	3209046	
1995	4	7	3	17	51.87	34	21.91	-116	28.21	A	3.1	1.26	86	0.17	3209212	
1995	4	9	23	1	8.49	34	2.39	-116	19.30	A	3.3	8.14	74	0.18	3209441	
1995	4	10	14	1	32.67	34	24.69	-116	28.21	A	3.7	3.73	101	0.19	3209506	5
1995	4	11	15	56	23.10	33	54.37	-116	17.48	A	3.4	9.26	91	0.15	3209640	
1995	4	15	22	0	46.31	34	19.45	-118	31.89	A	3.4	4.71	102	0.30	3210104	
1995	4	16	22	3	40.51	32	2.33	-116	22.97	C	3.1	6.00	32	0.32	3210176	
1995	4	20	21	38	41.87	34	18.15	-116	54.74	A	3.2	6.53	108	0.18	3210509	
1995	5	7	11	3	33.04	33	54.28	-116	17.27	A	4.8	10.67	168	0.24	3212249	6
1995	5	7	22	5	26.94	33	54.27	-116	17.83	A	3.0	9.31	72	0.16	3212318	
1995	5	13	2	25	22.14	33	58.53	-116	58.44	A	3.7	14.64	137	0.20	3212848	7
1995	5	18	10	52	51.19	32	23.48	-118	32.27	D	3.2	6.00	34	0.31	3213395	
1995	5	21	18	59	16.06	34	23.28	-118	39.14	A	3.3	16.72	108	0.24	3213718	
1995	5	21	19	50	50.45	33	48.57	-116	59.30	A	3.0	11.43	77	0.16	3213726	
1995	5	21	20	44	16.61	34	23.38	-118	39.20	A	3.1	16.02	92	0.28	3213729	
1995	5	25	12	23	24.17	34	16.49	-118	27.51	A	3.1	10.59	140	0.29	3214277	
1995	5	30	1	44	56.12	33	30.01	-116	49.47	A	3.1	13.83	95	0.26	3214808	
1995	6	5	14	59	46.94	34	53.25	-119	11.92	A	3.2	9.67	102	0.32	3215446	
1995	6	8	22	32	18.44	34	59.36	-116	56.54	A	3.4	7.94	96	0.21	3215730	
1995	6	9	8	45	47.65	34	55.85	-116	55.24	A	3.0	0.01	76	0.17	3215764	
1995	6	9	19	44	4.38	33	16.40	-116	48.70	A	3.4	13.97	100	0.28	3215805	
1995	6	12	21	23	6.38	36	20.44	-118	4.91	C	3.5	6.00	58	0.26	3216084	

DATE			TIME			LOCATION				Q	M	Z	PH	RMS	ID	F
1995	6	17	7	56	38.35	34	38.97	-116	39.48	A	3.2	4.50	81	0.17	3216711	
1995	6	19	10	40	39.10	34	56.47	-116	53.12	A	3.4	0.00	93	0.20	3216909	
1995	6	21	21	17	36.23	32	59.08	-117	49.05	C	4.3	6.00	134	0.57	3217139	8
1995	6	23	7	17	8.03	35	2.30	-116	59.96	A	3.1	4.98	81	0.18	3217291	
1995	6	23	10	18	59.95	36	21.07	-120	15.23	C	3.1	6.00	35	0.38	3217309	
1995	6	24	15	8	33.87	36	8.30	-120	7.75	C	3.2	6.00	34	0.49	3217441	
1995	6	26	7	19	31.08	34	23.63	-118	39.82	A	3.1	11.22	109	0.27	3217581	
1995	6	26	8	40	28.94	34	23.61	-118	40.11	A	5.0	13.34	184	0.28	3217586	9
1995	6	26	8	58	41.58	34	24.57	-118	38.36	A	3.3	12.91	91	0.23	3217591	
1995	6	28	21	29	9.13	34	21.38	-116	54.21	A	3.0	4.51	102	0.16	3217948	
1995	7	8	0	26	29.53	35	24.26	-119	31.99	A	3.2	21.27	58	0.32	3218864	
1995	7	10	5	35	38.79	33	58.06	-117	35.89	A	3.2	5.50	147	0.22	3219045	
1995	7	11	23	43	49.94	35	1.94	-118	59.80	A	3.1	10.91	84	0.35	3219228	
1995	7	13	13	8	4.11	34	56.09	-120	52.06	C	3.0	6.00	39	0.33	3219378	
1995	7	13	15	39	0.02	34	0.81	-116	19.53	A	3.1	5.26	80	0.19	3219392	
1995	7	24	3	29	18.47	36	1.58	-117	53.09	A	3.2	5.17	67	0.22	3221751	
1995	7	28	7	7	30.39	33	32.47	-116	41.42	A	3.6	8.60	116	0.24	3222372	10
1995	8	6	11	22	23.11	32	8.94	-116	43.07	C	3.4	6.00	43	0.37	3223743	
1995	8	8	0	45	39.15	36	0.89	-117	49.00	A	3.3	0.26	69	0.19	3223908	
1995	8	9	12	16	37.63	34	14.26	-119	38.77	A	3.3	19.21	79	0.41	3224045	
1995	8	9	13	53	0.15	32	19.04	-115	15.56	C	3.4	6.00	44	0.64	3224050	
1995	8	10	5	17	57.89	36	25.74	-120	4.46	C	3.3	6.00	22	0.36	3224116	
1995	8	12	9	57	53.44	33	59.11	-116	54.23	A	3.2	10.12	100	0.15	3224351	
1995	8	15	4	12	40.12	35	47.07	-118	2.05	A	3.2	5.80	57	0.15	3224697	
1995	8	15	5	17	46.88	33	46.87	-116	55.35	A	3.0	12.14	83	0.20	3224709	
1995	8	15	16	3	46.67	34	10.17	-116	27.52	A	3.4	9.58	73	0.18	3224779	
1995	8	17	15	26	14.35	34	55.89	-116	54.92	A	3.2	3.98	92	0.19	3225073	
1995	8	17	22	39	59.00	35	46.56	-117	39.73	A	5.4	5.56	156	0.17	3225143	11
1995	8	17	22	41	10.49	35	47.39	-117	40.72	C	4.2	6.00	29	0.46	3225237	
1995	8	17	22	43	30.90	35	47.05	-117	39.84	A	3.9	6.34	56	0.17	3225210	
1995	8	17	22	49	27.06	35	46.88	-117	40.72	A	3.3	10.47	31	0.13	3225146	
1995	8	17	23	33	27.53	35	45.83	-117	39.64	A	3.6	9.62	49	0.14	3225173	
1995	8	17	23	36	31.73	35	46.61	-117	40.45	A	3.2	10.53	43	0.15	3225177	
1995	8	17	23	43	29.65	35	46.89	-117	40.41	A	3.0	9.79	49	0.14	3225179	
1995	8	18	1	56	16.59	35	47.41	-117	39.82	A	3.2	7.45	44	0.15	3225252	
1995	8	18	2	33	4.26	35	47.05	-117	39.92	A	3.3	8.30	52	0.14	3225288	
1995	8	18	3	22	38.66	35	46.98	-117	39.76	A	3.1	7.52	44	0.14	3225312	
1995	8	18	3	51	17.51	35	46.18	-117	39.21	A	3.5	5.49	49	0.14	3225323	
1995	8	18	5	3	6.30	35	47.19	-117	39.43	A	3.5	6.39	51	0.14	3225357	
1995	8	18	5	35	51.05	35	46.94	-117	40.40	A	3.1	9.51	47	0.15	3225363	
1995	8	18	6	50	49.96	35	47.05	-117	40.35	A	3.1	9.07	42	0.14	3225388	
1995	8	18	12	13	56.89	35	46.41	-117	40.04	A	3.0	9.28	43	0.13	3225510	
1995	8	19	4	1	26.81	33	24.24	-116	25.97	A	3.2	12.71	81	0.28	3225827	
1995	8	19	12	11	37.51	35	46.73	-117	38.97	A	3.2	5.48	48	0.14	3225947	
1995	8	23	7	57	25.60	35	46.49	-117	39.35	A	3.4	7.84	102	0.16	3227262	
1995	8	25	2	59	35.05	35	1.73	-116	57.85	A	3.5	6.47	110	0.19	3227650	
1995	8	25	19	37	46.35	34	21.90	-118	17.44	A	3.3	2.86	115	0.27	3227753	
1995	8	25	23	50	12.14	34	21.95	-118	17.73	A	3.3	3.16	115	0.23	3227787	
1995	8	30	15	29	54.62	35	47.48	-117	38.49	A	4.1	4.96	125	0.19	3228523	
1995	8	30	15	54	22.46	35	47.75	-117	38.41	A	3.9	3.37	125	0.22	3228530	
1995	8	31	1	58	58.78	35	47.57	-117	38.66	A	3.8	5.16	143	0.17	3228626	
1995	8	31	2	17	44.46	35	47.67	-117	38.03	A	3.0	4.85	51	0.17	3228629	
1995	8	31	6	8	11.08	35	1.49	-118	59.64	A	3.2	11.69	63	0.30	3228670	
1995	8	31	11	42	58.99	34	22.77	-116	27.29	A	3.0	2.40	88	0.16	3228719	
1995	9	3	18	11	59.87	35	47.05	-117	40.33	A	3.3	9.13	79	0.16	3229203	
1995	9	5	20	27	18.42	34	11.94	-116	26.31	A	4.4	0.01	87	0.23	3229496	12
1995	9	5	21	47	52.06	34	10.70	-116	25.77	A	3.0	0.50	75	0.20	3229665	
1995	9	9	8	8	16.27	34	9.34	-116	26.01	B	3.4	7.08	79	0.19	3229998	
1995	9	11	18	37	23.75	35	47.26	-117	39.75	A	4.2	6.61	124	0.17	3230334	13
1995	9	14	10	59	24.01	35	47.98	-117	38.19	A	3.4	4.77	66	0.17	3230725	
1995	9	17	2	48	44.31	32	27.21	-115	25.63	C	3.2	6.00	41	0.66	3231088	
1995	9	20	23	27	36.27	35	45.63	-117	38.31	A	5.8	5.43	147	0.20	3231786	14
1995	9	20	23	30	34.62	35	43.76	-117	36.68	A	4.1	10.25	23	0.16	3231937	
1995	9	20	23	32	46.86	35	45.29	-117	37.72	B	4.0	8.55	24	0.14	3231943	
1995	9	20	23	37	32.59	35	46.42	-117	39.76	A	3.6	7.81	51	0.16	3231957	

DATE			TIME			LOCATION				Q	M	Z	PH	RMS	ID	F
1995	9	20	23	53	8.10	35	45.30	-117	39.22	A	3.2	5.45	36	0.14	3231729	
1995	9	20	23	56	58.50	35	46.83	-117	39.94	A	3.9	5.32	43	0.20	3231731	
1995	9	21	0	16	42.95	35	46.48	-117	38.42	A	3.4	7.74	68	0.25	3231734	
1995	9	21	1	13	4.04	35	44.99	-117	38.25	A	3.0	5.39	58	0.17	3231789	
1995	9	21	1	40	54.46	35	44.76	-117	37.71	B	3.4	9.47	12	0.22	3233132	
1995	9	21	2	16	34.95	35	46.14	-117	38.99	A	3.1	5.48	46	0.16	3231847	
1995	9	21	3	9	50.82	35	45.97	-117	38.97	A	3.3	6.41	55	0.17	3231891	
1995	9	21	4	23	59.43	35	45.85	-117	39.30	A	3.0	6.57	48	0.16	3231920	
1995	9	21	5	10	13.84	35	45.98	-117	38.72	A	3.1	5.46	42	0.15	3231938	
1995	9	21	7	26	37.01	35	46.99	-117	39.36	A	3.0	8.86	51	0.16	3232022	
1995	9	21	7	46	53.65	35	45.53	-117	38.20	A	3.9	5.09	103	0.21	3232030	
1995	9	21	7	57	41.34	35	45.37	-117	38.01	A	4.0	5.38	57	0.17	3232031	
1995	9	21	7	58	43.42	35	45.47	-117	38.17	A	3.1	4.79	31	0.19	2219646	
1995	9	21	7	59	6.66	35	45.50	-117	38.25	A	3.2	3.84	27	0.21	2219647	
1995	9	21	14	11	6.85	35	44.57	-117	38.04	A	3.5	5.35	38	0.16	3232192	
1995	9	21	14	11	19.56	35	44.39	-117	37.98	A	3.7	5.33	65	0.17	2219928	
1995	9	21	14	21	58.38	33	25.07	-118	3.29	C	3.1	6.00	27	0.26	3232201	
1995	9	21	21	10	18.82	35	46.11	-117	39.10	A	3.4	5.98	77	0.17	3232337	
1995	9	21	23	48	39.16	35	45.69	-117	38.56	A	4.0	5.44	96	0.17	3232380	
1995	9	22	22	48	37.08	35	45.99	-117	39.10	A	3.0	7.38	45	0.17	3232771	
1995	9	23	16	3	52.01	34	15.09	-116	26.16	A	3.4	2.78	86	0.18	3233047	
1995	9	24	13	15	30.04	35	47.48	-117	39.60	A	3.7	6.34	56	0.15	3233354	
1995	9	24	20	14	10.94	32	19.39	-115	15.43	C	3.4	6.00	25	0.42	3233470	
1995	9	25	4	21	40.60	35	48.49	-117	37.11	A	3.5	8.76	49	0.16	3233606	
1995	9	25	4	47	29.18	35	48.52	-117	36.98	A	4.9	9.40	163	0.17	3233618	15
1995	9	25	5	47	1.82	35	48.23	-117	37.11	A	3.1	8.76	75	0.16	3233652	
1995	9	25	6	30	10.52	35	48.69	-117	37.02	A	3.1	8.27	43	0.15	3233660	
1995	9	25	10	33	20.68	35	44.29	-117	38.24	A	3.5	5.35	57	0.18	3233719	
1995	9	28	0	25	29.85	35	46.04	-117	38.57	A	3.1	10.99	56	0.15	3234527	
1995	9	28	9	35	5.26	35	44.00	-117	37.61	A	3.4	5.25	79	0.17	3234637	
1995	9	28	11	36	28.37	35	48.60	-117	38.41	A	3.5	4.41	80	0.21	3234672	
1995	9	30	12	46	38.17	34	56.20	-116	45.76	A	3.5	0.50	70	0.19	3235183	
1995	9	25	10	53	32.50	35	43.32	-117	37.60	B	3.4	0.41	6	0.08	3246775	
1995	10	1	16	30	27.87	35	44.00	-117	37.72	A	3.0	5.15	56	0.21	3235435	
1995	10	1	23	42	23.99	35	44.29	-117	37.63	A	3.2	5.20	66	0.16	3235514	
1995	10	2	0	10	53.59	35	48.57	-117	38.74	A	3.8	4.73	94	0.16	3235521	
1995	10	3	1	33	25.06	35	47.01	-117	37.56	A	3.3	3.18	67	0.18	3235778	
1995	10	5	16	42	18.95	34	14.63	-118	40.85	A	3.7	14.11	84	0.22	3236293	16
1995	10	6	8	40	44.20	35	46.13	-117	37.72	A	3.1	5.35	51	0.16	3236410	
1995	10	6	12	24	35.24	35	47.40	-117	39.94	A	3.1	7.16	59	0.14	3236439	
1995	10	6	17	17	17.26	35	44.58	-117	38.29	A	3.2	5.45	62	0.15	3236469	
1995	10	6	17	44	54.92	35	45.51	-117	38.27	A	3.2	5.41	75	0.17	3236478	
1995	10	6	19	15	4.26	35	45.48	-117	38.18	A	3.6	5.40	59	0.17	3236490	
1995	10	7	19	26	55.58	35	45.98	-117	37.80	A	3.4	5.30	58	0.17	3236716	
1995	10	8	16	43	31.32	35	45.79	-117	38.13	A	3.0	5.07	46	0.17	3236887	
1995	10	11	14	45	35.14	35	47.93	-117	37.96	A	3.5	5.13	65	0.16	3237625	
1995	10	11	17	37	3.97	33	14.75	-116	7.68	A	3.5	13.87	69	0.29	3237662	17
1995	10	18	12	42	4.80	35	44.53	-117	37.88	A	4.1	3.69	146	0.21	3238772	
1995	10	18	12	49	7.49	35	44.50	-117	38.02	A	3.8	5.11	75	0.16	3238773	
1995	10	18	12	52	14.06	35	44.18	-117	37.80	A	3.2	5.23	49	0.16	2221267	
1995	10	18	12	54	17.65	35	44.06	-117	37.72	A	3.3	4.90	107	0.19	3238774	
1995	10	18	13	31	53.12	35	43.82	-117	37.86	A	3.4	4.59	64	0.16	2221268	
1995	10	20	5	51	10.49	35	47.10	-117	39.43	A	3.3	6.48	60	0.15	3239110	
1995	10	22	14	41	3.75	34	8.30	-116	25.98	A	3.9	2.35	87	0.20	3239495	18
1995	10	25	18	18	28.08	35	45.85	-117	37.71	A	3.2	11.66	60	0.17	3239900	
1995	11	1	3	11	9.37	35	20.79	-118	34.33	B	3.1	6.00	101	0.18	3240980	
1995	11	1	15	39	1.87	34	13.66	-116	50.48	A	3.0	0.85	59	0.19	3241038	
1995	11	4	0	20	34.24	33	57.66	-117	58.85	A	3.4	16.66	108	0.27	3241555	
1995	11	5	0	3	26.47	36	26.15	-120	3.90	C	3.1	6.00	24	0.20	3241689	
1995	11	9	6	22	23.01	34	24.15	-116	28.37	A	3.2	3.76	82	0.15	3242385	
1995	11	13	0	54	31.83	33	36.76	-117	0.72	A	3.0	11.76	77	0.19	3242884	
1995	11	15	13	53	51.95	34	5.35	-116	23.82	B	3.1	6.64	73	0.19	3243225	
1995	11	28	2	23	21.22	35	25.78	-117	15.77	A	3.5	8.17	81	0.18	3244857	
1995	11	30	14	9	55.91	35	45.15	-117	38.09	A	3.5	5.39	61	0.18	3245161	
1995	11	30	17	31	58.70	35	47.14	-117	41.06	A	3.3	5.49	63	0.18	3245191	

DATE			TIME			LOCATION				Q	M	Z	PH	RMS	ID	F
1995	12	2	0	29	8.63	35	47.03	-117	41.20	A	3.7	5.84	91	0.14	3245375	
1995	12	2	14	52	37.34	33	20.02	-118	0.40	C	3.2	6.00	54	0.38	3245462	
1995	12	5	15	34	44.30	33	17.72	-116	19.32	A	3.1	13.78	70	0.29	3245829	
1995	12	7	10	1	17.42	34	17.14	-118	40.67	A	3.3	7.99	109	0.25	3246064	
1995	12	7	17	25	31.32	34	22.56	-119	2.96	A	3.4	14.83	94	0.37	3246093	
1995	12	9	4	15	30.32	34	2.13	-118	56.19	A	3.5	14.02	106	0.39	3246329	19
1995	12	15	6	3	1.10	35	44.14	-117	38.20	A	3.2	3.71	47	0.18	7011514	
1995	12	19	17	26	31.73	33	34.22	-117	6.19	A	3.2	11.91	129	0.21	3246869	
1995	12	20	4	28	32.86	34	23.10	-116	27.29	A	3.3	1.56	82	0.17	3246977	
1995	12	25	23	40	7.66	33	11.10	-115	36.32	A	3.7	4.18	57	0.32	3247608	20
1995	12	26	5	44	11.00	33	42.19	-116	46.03	A	3.3	14.69	96	0.20	3247634	
1995	12	27	19	28	16.56	32	46.76	-115	27.57	A	3.1	15.88	39	0.29	3247785	
1995	12	28	4	6	37.09	34	36.21	-116	37.94	A	3.0	3.77	99	0.21	3247825	
1995	12	31	21	48	23.06	35	5.88	-118	18.33	A	4.0	7.94	111	0.21	3248154	
1995	12	31	22	51	59.63	35	5.84	-118	18.28	A	3.3	8.69	88	0.18	3248159	

Appendix B

DAT Tape Archives

All telemetered network data - 330 channels digitized at 100 samples per second - are continuously recorded on 4mm DAT tapes. Three 2-Gbyte tapes are used each day. These tapes provide on-line system backup and capture signals that do not trigger the local network detection system. The tapes have been useful for recording data that normally would not have been saved, such as teleseismic body and surface waves, and late arrivals from local earthquakes.

All tapes are saved for about one month and then at the end of the month, time periods containing significant earthquakes, important periods of seismicity (such as the Landers earthquake sequence), and other noteworthy events (i.e. space shuttle landings and NTS blasts) are identified and the appropriate tapes are archived. The criteria for saving tapes are given below. Tapes that do not contain significant data are re-used. The archived tapes are boxed and stored chronologically in a cabinet in the SCSN data analysis room at the Caltech Seismological Laboratory.

Tapes are saved if they contain earthquakes meeting any of these broad criteria:

local events, mag >= 4.0

regional events, mag >= 4.5
teleseisms, mag >= 6.0
deep events, >= 100 km, mag >= 5.5
someone has requested the tape be saved.

To request that a tape be pulled and saved from the last month's batch of recordings, or for more information about these tapes, contact Nick Scheckel, 818-395-6955, nick@bombay.gps.caltech.edu.

Instructions on reading the DAT tapes at our facilities can be found in any of the red binders - the emergency and important procedures manuals.

Below is a list of events from 1995 that have been saved on 4mm DAT tapes.

Teleseismic & Regional Events

DATE	TIME	LAT.	LONG.	DEPTH	MB	MSZ	ML	LOCATION
01JAN95	06:59.55	40.8 N	143.4 E	33	5.7	6.2		OFF COAST OF HONSHU
03JAN95	16:11.58	57.8 S	65.5 W	33	6.1			DRAKE PASSAGE
06JAN95	00:12.02	38.7 N	119.7 W	1	4.2		4.4	CAL/NEV REG (TAHOE)
06JAN95	17:38.20	29.6 N	113.8 W	10	4.1			GULF OF CALIFORNIA
06JAN95	21:59.32	9.1 N	126.3 E	61	5.9(Mw)			MINDANAO PHILIPPINES
06JAN95	22:37.37	40.2 N	142.2 E	57	6.7			E COAST OF HONSHU
07JAN95	02:36.08	40.3 N	142.3 E	33	6.2			E COAST OF HONSHU
08JAN95	01:00.39	40.3 N	127.3 W	10	4.4		4.5	OFF COAST OF N CAL
11JAN95	04:51.23	32.2 N	115.3 W	10	3.9		3.9	CAL/BAJA (MEXICALI)
11JAN95	13:53.32	40.3 N	124.6 W	17	4.3		4.1	OFF COAST OF N CAL
12JAN95	10:26.47	44.0 N	147.0 E	33	6.2			KURIL ISLANDS
15JAN95	23:59.26	5.2S	152.0 E	33	6.0(Mw)			NEW BRITAIN REGION
16JAN95	18:14.49	51.2 N	179.1 E	33	5.5	6.0		RAT ISLANDS ALEUTIAN
16JAN95	20:46.54	34.5 N	135.0 E	16	6.4	6.8		S. COAST OF W HONSHU
17JAN95	16:54.12	20.8 S	179.2 W	637	6.0			FIJI ISLANDS REGION
18JAN95	15:51.39	34.7 N	97.5 N	5			4.2	OKLAHOMA
19JAN95	09:55.34	7.5 S	128.6 E	170	5.8			BANDA SEA
19JAN95	15:05.04	4.9 N	73.1 W	18	6.4	6.6		COLOMBIA
20JAN95	15:49.01	1.1 N	126.1 E	51	6.0(Mw)			NORTHERN MOLUCCA SEA
21JAN95	07:30.23	2.5 N	127.0 E	47	6.1			NORTHERN MOLUCCA SEA
21JAN95	08:47.30	43.3 N	146.7 E	63	6.5			KURIL ISLANDS
21JAN95	16:01.26	7.0 S	129.1 E	197	5.6			BANDA SEA
22JAN95	00:20.40	20.3 S	178.0 W	504	5.7(Mw)			FIJI ISLANDS REGION
23JAN95	10:16.18	26.8 S	176.4 W	33	6.0(Mw)			S OF FIJI ISLANDS
24JAN95	22:36.35	5.9 S	154.4 E	33	5.7	6.2		SOLOMON ISLANDS
27JAN95	20:16.53	4.4 S	134.5 E	33	6.2	6.8		IRIAN JAYA REGION
28JAN95	06:26.21	44.4 N	114.7 W	5	4.1		4.6	WESTERN IDAHO
29JAN95	03:11.22	47.3 N	122.3 W	17	5.1	4.5	4.9	WASHINGTON
29JAN95	16:02.26	31.6 N	117.4 W	5	3.8		4.4	OFF W COAST OF BAJA
02FEB95	19:50.45	6.2 S	148.7 E	64	5.4	6.0(Mw)		NEW BRITAIN REG PNG
03FEB95	02:31.34	62.9 S	155.1 E	10	5.6	6.3		BALLENY ISL REGION
03FEB95	15:26.11	41.6 N	109.7 W	1	5.2	4.6		WYOMING (IMPLOSION)

05FEB95	20:37.10	6.8 N	82.6 W	10	5.8	5.4		S OF PANAMA
05FEB95	22:51.07	37.7 S	178.7 E	59	6.4			OFF COAST OF N.Z.
06FEB95	10:43.57	37.6 S	178.7 E	33	5.7	5.8		OFF COAST OF N.Z.
08FEB95	18:40.23	4.0 N	76.6 W	69	6.3			COLOMBIA
10FEB95	01:45.04	38.0 S	178.6 E	33	5.8	6.4		OFF COAST OF N.Z.
10FEB95	20:27.03	19.8 S	68.5 W	164	5.4			CHILE/BOLIVIA REGION
12FEB95	20:13.36	59.4 N	153.1 W	111	5.5			SOUTHERN ALASKA
13FEB95	00:11.48	37.5 S	178.5 E	28	5.6	6.2		OFF COAST OF N.Z.
13FEB95	08:43.39	1.3 S	127.4 E	33	6.1	6.2		HALMAHERA INDONESIA
13FEB95	12:29.55	1.3 S	127.5 E	33	5.8	6.0		HALMAHERA INDONESIA
13FEB95	15:04.26	1.3 S	127.5 E	33	6.2	6.8		HALMAHERA INDONESIA
14FEB95	15:53.56	23.2 S	67.7 W	156	5.7			CHILE/ARGENTINA REG.
14FEB95	20:47.41	43.9 N	148.1 E	37	5.9	5.6		E OF KURIL ISLANDS
18FEB95	13:29.07	46.7 N	145.9 E	355	5.6			SEA OF OKHOTSK
19FEB95	00:17.48	5.2 N	126.2 E	104	5.9			MINDANAO PHILIPPINE
19FEB95	04:03.16	40.5 N	125.5 W	10	6.1	6.8	6.6	OFF COAST OF N CAL
23FEB95	05:01.25	39.6 N	143.8 E	33	5.5	6.0		OFF COAST OF HONSHU
23FEB95	05:19.02	24.1 N	121.6 E	44	5.8	6.2		TAIWAN
23FEB95	21:03.02	35.0 N	32.2 E	15	5.8	5.7		CYPRUS REGION
25FEB95	21:54.29	18.2 S	178.1 W	568	5.6			FIJI ISLANDS REGION
05MAR95	00:07.03	37.6 N	118.8 W	11	3.8		4.5	CAL/NEV REGION
06MAR95	18:43.42	2.6 N	118.2 E	33	5.5	6.3(Mw)		CELEBES SEA
08MAR95	03:45.59	16.5 N	59.5 W	15	6.3	6.2		LEEWARD ISLANDS
10MAR95	05:22.22	46.0 N	143.5 E	350	5.4			SAKHALIN ISLAND
11MAR95	15:21.10	44.0 N	148.1 E	33	6.0	5.7		KURIL ISLANDS
12MAR95	12:09.43	5.3 S	146.6 E	233	5.6			E NEW GUINEA REG.
13MAR95	10:31.50	2.8 S	134.3 E	33	5.5	5.7		IRIAN JAYA REGION
14MAR95	17:33.50	54.8 N	161.3 W	33	6.1	5.9		ALASKA PENINSULA
16MAR95	04:34.44	21.6 S	176.5 W	182	5.5			FIJI ISLANDS REGION
18MAR95	09:27.19	29.2 N	140.6 E	104	5.			SOUTH OF HONSHU
19MAR95	18:34.05	4.2 S	135.0 E	33	5.	6.3		IRIAN JAYA REGION
19MAR95	23:53.14	4.1 S	135.0 E	33	6.3	7.1		IRIAN JAYA REGION
20MAR95	12:46.16	40.1 N	108.9 W	5			4.1	COLORADO
25MAR95	22:44.28	11.1 S	165.9 E	77	5.9	6.3(Mw)		SANTA CRUZ ISLANDS
26MAR95	02:16.16	55.9 S	28.2 W	77	6.1	5.9		S SANDWICH ISLANDS
31MAR95	14:01.40	38.2 N	135.1 E	365	6.0			SEA OF JAPAN
01APR95	05:50.20	52.3 N	159.2 E	47	5.9	5.6		OFF COAST KAMCHATKA
07APR95	22:06.58	15.2 S	173.6 W	31	6.7	8.0		TONGA ISLANDS
08APR95	01:20.07	15.2 S	173.6 W	33	5.9	6.1		TONGA ISLANDS
08APR95	17:45.18	22.0 N	142.6 E	319	6.3			MARIANA ISL REGION
13APR95	02:34.38	13.4 S	170.3 E	640	5.5			VANUATU ISL REGION
13APR95	05:27.26	22.4 S	170.4 E	33	5.2	6.5(Mw)		LOYALTY ISL REGION
14APR95	00:32.54	30.3 N	103.3 W	5	5.7	5.6		WESTERN TEXAS
14APR95	13:15.16	60.6 S	20.0 W	10	5.4	6.5(Mw)		SW ATLANTIC OCEAN
14APR95	14:12.59	1.8 S	77.5 W	165	5.			ECUADOR
17APR95	01:14.20	8.4 S	156.5 E	36	5.	6.0		SOLOMON ISLANDS
17APR95	07:14.35	33.7 N	38.6 W	10	5.	5.8		N MID-ATLANTIC RIDGE
17APR95	23:28.08	45.9 N	151.3 E	34	6.	6.3		KURIL ISLANDS
18APR95	03:49.39	2.1 S	140.3 E	36	5.9	5.7		N COAST IRIAN JAYA
19APR95	03:50.05	44.0 N	148.0 E	33	5.9			KURIL ISLANDS
20APR95	08:45.10	6.2 N	126.8 E	85	6.2			MINDANAO PHILIPPINE
21APR95	00:09.56	12.0 N	125.7 E	33	6.1	6.9		SAMAR PHILIPPINE
21APR95	00:30.12	11.9 N	125.6 E	33	6.3	7.0		SAMAR PHILIPPINE
21APR95	00:34.47	12.1 N	125.9 E	23	6.2	7.3		SAMAR PHILIPPINE
21APR95	05:17.00	12.2 N	125.9 E	23	5.6	6.9		PHILIPPINE ISL REG
22APR95	14:31.32	38.7 N	119.7 W	6			4.4	CAL/NEV REG-TAHOE
23APR95	02:55.55	51.3 N	179.7 E	16	6.1	6.4		RAT ISLANDS
23APR95	05:08.03	12.3 N	125.3 E	33	6.0	6.6		SAMAR PHILIPPINE
23APR95	06:38.11	6.0 N	123.8 E	531	5.5			MINDANAO PHILIPPINE
23APR95	08:41.36	36.6 N	121.2 W	7	4.4	4.6	4.8	CENTRAL CA-PINNACLES
25APR95	06:15.02	5.8 S	147.3 E	33	5.6	6.1(Mw)		E NEW GUINEA REGION
27APR95	12:44.38	1.1 N	84.9 W	10	5.3	6.0		OFF COAST OF ECUADOR
28APR95	16:30.00	44.0 N	148.1 E	29	6.6	6.9		KURIL ISLANDS
28APR95	17:08.43	44.0 N	148.1 E	29	6.2	6.2		KURIL ISLANDS
28APR95	17:59.24	44.0 N	148.0 E	33	4.8	6.0		KURIL ISLANDS
29APR95	09:44.00	11.7 N	125.9 E	33	5.4	6.0		SAMAR PHILIPPINE
30APR95	02:55.38	16.6 S	176.8 E	33	5.1	6.0(Mw)		FIJI ISLANDS REGION
01MAY95	18:29.41	10.6 S	161.3 E	94	5.5	6.0(Mw)		SOLOMON ISLANDS

02MAY95	06:06.05	3.8 S	76.9 W	103	6.5			NORTHERN PERU
02MAY95	12:28.27	43.1 N	9.4 E	10	5.9(Mw)			CORSICA
02MAY95	19:31.01	48.1 N	114.4 W	5			4.1	MONTANA
04MAY95	02:18.51	1.8 N	128.4 E	55	6.0	6.0		HALMAHERA INDONESIA
05MAY95	03:53.47	12.6 N	125.3 E	33	6.2	7.0		SAMAR PHILIPPINE
05MAY95	04:39.13	12.5 N	125.3 E	55	5.6	6.5(Mw)		SAMAR PHILIPPINE
05MAY95	17:19.21	8.7 S	111.0 E	104	5.6			JAWA INDONESIA
05MAY95	22:48.05	18.5 S	168.6 E	123	5.8			VANUATU ISLANDS
06MAY95	01:59.07	25.0 N	95.4 E	122	6.4			MYANMAR/INDIA REG.
08MAY95	03:29.04	18.0 S	168.6 E	100	5.5			VANUATU ISLANDS
08MAY95	18:05.10	11.5 N	126.1 E	36	5.5	6.1		PHILIPPINE ISLANDS
08MAY95	18:08.10	11.6 N	126.0 E	33	5.6	6.2		SAMAR PHILIPPINE
12MAY95	15:12.23	19.3 S	63.9 W	601	5.2	5.4(Mw)		SOUTHERN BOLIVIA
13MAY95	08:47.13	40.0 N	21.6 E	13	6.2	6.5		GREECE
13MAY95	21:00.54	5.2 S	108.9 E	554	5.7	5.9(Mw)		JAVA SEA
14MAY95	11:33.20	8.3 S	125.1 E	33	6.1	6.9		TIMOR REGION INDON
15MAY95	15:26.54	56.0 S	27.7 W	100	5.4			S SANDWICH ISL REG
16MAY95	03:35.03	36.4 N	70.9 E	190	5.7			HINDU KUSH AFG
16MAY95	20:12.45	22.9 S	169.7 E	33	6.8	7.7		LOYALTY ISL REGION
16MAY95	20:31.14	23.0 S	170.0 E	33	5.8			LOYALTY ISL REGION
17MAY95	02:29.13	39.8 N	122.7 W	13	4.6		4.3	NORTHERN CALIFORNIA
17MAY95	11:23.51	23.2 S	170.1 E	33	5.7	6.5		LOYALTY ISL REGION
18MAY95	00:06.26	0.9 S	22.0 W	10	6.2	6.1		CENT MID-ATL RIDGE
19MAY95	17:09.14	6.1 S	130.4 E	140	5.5			BANDA SEA
20MAY95	13:45.02	56.0 S	27.7 W	100	5.5			S SANDWICH ISL REG
22MAY95	03:45.03	22.6 S	169.4 E	33	5.8	6.1		LOYALTY ISL REGION
22MAY95	04:02.55	9.6 S	151.4 E	33	5.7	6.1		D'ENTRECASTEAUX ISL
23MAY95	22:10.05	56.0 S	3.1 W	10	5.3	6.6		S MID-ATLANTIC RIDGE
27MAY95	13:03.55	52.5 N	142.8 E	33	6.6	7.6		SAKHALIN ISLAND
28MAY95	02:42.25	6.9 S	107.2 E	100	5.5			JAWA INDONESIA
29MAY95	07:29.46	10.1 S	163.7 E	33	5.8	6.4		SOLOMAN ISLANDS
30MAY95	04:12.43	29.4 N	138.4 E	468	4.9			S OF HONSHU JAPAN
30MAY95	09:09.19	7.0 S	123.6 E	639	5.4			BANDA SEA
31MAY95	16:08.40	18.9 N	107.4 W	33	5.4	6.1		COAST OF JALISCO MEX
09JUN95	05:35.50	21.4 S	67.9 W	132	5.2	5.4(MW)		CHILE-BOLIVIA
14JUN95	11:11.49	12.2 N	88.3 W	39	5.6	6.0		COAST CENT AMERICA
15JUN95	00:15.48	38.4 N	22.2 E	14	6.0	6.5		GREECE
15JUN95	00:31.00	38.4 N	22.4 E	10	5.3	6.0		GREECE
16JUN95	04:20.36	36.7 N	121.3 W	10			4.1	CENTRAL CALIFORNIA
16JUN95	13:49.49	18.2 S	178.0 W	567	5.5			FIJI ISLAND REGION
18JUN95	22:23.23	39.8 N	120.7 W	13	4.4		4.3	NORTHERN CALIFORNIA
21JUN95	15:28.51	61.8 S	154.4 E	10	5.6	6.7		BALLENY ISLANDS REG
22JUN95	07:57.10	16.3 S	168.0 E	33	5.5	6.0(Mw)		VANUATU ISLANDS
23JUN95	16:10.56	24.6 S	177.3 W	108	5.4	5.8(Mw)		S OF FIJI ISLANDS
24JUN95	06:58.06	3.9 S	153.9 E	386	6.2	6.8(Mw)		NEW IRELAND REGION
25JUN95	02:10.41	3.3 S	150.3 E	45	5.5	6.3		NEW IRELAND REGION
25JUN95	06:59.05	24.6 N	121.8 E	47	5.8	6.0(Mw)		TAIWAN
26JUN95	03:41.42	55.3 S	27.8 W	33	5.4	6.0(Mw)		S SANDWICH ISL REG
27JUN95	10:09.58	18.8 N	81.7 W	10	5.7	6.2(Mw)		CARIBBEAN SEA
27JUN95	17:16.35	3.9 S	151.0 E	397	5.3			NEW IRELAND REGION
27JUN95	21:12.56	17.2 S	66.8 E	10	5.0	6.3		MAURITIUS-REUNION
29JUN95	07:45.09	48.8 N	154.4 E	61	5.9	6.0(Mw)		KURIL ISLANDS
29JUN95	12:24.03	19.5 S	169.2 E	144	6.2	6.7(Mw)		VANUATU ISLANDS
30JUN95	11:58.56	24.6 N	110.3 W	10	5.8	6.3		BAJA CALIF MEXICO
02JUL95	23:53.21	35.0 N	139.4 E	120	5.4			S COAST OF HONSHU
03JUL95	19:50.50	29.2 S	177.7 W	33	6.5	7.2		KERMADEC ISL NZ
03JUL95	21:56.51	29.0 S	177.7 W	55	6.0			KERMADEC ISL NZ
07JUL95	21:15.18	34.0 N	137.1 E	324	5.8	6.0(Mw)		S COAST OF HONSHU
08JUL95	05:42.56	39.6 N	143.3 E	40	5.7			E COAST OF HONSHU
08JUL95	17:15.28	53.6 N	163.5 W	33	5.8	6.0(Mw)		UNIMAK ISL REGION
09JUL95	20:31.31	22.0 N	99.2 E	12	5.7	6.2(Mw)		MYANMAR-CHINA BORDER
11JUL95	21:46.42	22.0 N	99.2 E	13	6.1	7.2		MYANMAR-CHINA BORDER
12JUL95	15:46.59	23.2 S	170.8 E	33	5.9	6.4		LOYALTY ISL REGION
15JUL95	01:35.15	19.8 S	177.6 W	358	5.4	5.7(Mw)		FIJI ISLANDS REGION
19JUL95	00:24.17	22.6 S	169.7 E	32	5.8	6.0(Mw)		LOYALTY ISL REGION
26JUL95	23:42.02	2.5 N	127.7 E	66	5.9	6.4(Mw)		NORTHERN MOLUCCA SEA
27JUL95	05:51.17	12.6 S	79.3 E	10	6.2	5.9		SOUTH INDIAN OCEAN
28JUL95	14:29.12	21.0 S	175.4 W	102	6.1	6.5(Mw)		TONGA ISLANDS

29JUL95	16:18.44	30.4 N	138.3 E	436	5.5			SOUTH OF HONSHU
30JUL95	21:05.50	23.6 S	70.5 W	33	5.6	6.1(Mw)		NEAR COAST N CHILE
31JUL95	08:48.34	10.4 S	78.3 W	93	5.6			NEAR COAST OF PERU
31JUL95	12:34.46	37.1 N	116.4 W	10			4.0	SOUTHERN NEVADA
02AUG95	18:32.09	30.0 N	114.1 W	10	4.7			GULF OF CALIFORNIA
03AUG95	01:57.21	23.0 S	70.4 W	33	5.4	6.3(Mw)		NEAR COAST N CHILE
03AUG95	08:18.53	28.1 S	68.9 W	104	5.9			CHILE/ARGENTINA REG
07AUG95	19:44.24	4.0 N	143.6 E	10	5.5	6.4(Mw)		E CAROLINE IS MICRO
14AUG95	04:37.05	4.8 S	151.1 E	126	6.3			NEW BRITAIN REG PNG
16AUG95	10:27.26	5.7 S	154.1 E	16	6.4	7.8		SOLOMON ISLANDS
16AUG95	11:21.41	14.7 S	167.1 E	134	5.7			VANUATU ISLANDS
16AUG95	15:04.00	31.7 S	179.3 E	462	5.8			KERMADEC ISLANDS REG
16AUG95	16:24.26	5.4 S	153.8 E	21	5.6	6.8		NEW IRELAND REG PNG
16AUG95	23:10.27	5.7 S	154.1 E	74	6.1	7.2		SOLOMON ISLANDS
17AUG95	00:15.53	5.9 S	153.9 E	33	6.0	6.5		NEW IRELAND REG PNG
17AUG95	05:35.37	21.8 S	170.3 E	75	5.5	6.1(MW)		LOYALTY ISL REGION
17AUG95	10:01.27	5.0S	153.3 E	33	5.5	6.4		NEW IRELAND REG PNG
17AUG95	23:14.19	36.4 N	71.3 E	239	5.4	5.7(MW)		AFGHAN/TAJIKISTAN
18AUG95	02:16.26	55.8 S	28.9 W	36	5.6	6.3(Mw)		S SANDWICH ISL REG
19AUG95	21:43.31	5.0 N	75.6 W	125	6.1	6.6(Mw)		COLOMBIA
23AUG95	07:06.02	18.9 N	145.2 E	596	6.3	7.0(Mw)		MARIANA ISLANDS
23AUG95	13:14.42	56.7 S	141.6 W	10	5.9	6.1(Mw)		PACIFIC-ANARCTIC
24AUG95	01:55.34	19.0 N	144.9 E	589	5.9	6.2(Mw)		MARIANA ISLANDS
24AUG95	06:28.54	18.9 N	145.0 E	600	5.4			MARIANA ISLANDS
24AUG95	07:54.41	18.9 N	144.8 E	598	5.3	6.1(Mw)		MARIANA ISLANDS
24AUG95	07:55.25	18.9 N	145.0 E	580	5.4	6.1(Mw)		MARIANA ISLANDS
25AUG95	14:25.25	20.0 S	178.0 W	540	5.2	5.4(Mw)		FIJI ISLANDS REGION
26AUG95	06:57.17	5.7 S	153.5 E	33	5.3	6.1		NEW IRELAND REG PNG
28AUG95	03:16.25	44.1 N	110.2 W	5	4.3		4.5	YELLOWSTONE WYOMING
28AUG95	10:46.12	25.9 N	110.3 W	10	5.6	6.5		GULF OF CALIFORNIA
29AUG95	07:25.48	48.0 S	99.4 E	10	5.3	6.2		SE INDIAN RIDGE
31AUG95	17:10.37	15.9 S	166.4 E	33	5.9	6.4		VANUATU ISLANDS
01SEP95	06:30.37	0.0 N	123.2 E	163	5.5			MINAHASSA PENINSULA
04SEP95	14:16.17	38.6 N	122.7 W	7	4.6	4.5	4.8	NORTHERN CALIFORNIA
08SEP95	01:15.28	56.1 S	122.3 W	10	5.2	6.3		S EAST PACIFIC RISE
13SEP95	20:36.46	37.0 N	121.5 W	8	4.2		4.2	GILROY CALIFORNIA
14SEP95	14:04.31	16.8 N	98.6 W	21	6.4	7.5(MW)		NEAR COAST GUERRERO
15SEP95	00:31.33	36.8 N	98.6 W	5			4.1	OKLAHOMA
16SEP95	01:03.38	6.3 S	155.2 E	160	5.8	6.1(MW)		SOLOMON ISLANDS
17SEP95	17:09.20	17.2 S	66.6 E	10	5.4	6.3(MW)		MAURITIUS-REUNION
18SEP95	06:56.31	6.9 S	128.8 E	180	5.5			BANDA SEA
19SEP95	03:31.53	21.2 S	68.7 W	110	5.7			CHILE-BOLIVIA BORDER
19SEP95	22:52.23	39.6 S	174.1 E	219	5.9			NORTH ISLAND NZ
22SEP95	05:39.29	5.9S	146.5 E	33	5.7	6.2(MW)		E NEW GUINEA REG
22SEP95	14:47.21	38.7 N	118.5 W	20	4.4		4.8	CALIF/NEV BORDER REG
23SEP95	16:05.50	5.7 S	104.0 E	56	5.8	6.0(MW)		S SUMATERA INDONESIA
23SEP95	22:31.58	10.5 S	78.7 W	73	5.9	6.5(MW)		NEAR COAST OF PERU
26SEP95	01:39.10	43.4 N	127.0 W	10	4.7	4.3		OFF COAST OF OREGON
26SEP95	18:24.12	13.0 S	166.9 E	187	5.5			VANUATU ISLANDS
27SEP95	16:44.42	36.5 N	121.1 W	9	4.2		4.2	CENTRAL CALIFORNIA
01OCT95	15:57.16	38.1 N	30.1 E	33	5.7	6.1		TURKEY
01OCT95	17:06.03	29.3 N	138.9 E	427	5.5	6.1(MW)		S OF HONSHU
02OCT95	23:48.23	15.0 S	175.1 W	33	5.5	6.0(MW)		TONGA ISLANDS
03OCT95	01:51.24	2.7 S	77.9 W	27	6.5	6.8(MW)		PERU-ECUADOR BORDER
03OCT95	12:45.00	2.8 S	77.8 W	33	6.0	6.4(MW)		PERU-ECUADOR BORDER
06OCT95	05:23.18	65.2 N	148.8 W	9	5.7	6.1(MW)		NORTHERN ALASKA
06OCT95	11:39.36	20.0 S	175.9 W	209	5.7	6.3(MW)		TONGA ISLANDS REGION
06OCT95	18:09.45	2.1 S	101.3 E	33	5.8	6.8(MW)		S SUMATERA INDONESIA
12OCT95	16:52.54	18.8 N	104.0 W	25	5.5	6.0(MW)		COAST JALISCO MEX
13OCT95	15:22.23	58.8 S	158.4 E	33	5.6	6.1(MW)		MACQUARIE ISL REG
14OCT95	08:00.41	25.5 S	177.6 W	70	5.9	6.2(MW)		SOUTH OF FIJI ISL
14OCT95	20:45.00	6.4 S	154.5 E	33	5.2	6.0(MW)		NEW IRELAND REG
15OCT95	15:04.13	6.5 S	154.4 E	52	5.3	6.1(MW)		SOLOMON ISLANDS
18OCT95	09:30.38	36.3 N	70.3 E	226	5.4	6.2(MW)		HINDU KUSH AFGHAN
18OCT95	10:37.26	27.9 N	130.4 E	27	6.5	6.9(MW)		RYUKYU ISLANDS
18OCT95	23:25.59	28.1 N	130.5 E	33	5.8	6.0(MW)		RYUKYU ISLANDS
19OCT95	00:32.06	28.4 N	130.2 E	33	5.9	6.4(MW)		RYUKYU ISLANDS
19OCT95	02:41.37	28.0 N	130.3 E	31	6.3	6.6(MW)		RYUKYU ISLANDS

19OCT95	10:51.11	27.6 N	130.0 E	28	5.2	6.0		RYUKYU ISLANDS
20OCT95	19:21.28	18.9 N	145.1 E	225	5.3			MARIANA ISLANDS
21OCT95	02:38.57	16.8 N	93.4 W	161	6.2	7.3(MW)		CHIAPAS MEXICO
23OCT95	22:46.54	25.9 N	102.2 E	33	5.8	6.1(MW)		YUNNAN CHINA
27OCT95	08:53.22	2.4 N	128.2 E	156	5.6			HALMAHERA INDONESIA
29OCT95	18:44.21	0.8 N	126.0 E	33	5.5	6.1		NORTHERN MOLUCCA SEA
29OCT95	19:24.29	0.8 N	126.0 E	33	6.1	5.4		NORTHERN MOLUCCA SEA
29OCT95	19:40.57	21.6 S	179.4 W	611	5.7	6.1(MW)		FIJI ISLANDS REGION
01NOV95	00:35.32	28.9 S	71.5 W	33	6.3	6.6(Mw)		COAST OF CENT CHILE
05NOV95	16:30.00	5.0 S	103.3 E	58	6.3			SO SUMATERA INDO
08NOV95	07:14.18	1.8 N	95.0 E	33	6.1	6.9(Mw)		W COAST N SUMATERA
13NOV95	02:17.51	3.5 N	126.6 E	33	5.8	6.1		TALAUD IS INDONESIA
13NOV95	07:38.45	15.1 S	173.5 W	33	5.7	6.0(Mw)		TONGA ISLANDS
13NOV95	08:43.14	56.0 N	114.4 E	24	5.9			LAKE BAYKAL RUSSIA
15NOV95	20:33.58	39.6 N	119.9 W	5	4.6		4.8	NEVADA
22NOV95	04:15.11	28.8 N	34.8 E	10	6.2	7.0(Mw)		EGYPT
24NOV95	06:18.57	42.9 S	171.6 E	10	5.6	6.2(Mw)		S ISL NEW ZEALAND
24NOV95	17:24.12	44.5 N	149.0 E	33	6.1	6.4(Mw)		KURIL ISLANDS
26NOV95	03:04.04	12.9 S	166.3 E	33	5.8			SANTA CRUZ ISLANDS
27NOV95	15:52.58	44.5 N	149.3 E	33	6.0	6.1(Mw)		KURIL ISLANDS
30NOV95	11:49.32	36.6 N	27.2 E	120	5.8			DODECANESE ISLANDS
30NOV95	12:19.03	36.4 N	115.3 W	5			3.8	CALIF/NEV BORDER REG
30NOV95	15:09.22	44.1 N	145.6 E	145	6.0			HOKKAIDO JAPAN
30NOV95	23:37.37	44.3 N	149.4 E	33	5.9	6.1(Mw)		KURIL ISLANDS
01DEC95	05:20.27	10.1 N	104.0 W	10	6.2			OFF COAST OF MEXICO
02DEC95	17:13.21	44.8 N	149.2 E	33	6.5	6.4(Mw)		KURIL ISLANDS
03DEC95	18:01.08	44.5 N	149.4 E	33	6.6	8.0		KURIL ISLANDS
03DEC95	18:14.27	44.8 N	150.7 E	33	6.4	6.6		KURIL ISLANDS
03DEC95	18:22.38	44.2 N	150.0 E	33	5.9			KURIL ISLANDS
03DEC95	21:38.38	44.6 N	150.2 E	33	5.7			EAST OF KURIL ISL
05DEC95	05:46.15	15.5 S	167.4 E	33	6.0	6.5		KURIL ISLANDS
05DEC95	06:32.06	9.3 S	125.0 E	33	5.9			VANUATU ISLANDS
05DEC95	14:54.45	1.7 N	127.1 E	100	5.7	6.3(Mw)		TIMOR REG INDONESIA
10DEC95	22:23.14	44.4 N	149.8 E	33	5.6			HALMAHERA INDONESIA
10DEC95	22:48.08	44.2 N	149.9 E	33	5.5	6.4		KURIL ISLANDS
10DEC95	23:47.00	21.2 S	178.4 W	412	5.8	6.2		KURIL ISLANDS
11DEC95	14:09.24	18.8 N	105.4 W	33	5.7			FIJI ISLANDS REGION
19DEC95	23:28.12	3.6 S	140.2 E	71	6.2	6.1		OFF COAST JALISCO
22DEC95	09:00.33	38.7 N	119.5 W	5	4.6	6.1(Mw)		IRIAN JAYA
24DEC95	07:41.31	41.9 N	126.8 W	10	4.6		4.9	CAL/NEV BORDER TAHOE
25DEC95	03:06.34	28.1 S	176.9 W	33	5.4	4.9	4.4	OFF COAST N CALIF
25DEC95	03:19.44	36.4 N	70.2 E	230	5.4	6.0		KERMADEC ISL REGION
25DEC95	04:43.26	6.9 S	129.2 E	150	6.2			HINDU KUSH
28DEC95	18:27.59	38.7 N	119.5 W	5	4.4	7.1(Mw)		BANDA SEA
30DEC95	02:07.16	63.3 N	150.9 W	140	5.3		5.0	CAL/NEV BORDER TAHOE
30DEC95	12:11.07	40.7 N	143.2 E	33	5.7			CENTRAL ALASKA
30DEC95	16:15.31	31.0 N	140.1 E	105	5.4	6.3(Mw)		OFF E COAST HONSHU
31DEC95	07:26.13	53.8 N	160.6 E	55	6.0			SOUTH OF HONSHU
								E COAST KAMCHATKA

Local Events

DATE	TIME	LAT.	LONG.	DEPTH	MB	MSZ	ML	LOCATION
19FEB95	21:24.18	34.0 N	118.9 W	16			4.3	MALIBU CALIFORNIA
01MAR95	15:56.35	33.7 N	118.6 W	14			3.7	REDONDO BCH CALIF
01MAR95	15:56.57	33.7 N	118.6 W	14			3.7	REDONDO BCH CALIF
07MAY95	11:03.33	33.9 N	116.3 W	11	4.5	4.3	4.8	PALMS SPRINGS CALIF
21JUN95	21:17.36	32.9 N	117.8 W	6	4.6		4.3	OFFSHORE S CALIF
26JUN95	08:40.28	34.4 N	118.6 W	13	4.7	4.5	5.0	CASTAIC S CALIF
17AUG95	22:39.59	35.7 N	117.6 W	6	5.3		5.4	RIDGECREST CALIF
17AUG95	22:41.10	35.7 N	117.6 W	6			4.2	RIDGECREST CALIF
30AUG95	15:29.54	35.7 N	117.6 W	5			4.1	RIDGECREST CALIF
05SEP95	20:27.18	34.2 N	116.4 W	0	4.5		4.4	YUCCA VALLEY CALIF
11SEP95	18:37.23	35.7 N	117.6 W	7			4.3	RIDGECREST CALIF
20SEP95	23:27.36	35.7 N	117.6 W	5	5.0		5.8	RIDGECREST CALIF
20SEP95	23:30.34	35.7 N	117.6 W	5			4.1	RIDGECREST CALIF
20SEP95	23:32.46	35.7 N	117.6 W	5			4.0	RIDGECREST CALIF
21SEP95	07:57.41	35.7 N	117.6 W	5			4.1	RIDGECREST CALIF
21SEP95	23:48.39	35.7 N	117.6 W	5			4.0	RIDGECREST CALIF
25SEP95	04:47.29	35.8 N	117.6 W	9			4.9	RIDGECREST CALIF
18OCT95	12:42.04	35.7 N	117.6 W	4			4.2	RIDGECREST CALIF
18OCT95	12:49.07	35.7 N	117.6 W	5			3.9	RIDGECREST CALIF
31DEC95	21:48.23	35.0 N	118.3 W	8			4.0	MOJAVE CALIFORNIA

Saved Time Periods for Local Sequences

20SEP95 23:27.36 — 27SEP95 23:00 RIDGECREST AFTERSHOCK SEQUENCE

Miscellaneous Events

DATE	TIME	LAT.	LONG.	DEPTH	MAG.	DESCRIPTION / LOCATION
18APR95	21:30 - 21:45					SONIC-SPACE SHUTTLE
15MAY95	04:05.58	41.6 N	88.8 E	0	6.1	(NTS BLAST) S XINJIANG CHINA
23MAY95	19:00.04	33.3 N	118.3 W	0	3.0	AVALON CATALINA ISL Catalina blast (200000 lbs) explosion
17AUG95	00:59.57	41.6 N	88.7 E	0	6.0	(NTS BLAST) S XINJIANG CHINA
05SEP95	21:29.58	21.8 S	138.8 W	0	4.8	(NTS BLAST) TUAMOTU ARCHIPELAGO
01OCT95	23:29.57	22.2 S	138.7 W	0	5.4	(NTS BLAST) TUAMOTU ARCHIPELAGO
27OCT95	21:59.57	22.0 S	139.2 W	0	5.5	(NTS BLAST) TUAMOTU ARCHIPELAGO
21NOV95	21:29:58	21.8 S	139.0 W	0	4.8	(NTS BLAST) TUAMOTU ARCHIPELAGO
27DEC95	21:29:57	21.9 S	139.0 W	0	5.1	(NTS BLAST) TUAMOTU ARCHIPELAGO

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